EXHIBIT 3

ATTACHMENT 3—RF JUSTIFICATION

LAND USE APPLICATION—CUP
Wireless Telecommunications Facility
AT&T (SP4359 Othello Downtown NSB)

EXHIBIT 3

January 29, 2019

City of Othello
Community Development Department
500 E Main Street, Othello, WA 99344

Re: AT&T's Radio Frequency (RF) Engineering Justification for the Proposed Wireless Communications Facility in the City of Othello (Adams County): SP4359 Othello Downtown NSB at 640 Elm Street, Othello, WA 99344.

To Whom It May Concern,

Enclosed please find the RF Justification document prepared for AT&T's proposed new wireless communications facility at the above noted location. This letter serves as my verification, to the best of my knowledge, of the accuracy of the RF information, propagation maps, and analysis provided in the attached RF Justification.

Thank you for your consideration of this information.

Sincerely,

Kung-Liang Brian Lin
RF Engineer
AT&T Mobility

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SP4359 Othello Downtown RF Justification

SERVICE OBJECTIVES & TARGETED SERVICE AREA EXHIBIT 3

AT&T is proposing to build a new wireless communication facility ("WCF" and/or "Facility"), SP4359 Othello Downtown, located 640 E Elm Street in Othello, WA (46.820344, -119.166256).

Service Objectives—Generally.
AT&T strives for a network design that provides high radio frequency ("RF") signal strength and signal-to-interference-plus-noise ratio ("SINR") resulting in quality service inside buildings and vehicles. To support this network design there are two main drivers that prompt the need for a new cell site—coverage and capacity.

"Coverage" is the need to expand wireless service into an area that either has no service or bad service. The request for service often comes from customers or emergency personnel. "Capacity" is the need for more wireless resources. Cell sites have a limited amount of resources to handle voice calls, data connections, and data volume. When these capacity limits are reached, user experience quickly degrades. Capacity issues for LTE networks are identified by using SINR metrics to measure the network's signal quality when there is a high traffic load condition. High traffic areas in the network experience poor SINR due to the increased amount of signal noise/interference generated by the interfering strength of the simultaneous transmissions.

Proposed New Facility.
The proposed new Facility is a service capacity site intended to provide capacity relief to AT&T's existing wireless facility for its customers in the downtown Othello area and south of downtown (the "Targeted Service Area"). Currently, the Targeted Service Area is experiencing higher traffic volumes and AT&T's existing facility is at or near its capacity to provide sufficient data density service to the Targeted Service Area. The proposed new Facility will offload data burdens from AT&T's existing site and will provide more service capacity for users.

As proposed, this WCF meets AT&T's service objectives to provide sufficient continuous outdoor, in-vehicle, and in-building wireless coverage within the Targeted Service Area. This proposed new Facility will allow for uninterrupted wireless service in the Targeted Service Area with fewer dropped calls, improved call quality, and improved access to additional wireless services the public now demands. This includes emergency 911 calls throughout the area.

This service objective and Targeted Service Area was determined by AT&T's radio frequency (RF) engineers through a combined analysis of market demand, customer complaints, service requests, and RF engineering design using SINR metrics.

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SEARCH RING

AT&T's RF engineers performed an RF engineering study—considering multiple objectives—to determine the approximate site location and antenna height required to best fulfill the noted service objectives within the Targeted Service Area. From this study, AT&T's RF engineers identified a "search ring" area where a new wireless facility may be located to provide effective service in the Targeted Service Area.

As this is a service capacity site intended to offload capacity in a specific area, the proposed new Facility must be located within identified search ring to be able to establish a dominant signal within the Targeted Service Area—i.e. the proposed new Facility will provide service to users' handsets and prevent them from communicating with AT&T's existing facility, thereby relieving some of the burden on the existing facility by offloading users' data requirements to the proposed new Facility. Accordingly, placing additional equipment on AT&T's existing facility, approximately ½ mile to the NW of downtown, is not a viable option, as the existing facility is too far away to provide sufficient capacity relief required in the Targeted Service Area.

Figure A—Search Ring, below, indicates the search ring AT&T's RF engineers established for this proposed WCF, imposed over both a territorial map and the city's zoning map. A discussion of the methodology AT&T's RF engineers used to identify the search ring is included at the end of this RF Justification document.

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PROPOSED NEW AT&T FACILITY

To meet AT&T's service objectives within the Targeted Service Area, AT&T is proposing to build a new 100ft tri-pole stealth tower with up to twelve (12) panel antennas and eighteen (18) remote radio head (RRH) units, together with all associated equipment. As the proposed new Facility is intended to enhance capacity, height and location plays an important role. The proposed 100ft tip height was determined by considering various factors such as the height of surrounding wireless sites, ground elevation, obstructions to the signal, and the surrounding terrain. The proposed antenna tip height is the minimum necessary to best meet AT&T's service objectives within the Targeted Service Area. This is also the height where an AT&T wireless device can be reliably used to make and receive telephone calls and use data service in the presence of varying signals.

Figure B—Existing AT&T 4G LTE Coverage shows existing AT&T wireless coverage in the general area of the proposed new Facility. As can be seen, the existing WCF is providing coverage to a wide area. With this, it carries huge amount of traffic. There is no coverage gap. However, there is a need to provide the area with more capacity for the subscribers. Based upon SINR metrics, the existing coverage in the Targeted Service Area is insufficient for the volume of traffic and requires enhanced capacity (*i.e.* though this area already has AT&T coverage, additional capacity is needed to service the volume of users).

Figure C.1—New AT&T 4G LTE Coverage shows the general predicted coverage area of from a 100ft antenna tip height at the proposed location.

Figure C.2—New AT&T 4G LTE Coverage by Tx more accurately shows the predicted serving boundary of the proposed Facility with a 100ft antenna tip height. This is the area where this Facility is predicted to offload AT&T's current cellular traffic load. The general Targeted Service Area is outlined in red. As shown, the proposed Facility will provide good additional capacity within the entire Targeted Service Area and will more than sufficiently reduce traffic congestion in the Targeted Service Area.

