



WBRS Spectrum Study – Expansion of 100.1 FM Signal Coverage

Summary Findings

March 14, 2006

APPENDIX A

CONTOUR MAPS

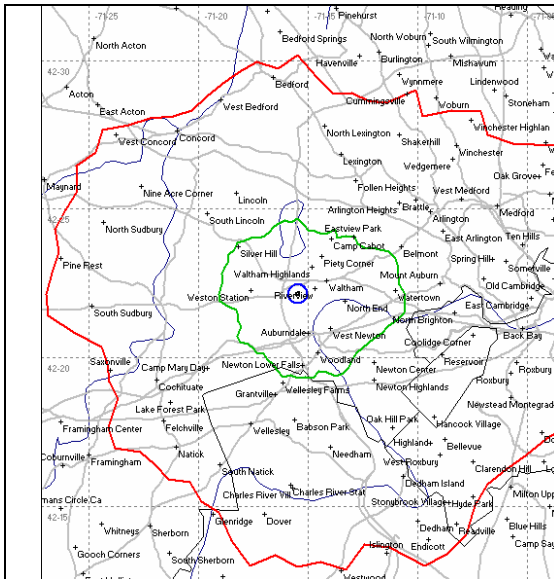
PREDICTED COVERAGE MAPS

For the max-strength plots, the colors represent the following values:

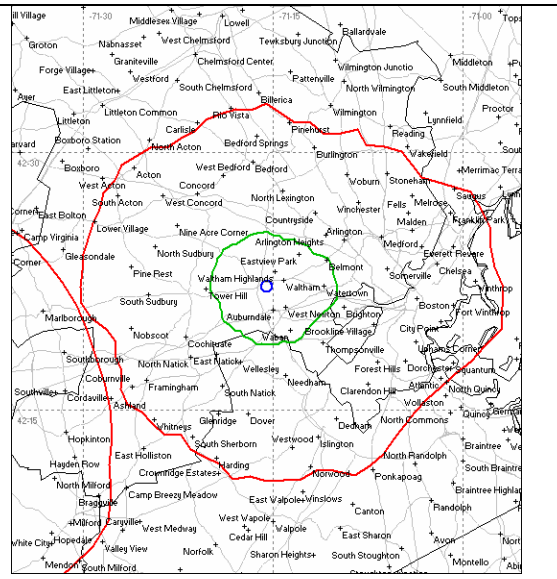
White (center)	=	100 dB+ (primarily to indicate the facility's location)
Red	=	70 – 100 dB (city-grade signal)
Yellow	=	54 – 70 dB (receivable by most radios)
Green	=	40 – 54 dB (receivable, but only by good radios with good antennas)
White (outer)	=	40 – 0 dB (not receivable)

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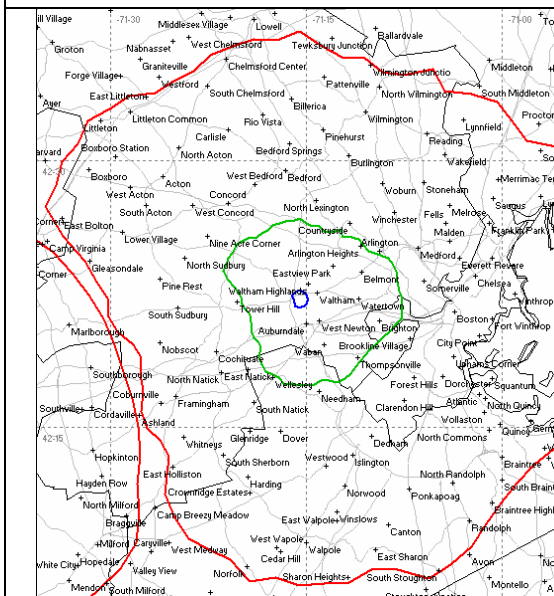
FCC CONTOUR MAPS



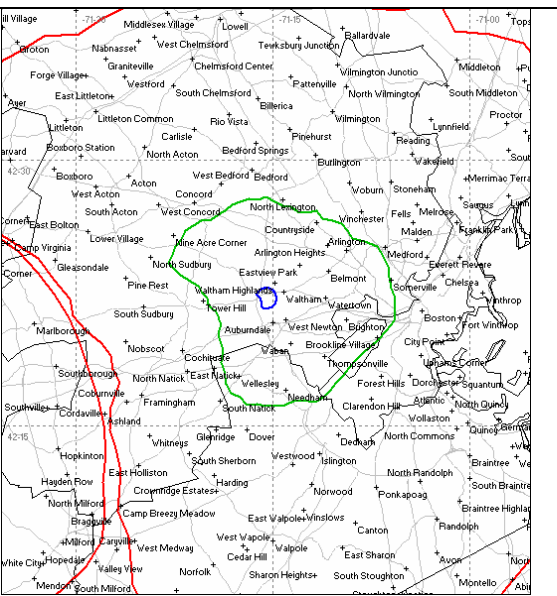
Existing WBRS facility
ND 25 W @ 49.88M HAAT



Water Tank
ND 25 W @ 75.68 M HAAT



Water Tank
DIR 100 W @ 75.68M HAAT

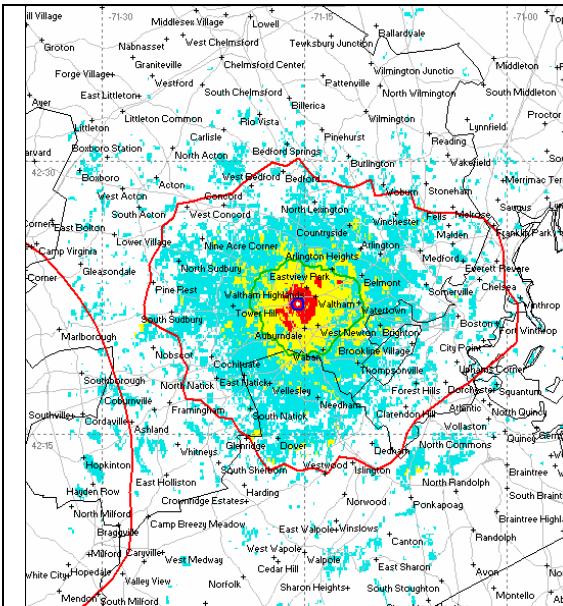


Water Tank
DIR 250 W @ 75.68 M HAAT

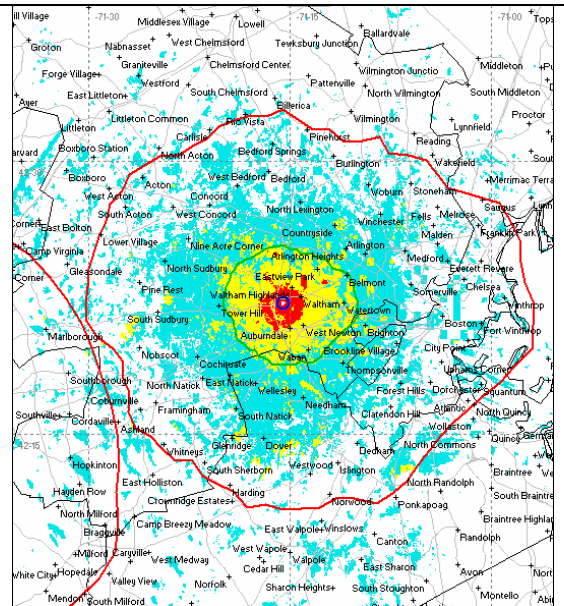
These contour maps represent existing WBRS facility and three hypothetical facilities on the Water Tank adjacent to the Brandeis campus. The red contour on the left in some maps is the 60dBu F(50,50) protected contour of WAFX 100.1FM in Southbridge. The red contour of WBRS is the 40dBu F(50,10) interfering contour; it cannot overlap WAFX's 60dBu. Green is WBRS's 60dBu protected contour. Blue contours are 100dBu F(50,10) interfering and help show the location of the transmission facility.

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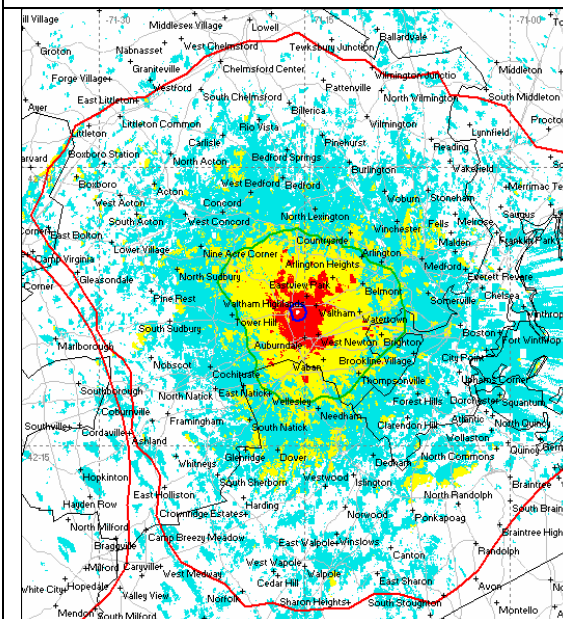
LONGLEY-RICE SIGNAL PLOTS - MAXIMUM FIELD STRENGTH (50,50)



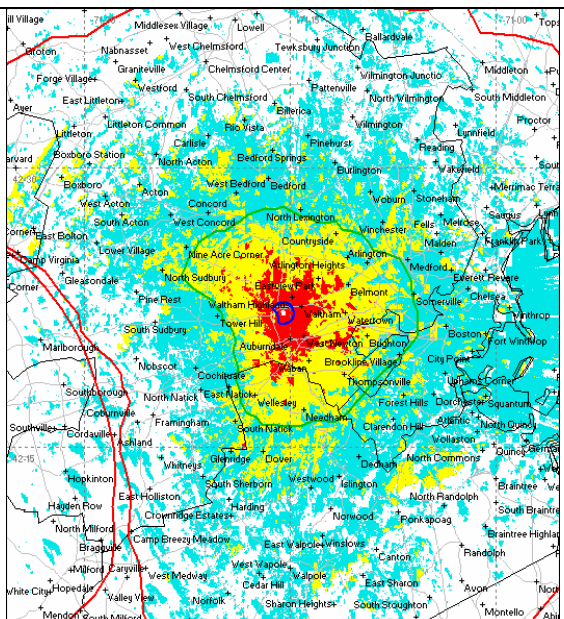
Existing WBRS facility
ND 25 W @ 49.88M HAAT



Water Tank
ND 25 W @ 75.68 M HAAT



Water Tank
DIR 100 W @ 75.68 M HAAT



Water Tank
DIR 250 W @ 75.68 M HAAT

These signal plots' colors represent the following signal levels.

