

# Exhibit 13.1

## Description of Proposed Antenna System

### DAYTIME/NIGHTTIME ANTENNA SYSTEM

- The proposed daytime facility will operate with a daytime directional power of 4.4 kW utilizing a four tower array. The proposed nighttime facility will operate with a nighttime directional power of 1.6 kW utilizing the same four towers, however an alternate set of phasor operating parameters will be employed. All four towers will consist of vertical, guyed uniform cross-section steel towers of unequal heights mounted on base piers and insulators. The radiating element for Tower One (1) will stand 63.0° or 82.0 meters above a 0.9 meter base pier and insulator. The radiating element for Tower Two (2) will stand 70° or 91.1 meters above a 0.9 meter base pier and insulator. The radiating element for Tower Three (3) will stand 70.0° or 91.1 meters above a 0.9 meter base pier and insulator. The radiating element for Tower four (4) will stand 63.0° or 82.0 meters above a 0.9 meter base pier and insulator. Accounting for a 0.9 meter aviation beacons on each tower, the top of Tower One (1) will stand at 83.8 meters AGL; the top of Tower Two (2) will stand at 92.9 meters AGL; the top of Tower Three (3) will stand at 92.9 meters AGL; and the top of Tower Four (4) will stand at 83.8 meters AGL.
- All four towers will employ toploading consisting of three wires in the uppermost guy wire set. The outer ends of the top-loaded guy wires will be connected to each other to form a “top-hat”. Tower One (1) will employ 12.0° of top-loading for operation on 640 kHz. Tower Two (2) will employ 12.0° of top-loading for operation on 640 kHz. Tower Three (3) will employ 12.0° of top loading for operation on 640 kHz. Tower Four (4) will also employ 12.0° of top loading for operation on 640 kHz.
- The ground system will consist of 120 buried copper radials extending 117.1 meters (384.2 ft) from the base of each tower. Radials will be shortened and bonded to transverse straps along intersections between the towers or at the tentative property boundaries. All radials will consist of No. 10 soft-drawn copper wire or equivalent.
- The proposed daytime antenna system theoretical parameters are as follows:

Call: WMFN(AM).P(DAYTIME)		Freq: 640 kHz		Lat: 41-18-04 N							
PEOTONE, IL, US		Power: 4.4 kW		Lng: 087-50-07 W							
Theo RMS: 592.57 mV/m @ 1km @ 4.4 kW											
#	Field Ratio	Phase (deg)	Spacing (deg)	Orient (deg)	Height (deg)	Ref Swtch	TL Swtch	A (deg)	B (deg)	C (deg)	D (deg)
1	1.000	0.0	0.0	0.0	-999.0	0	1	63.0	12.0	0.0	0.0
2	1.060	-6.5	175.0	305.0	-999.0	0	1	70.0	12.0	0.0	0.0
3	1.110	108.5	84.0	250.0	-999.0	0	1	70.0	12.0	0.0	0.0
4	1.010	102.0	175.0	305.0	-999.0	1	1	63.0	12.0	0.0	0.0
Theoretical RMS: 592.57 mV/m@1km						Erss = 760.28 mV/m@1km					
Standard RMS: 622.59 mV/m@1km						Q = 20.98 mV/m@1km					

- The proposed nighttime antenna system theoretical parameters are as follows:

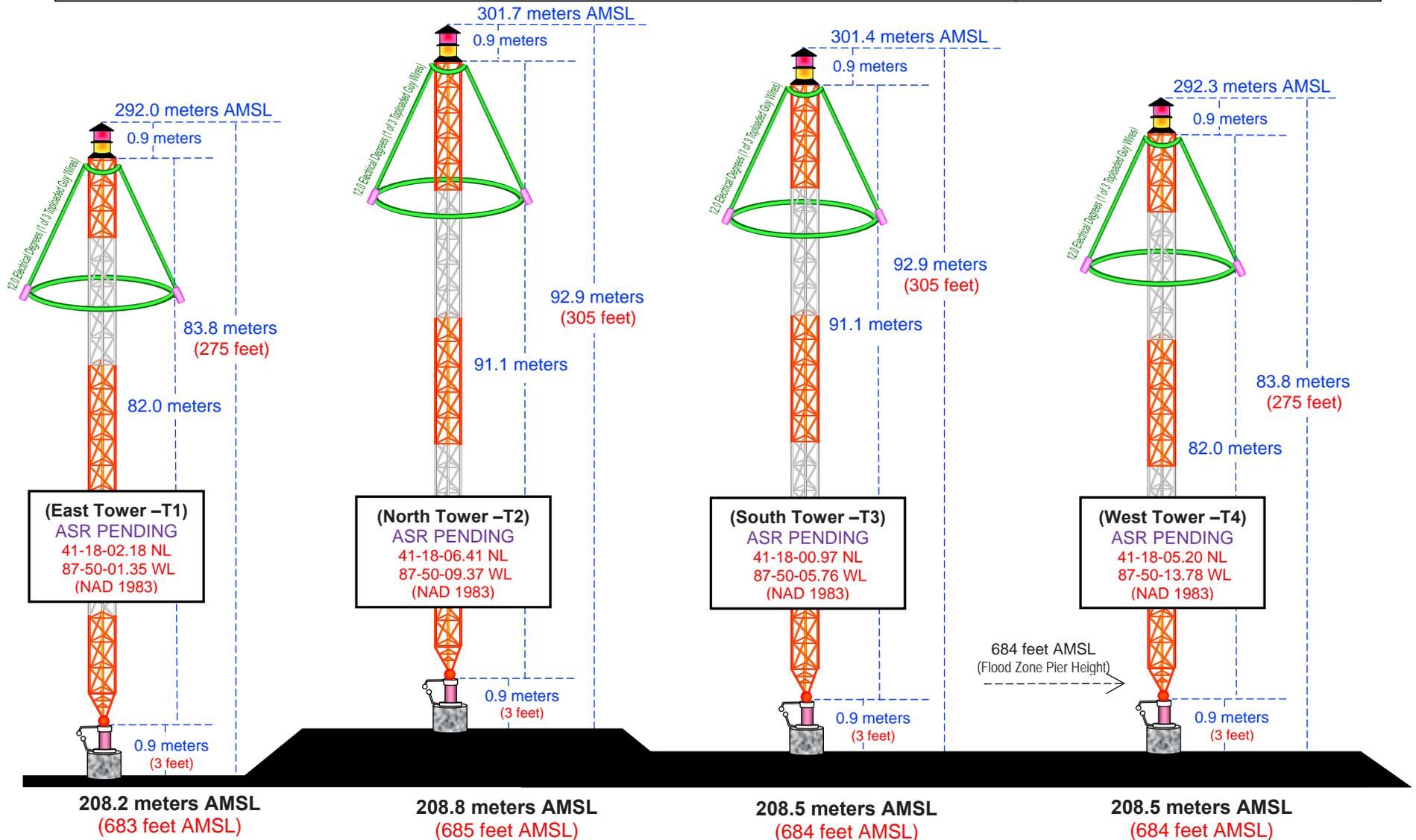
Call: WMFN.P(Nighttime)		Freq: 640 kHz		Lat: 41-18-04 N							
PEOTONE, IL, US		Power: 1.6 kW		Lng: 087-50-07 W							
Theo RMS: 377.57 mV/m @ 1km @ 1.6 kW											
#	Field Ratio	Phase (deg)	Spacing (deg)	Orient (deg)	Height (deg)	Ref Swtch	TL Swtch	A (deg)	B (deg)	C (deg)	D (deg)
1	1.000	0.0	0.0	0.0	-999.0	0	1	63.0	12.0	0.0	0.0
2	0.965	-66.0	175.0	305.0	-999.0	0	1	70.0	12.0	0.0	0.0
3	1.000	104.5	84.0	250.0	-999.0	0	1	70.0	12.0	0.0	0.0
4	1.150	56.0	175.0	305.0	-999.0	1	1	63.0	12.0	0.0	0.0
Theoretical RMS: 377.57 mV/m@1km						Erss = 510.32 mV/m@1km					
Standard RMS: 396.67 mV/m@1km						Q = 12.76 mV/m@1km					

- The sampling system for the proposed array will conform to §73.68 of the Commission's Rules regarding approved sampling systems.

# Exhibit 13.2 Vertical Plan of Antenna System

The site is located on W. County Line Road, 0.85 km northeast of the “IL” intersection of W. County Line Road and South Center Rd, the city of Peotone, Will County, Illinois.