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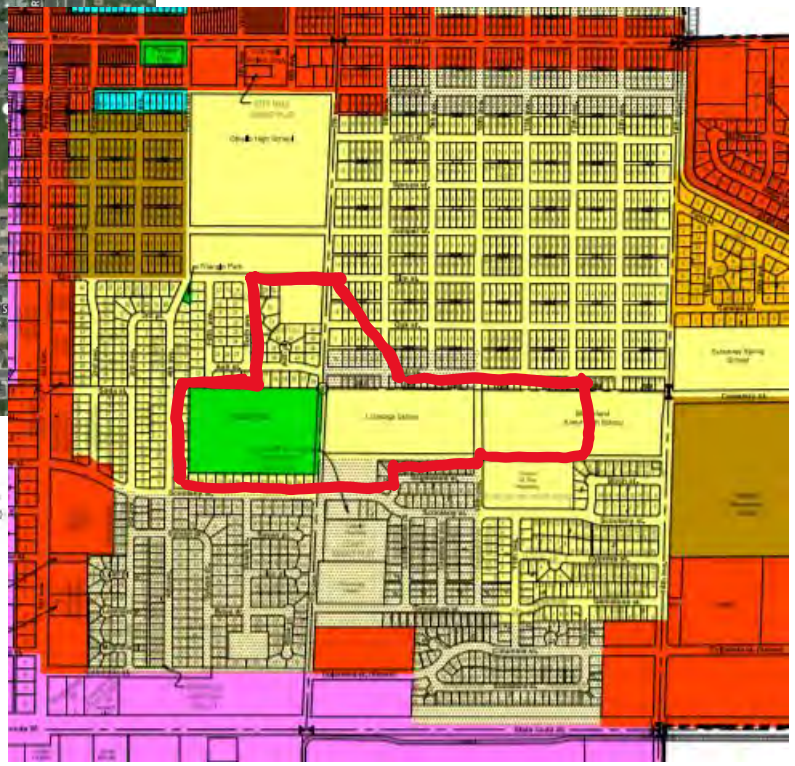
Figure A—Search Ring

Search Ring



LEGEND

(R-1)	RESIDENTIAL DISTRICT ONE	(I-2)	INDUSTRIAL DISTRICT TWO
(R-2)	RESIDENTIAL DISTRICT TWO	(S-1)	SUBURBAN 1
(R-3)	RESIDENTIAL DISTRICT THREE	(O.S.)	OPEN SPACE
(R-4)	RESIDENTIAL DISTRICT FOUR		CITY PARKS
(R-1M)	RESIDENTIAL-MEDICAL DISTRICT		CITY LIMITS
(C-1B)	COMMERCIAL USE DISTRICT ONE B	1	LOT NUMBER
(C-1)	COMMERCIAL USE DISTRICT ONE	101	BLOCK NUMBER
(C-2)	COMMERCIAL USE DISTRICT TWO		PLAT NAME
(I-1)	INDUSTRIAL DISTRICT ONE		

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Figure B—Existing AT&T 4G LTE Coverage

