

ENGINEERING EXHIBIT

Incentive Auction Channel Reassignment

Application for Digital Television Station Construction Permit

prepared for

Hearst Stations Inc.
KQCA(DT) Stockton, CA
Facility ID 10242
Ch. 23 425 kW 579 m

Hearst Stations Inc. (“Hearst”) is the licensee of digital television station KQCA(DT), Channel 46, Facility ID 10242, Stockton, CA. *Hearst* herein proposes construction of the KQCA post-auction facility on Channel 23. Reassignment of KQCA from Channel 46 to Channel 23 was specified in the *Incentive Auction Closing and Channel Reassignment Public Notice* (“*CCRPN*”, DA 17-317, released April 13, 2017).

The proposed Channel 23 operation will employ the existing broadband shared antenna system utilized by the licensed KQCA facility. The antenna is a horizontally polarized nondirectional Dielectric model TUG-O5-16/80H-1-B. *Hearst* proposes to operate KQCA with an effective radiated power (“ERP”) of 425 kW at 579 meters antenna height above average terrain (“HAAT”).

The existing tower structure corresponds to FCC Antenna Structure Registration number 1015686. No change to the overall structure height will result.

A map is supplied as Figure 1 which depicts the standard predicted coverage contours. This map includes the location of Stockton, KQCA’s principal community. As demonstrated thereon, the proposed facility complies with §73.625(a)(1) as the entire principal community will be encompassed by the 48 dBμ contour.

The proposed noise limited service contour (“NLSC”) extends slightly beyond that of the *CCRPN* parameters of 377 kW ERP and 580 meters HAAT. The antenna height above ground is specified herein at 581 meters above ground level (“AGL”) to correspond to the as-built condition, a decrease of 2 meters from the 583 meters AGL as licensed. The proposed KQCA antenna HAAT is recalculated to be 578.6 meters, based on FCC 30 meter terrain data developed by OET (at 30 degree increments). The proposal complies with §73.3700(b)(ii) as described in the following.

KQCA’s reassignment facility experiences a loss of interference-free coverage area within the NLSC when compared to that of its baseline¹ pre-auction facility. Detailed analysis shows that an area of 489.9 square kilometers having a population of 22,688 persons which received interference-free service from the baseline KQCA facility does not receive interference-free service from the reassignment parameters. A map is supplied as Figure 2 which shows the interference-free results for the *CCRPN* parameters and the baseline interference-free individual cells that are lost at reassignment. Therefore, KQCA qualifies under §73.3700(b)(ii)(A) for a contour extension due the loss of interference-free coverage area resulting from the new channel assignment.

Interference study per FCC OET Bulletin 69² shows that the proposal complies with the 0.5 percent limit of new interference caused to pertinent nearby post-auction full service and Class A television stations and reassignments as required by §73.616. The interference study output report is provided as Table 1. This satisfies §73.3700(b)(ii)(C) for the proposed NLSC extension.

¹“*Final Digital Television Baseline Coverage Area And Population Served Information Related To Incentive Auction Repacking*,” DA 15-1296, Public Notice, Released November 12, 2015.

²FCC 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, 2 km cell size, and 1 km terrain increment. Comparisons of various results of this computer program (run on a Mac processor) to the FCC’s implementation of TVStudy show excellent correlation.

The amount of NLSC extension does not exceed one percent in any direction. Figure 3 supplies a coverage contour comparison of the proposed KQCA facility to the reassignment facility's contour and a one percent extension distance of the reassignment facility's contour. Here, the contour level is adjusted with the dipole factor to match FCC application processing. Table 1's results also demonstrate that the proposed contour is within the baseline contour plus one percent. Therefore the proposed contour extension complies with §73.3700(b)(ii)(B).

The proposed KQCA facility's terrain-limited population provides a 101.3 percent match of the *CCRPN* baseline facility, as detailed in the following table. The OET Bulletin 69 report summary in Table 1 also concludes that the proposed service area population is more than 95 percent of the baseline population.

Terrain Limited Population - Match of Reassignment

Population Summary (2010 Census) OET Bulletin 69: TVStudy	Reassignment Parameters	Proposed
Within Noise Limited Contour	9,931,380	10,077,891
Not affected by terrain losses	6,195,979	6,276,197
Match of Reassignment	---	101.29%

The proposed 425 kW ERP exceeds the maximum allowed for the proposed antenna HAAT of 579 meters permitted by §73.622(f)(8)(i). Section 73.622(f)(5) permits the maximum ERP to be exceeded in order to provide the same geographic coverage area as the largest station within the same market. The total area within the proposed KQCA NLSC is 39,049 square kilometers, which does not exceed the NLSC area of KXTV(DT) (47,544 sq. km, Ch. 10, Sacramento CA, BLCDT-20120201AAM). Thus, the 425 kW ERP specified herein is in compliance with §73.622(f)(5) of the FCC's Rules.

