

Memorandum

Date: October 27, 2014
To: City of Beaverton Community Development Staff
From: Joe Dills and Becky Hewitt, Angelo Planning Group
Carl Springer and Kevin Chewuk, DKS Associates
Cc: Beaverton Planning Commission
Re: Analysis of Alignment Options for South Cooper Mountain East-West Collector

Introduction

As part of the work to date on the South Cooper Mountain (SCM) Concept and Community Plans, the need for a new east-west collector road serving the South Cooper Mountain Annexation Area (SCMAA) has been identified. As drawn, the route provides parallel route to Scholls Ferry Road for local trips, connects the neighborhoods in the annexation area, and helps meet the goal of a connected community. To date, three potential routes have been identified and evaluated as part of the planning process. This memorandum provides a summary of the project team's evaluation and comparison of these three options and identifies a recommended alignment to be carried forward into the Concept and Community Plans.

Based on concern from residents of Alvord Lane, as well as concerns about feasibility due to grades on Alvord Lane and its location outside the Urban Growth Boundary (UGB), the project team identified an alternative alignment that was approved as part of the Preferred Scenario and is currently shown on the Transportation Framework and other drawings in the Concept Plan and Community Plan. This option is identified as Option 2 throughout this memorandum.

Concerns from residents in the Sterling Park and Churchill Forest neighborhoods adjacent to Loon Drive have prompted evaluation of a third alternative. This option is identified as Option 3 throughout this memorandum.

Description of Alternative Alignments

Alignment Option 1: Alvord Lane and Black Bird Drive

Initially, a route was proposed that would connect to Alvord Lane at 175th Avenue, with Alvord Lane being extended to connect to Black Bird Drive, consistent with the Beaverton Transportation System Plan (TSP). This is shown in Figure 1. Black Bird Drive intersects with Scholls Ferry Road at an existing traffic signal. Both Alvord Lane and Black Bird Drive were proposed to be designated as Neighborhood Routes. A network of proposed neighborhood routes was also proposed along with this alignment option to connect 175th Avenue with Loon



Drive and the existing traffic signal at Scholls Ferry Road via the existing stubbed streets in the Churchill Forest subdivision.



Figure 1: Alignment Option 1

Alignment Option 2: Loon Drive

In this option, the east-west collector would cross 175th Avenue further south and connect to Loon Drive adjacent to the play fields at Scholls Heights Elementary School. This is shown in Figure 2. Loon Drive provides a connection to Scholls Ferry Road and Barrows Road (an existing east-to-west collector street paralleling Scholls Ferry Road) at an existing traffic signal. A network of proposed neighborhood routes in the SCMAA would also connect 175th Avenue with Alvord Lane and Black Bird Drive under this alignment option.

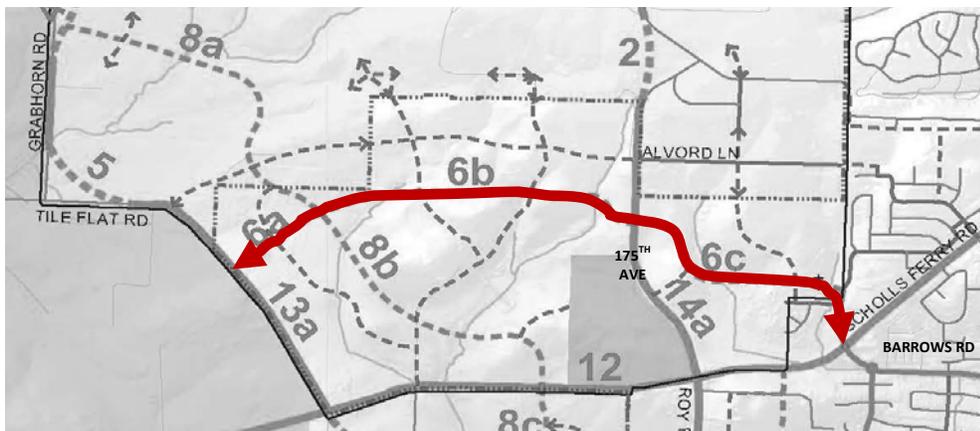


Figure 2: Alignment Option 2

Alignment Option 3: Proposed River Terrace Boulevard

This alignment would intersect with Scholls Ferry Road east of the Loon Drive / Barrows Road intersection, where a new intersection is proposed to River Terrace Boulevard, a proposed



collector road planned to serve River Terrace. This is shown in Figure 3. It is unknown whether a traffic signal will be approved at this location. A network of proposed neighborhood routes would support this alignment option, connecting 175th Avenue with Loon Drive and the existing traffic signal at Scholls Ferry Road via the existing stubbed streets in the Churchill Forest subdivision.



