

T Z SAWYER TECHNICAL CONSULTANTS

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CALVARY CHAPEL OF TWIN FALLS, INC.

APPLICATION FOR  
AM CONSTRUCTION PERMIT TO  
REDUCE DAYTIME POWER AND  
DELETE NIGHTTIME AUTHORIZATION

MINOR CHANGE APPLICATION

KIPA (AM)  
HAS: 1060 KHZ - CLASS B - 5 KW DAY/ NIGHT ND  
PROPOSES: 1060 KHZ - CLASS D - 1 KW DAY ND

HILO, HAWAII

FACILITY ID: 33324

AUGUST 2020

ENGINEERING EXHIBIT  
IN SUPPORT OF  
AN APPLICATION FOR AM CONSTRUCTION PERMIT  
STATION KIPA (AM)  
HILO, HAWAII

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Reduce Daytime Power from 5 kW to 1 kW, Nondirectional

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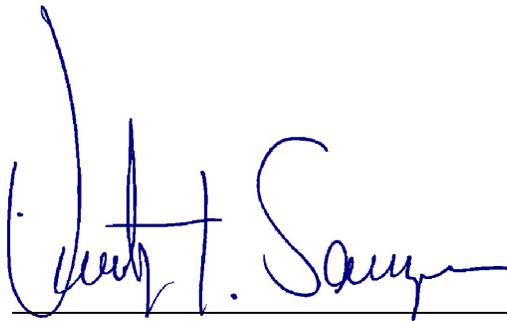
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DECLARATION OF ENGINEER

I, Timothy Z. Sawyer, declare that I have provided RF engineering services in the area of telecommunications since 1969. My qualifications are a matter of record with the Federal Communications Commission. I am a senior engineer and principal with the firm of T Z Sawyer Technical Consultants, consulting radio telecommunications engineers with offices in Falls Church, Virginia.

This firm has been retained by CALVARY CHAPEL OF TWIN FALLS, INC., to prepare this instant engineering exhibit in support of an application to make minor changes to the license authorization of Class B AM broadcast station KIPA, Hilo, Hawaii.

All facts contained herein are true of my own knowledge except those stated to be on information and belief, and as to those facts, I believe them to be true. I declare under penalty of perjury that the foregoing is true and correct.



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Timothy Z. Sawyer  
August 4, 2020

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Engineering Statement Narrative

This engineering statement (in narrative form) and the instant exhibit of which it is part has been prepared on behalf of CALVARY CHAPEL OF TWIN FALLS, INC., licensee of Class B AM broadcast Station KIPA, Hilo, Hawaii.

By means of the instant application, the applicant proposes to make minor changes to its station license. The applicant proposes to DELETE its NIGHTTIME SERVICE authorization, changing station CLASS from Class B to Class D, and reduce its authorized daytime power from 5-kilowatts to 1-kilowatt. No other changes are proposed.

Engineering Discussion - Transmitter/Antenna Location

This is the existing antenna and site location of the station, as no physical changes will occur, a site map or plat of site is not required.

Figure 1 contains the FCC ASR details for the vertical radiator (tower). No changes are reported. A site map is not provided as this is the existing licensed site of the facility.

As no SITE changes are proposed, the maximum blanketing contour area is reduced from a radius of 550 meters to 270 meters. The population within the proposed blanketing contour (1000 mV/m) is less than 25 persons. A Google Earth overhead view of the site and the blanketing contour is provided in Figure 4-3.

#### Antenna System - Vertical Sketch of Antenna.

Figure 2, A description of the radiator and the antenna ground system are described in the station's authorization. There are no changes to report. This is an existing diplex antenna system shared with KHLO (AM) 850 kilohertz. The antenna is a series fed, top-loaded, uniform cross-section guyed steel tower.

*There are no changes to report concerning the radiator in use; this is a daytime power reduction application. The antenna radiator and its associated ground system (shared with AM Station KHLO) remains as previously authorized and described. The diplexing equipment, filters, and all associated combining networks remain unchanged.*

#### Daytime Allocation Study

Figure 3 includes the results (a 1060 kHz allocation map) of the proposed daytime time operation on existing or pending facilities. No prohibitive overlap of protected contours occurs to other facilities.

The proposed operation is in compliance with the current rules regarding daytime contour groundwave overlap and does not cause prohibitive interference to any other facility (protected current/proposed or pending) as required by the Commission's Rules.

