ORIGINAL

**Before the**
**FEDERAL COMMUNICATIONS COMMISSION**
**Washington DC 20554**

| | | |
|---|---|---|
| In the Matter of | ) | |
| | ) | |
| Amendment of Section 73.622 | ) | MB Docket No. _____ |
| Digital Television Table of Allotments, | ) | |
| (Anchorage, Alaska) | ) | Rulemaking No. _____ |
| | ) | |

Accepted / Filed

MAR 24 2017

Federal Communications Commission
Office of the Secretary

To: Office of the Secretary, Federal Communications Commission
Attn: Chief, Media Bureau

**PETITION FOR RULEMAKING**

Gray Television Licensee, LLC ("Gray"), licensee of Station KYES-TV, Anchorage, Alaska ("KYES"), by counsel hereby requests that the Commission amend the Digital Table of Allotments (the "DTV Table")[1] to change KYES's digital allotment from VHF Channel 5 to VHF Channel 7 with the technical parameters set forth in the attached Engineering Statement. The channel change is necessary to allow KYES to relocate from its existing transmitter site, which is both primitive and remote, and upgrade its antenna. Specifically, KYES intends to move to the transmitter site of its sister station, KTUU-TV ("KTUU"), and operate from a shared broadband antenna. Because the broadband antenna can transmit only on channels 7-13, Gray requests amendment of the DTV Table to substitute Channel 7 for Channel 5.

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The attached Engineering Statement of Chesapeake RF Consultants, LLC sets forth in detail the specifications for KYES's proposed amendment of the DTV Table.[2] This proposal complies with all relevant technical requirements for amendment of the post-transition DTV Table, including the interference protection requirements of 47 C.F.R. § 73.616 and the 0.5%

[1] 47 C.F.R. §73.622(i).

[2] *See* Exhibit 1 ("Engineering Statement").

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*de minimis* interference standard with respect to all existing and proposed allotments and assignments. In addition, and as demonstrated in the Engineering Statement, KYES's proposed Channel 7 facility will provide full principal community coverage to Anchorage, Alaska.

This request serves the public interest because it will allow KYES to relocate from its current transmitter site to a state-of-the-art site already equipped with upgraded equipment. Utilizing a broadband antenna will allow KYES to improve its over the air signal, thereby better serving viewers who rely on the station. Gray requests that the Commission waive its freeze on petitions for digital channel substitutions and increases in the noise-limited statin contour because, as demonstrated herein, this request will have no impact on the post-auction repacking of television stations.

## II. DISCUSSION

Gray acquired KYES in June 2016 pursuant to a failing station waiver.[3] Under its former owner, KYES operated on a shoestring budget that left the station unable to modernize its operations. Thus, when it sought to acquire the station, Gray indicated its commitment to making the station competitive in its market and improving its service to viewers by upgrading its broadcast facilities. Gray has worked steadily towards that goal since acquiring KYES, including by moving station operations into a state-of-the-art studio that it shares with sister station KTUU. The relocation of its transmitter site as proposed in this petition will implement the next step of Gray's plan to improve the reliability and quality of KYES's broadcast signal and service to its viewers.[4]

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[3] See FCC File No. BALCDT-20151009ADJ.

[4] Indeed, when granting Gray authority to acquire KYES, the Commission commented favorably on Gray's plans noting, "upgrading facilities would realistically improve service to individuals who may not already receive KYES's signal, especially given the unique terrain and characteristics of markets in Alaska." *Fireweed Communications, LLC*, 31 FCC Rcd 6997 (2016).

KYES currently operates from a tower on the hillside of Eagle River, which is northeast of Anchorage. This tower sits at the edge of a valley and is hemmed in by mountains to the north, east and south, limiting KYES's over-the-air service to areas northeast of Anchorage. The tower site does not have a generator, which means that the station's signal goes down every time there is a power outage—a common occurrence in Alaska in the winter. Complicating the lack of backup power, the last mile to the site is frequently accessible only by foot during winter. Thus, KYES's engineer often must hike into the site to restore normal operations after a power outage.

Gray's lease for the current tower site has expired. While negotiating new lease terms, KYES remains at the site on a month-to-month agreement. However, the landlord's proposed new lease terms include a rent increase and burdensome notification requirements for access to the transmitter site. The proposed lease terms simply do not make financial sense for a station still recovering from years of economic hardship—especially for a site without the basic safeguards needed to keep a station fully operational in an Alaska winter.

Moreover, were KYES to stay at its current site, it would need to invest in a significant equipment upgrade to resolve long-standing antenna problems. KYES's current antenna is a repurposed analog antenna that the previous station owner built himself. There is no available documentation showing the antenna's intended design specifications that could aid in its repair. Moreover, because of repairs made by the previous licensee, the antenna has a high reflective power (estimated to be at least 25 percent), which severely compromises the efficiency of its signal. To resolve fully the technical limitations of this old repurposed antenna, the station would have to replace it and potentially install a new transmission line. The cost involved in doing so would be significant.

Continuing to utilize a remote, frequently powerless transmitter site at increased rental cost and expending large sums on a new antenna and transmission line make little sense when KYES could move to the transmitter site of sister station KTUU and broadcast from an existing broadband antenna. That antenna operates on Channels 7-13 and is shared by KTUU (Channel 10), KAKM (Channel 8), and KYUR (Channel 12). Of the remaining channels, KYES's consulting engineers selected Channel 7 as the channel best able to replicate KYES's service area and satisfy interference requirements.[5]

It is a well-accepted reality that low-VHF channels are "less-suited" to digital operations because of "increased signal interference caused by the higher levels of ambient noise from electronic devices operating on or near the low VHF frequency range."[6] By moving to Channel 7 (a high-VHF channel) and when corrected to account for the low-VHF band signal strength shortfalls of KYES's Channel 5 operations, the proposed operating parameters will result in a slight total service population gain.[7] Additionally, the shared antenna site location provides a significantly improved line-of-sight signal to the communities located northeast of Anchorage that are currently terrain-blocked from receiving a reliable over-the-air signal from KYES.[8] Moreover, to address any concerns about loss of coverage to the communities located to the south of Anchorage, KYES commits to adding its signal to the translator network owned by its sister station KTUU, providing robust coverage to these communities.[9]

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[5] See Engineering Statement.

[6] Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions, 29 FCC Rcd 6567, para. 369 (2014) (internal quotations omitted).

[7] Engineering Statement at 4-7, Figure 5.

[8] Engineering Statement at 7, Figures 6-8.

[9] Engineering Statement at 4, Figure 4.

KYES investigated operating from the proposed shared tower site on Channel 5, but determined this is not a viable option. KYES would have to purchase a new or repurpose an old Channel 5 antenna, at an estimated cost (based on recent quotes) of $250,000-$350,000. Of greatest concern to KYES, operating from Channel 5 at the new site would ultimately compromise service to its viewers because the only vacant space on the tower is a lower, side-mount location. KYES and its viewers will reap the full benefits of a better signal and service from the new tower site only if the station operates on Channel 7 from the shared antenna site.

## III. REQUEST FOR WAIVER

Gray seeks a waiver of the May 31, 2011 freeze on channel substitutions and the April 5, 2013 freeze on contour extensions.[10] These freezes were issued pursuant to recommendations in the National Broadband Plan in preparation for the FCC conducting a rulemaking proceeding to reallocate 120 MHz from the television bands and subsequent spectrum incentive auction. In particular, the 2011 public notice that froze channel substitutions stated that the purpose of the freeze was "to permit the Commission to evaluate its reallocation and repacking proposals and their impact on the Post-Transition Table of DTV Allotments."[11] Because the proposed channel substitution will in no way impact the purpose of either freeze, Gray hereby respectfully requests a waiver.

The instant request for KYES to substitute Channel 7 for Channel 5 will have no impact on the Incentive Auction or the subsequent repack of broadcast spectrum. Indeed, in its Opening Price Spreadsheet, the Commission confirmed that it does not need any stations

[10] Public Notice, DA 11-959 (released May 31, 2011), Public Notice, DA 13-618 (released April 5, 2013).

[11] *Id.*

in Alaska for the Incentive Auction.[12] Therefore, since no station in Alaska participated in the Incentive Auction, and since any UHF stations that must be repacked as a collateral effect of the auction must be repacked in the UHF band, no stations in Alaska will move into the VHF band. Moreover, because this channel change request would allow KYES to use the existing antenna and a transmitter already on-site, grant of the instant petition would not add to the demand for new equipment or tower crews. Thus, granting KYES's waiver request will not affect either the Incentive Auction or subsequent repack.

As explained herein, the proposed amendment to the DTV Table of Allotments will serve the public interest and the waiver request will have no impact on the Incentive Auction or repack. Gray therefore respectfully requests that the Commission grant the waiver and amend the DTV Table in accordance with the specifications set forth in the attached Engineering Statement.

Respectfully submitted,

GRAY TELEVISION LICENSEE, LLC

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Wiley Rein LLP
1776 K Street NW
Washington DC 20006
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*Its Attorney*

Dated: March 24, 2017

[12] Public Notice, DA 15-1296, Appendix I (released Nov. 12, 2015), See also Engineering Statement at Figure 9.