The nearest FCC monitoring station is 64 km distant at Livermore, CA. Using the FCC propagation curves, the proposed F(50,90) signal level at the monitoring station is 2.3 mV/m, which is below the 10 mV/m threshold of §73.1030(c) for further analysis. The site is not located within the areas requiring coordination with "quiet" zones specified in §73.1030(a) and (b). There are no authorized AM stations within 3 kilometers of the site. The site location is beyond the border areas requiring international coordination.

Human Exposure to Radiofrequency Electromagnetic Field (Environmental)

The proposed operation was evaluated for human exposure to RF energy using the procedures outlined in the FCC's OET Bulletin Number 65. Based on OET-65 equation (10), and considering 10 percent antenna relative field in downward elevations (pattern data shows less than 10 percent relative field at angles 10 to 90 degrees below the antenna), the calculated signal density near the tower at two meters above ground level attributable to the proposed facility is $0.42 \mu\text{W}/\text{cm}^2$, which is 0.1 percent of the general population/uncontrolled maximum permitted exposure limit. This is well below the five percent threshold limit described in §1.1307(b) regarding sites with multiple emitters, categorically excluding the applicant from responsibility for taking any corrective action in the areas where the proposal's contribution is less than five percent.

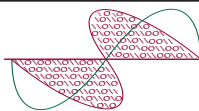
The general public will not be exposed to RF levels attributable to the proposal in excess of the FCC's guidelines. RF exposure warning signs will continue to be posted. With respect to worker safety, the applicant will coordinate exposure procedures with all pertinent stations and will reduce power 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. No tower work is required to carry out this proposal.

List of Attachments

Figure 1	Proposed Coverage Contours
Figure 2	Reassignment Service Loss
Figure 3	Proposed Contour Expansion
Figure 4	Maximum ERP per §73.622(f)
Table 1	OET Bulletin 69 Interference Study
Form 2100	Saved Version of Engineering Sections from FCC Form at Time of Upload

Chesapeake RF Consultants, LLC

Joseph M. Davis, P.E.	May 17, 2017	
207 Old Dominion Road	Yorktown, VA 23692	703-650-9600

