ENGINEERING EXHIBIT

Application for Minor Modification of Digital Low Power Television Station

prepared for

Mountain Licenses, L.P.
KCYU-LD Yakima, WA
Facility ID 58694
Ch. 29 (digital) 15 kW

Mountain Licenses, L.P. ("MLLP") is the licensee of digital Low Power Television station KCYU-LD, Channel 29, Yakima, WA, Facility ID 58694. KCYU-LD is licensed (file# 0000055266) to operate at 15 kW effective radiated power ("ERP") with a directional antenna. *MLLP* proposes herein a minor modification to relocate KCYU-LD to a nearby antenna structure and employ a nondirectional antenna.

As proposed herein, KCYU-LD will be relocated to the antenna supporting structure associated with FCC Antenna Structure Registration number 1258286, 0.2 km from the licensed site. The proposed KCYU-LD facility will employ a side-mounted antenna system and no change to the overall structure height is proposed.

The proposed KCYU-LD facility will operate at 15 kW ERP nondirectional using a "full service" out of channel emission mask. Figure 1 depicts the 51 dBμ coverage contour of the licensed and proposed facilities, demonstrating compliance with §73.3572 for a minor change.

Interference study per OET Bulletin 69[1] shows that the proposal complies with the FCC's interference protection requirements toward all digital television, television translator, LPTV, and Class A stations (existing and post-auction). The results, summarized in Table 1, show that

[1]FCC Office of Engineering and Technology Bulletin number 69, *Longley-Rice Methodology for Evaluating TV Coverage and Interference*, February 6, 2004 ("OET-69"). This analysis employed the FCC's current "TVStudy" software with the default application processing template settings, 1 km cell size, and 1 km terrain increment. Comparisons of various results of this computer program (run on a Mac processor) to the FCCs implementation of TVStudy show excellent correlation.

any new interference does not exceed the FCC's interference limits (0.5 percent to full power and Class A stations, and 2.0 percent to secondary stations) to any facility.

The site is located 274.5 km from the U.S. – Canadian border. For Canada referral purposes, the 25.2 dBµ F(50,10) contour is relevant for digital LPTV operations on Channel 29. The 25.2 dBµ F(50,10) contour is depicted in Figure 2 and does not reach Canada. Thus, international coordination is not required.

Human Exposure to Radiofrequency Electromagnetic Field (Environmental)