**Exhibit 1**

Engineering Statement of Chesapeake RF Consultants, LLC

# Engineering Statement

prepared for

**Gray Television Licensee, LLC**

KYES-TV Anchorage, AK

Facility ID 21488

This engineering statement has been prepared on behalf of *Gray Television Licensee, LLC ("Gray")*, licensee of KYES-TV (Facility ID 21488, Anchorage, AK) in support of a *Petition for Rulemaking* to change KYES-TV's digital television ("DTV") channel assignment. KYES-TV is licensed to operate on Channel 5 (BLCDT-20110307ACV). As described herein, *Gray* requests substitution of Channel 7 in lieu of Channel 5. Waivers of the FCC's May 31, 2011 freeze[1] on the filing of digital channel substitutions and the April 5, 2013[2] freeze on the filing applications that propose an increase in their authorized noise-limited service contour ("NLSC") are sought.

The substitution would allow KYES-TV to utilize a shared transmitting location and antenna with three other full service television stations in the market (including *Gray's* KTUU-TV, Channel 10, Anchorage AK)[3]. The existing Channel 5 operation is plagued by technical deficiencies, site access issues, and poor coverage, as discussed herein and elsewhere in the petition. In addition to moving to the more effective High-Band VHF spectrum, the proposed Channel 7 operation would allow use of an existing, well-established, and reliable transmitting facility.

KYES-TV's Channel 5 operation is within the Low-Band portion of the VHF spectrum. *Gray* has determined that many viewers experience significant difficulty in receiving KYES-TV's signal. Problems with digital Low-Band VHF reception by stations in many

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[1] *"Freeze On The Filing Of Petitions For Digital Channel Substitutions, Effective Immediately,"* Public Notice, DA 11-959, May 31, 2011.

[2] *"Media Bureau Announces Limitations on the Filing and Processing of Full Power and Class A Television Station Modification Applications, Effective Immediately, and Reminds Stations of Spectrum Act Preservation Mandate,"* DA 13-618, Public Notice, released April 5, 2013.

[3] The proposed shared antenna is also utilized by KAKM(DT), Channel 8, and KYUR(DT), Channel 12, both Anchorage AK.

markets were widely publicized since the 2009 digital transition date. It has been established that indoor reception is difficult for digital Low-Band VHF stations such as KYES-TV due to the longer wavelength signal's inability to readily pass through buildings (the windows are smaller than the wavelength size), the ineffectiveness of many indoor antennas many of which were designed to emphasize the shorter wavelengths for UHF reception, and high levels of manmade and environmental noise.

Implementation of the proposed channel change would not require any antenna or tower work, since it would involve a shared antenna. A suitable Channel 7 transmitter is already in place within the equipment building, previously utilized for the pre-transition analog operation of KAKM. The transmitter can be converted to digital and reconnected to the existing shared antenna via an existing combiner. A summary of the licensed Channel 5 and proposed Channel 7 technical parameters is provided in the following.

**Licensed Channel 5 Parameters (BLCDT-20110307ACV)**

| Facility ID | State and City | | DTV | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Chan | ERP (kW) | HAAT (m) | Antenna ID | Latitude (DDMMSS) NAD-27 | Longitude (DDDMMSS) NAD-27 | Area (sq km) | Population (thous) | % Interf. Received |
| 21488 | AK | ANCHORAGE | 5 | 15 | 277 | 93311 | 61-20-11 | 149-30-47 | 30,291 | 329 | 0.0 |

**Antenna C/R AMSL: 614.5 meters**

**Proposed Channel 7 Parameters**

| Facility ID | State and City | | DTV | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Chan | ERP (kW) | HAAT (m) | Antenna ID | Latitude (DDMMSS) NAD-27 | Longitude (DDDMMSS) NAD-27 | Area (sq km) | Population (thous) | % Interf. Received |
| 21488 | AK | ANCHORAGE | 7 | 50 | 240 | 89986 | 61-25-22 | 149-52-20 | 26,588 | 318 | 0.0 |

**Antenna C/R AMSL: 271.2 meters**

The azimuthal pattern described by FCC CDBS Antenna ID number 89986 is specified for the proposed Channel 7. This Antenna ID corresponds to the licensed KTUU-TV facility, and has identical relative field values as those for KAKM (Antenna ID 68006) and KYUR (Antenna ID 67943), all of which share the same antenna. The directional antenna pattern data and azimuthal plot is supplied as Figure 1.

A map is supplied as Figure 2, which depicts the standard predicted coverage contours. This map includes the boundaries of the Municipality of Anchorage Borough (equivalent to a county) and the associated 2010 Census Anchorage urbanized area. As demonstrated thereon, the proposed facility complies with §73.625(a)(1) as the entire Anchorage urbanized area[4] will be encompassed by the 43 dBμ contour.

Interference study per FCC OET Bulletin 69[5] shows that the proposal complies with the 0.5 percent limit of new interference caused to pertinent nearby digital television and Class A television stations as required by §73.616. The interference study output report is provided as Table 1 and shows that no interference would be caused to any relevant facility. The site location is beyond the border areas requiring international coordination (the U.S. - Canada border is 473 km distant).

**Service Gain and Loss**

Due to the change in transmitter site location and the resulting impact of non-uniform terrain on coverage contour locations, the proposed channel change will result in a shift in the KYES-TV service contour area. Figure 3 supplies a coverage contour comparison map to depict the resulting areas of NLSC along with the areas of gain and loss. The table below summarizes the area and population in these gain and loss areas.

**Noise Limited Service Contour Gain and Loss**

| FCC Standard NLSC | Area (sq. km) | Population (2010 Census) |
|---|---|---|
| Licensed Ch. 5 | 30,046 | 392,853 |
| Proposed Ch. 7 | 30,496 | 380,389 |
| Loss Area | 5,053 | 13,340 |
| Gain Area | 5,503 | 876 |

[4]The Anchorage urbanized area is the target benchmark for compliance with the FCC's principal community coverage requirements. For example, see BMPCDT-20031121ABT, BPCDT-20110228AAK, or BPH-20130430ADX.

[5]FCC Office of Engineering and Technology Bulletin number 69, *Longley-Rice Methodology for Evaluating TV Coverage and Interference*, February 6, 2004 ("OET-69"). The implementation of OET-69 for this study followed the guidelines of OET-69 as specified therein. A cell size of 2 km was employed. Comparisons of various results of this computer program (run on a Sun Sparc processor) to the Commission's implementation of OET-69 show excellent correlation.

The loss population of 13,340 persons represents 3.40 percent of the total population within the licensed KYES-TV Channel 5 NLSC.

To mitigate this loss, *Gray* intends to carry the KYES-TV main programming on a multicast channel of five translators[6] in the region which are licensed to Gray. Figure 4 supplies the resulting gain and loss areas when the five translator service contours[7] are considered. The table below provides the resulting population and area summary.

**Coverage Contour Gain and Loss**

| NLSC and Translator Contours | Area (sq. km) | Population (2010 Census) |
|---|---|---|
| Licensed Ch. 5 | 30,046 | 392,853 |
| Proposed Ch. 7 with Translators | 34,013 | 425,262 |
| Loss Area | 4,360 | 2,181 |
| Gain Area | 8,327 | 34,590 |

Considering the translators' coverage areas, the KYES-TV loss population is 2,181 persons, which is 0.56 percent of the total KYES-TV NLSC population. New areas ("gain") that will be covered by KYES-TV and the translators have a population of 34,590 persons (8.80 percent of the KYES-TV licensed NLSC population).

**Correction to Low-Band VHF Receive Signal Threshold**

It is well established that the FCC's planning factors for satisfactory digital Low-Band VHF reception are overly optimistic and thus overestimate the resulting service area and population. According to §73.622(e) and FCC OET Bulletin 69, a signal level of 28 dBμ is sufficient for reception. However that signal level does not consider the effect of manmade noise which is prevalent in the Low-VHF band (*i.e.,* electrical noise from nearby electric devices such as lights, household appliances, computers, personal electronic devices, and other consumer electronics). It has even been found that some digital television receivers emit electrical noise within the Low-VHF band.

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[6]The translators are K10NC-D (Kenai, Etc., AK), K44LE-D (Kasilof, AK), K27AI-D (Ninilchik, Etc., AK), K12MM-D (Girdwood Valley, AK), and K08PN-D (Homer, Etc., AK), all of which are associated with *Gray's* KTUU-TV, Anchorage, AK.

[7]Digital translator contour levels are pursuant to §74.792(a).

The FCC has acknowledged that Low-Band VHF digital stations such as KYES-TV are suffering from the inability to provide service replication on those channels. In ET Docket 10-235, the FCC described in part the challenges faces by Low-Band VHF stations such as KYES-TV (FCC 10-196 at para. 42-45)[8] and sought comments on increased maximum power limits for VHF stations to help overcome reception problems. The FCC's June 23, 2010 "Broadcast Engineering Forum"[9] discussed the practical factors related to a 20 dB power increase for Low-Band VHF stations. The amount of power increase (20 dB) was not an issue or in dispute during the forum, rather the forum addressed the practical issues in implementing a 20 dB power increase to aid Low-Band VHF reception. In the forum, it was clear that a substantial power increase would be needed to make Low-Band VHF stations viable. It can be concluded from this effort that a 20 dB correction would be needed to the FCC's planning factors for successful Low-Band VHF reception, making the required receive signal level 48 dBμ which is a 20 dB increase over the 20 dBμ specified in §73.622(e).

