

**Comprehensive Technical Exhibit**  
*Application for Construction Permit*  
WSTM-DT – Syracuse, New York  
Barrington Syracuse License LLC

**General**

The following engineering statement and attached exhibits have been prepared for **Barrington Syracuse License LLC**, licensee of digital television station WSTM-DT (Facility ID: 21252) at Syracuse, New York, and are in support of their application for construction permit for WSTM-DT post transition facilities.

WSTM-TV currently operates on channel 3 as an NTSC facility, with pre-transition DTV operations on channel 54. In the post-transition environment, WSTM-DT will operate on channel 24 pursuant to the Commission's DTV Table of Allotments. This application is being filed to request a construction permit for the post-transition DTV facilities, which will vary slightly from those indicated in Appendix B to the Commission's order adopting the DTV table of allotments.

**Discussion of WSTM-DT Allotment**

In the Commission's Table of Allotments, WSTM-DT is specified as operating in the post-transition environment on channel 24. The table in Appendix B specifies a maximum effective radiated power of 210 kW at an antenna center of radiation at 405 meters above average terrain. The allocation in the table lists a blank antenna ID, therefore a non-directional antenna is to be utilized.

The applicant has entered into an agreement with co-located television station to utilize the current NTSC antenna for WCNY-TV in the post transition environment. This antenna is located at a center of radiation of 393 meters above average terrain and is a non-directional. The facilities proposed in this application will, therefore, result in a minor reduction in the service area of WSTM-DT relative to the allotment.

Clearly this minor reduction in the service area will not result in an increase in interference to other facilities. Rather the minor decrease in the coverage of WSTM-DT relative to the allotment would actually result in less interference to other facilities. As a result of the reduction in the footprint of WSTM-DT, interference studies have been omitted from this application as such studies should be considered moot.

The reduction in the service area will not result in a decrease in predicted population served by more than five percent. The entry for WSTM-DT in Appendix B lists a service area population of 1368 thousand persons as being served by the allocation. Within the actual predicted 41 dBu service contour resulting from the allocation parameters, a resident population of 1,423,527 persons exists based on 2000 US Census data. The proposed facility would reduce the population within the contour by 20,750 persons, which is a 1.46 percent reduction. Exhibit E-1 compares the 41 dBu service contour of the allocation facility to the same contour for the proposed facility.

It should also be noted that the proposed facilities specify geographic coordinates that are one second different in longitude from those specified in the table of allotments. This variance is the result of accurate data being obtained for the ASR assigned to the tower that will be utilized for the facility. The coordinates specified in this application are consistent with those assigned to ASRN 1233154.

**DTV Checklist – FCC Form 301 Section III-D**

The appropriate items on Section III-D of FCC Form 301 have been answered. This application is for the post-transition facilities for WSTM-DT. As a result, items 1(a), 1(d), 1(e), and 2-5 have been answered per the instructions. This section of the comprehensive technical exhibit

will, however, provide additional information relative to these responses. Based on these responses, the proposed facility described in this application qualify for rapid approval.

The proposed DTV facilities described in this application will operate on the DTV channel established for the station. Specifically, the proposed facilities would utilize channel 24 in the post-transition environment. A response of “yes” has therefore been provided for this item.

Under item 1(d), a response of “yes” has been provided. As previously discussed, the proposed facility actually reduces the size of the noise limited service contour from the established value indicated in Appendix B. This reduction in the service contour is the result of the center of radiation for the proposed facility being 393 meters above average terrain instead of the 405 meter value indicated in Appendix B.

Item 1(e) has been answered as “yes” since the proposed facility would reduce the population within the noise limited service contour by less than five percent. As previously discussed, the reduction in the population within the noise limited service contour is 1.46 percent of the population within the allocated contour.

The proposed facility will not have a significant environmental impact. The facility, as a result, will not fall under Section 1.1307 of the Commission’s Rules. More detailed information concerning this response will be contained in section of this technical exhibit pertinent to the Tech Box portion of FCC Form 301.

The proposed facility will also comply with the provisions of Section 73.625 of the Commission's Rules. Additional information concerning this response will be provided in the subsequent Tech Box section of this exhibit. The proposed facility will utilize a non-directional antenna.

