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### MEMORANDUM

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Date: November 20, 2014

Project #: 13911

To: Matt Hermen, Clark County Department of Community Planning

From: Julia Kuhn and Chris Brehmer

Project: NE 159<sup>th</sup> Street Assessment

Subject: Overview of Preliminary Assessment Results

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The 2013 Clark County Arterial Atlas identifies the extension of NE 159<sup>th</sup> Street as a rural major collector (R-2) from its current terminus at Caples Road west to NE 112<sup>th</sup> Street. This extension would include two travel lanes with roadside shoulders. This extension would also include a new intersection with SR-503 (a state highway). Clark County staff has received a public request to remove the future extension from the Arterial Atlas. The enclosed memo presents the results of our preliminary review of transportation-related considerations associated with this potential extension, including:

- Existing and future transportation volumes and crash history;
- Connectivity and connections to the State Highway system;
- Potential environmental issues; and,
- Conclusions.

### EXISTING AND FUTURE TRAFFIC CONDITIONS

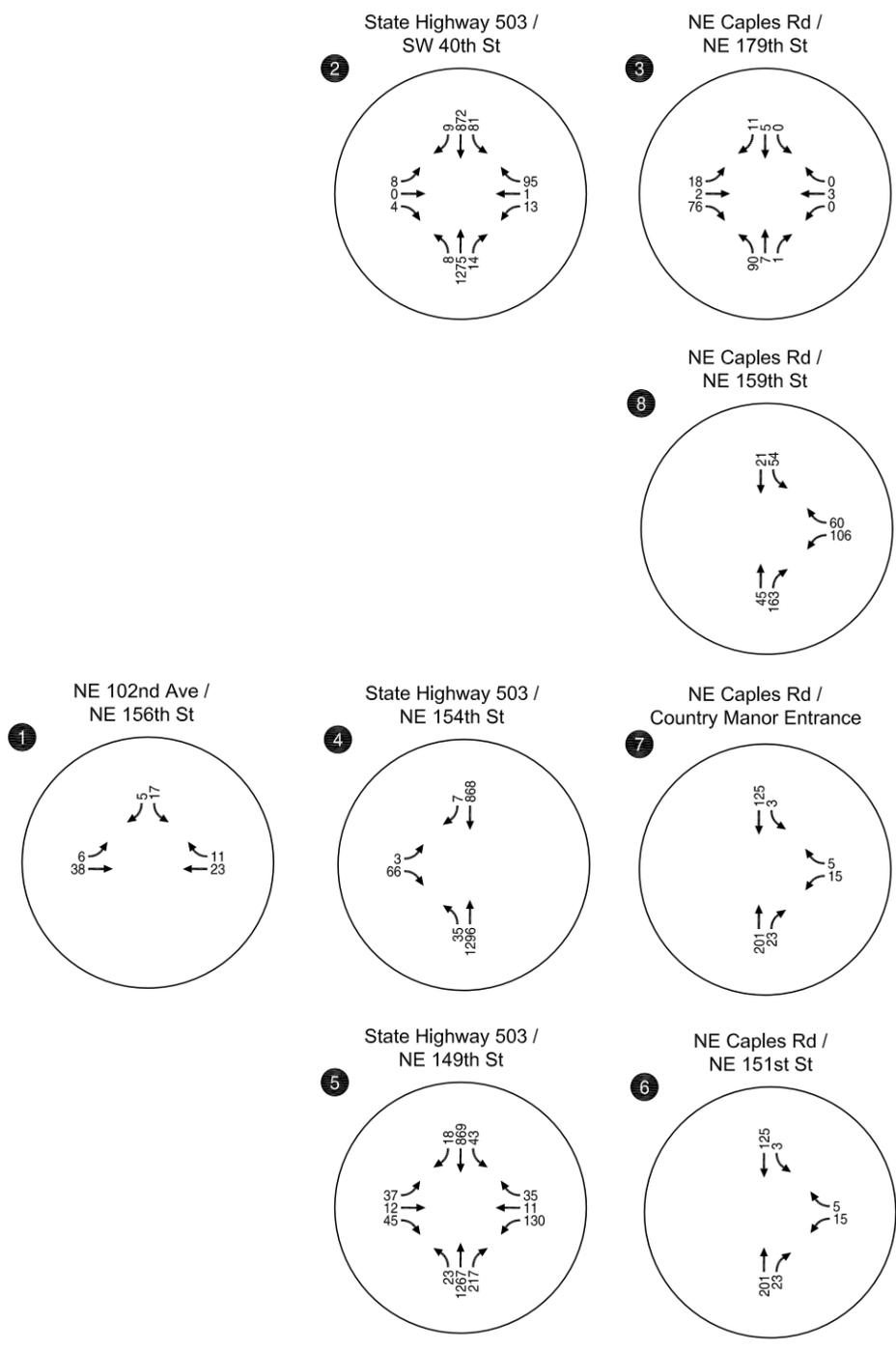
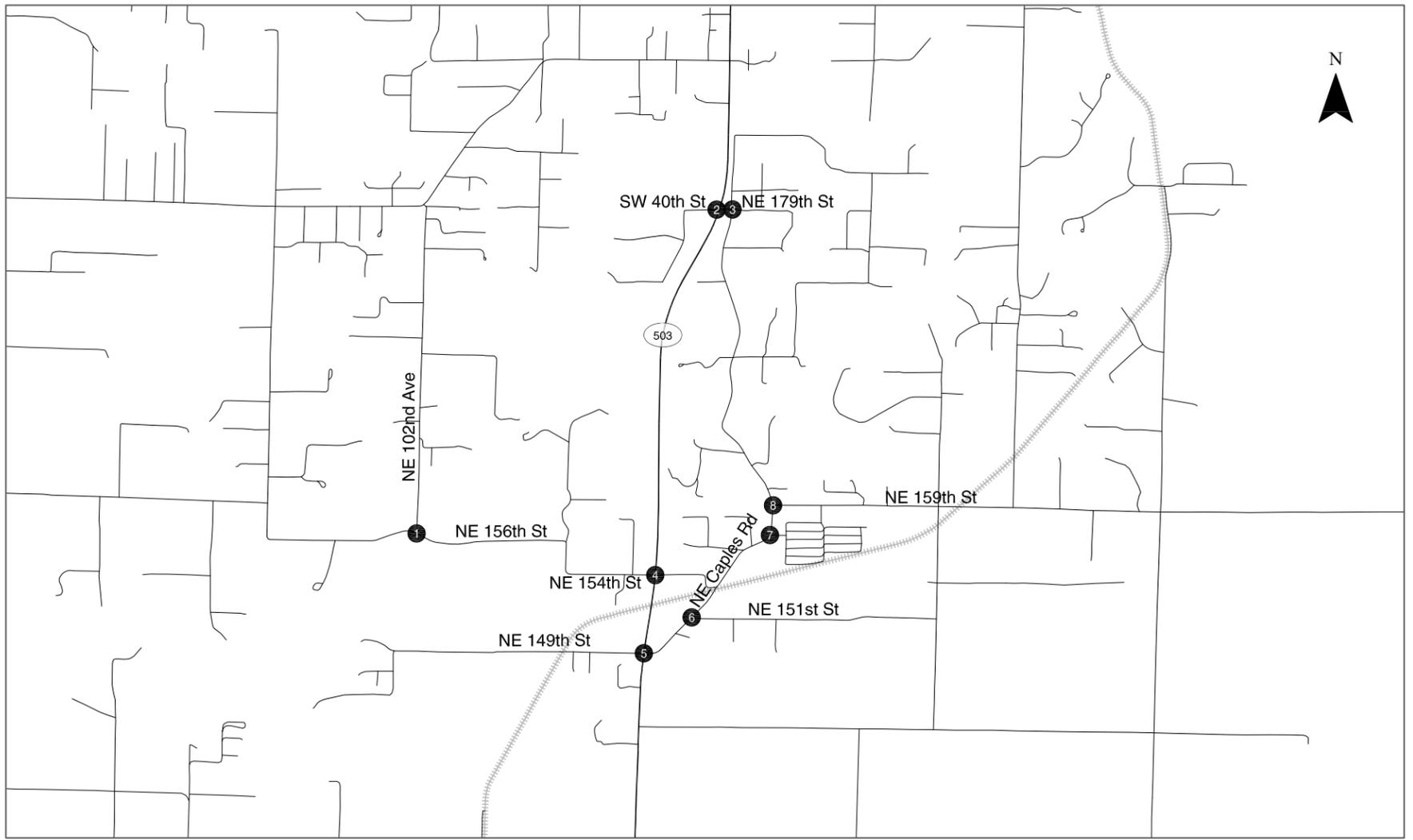
To help understand potential safety, capacity and/or connectivity needs that could be addressed in part through the extension of NE 159<sup>th</sup> Street, we reviewed existing traffic volumes and patterns, future traffic forecasts, and the crash history within the vicinity of the extension. Figure 1 identifies the existing rural roadway system within the area. We collected traffic volumes and crash records at eight selected intersections within this vicinity (as identified in the figure).