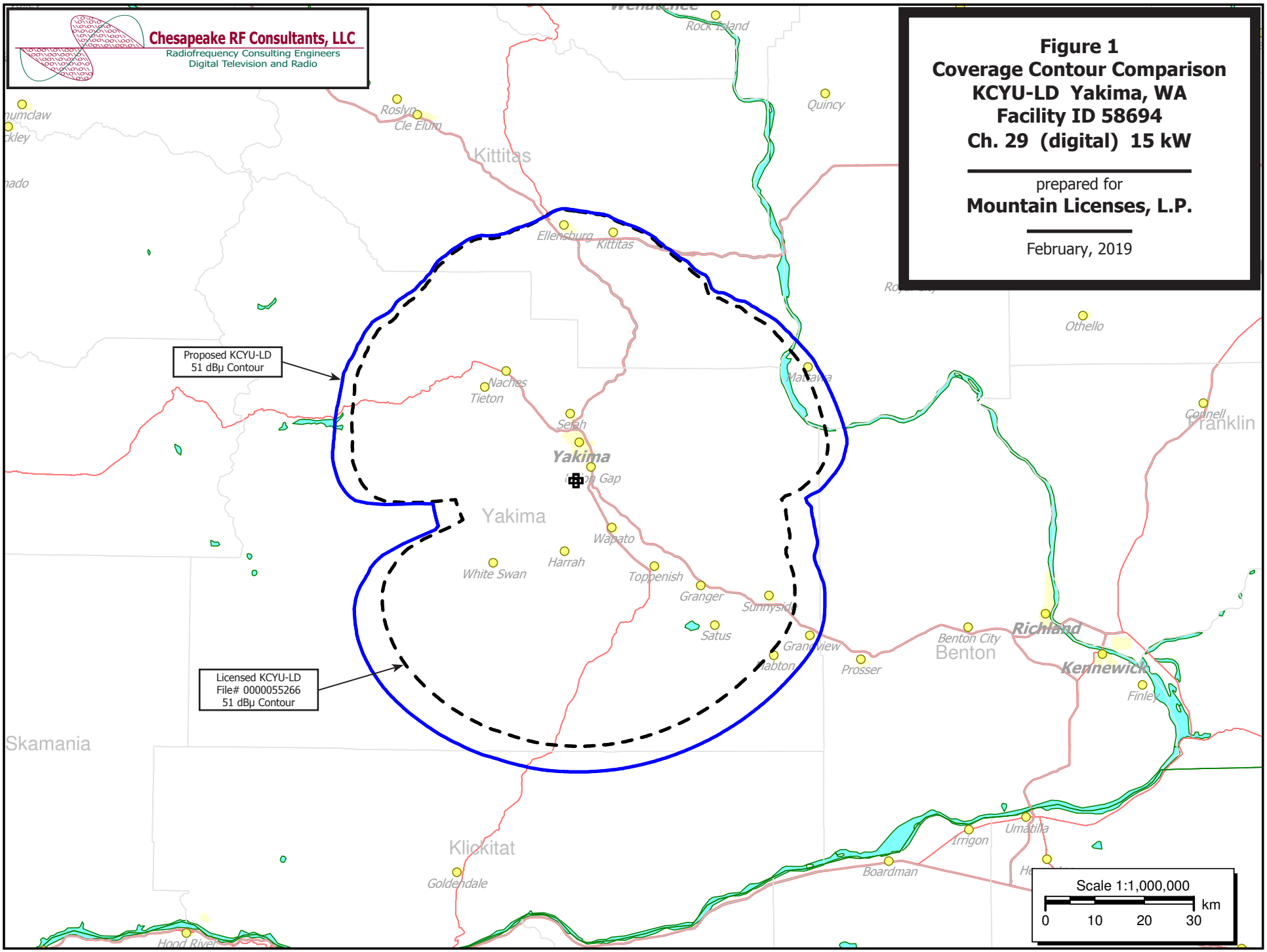
The transmitting location is on Ahtanum Ridge overlooking Yakima. There are numerous other transmitting facilities at this site area situated on various antenna supporting structures. *MLLP* participates in a radiofrequency ("RF") electromagnetic field exposure safety program, along with other broadcasters and FCC licensees that utilize the Ahtanum Ridge site area. Following construction of the proposed facility, *MLLP* will conduct RF exposure measurements (and/or detailed calculations) to evaluate the level of RF exposure resulting from the KCYU-LD facility. As necessary, based on these results and considering all emitters, appropriate exposure abatement procedures will be established and followed, in order to comply with the FCC's exposure limits. Such abatement procedures may involve the restriction of access to certain areas and/or facility modifications to reduce RF levels.

Considering the post-construction measurement and an appropriate abatement program, the general public and workers will not be exposed to RF levels attributable to the proposal in excess of the FCC's guidelines. RF exposure warning signs will continue to be posted. With respect to worker safety, authorized personnel will be trained and/or supervised as necessary for access to any "controlled" areas. *MLLP* will coordinate exposure procedures with all pertinent stations and will reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from RF electromagnetic field exposure in excess of FCC guidelines. This exhibit is limited to the evaluation of exposure to RF electromagnetic field.

List of Attachments

Figure 1	Coverage Contour Comparison
Figure 2	Interfering Contour Towards Canada
Table 1	TVStudy Analysis of Proposal
Form 2100	Engineering Data for FCC Form 2100

Chesapeake RF Consultants, LLC
Joseph M. Davis, P.E. February 15, 2019
207 Old Dominion Road Yorktown, VA 23692 703-650-9600