Published reports provide additional data regarding a correction to the FCC required signal level. For example, according to the ATSC[10], field tests "have shown that the minimum decodable signal levels are well above those planned for." For Low-Band VHF Channel 2, ATSC reports that the required signal strength is at least 12 dB higher than the FCC's specified value of 28 dBμ for service. An IEEE Transactions[11] report regarding the planning factors concludes that there is a "shortfall of at least ... 10 dB in the low VHF range."

While there is a wide range in the amount of recommended correction that could be applied to the FCC's planning factors for Low-Band VHF reception, a 12 dB correction to the threshold reception signal level will be applied herein for predicted coverage comparisons. The

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[8] "*Innovation in the Broadcast Television Bands: Allocations, Channel Sharing and Improvements to VHF,*" Notice of Proposed Rulemaking, ET Docket 10-235, FCC 10-196, released November 30, 2010.

[9] "*FCC Announces June 25 Broadcast Engineering Forum,*" News Release, June 9, 2010.

[10] "*Performance Assessment of the ATSC Transmission System, Equipment and Future Directions*" Advanced Television Systems Committee (ATSC), April 12, 2001 Revision 1.0.

[11] "*Planning Factors for Fixed and Portable DTTV Reception*" Oded Bendov, Yiyan Wu, Charles W. Rhodes, and John F.X. Browne," IEEE Transactions of Broadcasting, Vol. 50, No. 3, September 2004.

above-referenced reports and presentations suggest corrections ranging from 10 dB to 20 dB. In the opinion of the undersigned, it would be appropriate to select a higher correction (in the order of 20 dB), however the 12 dB correction will be employed herein as that amount cannot be considered as excessive based on the published reports and post-transition experience. A 12 dB correction to the Low-Band VHF threshold reception signal level results in a 40 dBμ signal level requirement for the existing Channel 5 KYES-TV Low-Band VHF service (28 dBμ plus 12 dB).

As discussed in prior paragraphs, the default 28 dBμ contour of the licensed KYES-TV Channel 5 facility extends beyond the proposed Channel 7 operation's 36 dBμ contour along some azimuths, thus raising concern that there could be loss of service (see Figure 3). However, with the 12 dB correction applied to the Low-Band VHF threshold reception signal level, the proposed Channel 7 facility's contour will encompass the (corrected) Channel 5 service contour and will represent a gain over the licensed operation. Figure 5 supplies a coverage contour comparison map which includes the 12 dB correction to the licensed KYES-TV contour. Coverage contour population counts are provided in the following.

**Coverage Contour Population**

| KYES-TV Facility | Contour Level | Population Within Contour (2010 Census) |
|---|---|---|
| Licensed Ch. 5 | 28 dBμ default FCC NLSC | 392,853 |
| | 40 dBμ (with 12 dB correction) | 376,572 |
| Proposed Ch. 7 | 36 dBμ default FCC NLSC | 380,389 |

Additional analysis pursuant to FCC OET Bulletin 69[12] using the FCC's "TVStudy" software with and without the 12 dB Low-Band VHF correction shows the proposed Channel 7 facility's total service population will exceed the Channel 5 facility when the 12 dB correction is utilized. A summary of the OET Bulletin 69 results follows.

[12]The FCC's "TVStudy" program was employed with a standard cell size of 2 km and all default parameters. Comparisons of various results of this computer program (run on a Mac platform) to the FCC's TVStudy implementation of OET-69 show excellent correlation.

**"TVStudy" OET Bulletin 69 Service Population**

| KYES-TV Facility | Receive Signal Level | Service Population 2010 Census (not lost to terrain or interference) |
|---|---|---|
| Licensed Ch. 5 | 28 dBμ default FCC NLSC | 391,590 |
| | 40 dBμ (with 12 dB correction) | 377,638 |
| Proposed Ch. 7 | 36 dBμ default FCC NLSC | 379,105 |

**Line-of-Sight Improvement**

The licensed Channel 5 facility's location is terrain-blocked by rugged mountains from reaching many populated areas in the Anchorage region, particularly along the Matanuska and Knik Rivers to the northeast of Anchorage. The coverage contour map of Figure 5 supplies terrain relief shading to depict the mountainous areas surrounding Anchorage. The shared site and antenna to be utilized by the proposed Channel 7 was developed by major television broadcasters in the Anchorage market at a location that provides favorable line of sight and resulting coverage of the populated areas, and is superior to the existing KYES-TV Channel 5 site.

For example, Figure 6 supplies terrain profiles from the licensed and proposed sites to Chugiak, AK. Chugiak is located in the aforementioned area northeast of Anchorage and is only 6.1 km from the licensed KYES-TV site. However, it is terrain-shielded from the licensed KYES-TV and reception of KYES-TV there is poor. Figure 6 shows the terrain blockage to Chugiak from the licensed site, and shows that the proposed site would have clear line of sight to Chugiak. Similarly, Figures 7 and 8 supply similar terrain profile comparisons to Palmer and Butte AK, respectively. Both of these communities suffer from severe terrain blockage from the licensed KYES-TV site and enjoy clear line of sight to the proposed Channel 7 antenna location.

**Waiver of Freezes and Impact to Incentive Auction**

*Gray* seeks waiver of the FCC's May 31, 2011 channel substitution freeze (DA 11-959) and the April 5, 2013 contour extension (DA 13-618) freeze. Both of those freezes were

imposed in connection with the incentive auction[13] in order to maintain a stable database of full power and Class A television stations. More recently, prior to commencement of the auction, the FCC released baseline data and opening prices for the reverse auction in a Public Notice[14] of November 12, 2015 (DA 15-1296). The baseline data and opening prices show that none of the television spectrum at Anchorage is needed for the incentive auction and that there is no channel constraint impact of any Anchorage station beyond the Anchorage market. The site is located 473 km from the Canada border therefore no international considerations are implicated.

A portion of the DA 15-1296 appendix is attached as Figure 9, showing the opening prices for all auction eligible stations in Alaska. All stations are listed as "not needed" for the reverse auction. In addition, the constraint data referenced in DA 15-1296, which is used to determine feasible channel assignments for each station, shows that the eight television stations in the Anchorage market do not have any channel constraints beyond the Anchorage market. Since the proposed KYES-TV parameters match those of KAKM and KTUU-TV[15], no additional interference constraints need to be computed. This data shows that no repacking of the High-Band VHF spectrum at Anchorage will result from the auction. Therefore the proposed channel substitution will have no effect on channel availability following the incentive auction proceeding's reorganization of the TV band. Additionally, since no tower work is required and an existing antenna, transmitter, and combiner will be employed, there will be no impact to repack transition resources or the FCC's proposed the phased transition schedule.[16]

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[13] *Expanding the Economic and Innovative Opportunities of Spectrum Through Incentive Auctions,* Docket No. 12-268.

[14] *Incentive Auction Task Force Releases Revised Baseline Data And Prices For Reverse Auction; Announces Revised Filing Window Dates,* Public Notice, DA 15-1296, November 12, 2015.

[15] The proposed KYES-TV Channel 7 antenna location, antenna height, antenna directional pattern, and 50 kW ERP is identical to those of KAKM (Ch. 8) and KTUU-TV (Ch. 10). KYUR's parameters are also identical except that its ERP is 41 kW.

[16] See *Incentive Auction Task Force and Media Bureau Adopt a Post- Incentive Auction Transition Scheduling Plan,* Public Notice, DA 17-107, January 27, 2017.

## Conclusion

The proposed channel substitution complies with the FCC's principal community coverage requirements of §73.625 and the interference protection requirements of §73.616. Improved service and reliability from KYES-TV will result. There will be no impact to TV band repacking or the post-auction transition. For these reasons, the proposed channel substitution would comply with the FCC's requirements and is in the public interest.

## Certification

The undersigned hereby certifies that the foregoing statement was prepared by him or under his direction, and that it is true and correct to the best of his knowledge and belief.