Targeted Service Area <u>BEFORE</u> Addition of Proposed New Facility

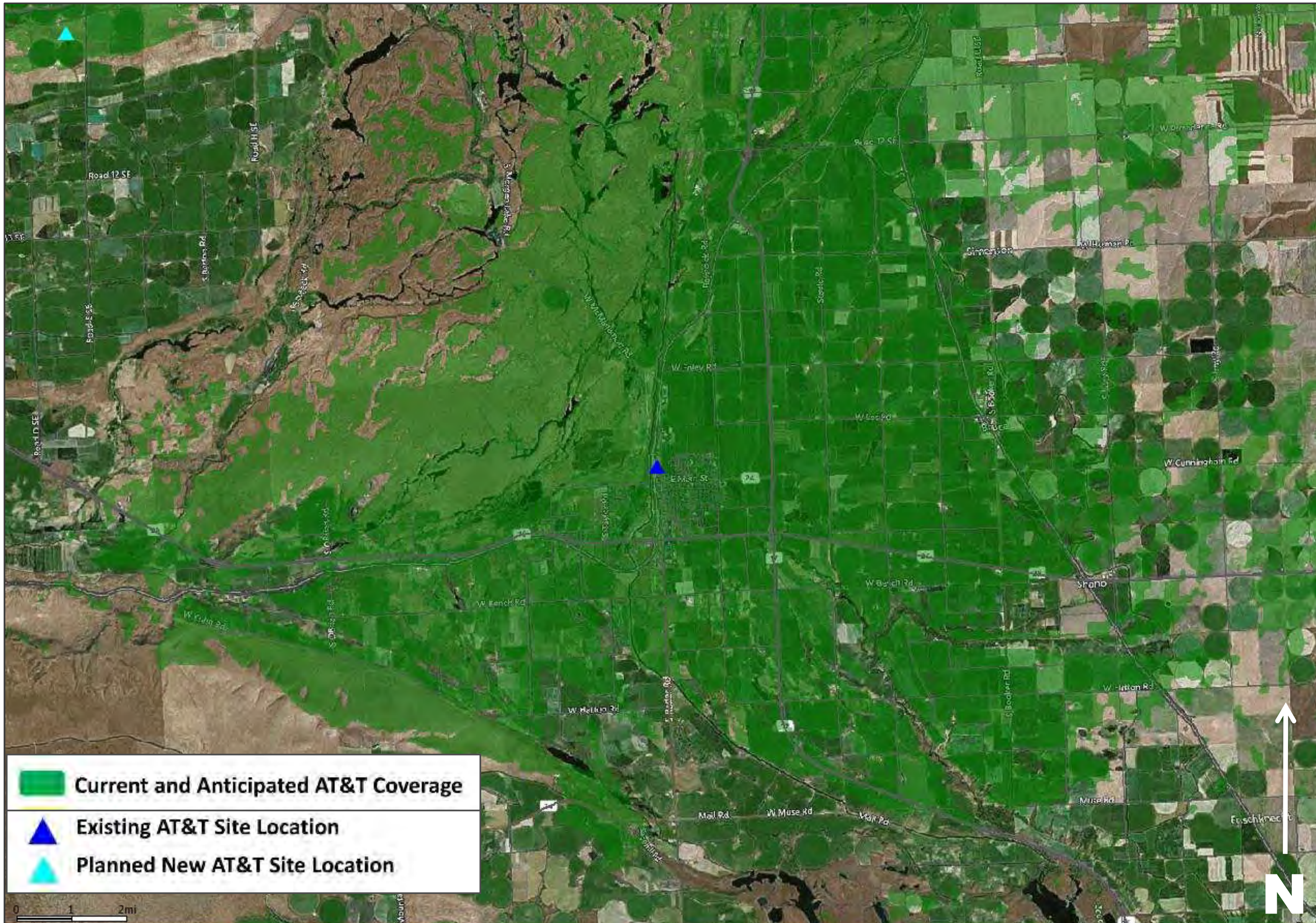

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Figure C.1—New AT&T 4G LTE Coverage

