



**ENGINEERING STATEMENT**  
**OF**  
**JOHN F.X. BROWNE, P.E.**  
**IN SUPPORT OF APPLICATION FOR**  
**MINOR MODIFICATION OF CONSTRUCTION PERMIT**  
**FOR**  
**DISTRIBUTED TRANSMISSION SYSTEM**  
**AND**  
**REQUEST FOR WAIVER OF 47CFR 73.626 (AUTHORIZED SERVICE AREA)**  
**WQTO**  
**PONCE, PR**

**Background**

Sistema Universitario Ana G. Mendez, Inc. (Mendez) is the licensee of WQTO-DT which has been authorized to operate its post-transition DTV facility on Channel 25 (BPEDT-20080620AEL) at Ponce, PR, with an ERP of 800 kW at an HAAT of 310m. The tower is located at the following coordinates:

(NAD27)  
18° 04' 48" N  
66° 44' 56" W

Mendez has commissioned this firm to prepare an engineering statement in support of the instant application for modification of its authorization to specify a Distributed Transmission System (DTS) consisting of two sites: (1) the authorized WQTO facility and (2) a completely new facility located near the summit of Pico Atalaya (Mayaguez, Aguadilla, PR).



Mendez is proposing a DTS with the following site parameters:

Sites	Site 1	Site 2
<b>ERP (kW):</b>	800	15
<b>RCAMSL (m):</b>	681	388
<b>Antenna:</b>	DA Dielectric TFU-22DSC P230	DA Dielectric TFU-16DSB/VP-R P270 SP
<b>Coordinates: (NAD27)</b>	18° 04' 48" N 66° 44' 56" W	18° 19' 06" N 67° 10' 49" W
<b>ASRN:</b>	1231838	NA – tower less than 200' AGL

No modifications requiring a change in structure height is needed at either site and, therefore, the FAA does not need to be notified of the proposed construction.

Both DTS sites will utilize directional antennas with the Site 1 antenna employing horizontal polarization only and the Site 2 antenna employing elliptical polarization. At Site 2, the vertically polarized radiation component will not exceed the horizontally polarized radiation component.

### **Coverage and Request for Waiver**

The entire principal community of Ponce, PR is well within the predicted F(50,90) 48 dBu contour of the proposed Site 1 DTS facility.

Figure 1, attached hereto, shows the predicted noise-limited service contours of the proposed DTS facilities (Site 1 contour in green and Site 2 contour in red). The union of these contours represents the "DTS coverage area" as defined by the Commission's Rules. The



black circle contour on the map defines the 103 km maximum service area for a DTS authorization found in the "Table of Distances" in Section 73.626(c) of the Commission's Rules for a UHF DTS located in Zone 2.

As noted above, Site 1 will have the exact same operating parameters as the existing WQTO authorization (800 kW ERP at a RCAMSL of 681m); therefore, the coverage area of the DTS Site 1 will not exceed the authorized service area. As can be seen in Figure 1, the coverage area of Site 2 will exceed both the authorized WQTO predicted service area (Site 1 noise-limited contour depicted in green) and the maximum DTS service area as specified in the Table of Distances (represented by the black circle contour); however, all of the area where the Site 2 contour will exceed the authorized maximum DTS service area is over water.

Furthermore, Site 2 is on the edge of the noise-limited contour of the authorized service area and, due to the mountainous terrain, the population in this area is not predicted to receive service from the authorized WQTO facility. The power level and antenna pattern proposed for Site 2 were selected to provide high level signals to the un-served population inside the authorized service area, particularly since it is reported that a high percentage of this population relies on indoor antennas for reception.

For the reasons stated above, Mendez requests a waiver of the requirement to not exceed the WQTO authorized service area or maximum DTS service area (103 km) as the area resulting from the contour extension (beyond the maximum DTS service area) is entirely over water and will not result in any actual increase in population or land area served.

### **FCC Monitoring Station**

The signal of the WQTO authorized facility presently exceeds the 10 mV/m threshold specified in Section 73.1030(c)(1) at the Santa Isabel FCC monitoring station. As identified above, Site 1 of the proposed DTS will match the authorized facility exactly and, therefore, will not change the already approved signal level predicted at the Santa Isabella station.



Site 2 of the DTS is not predicted to impact the monitoring station as it will be located 57 miles from the Santa Isabel monitoring station which is farther than the suggested distance (10 miles) for advance coordination for the proposed power level (15 kW) for Site 2.

### **Radio Astronomy**

Since the proposed WQTO facility is located on the island of Puerto Rico, the Interference Office located at the Arecibo Observatory will be notified of this plan to change facility parameters by forwarding a copy of this DTS application.

### **Interference Studies**

Interference studies were run for the proposed DTS with software that emulates the software used by the FCC (OET-69 analysis with the addition of the root-sum-square of the field strength values for all facilities proposed for each DTS). The results of the interference studies show that the proposed DTS facilities will not cause more than the allowable 0.5% new interference (above the station's Appendix B level of interference) to any other full-power stations and no Class A stations will receive any new interference above the allowable 0.5%.

### **Environmental/RFR**

This construction does not involve any of the non-RFR conditions that require an Environmental Assessment as specified in 47 CFR Section 1.1311, therefore, further consideration of these issues is not required.

The additional RFR contributed by Site 1 in public areas has already been approved by the Commission as WQTO is an authorized facility located at this site which will be used as part of the DTS with no change in operating parameters and, therefore, no further study is required.