Joseph M. Davis, P.E.
March 24, 2017

**Chesapeake RF Consultants, LLC**
207 Old Dominion Road
Yorktown, VA 23692
703-650-9600

List of Attachments

| | |
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| Figure 1 | Directional Antenna Pattern Data |
| Figure 2 | Proposed Coverage Contours |
| Figure 3 | Coverage Contour Comparison – Gain and Loss Areas |
| Figure 4 | Coverage Contour Comparison – Gain and Loss Areas With Translators |
| Figure 5 | Coverage Contour Comparison – Default and Practical |
| Figure 6 | Terrain Profiles to Chugiak AK |
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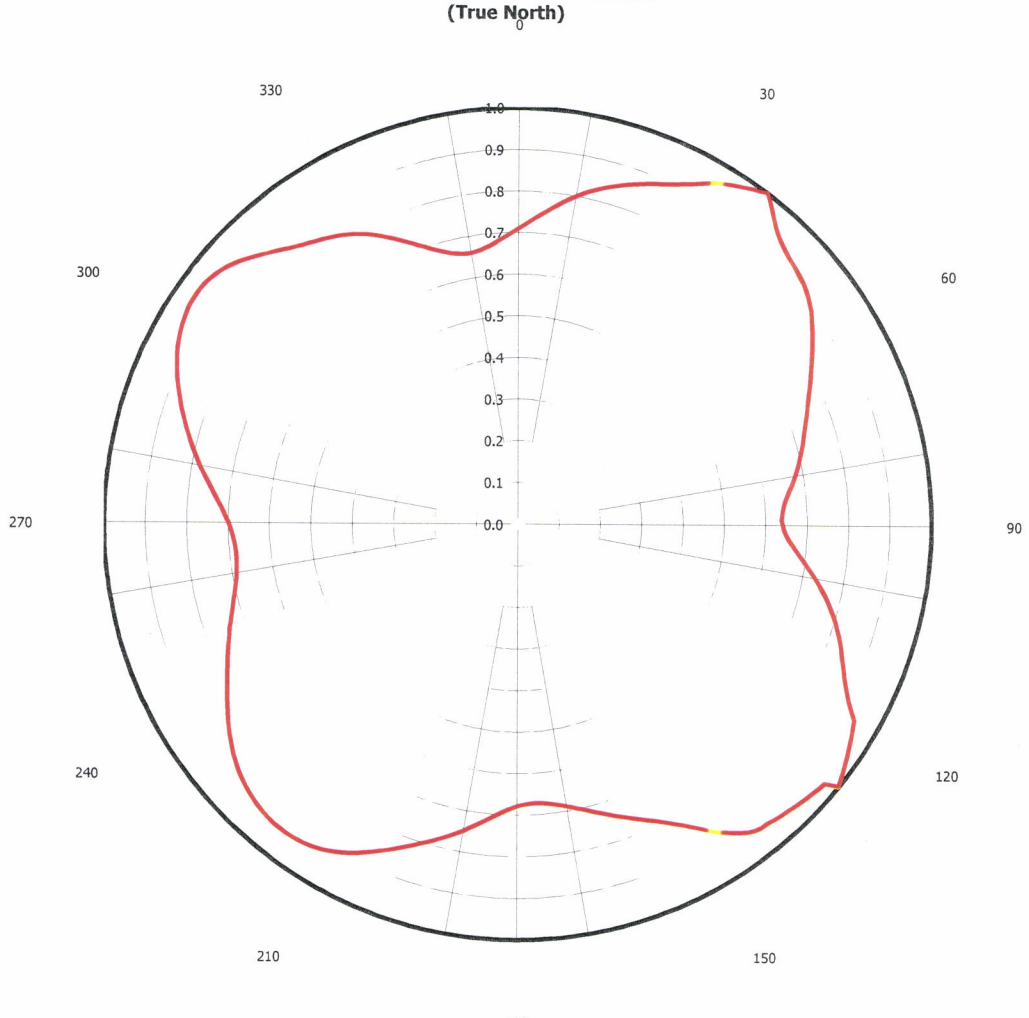
| Figure 9 | Excerpt of DA 15-1296 Appendix – Alaska Stations Opening Prices |
| Table 1 | OET Bulletin 69 Interference Study |

**Azimuth Pattern - Relative Field**
**(True North)**




| Azimuth (°T) | Relative Field | Azimuth (°T) | Relative Field | Azimuth (°T) | Relative Field | Azimuth (°T) | Relative Field |
|---|---|---|---|---|---|---|---|
| 0 | 0.710 | 90 | 0.640 | 180 | 0.680 | 270 | 0.700 |
| 10 | 0.800 | 100 | 0.730 | 190 | 0.750 | 280 | 0.780 |
| 20 | 0.870 | 110 | 0.830 | 200 | 0.830 | 290 | 0.870 |
| 30 | 0.950 | 120 | 0.940 | 210 | 0.910 | 300 | 0.940 |
| 40 | 0.960 | 130 | 0.970 | 220 | 0.930 | 310 | 0.940 |
| 50 | 0.900 | 140 | 0.940 | 230 | 0.890 | 320 | 0.860 |
| 60 | 0.820 | 150 | 0.840 | 240 | 0.810 | 330 | 0.800 |
| 70 | 0.740 | 160 | 0.750 | 250 | 0.740 | 340 | 0.710 |
| 80 | 0.680 | 170 | 0.690 | 260 | 0.690 | 350 | 0.660 |

| Special Radials | |
|---|---|
| 37 | 1.000 |
| 129 | 1.000 |

Chesapeake RF Consultants, LLC
Radiofrequency Consulting Engineers
Digital Television and Radio

**Figure 1**
**Directional Antenna Data**
**Antenna ID # 89986**
**KYES-TV Anchorage, AK**
**Facility ID 21488**
**Ch. 7 50 kW 240 m**

prepared for
**Gray Television Licensee, LLC**

March, 2017

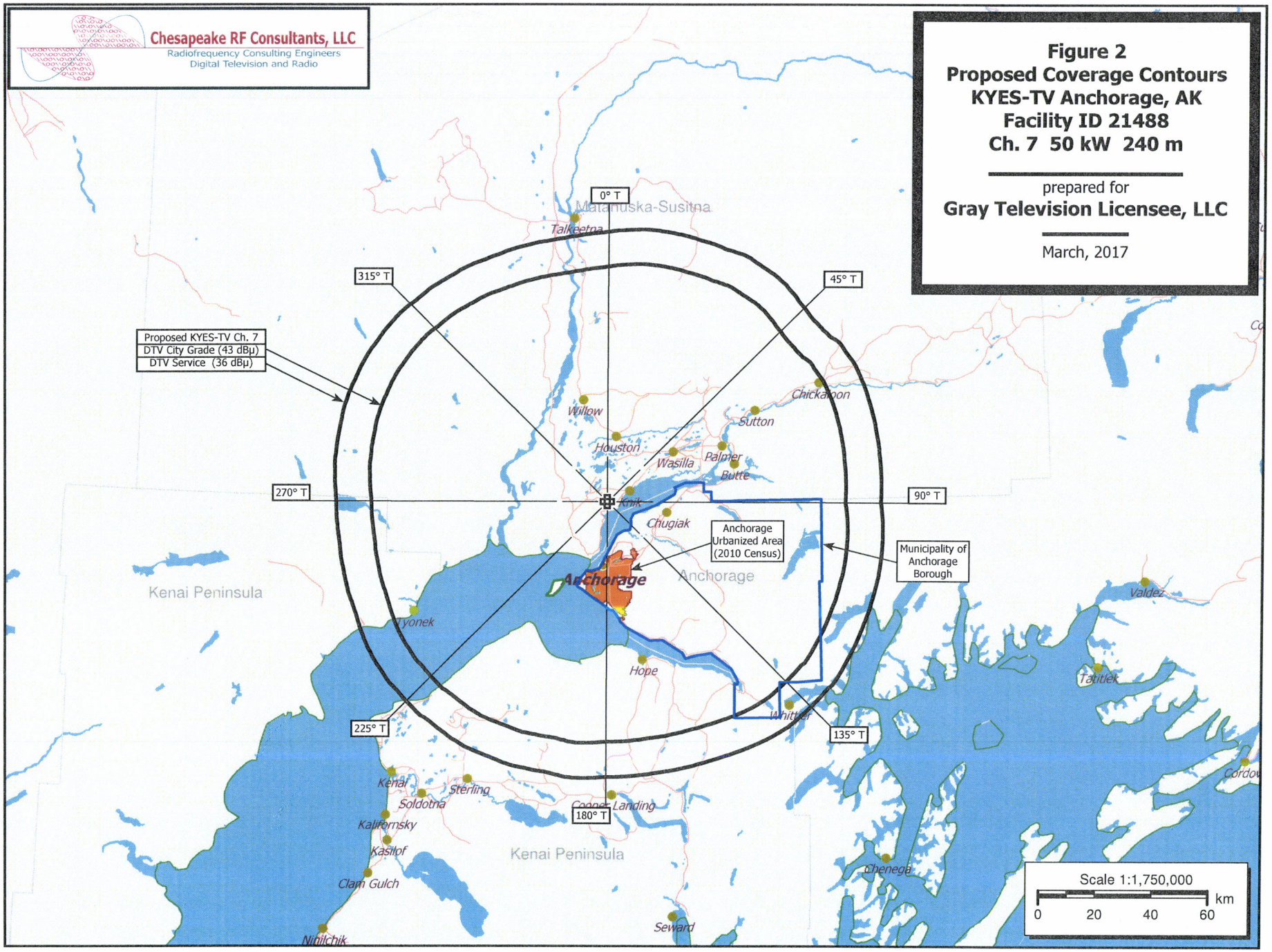
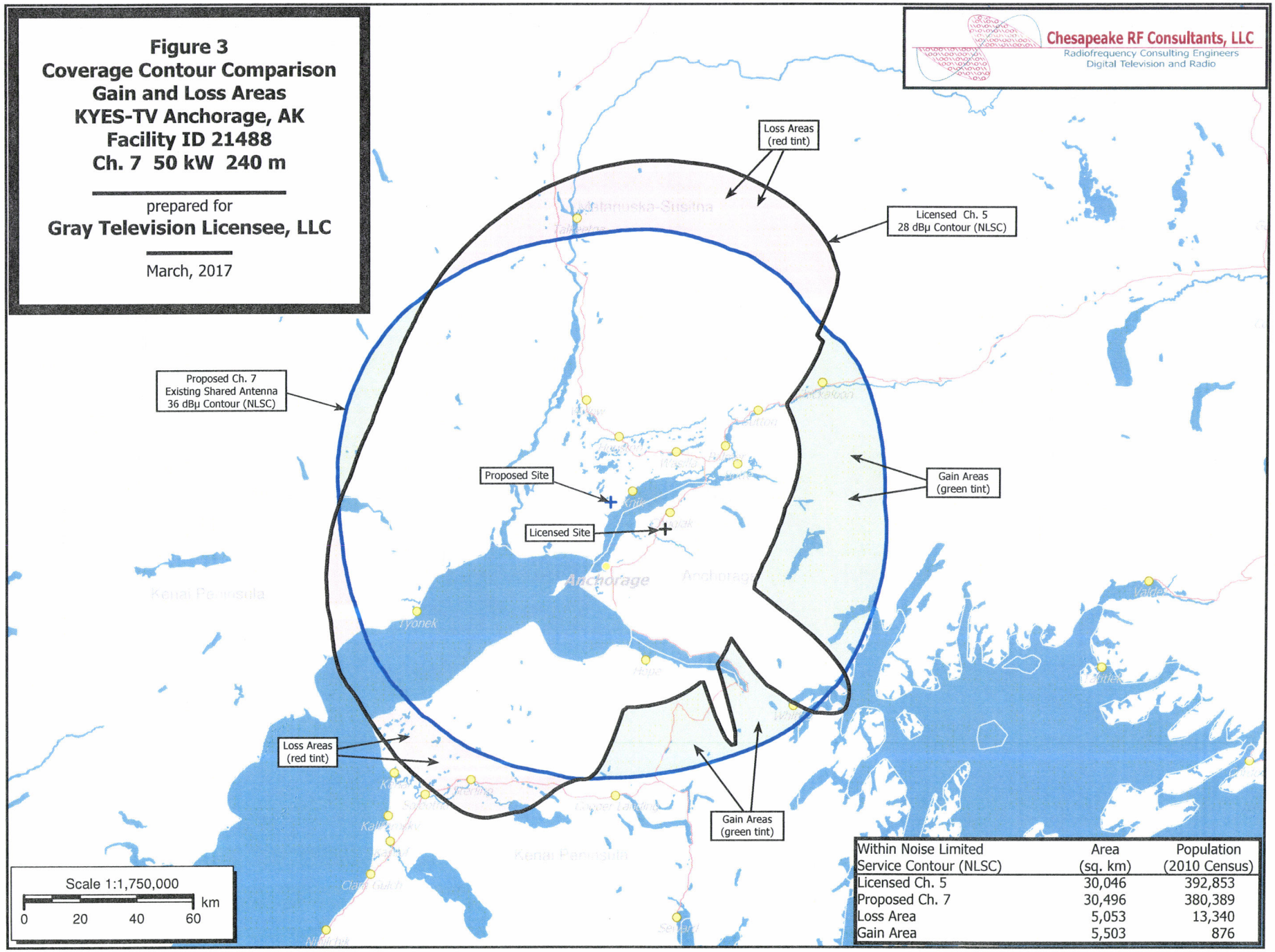