Predicted New Coverage AFTER Proposed AT&T Facility On-Air, 100ft Antenna Tip

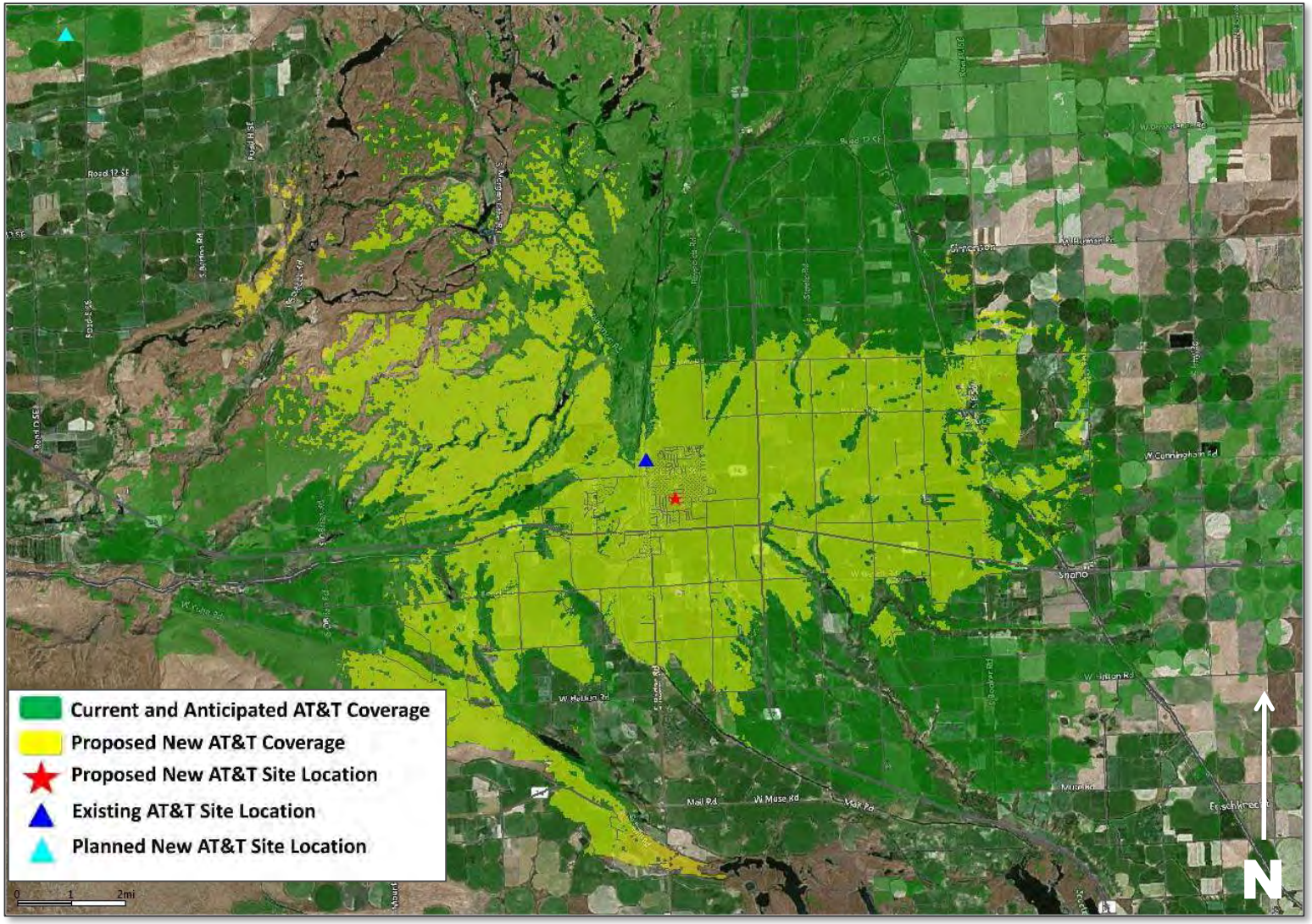

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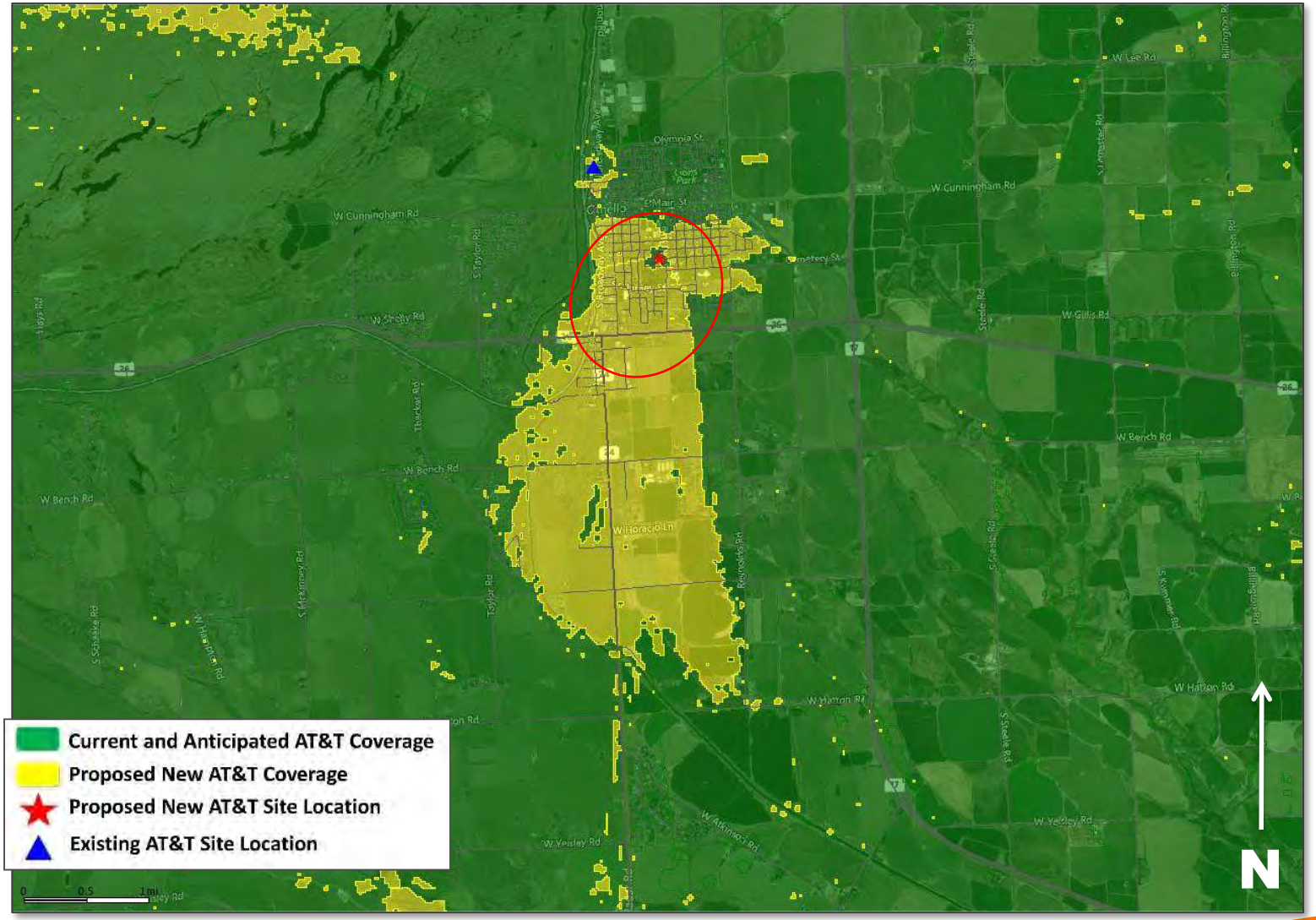
Figure C.2—New AT&T 4G LTE Coverage by TX

ZOOM IN—Predicted Coverage by Transmitter AFTER Proposed AT&T Facility On-Air, 100ft Antenna Tip



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ALTERNATIVE SITE ANALYSIS

AT&T's RF engineers evaluated the following sites within and adjacent to the search ring as a possible alternative locations for AT&T's proposed new Facility:

- **Alternative Site #1—Stevens Funeral Chapel.** 511 S. 7th Ave, Othello, WA. This alternative site was found unsuitable for siting for reasons other than RF engineering.

- **Alternative Site #2—Co-location on City of Othello Water Tank.** Corner of E. Ash St and S 14th Ave, Othello, WA.~70ft available antenna tip height. **Figure E** demonstrates the serving boundary of this alternative location and the area where this alternative site could offload current cellular traffic load in the downtown Othello area. As shown, this is not a suitable co-location option as the lower available antenna tip height will not provide significant enough coverage to address the traffic requirements and augment the current traffic requirements for downtown Othello—i.e. the transmission boundary of the additional capacity coverage is not large enough to sufficiently reduce traffic congestion in downtown Othello.

- **Alternative Site #3—Rooftop Facility—Othello High School.** 340 S 7th Ave, Othello, WA. ~25ft available antenna tip height. **Figure F** demonstrates the serving boundary of this alternative location and the area where this alternative site could offload current cellular traffic load in the downtown Othello area. As shown, this is not a suitable siting option as the lower available antenna tip height will not provide significant enough coverage to address the traffic requirements and augment the current traffic requirements for downtown Othello—i.e. the transmission boundary of the additional capacity coverage is not large enough to sufficiently reduce traffic congestion in downtown Othello.

ALTERNATIVE SITE ANALYSIS, con't

- **Alternative Site #4—Rooftop Facility—Lutacaga Elementary School.** 795 S 7th Ave, Othello, WA. ~25ft antenna tip height. **Figure G** demonstrates the serving boundary of this alternative location and the area where this alternative site could offload current cellular traffic load in the downtown Othello area. As shown, this is not a suitable siting option as the lower available antenna tip height will not provide significant enough coverage to address the traffic requirements and augment the current traffic requirements for downtown Othello—i.e. the transmission boundary of the additional capacity coverage is not large enough to sufficiently reduce traffic congestion in downtown Othello.

- **Alternative Site #5—Rooftop Facility—McFarland Middle School.** 790 S 10th Ave, Othello, WA. ~25ft antenna tip height. **Figure H** demonstrates the serving boundary of this alternative location and the area where this alternative site could offload current cellular traffic load in the downtown Othello area. As shown, this is not a suitable siting option as the lower available antenna tip height will not provide significant enough coverage to address the traffic requirements and augment the current traffic requirements for downtown Othello—i.e. the transmission boundary of the additional capacity coverage is not large enough to sufficiently reduce traffic congestion in downtown Othello.