Chesapeake RF Consultants, LLC
Radiofrequency Consulting Engineers
Digital Television and Radio
Figure 1
Coverage Contour Comparison
KCYU-LD Yakima, WA
Facility ID 58694
Ch. 29 (digital) 15 kW
prepared for
Mountain Licenses, L.P.
February, 2019
Proposed KCYU-LD
51 dBµ Contour
Licensed KCYU-LD
File# 0000055266
51 dBµ Contour
Kittitas
Yakima
Skamania
Klickitat
Franklin
Benton
Roslyn
Cle Elum
Ellensburg
Kittitas
Quincy
Othello
Naches
Tieton
Selah
Yakima
Wapato
Harrah
White Swan
Toppenish
Granger
Sunnyside
Satus
Grandview
Prosser
Benton City
Richland
Kennewick
Finley
Irrigon
Umatilla
Boardman
Goldendale
Hood River
Scale 1:1,000,000
km
0
10
20
30

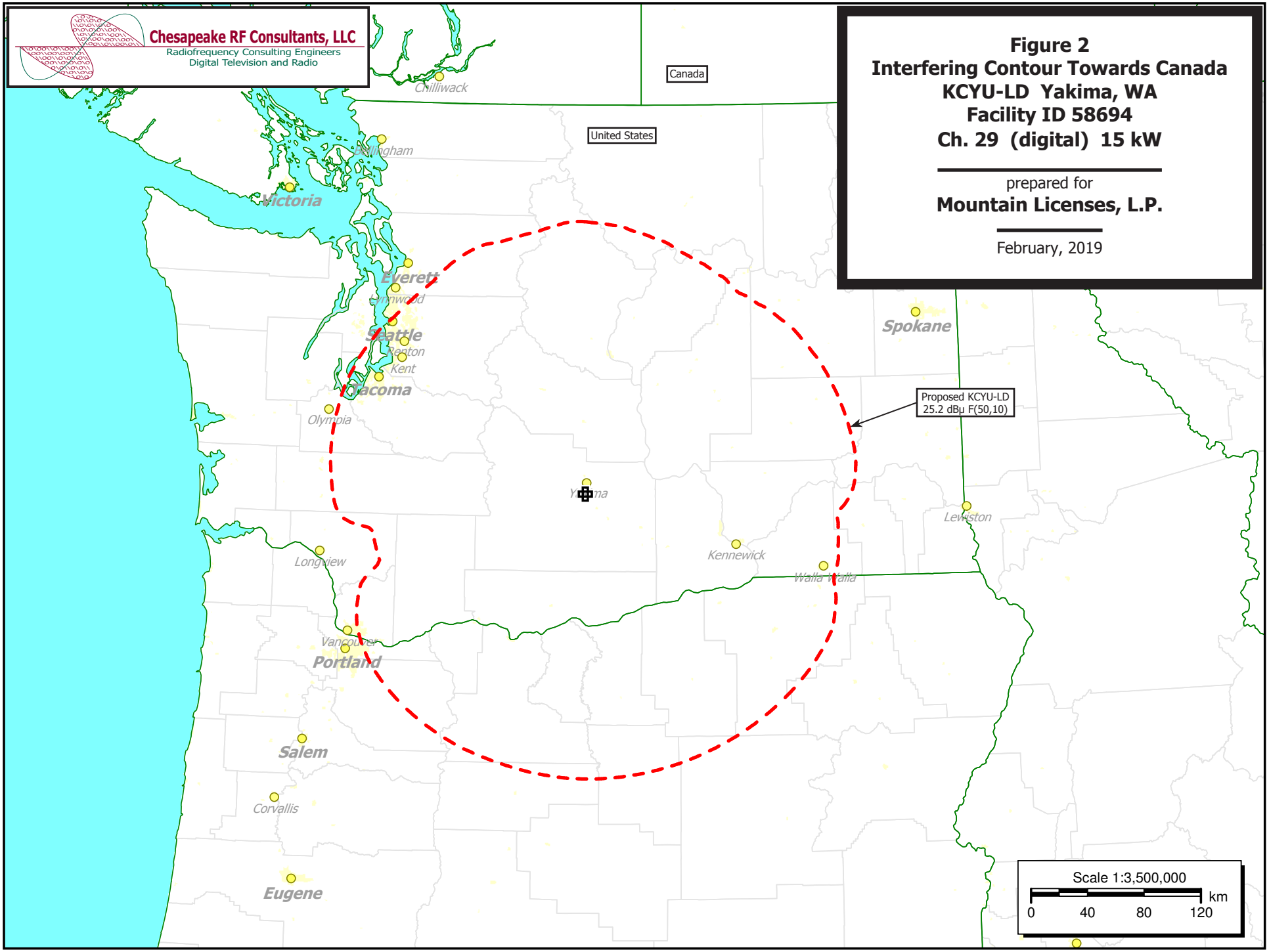

Chesapeake RF Consultants, LLC
Radiofrequency Consulting Engineers
Digital Television and Radio
Figure 2
Interfering Contour Towards Canada
KCYU-LD Yakima, WA
Facility ID 58694
Ch. 29 (digital) 15 kW
prepared for
Mountain Licenses, L.P.
February, 2019
Canada
United States
Chilliwack
Victoria
Everett
Seattle
Tacoma
Olympia
Spokane
Proposed KCYU-LD
25.2 dBµ F(50,10)
Yakima
Lewiston
Kennewick
Longview
Vancouver
Portland
Salem
Corvallis
Eugene
Scale 1:3,500,000
km
0
40
80
120

Table 1 KCYU-LD TVStudy Analysis of Proposal


```
tvstudy v2.2.5 (4uoc83)
Database: localhost,  Study: KCYU-LD relo nonD,  Model: Longley-Rice
Start: 2019.02.14 16:10:18

Study created: 2019.02.14 16:10:18

Study build station data: LMS TV 2019-02-11

    Proposal: KCYU-LD D29 LD APP YAKIMA, WA
 File number: KCYU-LD relo nonD
 Facility ID: 58694
Station data: User record
   Record ID: 2538
     Country: U.S.

Build options:
Protect pre-transition records not on baseline channel

Search options:
Baseline record excluded if station has CP

Stations potentially affected by proposal:
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IX	Call	Chan	Svc	Status	City, State	File Number	Distance