Chesapeake RF Consultants, LLC
Radiofrequency Consulting Engineers
Digital Television and Radio
Figure 2
Proposed Coverage Contours
KYES-TV Anchorage, AK
Facility ID 21488
Ch. 7 50 kW 240 m
prepared for
Gray Television Licensee, LLC
March, 2017
0° T
45° T
90° T
135° T
180° T
225° T
270° T
315° T
Proposed KYES-TV Ch. 7
DTV City Grade (43 dBμ)
DTV Service (36 dBμ)
Anchorage Urbanized Area (2010 Census)
Municipality of Anchorage Borough
Matanuska-Susitna
Talkeetna
Willow
Houston
Wasilla
Palmer
Butte
Sutton
Chickaloon
Knik
Chugiak
Anchorage
Kenai Peninsula
Tyonek
Hope
Whittier
Valdez
Tatitlek
Cordova
Kenai
Soldotna
Sterling
Cooper Landing
Kalifornsky
Kasilof
Clam Gulch
Ninilchik
Seward
Chenega
Scale 1:1,750,000
km
0
20
40
60

**Figure 3**
**Coverage Contour Comparison**
**Gain and Loss Areas**
**KYES-TV Anchorage, AK**
**Facility ID 21488**
**Ch. 7 50 kW 240 m**

prepared for
**Gray Television Licensee, LLC**

March, 2017

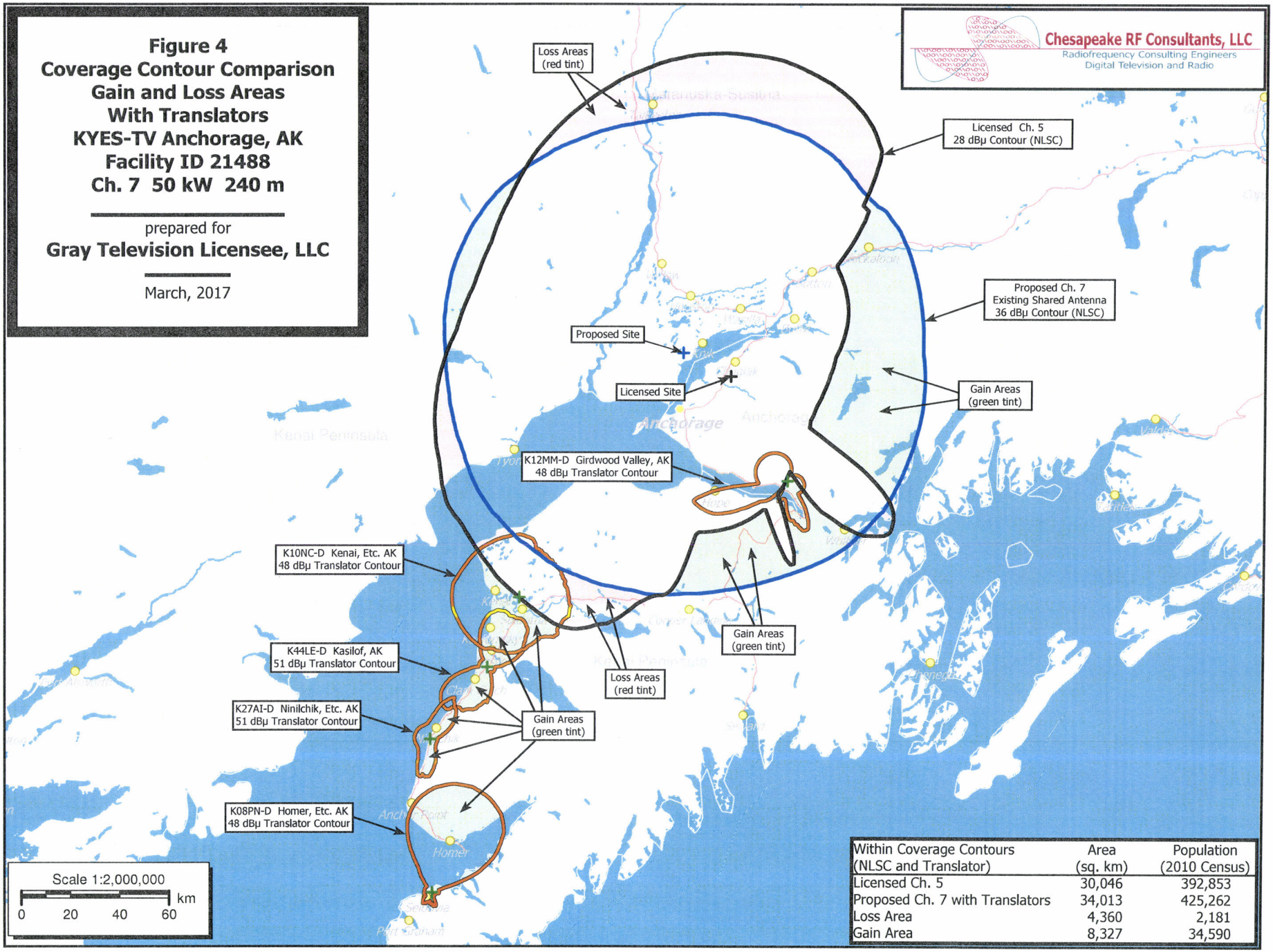



| Within Noise Limited Service Contour (NLSC) | Area (sq. km) | Population (2010 Census) |
|---|---|---|
| Licensed Ch. 5 | 30,046 | 392,853 |
| Proposed Ch. 7 | 30,496 | 380,389 |
| Loss Area | 5,053 | 13,340 |
| Gain Area | 5,503 | 876 |