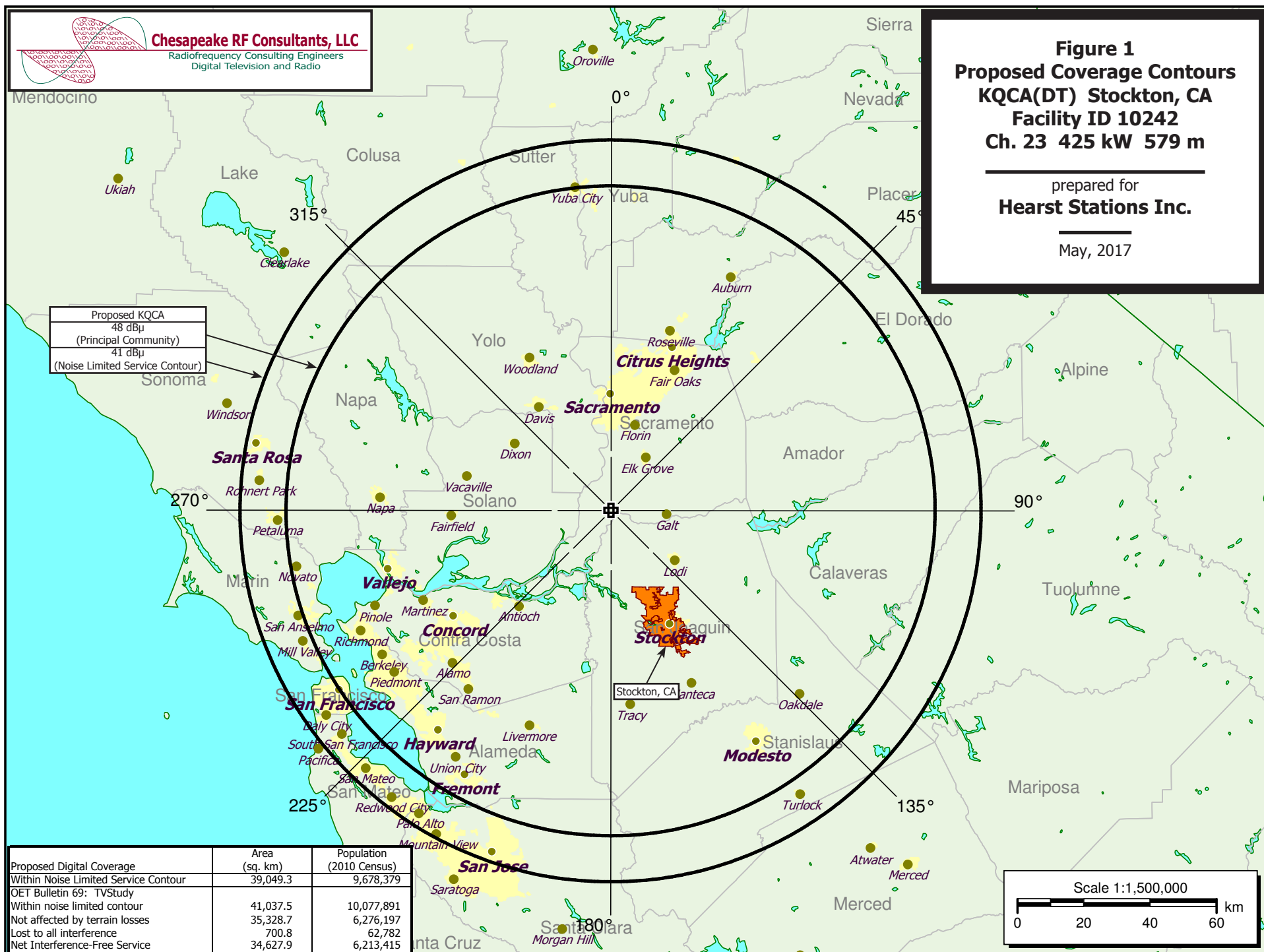


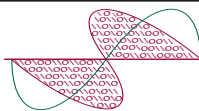
Chesapeake RF Consultants, LLC
Radiofrequency Consulting Engineers
Digital Television and Radio

Figure 1
Proposed Coverage Contours
KQCA(DT) Stockton, CA
Facility ID 10242
Ch. 23 425 kW 579 m

prepared for
Hearst Stations Inc.