### Daytime Service Contours

Figure 4 contains a series of maps in which the present and proposed daytime 0.5, 2.0, and 5.0 mV/m service contours have been drawn. The daytime blanketing contour (1000 mV/m) is shown in Figure 4-3.

Soil conductivity values obtained from the FCC M3 HI database have been used. A uniform conductivity value of 2.0 mS has been employed for all land areas, and 5000 mS for all saltwater paths.

### City of License Coverage

Figure 4-2 contains a map showing the corporate limits of HILO, Hawaii. As can be seen from this figure, service to Hilo is in full compliance with the Commission's rules, with 95 percent of the corporate area, and 99 percent of the population of Hilo receiving 5.0 mV/m groundwave daytime service.

### Environmental Considerations:

The applicant believes its proposal will not significantly affect the environment for the following reasons:

The proposal does not meet any of the criteria specified in Section 1.1307 of the FCC Rules. More specifically, the proposed facilities are not known to fall within any of the categories enumerated in Sections 1.1307(a)(1)-(7) and will not involve the use of high-intensity white lights.

Furthermore, the operation of the facility will not involve the exposure of workers or the general public to levels of radiofrequency electromagnetic fields exceeding guidelines adopted by the Federal Communications Commission. The radiator is surrounded by a gated, and locked fence enclosure as required by the Commission's rules that restricts access to the tower at distances greater than the OET minimum recommended distances for a radiator at or about 90 electrical degrees at 1060 kilohertz operating at 1-kilowatt of power.

Multiple Use Site Evaluation

Station	Frequency	Power (kw)	Radiator	OET No 65 Compliance Dist. (meters) Public	Distance. (meters)	OK
KIPA	1060 kHz	1.0	91.5 Deg.	1	> 1	YES
KHLO	850 kHz	5.0	73.4 Deg.	2	> 2	YES
K201FQ	88.1 MHz	0.23	54.9 m AGL	8.2	54.9	YES

Therefore, as noted in the above table, the proposal is within the Commissions standards. The licensee/applicant will comply with the Commissions guidelines and standards.

Access to the tower is restricted, and suitable warning signs are posted. The applicant will reduce power or cease operation as necessary in coordination with any other site users during periods of maintenance, or installation of equipment.

Summary

The applicant proposes to REDUCE its daytime operating power and DELETE its nighttime authorization to its existing station license. No physical changes at the site will occur. No changes in the technical operating parameters of the existing daytime authorization are proposed other than the reduction in daytime power from 5-kilowatts to 1-kilowatt.

August 4, 2020



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Timothy Z. Sawyer, Consulting Engineer

T Z Sawyer Technical Consultants  
2130 Hutchison Grove Court, Suite 100  
Falls Church, VA 22043

Telephone: (703) 848-2130 e-mail to: [tzsawyer@tzsawyer.com](mailto:tzsawyer@tzsawyer.com)

