Broadcast Signal Lab

Updated Analysis of Prospective Clearwire Coverage Relating to the 5-7 Craig Road, Acton Application for A Wireless Facility by SBA Towers

Clearwire has been presenting its coverage analysis to the Acton Planning Board. Broadcast Signal Lab, acting as the Town's wireless consultant, was asked to prepare a set of Clearwire coverage plots that include the locations of buildings. We have prepared our own coverage analysis of the existing, in-process, proposed and alternative facilities and have integrated a map layer with the buildings. We received PDF documents of new alternatives analysis from Clearwire.[1]

We have incorporated our plots with the buildings overlay in this report. Our coverage analysis, as noted in previous reportage, is substantially similar to Clearwire's analysis. There are differences because of the computer modeling techniques. Our plots tend to have more of a "Swiss cheese" appearance than Clearwire's because our model is highly deterministic. In other words, our model does not simply take a statistical estimate based on a few variables; our model attempts to predict the interaction of nearly every factor that affects radio signal propagation. To the experienced technician, the Swiss cheese model is a more realistic representation of the manner in which radio signals arrive in the environment. Nevertheless, every computer model, whether more deterministic, like ours, or more empirical, as Clearwire's appears to be, has a degree of accuracy and a degree of uncertainty. It may be hard to fathom, but it is entirely possible that both Clearwire's and our plots are of similar accuracy, despite their differences in the fine structure of the coverages depicted.

We plotted existing/planned facilities around the proposed site, then added the proposed facility at 170 and at 140 feet (pp. 3-5). Then we plotted the landfill location selected by Clearwire and communicated to us, by employing a 140 foot height (p. 6) and 170 feet (p. 7).

Then we invented a location for a complementary facility at a warehouse by the train tracks along River Street (p. 8). The site seems to enable placing a tower more than 350 feet from any

[1] Geocoded data files from Clearwire would be necessary for us to integrate buildings with Clearwire coverage data. As this report was being composed, the applicant indicated that it has succeeded in integrating a building layer on its plots. Therefore we present only our own plots (with buildings) in this report.
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residence, although the property line setback may not be achievable. We picked the location because it was a singular site in the area, with its wooded non-residential use in the midst of a residential area that is south of the proposed site's coverage area. We think it could be a complement to the proposed facility or to one at the landfill. Our analysis of this site indicates that it does not specifically play a role as an alternative for the proposed facility.

Next, we noticed that the Great Hill Clearwire facility has its three sector antennas tweaked in such a way that a fourth sector could be added, pointing northeast toward Route 2. Since the proposed facility is shown to leave white space along Route 2, northwest of Craig Road, it follows that the Great Hill 4th sector could be a complement to the proposed facility. We plotted our 4th sector on Great Hill with existing/planned coverage (p. 9).

Also, by complementing the proposed facility, the fourth sector at Great Hill could also diminish the height required for the proposed facility. We have prepared a plot showing how a 4th sector at Great Hill and a 100-foot height at the proposed site could provide better overall service than a 170 or 140 foot facility solely at Craig Road (p. 10).

We also plotted 15 Mass Ave at 170 (p. 11) and 140 feet (p. 12); Hosmer church (p. 13) and Weatherbee facilities at 170 (p. 14) and 140 feet (p. 15).

Finally, we present only the projected coverage from the proposed site at 100, 140, and 170 feet (pp. 16-18).

Alternative:

Page 5 shows the applicant's current proposal, the Site at 140 feet. Compare to page 6, the landfill at 140 feet. It appears the landfill site provides more in-building coverage in Acton than the proposed facility would. Alternatively, consider how the area Clearwire calls the gap changes between the existing/planned condition (page 4) and the addition of a sector on Great Hill (page 9). Then add the proposed facility at 100 feet (page 10). Which is better, the proposed at 140 feet (page 5) or the proposed at 100 feet plus a 4th sector on Great Hill (page 10)?

Another alternative:

Also consider the landfill at 140 feet (page 6) against the proposed at 170 feet (page 4).

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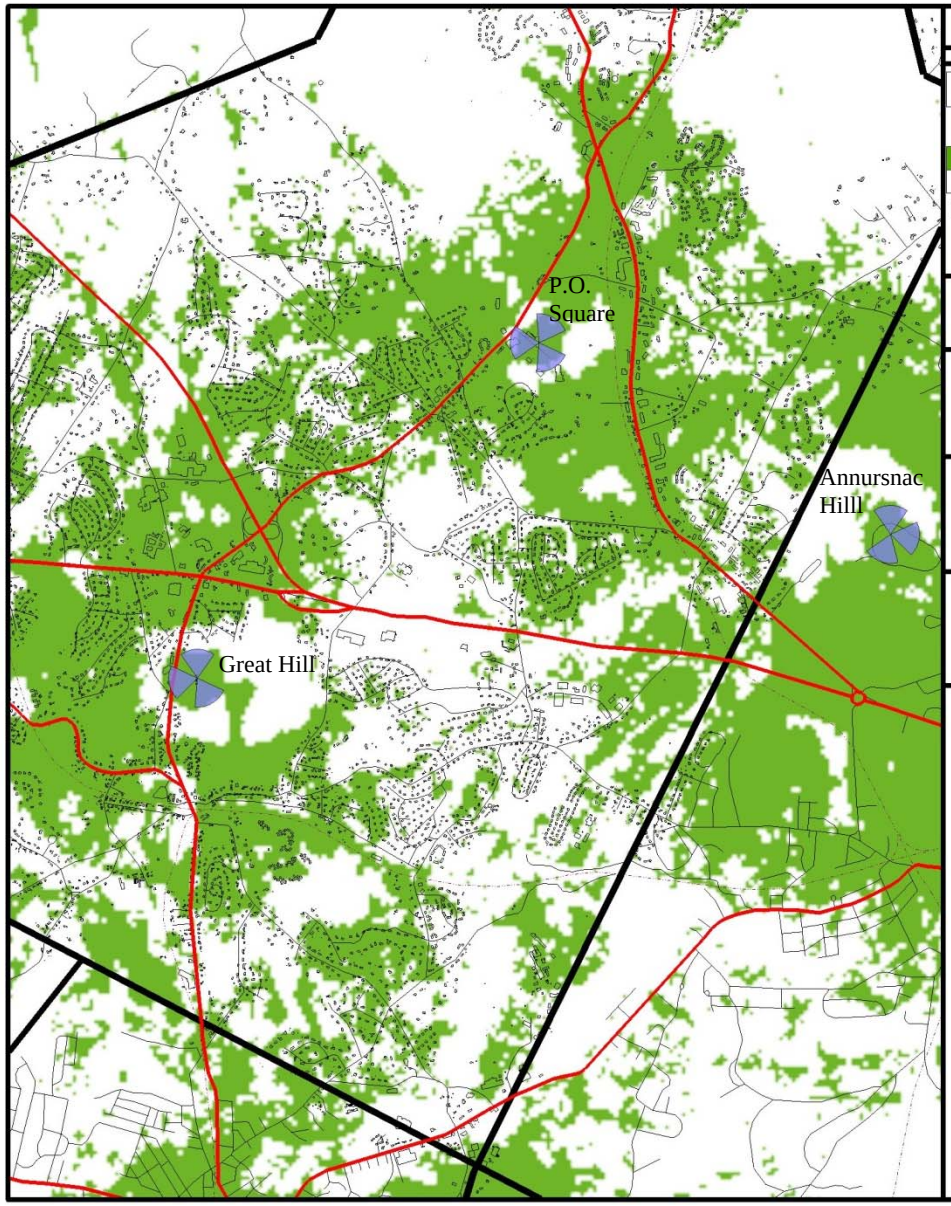

SIGNAL™: Acton Clearwire

Rail

Received Power at remote

> -73.0 dBmW
< -73.0 dBmW

Display threshold level: -120.0 dBmW
RX Antenna - Type: ISOTROPIC
Height: 6.6 ft AGL Gain: -2.15 dBd