The requirements of Section 73.1030 of the Commission's Rules are applicable in this particular case, however, the applicant would be in compliance with this section of the Rules. The proposed facility would not operate in any of the radio astronomy zones described in Section 73.1030, however, it would be located in the vicinity of the Canandaigua, New York FCC monitoring facility. Utilizing the Commission's distance calculation methodology, the proposed facility would be located at a distance of 93.76 kilometers (58.26 miles) at an azimuth of 87.5 degrees true from this protected facility. Since the proposed facility would operate with an average effective radiated power of 210 kW at a distance in excess of 80 kilometers from this protected facility, it is believed that no further notification is required to be made concerning this facility based on Section 73.1030(c)(3)(iv) of the Commission's Rules.

The structure utilized for the facilities described in this application has been registered with the Commission. Specifically an Antenna Structure Registration Number of 1233154 has been assigned to the tower. The proposed facility would not require any modifications to the structure resulting in a necessary change to the current ASR data.

**Tech Box – FCC Form 301 Section III-D**

This section of the technical exhibit contains additional information relative to the responses required on the Tech Box section of FCC Form 301. Responses to items numbered 1 through 9 in this section have been answered in the appropriate blanks on the form page.

As previously mentioned, the proposed facility would utilize the antenna current in operation for the WCNY-TV NTSC facilities. This antenna is a Dielectric Communications (DIE) model TFU-26GBH-R 06 DC. This is a non-directional antenna that utilizes 0.75 degrees of electrical beam tilt and has no mechanical beam tilt. Items described under Section 73.625(c)(3) of the Commission's Rules have been omitted from this application since the proposed antenna is a non-directional antenna.

The tower utilized by the proposed DTV facility in the post-transition environment will also be utilized by WCNY-DT. In addition to this station, a construction permit has been issued for WCNY-FM (BPED-20070905ABE) as well as for W30AJ (BPTTL-20050110AAZ). The AM station in closest proximity to the tower is WVOA(AM), which located at a distance of 1.81 kilometers. The proposed facility would therefore comply with Section 73.625(c) of the Commission's Rules as it would not be part of an AM radiation system. The proposed facility would not affect the operation of WVOA(AM) as the use of the existing antenna would not require modifications to the structure.

As indicated on the form pages, the proposed facility would satisfy the post-transition interference protection provisions of Section 73.616 of the Commission's Rules. The interference provisions would be satisfied since the proposed facility would reduce the noise limited service contour relative to the allocation as previously discussed. Since no increase, but rather a decrease, in the predicted interference to other facilities would result, detailed interference studies have been omitted from this application.

The proposed WSTM-DT facilities would satisfy the principal community coverage requirements of Section 73.625 of the Commission's Rules. Exhibit E-2 is a map illustrating the predicted coverage of the proposed facility. As this map demonstrates, the entire community of

license, Syracuse, New York, would be served with a signal level of greater than 48 dBu. For reference purposes, the 41 dBu service contour has also been included on this map.

The proposed WSTM-DT facility would not constitute a substantial environmental impact as previously discussed. The absence of a significant environmental impact by the proposed facility is based on two considerations. The first of these considerations is the fact that the proposed facility would utilize the existing WSTM/WCNY transmission facility. Since no new excavation or construction would result, no additional environmental impact to the area would ensue.

Secondly, the proposed facility would not constitute an RF exposure hazard to persons at the site. In addition to the final WSTM-DT facilities, the tower would also support the transmitting antennas for WCNY-DT, WCNY-FM, and W30AJ. In the case of WCNY-FM and W30AJ, outstanding construction permits exist for those facilities to utilize the tower. Both of these facilities have been included in the calculations to determine the predicted power density at ground level.