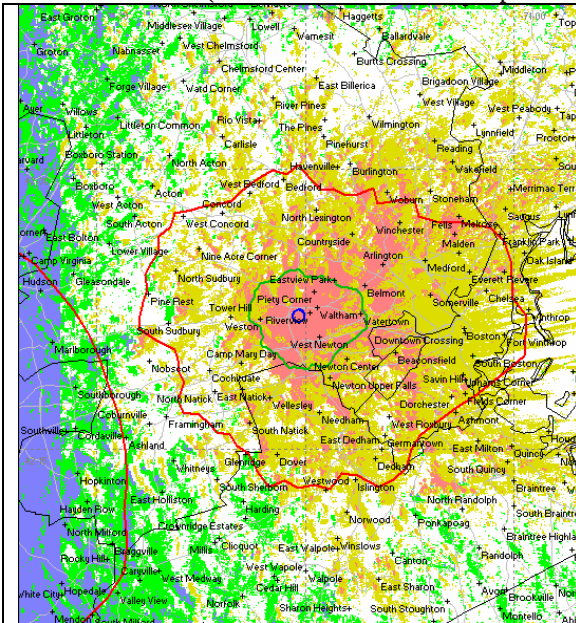
Red = 100 – 70dB (very strong signal)
Yellow = 70 – 54dB (city grade signal)

Light Blue = 54 to 40dB (need good radios & antennas)
White = 40dB or lower (likely not receivable)

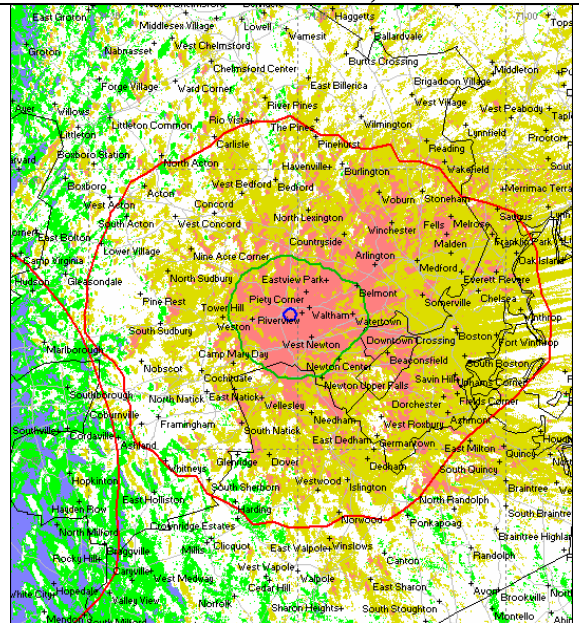
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LONGLEY-RICE SIGNAL PLOTS - DIFFERENCE WITH WWFX 100.1

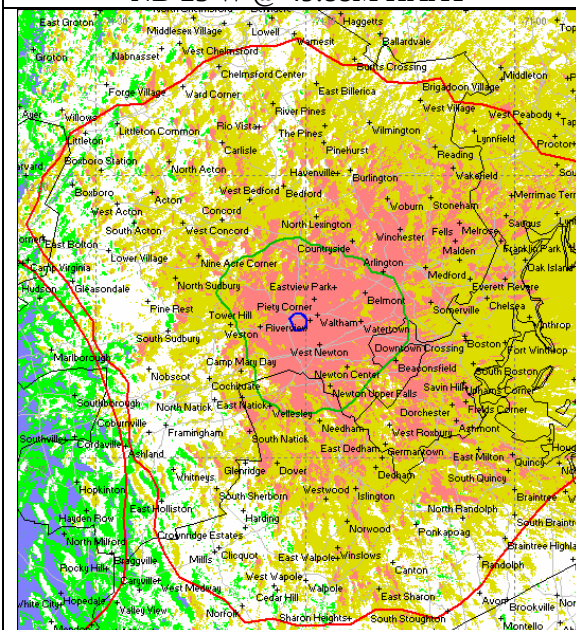
(does not account for other possible interference sources / other stations)



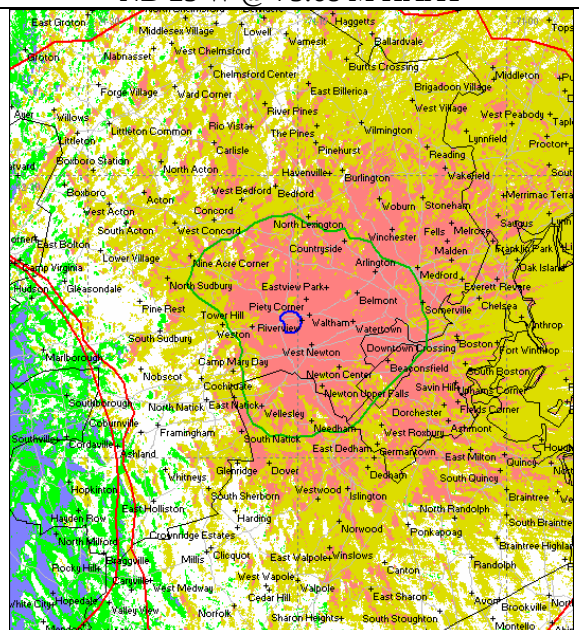
Existing WBRS facility
ND 25 W @ 49.88M HAAT



Water Tank
ND 25 W @ 75.68 M HAAT



Water Tank
DIR 100 W @ 75.68 M HAAT



Water Tank
DIR 250 W @ 75.68 M HAAT

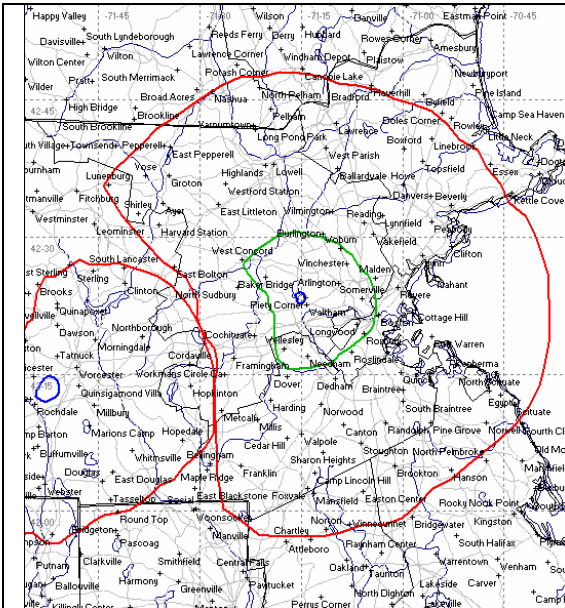
Most radios need at least +20dB more of WBRS's signal to reject WWFX's signal. So areas in red are most reliable. Yellow is "possible" with a good radio & antenna. White means WBRS is probably not receivable. Blue & Green mean WWFX swamps WBRS.

Red = WBRS is 40 to 20dB stronger
Yellow = WBRS is 20 to 0dB stronger

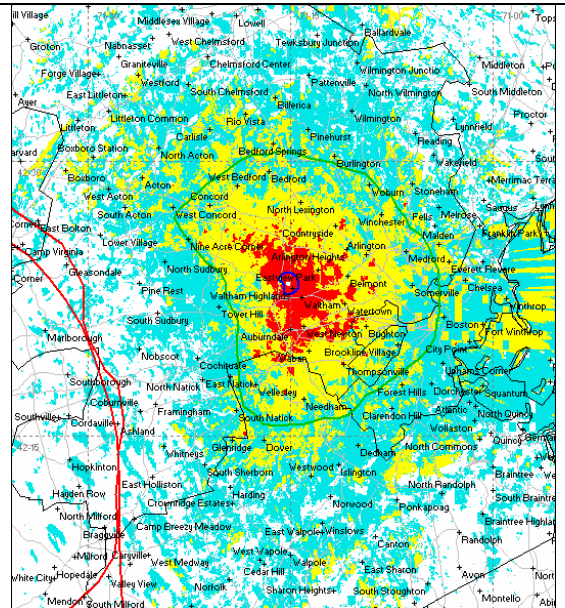
White = WBRS is 0 to 20dB weaker
Green = WBRS is 20 to 40dB weaker
Blue = WBRS is 40 to 43dB weaker

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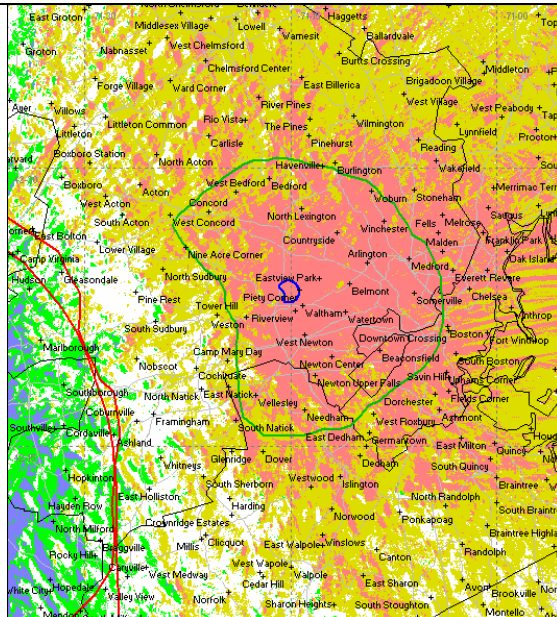
PROSPECT HILL using 250 WATT DIRECTIONAL



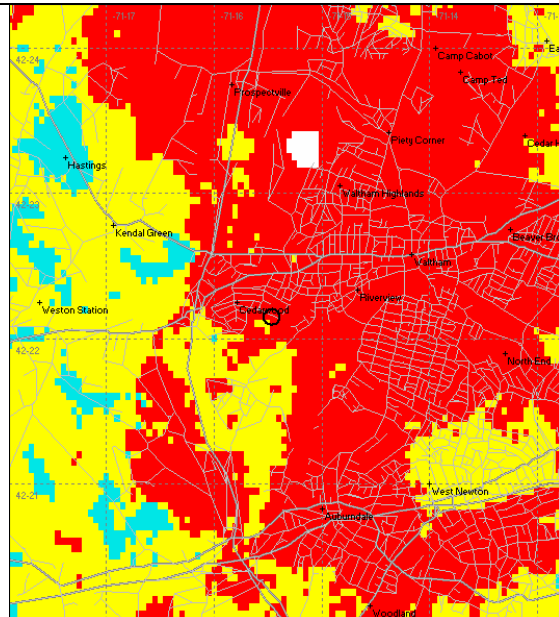
Prospect Hill – Contours vs. WWFX
DIR 250 W @ 114.84 M HAAT



Prospect Hill – Signal Plot (Max)
DIR 250 W @ 114.84 M HAAT



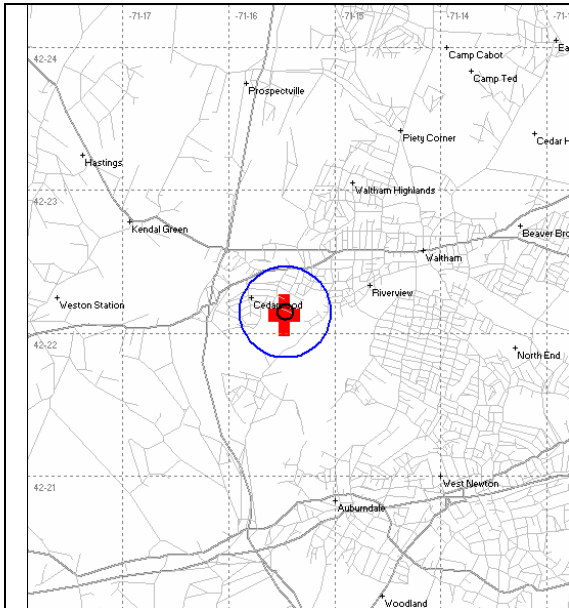
Prospect Hill – Signal Plot (vs. WWFX)
DIR 250 W @ 114.84 M HAAT



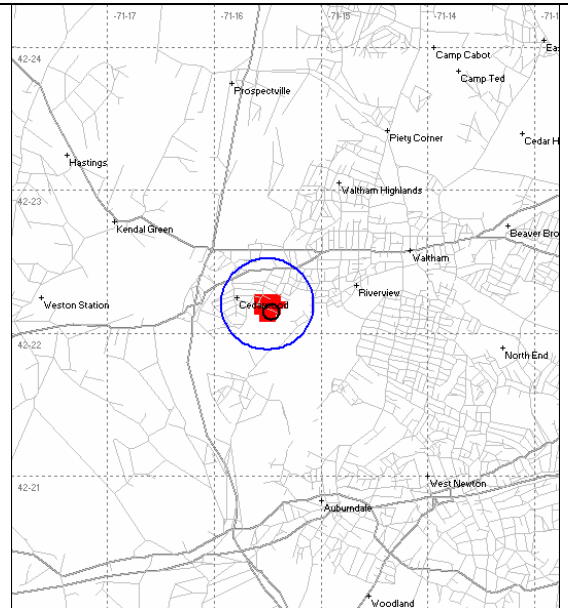
Prospect Hill – Signal Plot (Max)
DIR 250 W @ 114.84 M HAAT
*Shows coverage on Brandeis campus
(existing site marked with black circle)*

These maps show the hypothetical 250 watt directional facility on Prospect Hill.