Notes

Acton existing and planned

MILES

-0.3 0 1

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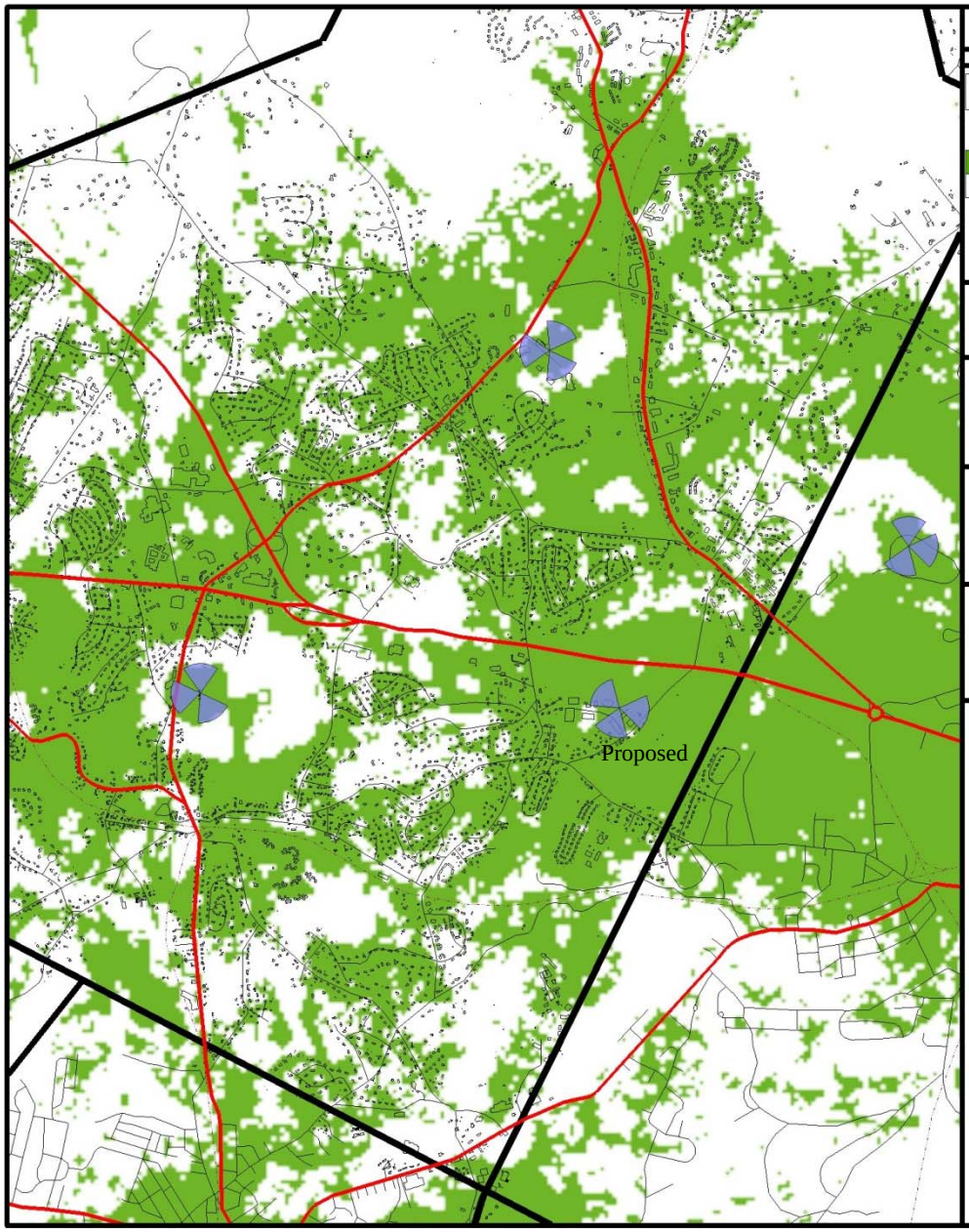

SIGNAL™: Acton Clearwire

Rail

Received Power at remote

> -73.0 dBmW

< -73.0 dBmW

Display threshold level: -120.0 dBmW
RX Antenna - Type: ISOTROPIC
Height: 6.6 ft AGL Gain: -2.15 dBd

Notes

Acton existing and planned with proposed at 170'

MILES

-0.3 0 1

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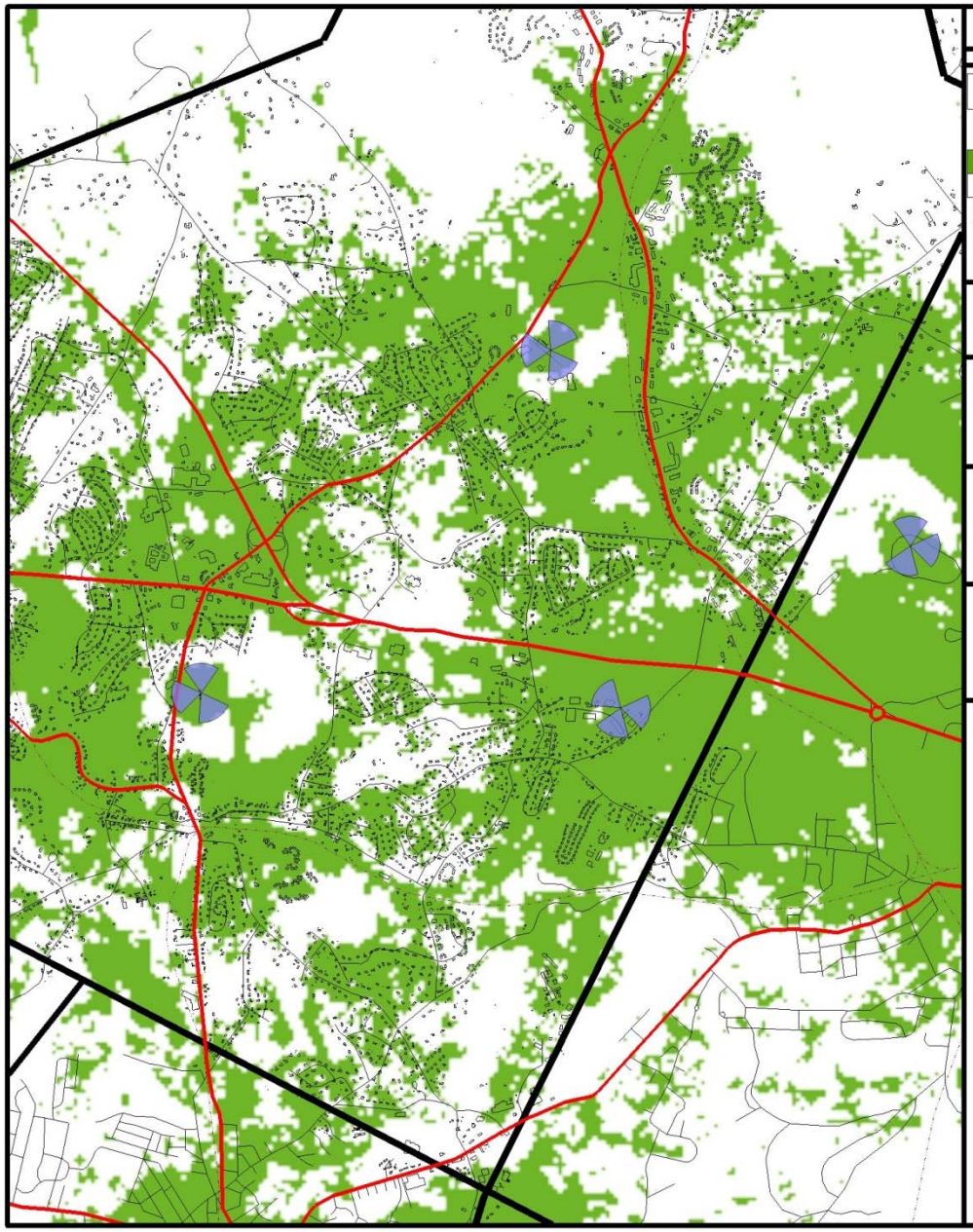

SIGNAL™: Acton Clearwire

Rail

Received Power at remote

> -73.0 dBmW

< -73.0 dBmW

Display threshold level: -120.0 dBmW
RX Antenna - Type: ISOTROPIC
Height: 6.6 ft AGL Gain: -2.15 dBd

Notes

Acton existing and planned with proposed at 140'

