

**ENGINEERING REPORT  
MINOR CHANGE APPLICATION**

For the NCE-FM Facilities of

**WHBP(FM) – Harbor Springs, MI  
CH211C3 – 90.1 MHz  
BLED-20110517ACU  
(Facility ID: 172716)**

Request for a Site Change;  
Power Increase;  
New Directional Antenna Pattern  
& increase to Class C2 Parameters

July, 2015

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**MUNN-REESE, INC.**  
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# **TABLE OF CONTENTS**

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Discussion of Report

## **Main Studio Location**

### **Community Coverage**

Exhibit 16.1 - Copy of USGS Topographic Map of Proposed Site

Exhibit 16.2 - Copy of FAA-1A Survey for Proposed Site

Exhibit 16.3 - Vertical Plan of Antenna System and Support Tower

Exhibit 16.4 - Tabulation of Operating Conditions

Exhibit 16.5 - Present vs Proposed Contour Study

## **Interference Requirements**

### **Contour Overlap Requirements**

Exhibit 18.1 - Tabulation of Non-Commercial Allocation

Exhibit 18.2 - Contour Protection Toward WLJN-FM.L - Traverse City, MI

Exhibit 18.3 - Contour Protection Toward WHWG.L - Trout Lake, MI

Exhibit 18.4 - Tabulation of Proposed Directional Antenna

**Spacing Requirements** (none)

**Grandfathered Short-Spaced Requirements** (none)

**Contour Protection Requirements** (none)

**TV Channel 6 Protection Requirements** (none)

### **RF Radiation Study Requirement**

Exhibit 24.1 - RF Study

(Exhibit Numbering is in response to FCC Online Form 340, Section VII)

# **DISCUSSION OF REPORT**

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This firm was retained to prepare the required engineering report in support of this Minor Construction Permit Application for WHBP(FM) - Harbor Springs, MI. Presently WHBP(FM) is licensed under File No. BLED-20110517ACU to operate with Class C3 operating parameters of 1.2 kW at a COR of 545 meters AMSL. This Minor Modification Application specifies Class C2 operating parameters of 8.5 kW at a COR of 486 meters AMSL from a new tower site location. The proposed operation will continue to serve the community of Harbor Springs, MI. Continued use of a directional antenna pattern will be employed.

The proposed site for the Class C2 operation meets all the contour protection requirements towards other domestic stations in the allocation. A tabulation of the proposed protections to each of the other relevant stations is found in **Exhibit 18.1**. There are two (2) other facilities, WLJN-FM.L - Traverse City, MI; and WHWG(FM).L - Trout Lake, MI, which are deemed close enough to require further study. An FMCommander™ map of the relevant protected and interference contours toward each relevant facility has been supplied in **Exhibit(s) 18.2 to 18.3**. The applicant would like to note that while contour overlap does exist with WLJN-FM.L; the areas of contour overlap are wholly contained over Lake Michigan and therefore allowable pursuant to §73.509. It is believed there is sufficient clearance to preclude the need for further study with respect to the other domestic protected stations shown in the allocation study. Tabulations for each contour employed will be supplied to the FCC upon request.

The transmitter site is located within 320 km of the common border between the United States and Canada. Full protection will be afforded all Canadian facilities as noted in **Exhibit 18.1**. The Transmitter site is also located within the affected radius of multiple Canadian Channel 6 Television Vacant Allotments. Full protection will be afforded each TV-6 Allotment as noted in **Exhibit 18.1**. Additional Canadian protection showings will be provided upon request.

The proposed service contours have been calculated in accordance with the Rules, and the data obtained has been tabulated and plotted in this report. The plotted service contour is found as **Exhibit 16.5** of this report. This exhibit shows the overall service provided by the 1.0 mV/m contour of the facility. The tabulation of the distances to the respective contours shown in this discussion is based on the use of the standard eight cardinal bearings, which were also used for the computation of the HAAT. However, the plotted contour shown in **Exhibit 16.5** is based on the use of a full 360 terrain radials and the USGS 03 Second Terrain Database.

The antenna will be mounted on a new 136.8 meter AGL tower to be constructed. TOWAIR has been consulted and the proposed tower requires Antenna Structure Registration. The FAA will be notified of the proposed new tower construction and ASR filed after receipt of FAA "Determination of No Hazard". A copy of USGS topographic mapping of the proposed site has been included in **Exhibit 16.1**. An FAA-1A Site Survey for the proposed site has already been undertaken and included in **Exhibit 16.2**. A vertical antenna plan depicting the placement of the antenna on the tower has been included in **Exhibit 16.3**.

The remainder of the information in this report and exhibit numbering is responsive to the Rules of the Commission, and provides the data for FCC Form 340.

## DISCUSSION OF REPORT (continued)

The FM Broadcast facility proposed in this application is within the uncontrolled limits as noted in the supplied **Exhibit 24.1** study. The RF radiation will not result in human exposure to radiofrequency radiation in excess of the applicable safety standards specified in §1.1310 of the Commission's rules. The facility will be properly marked with signs, and entry will be restricted by means of fencing with locked doors and/or gates. Any other means as may be required to protect employees and the general public will be employed.

***In the event work would be required in proximity to the antenna such that the person or persons working in the area would be potentially exposed to fields in excess of the guidelines set forth in OET Bulletin No. 65 (Edition 97-01), the transmitter power will be reduced or the station will cease operation during the critical period.***

**DISTANCES TO CONTOURS:** The table below shows the distances to the 1.0 mV/m contour from the proposed facility using an ERP of 8.5 kW at an HAAT of 254 meters. These distances have been calculated based on the FCC F(50-50) curves.

N. Lat. = 453407.0    W. Lng. = 850235.0 HAAT and Distance to Contour, FCC, FM 2-10 Mi, 51 pts Method - USGS 03 SEC						
Azi.	AV EL	HAAT	ERP kW	dBk	Field	60-F5
000	198.1	287.9	1.2599	1.00	0.385	32.34
045	245.2	240.8	5.9264	7.73	0.835	41.64
090	245.2	240.8	8.5000	9.29	1.000	44.62
135	284.9	201.1	2.6847	4.29	0.562	32.41
180	291.8	194.2	0.5313	-2.75	0.250	21.95
225	208.7	277.3	1.1016	0.42	0.360	30.73
270	193.6	292.4	8.2469	9.16	0.985	47.81
315	191.8	294.2	8.1634	9.12	0.980	47.83
Ave El= 232.40 M    HAAT= 253.60 M    AMSL= 486						