#### Existing Traffic Volumes

Figure 1 also identifies the existing traffic counts we measured at the 8 intersections during a typical weekday PM peak hour in October 2014<sup>1</sup>. As shown in the figure, the east-west facilities within the area

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<sup>1</sup> The traffic counts were completed between 4:00 and 6:00 PM and the peak hour within that period was identified at each intersection.



Existing PM Peak Hour Traffic Volumes  
Brush Prairie, WA

Figure  
1

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reflect the following patterns (assuming weekday PM Peak hour volumes constitute approximately 10 percent of the daily volumes):

- NE 154<sup>th</sup> and NE 149<sup>th</sup> Streets to the west of SR-503 reflect daily volumes of 1,000 – 2,000 vehicles per day today;
- Caples Road to the east of SR-503 reflects daily volumes of 4,500 – 5,000 vehicles per day, approximately 80 percent of the traffic is oriented to/from the south on SR-503;
- The existing portion of NE 159<sup>th</sup> Street to the east of Caples Road reflects daily traffic volumes of approximately 3,500 – 4,000 vehicles per day;
- NE 179<sup>th</sup> Street to the east of SR-503 reflects daily traffic volumes of approximately 2,000 vehicles per day, approximately 85 percent is oriented to/from the north; and,
- SR-503 reflects volumes of approximately 20,000 – 25,000 vehicles per day<sup>2</sup>.

Each of the east-west facilities convey traffic volumes consistent with the rural context and none are indicative of east-west capacity issues that would currently necessitate an additional connection to or across SR 503.

## Crash History

The Washington Department of Transportation provided crash history data for the eight study intersections for the past five years from 2009-2013. Table 1 summarizes the crash history of the eight study intersections. As shown, there were no reported crashes at five of the study intersections. Of the remaining three, all were intersections with State Highway 503. None of these three intersections showed a disproportionately high share of crashes compared to the others, nor were any trends identified in the crash type analysis.

As shown in the table, the recorded crash history does not indicate an existing safety deficiency that would require or benefit from the extension of NE 159<sup>th</sup> Street.

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<sup>2</sup> The State of Washington Department of Transportation TRIPS System Annual report identifies a year 2013 average daily traffic count of 23,000 vehicles per day on SR 503 north of the Caples Road Wye.

**Table 1. Recorded Crash History (2009 – 2013)**

Figure ID#	Intersection	Crashes / Year	Collision Type				Severity				Crashes / MEV
			Turning	Rear -end	Angle	Other	PDO	Possible Injury	Evident Injury	Fatality	
1	NE 102 <sup>nd</sup> Avenue / NE 156 <sup>th</sup> St	-	-	-	-	-	-	-	-	-	-
2	SR 503 / NE 179 <sup>th</sup> Street / SW 40 <sup>th</sup> St	1.8	2	4	2	1	5	4	-	-	0.207
3	NE Caples Road / NE 179 <sup>th</sup> Street	-	-	-	-	-	-	-	-	-	-
4	SR 503 / NE 154 <sup>th</sup> Street	0.4	-	1	-	1	1	1	-	-	0.048
5	NE Caples Road / SR 503 / NE 149 <sup>th</sup> St	2	2	4	2	2	6	3	1	-	0.202
6	NE Caples Road / NE 151 <sup>st</sup> Street	-	-	-	-	-	-	-	-	-	-
7	NE Caples Road / Country Manor Entrance	-	-	-	-	-	-	-	-	-	-
8	NE Caples Road / NE 159 <sup>th</sup> Street	-	-	-	-	-	-	-	-	-	-

Where:

PDO = property damage only

MEV = million entering vehicles

### Future Traffic Forecasts

For the purposes of our review, Southwest Regional Transportation Council (RTC) provided year 2035 traffic forecasts under two scenarios: with and without the extension of NE 159<sup>th</sup> Street. Comparing the two scenarios yielded the following observations:

- Future traffic volumes to the west of SR-503 on NE 154<sup>th</sup> and NE 149<sup>th</sup> could more than double but would still be well under 5,000 vehicles per day;
- Future traffic volumes on NE Caples Road to the east of SR-503 could increase by approximately 50 percent (to result in a total of 7,000 vehicles per day);
- The extension of NE 159<sup>th</sup> Street west to NE 112<sup>th</sup> Street does not materially change the forecast traffic volumes on any of the adjacent east-west corridors (including NE 99<sup>th</sup> Street to SR 502) nor does it change the traffic volumes/patterns to/from SR-503. Therefore, the modeling data suggests that the additional connectivity would not provide demonstrable capacity benefits to other east-west corridors as a result of the extension.