May, 2017



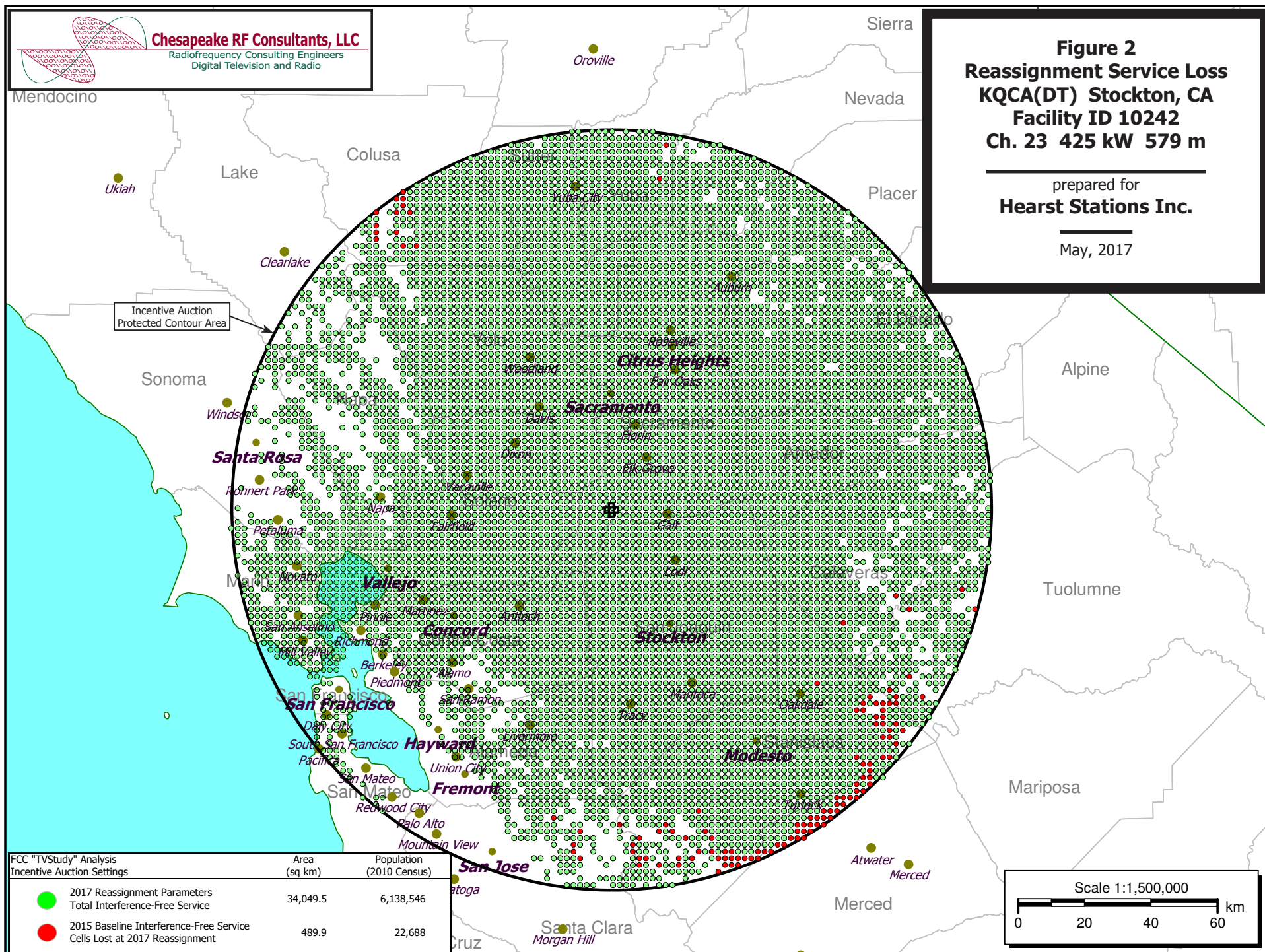


Chesapeake RF Consultants, LLC
Radiofrequency Consulting Engineers
Digital Television and Radio

Figure 2
Reassignment Service Loss
KQCA(DT) Stockton, CA
Facility ID 10242
Ch. 23 425 kW 579 m

prepared for
Hearst Stations Inc.

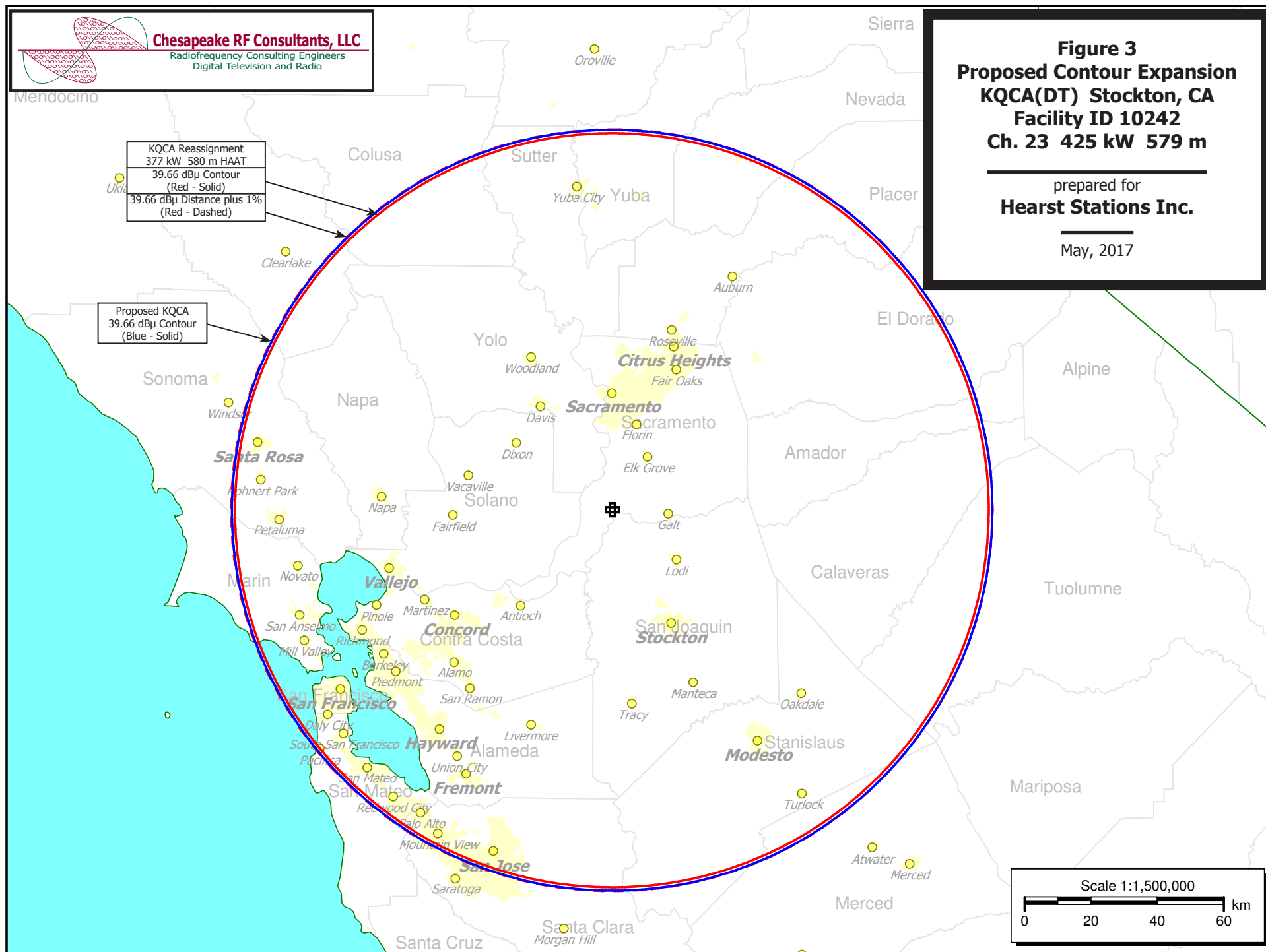
May, 2017

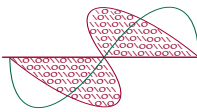




prepared for
Hearst Stations Inc.

