The SEMARC Repeaters

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Overview

- Repeater Basics
- Three SEMARC Repeaters
- Configurations
- Predicted Coverage Maps
- Fun Facts
- Q&A

Why Deploy Repeaters?

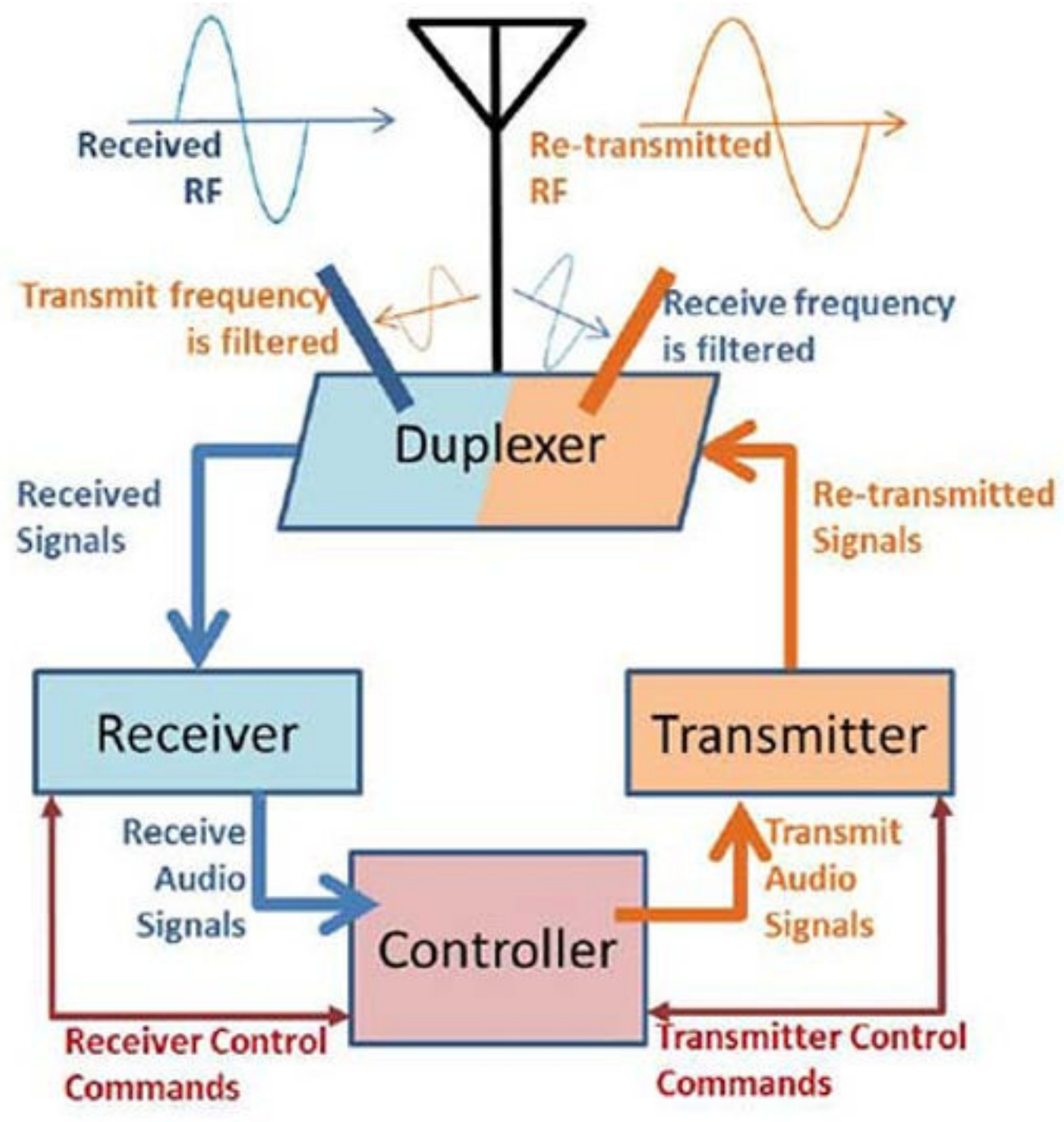
- The function of a repeater is to provide communications between stations that can't otherwise communicate because of terrain, equipment limitations, or both.