**Existing Communications Tower - No FAA Notice Required**  
**(No change in existing tower height is proposed)**

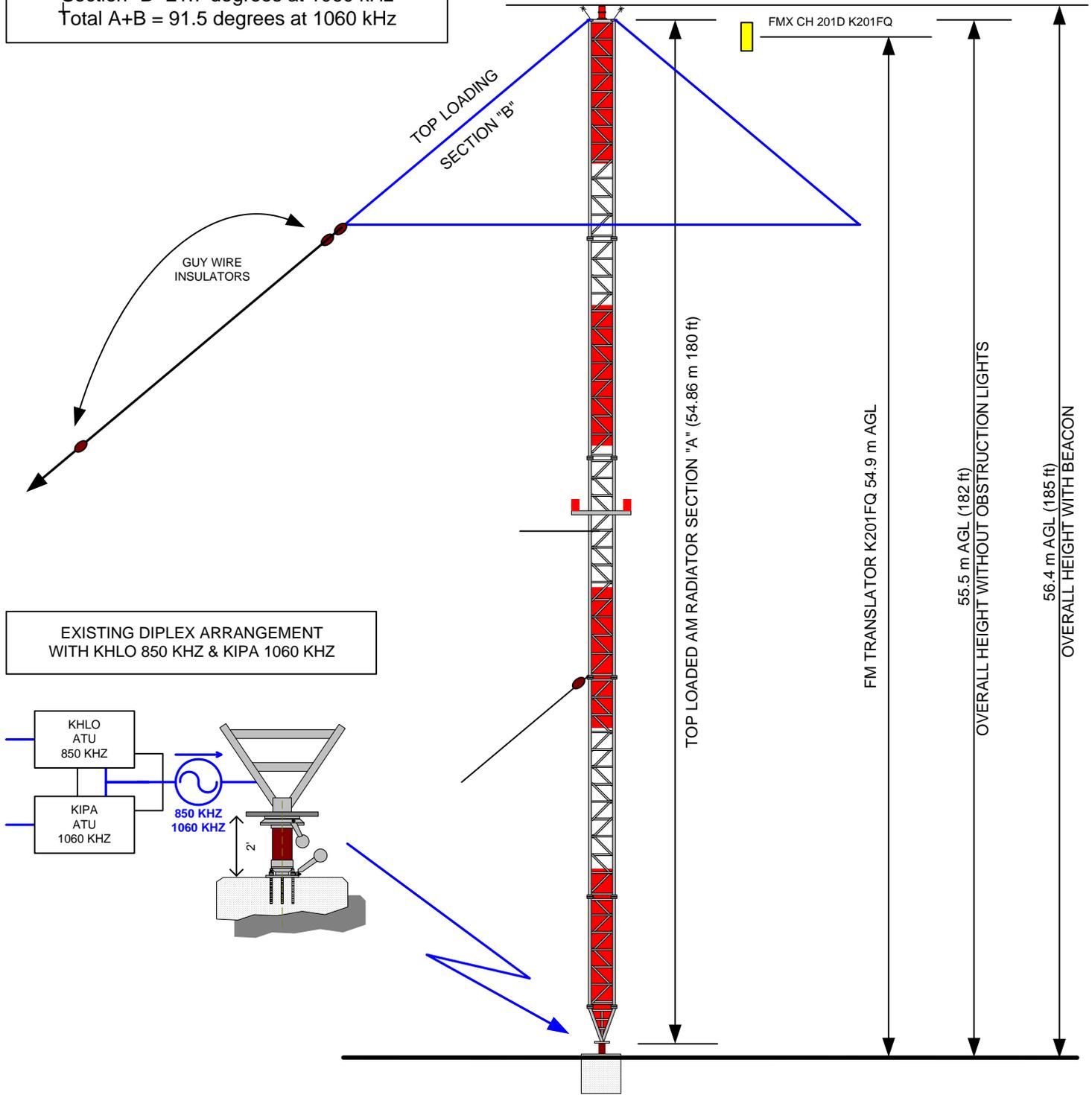
<b>Registration Detail</b>			
Reg Number	1011944	Status	Constructed
File Number	A0708138	Constructed	01/01/1985
EMI	No	Dismantled	
NEPA	No		
<b>Antenna Structure</b>			
Structure Type	TOWER - Free standing or Guyed Structure used for Commu		
<b>Location</b> (in NAD83 Coordinates - <a href="#">Convert to NAD27</a> )			
Lat/Long	19-41-37.0 N 155-02-55.0 W	Address	NE CORNER KAHAOPEA ST & AUWAE RD
City, State	HILO , HI		
Zip	96720	County	HAWAII
Center of AM Array		Position of Tower in Array	
<b>Heights (meters)</b>			
Elevation of Site Above Mean Sea Level		Overall Height Above Ground (AGL)	
32.3		56.4	
Overall Height Above Mean Sea Level		Overall Height Above Ground w/o Appurtenances	
88.7		56.4	
<b>Painting and Lighting Specifications</b>			
FCC Paragraphs 1, 3, 11, 21			
<b>FAA Notification</b>			
FAA Study	83-AWP-1336-OE	FAA Issue Date	09/21/1984

<p align="center"><b>T Z SAWYER TECHNICAL CONSULTANTS</b> Tel.: (703) 848-2130 www.tzsawyer.com</p>	<p><b>FCC TOWER ASR REGISTRATION 1011944</b>  <b>FAA NOTICE NOT REQUIRED - NO CHANGE IN STRUCTURE</b></p>			
	<p>KIPA AM 1060 KHZ HILO, HAWAII</p>			<p><b>FIGURE 1</b></p>
FALL CHURCH, VIRGINIA 22043-2555	SIZE A	CAGE NO N/A	DWG NO 20200804KPAI	REV
(c) 2020, ALL RIGHTS RESERVED	SCALE	N/A	AUGUST 2020	SHEET