No	K14HT	N14	TX	LIC	WALLA WALLA, ETC., WA	BLTT19910213IG	187.8 km
No	K28GD-D	D28	LD	LIC	HEPPNER, ETC., OR	BLDTT20111117ARH	174.3
No	K28CQ-D	D28	LD	LIC	HOOD RIVER, OR	BLDTT20120514ACX	120.1
No	K28KJ-D	D28	LD	LIC	CHELAN, WA	BLDTL20111012ABP	146.4
No	K28KJ-D	D28	LD	CP	CHELAN, WA	BMPDTT20101012ABD	146.4
No	K42IH-D	D28	LD	CP	EAST WENATCHEE, ECT, WA	BLANK0000054491	95.7
No	NEW	D28	LD	APP	ELLENSBURG, WA	BNPDTL20090825AEW	52.0
No	KAYU-TV	D28	DT	LIC	SPOKANE, WA	BLCDT20091029ACN	270.0
Yes	K28KW-D	D28	LD	LIC	SUNNYSIDE, WA	BLDTL20130719ABV	42.9
No	K29KU-D	D29	LD	CP	BEND, OR	BLANK0000022168	259.0
No	KEPB-TV	D29	DT	LIC	EUGENE, OR	BLEDT20050127AHY	347.0
No	K29EL-D	D29	LD	LIC	LA GRANDE, OR	BLDTT20120625ABJ	254.3
Yes	K29EG-D	D29	LD	LIC	MILTON, ETC, OR	BLDTT20101122AJO	190.0
No	K29AZ-D	D29	LD	LIC	NEWPORT, OR	BLDTT20111208ABT	338.1
No	K29LW-D	D29	LD	LIC	Rockaway Beach, OR	BLANK0000063315	278.0
Yes	K51EH-D	D29	LD	CP	THE DALLES, OR	BLANK0000053828	102.2
No	K29IA-D	D29	LD	LIC	CENTRALIA, ETC., WA	BLDTT20090618ABC	194.4
Yes	NEW	D29	LD	APP	ELLENBURG, WA	BNPDTL20090825AKK	50.6
Yes	NEW	D29	LD	APP	ELLENSBURG, WA	BNPDTL20090825AEN	52.0
No	K29ED-D	D29	LD	LIC	EVERETT, WA	BLDTL20110812ACJ	201.6
No	K29IB-D	D29	LD	LIC	GRAYS RIVER, ETC., WA	BLDTT20100511ACN	232.4
No	K29JB-D	D29	LD	LIC	MOSES LAKE, WA	BLDTL20131206AUE	114.0
Yes	KRLB-LD	D29	LD	CP	RICHLAND, ETC, WA	BLANK0000029420	97.2
No	K29NM-D	D29	LD	LIC	SPOKANE, WA	BLANK0000065361	270.0
No	K30EW-D	D30	LD	LIC	MONUMENT, ETC., OR	BLDTL20130115ABJ	174.3
No	K30QF-D	D30	LD	LIC	HERMISTON, WA	BLANK0000063991	111.9
No	KOMO-TV	D30	DT	CP	SEATTLE, WA	BLANK0000034249	185.3
No	KPDX	D30	DT	LIC	VANCOUVER, WA	BLCDT20090612ADJ	205.7
No	K30KA-D	D30	LD	CP	WENATCHEE, WA	BDCCDTT20061030AGI	83.0
Yes	KUNW-CD	D30	DC	LIC	YAKIMA, WA	BLDTL20090923ACQ	0.4