**Site Location (NAD 27)**  
 NL: 41° 18' 04"  
 WL: 87° 50' 07"  
 (41-18-03.69 NL / 87-50-07.57 WL NAD 1983)



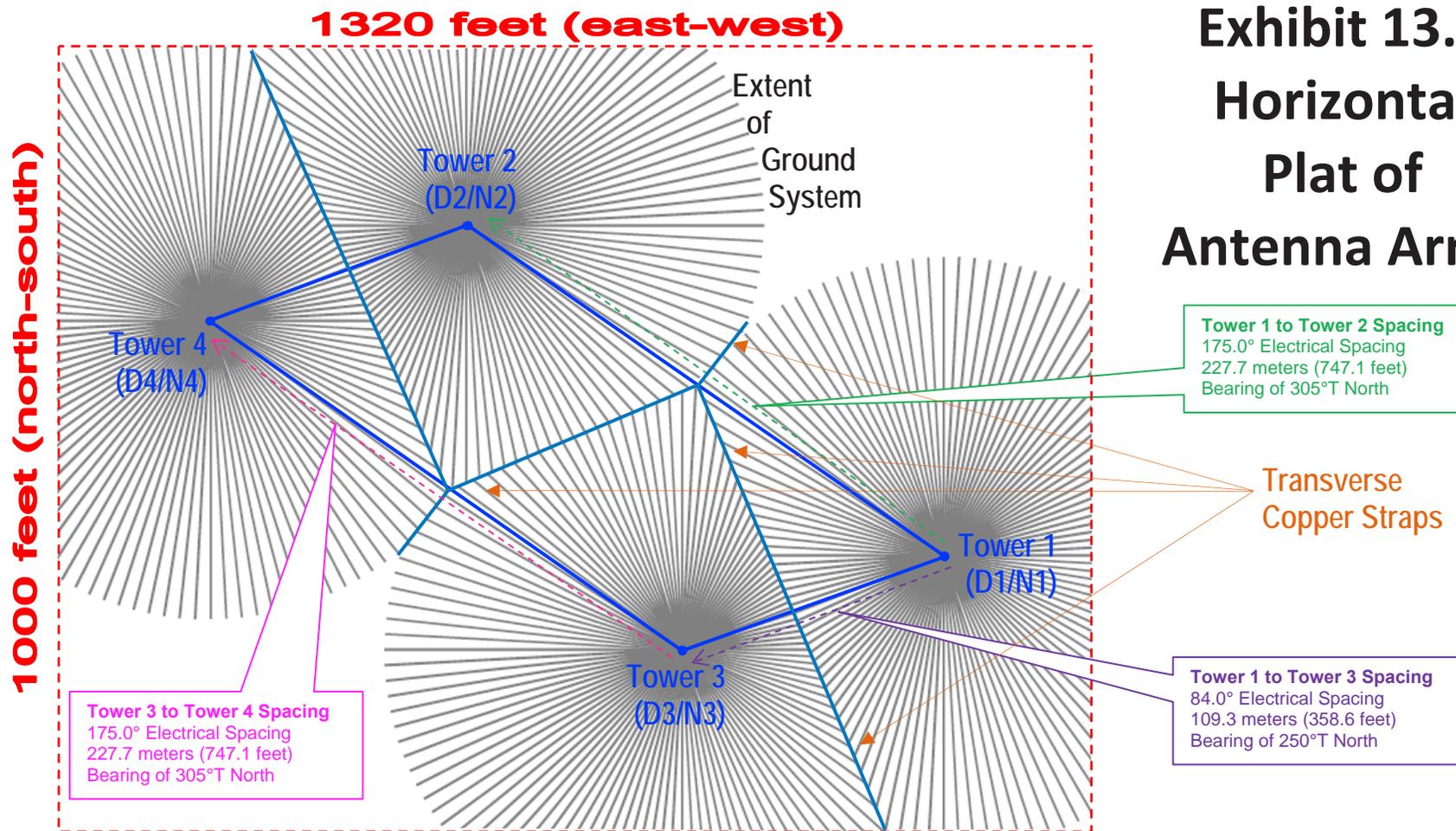
**(West Tower -T4)**  
 ASR PENDING  
 41-18-05.20 NL  
 87-50-13.78 WL  
 (NAD 1983)

684 feet AMSL  
 (Flood Zone Pier Height)