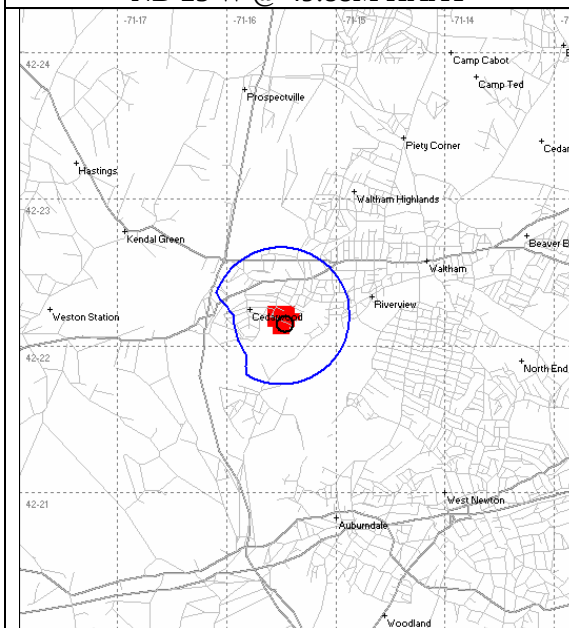
100dBu INTERFERING CONTOUR / PLOTS – CLOSEUP VIEWS (WATER TANK)



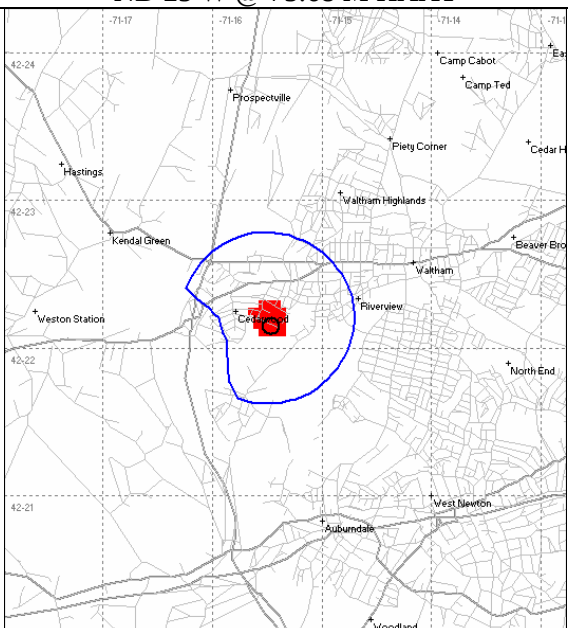
Existing WBRS facility
ND 25 W @ 49.88M HAAT



Water Tank
ND 25 W @ 75.68 M HAAT



Water Tank
DIR 100 W @ 75.68 M HAAT



Water Tank
DIR 250 W @ 75.68 M HAAT

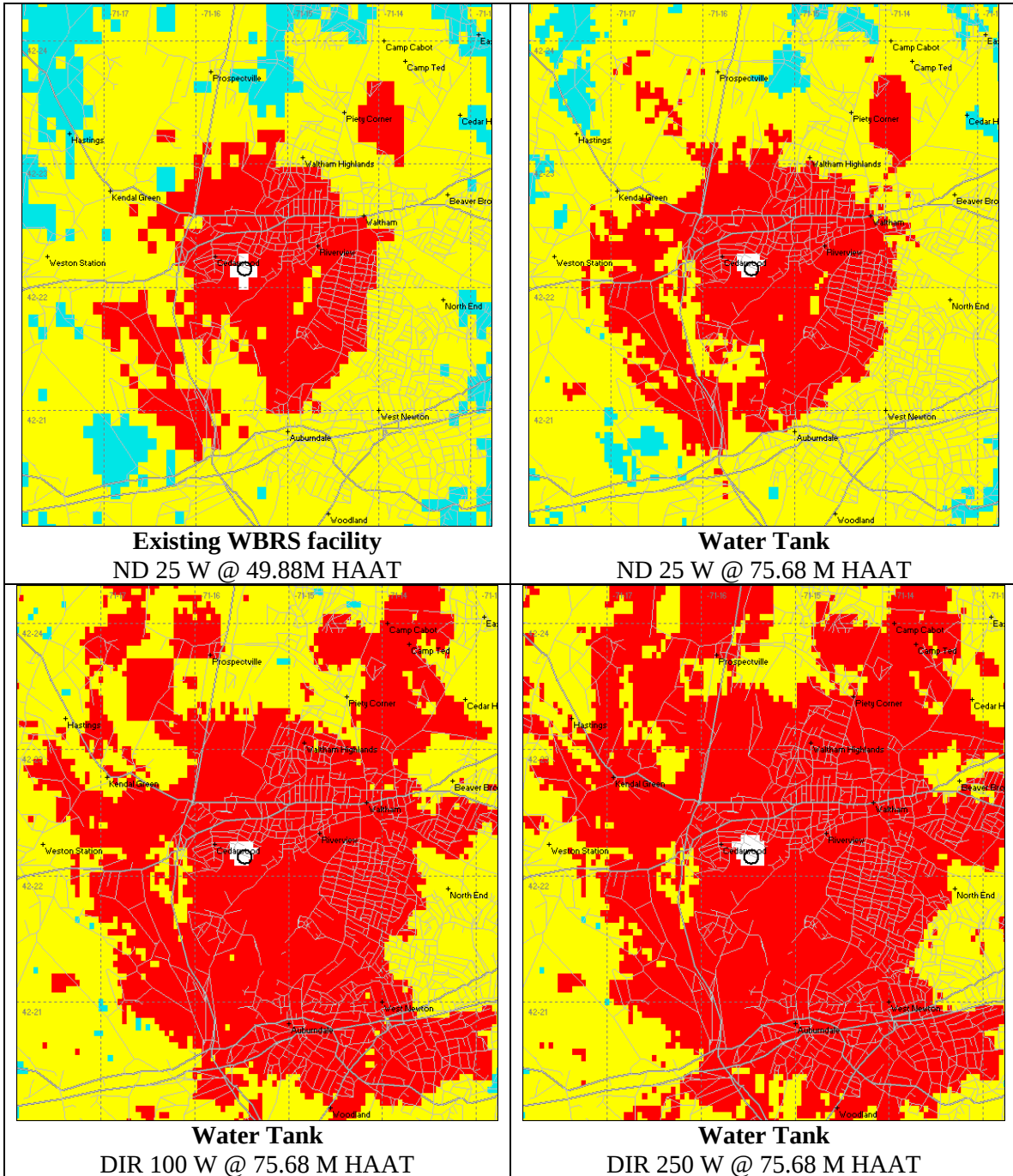
The black circle indicates the existing WBRS facility. Blue contours are the 100dBu (50,10) interfering contour. The red area is a Longley-Rice contour plot showing the 100 – 70 dB signal.

100dBu INTERFERING CONTOUR / PLOTS – CLOSEUP VIEWS (PROSPECT HILL)



The black circle indicates the existing WBRS facility. Blue contours are the 100dBu (50,10) interfering contour. The red area is a Longley-Rice contour plot showing the 100 – 70 dB signal.

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CAMPUS COVERAGE – WATERTANK



These signal plots' colors represent the following signal levels.

White = 100dB or greater
 Red = 100 – 70dB (very strong signal)

Yellow = 70 – 54dB (city grade signal)
 Light Blue = 54 to 40dB (need good radios & antennas)

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APPENDIX B

CONTOUR MAPS

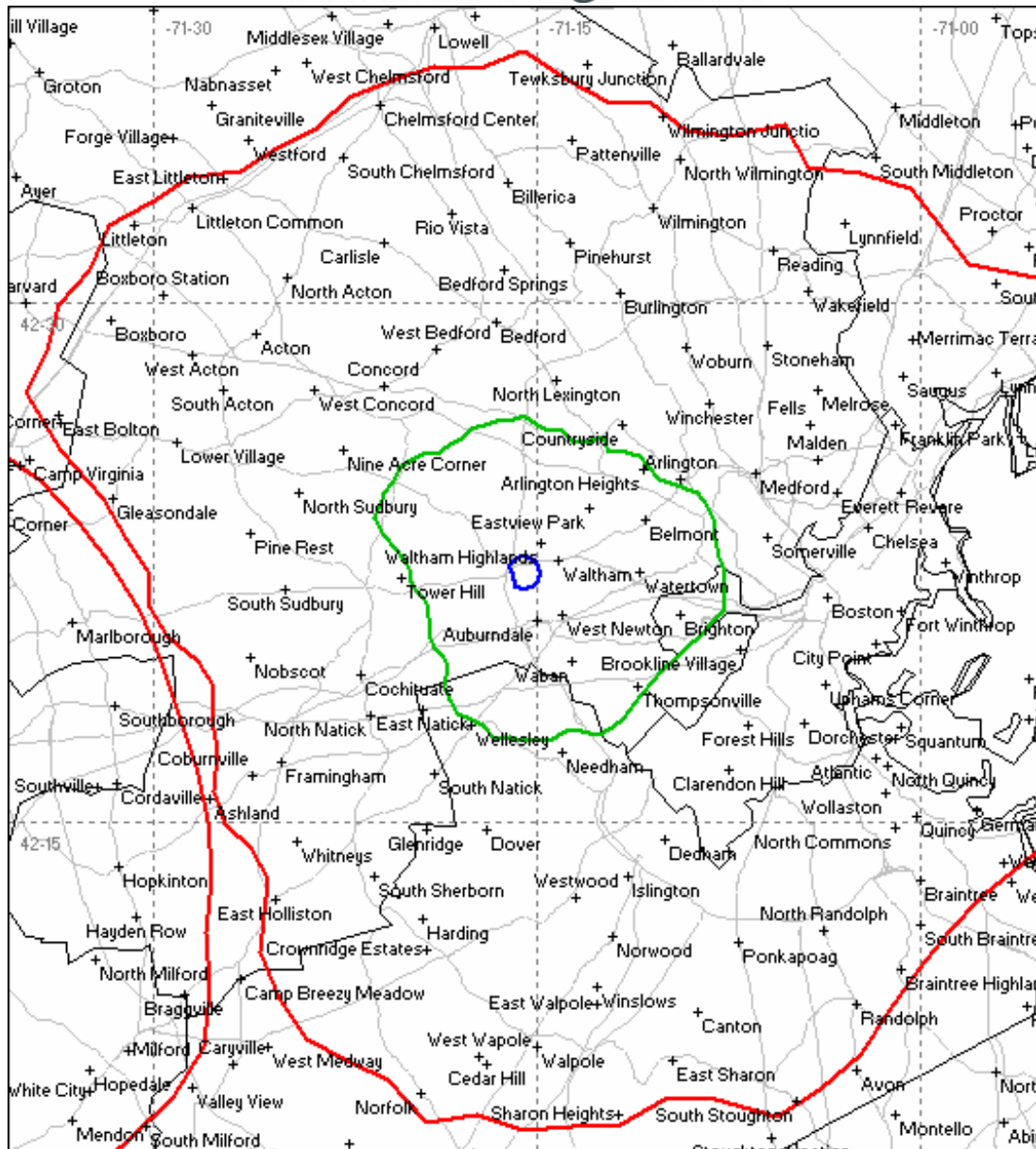
PREDICTED COVERAGE MAPS

(individual maps shown full-size)