**TOP LOADED AM RADIATOR**

Above Base Insulator  
 Section "A" 69.8 degrees at 1060 kHz  
 Section "B" 21.7 degrees at 1060 kHz  
 Total A+B = 91.5 degrees at 1060 kHz

EXISTING STRUCTURE NO CHANGE  
 FCC ASR # 1011944



**T Z SAWYER TECHNICAL CONSULTANTS**

Tel.: (703) 848-2130  
 www.tzsawyer.com

**KIPA AM VERTICAL SKETCH OF RADIATOR**

HILO, HAWAII

**FIGURE 2**

FALL CHURCH, VIRGINIA 22043-2555

SIZE  
A

CAGE NO  
N/A

DWG NO  
20200804KIPA.F2

REV  
NONE

(c) 2020, ALL RIGHTS RESERVED

SCALE 1" = 25' VERTICAL ONLY

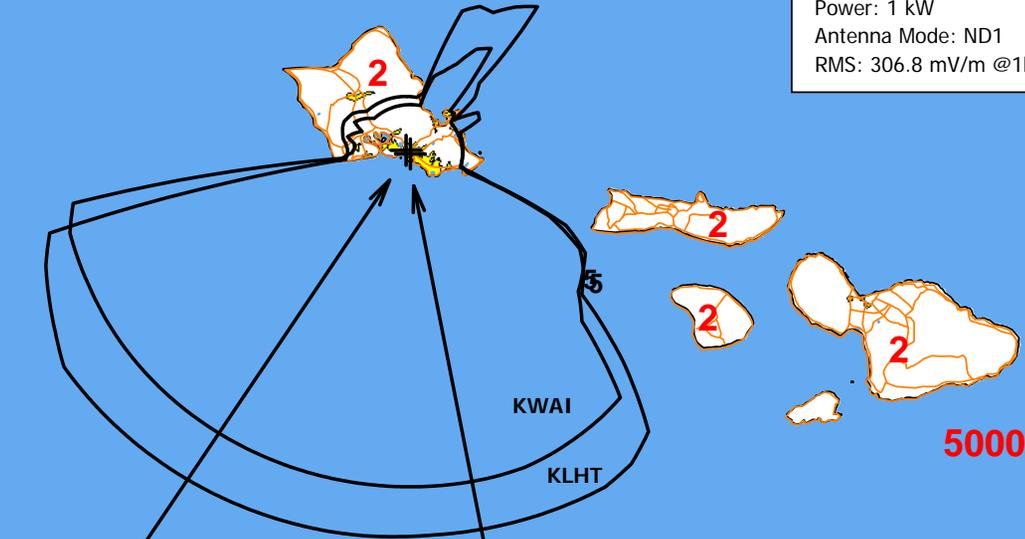
AUGUST 2020

SHEET

— Causes  
— Receives  
— No Ix

**KIPA**  
 PROPOSED  
 FCC Facility ID: 33324  
 Freq: 1060 kHz  
 Class: D  
 NAD 27 Latitude: 19-41-48 N  
 NAD 27 Longitude: 155-03-05 W  
 Power: 1 kW  
 Antenna Mode: ND1  
 RMS: 306.8 mV/m @1km

**1060 KHZ - DAYTIME ALLOCATION MAP**  
 PROPOSED DAYTIME  
 NO PROHIBITIVE CONTOUR OVERLAP  
 NO CO-CHANNEL STATIONS  
 NO 1ST ADJACENT CHANNEL STATIONS  
 2ND ADJ CHANNEL ONLY 5 MV/M GW  
 NO 3RD ADJACENT CHANNEL STATIONS  
 FIGURE 3



HAWAII M3 CONDUCTIVITY VALUES DISPLAYED  
 SOIL 2.0 MS - SEAWATER 5000 MS

**KWAI**  
 FCC Facility ID: 54613  
 Freq: 1080 kHz  
 Class: B  
 NAD 27 Latitude: 21-19-27.20 N  
 NAD 27 Longitude: 157-52-47.10 W  
 Power: 5 kW  
 Antenna Mode: ND1  
 RMS: 297.85 mV/m @1km

**KLHT**  
 FCC Facility ID: 8415  
 Freq: 1040 kHz  
 Class: B  
 NAD 27 Latitude: 21-20-06 N  
 NAD 27 Longitude: 157-53-37 W  
 Power: 10 kW  
 Antenna Mode: ND2  
 RMS: 255.5 mV/m @1km

