



From: Hank Madden & Billy Stubbs – RF Engineers, Verizon Wireless

April 17, 2015

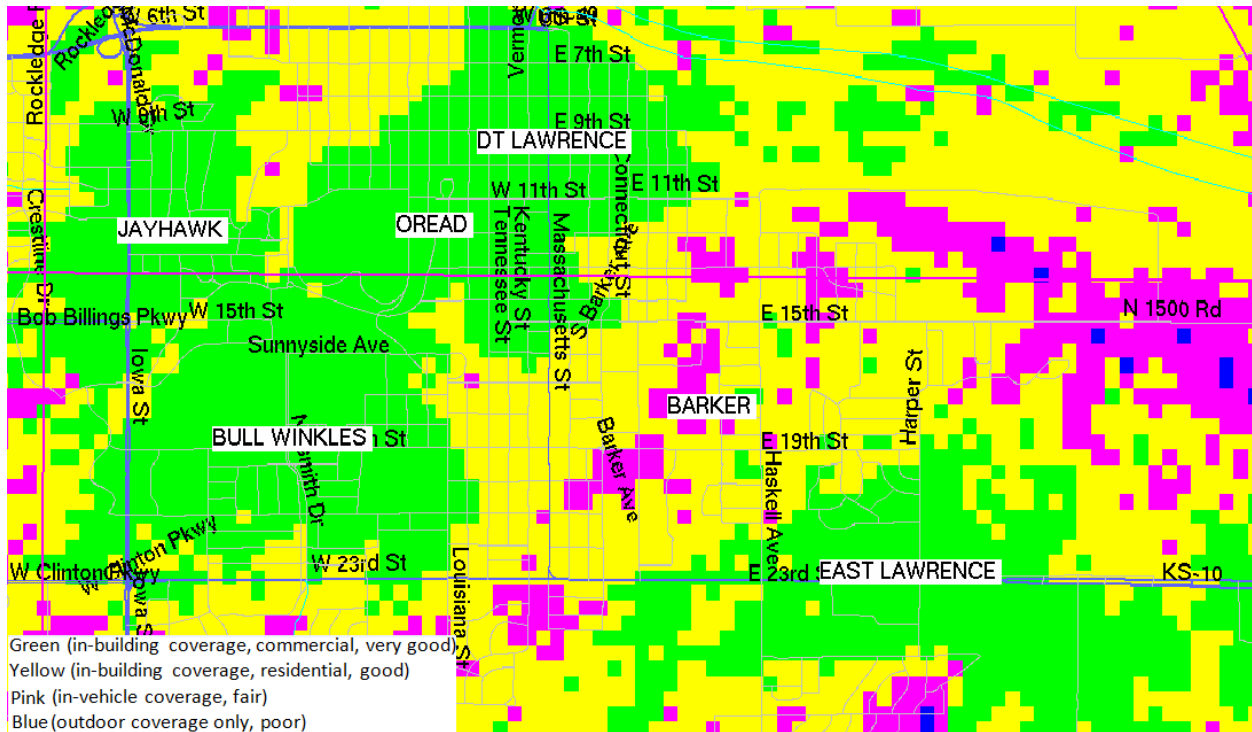
To: **The City Representatives**

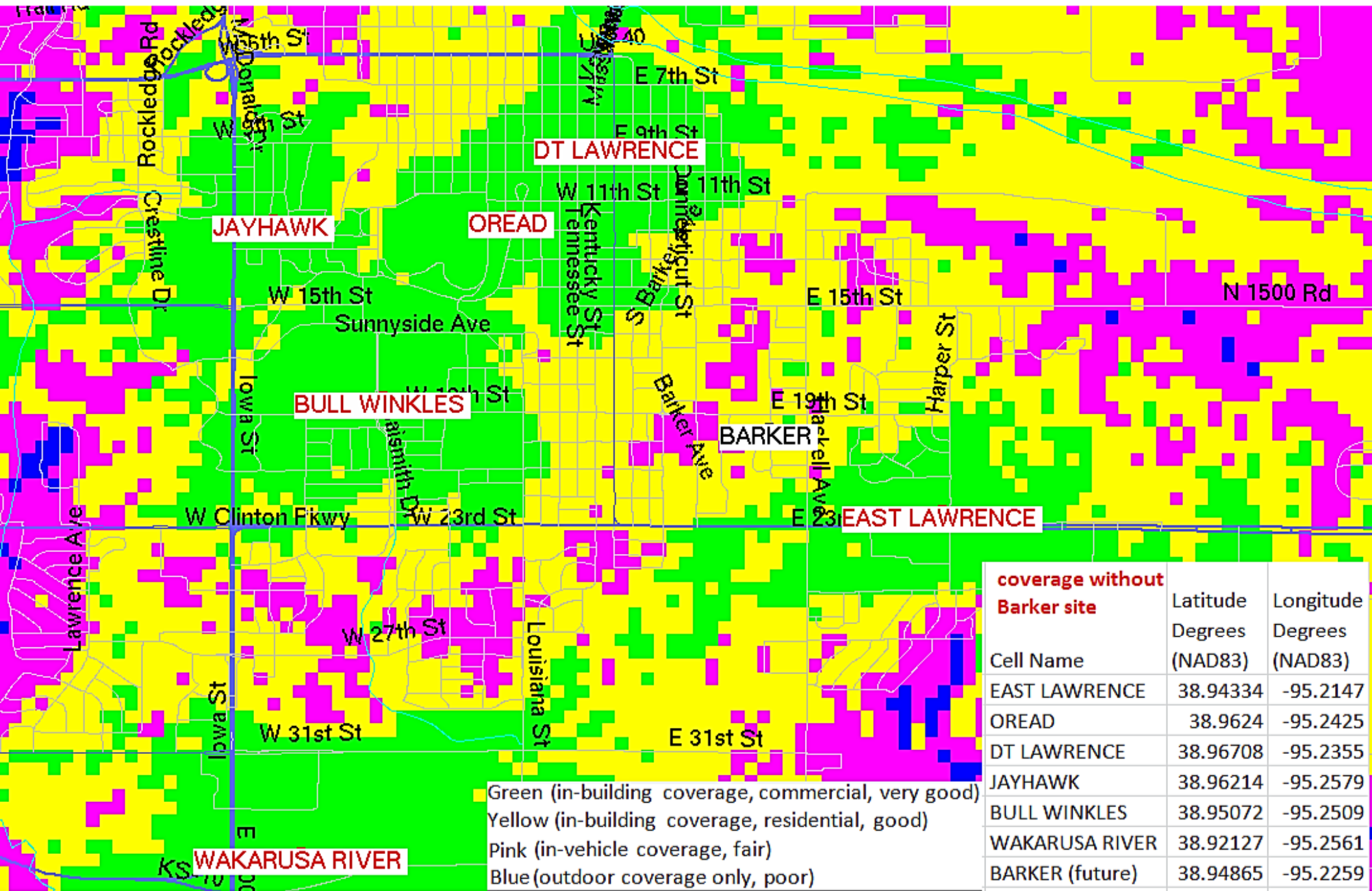
RE: **Proposed Barker cell site**

Dear City Representatives,

Verizon Wireless is proud to serve the greater Lawrence, KS area and we are always diligent to maintain excellent service and improvements. At this time, Verizon Wireless is trying to enhance the area of east-central portions of Lawrence, KS where coverage service reliability and capacity must be improved. The area that needs improvement at this time in both capacity and performance is between Massachusetts St and Haskell Ave just north of 20<sup>th</sup> St in east-central Lawrence. The fast growing 4G (LTE) data usage has required Verizon Wireless to plan for a new cell site in this area to improve coverage, performance and offload capacity from existing sites namely Oread, DT Lawrence and East Lawrence sites as shown below, Map 1.