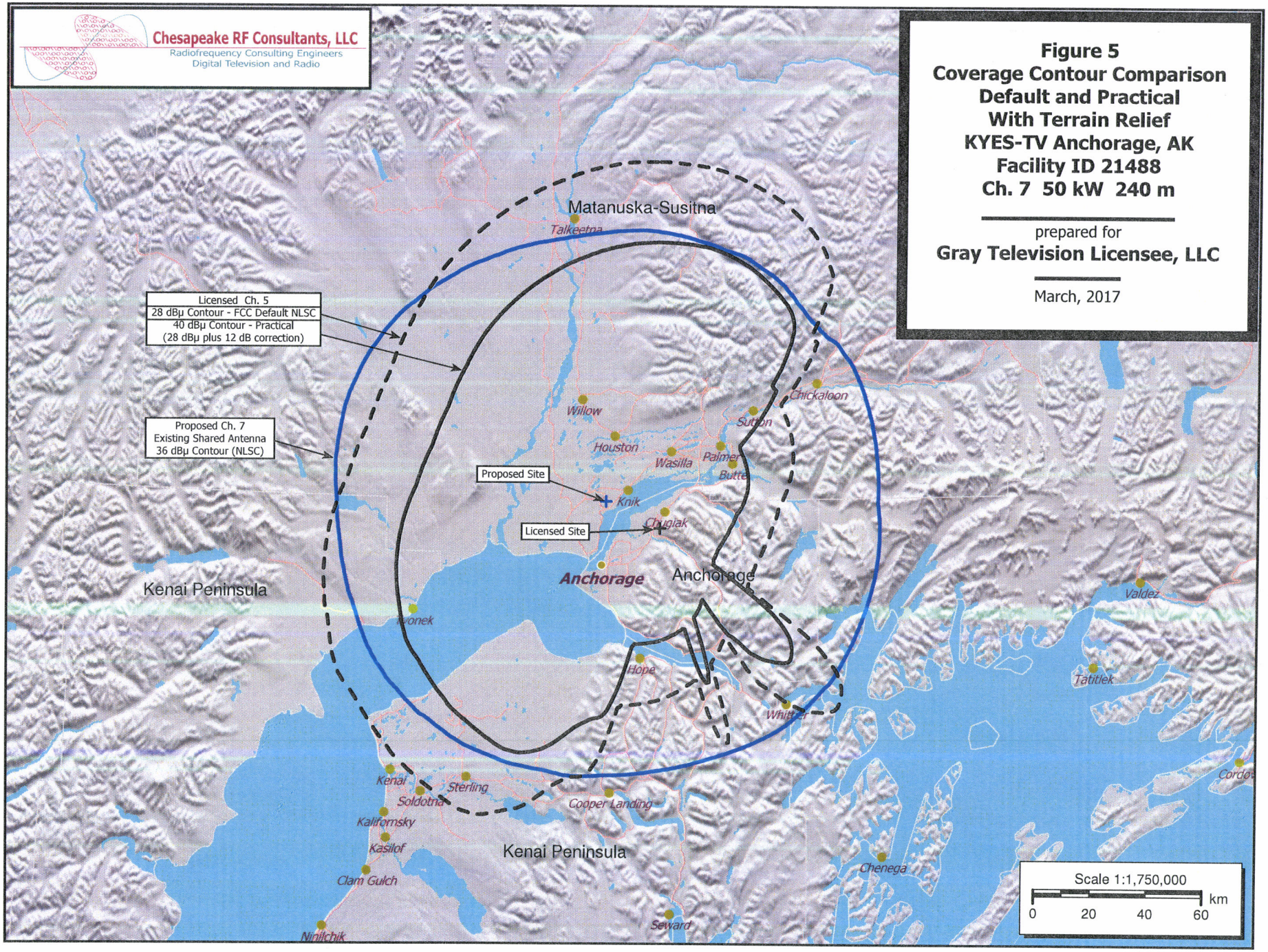
**Figure 4**
**Coverage Contour Comparison**
**Gain and Loss Areas**
**With Translators**
**KYES-TV Anchorage, AK**
**Facility ID 21488**
**Ch. 7 50 kW 240 m**

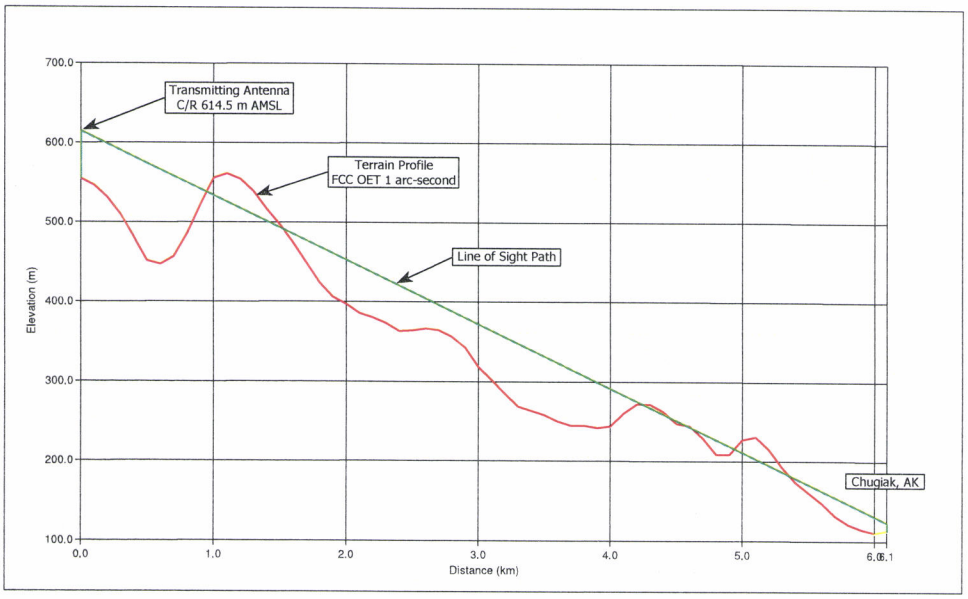
prepared for
**Gray Television Licensee, LLC**

March, 2017




| Within Coverage Contours (NLSC and Translator) | Area (sq. km) | Population (2010 Census) |
|---|---|---|
| Licensed Ch. 5 | 30,046 | 392,853 |
| Proposed Ch. 7 with Translators | 34,013 | 425,262 |
| Loss Area | 4,360 | 2,181 |
| Gain Area | 8,327 | 34,590 |


Chesapeake RF Consultants, LLC
Radiofrequency Consulting Engineers
Digital Television and Radio
Figure 5
Coverage Contour Comparison
Default and Practical
With Terrain Relief
KYES-TV Anchorage, AK
Facility ID 21488
Ch. 7 50 kW 240 m
prepared for
Gray Television Licensee, LLC
March, 2017
Licensed Ch. 5
28 dBμ Contour - FCC Default NLSC
40 dBμ Contour - Practical
(28 dBμ plus 12 dB correction)
Proposed Ch. 7
Existing Shared Antenna
36 dBμ Contour (NLSC)
Proposed Site
Licensed Site
Matanuska-Susitna
Talkeetna
Willow
Houston
Wasilla
Palmer
Butte
Sutton
Chickaloon
Knik
Chugiak
Anchorage
Anchorage
Kenai Peninsula
Ivonek
Hope
Whittier
Valdez
Tatitlek
Cordova
Kenai
Soldotna
Sterling
Cooper Landing
Kalifornsky
Kasilof
Clam Gulch
Kenai Peninsula
Chenega
Seward
Ninilchik
Scale 1:1,750,000
0
20
40
60
km