MILES

-0.3 0 1

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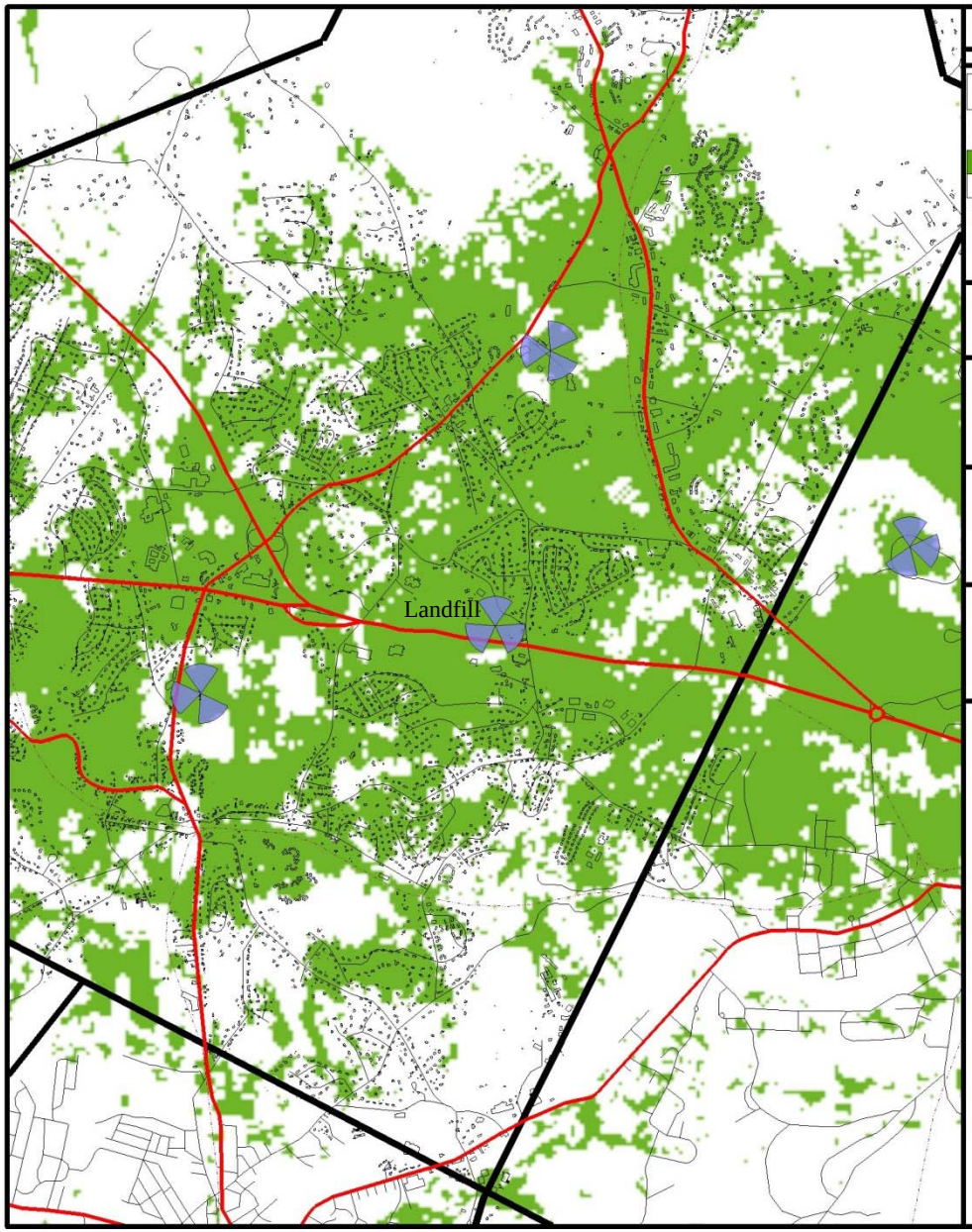

SIGNAL™: Acton Clearwire

Rail

Received Power at remote

> -73.0 dBmW
< -73.0 dBmW

Display threshold level: -120.0 dBmW
RX Antenna - Type: ISOTROPIC
Height: 6.6 ft AGL Gain: -2.15 dBd

Notes

Acton existing and planned with 8 Forest Street at 140'

MILES

-0.3 0 1

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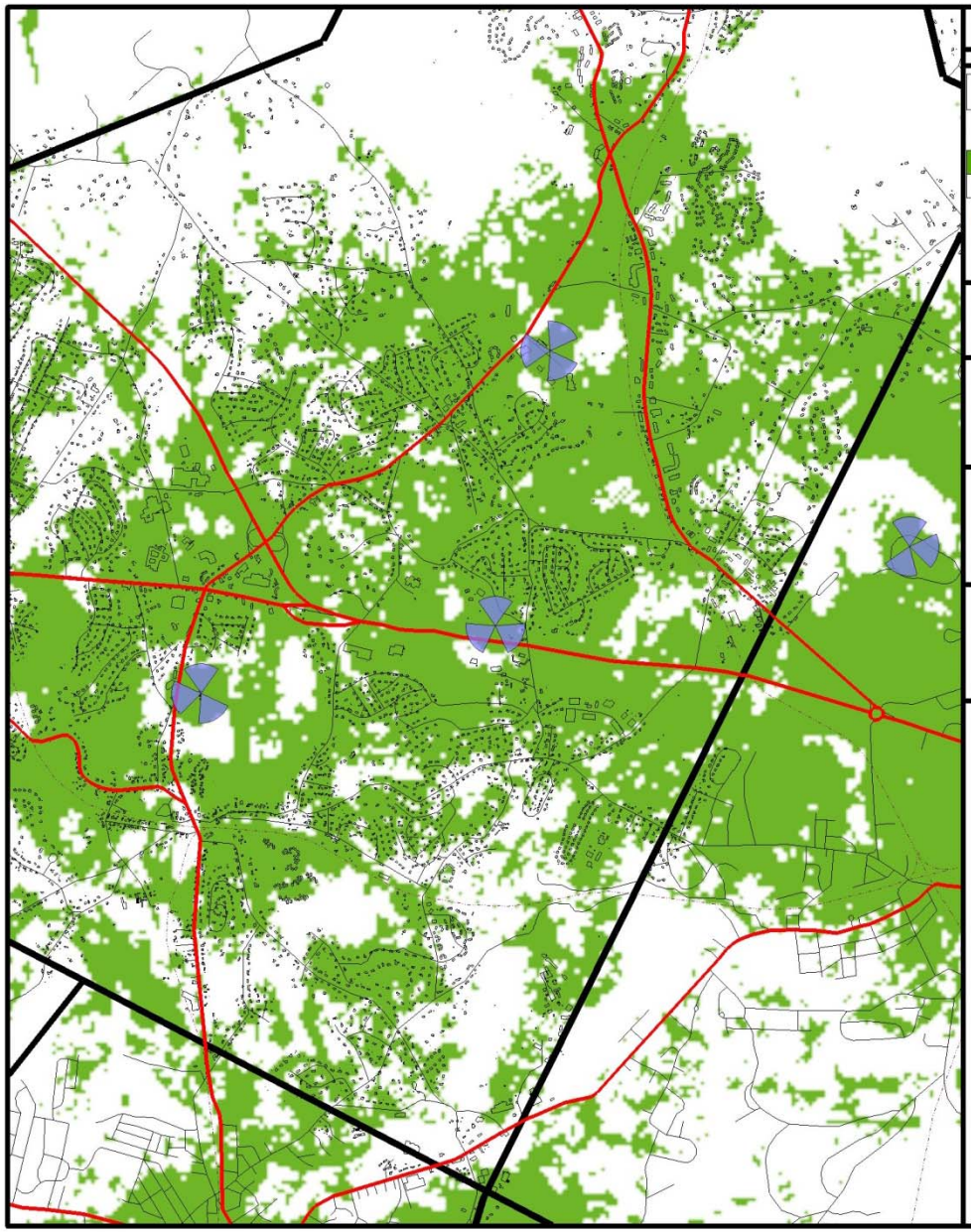

SIGNAL™: Acton Clearwire

Rail

Received Power at remote

> -73.0 dBmW

< -73.0 dBmW

Display threshold level: -120.0 dBmW
RX Antenna - Type: ISOTROPIC
Height: 6.6 ft AGL Gain: -2.15 dBd