    A. Overcome ‘line of sight’ limitations

    B. Allow low power devices, such as HTs, to extend their coverage area

Typical Repeater Design

Block Diagram



Three Semarc Repeaters

- 146.985 - W0CGM - Cottage Grove Minnesota
- 147.180 - W0CGM - Forest Lake Minnesota (Washington County ARES Coverage North)
- 147.180 - W0CGM - Newport, Minnesota (Washington County ARES Coverage South)

146.985 Cottage Grove

The Mighty 985

- - (minus) Offset
- No Tone
- Split Receive / Transmit sites
- GE MASTR II with EF Johnson / S-Com controllers (Duplexer Cavities Not Required)
- Receive site incorporates a high-gain preamplifier to pull in lower power stations such HT's
- Two Monoband Vertical Antennae - XMIT antenna @ 200ft
- Inter-site links via UHF and associated link antennae
- 75 Watts Shore Power / No Emergency Power

147.180 Forest Lake

ARES Coverage Area North

- + (plus) Offset
- Tone 100.0
- Motorola 5000 Repeater / Duplexer Cavities
- Four bay antenna fed by 7/8” hardline @ 130ft
- 60 watts Shore Power / 60 Watts Emergency Power

147.180 Newport

ARES Coverage Area South

- + (plus) Offset
- Tone 74.4 FM Analog / DCS 023 Fusion Digital
- Yaesu-DR-2x / Wacom Duplexer Cavities
- Four bay antenna fed by 7/8” hardline @ 160ft
- 50 watts Shore Power / 20 Watts Emergency Power

A note about 147.180

- These two repeaters on the same frequency, and in such close proximity, can interfere with each other which is typically not desirable nor allowed

- Because both are operated by SEMARC, that interference is allowed by the Minnesota Repeater Council as an exception

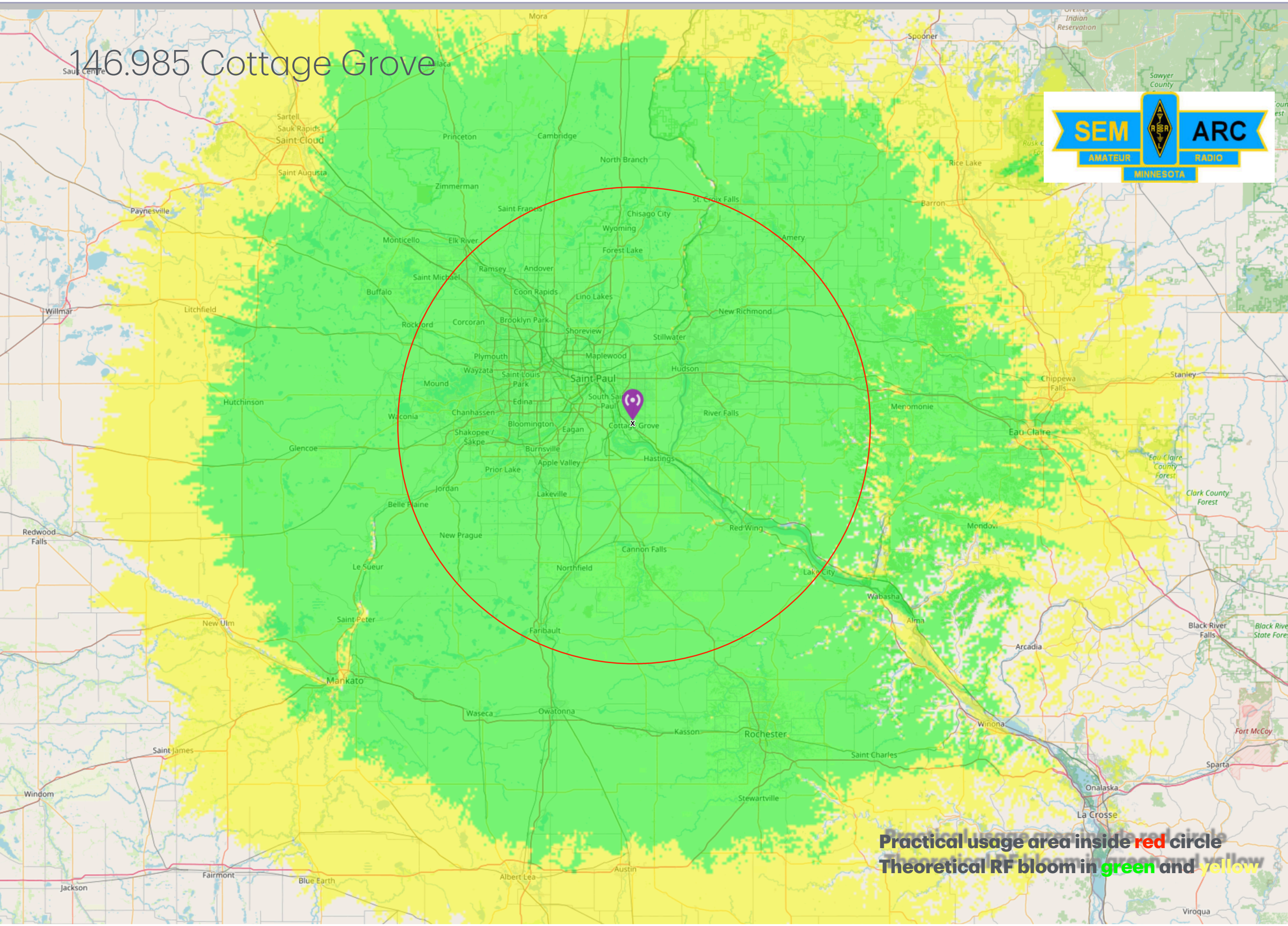
- Users should be aware that *this interference may occur*