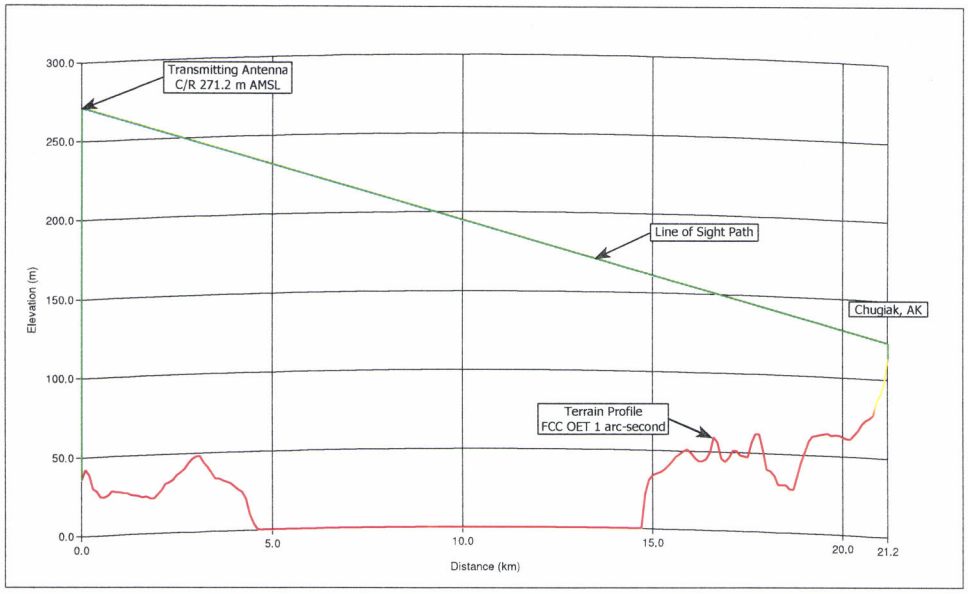



**Profile From Licensed Site**

Start Latitude: 61-20-10.60 N
Start Longitude: 149-30-46.80 W

End Latitude: 61-23-20 N
End Longitude: 149-28-55 W

Distance: 6.09 km
Bearing: 15.81 deg




**Profile From Proposed Site**

Start Latitude: 61-25-22 N
Start Longitude: 149-52-20 W

End Latitude: 61-23-20 N
End Longitude: 149-28-55 W

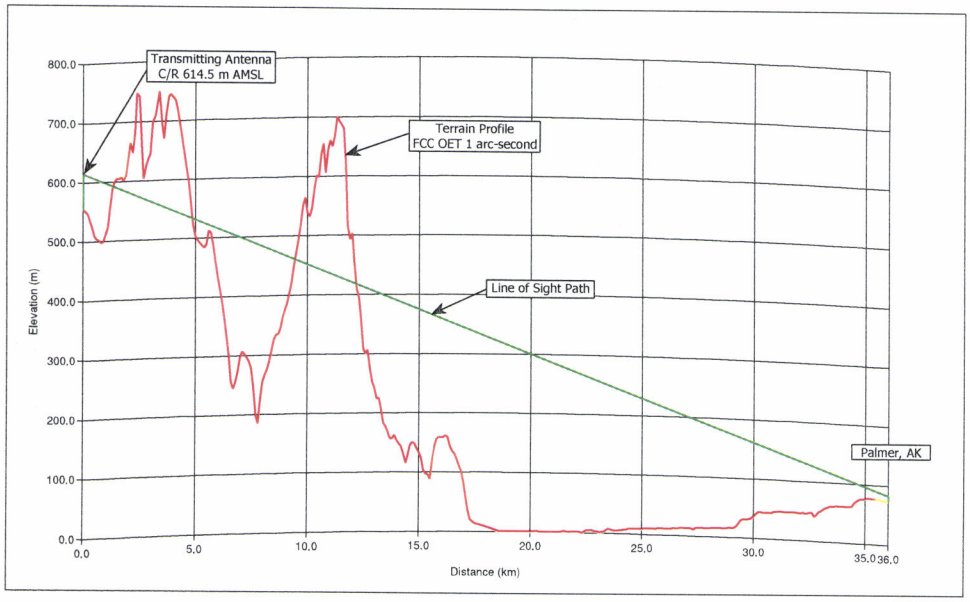
Distance: 21.19 km
Bearing: 100.1 deg

**Figure 6**
**Terrain Profiles to Chugiak AK**
**Licensed and Proposed Sites**
**KYES-TV Anchorage, AK**
**Facility ID 21488**
**Ch. 7 50 kW 240 m**

prepared for
**Gray Television Licensee, LLC**

March, 2017

Chesapeake RF Consultants, LLC
Radiofrequency Consulting Engineers
Digital Television and Radio

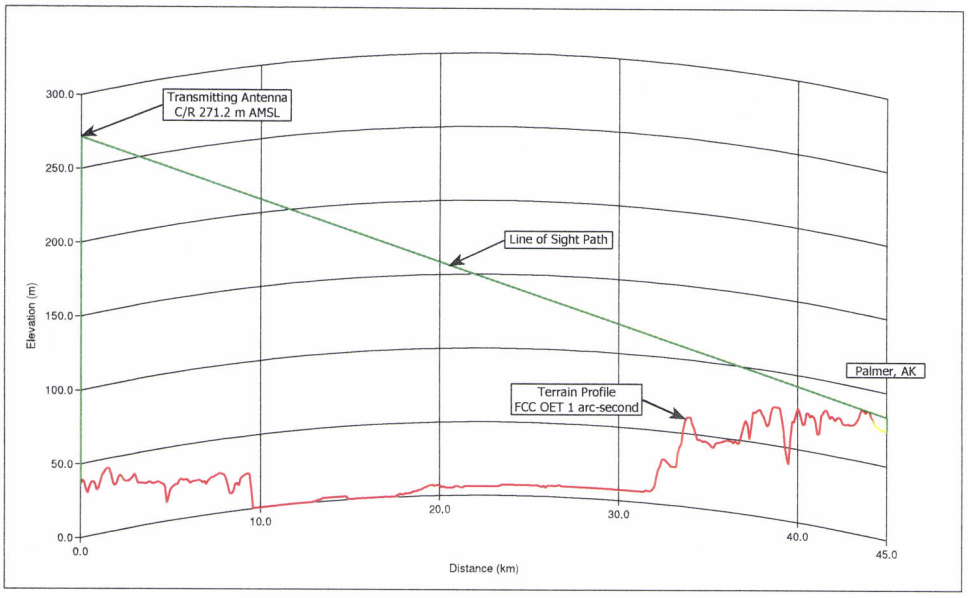



**Profile From Licensed Site**

Start Latitude: 61-20-10.60 N
Start Longitude: 149-30-46.80 W

End Latitude: 61-35-51 N
End Longitude: 149-06-53 W

Distance: 36.03 km
Bearing: 35.93 deg




**Profile From Proposed Site**

Start Latitude: 61-25-22 N
Start Longitude: 149-52-20 W

End Latitude: 61-35-59 N
End Longitude: 149-06-46 W

Distance: 44.98 km
Bearing: 63.67 deg

**Figure 7**
**Terrain Profiles to Palmer AK**
**Licensed and Proposed Sites**
**KYES-TV Anchorage, AK**
**Facility ID 21488**
**Ch. 7 50 kW 240 m**

prepared for
**Gray Television Licensee, LLC**

March, 2017

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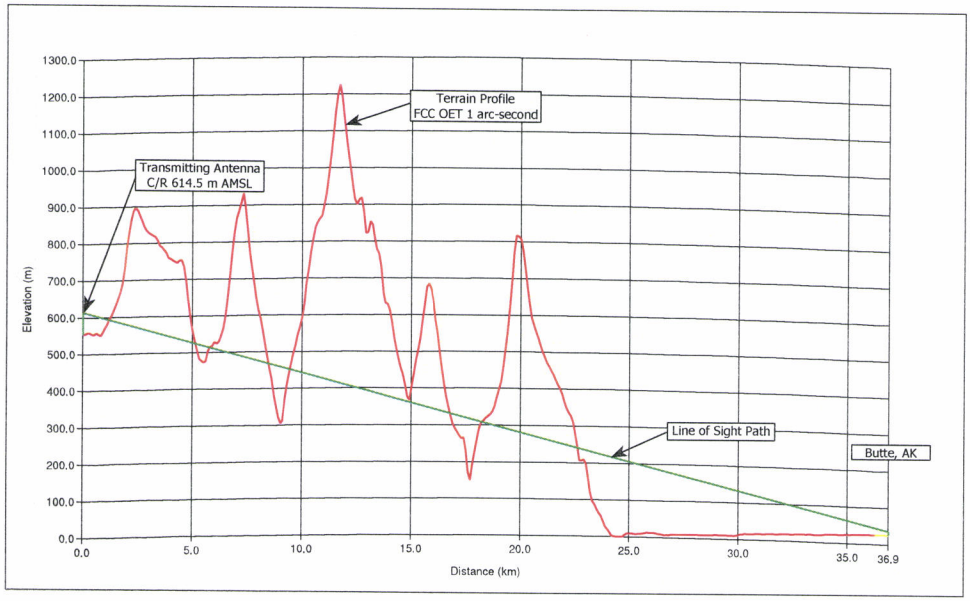
Digital Television and Radio