- **Alternative Site #6—Co-location on Existing 150ft Tower.** 1040 E. Main Street, Othello, WA. ~27ft available antenna tip height. **Figure I** demonstrates the serving boundary of this alternative location and the area where this alternative site could offload current cellular traffic load in the downtown Othello area. As shown, this is not a suitable co-location option as the lower available antenna tip height will not provide significant enough coverage to address the traffic requirements and augment the current traffic requirements for downtown Othello—i.e. the transmission boundary of the additional capacity coverage is not large enough to sufficiently reduce traffic congestion in downtown Othello.

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Figure D—Alternative Site Locations

(Quarter-mile radius inset included pursuant to the siting criteria of Chapter 16.68 OMC)

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Figure E—Alt Site #2—New AT&T 4G LTE Coverage by Tx

Predicted New Coverage by Transmitter AFTER Alt Site #2 On-Air, 70ft Antenna Tip

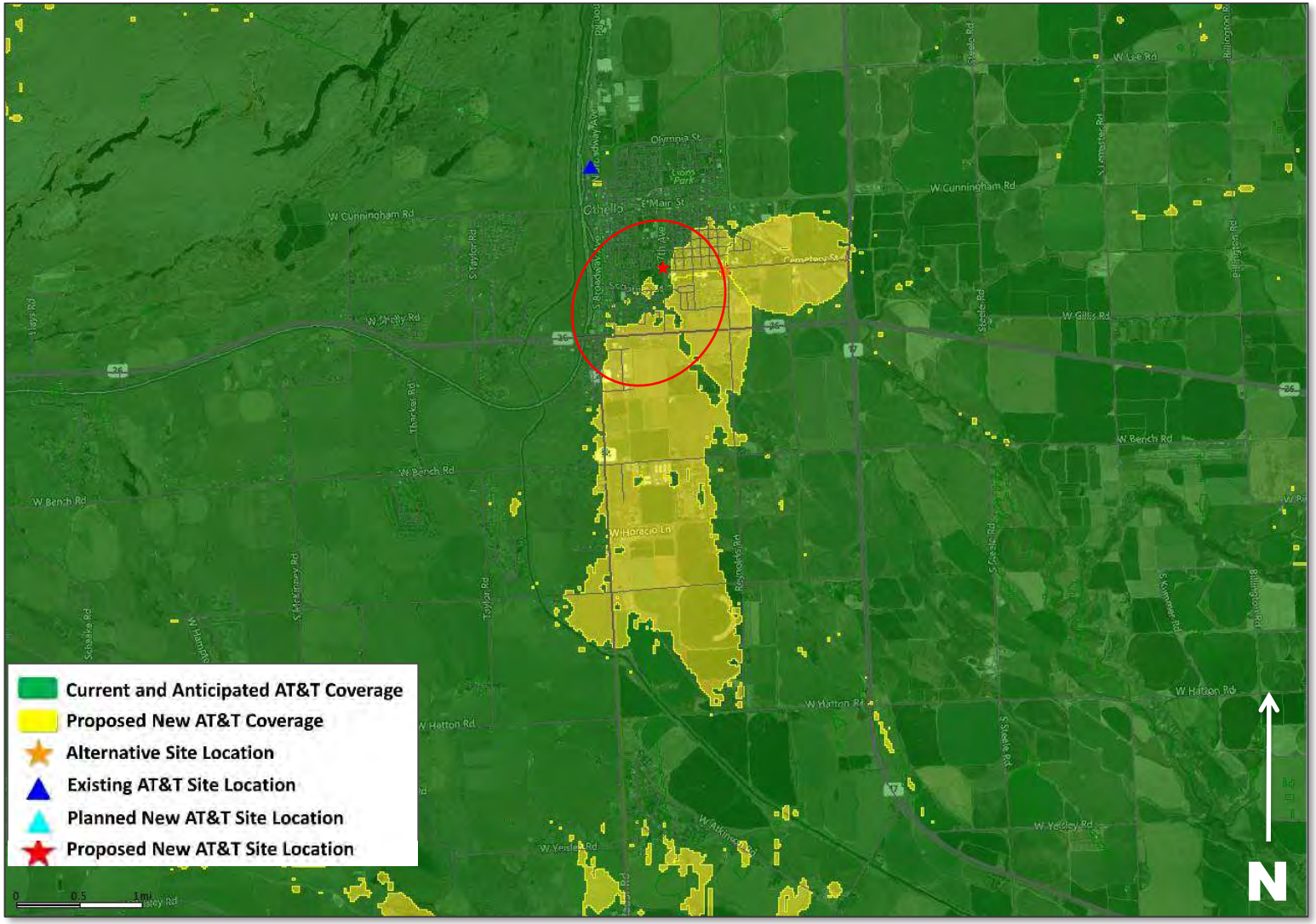

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Figure F—Alt Site #3—New AT&T 4G LTE Coverage by Tx

Predicted New Coverage by Transmitter AFTER Alt Site #3 On-Air, ~25ft Antenna Tip