```
No non-directional AM stations found within 0.8 km

No directional AM stations found within 3.2 km

Record parameters as studied:

    Channel: D29
       Mask: Full Service
   Latitude:  46 31 51.60 N (NAD83)
  Longitude: 120 30 54.00 W
Height AMSL: 627.1 m (Adjusted based on actual ground elevation calculation)
       HAAT: 0.0 m
   Peak ERP: 15.0 kW
    Antenna: Omnidirectional
Elev Pattrn: Generic
  Elec Tilt: 1.50

50.2 dBu contour:
```

Table 1 KCYU-LD TVStudy Analysis of Proposal

Azimuth	ERP	HAAT	Distance
0.0 deg	15.0 kW	287.9 m	55.7 km
45.0	15.0	208.7	51.2
90.0	15.0	219.2	51.8
135.0	15.0	359.8	59.5
180.0	15.0	358.4	59.4
225.0	15.0	316.8	57.3
270.0	15.0	167.1	48.8
315.0	15.0	224.5	52.1

Database HAAT does not agree with computed HAAT
Database HAAT: 0 m Computed HAAT: 268 m

Proposal 25.23 dBu contour does not cross Canadian border
Distance to Canadian border: 274.5 km

Distance to Mexican border: 1571.2 km

Conditions at FCC monitoring station: Ferndale WA
Bearing: 331.3 degrees Distance: 309.6 km

Proposal is not within the West Virginia quiet zone area

Conditions at Table Mountain receiving zone:
Bearing: 114.5 degrees Distance: 1419.3 km

Study cell size: 1.00 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%

Interference to BLDTL20130719ABV LIC scenario 1

	Call	Chan	Svc	Status	City, State	File Number	Distance
Desired:	K28KW-D	D28	LD	LIC	SUNNYSIDE, WA	BLDTL20130719ABV	
Undesireds:	KCYU-LD	D29	LD	APP	YAKIMA, WA	KCYU-LD relo nonD	42.9 km
	K28GD-D	D28	LD	LIC	HEPPNER, ETC., OR	BLDTT20111117ARH	136.8
	K28KJ-D	D28	LD	LIC	CHELAN, WA	BLDTL20111012ABP	164.2
	KAYU-TV	D28	DT	LIC	SPOKANE, WA	BLCDT20091029ACN	249.9

Service area		Terrain-limited		IX-free, before		IX-free, after		Percent New IX	
1087.5	87,417	992.3	86,710	989.2	86,693	988.2	86,691	0.10	0.00

Undesired		Total IX	Unique IX, before		Unique IX, after	
KCYU-LD D29 LD APP	1.0	2			1.0	2
K28GD-D D28 LD LIC	2.0	17	2.0	17	2.0	17
KAYU-TV D28 DT LIC	1.0	0	1.0	0	1.0	0

Interference to BLDTT20101122AJO LIC scenario 1

	Call	Chan	Svc	Status	City, State	File Number	Distance
Desired:	K29EG-D	D29	LD	LIC	MILTON, ETC, OR	BLDTT20101122AJO	
Undesireds:	KCYU-LD	D29	LD	APP	YAKIMA, WA	KCYU-LD relo nonD	190.0 km
	K28FT-D	D28	LD	LIC	MILTON-FREEWATER, OR	BLDTT20111206BCR	0.0
	K51EH-D	D29	LD	CP	THE DALLES, OR	BLANK0000053828	221.8
	KRLB-LD	D29	LD	CP	RICHLAND, ETC, WA	BLANK0000029420	93.3