Predicted Coverage Maps

Your Mileage May Vary

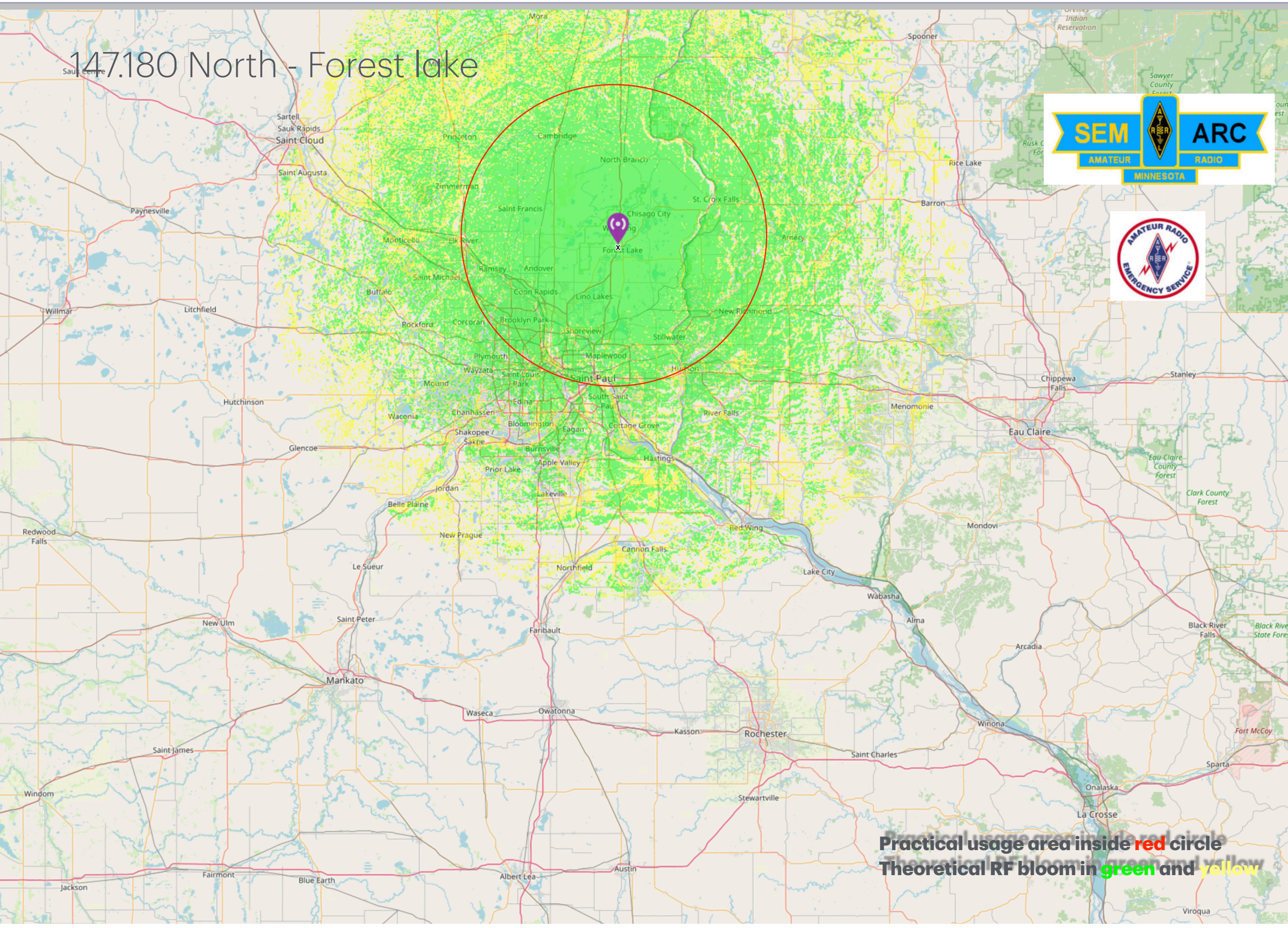
- Assumptions
    - 6dBi gain on XMIT antenna
    - 3dB losses in feedline
    - The theoretical RF Bloom map center represents a general location in the named City, not the exact location
    - The Red Circle indicates the practical operating area - receiving a signal is not a guarantee that you can access the repeater