Figure 3: Alignment Option 3



Summary of Alternatives Analysis

Table 1 lays out the land use, transportation, natural resources, neighborhood compatibility, and feasibility considerations of each of the three alternatives.

Table 1: Alternatives Evaluation

Considerations	Option 1	Option 2	Option 3
Land Use	Alvord Lane lies outside the Urban Growth Boundary (UGB) – improvements to urban standards may not be possible until it is brought into the UGB. This is true for all options, since all include urban upgrades for Alvord Lane to Neighborhood Route standards, but Option 1 relies most heavily on this connection becoming available to serve the SCMAA.	The connection to Loon Drive requires acquisition of a small (0.12 acre) segment of land that is owned by the Sterling Park Owners Committee that lies between the SCMAA and Loon Drive. This alignment would increase traffic below the play fields and grounds of Scholls Heights Elementary School; however, not adjacent to the school building or to the entrance.	This alignment lies exclusively on land within the SCMAA and does not directly impact land outside the UGB or in existing neighborhoods. It also provides a direct connection to the future River Terrace community other than by 175 th Avenue / Roy Rogers Road.
Transportation¹	This option would not provide a continuous east-west collector connection from Tile Flat Road to Scholls Ferry Road. Because it lies further north, it would be expected to attract less use. This would cause more trips to route to 175 th	This option would provide drivers a network of continuous east-west collector streets paralleling Scholls Ferry Road from Tile Flat Road to areas east of Murray Boulevard. This would best disperse traffic and reduce	If the proposed intersection is not approved by Washington County for a traffic signal, the proposed SCMAA collector access at Scholls Ferry Road would be restricted to right-in, right-out, left-in access only, which would only

¹ See attached technical memorandum from DKS Associates for details of transportation analysis of each of the three options.



Considerations	Option 1	Option 2	Option 3
	<p>Avenue to access Scholls Ferry Road. A limited amount of traffic would connect to Loon Drive via Oystercatcher Lane, through the Churchill Forest subdivision.</p>	<p>demand along 175th Avenue and Scholls Ferry Road adjacent to the SCMAA. The Loon Drive-Barrows Road intersection with Scholls Ferry Road would not be significantly impacted with the increase in traffic demand associated with this alignment option because some of the projected traffic through that intersection would already have been using the intersection, but would have turned onto Scholls Ferry rather than continuing to Loon Drive. More trips would flow directly to Loon-Scholls-Barrows via the east-west collector, as opposed to through local street connections in Churchill Woods.</p>	<p>be attractive to westbound drivers from the SCMAA, as drivers traveling eastbound from the SCMAA would not be able to access Scholls Ferry Road. This would increase reliance on 175th Avenue and increase traffic through the 175th Avenue-Scholls Ferry Road intersection. If a traffic signal was approved, this alignment would provide a continuous collector street connection between Tile Flat Road and the proposed River Terrace Boulevard; however, adding the SCMAA collector to the intersection would likely cause additional delay and back-ups along Scholls Ferry Road. In addition, drivers traveling further east would still have to utilize Scholls Ferry Road, which would be expected to attract fewer drivers than option 2. A limited amount of traffic would connect to Loon Drive via Oystercatcher Lane, through the Churchill Forest subdivision.</p>
<p>Natural Resources</p>	<p>Widening Alvord Lane would likely impact a number of trees, because the road is only 16 feet wide at</p>	<p>This option requires two new stream crossings. The streams in question are fairly narrow and</p>	<p>This alignment would impact a large wetland area that spans the SCMAA and the adjacent</p>