Based on the above bullets, we concluded that the year 2035 traffic forecasts and patterns do not indicate the need to extend NE 159<sup>th</sup> Street as shown in the Arterial Atlas. It should be noted that the RTC travel demand model has recently been updated to reflect revised (generally reduced) long-term travel demand within Clark County.

## STATE HIGHWAY SYSTEM

As noted above, the westward extension of NE 159<sup>th</sup> Street would require a new intersection with SR 503 (the future traffic volumes indicate that an at-grade crossing would likely be more appropriate than an interchange). SR 503 is the only continuous north-south at-grade arterial within Clark County and as such provides an important role in connecting cities within the County as well as providing for regional traffic and freight movements. Given this role, protecting the mobility and safety of this facility is a priority for WSDOT. Creating an additional at-grade intersection along this corridor at NE 159<sup>th</sup> Street within the vicinity of other signalized and unsignalized locations (NE 149<sup>th</sup>, NE 154<sup>th</sup>, NE 179<sup>th</sup> Streets, etc.) may unnecessarily impact mobility and safety within the state highway corridor. Given the RTC modeling suggests a NE 159<sup>th</sup> Street extension to SR 503 offers limited capacity or connectivity benefits to other east-west corridors in the vicinity, the extension appears to offer no material benefits to the state system.

## ENVIRONMENTAL AND OTHER CONSIDERATIONS

During our field visit, we observed several apparent environmental constraints related to the minor waterways within the vicinity that could require new crossings and/or mitigation treatments. Further, there could be property impacts associated with acquiring the right-of-way for the extension. Based on our review, it appears that construction of the extension could be costly and impactful. We understand that Clark County staff is preparing a more thorough review of the non-transportation considerations that may aid in this assessment as well.

## FUTURE CONNECTIVITY IMPLICATIONS

Currently, trips along NE 156<sup>th</sup> Street west of SR 503 use NE 154<sup>th</sup> Street to access the state highway; however, the NE 154<sup>th</sup> Street connection is unsignalized and is not likely to be signalized in the future. In the event that NE 159<sup>th</sup> Street is not extended as envisioned in the current Clark County Arterial Atlas, it will be more important to develop connectivity between NE 156<sup>th</sup> Street west of SR 503 and the signalized intersection of NE 149<sup>th</sup> Street/SR 503.

The Clark County Arterial Atlas identifies a future north-south extension of NE 112<sup>th</sup> Avenue linking NE 156<sup>th</sup> Street, NE 154<sup>th</sup> Street, and NE 149<sup>th</sup> Street; thereby creating a potential circulation route to the existing traffic signal at NE 149<sup>th</sup> Street/SR 503. The NE 112<sup>th</sup> Avenue connection is clearly desirable and could help accommodate trips that otherwise might have used NE 159<sup>th</sup> Street.

The attached graphic illustrates the potential connections described above. In reviewing the attachment, it should be noted that the extension of NE 112<sup>th</sup> Avenue between NE 154<sup>th</sup> Street and NE 149<sup>th</sup> Street implies a connection to NE 149<sup>th</sup> Street near an existing school and an existing at-grade crossing of the Chelatchie Prairie Railroad (or potentially a new railroad crossing along NE 112<sup>th</sup> Avenue). Clark County should consider planning efforts to refine how the roadway connectivity can be

achieved while minimizing impacts to the railroad and school while ensuring local connectivity can be achieved west of SR 503 without NE 159<sup>th</sup> Street.