Notes

Acton existing and planned with 8 Forest at 170

MILES

-0.3 0 1

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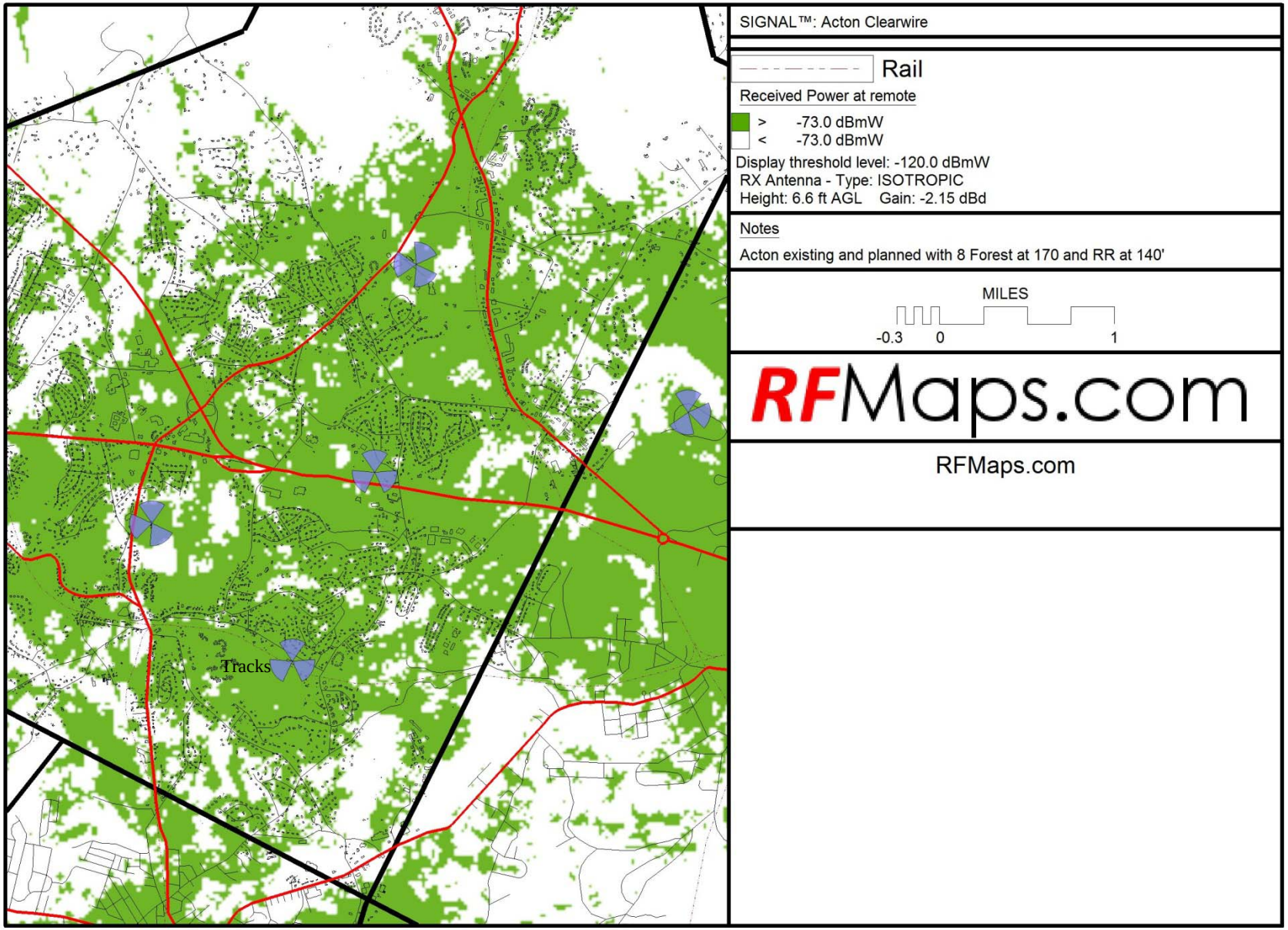
Tracks
SIGNAL™: Acton Clearwire
Rail
Received Power at remote
> -73.0 dBmW
< -73.0 dBmW
Display threshold level: -120.0 dBmW
RX Antenna - Type: ISOTROPIC
Height: 6.6 ft AGL Gain: -2.15 dBd
Notes
Acton existing and planned with 8 Forest at 170 and RR at 140'
MILES
-0.3
0
1
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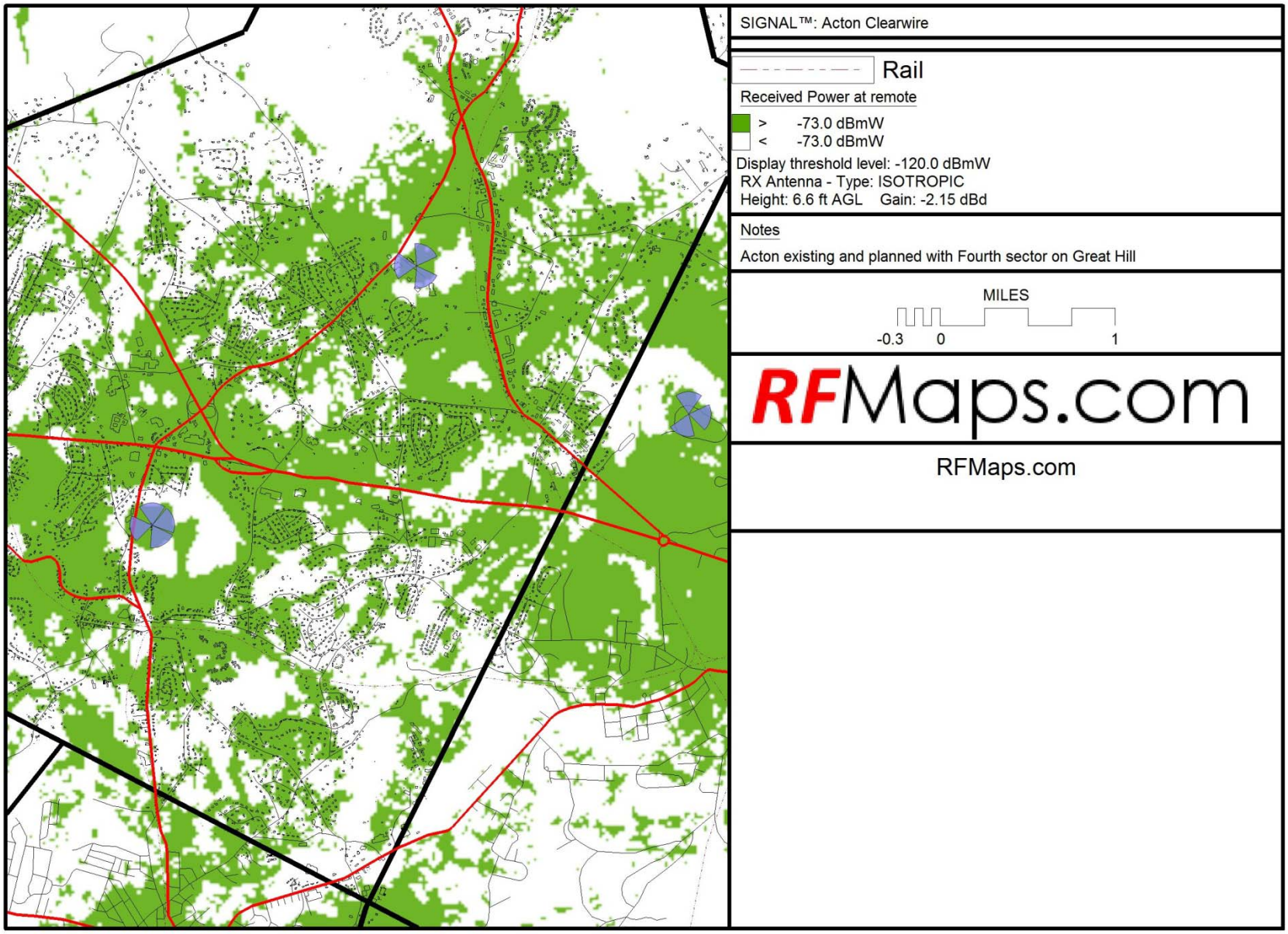
SIGNAL™: Acton Clearwire
Rail
Received Power at remote
> -73.0 dBmW
< -73.0 dBmW
Display threshold level: -120.0 dBmW
RX Antenna - Type: ISOTROPIC
Height: 6.6 ft AGL Gain: -2.15 dBd
Notes
Acton existing and planned with Fourth sector on Great Hill