Map 1 – Existing Coverage

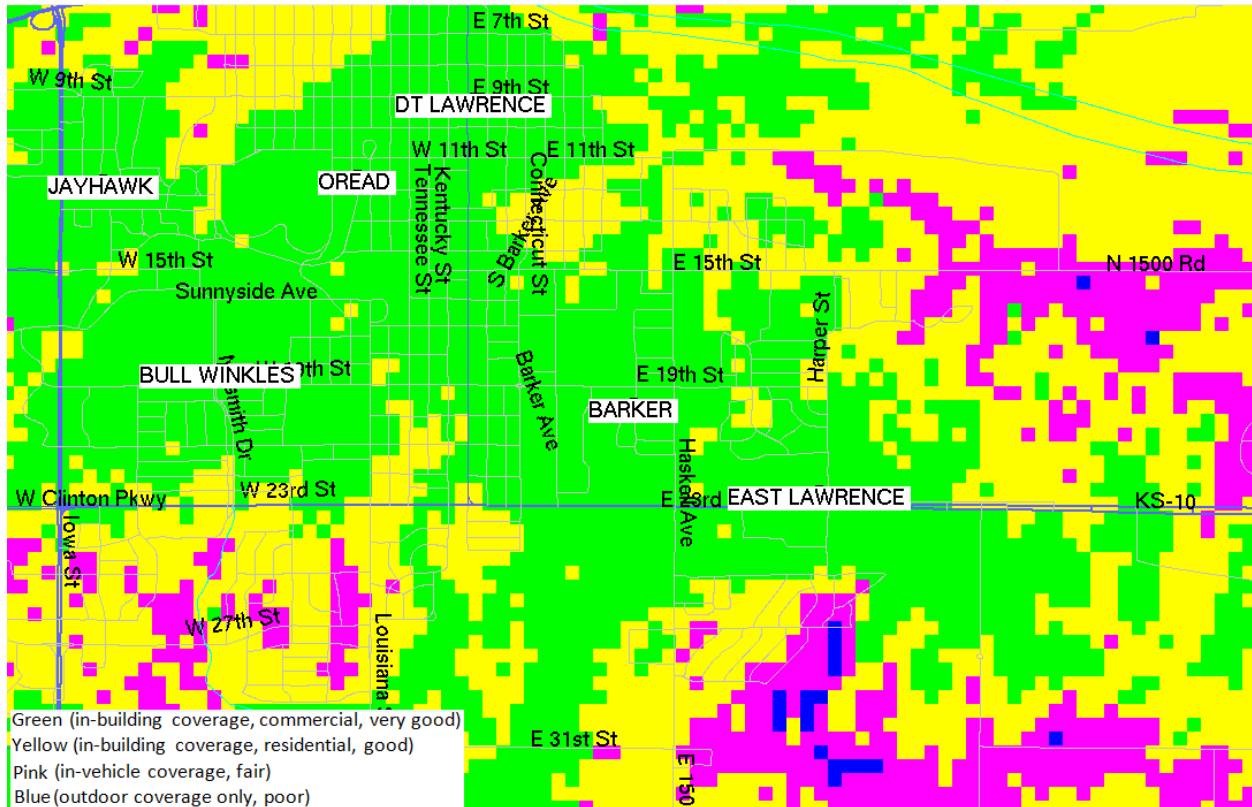




coverage without Barker site	Latitude Degrees (NAD83)	Longitude Degrees (NAD83)
Cell Name		
EAST LAWRENCE	38.94334	-95.2147
OREAD	38.9624	-95.2425
DT LAWRENCE	38.96708	-95.2355
JAYHAWK	38.96214	-95.2579
BULL WINKLES	38.95072	-95.2509
WAKARUSA RIVER	38.92127	-95.2561
BARKER (future)	38.94865	-95.2259