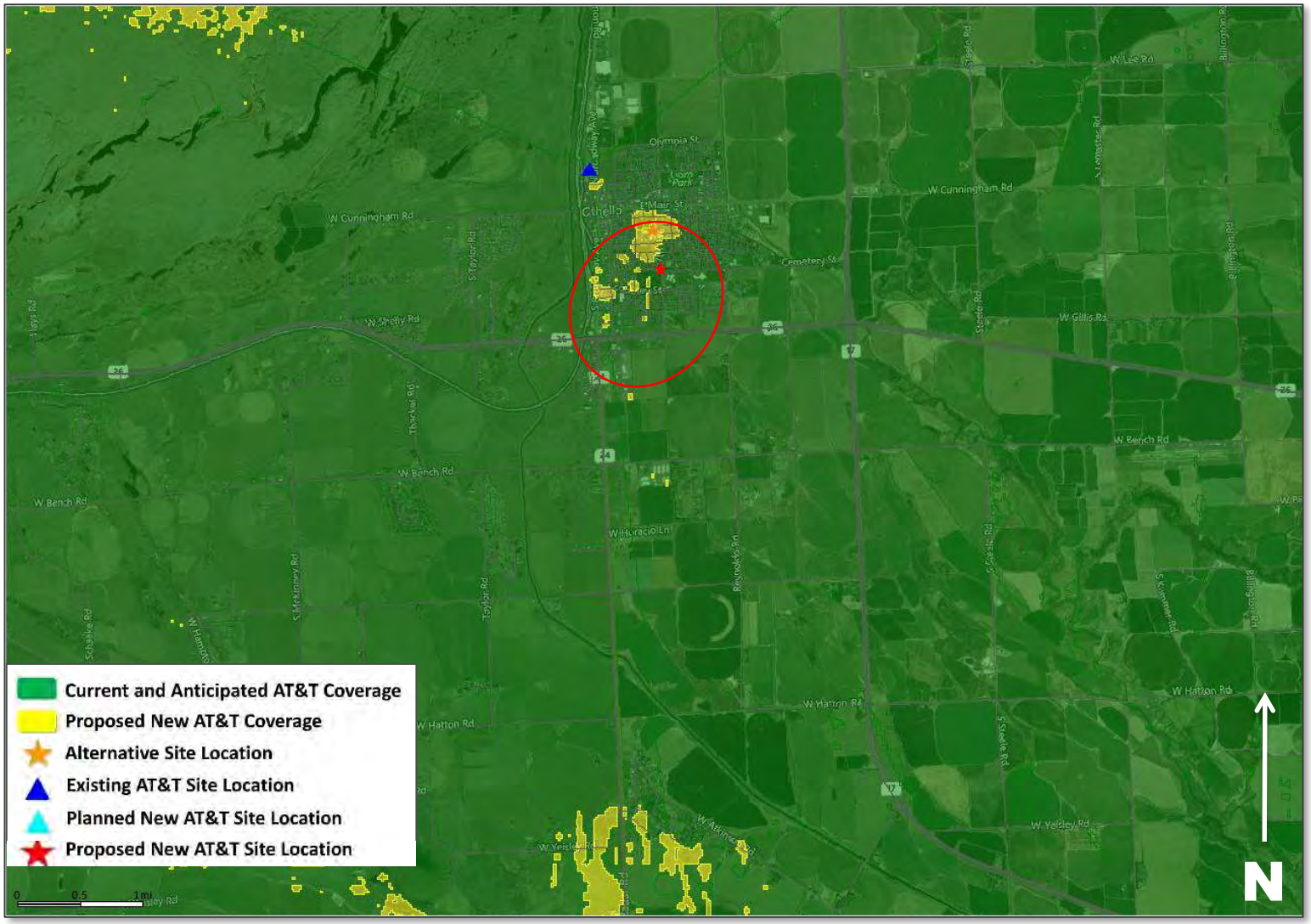

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Figure G—Alt Site #4—New AT&T 4G LTE Coverage by Tx

Predicted New Coverage by Transmitter AFTER Alt Site #4 On-Air, ~25ft Antenna Tip