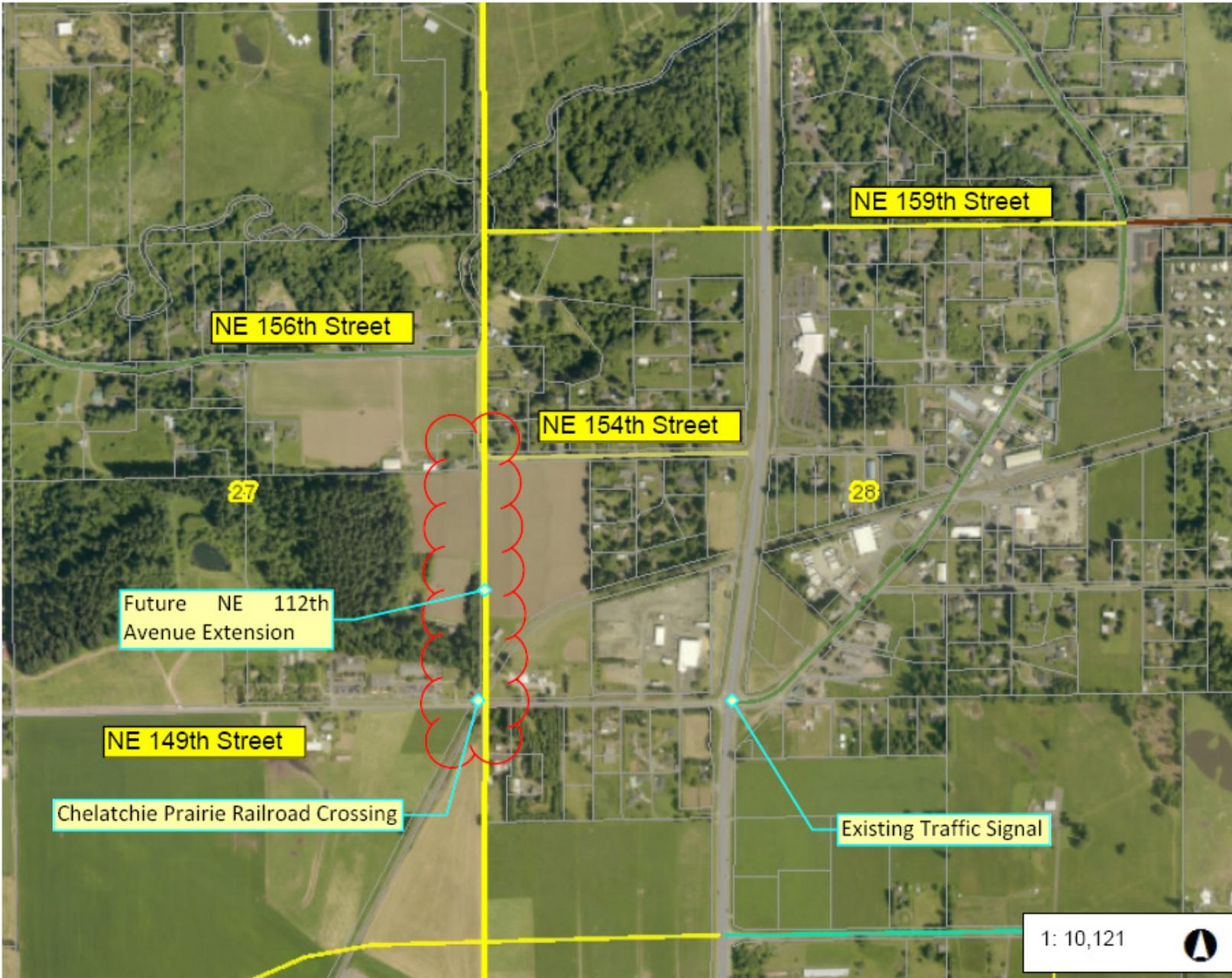
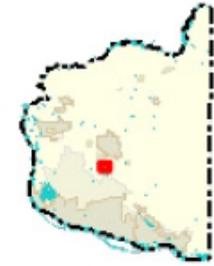
## CONCLUSIONS

Our review of the transportation-related considerations suggests that the benefits associated with the extension of NE 159<sup>th</sup> Street are likely outweighed by the possible impacts. We do understand though that there may be non-transportation considerations being reviewed by the County that could identify additional benefits that require further consideration. Further, in the event that NE 159<sup>th</sup> Street is removed from the Arterial Atlas, the County should proactively ensure that alternative connectivity west of SR 503 is provided for the NE 156<sup>th</sup> Street and NE 154<sup>th</sup> Street corridors as identified in the Arterial Atlas.

Please let us know if you have any questions about our review.



# 159th Street Area



**Legend**

Road Atlas Page Index

**Arterial Classification**

- C-2
- C-2b
- C-2cb
- Local
- M-2cb
- M-4b
- M-4c
- M-4cb
- Nbr
- Pa-4cb
- Pr-2cb
- Pr-4cb
- Pr-6c
- Pr-6cb
- Proposed
- R-2
- Rm-2
- S
- W

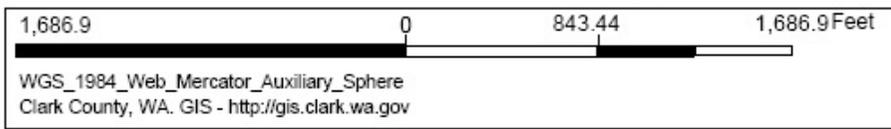
Building Footprints

Taxlots

ImageOrtho

Notes:

1: 10,121



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