Considerations	Option 1	Option 2	Option 3
	<p>present and the area is heavily wooded. The extension of Alvord Lane to Black Bird Drive would have an impact on Tenax Woods Natural Area, owned by Tualatin Hills Park and Recreation District (THPRD). This is true for all options, since all include widening and extension of Alvord Lane, but Option 1 relies most heavily on this connection becoming available to serve the SCMAA.</p>	<p>minor; a culvert would likely be adequate. A similar crossing was recently installed in the Churchill Forest subdivision. There would also be some impacts to the trees and vegetation surrounding the streams.</p>	<p>Churchill Forest subdivision across a distance of roughly 300 feet (based on current public mapping; a wetland delineation is needed to determine the actual wetland impact area). This wetland has been identified as locally significant. While there are existing narrow, unpaved driveways crossing the wetland today, they are not located where the collector would need to be aligned in order to connect with the proposed River Terrace Boulevard, and, even if they were, they would need to be rebuilt and substantially widened in order to accommodate a collector street. It would also impact one of the two streams discussed under Option 2 (the western of the two streams).</p>
<p>Neighborhood Compatibility</p>	<p>Residents on Alvord Lane raised concerns about the potential increase in traffic past their homes. Traffic would also increase on Black Bird Drive. Traffic calming measures would likely be needed on both streets in order to reduce impacts.</p>	<p>Loon Drive north of the proposed collector alignment is fronted by single family homes and Scholls Heights Elementary School. However, based on the attached analysis by DKS Associates, an insignificant increase in traffic would be expected along this segment of Loon Drive, as drivers would remain on the collector.</p>	<p>The east-west collector would likely run relatively close to the new homes on the western edge of the Churchill Forest subdivision, though there is some flexibility to curve the road away from the subdivision to the west. Local street or Neighborhood Route connections would be provided to Oystercatcher Lane and Moorhen</p>



Considerations	Option 1	Option 2	Option 3
Feasibility	<p>The eastern end of Alvord Lane has steep grades (over 10%) that will create challenges for extension to the east. This is true for all options, since all include an extension of Alvord Lane, but Option 1 relies most heavily on this connection becoming available to serve the SCMAA.</p>	<p>Residents of the Sterling Park and Churchill Forest neighborhoods have raised concerns about noise, safety impacts around the school, and impacts to property values. The collector would run roughly 50 to 200 feet from the northern edge of the Churchill Forest subdivision. As noted above, this option would result in fewer trips using the local streets in Churchill Forest due to the more direct collector connection to Loon Drive.</p>	<p>Way, regardless of the precise alignment, as it would provide the only connection to Loon Drive and to Scholls Heights Elementary School from within the SCMAA aside from Scholls Ferry Road.</p>
	<p>The eastern end of Alvord Lane has steep grades (over 10%) that will create challenges for extension to the east. This is true for all options, since all include an extension of Alvord Lane, but Option 1 relies most heavily on this connection becoming available to serve the SCMAA.</p>	<p>Although this option traverses some rolling terrain, the grades appear to be feasible, and the stream crossings (as discussed above) are fairly minor. Further study of the intersections of the proposed collector and Oystercatcher Lane with Loon Drive may be needed to design the appropriate solutions for those intersections.</p>	<p>State and federal wetlands permits would be required for this option in order to place fill in the wetland for the road. State and federal regulations require demonstration that alternatives are not available to filling a wetland; it is possible that they would not be issued if other alternatives that would avoid the wetland impacts were considered reasonable. If the wetland impacts were permitted, they would require mitigation. In addition, as mentioned above, it is unknown at this time whether a signal will be approved by Washington County at the</p>



Considerations	Option 1	Option 2	Option 3
			proposed intersection with Scholls Ferry Road.