May, 2017



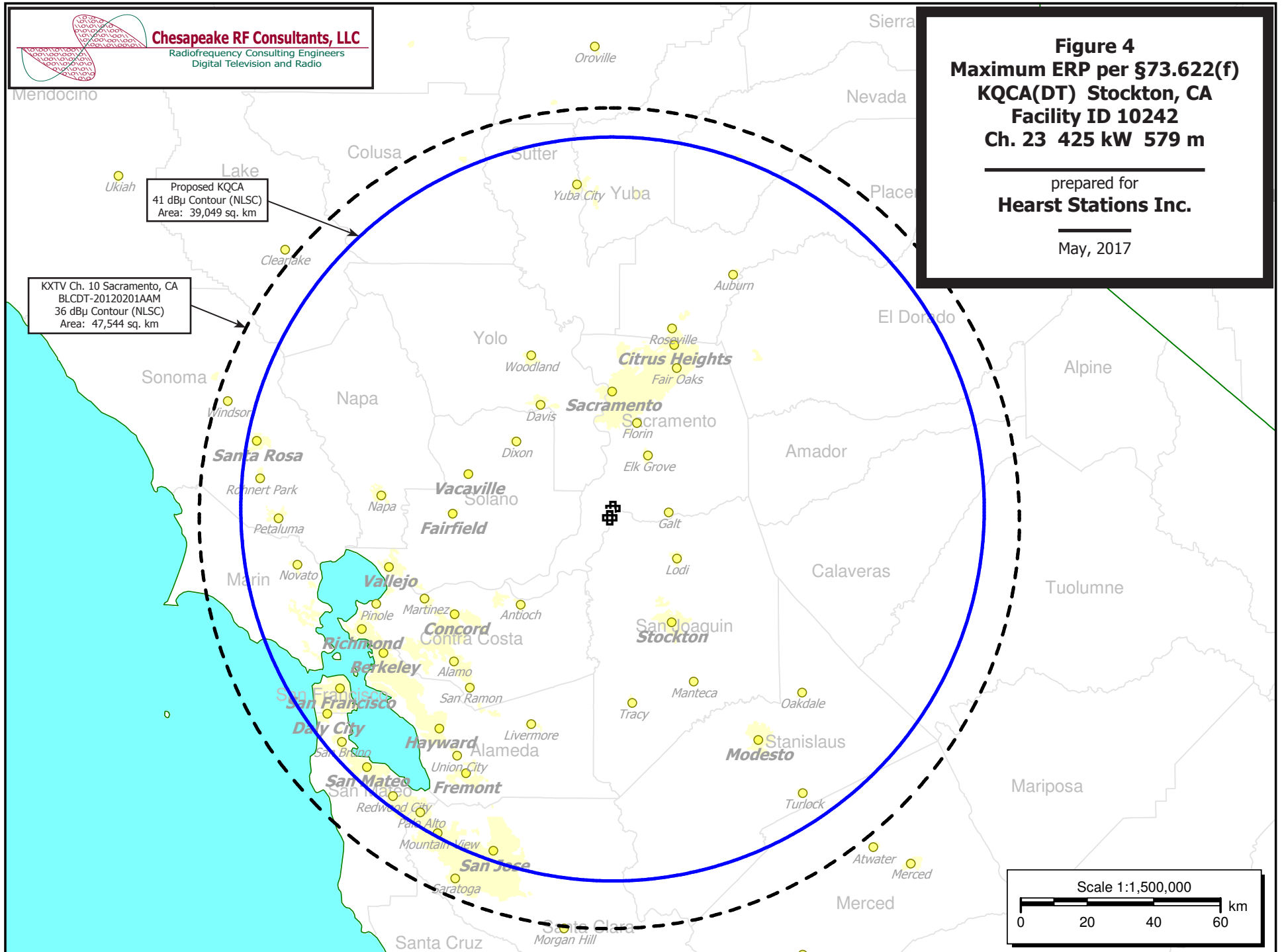


Chesapeake RF Consultants, LLC
Radiofrequency Consulting Engineers
Digital Television and Radio

Figure 4
Maximum ERP per §73.622(f)
KQCA(DT) Stockton, CA
Facility ID 10242
Ch. 23 425 kW 579 m

prepared for
Hearst Stations Inc.