A value of 0.3 was utilized for the relative field for radiation emanating from each antenna. This value along with other relevant parameters was utilized in the calculations of the predicted power density at ground level pursuant to the equations contained in OET Bulletin 65. The predicted power density for WSTM-DT and WCNY-DT is determined by the following equation:

$$S = \frac{33.4(E_{\text{rel}})^2(ERP)}{h^2}$$

For W30AJ the predicted power density at ground level is given by the following equation:

$$S = \frac{33.4(E_{Rel})^2(0.4ERP_V + ERP_A)}{h^2}$$

For WCNY-FM the predicted power density at ground level is given by the following equation:

$$S = \frac{33.4(E_{Rel})^2(ERP_H + ERP_V)}{h^2}$$

The relative field component for all facilities in these three equations is assumed to have 0.3 as a value. The effective radiated power is simply the maximum effective radiated power of the facilities in Watts for WSTM-DT, WCNY-DT. For WCNY-FM, which operates with circular polarization, the ERP is the sum of the horizontally and vertically polarized components. For W30AJ it is the sum of the aural ERP and four-tenths of the visual ERP in Watts. The denominator term in all cases is the height of the center of radiation minus 2 meters to accommodate the average human height. The contribution from each of the facilities is tabulated as follows:

Callsign	Channel	Relative Field	ERP (kW)	COR AGL (m)	Power Density μW/cm <sup>2</sup>
WSTM-DT	24	0.30	210	235	11.628
WCNY-DT	25	0.30	97	235	5.371
WCNY-FM	217 (91.3)	0.30	9.7	198	1.518
W30AJ	46	0.30	50	84.1	11.149
Sum of Contributors:					29.67

As this table indicates, the sum of all contributors on the tower is 29.67 μW/cm<sup>2</sup>. Under the applicable safety standard, the most stringent requirement is imposed on frequencies in the range of WCNY-FM. In that range, the uncontrolled environment limits the power density to 200 μW/cm<sup>2</sup>

for compliance. Since the predicted worst case power density is considerably less than this value, it is apparent that the proposed facility would not constitute an RF exposure hazard.<sup>1</sup>

In order to protect workers having access to the site from being exposed to levels of non-ionizing radiation which may exceed the applicable safety standards, the applicant certifies that it will coordinate with other present and future users of the site. Such coordination will include, but is not necessarily limited to, a reduction in transmitter power or cessation of operation.

**Affidavit**

The preceding statement and attached exhibits have been prepared by me, or under my direction, and are true and accurate to the best of my belief and knowledge.



Above signature is digitized copy of actual signature  
License Expires November 30, 2009

**Jeremy D. Ruck, PE**  
**March 13, 2008**

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<sup>1</sup> Contributions from the analog WSTM and WCNY facilities have been ignored in this post-transition study as each facility will not exist in the post-transition environment.

**WSTM.ALLOC**  
 ALLOCATION  
 Latitude: 42-56-42 N  
 Longitude: 076-07-07 W  
 ERP: 210.00 kW  
 Channel: 24  
 Frequency: 533.0 MHz  
 AMSL Height: 701.57 m  
 Horiz. Pattern: Omni  
 Vert. Pattern: Yes  
 Elec Tilt: 0.75  
 Prop Model: FCC Method

**WSTM.PRO**  
 PROPOSED  
 Latitude: 42-56-42 N  
 Longitude: 076-07-08 W  
 ERP: 210.00 kW  
 Channel: 24  
 Frequency: 533.0 MHz  
 AMSL Height: 689.0 m  
 Horiz. Pattern: Omni  
 Vert. Pattern: Yes  
 Elec Tilt: 0.75  
 Prop Model: FCC Method

**D.L. Markley & Associates, Inc.**

 Proposed 41 dBu F(50,90) Service Contour  
 Allocated 41 dBu F(50,90) Service Contour