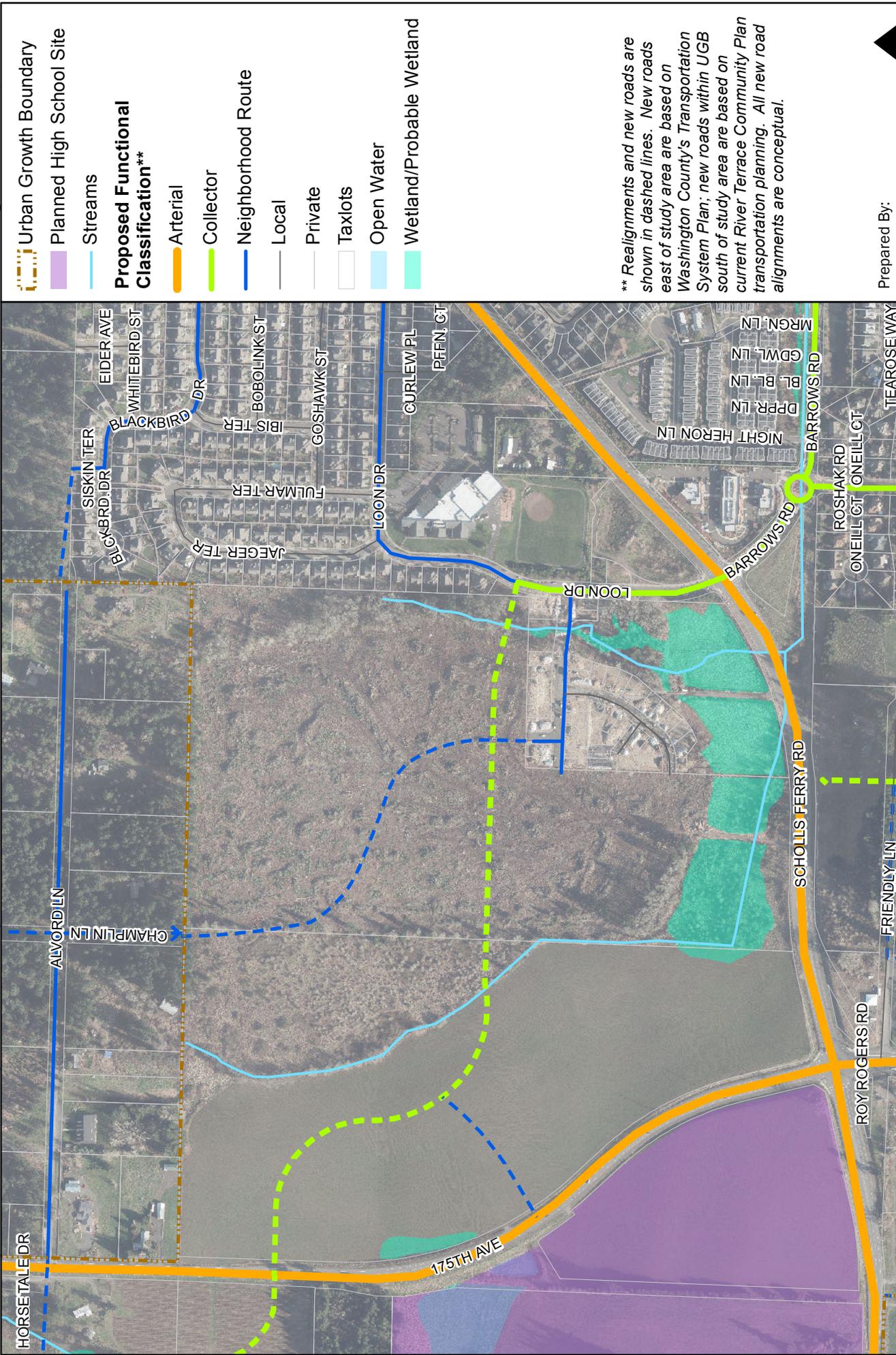


Conclusion and Recommendation

Based on the analysis of impacts summarized above, the project team recommends that alignment Option 2 be carried forward into the Concept and Community Plans, as it has better transportation performance, less natural resource impacts, and fewer feasibility concerns than the other alternatives. The impacts to the Loon Drive area can be mitigated to some degree through refinements to the precise alignment of the road in this area, landscaping and street design. Impacts to the Sterling Park neighborhood and safety considerations in the vicinity of Scholls Heights Elementary School can be addressed through street design treatments that will keep speeds low along the southern portion of Loon Drive, and intersection treatments that will provide for safe bicycle and pedestrian crossings of Loon Drive and discourage any through-traffic from continuing north on Loon Drive. These considerations should inform the refinement of the alignment and design of this street connection.

East-West Collector Alignment Option 2

Attachment D South Cooper Mountain Concept & Community Plans



Proposed Functional Classification**

- Urban Growth Boundary
- Planned High School Site
- Streams
- Arterial
- Collector
- Neighborhood Route
- Local
- Private
- Taxlots
- Open Water
- Wetland/Probable Wetland

**** Realignments and new roads are shown in dashed lines. New roads east of study area are based on Washington County's Transportation System Plan; new roads within UGB south of study area are based on current River Terrace Community Plan transportation planning. All new road alignments are conceptual.**

Prepared By:
Angelo Planning Group
Date: 10/24/2014

0 250 500 Feet

NORTH

DISCLAIMER
This map is intended for informational purposes only. It is not intended for legal, engineering, or surveying purposes. While this map represents the best data available at the time of publication, the City of Beaverton makes no claims, representations, or warranties as to its accuracy or completeness. Metadata available upon request.
Coordinate System: NAD 1983 HARN StatePlane Oregon North FIPS 3601 Feet Intl



MEMORANDUM

DATE: October 17, 2014

TO: South Cooper Mountain Technical Advisory Committee

Cc: South Cooper Mountain Project Management Team

FROM: Carl Springer, Kevin Chewuk

SUBJECT: East-West Collector Sensitivity Analysis

P13036-000

This memorandum reconfirms the ultimate alignment recommendation for a connection from the planned east-to-west collector street through the South Cooper Mountain Annexation area (SCMAA), to areas east of 175th Avenue. The expected impacts, and sensitivity of different alignment options were assessed.