Site 2 of the proposed construction is a multi-user site and it is assumed that the site is currently "in compliance" with FCC guidelines for human exposure to RFR (as defined in OET-65). The additional worst case ground level RFR contributed to the site by this proposal in public areas is calculated to be  $0.013774 \text{ mW/cm}^2$ , which is less than 5% of the MPE for public exposure ( $0.359 \text{ mW/cm}^2$ ) at Ch. 25 (539 MHz). The contribution to the total RFR from the proposed facility is negligible and, therefore, the site will remain "in compliance" within FCC guidelines.

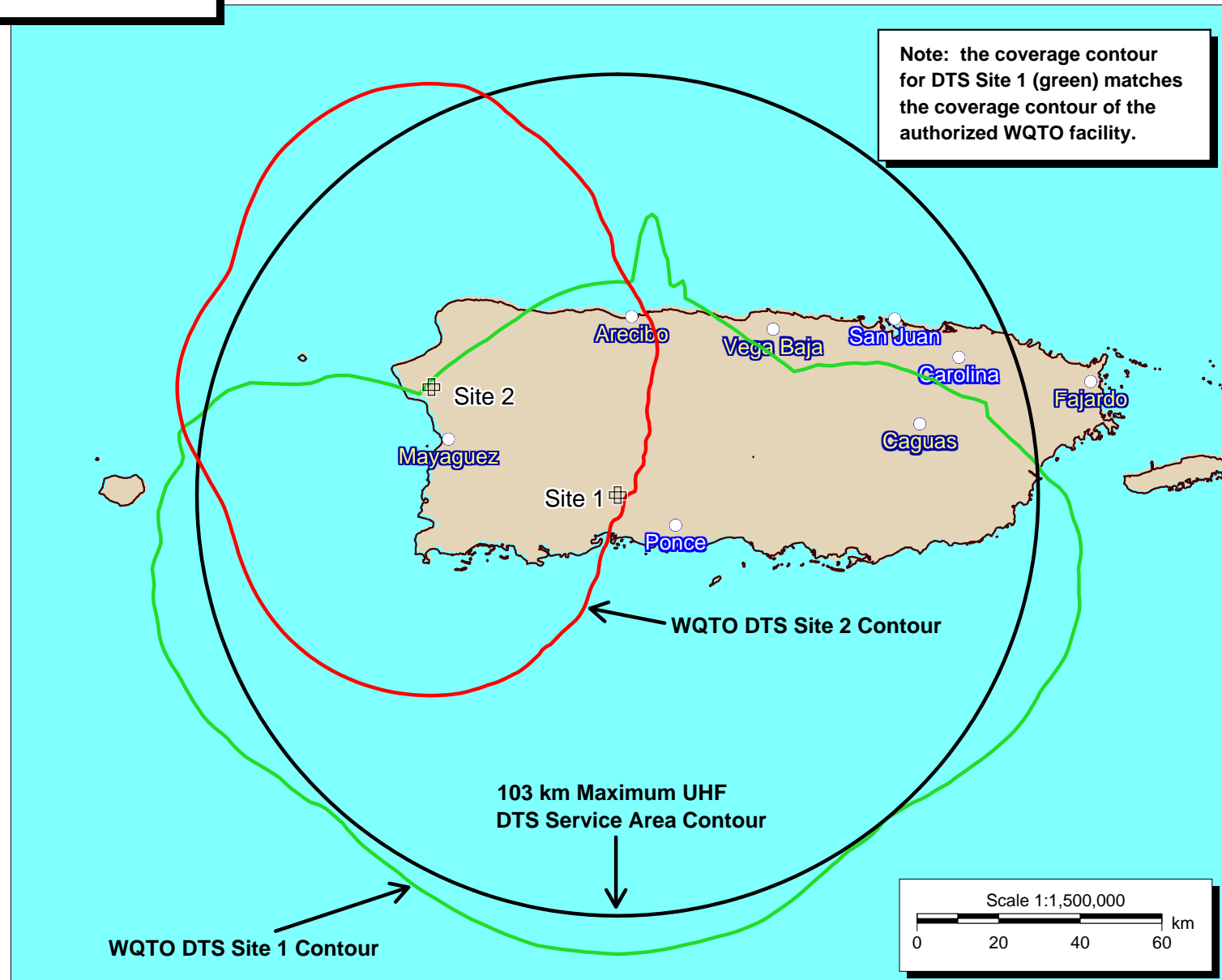
Mendez agrees to comply with the Commission's requirements regarding power adjustments or cessation of operation as may be necessary to ensure a compliant environment for worker access. Workers will be trained on RFR issues and encouraged to wear personal RFR monitors when on the structure. The tower base is enclosed by a locked security fence and appropriate signage warning of potential RFR hazards is posted.

### **Certification**

I hereby certify that the foregoing report or statement was prepared by me but may include work performed by others under my supervision or direction. The statements of fact contained therein are believed to be true and correct based on personal knowledge, information and belief unless otherwise stated; with respect to facts not known of my own personal knowledge, I believe them to be true and correct based on their origin from sources known to me to be generally reliable and accurate. I have prepared this document with due care and in accordance with applicable standards of professional practice.

A handwritten signature in black ink, reading "John F.X. Browne".

John F.X. Browne, P.E.  
February 1, 2010



Green - Predicted Noise Limited Contour of WQTO DTS Site 1  
Red - Predicted Noise Limited Contour of WQTO DTS Site 2  
Black - 103 km Maximum DTS Service Area for UHF DTS in Zone 2

Figure 1