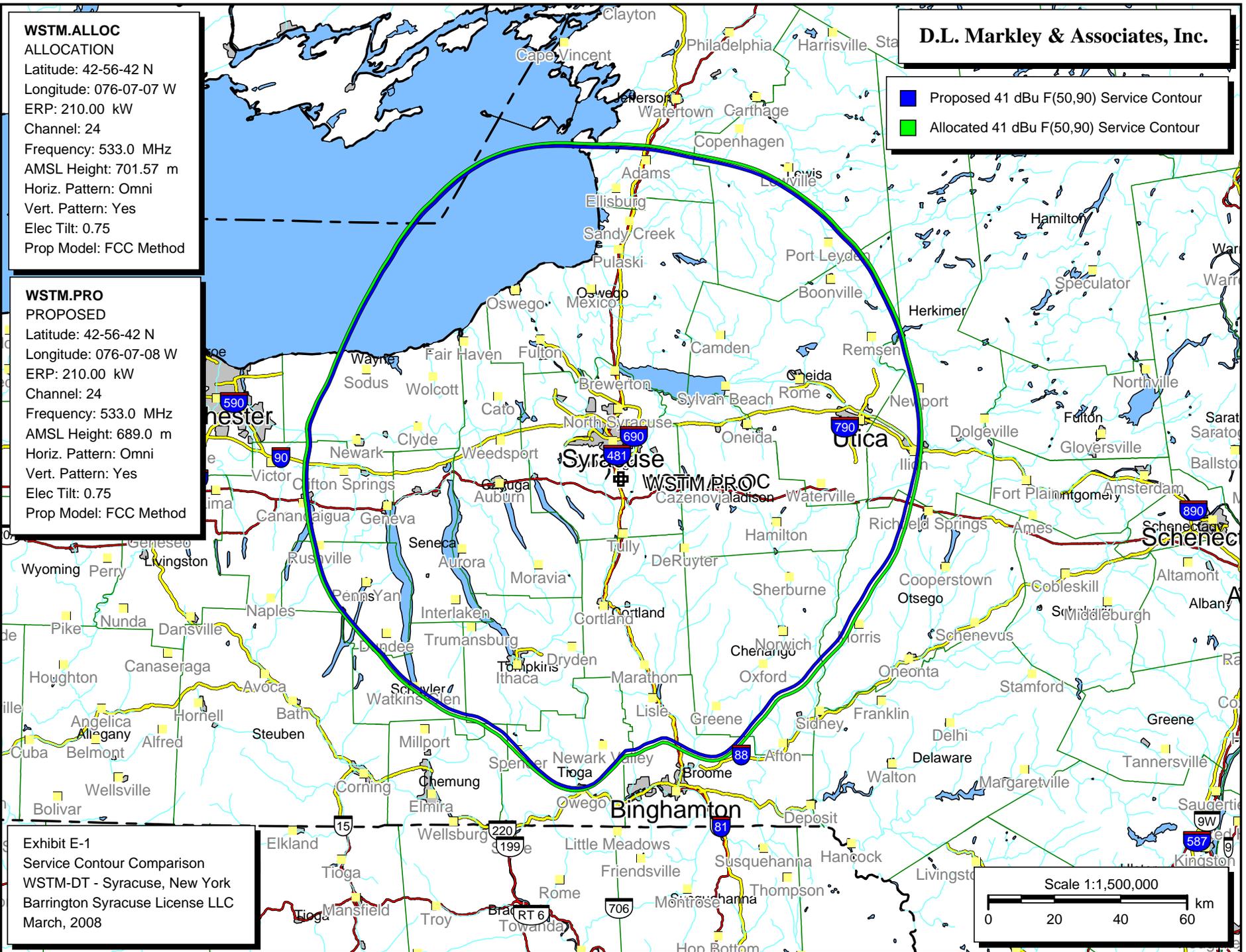
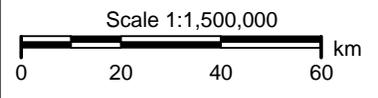


Exhibit E-1  
 Service Contour Comparison  
 WSTM-DT - Syracuse, New York  
 Barrington Syracuse License LLC  
 March, 2008



**WSTM.PRO**  
PROPOSED  
Latitude: 42-56-42 N  
Longitude: 076-07-08 W  
ERP: 210.00 kW  
Channel: 24  
Frequency: 533.0 MHz  
AMSL Height: 689.0 m  
Horiz. Pattern: Omni  
Vert. Pattern: Yes  
Elec Tilt: 0.75  
Prop Model: FCC Method

**D.L. Markley & Associates, Inc.**

- Proposed 48 dBu F(50,90) Service Contour
- Proposed 41 dBu F(50,90) Service Contour