MULTI-MODAL CONNECTIVITY

The aggregate effect of local street design impacts the effectiveness of the regional system when local travel is restricted by a lack of connecting routes, and local trips are forced onto the regional network.¹ Therefore, street networks should be designed to keep through motor vehicle trips on arterial streets and provide local trips with alternative routes. Street system connectivity is critical because roadway networks provide the backbone for bicycle and pedestrian travel in the region. Metro's local street connectivity principal, which has been incorporated into the Beaverton Transportation System Plan (TSP), encourages communities to develop a connected network of local streets to provide a high level of access, comfort, and convenience for bicyclists and walkers that travel to and among centers. To improve connectivity of the region's arterial system and support walking, bicycling and access to transit, the Metro Regional Transportation Functional Plan requires that, to the extent possible, major arterial streets be spaced at one-mile intervals, and minor arterial or collector streets to be spaced at half-mile intervals.²

In addition, to improve local access and circulation, and preserve capacity on the region's arterial system, each local Transportation System Plan must include a conceptual map of new streets for all contiguous areas of vacant and redevelopable lots and parcels of five or more acres that are zoned to allow residential or mixed-use development. Full street connections should be provided at least every 530 feet (or 1/10th of a mile) or pedestrian and bicycle connections every 330 feet if a full-street connection is not possible. Cul-de-sac or other closed-end street designs are also restricted to circumstances in which barriers prevent full street extensions and such streets are limited in length to 200 feet and the number of dwellings along the street to no more than 25 units.

¹ Metro 2035 Regional Transportation Plan, Local Street Network Concept

² Metro Regional Transportation Functional Plan, Section 3.08.110 Street System Design Requirements

Streets within the SCMAA were identified to be consistent with the Metro Regional Transportation Functional Plan. Specifically, the proposed east-to-west collector between Tile Flat Road and 175th Avenue would be approximately a half-mile north of Scholls Ferry Road, while a proposed north-to-south collector street would be approximately a half-mile between Tile Flat Road and 175th Avenue.

East of 175th Avenue, a north-to-south collector gap was identified, with the nearest collector street being over a mile to the east (Teal Boulevard). In addition, an east-to-west collector gap was identified north of Scholls Ferry Road. Three alignment options were considered to ultimately satisfy the collector street gaps east of 175th Avenue and north of Scholls Ferry Road.

SENSITIVITY ANALYSIS

A sensitivity analysis was performed to determine the motor vehicle impacts associated with three alignment options connecting 175th Avenue with areas to the east. The alignment options were developed through the Community Plan process, and represent a combination of new and previous ideas. These options are summarized below.

Alignment Option 1: Alvord Lane and Black Bird Drive

The proposed east-to-west collector street through the SCMAA would connect with Alvord Lane at 175th Avenue (see Figure 1). The western terminus of Alvord Lane would be extended east, to connect with Black Bird Drive, just to the west of White Bird Street. This would give drivers a connection to the existing traffic signal at the Black Bird Drive intersection with Scholls Ferry Road. A network of proposed neighborhood routes would also connect 175th Avenue with Loon Drive and the existing traffic signal at Scholls Ferry Road under this alignment option. It should be noted that the extension of Alvord Lane is identified in the Beaverton TSP.



Figure 1: Alignment Option 1

Alvord Lane and Black Bird Drive would continue to be classified as neighborhood routes, as they are fronted by single family residential uses. This alignment option is the only option that would not provide a continuous east-to-west collector connection from Tile Flat Road to Scholls Ferry Road, and instead would provide an indirect connection through existing residential neighborhoods east of 175th Avenue. In addition, this alignment option would be towards the north end of the SCMAA, therefore, it would generally be expected to attract fewer motor vehicle trips as drivers would have to travel out of direction to reach it. Consequently, this alignment option would be expected to result in the highest motor vehicle demand along the segments of 175th Avenue and Scholls Ferry Road adjacent to the SCMAA, as this alignment option would provide the least attractive option for east-to-west motor vehicle travel demand. Most drivers would instead, be expected to access Scholls Ferry Road adjacent to the site, or utilize 175th Avenue to access Scholls Ferry Road, when traveling east-to-west.