**LICENSED**  
 5.0 MV/M GW

**PROPOSED**  
 5.0 MV/M GW

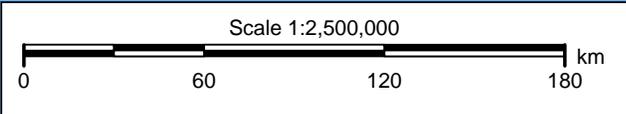


FIGURE 3 - DAYTIME ALLOCATION STUDY - STATIONS CONSIDERED

Reference Station: KIPA, 1060 kHz

Location: 19-41-48 N, 155-03-05 W

\*\*\* 1040 kHz (-2) \*\*\*

347.5 km KLHT L 21-20-06 N 157-53-37 W 10.0 kW ND2 - 255.5 mV/m@1km  
215.9 mi Azi: 301.0 Class: B Sched: U File #: BL20190723ABG  
Location: HONOLULU, HI, US

\*\*\* 1080 kHz (+2) \*\*\*

345.7 km KWAI L 21-19-27.20 N157-52-47.10 W5.0 kW ND1 - 297.9 mV/m@1km  
214.8 mi Azi: 300.9 Class: B Sched: U File #: BL20200428AAE  
Location: HONOLULU, HI, US

**KIPA**  
 LICENSED - DASHED CONTOURS  
 FCC Facility ID: 33324  
 Freq: 1060 kHz  
 Class: B  
 NAD 27 Latitude: 19-41-48 N  
 NAD 27 Longitude: 155-03-05 W  
 Power: 5 kW  
 Antenna Mode: ND1  
 RMS: 306.8 mV/m @1km

**KIPA**  
 PROPOSED - SOLID CONTOURS  
 FCC Facility ID: 33324  
 Freq: 1060 kHz  
 Class: D  
 NAD 27 Latitude: 19-41-48 N  
 NAD 27 Longitude: 155-03-05 W  
 Power: 1 kW  
 Antenna Mode: ND1  
 RMS: 306.8 mV/m @1km