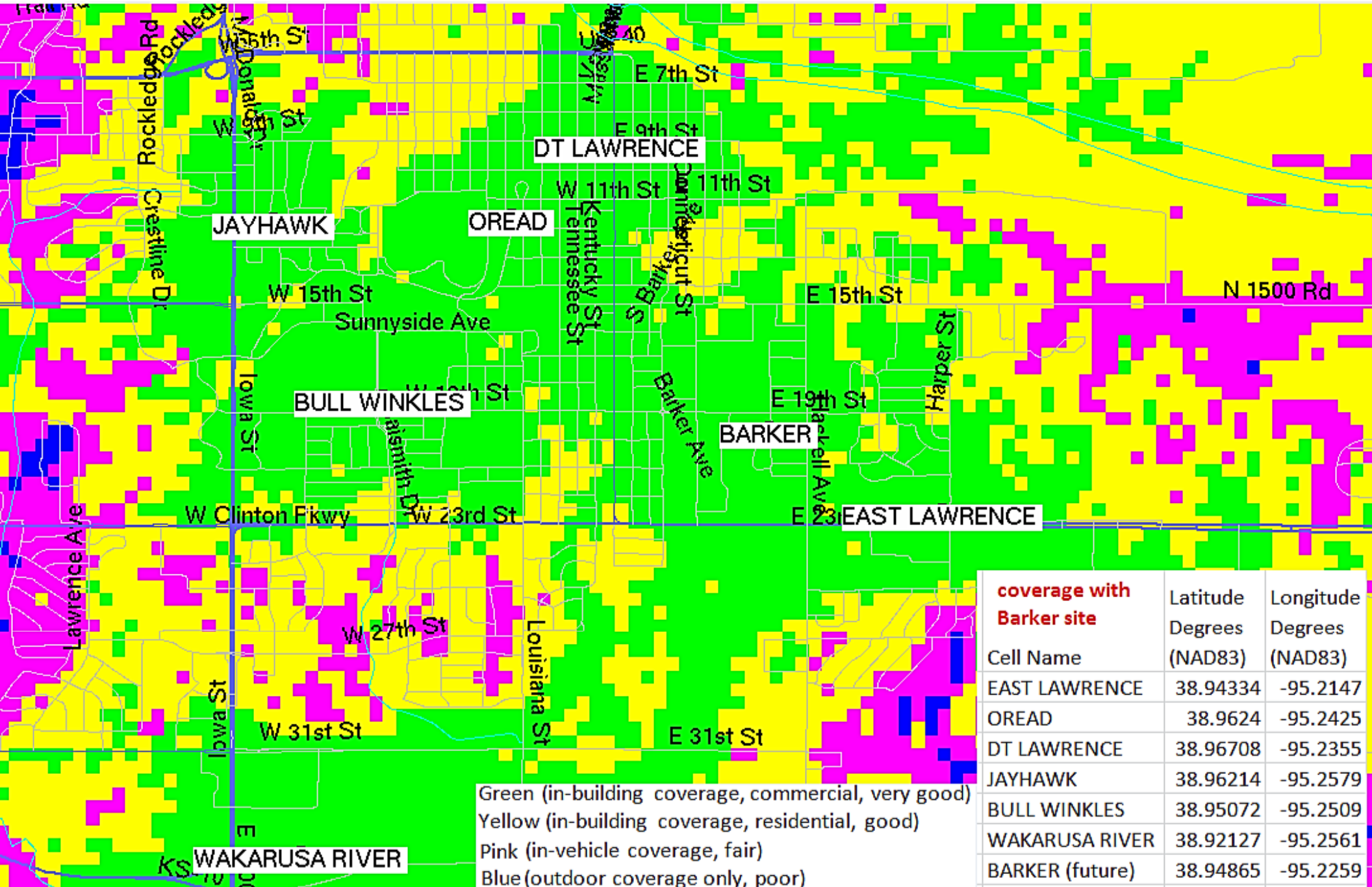
Below is Map 2 showing coverage improvement with the proposed new cell site, Barker.

Map 2 – Coverage with the new cell site, Barker



As 4G (LTE) data usage continues to increase dramatically as wireless customers utilize their wireless devices for more day to day task and recreation, the demand also increases to meet these needs by creating new opportunities to develop methods of improving coverage, capacity, and data throughput. The most challenging is capacity and data throughput. Verizon Wireless is meeting the expectations of our customers by designing this proposed cell site in the Lawrence area.

This coverage improvement combined with the capacity offload will afford Verizon Wireless customers the best possible data performance at the location identified. Verizon Wireless continues to strive to provide the best possible wireless experience for its customers while still recognizing the needs and desires of the surrounding community and being a good neighbor.