May, 2017



KXTV Ch. 10 Sacramento, CA
BLC DT-20120201AAM
36 dBu Contour (NLSC)
Area: 47,544 sq. km

Proposed KQCA
41 dBu Contour (NLSC)
Area: 39,049 sq. km

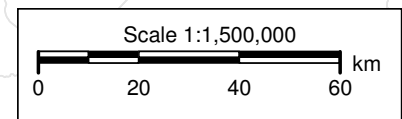
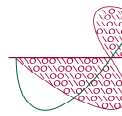


Table 1 KQCA(DT) OET Bulletin 69 Interference Study
(page 1 of 4)



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

tvstudy v2.2.2

Database: localhost, Study: KQCA 425KW PROP (403), Model: Longley-Rice
Start: 2017.05.17 09:42:32

Study created: 2017.05.17 09:42:21

Study build station data: LMS TV 2017-05-15 (11)

Proposal: KQCA D23 DT BL STOCKTON, CA
File number: KQCA 425KW PROP
Facility ID: 10242
Station data: User record
Record ID: 171
Country: U.S.

Stations potentially affected:

Call	Chan	Svc	Status	City, State	File Number	Distance
KSPX-TV	D22	DT	BL	SACRAMENTO, CA	DTVBL52953	0.0 km
KAXT-CD	D22	DC	BL	SAN FRANCISCO, SAN JO, CA	DTVBL37689	91.5
KTFE-DT	D23	DT	BL	PORTERVILLE, CA	DTVBL35512	321.5
KRDT-CD	D23	DC	LIC	REDDING, CA	BLDTA20110620AEA	279.8
KRXI-TV	D23	DT	BL	RENO, NV	DTVBL48360	199.9
KMAX-TV	D24	DT	BL	SACRAMENTO, CA	DTVBL51499	0.0

No non-directional AM stations found within 0.8 km

No directional AM stations found within 3.2 km

Record parameters as studied:

Channel: D23
Latitude: 38 15 54.00 N (NAD83)
Longitude: 121 29 28.00 W
Height AMSL: 581.0 m
HAAT: 578.6 m
Peak ERP: 425 kW
Antenna: Omnidirectional

39.7 dBu contour:

Azimuth	ERP	HAAT	Distance
0.0 deg	425 kW	578.5 m	114.3 km
45.0	425	573.2	114.0
90.0	425	574.3	114.1
135.0	425	577.2	114.2
180.0	425	581.5	114.4
225.0	425	581.2	114.4
270.0	425	581.3	114.4
315.0	425	579.6	114.3

Database HAAT does not agree with computed HAAT
Database HAAT: 579 m Computed HAAT: 578 m

ERP exceeds maximum
ERP: 425 kW ERP maximum: 353 kW

Proposal service area is within baseline plus 1.0%
Proposal service area population is more than 95.0% of baseline

Distance to Canadian border: 1119.3 km

Distance to Mexican border: 728.5 km

**Proposal is within coordination distance of FCC monitoring station
Conditions at FCC monitoring station: Livermore CA
Bearing: 201.1 degrees Distance: 64.3 km
ERP: 425 kW Field strength: 46.2 dBu, 0.2 mV/m

Proposal is not within the West Virginia quiet zone area

Conditions at Table Mountain receiving zone:
Bearing: 76.5 degrees Distance: 1411.8 km

Table 1 KQCA(DT) OET Bulletin 69 Interference Study
(page 2 of 4)



Study cell size: 2.00 km
Profile point spacing: 1.00 km

Maximum new IX to full-service and Class A: 0.50%
Maximum new IX to LPTV: 2.00%

Interference to DTVBL52953 BL, scenario 1

	Call	Chan	Svc	Status	City, State	File Number	Distance
Desired:	KSPX-TV	D22	DT	BL	SACRAMENTO, CA	DTVBL52953	
Undesireds:	KQCA	D23	DT	BL	STOCKTON, CA	DTVBL10242	0.0 km
	KQCA	D23	DT	BL	STOCKTON, CA	KQCA 425KW PROP	0.0
	KFTL-CD	D21	DC	BL	SAN FRANCISCO, CA	DTVBL52887	104.7
	KDTV-CD	D21	DC	BL	SANTA ROSA, CA	DTVBL18148	107.1
	KAEF-TV	D22	DT	LIC	ARCATA, CA	BLCDT20071012ASQ	346.7
	KAXT-CD	D22	DC	BL	SAN FRANCISCO, SAN JO, CA	DTVBL37689	91.5
	KNXT	D22	DT	BL	VISALIA, CA	DTVBL16950	321.4
	KRXI-TV	D23	DT	BL	RENO, NV	DTVBL48360	199.9

	Service area	Terrain-limited		IX-free, before		IX-free, after	Percent New IX
	35281.0	6,745,180	31490.1	5,071,500	30425.1	4,958,326	30405.0 4,954,921 0.07 0.07

Undesired			Total IX		Unique IX, before		Unique IX, after
KQCA D23 DT BL			163.7	14,331	155.7	11,374	
KQCA D23 DT BL			183.8	17,736			175.8 14,779
KFTL-CD D21 DC BL			19.8	1,218	7.9	1,218	7.9 1,218
KDTV-CD D21 DC BL			16.1	435	12.1	20	12.1 20
KAXT-CD D22 DC BL			658.5	99,353	630.7	95,981	630.7 95,981
KNXT D22 DT BL			234.7	1,209	230.7	1,209	230.7 1,209

Interference to DTVBL37689 BL, scenario 1
Proposal causes no interference.