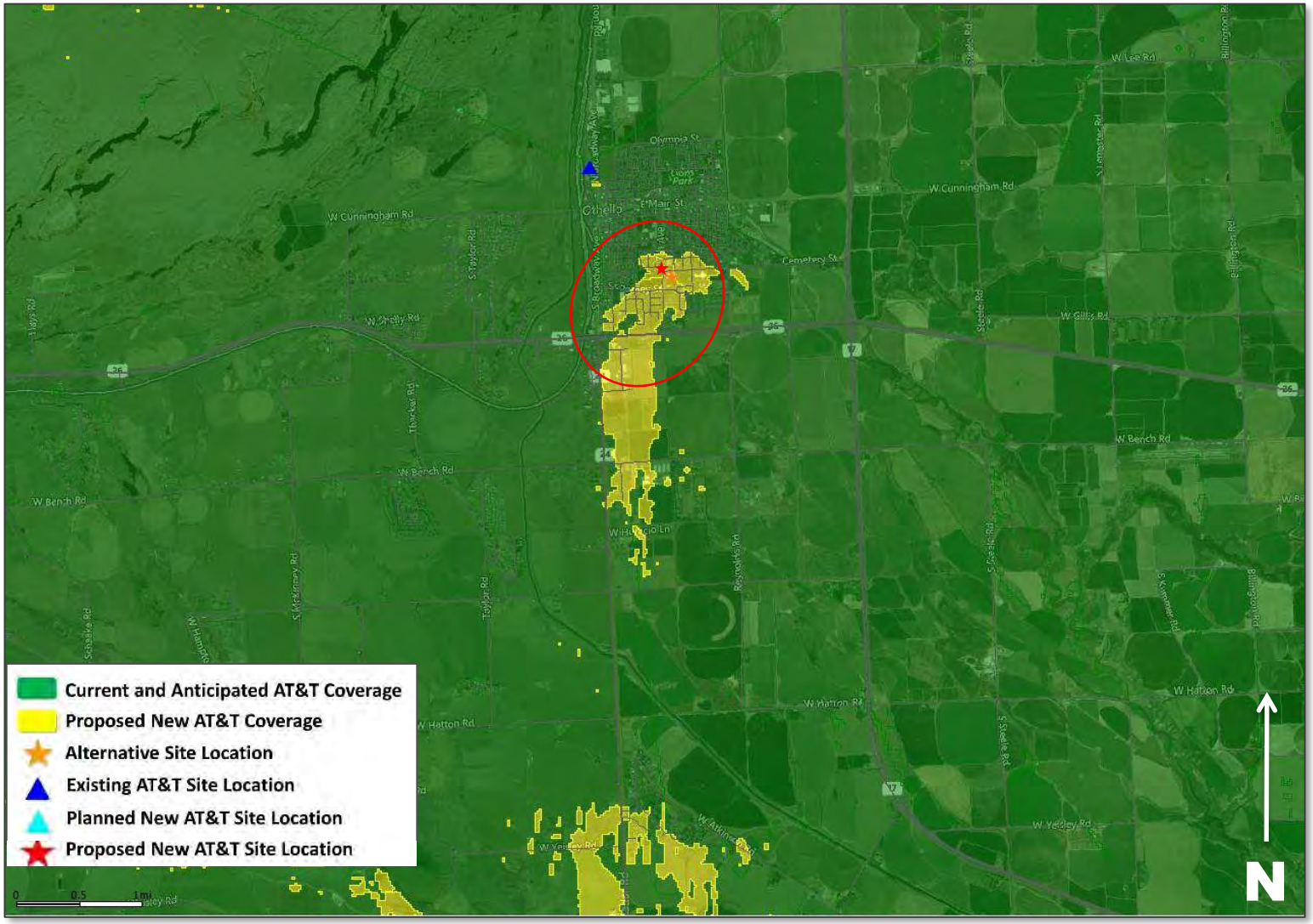

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Figure H—Alt Site #5—New AT&T 4G LTE Coverage by Tx

Predicted New Coverage by Transmitter AFTER Alt Site #5 On-Air, ~25ft Antenna Tip