146.985 Cottage Grove

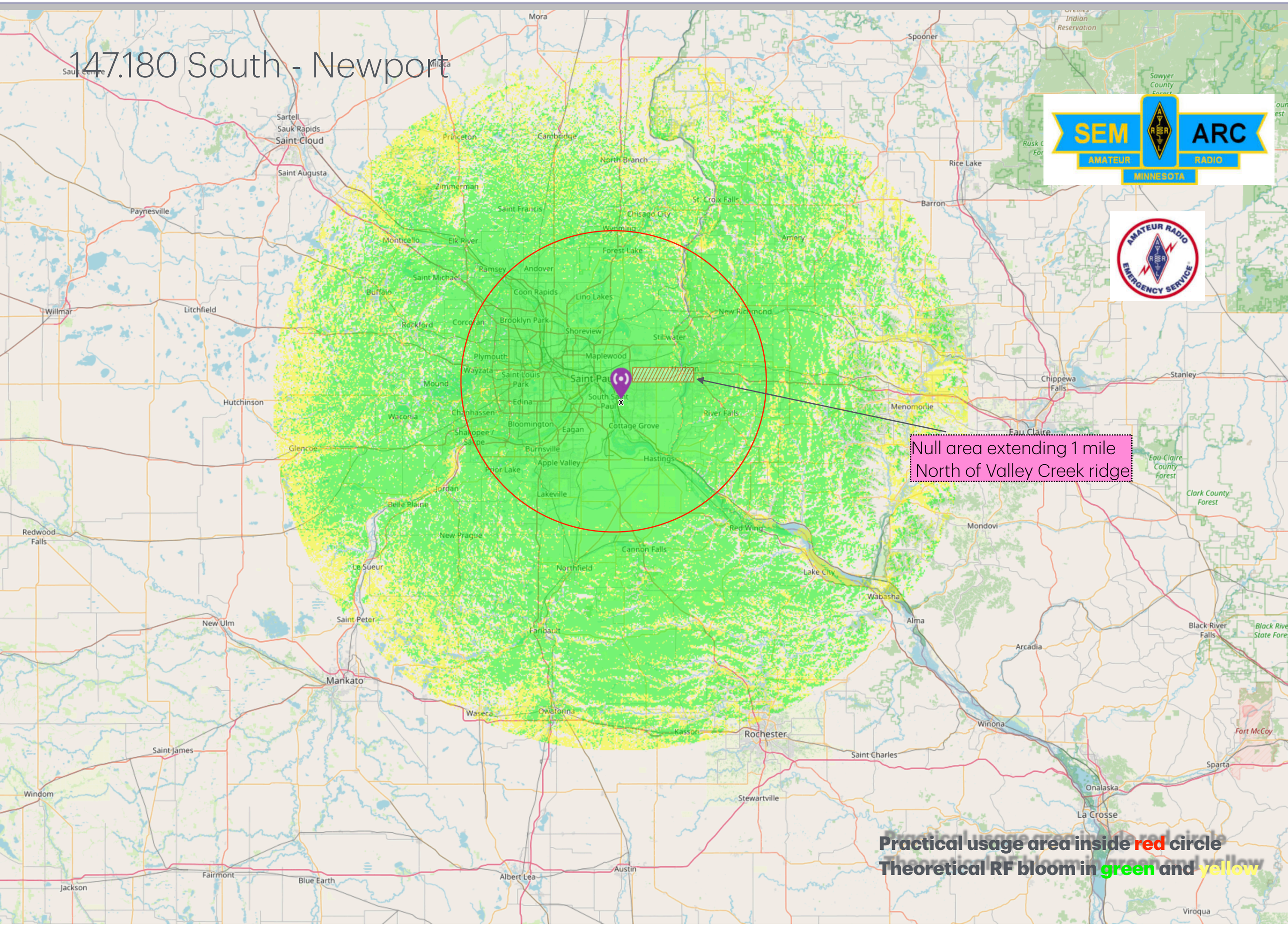


Practical usage area inside red circle
Theoretical RF bloom in green and yellow

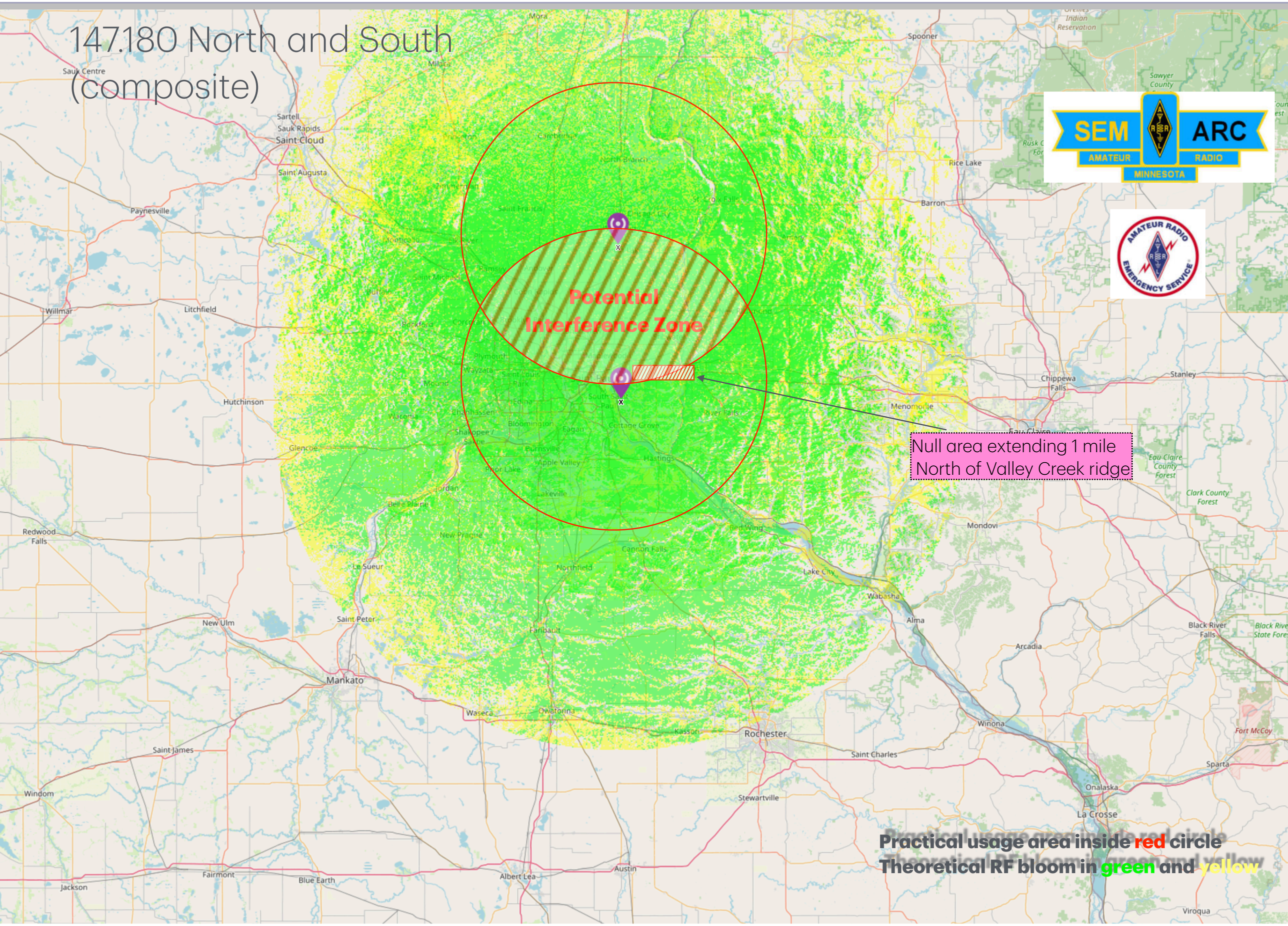
147.180 North - Forest lake



147.180 South - Newport



147.180 North and South (composite)



Fun Facts

- Brian McInerney, N0BM, has a pretty good sense of humor - *for a lawyer…*

Q&A

Notes:


SEM
ARC
AMATEUR
RADIO
MINNESOTA