MILES
-0.3
0
1
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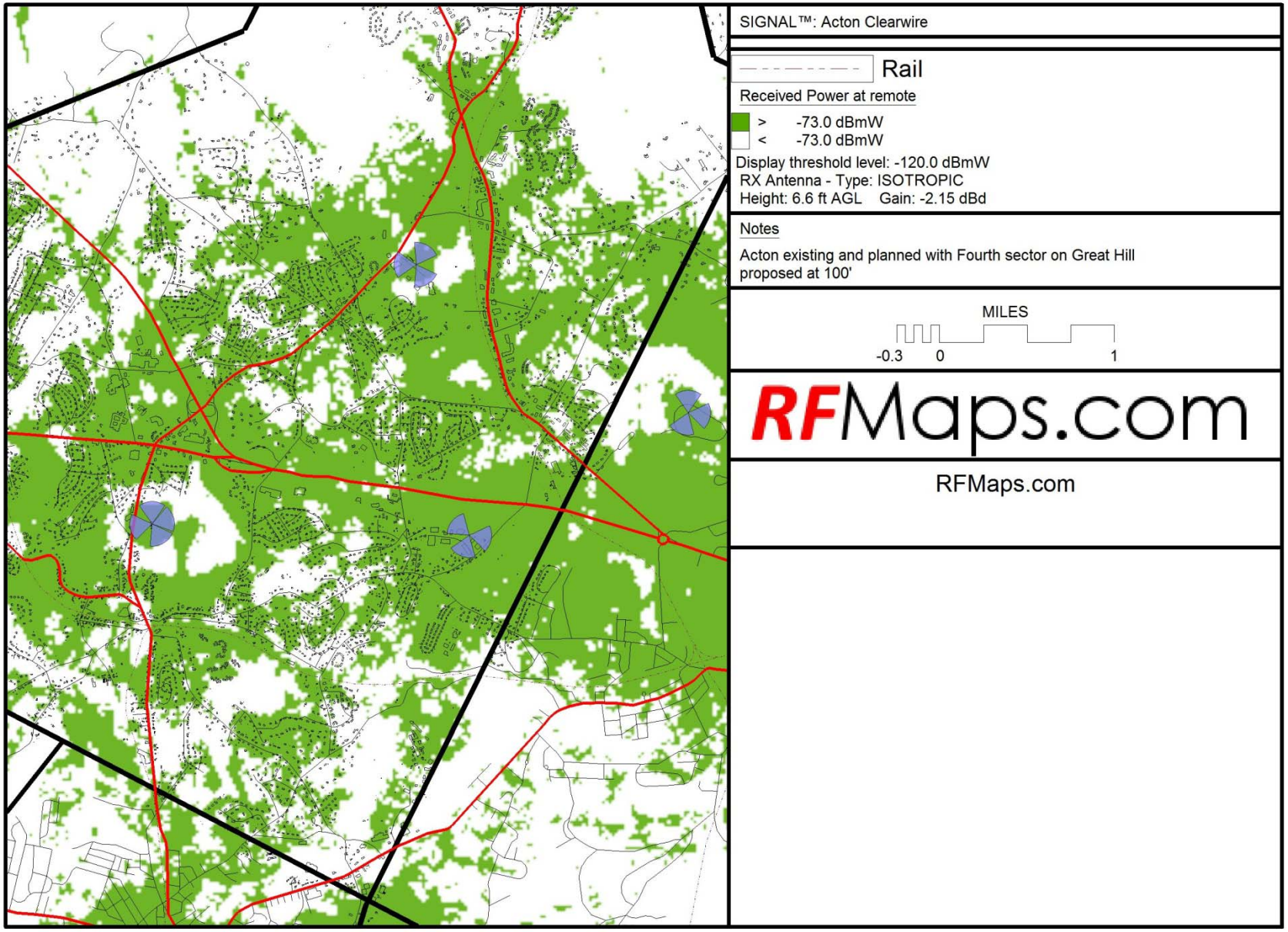
SIGNAL™: Acton Clearwire
Rail
Received Power at remote
> -73.0 dBmW
< -73.0 dBmW
Display threshold level: -120.0 dBmW
RX Antenna - Type: ISOTROPIC
Height: 6.6 ft AGL Gain: -2.15 dBd
Notes
Acton existing and planned with Fourth sector on Great Hill proposed at 100'
MILES
-0.3
0
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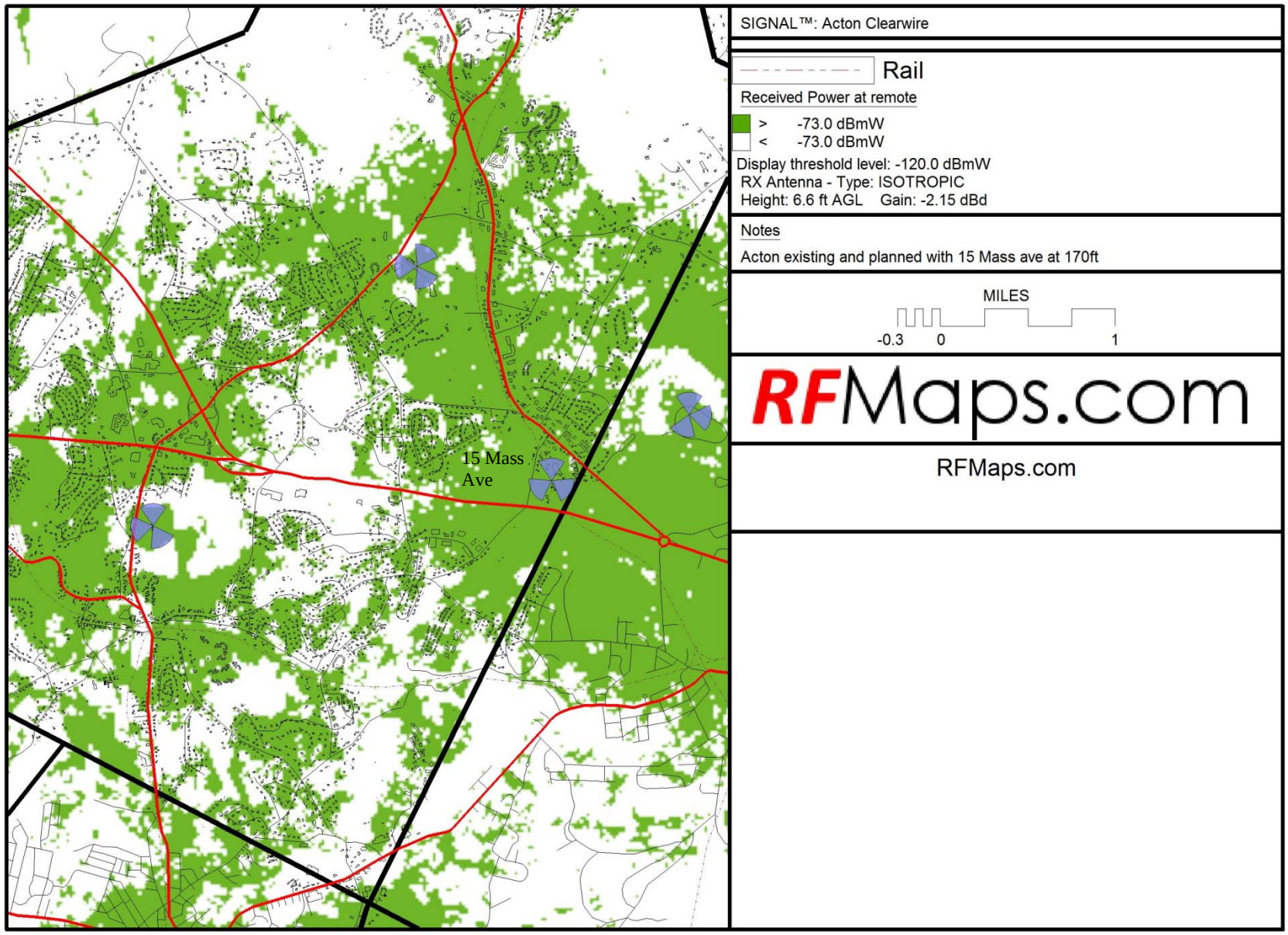
15 Mass
Ave
SIGNAL™: Acton Clearwire
Rail
Received Power at remote
> -73.0 dBmW
< -73.0 dBmW
Display threshold level: -120.0 dBmW
RX Antenna - Type: ISOTROPIC
Height: 6.6 ft AGL Gain: -2.15 dBd
Notes
Acton existing and planned with 15 Mass ave at 170ft
MILES
-0.3
0
1