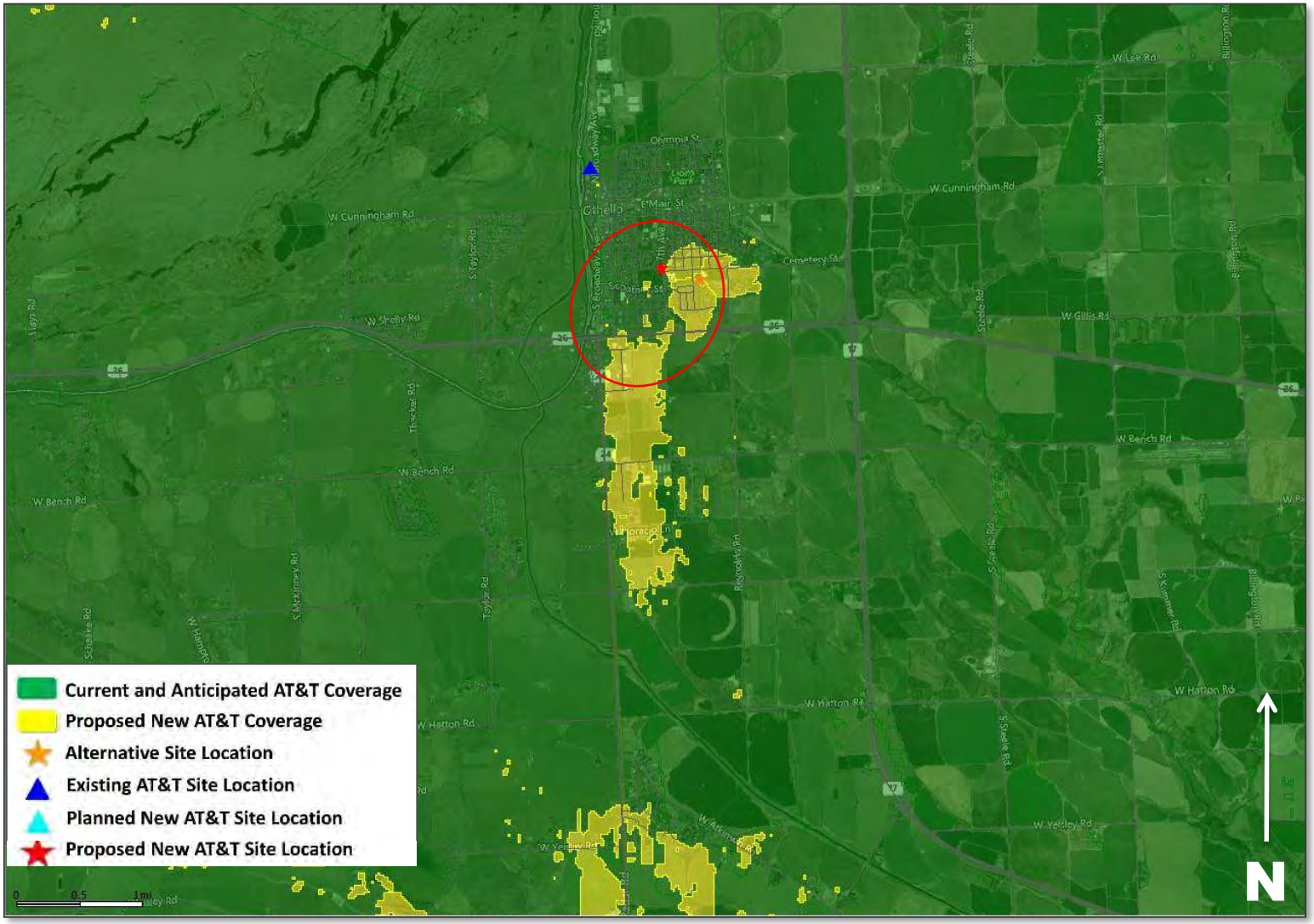

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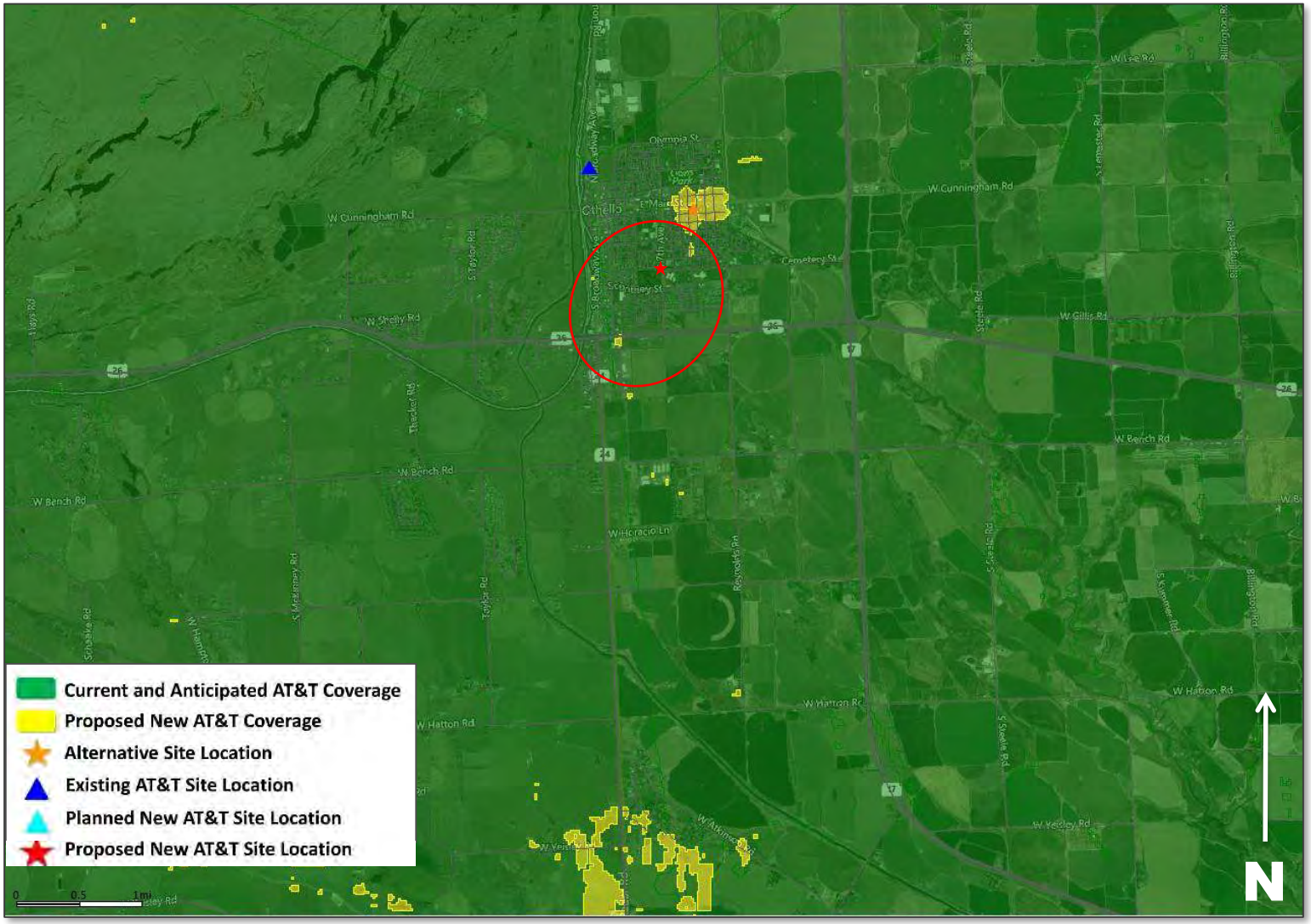
Figure I—Alt Site #6—New AT&T 4G LTE Coverage by Tx

Predicted New Coverage by Transmitter AFTER Alt Site #6 On-Air, ~25ft Antenna Tip



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SEARCH RING METHODOLOGY

AT&T's RF engineers used coverage propagation software systems to predict the coverage provided by the proposed new WCF. The software and AT&T's RF engineers considered the general factors outlined below, as well as more project-specific factors such as the type of antenna, antenna tilt, etc.

Coverage. The antenna site must be located in an area where the radio frequency broadcasts will provide adequate coverage within the targeted service area. The RF engineer must take into consideration the coverage objectives for the site as well as the terrain in and around the area to be covered. Because radio frequency broadcasts travel in a straight line and diminish as they travel further away from the antennas, it is generally best to place an antenna site near the center of the desired coverage area. However, in certain cases, the search ring may be located away from the center of the desired coverage area due to the existing coverage, the surrounding terrain, or other features which might affect the radio frequency broadcasts, *e.g.* buildings or sources of electrical interference.

Clutter. AT&T's WCFs must "clear the clutter"—the WCF site must be installed above or close to RF obstructions (the "clutter") to enable the RF to extend beyond and clear the clutter. AT&T's radio frequencies do not penetrate mountains, hills, rocks, or metal, and are diminished by trees, brick and wood walls, and other structures. Accordingly, AT&T's antennas must be installed above or close to the "clutter" to provide high quality communications services in the desired coverage areas. Additionally, if the local code requires us to accommodate additional carriers on the support structure, the structure must be even taller to also allow the other carriers' antennas to clear the clutter.

Call Handoff. The WCF site must be in an area where the radio broadcasts from the site will allow seamless "call handoff" with adjacent WCF sites. Call handoff is a feature of a wireless communications system that allows an ongoing telephone conversation to continue uninterrupted as the user travels from the coverage area of one antenna site into the coverage area of an adjacent antenna site. This requires coverage overlap for a sufficient distance and/or period of time to support the mechanism of the call handoff.

Quality of Service. Users of wireless communications services want to use their services where they live, work, commute and play, including when they are indoors. AT&T's coverage objectives include the ability to provide indoor coverage in areas where there are residences, businesses and indoor recreational facilities.

SEARCH RING METHODOLOGY, con't

Radio Frequencies used by System. The designs of wireless communications systems vary greatly based upon the radio frequencies that are used by the carrier. If the carrier uses radio frequencies in the 850 MHz to 950 MHz range, the radio signals will travel further and will penetrate buildings better than the radio frequencies in the 1900 MHz band. As a result, wireless communications systems that use lower radio frequencies will need fewer sites than wireless communications systems that use higher radio frequencies. AT&T's system in Othello uses only frequencies in the 1900 MHz so AT&T's system requires more sites in order to achieve the same coverage that is provided by the carriers which use the 850 MHz to 950 MHz frequency band.

Land Use Classifications. A&T's ability to construct a WCF site on any particular property is affected by state and local regulations, including zoning and comprehensive plan classifications, goals, and policies. AT&T's search rings take these laws and regulations into consideration.