The map displays the Greater Boston area, with Waltham, MA, highlighted by a green circle and a blue dot. Waltham is located in the central part of the map, near the intersection of the New England Corridor (indicated by a red line) and the Boston Harbor area. The map shows major roads, rail lines, and surrounding towns. The New England Corridor runs from the northwest to the southeast, passing through Waltham. The Boston Harbor area is shown to the east of Waltham, with the city of Boston and the harbor visible. The map also shows the locations of other major cities and towns in the region, including Lowell, Haverhill, and Springfield. The map is a detailed representation of the Greater Boston area, showing the location of Waltham, MA, relative to the New England Corridor and the Boston Harbor area.

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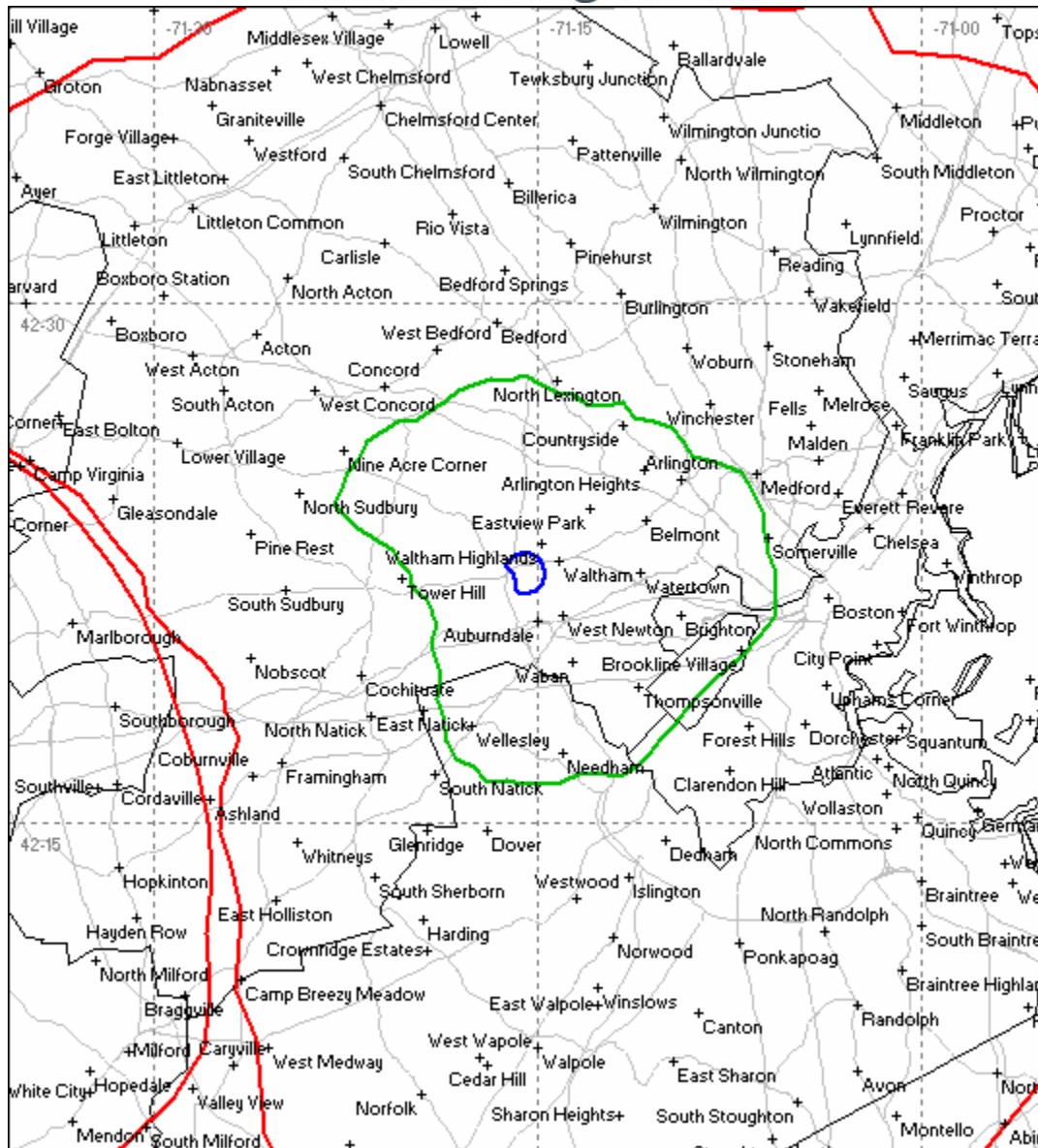
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WATER TANK – DIR 100 W @ 75.68 M HAAT

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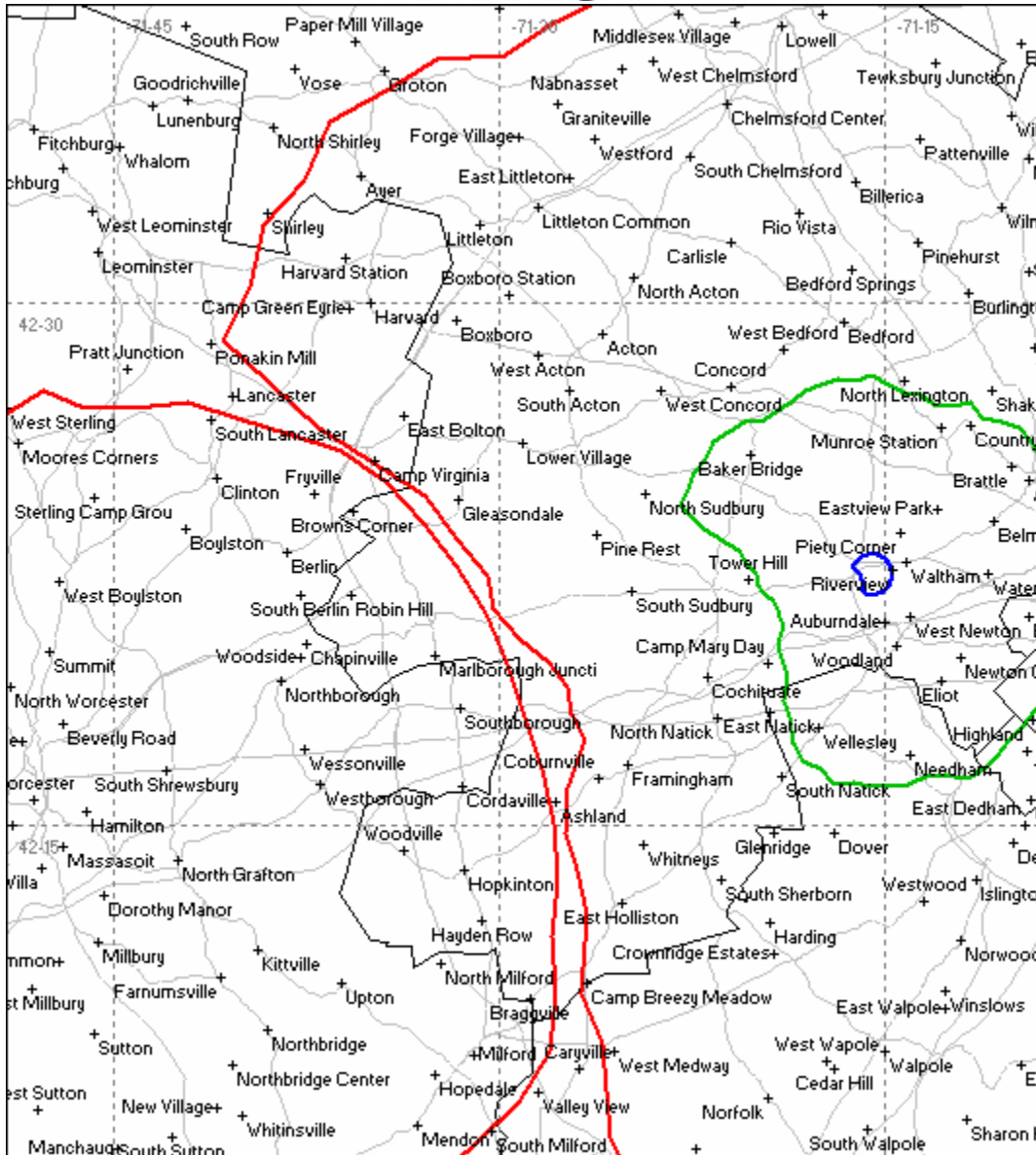
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WATER TANK – ND 250 W @ 75.68 M HAAT