Guy Wires  
 Not Shown  
 Drawing is not to Scale

**MUNN-REESE, INC.**  
 Broadcast Engineering Consultants  
 Coldwater, MI 49036  
 1(517)278-7339

# Exhibit 13.3 Horizontal Plat of Antenna Array



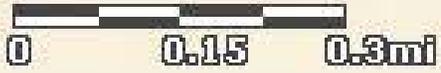
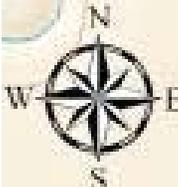
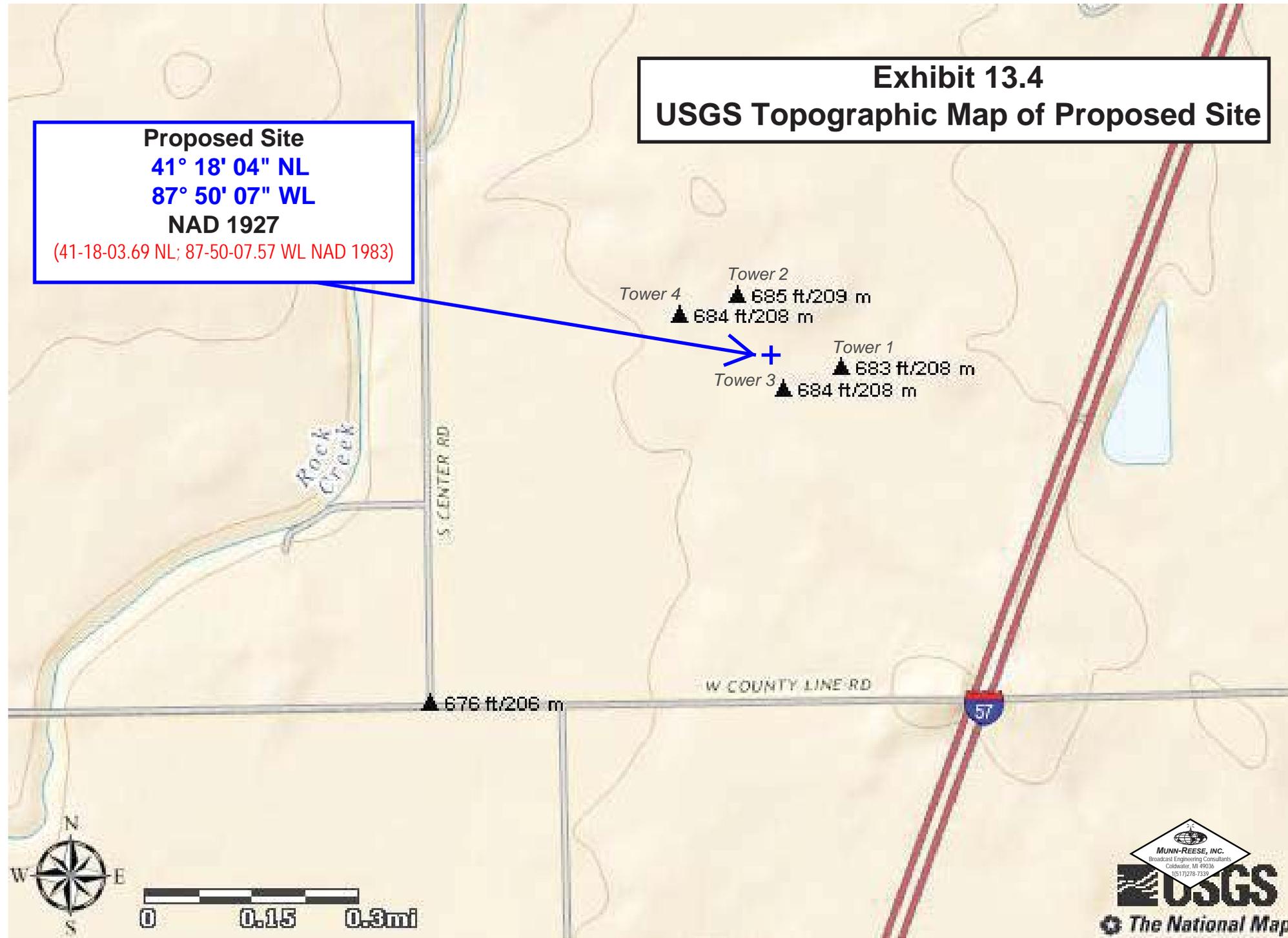
The ground system will consist of 120 buried copper radials extending 117.1 meters (384.2 ft) from the base of each tower. Radials will be shortened and bonded to transverse straps along intersections between the towers. All radials will consist of No. 10 soft-drawn copper wire or equivalent.