Interference to DTVBL35512 BL, scenario 1

	Call	Chan	Svc	Status	City, State	File Number	Distance
Desired:	KTFF-DT	D23	DT	BL	PORTERVILLE, CA	DTVBL35512	
Undesireds:	KQCA	D23	DT	BL	STOCKTON, CA	DTVBL10242	321.4 km
	KQCA	D23	DT	BL	STOCKTON, CA	KQCA 425KW PROP	321.5
	KNXT	D22	DT	BL	VISALIA, CA	DTVBL16950	0.0
	KVMD	D23	DT	LIC	TWENTYNINE PALMS, CA	BLCDT20060615AAB	310.4
	KRXI-TV	D23	DT	BL	RENO, NV	DTVBL48360	379.3
	KKFX-CD	D24	DC	LIC	SAN LUIS OBISPO, CA	BLDTA20150102AAC	193.5

	Service area	Terrain-limited		IX-free, before		IX-free, after	Percent New IX
	33803.7	2,162,467	28658.1	2,143,605	28514.2	2,143,501	28510.2 2,143,312 0.01 0.01

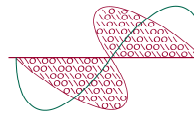
Undesired			Total IX		Unique IX, before		Unique IX, after
KQCA D23 DT BL			71.9	104	67.9	104	
KQCA D23 DT BL			75.9	293			71.9 293
KNXT D22 DT BL			76.0	0	71.9	0	71.9 0

Interference to DTVBL35512 BL, scenario 2

	Call	Chan	Svc	Status	City, State	File Number	Distance
Desired:	KTFF-DT	D23	DT	BL	PORTERVILLE, CA	DTVBL35512	
Undesireds:	KQCA	D23	DT	BL	STOCKTON, CA	DTVBL10242	321.4 km
	KQCA	D23	DT	BL	STOCKTON, CA	KQCA 425KW PROP	321.5
	KNXT	D22	DT	BL	VISALIA, CA	DTVBL16950	0.0
	KVMD	D23	DD	APP	TWENTYNINE PALMS, CA	BPCDT20100325ACD	310.9
	KRXI-TV	D23	DT	BL	RENO, NV	DTVBL48360	379.3
	KKFX-CD	D24	DC	LIC	SAN LUIS OBISPO, CA	BLDTA20150102AAC	193.5

	Service area	Terrain-limited		IX-free, before		IX-free, after	Percent New IX

Table 1 KQCA(DT) OET Bulletin 69 Interference Study
(page 3 of 4)



33803.7 2,162,467 28658.1 2,143,605 28498.2 2,143,501 28494.2 2,143,312 0.01 0.01

Undesired		Total IX	Unique IX, before	Unique IX, after
KQCA D23 DT BL	71.9	104	67.9	104
KQCA D23 DT BL	75.9	293		293
KNXT D22 DT BL	76.0	0	67.9	0
KVMD D23 DD APP	20.1	0	16.1	0

Interference to BLDTA20110620AEA LIC, scenario 1

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	KRDT-CD	D23	DC	LIC	REDDING, CA	BLDTA20110620AEA	
Undesireds:	KQCA	D23	DT	BL	STOCKTON, CA	DTVBL10242	279.8 km
	KQCA	D23	DT	BL	STOCKTON, CA	KQCA 425KW PROP	279.8
	KAFF-TV	D22	DT	LIC	ARCATA, CA	BLCDDT20071012ASQ	122.6
	KRXI-TV	D23	DT	BL	RENO, NV	DTVBL48360	250.1
	K23EX-D	D23	DC	LIC	MEDFORD, OR	BLDTA20131125BZO	193.0
	Service area	Terrain-limited	IX-free, before	IX-free, after	Percent New IX		
	5725.4	202,512	5164.6	200,881	5164.6	200,881	0.08 0.00

Undesired	Total IX	Unique IX, before	Unique IX, after
KQCA D23 DT BL	0.0	0	0
KQCA D23 DT BL	4.0	0	4.0 0

Interference to DTVBL48360 BL, scenario 1

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	KRXI-TV	D23	DT	BL	RENO, NV	DTVBL48360	
Undesireds:	KQCA	D23	DT	BL	STOCKTON, CA	DTVBL10242	199.9 km
	KQCA	D23	DT	BL	STOCKTON, CA	KQCA 425KW PROP	199.9
	KTFF-DT	D23	DT	BL	PORTERVILLE, CA	DTVBL35512	379.3
	KRDT-CD	D23	DC	LIC	REDDING, CA	BLDTA20110620AEA	250.1
	K23EX-D	D23	DC	LIC	MEDFORD, OR	BLDTA20131125BZO	400.0
	Service area	Terrain-limited	IX-free, before	IX-free, after	Percent New IX		
	34552.7	713,121	21608.2	529,385	21488.4	529,385	21476.3 529,385 0.06 0.00

Undesired	Total IX	Unique IX, before	Unique IX, after
KQCA D23 DT BL	119.8	0	119.8 0
KQCA D23 DT BL	131.9	0	131.9 0

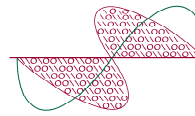
Interference to DTVBL51499 BL, scenario 1
Proposal causes no interference.