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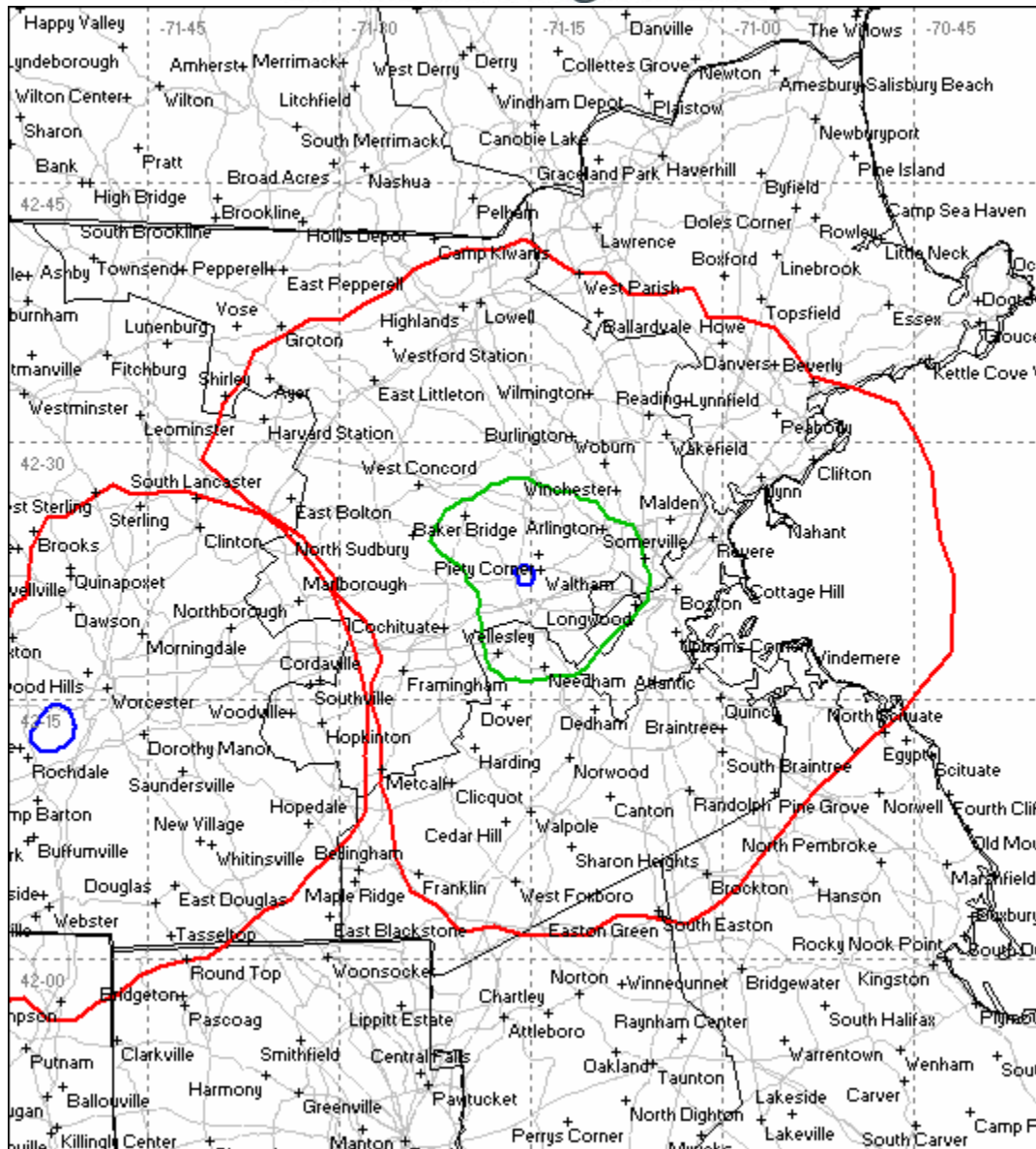
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WATER TANK – ND 25 W @ 75.68 M HAAT

Closeup view showing no overlap between WBRS 40dBu contour and WAFX 60dBu contour.

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WATER TANK – ND 250 W @ 75.68 M HAAT

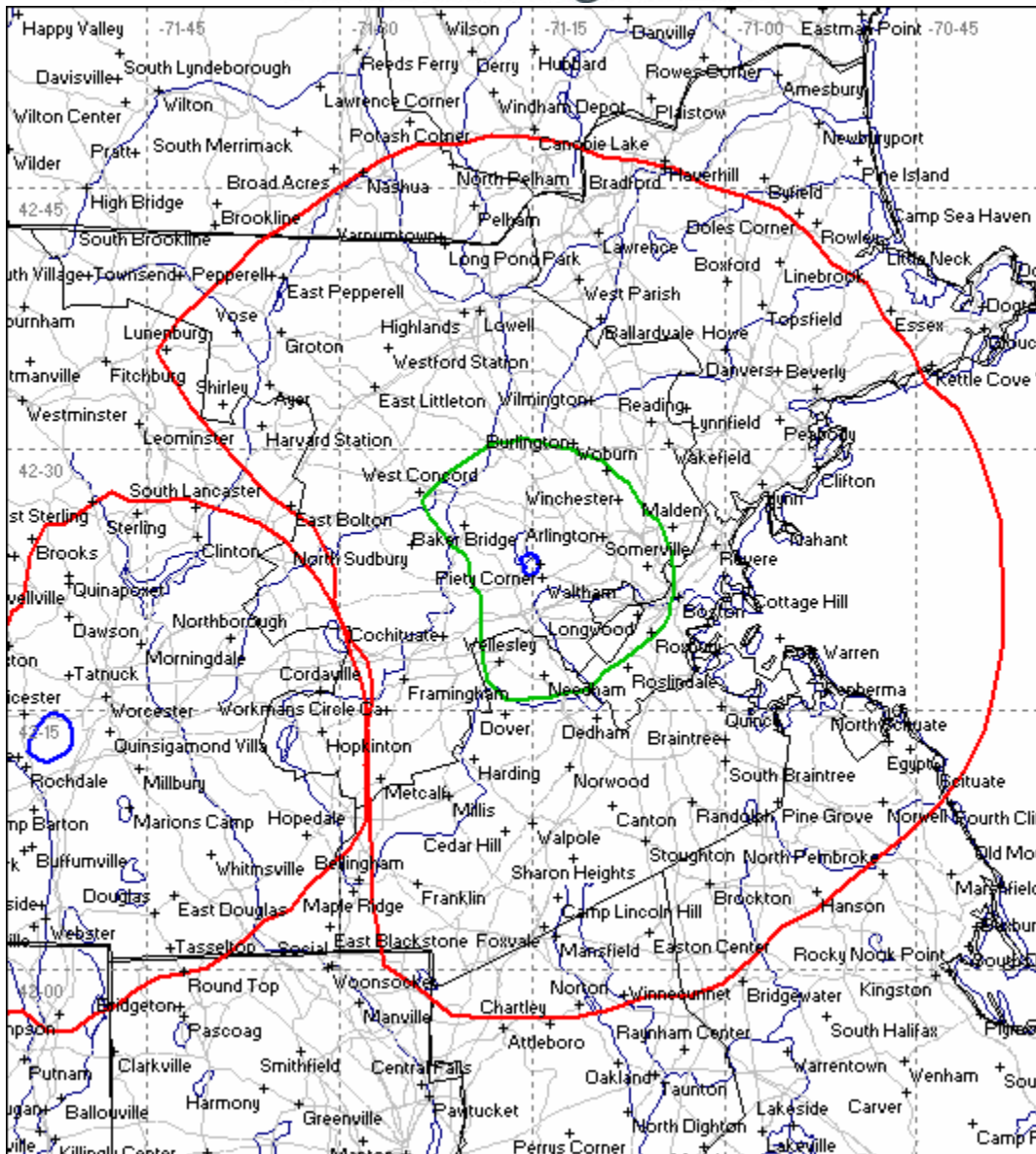
Wide view showing entire WBRB 40dBu

This map shows the Merrimack Valley region, including parts of Massachusetts and New Hampshire. A red line traces a route from the northwest (near North Andover) southwards through Andover, Lowell, and into the Merrimack River valley. A green line traces a route from the northeast (near North Andover) southwards through Andover, Lowell, and into the Merrimack River valley. A blue circle is drawn around the town of North Andover.

Closeup view showing no overlap between WBRS 40dBu contour and WAFX 60dBu contour.

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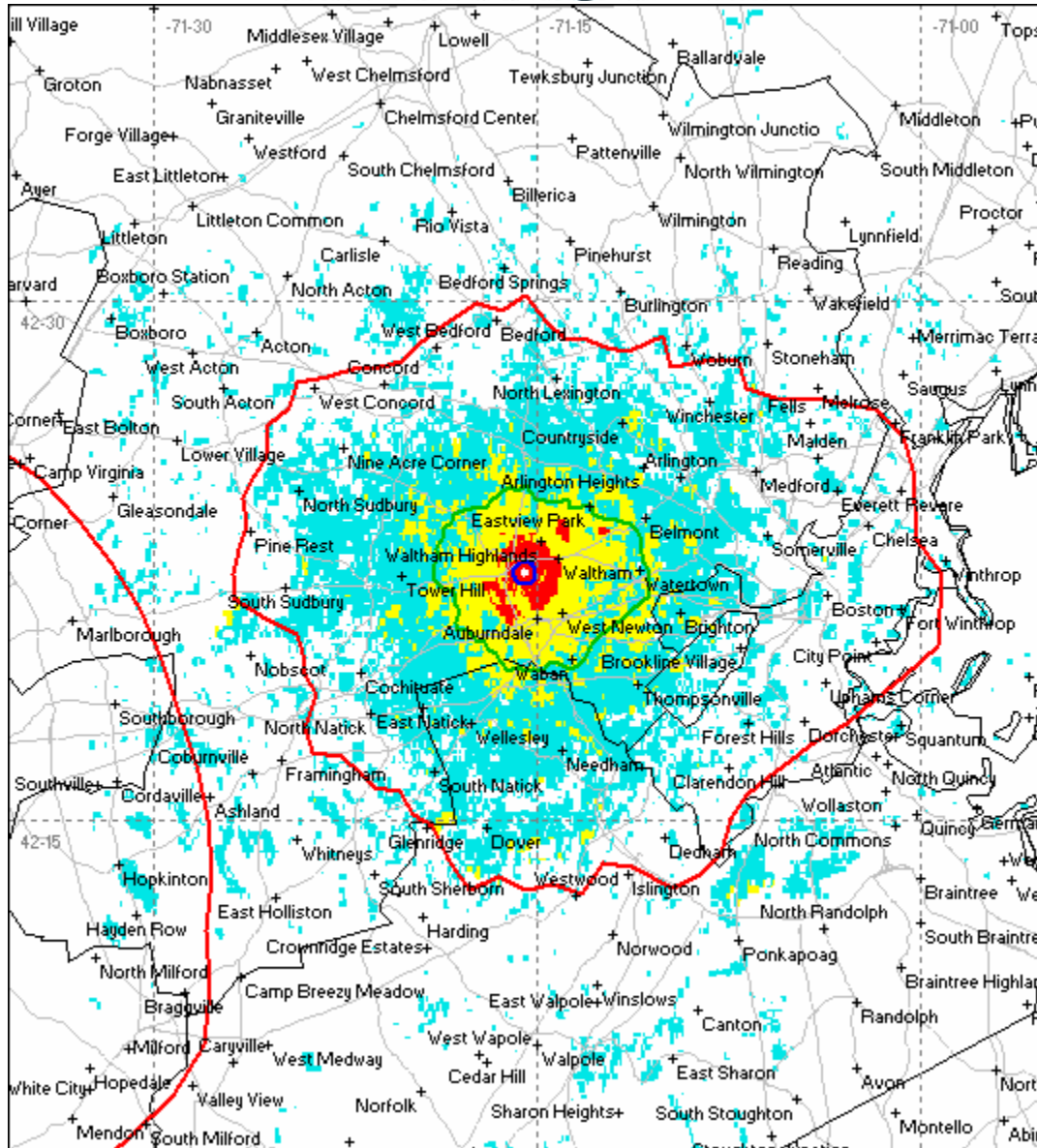
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PROSPECT HILL – DIR 250 W @ 114.84 M HAAT