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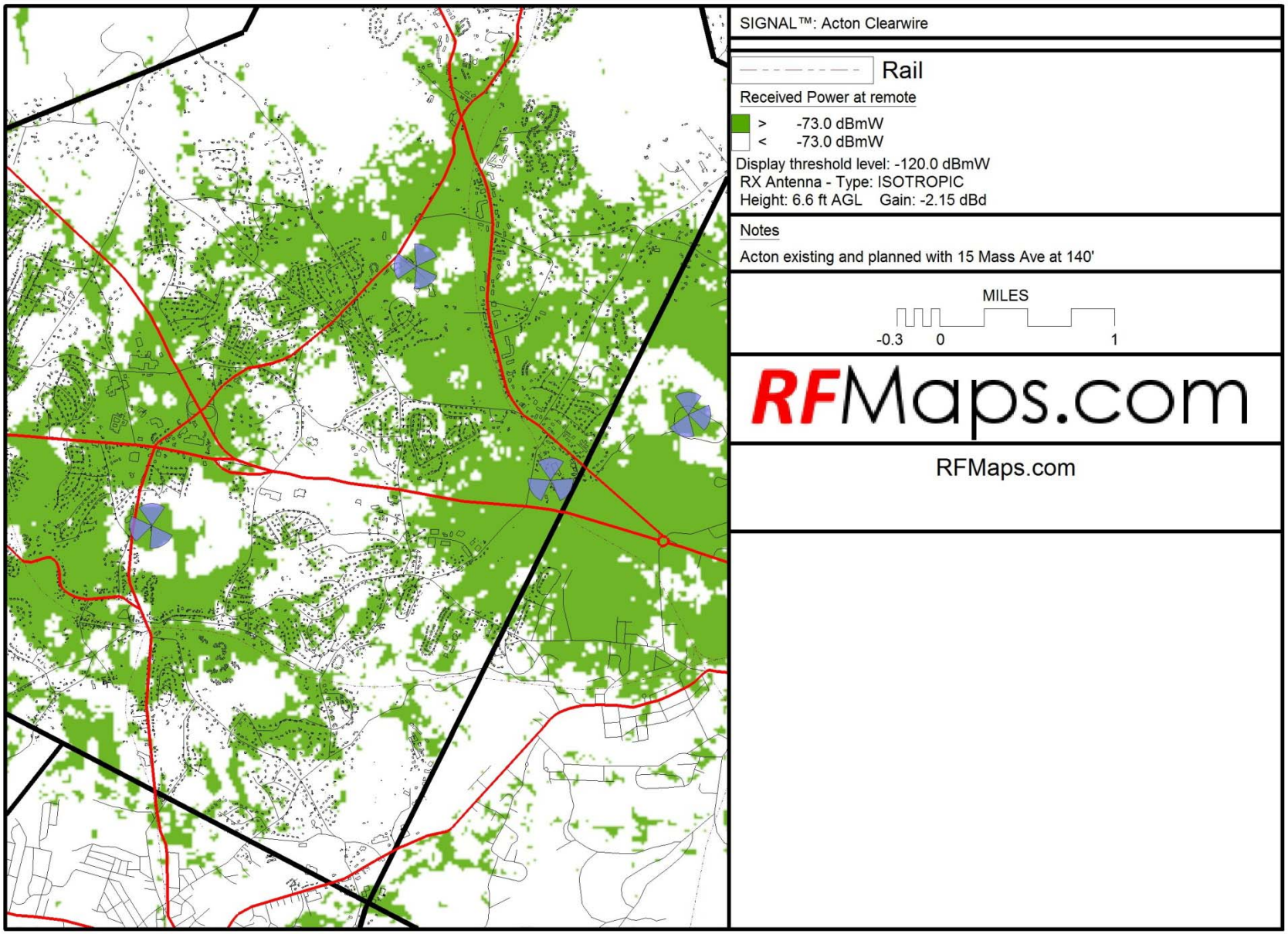
SIGNAL™: Acton Clearwire
Rail
Received Power at remote
> -73.0 dBmW
< -73.0 dBmW
Display threshold level: -120.0 dBmW
RX Antenna - Type: ISOTROPIC
Height: 6.6 ft AGL Gain: -2.15 dBd
Notes
Acton existing and planned with 15 Mass Ave at 140'
MILES
-0.3
0
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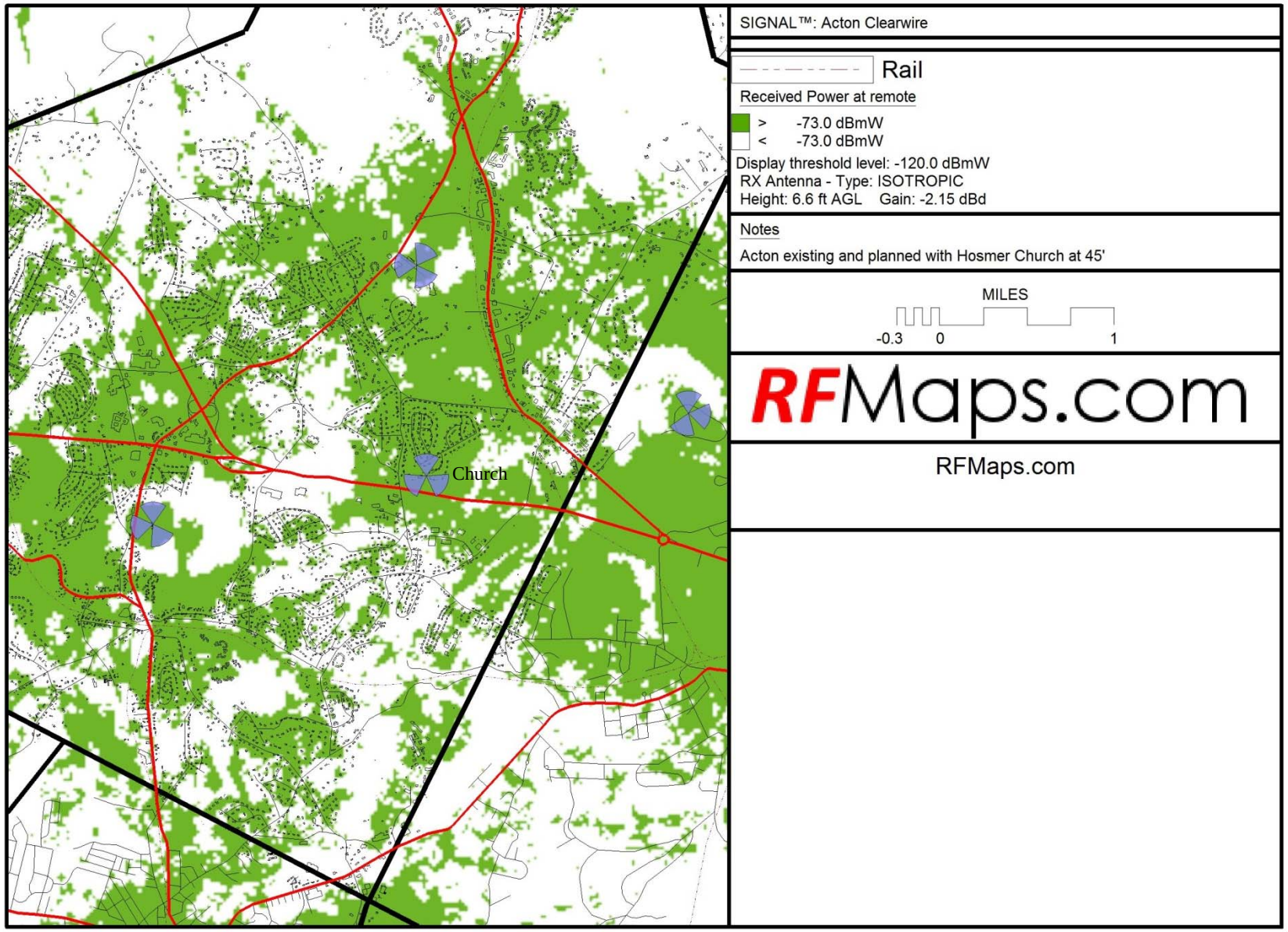
Church
SIGNAL™: Acton Clearwire
Rail
Received Power at remote
> -73.0 dBmW
< -73.0 dBmW
Display threshold level: -120.0 dBmW
RX Antenna - Type: ISOTROPIC
Height: 6.6 ft AGL Gain: -2.15 dBd
Notes
Acton existing and planned with Hosmer Church at 45'
MILES
-0.3
0
1
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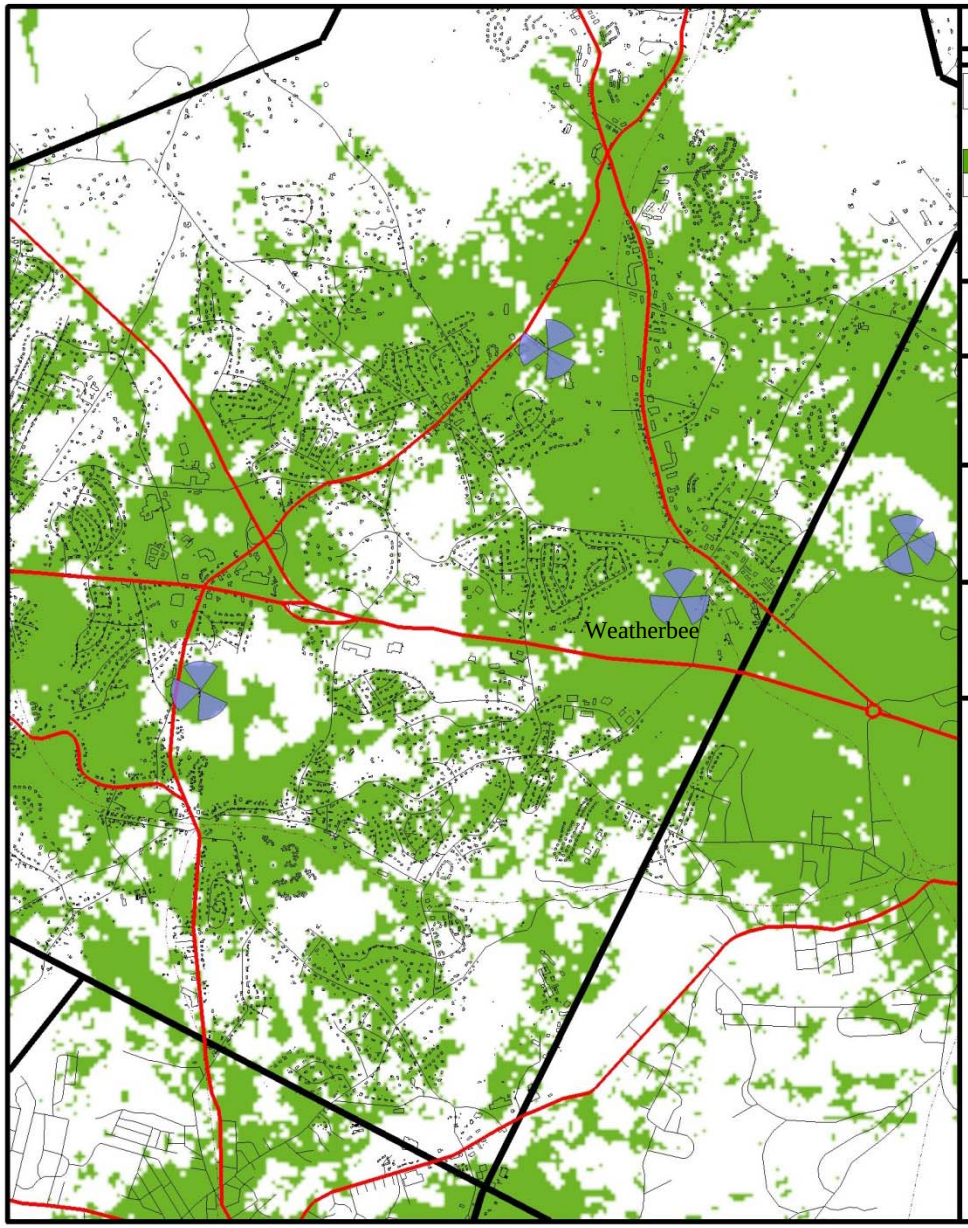