**PRESENT AND PROPOSED DAYTIME GROUNDWAVE CONTOURS**

0.5 MV/M  
 2.0 MV/M

PRESENT CONTOURS - DASHED LINE  
 PROPOSED CONTOURS - SOLID LINE

FIGURE 4-1

0.5 MV/M GW

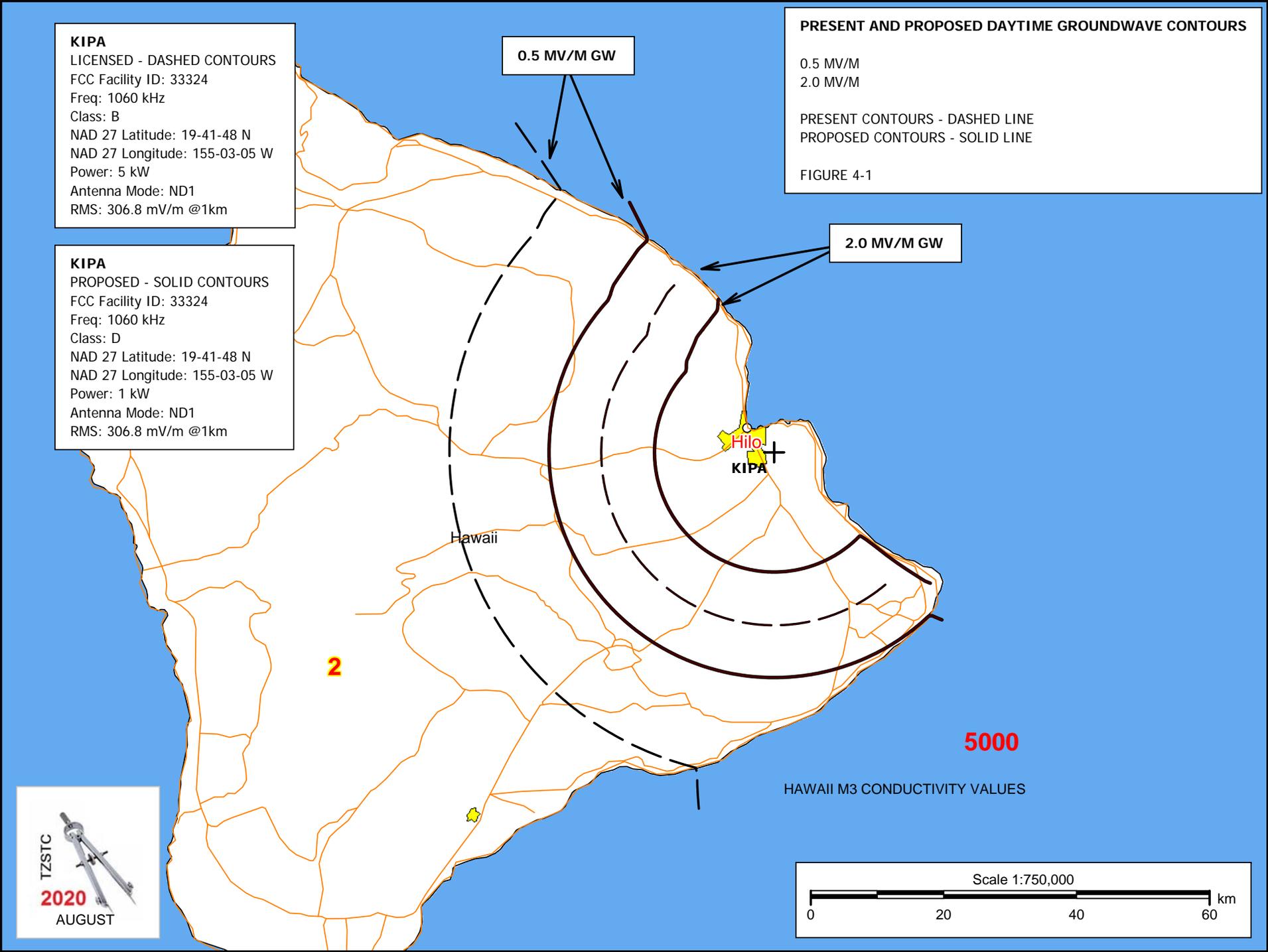
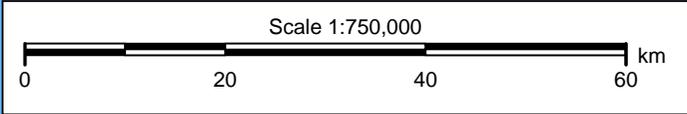
2.0 MV/M GW



2

5000

HAWAII M3 CONDUCTIVITY VALUES



**KIPA**

LICENSED - DASHED CONTOUR  
FCC Facility ID: 33324  
Freq: 1060 kHz  
Class: B  
NAD 27 Latitude: 19-41-48 N  
NAD 27 Longitude: 155-03-05 W  
Power: 5 kW  
Antenna Mode: ND1  
RMS: 306.8 mV/m @1km

**KIPA**

PROPOSED - SOLID CONTOUR  
FCC Facility ID: 33324  
Freq: 1060 kHz  
Class: D  
NAD 27 Latitude: 19-41-48 N  
NAD 27 Longitude: 155-03-05 W  
Power: 1 kW  
Antenna Mode: ND1  
RMS: 306.8 mV/m @1km