	K30OA-D	D30	LD	LIC	MILTON-FREEWATER, OR	BLANK0000058589	0.0

Service area		Terrain-limited		IX-free, before		IX-free, after		Percent New IX	
2533.7	66,731	2244.0	65,586	2180.1	65,523	2175.1	65,511	0.23	0.02

Undesired		Total IX	Unique IX, before		Unique IX, after	
KCYU-LD D29 LD APP	12.1	15			5.0	12
K28FT-D D28 LD LIC	1.0	0	0.0	0	0.0	0
K51EH-D D29 LD CP	2.0	0	0.0	0	0.0	0
KRLB-LD D29 LD CP	53.7	56	47.7	56	41.6	53

K30OA-D D30 LD LIC	14.2	7	9.1	7	9.1	7		

Interference to BLANK0000053828 CP scenario 1

	Call	Chan	Svc	Status	City, State	File Number	Distance
Desired:	K51EH-D	D29	LD	CP	THE DALLES, OR	BLANK0000053828	
Undesireds:	KCYU-LD	D29	LD	APP	YAKIMA, WA	KCYU-LD relo nonD	102.2 km
	K28CQ-D	D28	LD	LIC	HOOD RIVER, OR	BLDTT20120514ACX	36.0
	K29EG-D	D29	LD	LIC	MILTON, ETC, OR	BLDTT20101122AJO	221.8

Service area		Terrain-limited		IX-free, before		IX-free, after		Percent New IX	
6885.2	65,643	5638.5	49,487	5615.5	48,610	5614.5	48,610	0.02	0.00

Undesired	Total IX		Unique IX, before		Unique IX, after	
KCYU-LD D29 LD APP	1.0	0			1.0	0
K28CQ-D D28 LD LIC	22.1	877	22.1	877	22.1	877
K29EG-D D29 LD LIC	1.0	0	1.0	0	1.0	0

Interference to BNPDTL20090825AKK APP scenario 1

	Call	Chan	Svc	Status	City, State	File Number	Distance
Desired:	NEW	D29	LD	APP	ELLENBURG, WA	BNPDTL20090825AKK	
Undesireds:	KCYU-LD	D29	LD	APP	YAKIMA, WA	KCYU-LD relo nonD	50.6 km
	K28KJ-D	D28	LD	LIC	CHELAN, WA	BLDTL20111012ABP	96.3
	NEW	D28	LD	APP	ELLENSBURG, WA	BNPDTL20090825AEW	18.4
	K29EG-D	D29	LD	LIC	MILTON, ETC, OR	BLDTT20101122AJO	199.0
	NEW	D29	LD	APP	ELLENSBURG, WA	BNPDTL20090825AEN	18.4
	K29JB-D	D29	LD	LIC	MOSES LAKE, WA	BLDTL20131206AUE	78.9
	KRLB-LD	D29	LD	CP	RICHLAND, ETC, WA	BLANK0000029420	108.6
	K29NM-D	D29	LD	LIC	SPOKANE, WA	BLANK0000065361	235.3

Service area		Terrain-limited		IX-free, before		IX-free, after		Percent New IX	
1421.2	31,146	1159.0	30,870	613.9	1,466	607.8	1,466	0.99	0.00

Undesired	Total IX		Unique IX, before		Unique IX, after	
KCYU-LD D29 LD APP	20.3	13			6.1	0
NEW D28 LD APP	168.9	22,775	0.0	0	0.0	0
K29EG-D D29 LD LIC	4.1	0	0.0	0	0.0	0
NEW D29 LD APP	538.0	29,404	362.1	6,629	356.0	6,629
K29JB-D D29 LD LIC	12.0	0	4.0	0	4.0	0
KRLB-LD D29 LD CP	4.1	0	1.0	0	1.0	0
K29NM-D D29 LD LIC	2.0	0	0.0	0	0.0	0

Interference to BNPDTL20090825AEN APP scenario 1

	Call	Chan	Svc	Status	City, State	File Number	Distance
Desired:	NEW	D29	LD	APP	ELLENSBURG, WA	BNPDTL20090825AEN	