Interference to DTVBL51499 BL, scenario 2
Proposal causes no interference.

Interference to proposal, scenario 1
1.00% interference

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	KQCA	D23	DT	BL	STOCKTON, CA	KQCA 425KW PROP	
Undesireds:	KSPX-TV	D22	DT	BL	SACRAMENTO, CA	DTVBL52953	0.0 km
	KAXT-CD	D22	DC	BL	SAN FRANCISCO, SAN JO, CA	DTVBL37689	91.5
	KTFF-DT	D23	DT	BL	PORTERVILLE, CA	DTVBL35512	321.5
	KRDT-CD	D23	DC	LIC	REDDING, CA	BLDTA20110620AEA	279.8
	KRXI-TV	D23	DT	BL	RENO, NV	DTVBL48360	199.9
	KMAX-TV	D24	DT	BL	SACRAMENTO, CA	DTVBL51499	0.0
	Service area	Terrain-limited	IX-free	Percent IX			
	41037.5	10,077,891	35328.7	6,276,197	34627.9	6,213,415	1.98 1.00
Undesired	Total IX	Unique IX	Pront Unique IX				
KSPX-TV D22 DT BL	4.0	0	0.0 0	0.00	0.00		

Table 1 KQCA(DT) OET Bulletin 69 Interference Study
(page 4 of 4)



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

KAXT-CD	D22	DC	BL	67.7	36,690	67.7	36,690	0.19	0.58
KTFF-DT	D23	DT	BL	525.4	25,393	525.4	25,393	1.49	0.40
KRDT-CD	D23	DC	LIC	71.9	111	71.9	111	0.20	0.00
KRXI-TV	D23	DT	BL	4.0	0	4.0	0	0.01	0.00
KMAX-TV	D24	DT	BL	31.8	588	27.8	588	0.08	0.01

Channel and Facility Information

Section	Question	Response
Proposed Community of License	Facility ID	10242
	State	California
	City	STOCKTON
	DTV Channel	23
Facility Type	Facility Type	Commercial
	Station Type	Main
Zone	Zone	2

Antenna Location Data

Section	Question	Response
Antenna Structure Registration	Do you have an FCC Antenna Structure Registration (ASR) Number?	Yes
	ASR Number	1015686
Coordinates (NAD83)	Latitude	38° 15' 54.0" N+
	Longitude	121° 29' 28.0" W-
	Structure Type	TOWER-A free standing or guyed struct
	Overall Structure Height	609.7 meters
	Support Structure Height	580.6 meters
	Ground Elevation (AMSL)	0.0 meters
Antenna Data	Height of Radiation Center Above Ground Level	581 meters
	Height of Radiation Center Above Average Terrain	578.6 meters
	Height of Radiation Center Above Mean Sea Level	581.0 meters
	Effective Radiated Power	425 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	TUG-O5-16/80H-1-B
	Rotation	
	Electrical Beam Tilt	0.75
	Mechanical Beam Tilt	Not Applicable
	toward azimuth	
	Polarization	Horizontal
DTV and DTS: Elevation 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	

Construction
Permit
Certifications

Section	Question	Response
Post-Incentive Auction Expedited Processing	It will operate on the DTV channel for this station as established in the post-incentive auction channel reassignment public notice.	Yes
	It will operate post-incentive auction facilities that do not expand the noise-limited service contour in any direction beyond that established by the post-incentive auction channel reassignment public notice.	No
	It will operate post-incentive auction facilities that match or reduce by no more than five percent with respect to predicted population from those defined in the post-incentive auction channel reassignment public notice.	Yes
	The antenna structure to be used by this facility has been registered by the Commission and will not require re-registration to support the proposed antenna, OR the FAA has previously determined that the proposed structure will not adversely affect safety in air navigation and this structure qualifies for later registration under the Commission's phased registration plan, OR the proposed installation on this structure does not require notification to the FAA pursuant to 47 C.F.R. Section 17.7.	Yes
Environmental Effect	Would a Commission grant of Authorization for this location be an action which may have a significant environmental effect? (See Section 1.1306 of 47 C.F.R.)	No
Broadcast Facility	The proposed facility complies with the applicable engineering standards and assignment requirements of 47 C. F.R. Sections 73.616, 73.622(i), 73.623(e), 73.625, 73.1030, and 73.1125.	Yes