**PRESENT AND PROPOSED DAYTIME GROUNDWAVE CONTOURS**

5.0 MV/M - CITY OF LICENSE CONTOUR

PRESENT CONTOURS - DASHED LINE

PROPOSED CONTOURS - SOLID LINE

FIGURE 4-2

5.0 MV/M GW

**Service to City Of License**

Percentage of Population or Area

	-----	-----
Hilo, HI	99.0 %	95.1 %

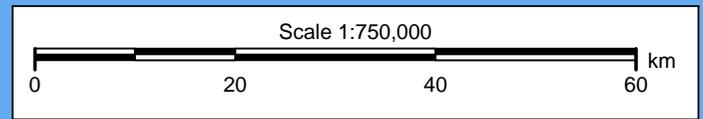


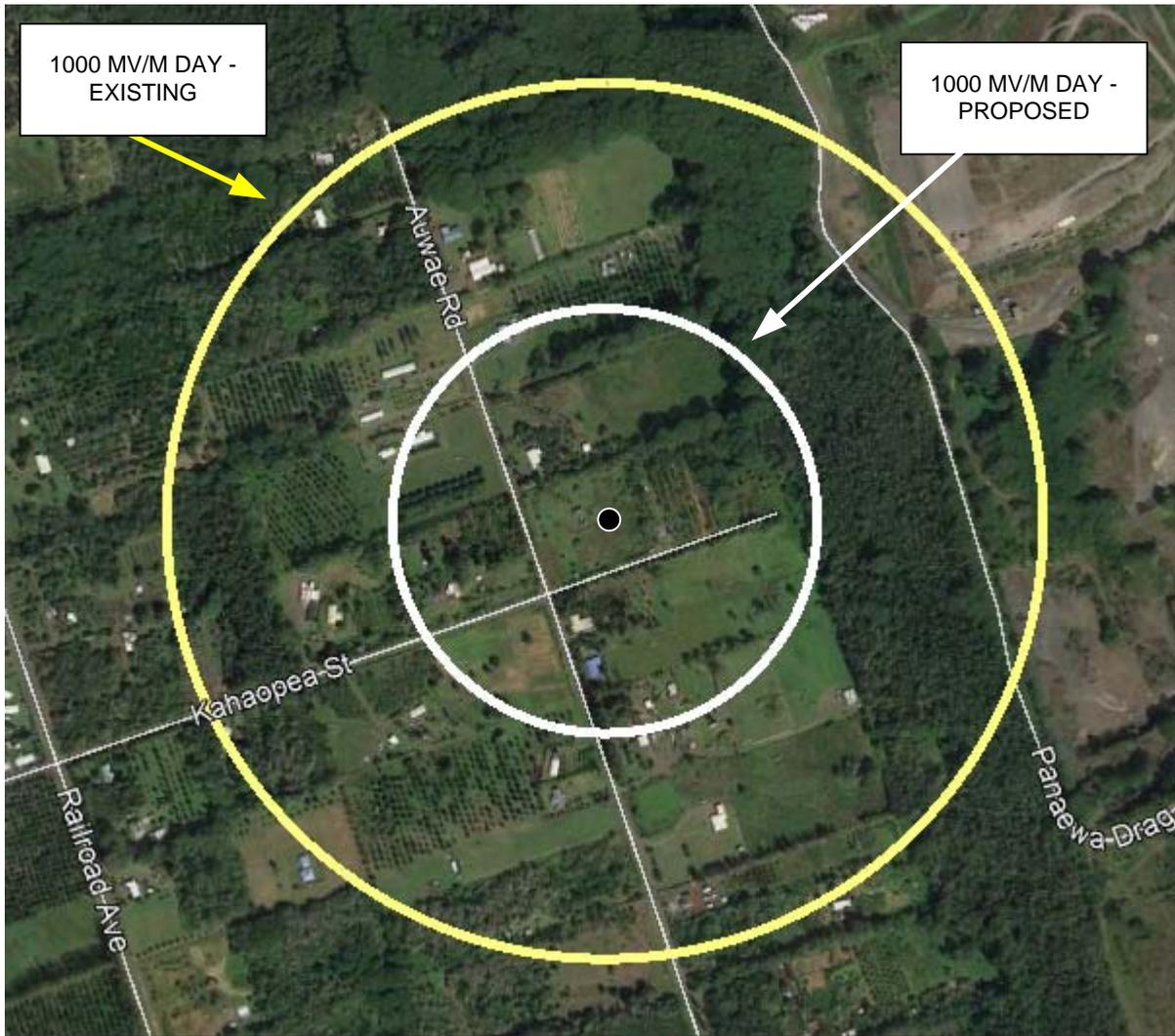
Hawaii

2

5000

HAWAII M3 CONDUCTIVITY VALUES





NO CHANGE IN EXISTING SITE LOCATION  
 THIS IS A DAYTIME POWER REDUCTION  
 POPULATION WITHIN BLANKETING CONTOUR IS LESS  
 THAN 100 PERSONS (US CENSUS 2010)

<b>T Z SAWYER TECHNICAL CONSULTANTS</b> Tel.: (703) 848-2130 www.tzsawyer.com	<b>BLANKET CONTOUR &amp; SITE PHOTOGRAPH</b>			
	KIPA (AM) 1060 KHZ HILO, HAWAII			<b>FIGURE 4</b>
<b>FALL CHURCH, VIRGINIA 22043-2555</b>	SIZE A	CAGE NO N/A	DWG NO 20200804KIPA.F4	REV NONE
<b>(c) 2020, ALL RIGHTS RESERVED</b>	SCALE	N/A	AUGUST 2020	SHEET