SIGNAL™: Acton Clearwire

Rail

Received Power at remote

> -73.0 dBmW
< -73.0 dBmW

Display threshold level: -120.0 dBmW
RX Antenna - Type: ISOTROPIC
Height: 6.6 ft AGL Gain: -2.15 dBd

Notes

Acton existing and planned with Wetherbee at 170'

MILES

-0.3 0 1

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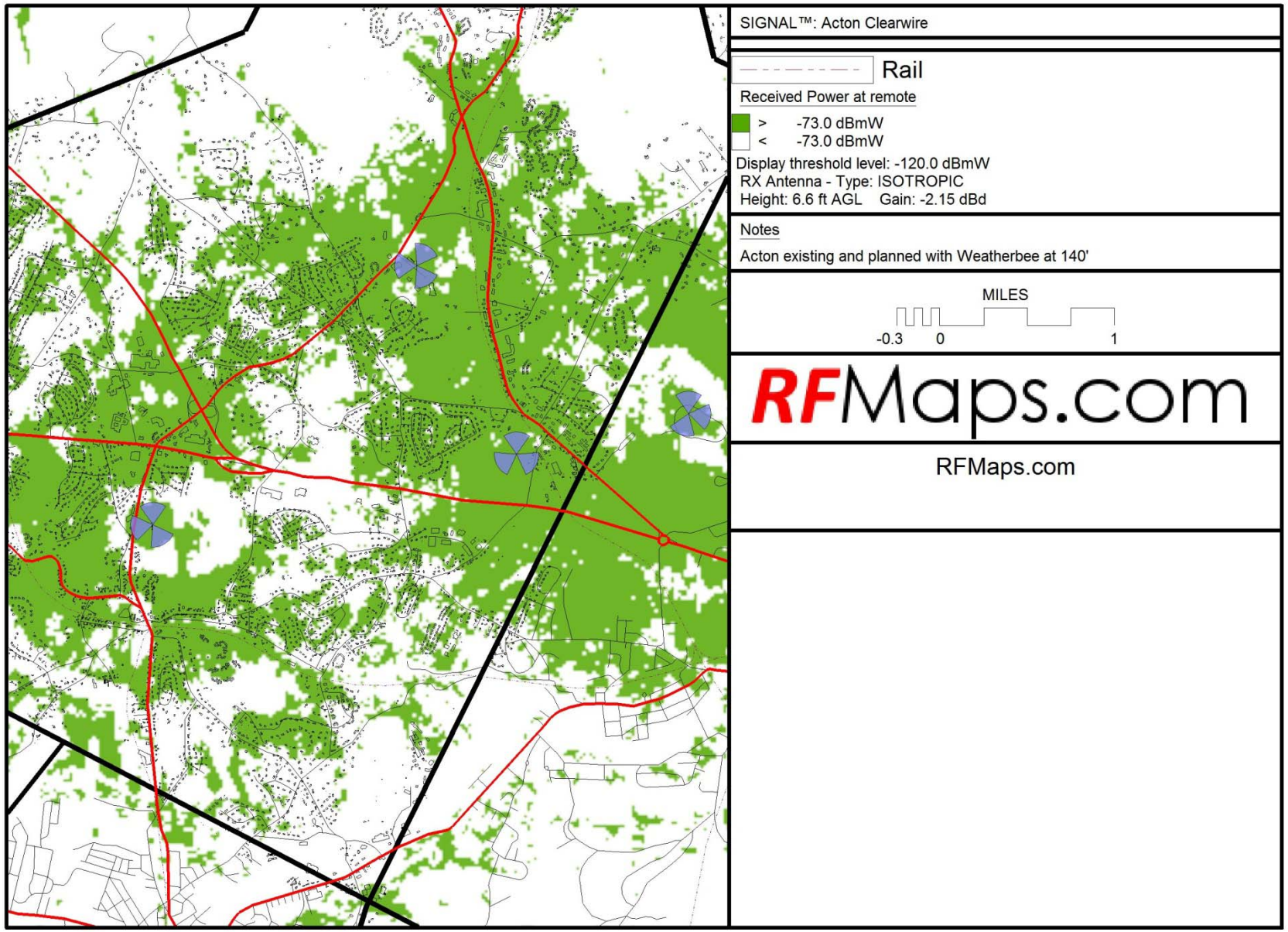
SIGNAL™: Acton Clearwire
Rail
Received Power at remote
> -73.0 dBmW
< -73.0 dBmW
Display threshold level: -120.0 dBmW
RX Antenna - Type: ISOTROPIC
Height: 6.6 ft AGL Gain: -2.15 dBd
Notes
Acton existing and planned with Weatherbee at 140'
MILES
-0.3
0
1
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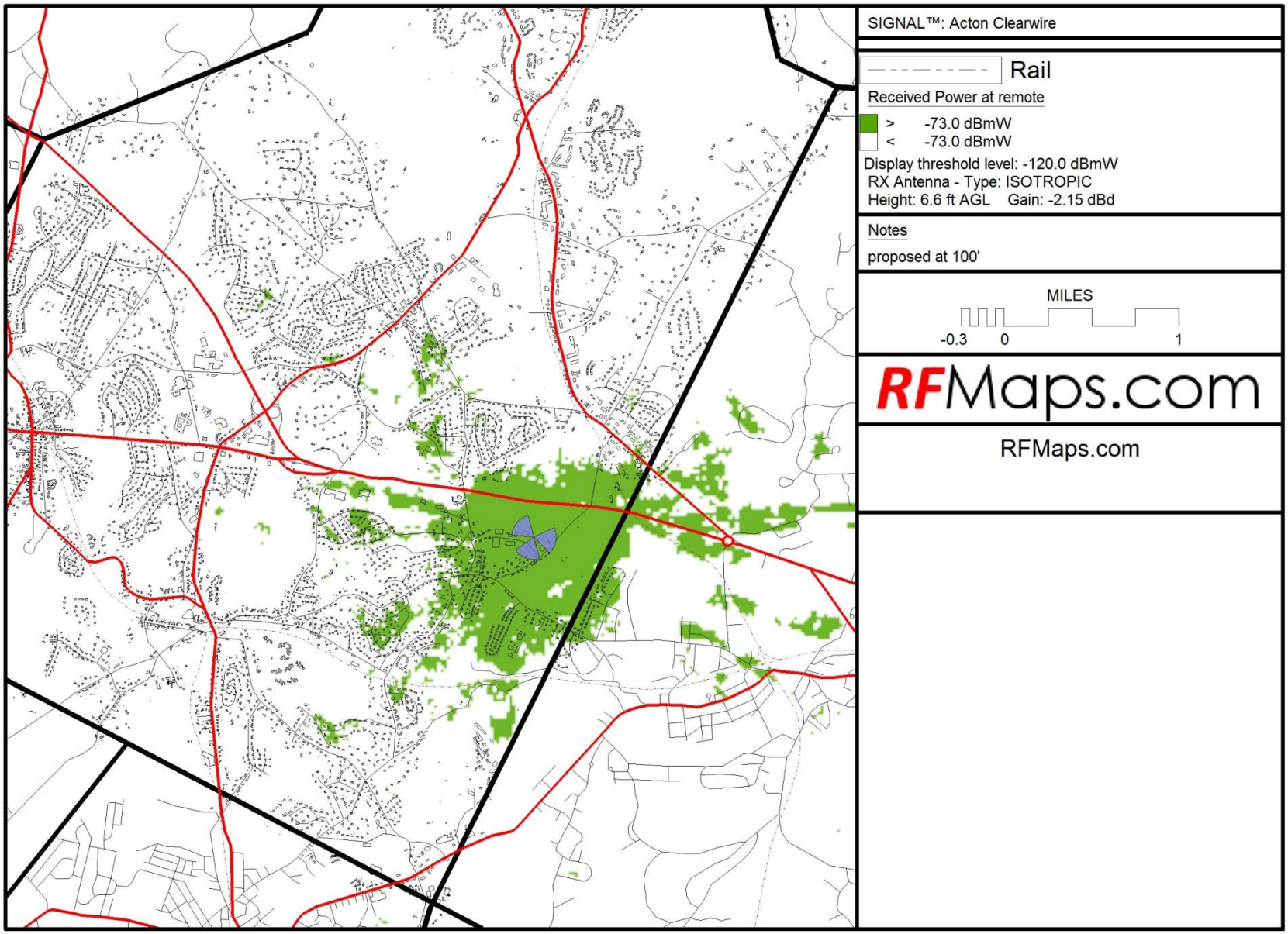
SIGNAL™: Acton Clearwire
Rail
Received Power at remote
> -73.0 dBmW
< -73.0 dBmW
Display threshold level: -120.0 dBmW
RX Antenna - Type: ISOTROPIC
Height: 6.6 ft AGL Gain: -2.15 dBd
Notes
proposed at 100'
MILES
-0.3
0
1
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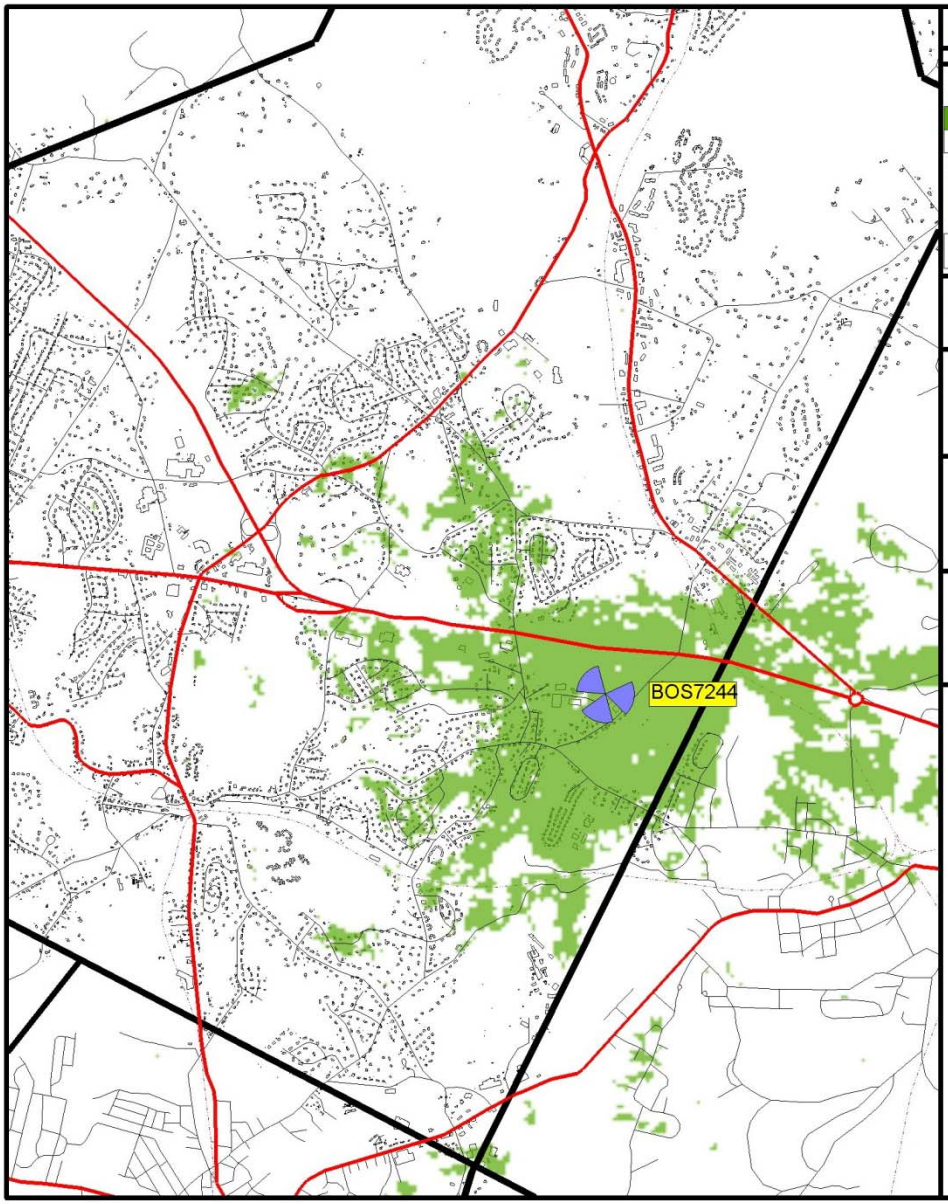