Undesireds:	KCYU-LD	D29	LD	APP	YAKIMA, WA	KCYU-LD relo nonD	52.0 km
	K28KJ-D	D28	LD	LIC	CHELAN, WA	BLDTL20111012ABP	96.9
	NEW	D29	LD	APP	ELLENBURG, WA	BNPDTL20090825AKK	18.4

Service area		Terrain-limited		IX-free, before		IX-free, after		Percent New IX	
687.3	30,655	672.3	30,649	460.4	27,860	459.4	27,860	0.22	0.00

Undesired	Total IX		Unique IX, before		Unique IX, after	
KCYU-LD D29 LD APP	1.0	0			1.0	0
NEW D29 LD APP	211.9	2,789	211.9	2,789	211.9	2,789

Interference to BLANK0000029420 CP scenario 1

	Call	Chan	Svc	Status	City, State	File Number	Distance
Desired:	KRLB-LD	D29	LD	CP	RICHLAND, ETC, WA	BLANK0000029420	
Undesireds:	KCYU-LD	D29	LD	APP	YAKIMA, WA	KCYU-LD relo nonD	97.2 km
	K28KW-D	D28	LD	LIC	SUNNYSIDE, WA	BLDTL20130719ABV	56.0
	K29EL-D	D29	LD	LIC	LA GRANDE, OR	BLDTT20120625ABJ	160.4

	K29EG-D	D29	LD	LIC	MILTON, ETC, OR	BLDTT20101122AJO	93.3
	K29JB-D	D29	LD	LIC	MOSES LAKE, WA	BLDTL20131206AUE	95.0
	KUNW-CD	D30	DC	LIC	YAKIMA, WA	BLDTL20090923ACQ	96.9

Service area		Terrain-limited		IX-free, before		IX-free, after		Percent New IX	
4755.6	242,647	4326.0	237,872	4034.1	237,165	3991.6	237,042	1.05	0.05

Undesired		Total IX	Unique IX, before		Unique IX, after	
KCYU-LD D29 LD APP	84.0	144			42.5	123
K28KW-D D28 LD LIC	5.1	9	1.0	0	0.0	0
K29EL-D D29 LD LIC	3.0	0	0.0	0	0.0	0
K29EG-D D29 LD LIC	288.8	691	275.7	686	247.4	686
K29JB-D D29 LD LIC	1.0	0	0.0	0	0.0	0
KUNW-CD D30 DC LIC	11.1	21	1.0	12	0.0	0

Interference to BLDTL20090923ACQ LIC scenario 1

	Call	Chan	Svc	Status	City, State	File Number	Distance
Desired:	KUNW-CD	D30	DC	LIC	YAKIMA, WA	BLDTL20090923ACQ	
Undesireds:	KCYU-LD	D29	LD	APP	YAKIMA, WA	KCYU-LD relo nonD	0.4 km
	KOMO-TV	D30	DT	CP	SEATTLE, WA	BLANK0000034249	185.5
	KPDX	D30	DT	LIC	VANCOUVER, WA	BLCDT20090612ADJ	206.1

Service area		Terrain-limited		IX-free, before		IX-free, after		Percent New IX	
9809.5	279,167	7206.8	242,794	7202.7	242,779	7185.6	242,779	0.24	0.00

Undesired		Total IX	Unique IX, before		Unique IX, after	
KCYU-LD D29 LD APP	17.1	0			17.1	0
KOMO-TV D30 DT CP	1.0	15	1.0	15	1.0	15
KPDX D30 DT LIC	3.0	0	3.0	0	3.0	0

Interference to proposal scenario 1
7.62% interference received

	Call	Chan	Svc	Status	City, State	File Number	Distance
Desired:	KCYU-LD	D29	LD	APP	YAKIMA, WA	KCYU-LD relo nonD	
Undesireds:	K28KJ-D	D28	LD	LIC	CHELAN, WA	BLDTL20111012ABP	146.4 km
	NEW	D28	LD	APP	ELLENSBURG, WA	BNPDTL20090825AEW	52.0
	K28KW-D	D28	LD	LIC	SUNNYSIDE, WA	BLDTL20130719ABV	42.9