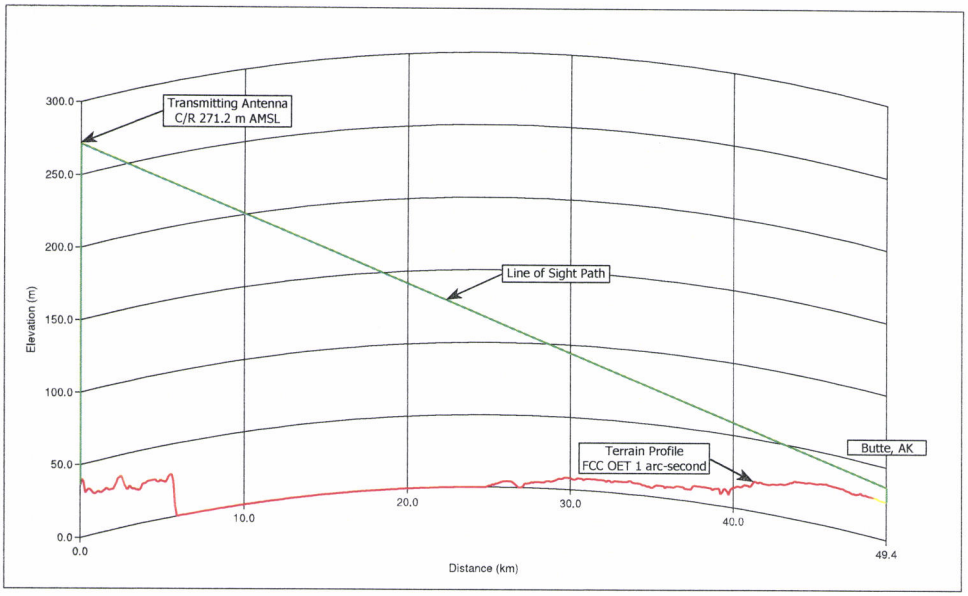



**Profile From Licensed Site**

Start Latitude: 61-20-10.60 N
Start Longitude: 149-30-46.80 W

End Latitude: 61-32-56 N
End Longitude: 148-59-00 W

Distance: 36.88 km
Bearing: 49.79 deg




**Profile From Proposed Site**

Start Latitude: 61-25-22 N
Start Longitude: 149-52-20 W

End Latitude: 61-32-56 N
End Longitude: 148-59-00 W

Distance: 49.4 km
Bearing: 73.08 deg

**Figure 8**
**Terrain Profiles to Butte AK**
**Licensed and Proposed Sites**
**KYES-TV Anchorage, AK**
**Facility ID 21488**
**Ch. 7 50 kW 240 m**

prepared for
**Gray Television Licensee, LLC**

March, 2017

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Radiofrequency Consulting Engineers
Digital Television and Radio

## Reverse Auction Opening Prices

| DMA Rank | DMA[1] | Call Sign | Opening Prices[2] | | |
|---|---|---|---|---|---|
| | | | Go Off-Air | Move to Low VHF | Move to High VHF |
| 148 | Anchorage, AK | KAKM | Not Needed | Not Needed | Not Needed |
| 148 | Anchorage, AK | KCFT-CD | Not Needed | Not Needed | Not Needed |
| 148 | Anchorage, AK | KDMD | Not Needed | Not Needed | Not Needed |
| 148 | Anchorage, AK | KTBY | Not Needed | Not Needed | Not Needed |
| 148 | Anchorage, AK | KTUU-TV | Not Needed | Not Needed | Not Needed |
| 148 | Anchorage, AK | KTVA | Not Needed | Not Needed | Not Needed |
| 148 | Anchorage, AK | KYES-TV | Not Needed | Not Needed | Not Needed |
| 148 | Anchorage, AK | KYUR | Not Needed | Not Needed | Not Needed |
| 202 | Fairbanks, AK | K13XD-D | Not Needed | Not Needed | Not Needed |
| 202 | Fairbanks, AK | KATN | Not Needed | Not Needed | Not Needed |
| 202 | Fairbanks, AK | KFXF | Not Needed | Not Needed | Not Needed |
| 202 | Fairbanks, AK | KJNP-TV | Not Needed | Not Needed | Not Needed |
| 202 | Fairbanks, AK | KTVF | Not Needed | Not Needed | Not Needed |
| 202 | Fairbanks, AK | KUAC-TV | Not Needed | Not Needed | Not Needed |
| 207 | Juneau, AK | KJUD | Not Needed | Not Needed | Not Needed |
| 207 | Juneau, AK | KTNL-TV | Not Needed | Not Needed | Not Needed |
| 207 | Juneau, AK | KTOO-TV | Not Needed | Not Needed | Not Needed |
| 207 | Juneau, AK | KUBD | Not Needed | Not Needed | Not Needed |

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Digital Television and Radio

**Figure 9**
**Excerpt of DA 15-1296 Appendix**
**Alaska Stations Opening Prices**
**KYES-TV Anchorage, AK**
**Facility ID 21488**
**Ch. 7 50 kW 240 m**

prepared for
**Gray Television Licensee, LLC**

March, 2017

**Table 1 KYES-TV OET Bulletin 69 Interference Study**
(worst-case scenarios shown page 1 of 3)

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TW Census data selected 2000
Data Base Selected
/space/software/cdbs/pt_tvdb.sff

TV INTERFERENCE and SPACING ANALYSIS PROGRAM

Date: 03-24-2017 Time: 08:53:21

Record Selected for Analysis

KYES-TV USERRECORD-01 ANCHORAGE AK US
Channel 07 ERP 50. kW HAAT 240. m RCAMSL 00271 m
Latitude 061-25-22 Longitude 0149-52-20
Status APP Zone 2 Border Site number: 01
Dir Antenna Make CDB Model 00000000089986 Beam tilt N Ref Azimuth 0.
Last update Cutoff date Docket
Comments
Applicant

Cell Size for Service Analysis 2.0 km/side

Distance Increments for Longley-Rice Analysis 1.00 km

Facility (site # 01) meets maximum height/power limits

Site number 1

| Azimuth (Deg) | ERP (kW) | HAAT (m) | 36.0 dBu F(50,90) (km) |
|---|---|---|---|
| 0.0 | 25.205 | 227.7 | 95.653 |
| 45.0 | 43.245 | 202.5 | 97.431 |
| 90.0 | 20.480 | 270.3 | 96.653 |
| 135.0 | 45.601 | 260.2 | 102.572 |
| 180.0 | 23.120 | 270.9 | 97.619 |
| 225.0 | 41.405 | 239.2 | 100.502 |
| 270.0 | 24.500 | 235.4 | 96.081 |
| 315.0 | 40.500 | 217.2 | 98.373 |

Evaluation toward Class A Stations from site # 01

No Spacing violations or contour overlap
to Class A stations from site # 01

Class A Evaluation Complete

Checks to Site Number 01

Proposed facility OK to FCC Monitoring Stations

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```
 Proposed facility OK toward West Virginia quiet zone

 Proposed facility OK toward Table Mountain

 Proposed facility is beyond the Canadian coordination distance

 Proposed facility is beyond the Mexican coordination distance

 Proposed station is OK toward AM broadcast stations

************************************************************************
                         Start of Interference Analysis


               Proposed Station
Channel      Call         City/State              ARN
   07       KYES-TV    ANCHORAGE AK               USERRECORD01

     Stations Potentially Affected by  Proposed Station

Chan    Call       City/State           Dist(km) Status  Application Ref. No.
 07    KFXF      FAIRBANKS AK             403.7   LIC     BLCDT      20090129AMM
 08    KAKM      ANCHORAGE AK               0.0   LIC     BMLEDT     20080325ADD

%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%


     Analysis of Interference to Affected Station   1


Analysis of current record
Channel      Call           City/State        Application Ref. No.
   07       KFXF       FAIRBANKS AK              BLCDT     -20090129AMM

     Stations Potentially Affecting This Station

Chan    Call       City/State           Dist(km) Status  Application Ref. No.
 07    KYES-TV   ANCHORAGE AK             403.7   APP    USERRECORD-01
 Proposal causes no interference

########################################################################


     Analysis of Interference to Affected Station   2


Analysis of current record
Channel      Call           City/State        Application Ref. No.
   08       KAKM       ANCHORAGE AK              BMLEDT    -20080325ADD

     Stations Potentially Affecting This Station

Chan    Call       City/State           Dist(km) Status  Application Ref. No.
 07    KYES-TV   ANCHORAGE AK               0.0   APP    USERRECORD-01
 Proposal causes no interference

########################################################################
```

**Table 1 KYES-TV OET Bulletin 69 Interference Study**
(worst-case scenarios shown page 3 of 3)

Chesapeake RF Consultants, LLC
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Digital Television and Radio

Analysis of Interference to Affected Station 3

Analysis of current record

| Channel | Call | City/State | Application Ref. No. |
|---|---|---|---|
| 07 | KYES-TV | ANCHORAGE AK | USERRECORD-01 |

Stations Potentially Affecting This Station

| Chan | Call | City/State | Dist(km) | Status | Application Ref. No. | |
|---|---|---|---|---|---|---|
| 07 | KFXF | FAIRBANKS AK | 403.7 | LIC | BLCDT | -20090129AMM |
| 08 | KAKM | ANCHORAGE AK | 0.0 | LIC | BMLEDT | -20080325ADD |

Total scenarios = 1

Result key: 1
Scenario 1 Affected station 3
Before Analysis

Results for: 7A AK ANCHORAGE USERRECORD01 APP
HAAT 240.0 m, ATV ERP 50.0 kW

| | POPULATION | AREA (sq km) |
|---|---|---|
| within Noise Limited Contour | 318864 | 30450.3 |
| not affected by terrain losses | 317967 | 26588.0 |
| lost to NTSC IX | 0 | 0.0 |
| lost to additional IX by ATV | 0 | 0.0 |
| lost to ATV IX only | 0 | 0.0 |
| lost to all IX | 0 | 0.0 |

Potential Interfering Stations Included in above Scenario 1

##########################################################################

FINISHED FINISHED FINISHED FINISHED FINISHED FINISHED