Wide view showing entire WBSR 40dBu

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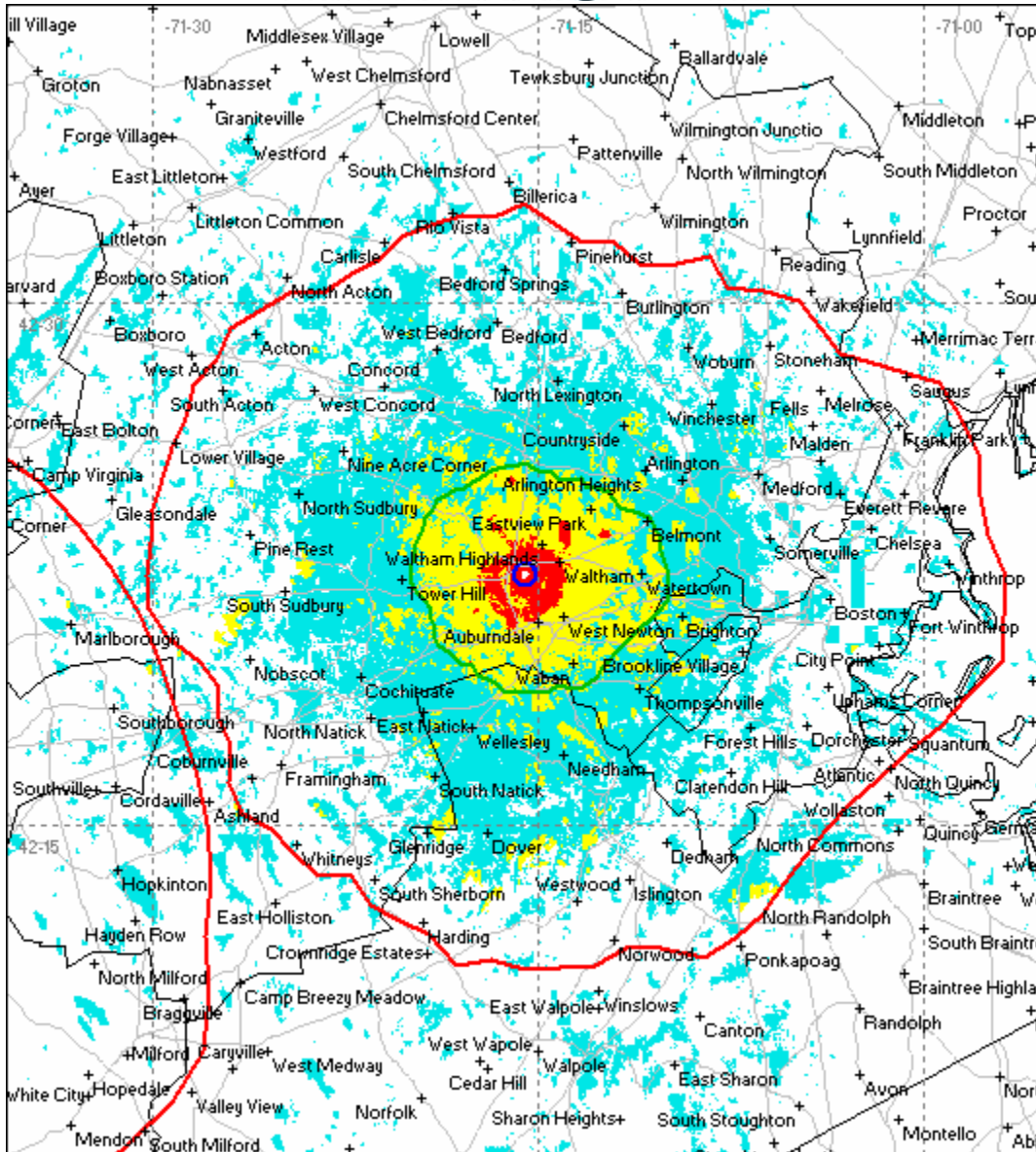


LONGLEY-RICE PLOT – MAXIMUM SIGNAL
EXISTING FACILITY
ND 25 W @ 49.88 M HAAT

Red = 100 – 70dB (very strong signal)
Yellow = 70 – 54dB (city grade signal)

Light Blue = 54 to 40dB (need good radios & antennas)
White = 40dB or lower (likely not receivable)

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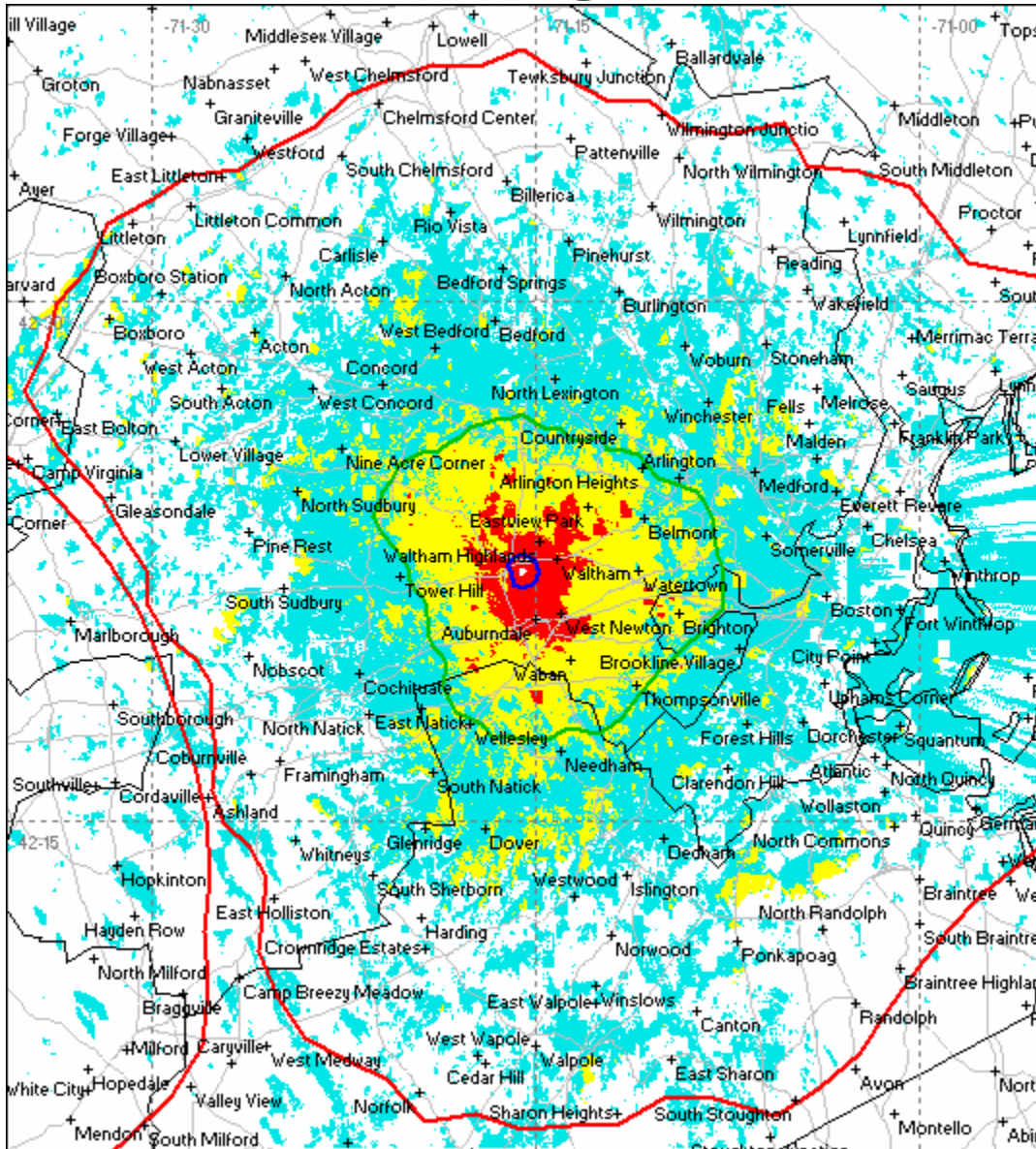


LONGLEY-RICE PLOT – MAXIMUM SIGNAL
WATER TANK
ND 25 W @ 75.68 M HAAT

Red = 100 – 70dB (very strong signal)
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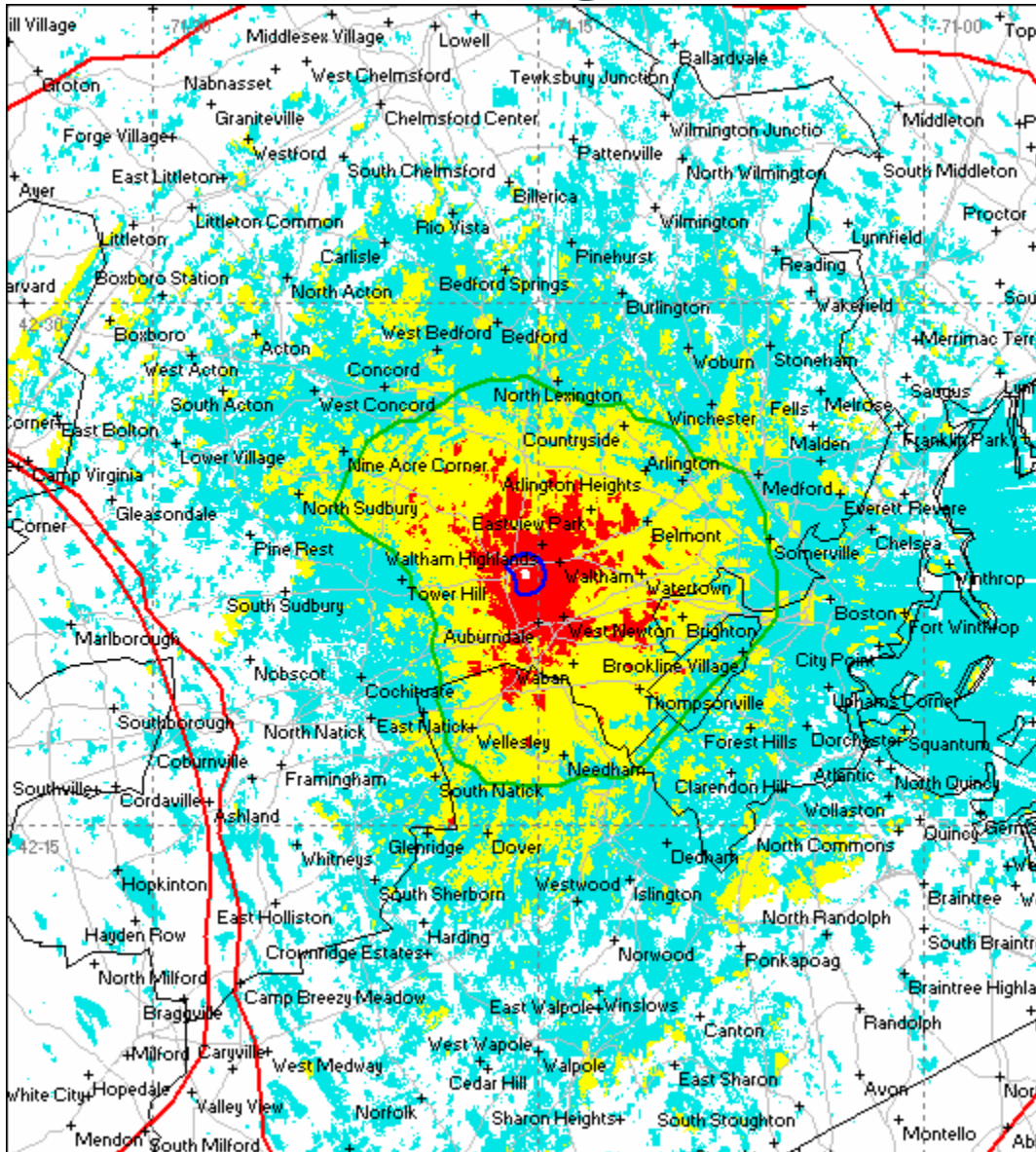