	K29EG-D	D29	LD	LIC	MILTON, ETC, OR	BLDTT20101122AJO	190.0
	K51EH-D	D29	LD	CP	THE DALLES, OR	BLANK0000053828	102.2
	NEW	D29	LD	APP	ELLENBURG, WA	BNPDTL20090825AKK	50.6
	NEW	D29	LD	APP	ELLENSBURG, WA	BNPDTL20090825AEN	52.0
	K29JB-D	D29	LD	LIC	MOSES LAKE, WA	BLDTL20131206AUE	114.0
	KRLB-LD	D29	LD	CP	RICHLAND, ETC, WA	BLANK0000029420	97.2
	K29NM-D	D29	LD	LIC	SPOKANE, WA	BLANK0000065361	270.0
	KUNW-CD	D30	DC	LIC	YAKIMA, WA	BLDTL20090923ACQ	0.4

Service area		Terrain-limited		IX-free		Percent IX	
9143.0	278,025	6887.5	241,203	6499.0	222,830	5.64	7.62

Undesired		Total IX		Unique IX		Prcnt Unique IX	
NEW D28 LD APP	10.0	0		0.0	0	0.00	0.00
K28KW-D D28 LD LIC	129.4	16,257		96.1	16,020	1.40	6.64
K29EG-D D29 LD LIC	30.2	0		9.1	0	0.13	0.00
K51EH-D D29 LD CP	5.1	0		4.1	0	0.06	0.00
NEW D29 LD APP	12.0	0		5.0	0	0.07	0.00
NEW D29 LD APP	28.0	0		12.0	0	0.17	0.00
K29JB-D D29 LD LIC	21.1	0		9.0	0	0.13	0.00
KRLB-LD D29 LD CP	78.7	8		32.4	8	0.47	0.00
K29NM-D D29 LD LIC	2.0	0		0.0	0	0.00	0.00
KUNW-CD D30 DC LIC	172.6	2,345		147.4	2,108	2.14	0.87

Channel and Facility Information

Section	Question	Response
Proposed Community of License	Facility ID	58694
	State	Washington
	City	YAKIMA
	LPD Channel	29

Antenna Location Data

Section	Question	Response
Antenna Structure Registration	Do you have an FCC Antenna Structure Registration (ASR) Number?	Yes
	ASR Number	1258286
Coordinates (NAD83)	Latitude	46° 31' 51.6" N+
	Longitude	120° 30' 54.0" W-
	Structure Type	POLE-Pole used only to mount an antenna
	Overall Structure Height	25.5 meters
	Support Structure Height	25.5 meters
	Ground Elevation (AMSL)	612.0 meters
Antenna Data	Height of Radiation Center Above Ground Level	13.7 meters
	Height of Radiation Center Above Mean Sea Level	625.7 meters
	Effective Radiated Power	15.0 kW

Antenna Technical Data

Section	Question	Response
Antenna Type	Antenna Type	Non-Directional
	Do you have an Antenna ID?	
	Antenna ID	
Antenna Manufacturer and Model	Manufacturer:	DIE
	Model	DLP-8B/VP_
	Rotation	
	Electrical Beam Tilt	1.5
	Mechanical Beam Tilt	Not Applicable
	toward azimuth	
	Polarization	Elliptical
Elevation Radiation Pattern	Does the proposed antenna propose elevation radiation patterns that vary with azimuth for reasons other than the use of mechanical beam tilt?	No
	Uploaded file for elevation antenna (or radiation) pattern data	
	Out-of-Channel Emission Mask:	Full Service