# Exhibit 13.4 USGS Topographic Map of Proposed Site

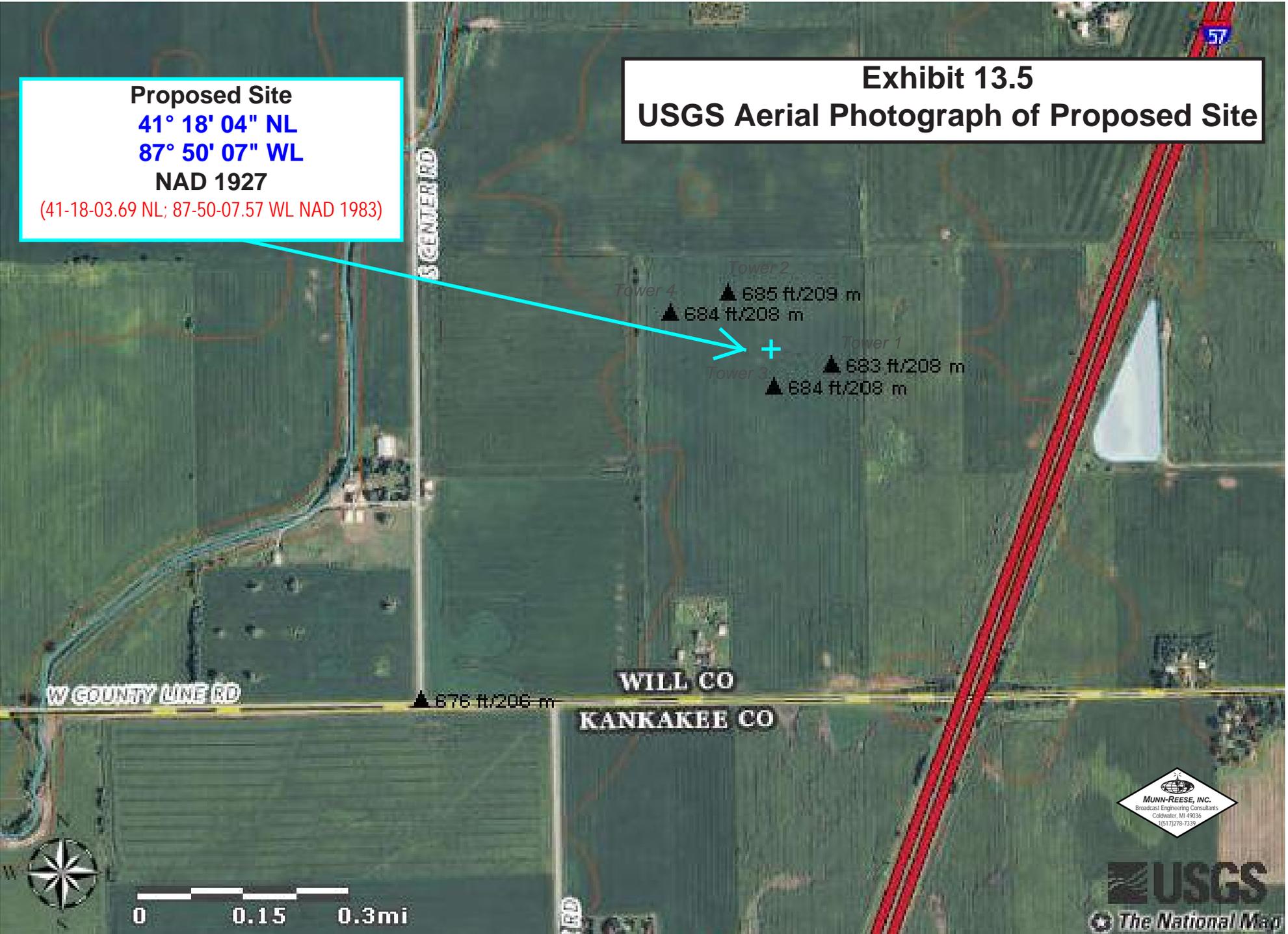
**Proposed Site**  
**41° 18' 04" NL**  
**87° 50' 07" WL**  
**NAD 1927**  
*(41-18-03.69 NL; 87-50-07.57 WL NAD 1983)*

Tower 2 ▲ 685 ft/209 m  
Tower 4 ▲ 684 ft/208 m  
Tower 1 ▲ 683 ft/208 m  
Tower 3 ▲ 684 ft/208 m



# Exhibit 13.5 USGS Aerial Photograph of Proposed Site

**Proposed Site**  
**41° 18' 04" NL**  
**87° 50' 07" WL**  
**NAD 1927**  
*(41-18-03.69 NL; 87-50-07.57 WL NAD 1983)*



# Exhibit 13.7 Present & Proposed Daytime Service Contour Study

Map M3 Ground Conductivity  
U.S. Census 2010 PL Datum

**WMFN.L**  
Zeeland, MI  
BL19941014AE  
FAC ID: 55089  
Freq: 640 kHz  
Class: B  
Latitude: 42-48-59 N  
Longitude: 085-57-24 W  
Power: 1.2 kW  
RMS: 308.2 mV/m @1km  
# Towers: 1  
# Augs: 0