LONGLEY-RICE PLOT – MAXIMUM SIGNAL
WATER TANK
DIR 100 W @ 75.68 M HAAT

Red = 100 – 70dB (very strong signal)
Yellow = 70 – 54dB (city grade signal)

Light Blue = 54 to 40dB (need good radios & antennas)
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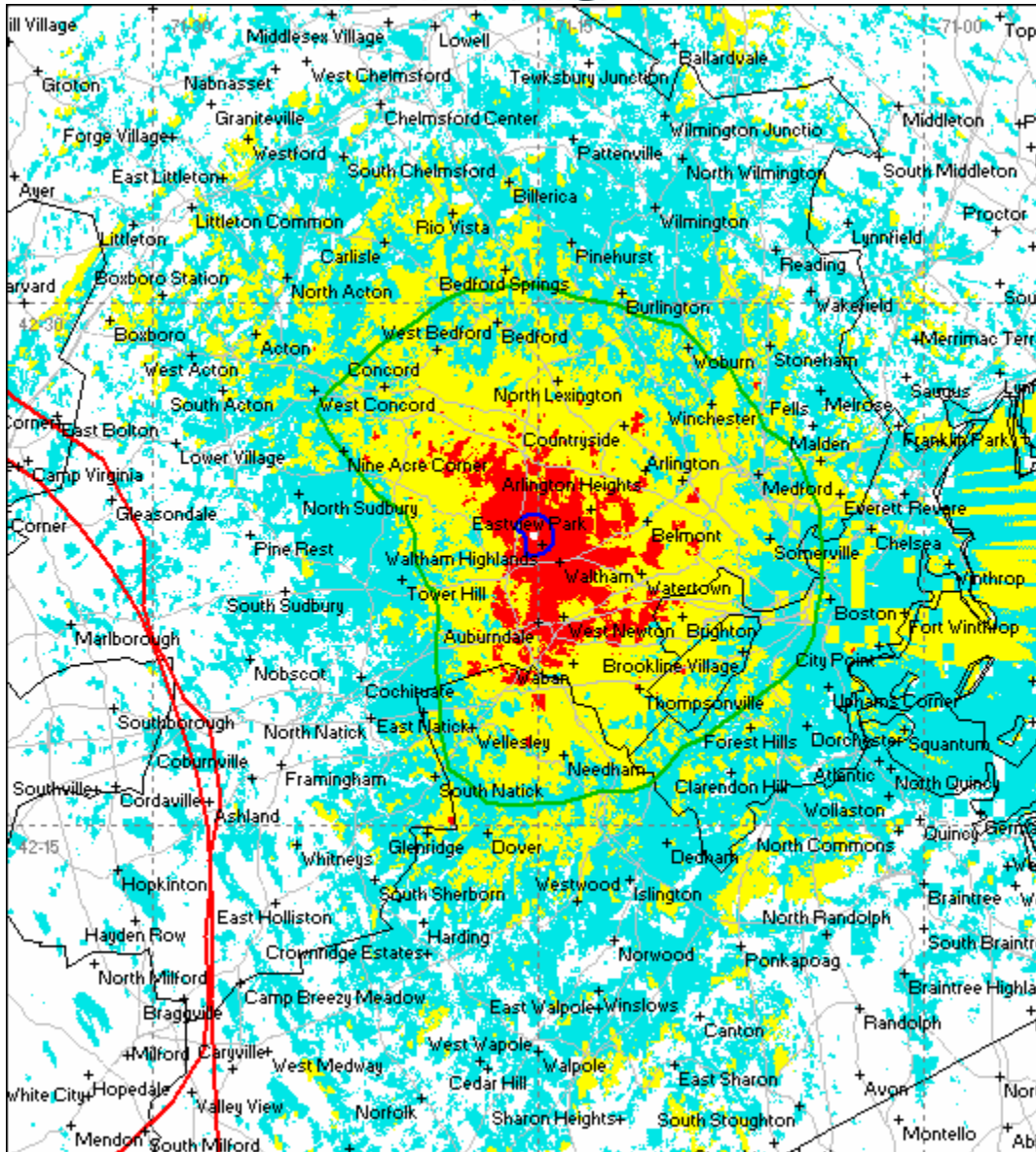


LONGLEY-RICE PLOT – MAXIMUM SIGNAL
WATER TANK
DIR 250 W @ 75.68 M HAAT

Red = 100 – 70dB (very strong signal)
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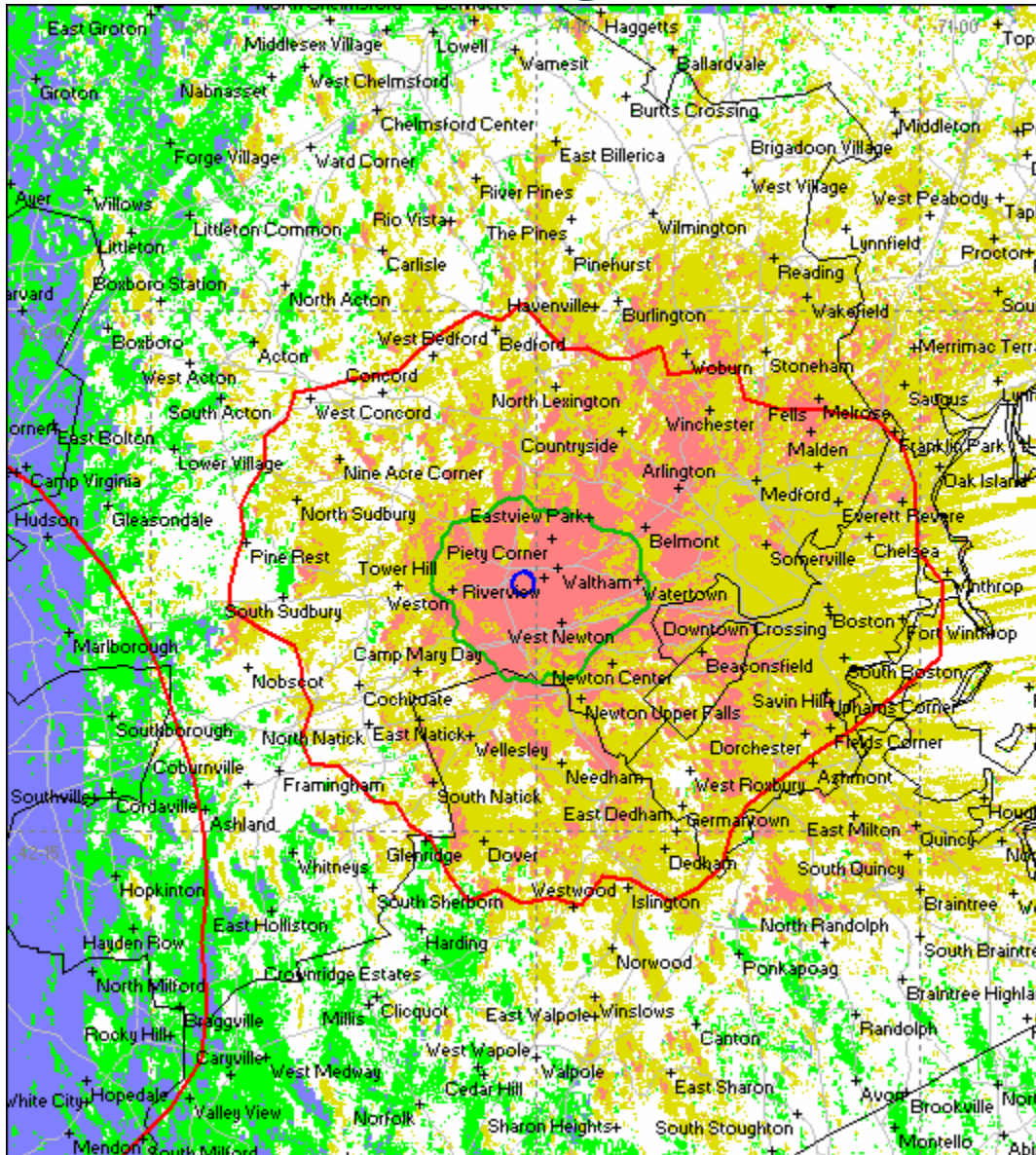
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LONGLEY-RICE PLOT – MAXIMUM SIGNAL
PROSPECT HILL
DIR 250 W @ 114.84 M HAAT

Red = 100 – 70dB (very strong signal)
Yellow = 70 – 54dB (city grade signal)

Light Blue = 54 to 40dB (need good radios & antennas)
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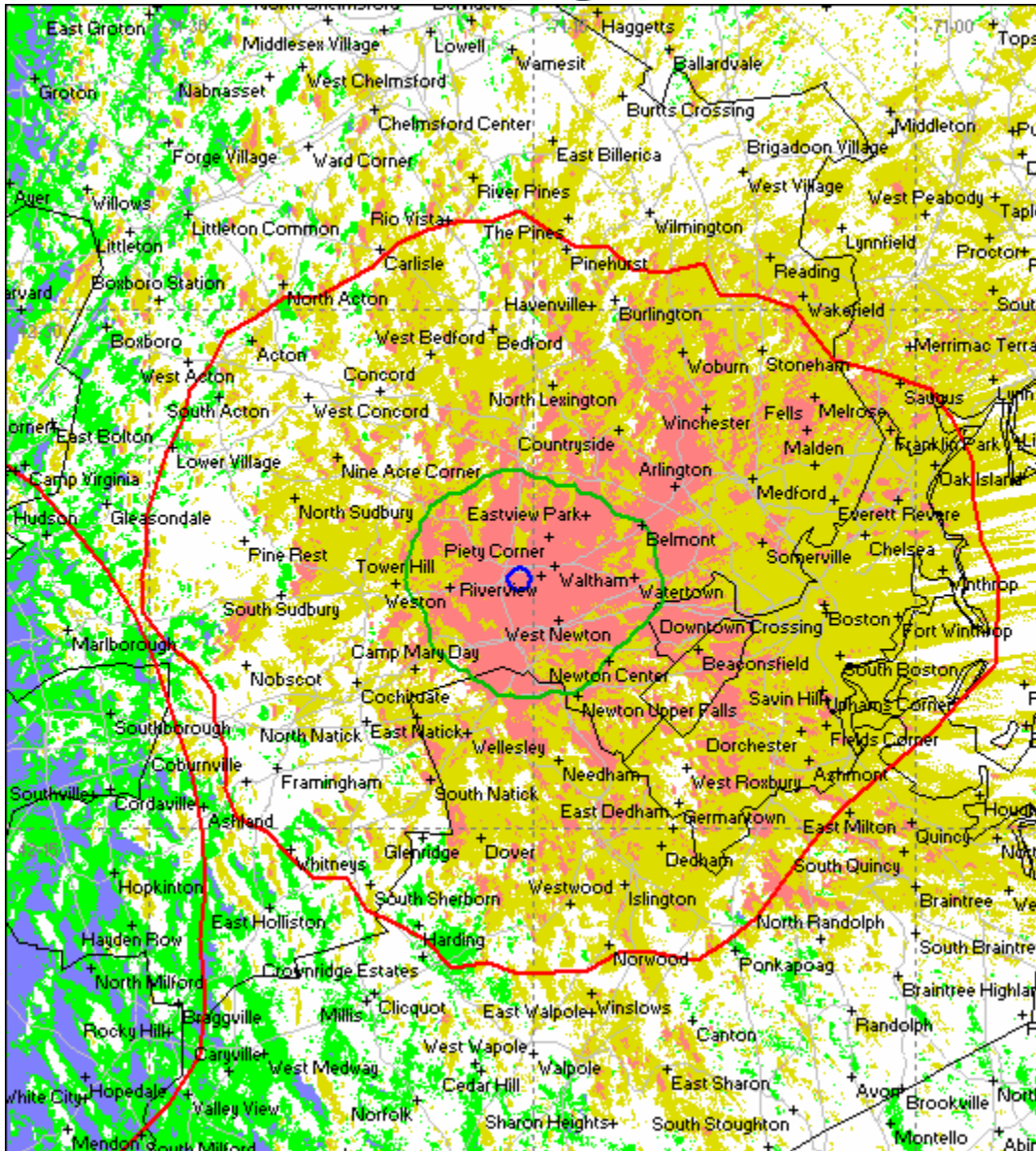
LONGLEY-RICE PLOT – SIGNAL DIFFERENCE
EXISTING FACILITY
ND 25 W @ 49.88 M HAAT

Most radios need at least +20dB more of WBRB's signal to reject WWFX's signal. So areas in red are most reliable. Yellow is "possible" with a good radio & antenna. White means WBRB is probably not receivable. Blue & Green mean WWFX swamps WBRB.