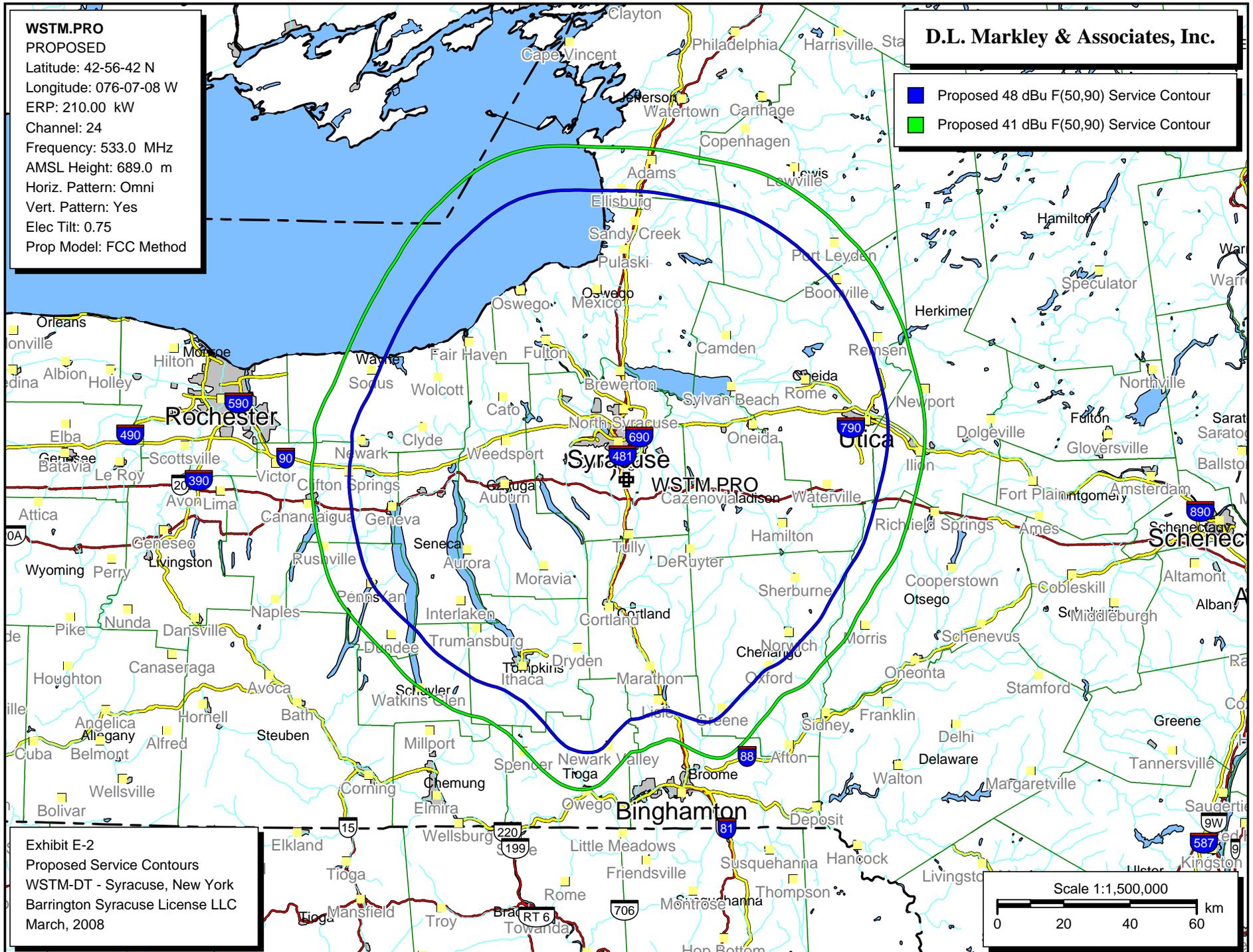


Exhibit E-2  
Proposed Service Contours  
WSTM-DT - Syracuse, New York  
Barrington Syracuse License LLC  
March, 2008