**5.0 mV/m Contour**  
Total Population: 402,569  
Coverage Area: 1,537 sq. km

**2.0 mV/m Contour**  
Total Population: 869,345  
Coverage Area: 5,541 sq. km

**0.5 mV/m Contour**  
Total Population: 1,708,543  
Coverage Area: 26,695 sq. km

Present 0.5 mV/m

Present 2.0 mV/m

Present 5.0 mV/m

Proposed 0.5 mV/m

Proposed 2.0 mV/m

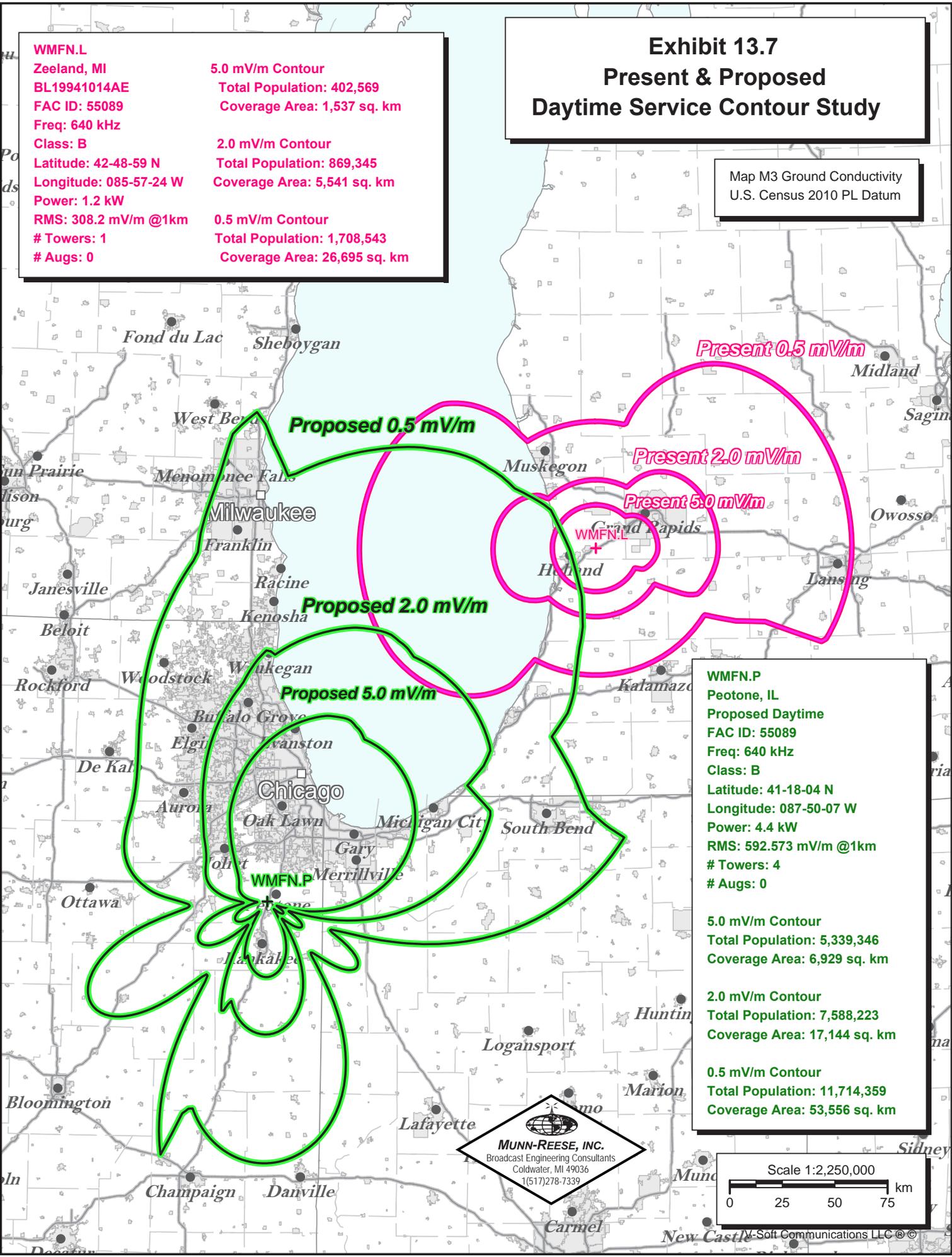
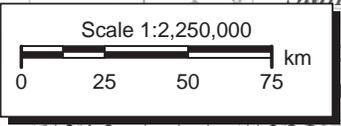
Proposed 5.0 mV/m

**WMFN.P**  
Peotone, IL  
Proposed Daytime  
FAC ID: 55089  
Freq: 640 kHz  
Class: B  
Latitude: 41-18-04 N  
Longitude: 087-50-07 W  
Power: 4.4 kW  
RMS: 592.573 mV/m @1km  
# Towers: 4  
# Augs: 0