SIGNAL™: Acton Clearwire

Received Power at remote

> -73.0 dBmW

< -73.0 dBmW

Display threshold level: -120.0 dBmW

RX Antenna - Type: ISOTROPIC

Height: 6.6 ft AGL Gain: -2.15 dBd

Rail

Notes

Acton proposed at 140'

MILES

-0.3 0 1

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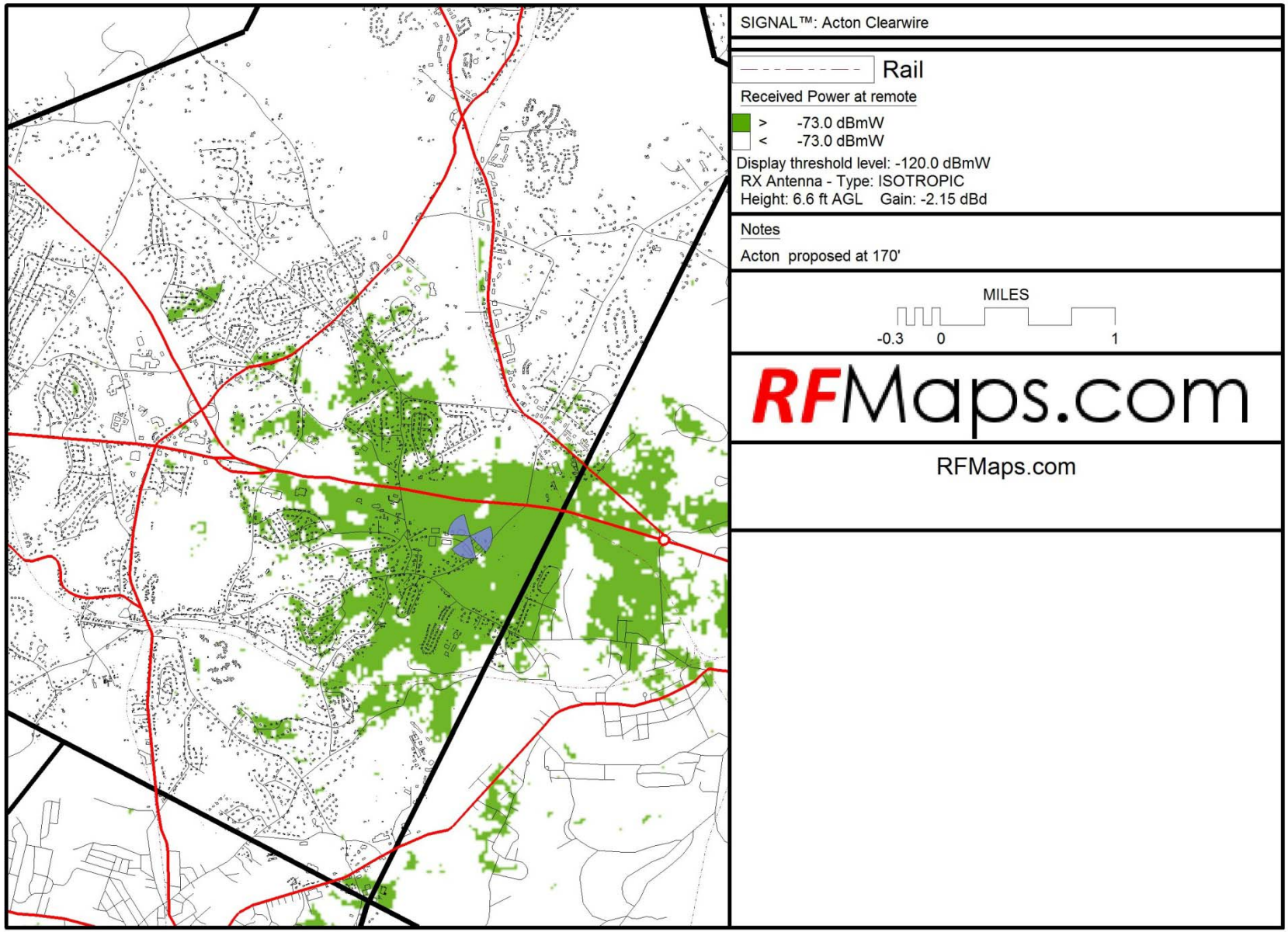
SIGNAL™: Acton Clearwire
Rail
Received Power at remote
> -73.0 dBmW
< -73.0 dBmW
Display threshold level: -120.0 dBmW
RX Antenna - Type: ISOTROPIC
Height: 6.6 ft AGL Gain: -2.15 dBd
Notes
Acton proposed at 170'
MILES
-0.3 0 1
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