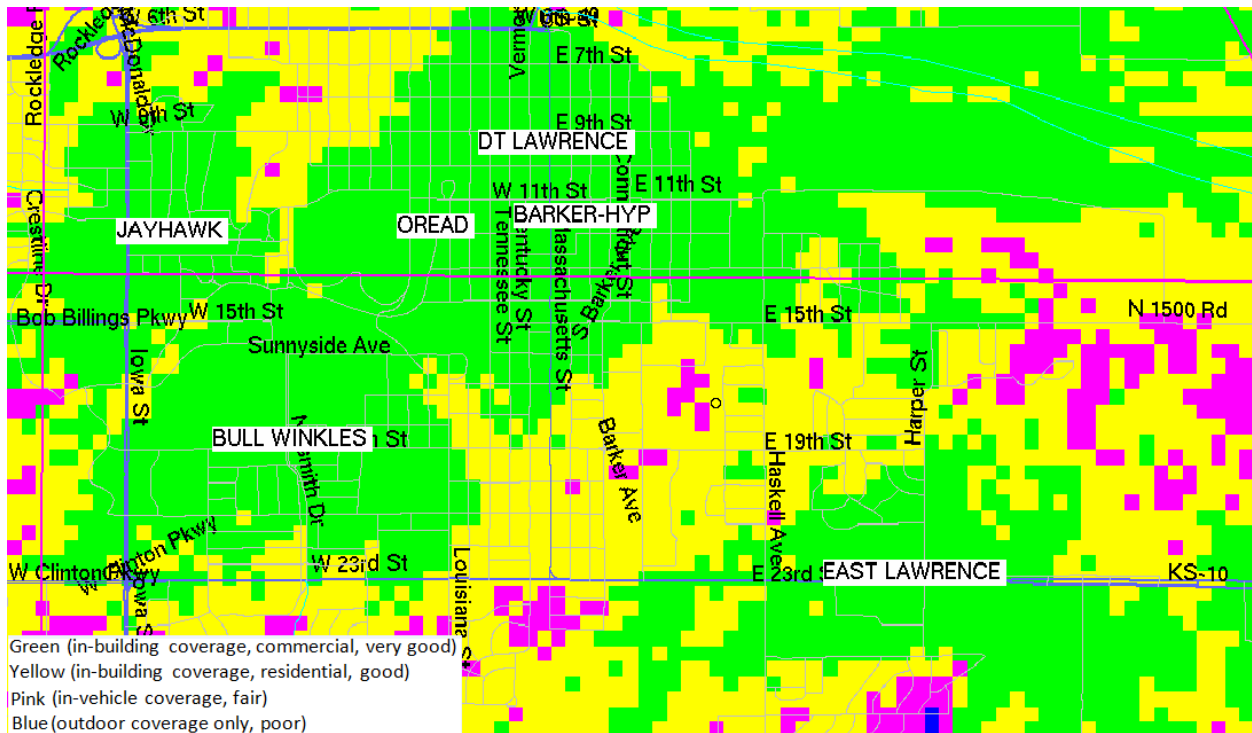


Green (in-building coverage, commercial, very good)  
 Yellow (in-building coverage, residential, good)  
 Pink (in-vehicle coverage, fair)  
 Blue (outdoor coverage only, poor)

coverage with Barker site	Latitude Degrees (NAD83)	Longitude Degrees (NAD83)
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Below is Map 3 showing coverage improvement utilizing the LAWC Barker tower site.

Map 3 – Coverage with the new cell site using the LAWC Barker site



The Douglas County tower location (Barker-HYP) was considered in the analysis; however the proximity of Barker-HYP is only 0.3 miles from the current VZW location of the DT Lawrence site. Typically, a separation of roughly 1 mile or more is preferred. If sites are closer than 1 mile apart this will cause excessive signal overlap and non-equidistant spacing among the other towers in the area. This could cause inter-signal interference which would result in poor signal quality or data throughput. The Barker-HYP location also does not fully address the coverage null identified earlier between Massachusetts St and Haskell Ave just north of 20<sup>th</sup> St in east-central Lawrence, which is the objective of the proposed site.

Based on these results, the Barker-HYP location is not considered a viable candidate.