**5.0 mV/m Contour**  
Total Population: 5,339,346  
Coverage Area: 6,929 sq. km

**2.0 mV/m Contour**  
Total Population: 7,588,223  
Coverage Area: 17,144 sq. km

**0.5 mV/m Contour**  
Total Population: 11,714,359  
Coverage Area: 53,556 sq. km

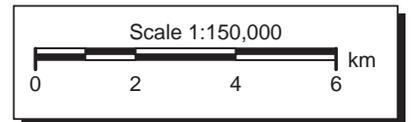
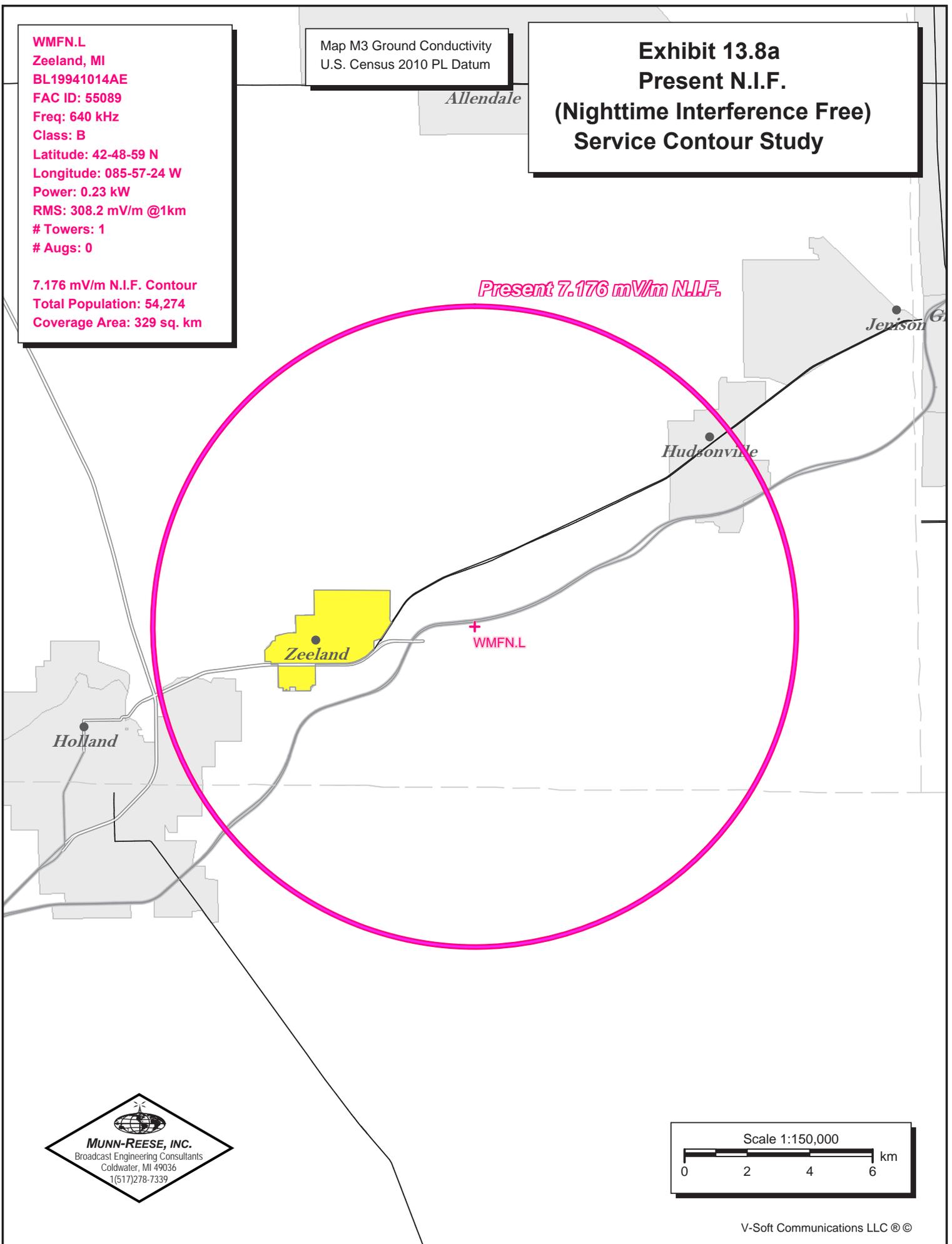


**WMFN.L**  
Zeeland, MI  
BL19941014AE  
FAC ID: 55089  
Freq: 640 kHz  
Class: B  
Latitude: 42-48-59 N  
Longitude: 085-57-24 W  
Power: 0.23 kW  
RMS: 308.2 mV/m @1km  
# Towers: 1  
# Augs: 0

7.176 mV/m N.I.F. Contour  
Total Population: 54,274  
Coverage Area: 329 sq. km

Map M3 Ground Conductivity  
U.S. Census 2010 PL Datum

### Exhibit 13.8a Present N.I.F. (Nighttime Interference Free) Service Contour Study



**WMFN.P**  
 Peotone, IL  
 Proposed Nighttime  
 FAC ID: 55089  
 Freq: 640 kHz  
 Class: B  
 Latitude: 41-18-04 N  
 Longitude: 087-50-07 W  
 Power: 1.6 kW  
 RMS: 377.569 mV/m @1km  
 # Towers: 4  
 # Augs: 0

9.413 mV/m N.I.F. Contour  
 Total Population: 1,781,634  
 Coverage Area: 2,202 sq. km