Red = WBRB is 40 to 20dB stronger
Yellow = WBRB is 20 to 0dB stronger

White = WBRB is 0 to 20dB weaker
Green = WBRB is 20 to 40dB weaker
Blue = WBRB is 40 to 43dB weaker

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LONGLEY-RICE PLOT – SIGNAL DIFFERENCE WATER TANK ND 25 W @ 75.68 M HAAT

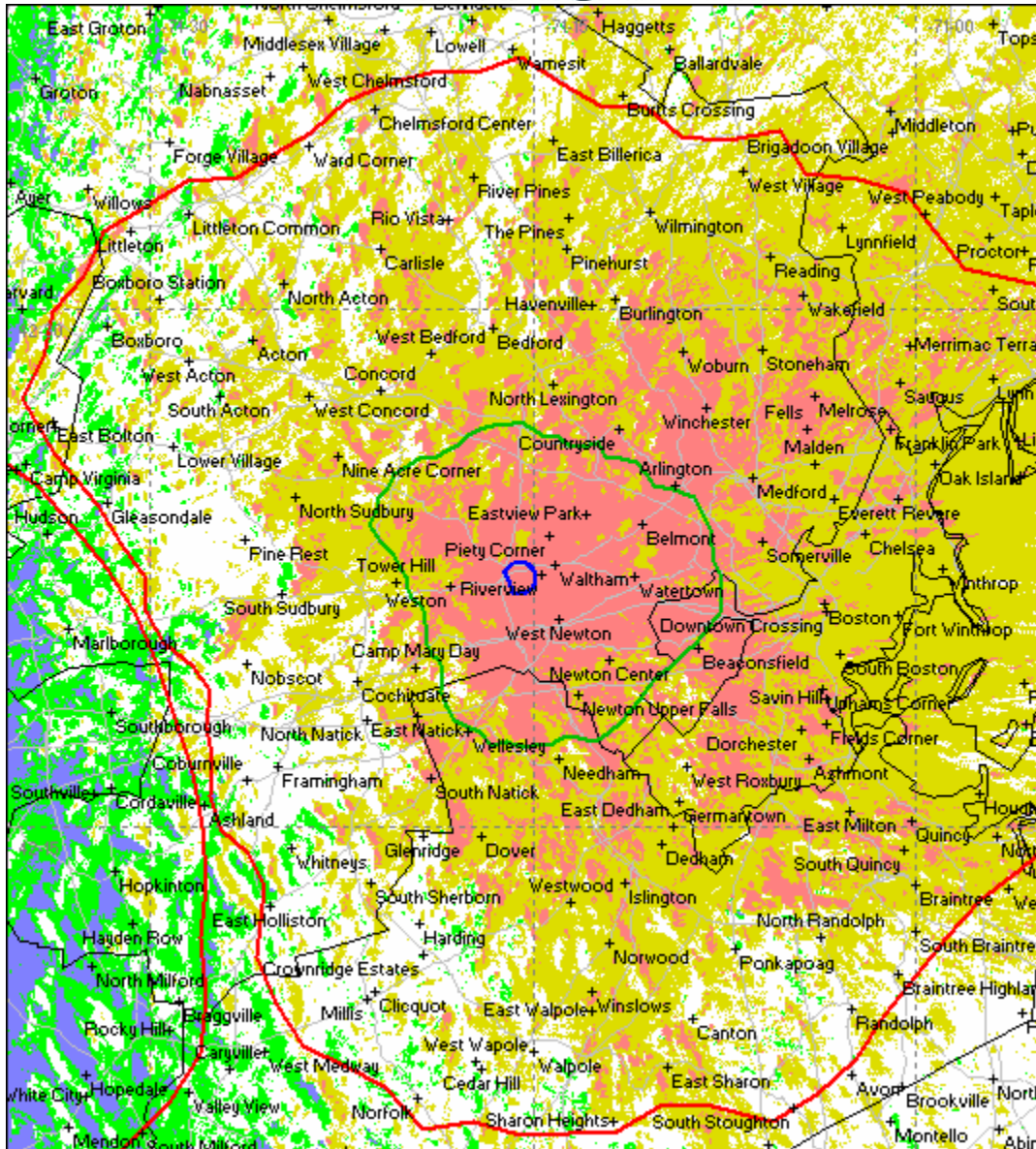
Most radios need at least +20dB more of WBRS's signal to reject WAFX's signal. So areas in red are most reliable. Yellow is "possible" with a good radio & antenna. White means WBRS is probably not receivable. Blue & Green mean WAFX swamps WBRS.

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White = WBRS is 0 to 20dB weaker
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Blue = WBRS is 40 to 43dB weaker

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LONGLEY-RICE PLOT – SIGNAL DIFFERENCE WATER TANK DIR 100 W @ 75.68 M HAAT

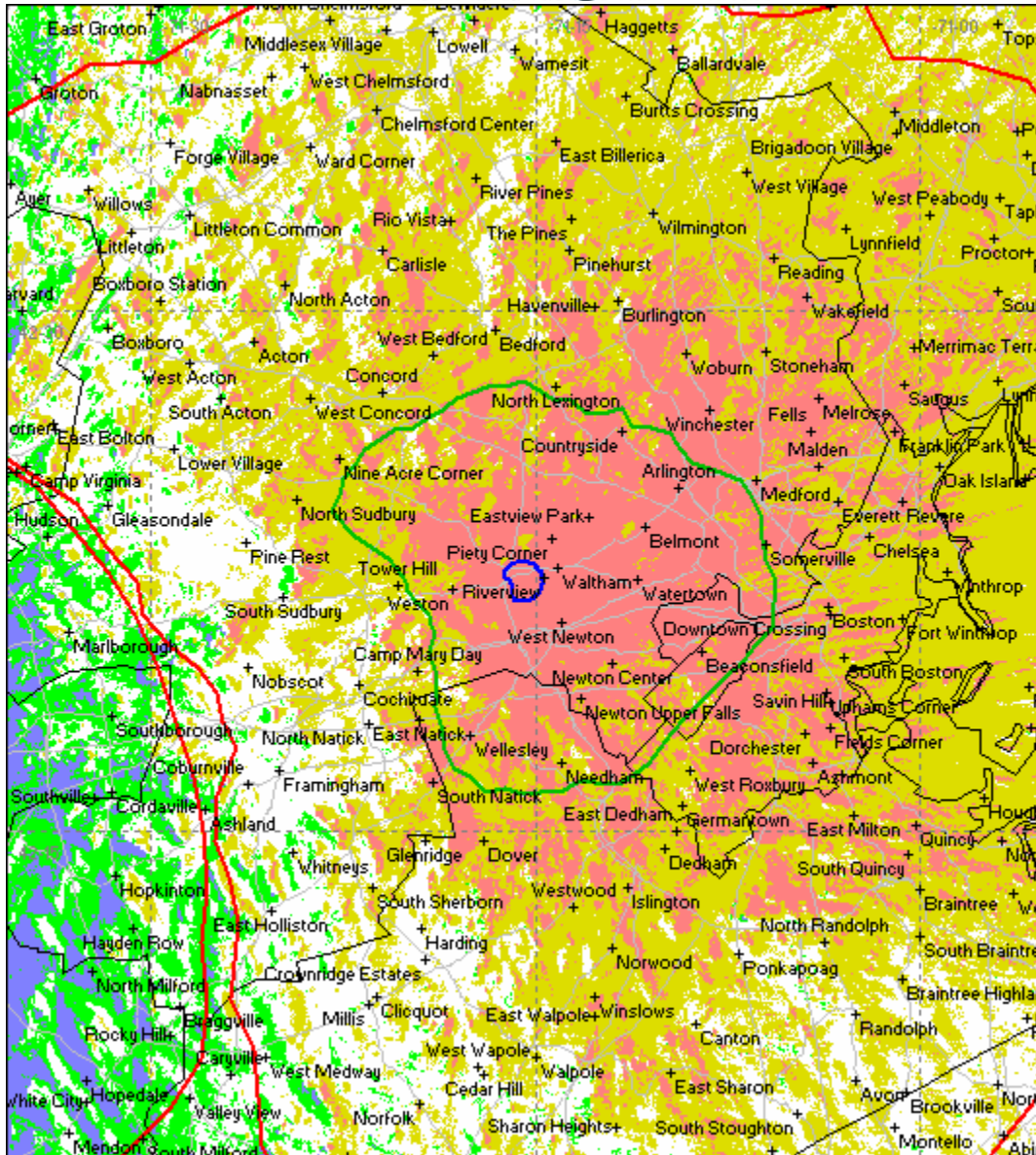
Most radios need at least +20dB more of WBRS's signal to reject WWFX's signal. So areas in red are most reliable. Yellow is "possible" with a good radio & antenna. White means WBRS is probably not receivable. Blue & Green mean WWFX swamps WBRS.

Red = WBRS is 40 to 20dB stronger
Yellow = WBRS is 20 to 0dB stronger

White = WBRS is 0 to 20dB weaker
Green = WBRS is 20 to 40dB weaker
Blue = WBRS is 40 to 43dB weaker

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LONGLEY-RICE PLOT – SIGNAL DIFFERENCE WATER TANK DIR 250 W @ 75.68 M HAAT

Most radios need at least +20dB more of WBRS's signal to reject WWFX's signal. So areas in red are most reliable. Yellow is "possible" with a good radio & antenna. White means WBRS is probably not receivable. Blue & Green mean WWFX swamps WBRS.

Red = WBRS is 40 to 20dB stronger
Yellow = WBRS is 20 to 0dB stronger

White = WBRS is 0 to 20dB weaker
Green = WBRS is 20 to 40dB weaker
Blue = WBRS is 40 to 43dB weaker

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Most radios need at least +20dB more of WBRS's signal to reject WWFX's signal. So areas in red are most reliable. Yellow is "possible" with a good radio & antenna. White means WBRS is probably not receivable. Blue & Green mean WWFX swamps WBRS.

White = WBRS is 0 to 20dB weaker
Green = WBRS is 20 to 40dB weaker
Blue = WBRS is 40 to 43dB weaker