Map M3 Ground Conductivity  
 U.S. Census 2010 PL Datum

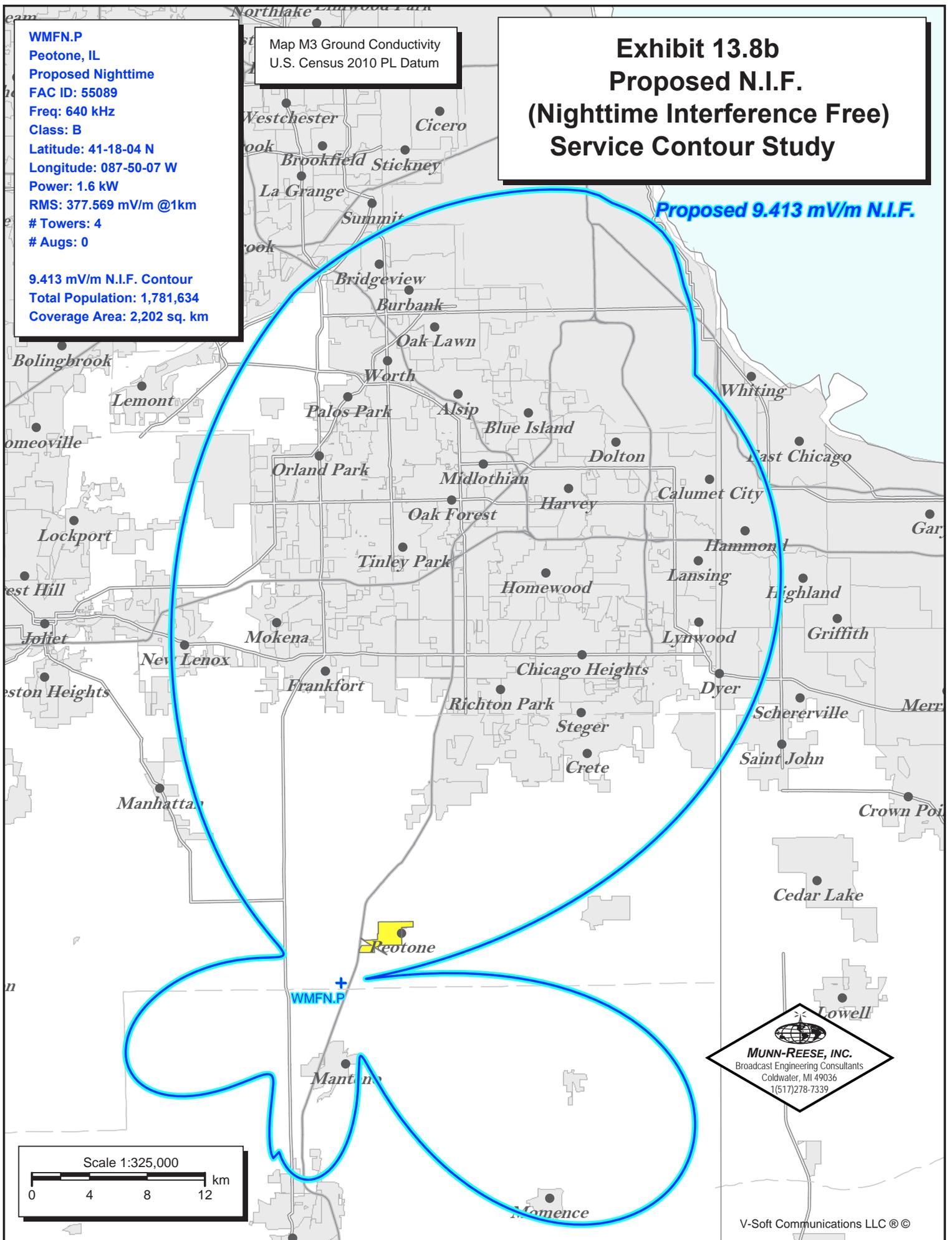
# Exhibit 13.8b

## Proposed N.I.F.

### (Nighttime Interference Free)

### Service Contour Study

**Proposed 9.413 mV/m N.I.F.**



# Exhibit 13.9 Proposed Daytime & Nighttime 1.0 V/m Blanket Contour Study

**WMFN.P(Daytime)**  
Peotone, IL  
Proposed Daytime  
FAC ID: 55089  
Freq: 640 kHz  
Class: B  
Latitude: 41-18-04 N  
Longitude: 087-50-07 W  
Power: 4.4 kW  
RMS: 592.573 mV/m @1km  
# Towers: 4  
# Augs: 0

**WMFN.P(Nighttime)**  
Peotone, IL  
Proposed Nighttime  
FAC ID: 55089  
Freq: 640 kHz  
Class: B  
Latitude: 41-18-04 N  
Longitude: 087-50-07 W  
Power: 1.6 kW  
RMS: 377.569 mV/m @1km  
# Towers: 4  
# Augs: 0

1.0 Vm "Blanket" Contour  
Total Population: 13

1.0 Vm "Blanket" Contour  
Total Population: 13

Map M3 Ground Conductivity  
U.S. Census 2010 PL Datum

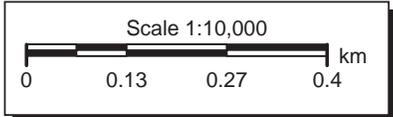
**Proposed Daytime 1.0 V/m "Blanket" Contour**

**Proposed Nighttime 1.0 V/m "Blanket" Contour**

W Kennedy Rd

+  
13

**WMFN.P(Daytime)**  
**WMFN.P(Nighttime)**  
+



"+" Represents U.S. Census 2010 PL Population Centroid Datum