It should be noted that the Alvord Lane segment of this alignment would be outside of the Urban Growth Boundary (UGB). This rural street is approximately 16 feet wide, and would require widening to accommodate the increased travel demand that would generally be expected with this alignment option. This would conflict with the

Transportation Planning Rule (OAR 660-012), since an exception is required to implement transportation improvements on rural lands. In this case, the exception would likely not be warranted since the east-to-west circulation need could be reasonably accommodated at another location (via alignment options 2 and 3).

Since it is unknown when this area could potentially be brought into the UGB (potentially delaying necessary improvements along Alvord Lane) and due to the alignment not providing a continuous collector route to Scholls Ferry Road, this alignment option is not preferred.

Alignment Option 2: Loon Drive

The proposed east-to-west collector street through the South Cooper Mountain Annexation area (SCMAA) would be extended east of 175th Avenue to connect with Loon Drive, just north of Oystercatcher Lane (see Figure 2). This alignment option would connect drivers with the existing traffic signal at the Loon Drive intersection with Scholls Ferry Road, and to Barrows Road, which is an existing east-to-west collector street paralleling Scholls Ferry Road.



Figure 2: Alignment Option 2

This would provide drivers a network of continuous east-to-west collector streets paralleling Scholls Ferry Road from Tile Flat Road to areas east of Murray Boulevard. A network of proposed neighborhood routes would also connect 175th Avenue with Alvord Lane and Black Bird Drive, and the existing traffic signal at Scholls Ferry Road under this alignment option.

Under this alignment option, the approximately 750 foot segment of Loon Drive, from the proposed collector connection south to Scholls Ferry Road, would be re-classified from a neighborhood route to a collector street. City of Beaverton design standards require collector streets to have minimum 12-foot travel lanes, while City spacing standards require a minimum of 200 feet between street and driveway connections. The current design of Loon Drive would be consistent with these standards for the collector street classification.

Loon Drive, north of the proposed collector alignment, is fronted by single family residential uses and Scholls Heights Elementary School. However, an insignificant increase in motor vehicle traffic would be expected along this segment of Loon Drive, as drivers would remain on the collector alignment south of this segment.

Motor vehicle trips are most dispersed under this alignment option, with drivers having a more convenient east-to-west alternative to Scholls Ferry Road. Thus, the expected motor vehicle demand along the segments of 175th Avenue and Scholls Ferry Road adjacent to the SCMAA would be lower. Intersection options during the p.m. peak hour at the Loon Drive-Barrows Road intersection with Scholls Ferry Road would not be expected to be significantly impacted with the increase in traffic demand associated with this alignment option, as some of the through traffic demand along Scholls Ferry Road would be shifted to Loon Drive. In addition, the collector street gaps east of 175th Avenue and north of Scholls Ferry Road would both be satisfied under this alignment option.

Alignment Option 3: Proposed River Terrace Boulevard

The proposed east-to-west collector street through the SCMAA would be extended east of 175th Avenue, to connect with the proposed River Terrace Boulevard intersection at Scholls Ferry Road (see Figure 3). A network of proposed neighborhood routes would also connect 175th Avenue with Loon Drive and the existing traffic signal at Scholls Ferry Road under this alignment option.



Figure 3: Alignment Option 3

While a traffic signal is being considered for the proposed River Terrace Boulevard intersection at Scholls Ferry Road, it has not and may not ever be approved by the County. Without a traffic signal, side street access at Scholls Ferry Road would be restricted to right-in, right-out, left-in access only, and therefore, this alignment option would only be attractive to westbound drivers, as drivers traveling eastbound would not be able to access Scholls Ferry Road.

With a traffic signal at the proposed River Terrace Boulevard intersection with Scholls Ferry Road, this alignment option would provide a continuous collector street connection between Tile Flat Road and the proposed River Terrace Boulevard, however, drivers traveling between areas further east would still have to utilize Scholls Ferry Road. Therefore, this alignment option would be expected to attract fewer motor vehicle trips than alignment option 2. In addition, assuming a traffic signal was approved by the County for the River Terrace Boulevard approach, adding an approach to the north leg of the intersection would likely cause additional delay and queuing along Scholls Ferry Road. The collector street gaps east of 175th Avenue and north of Scholls Ferry Road would both be satisfied under this alignment option.

Recommendation

The recommended alignment option (alignment option 2) would extend the proposed east-to-west collector street through the South Cooper Mountain Annexation area (SCMAA) east of 175th Avenue to connect with Loon Drive, just north of Oystercatcher Lane. This alignment option would satisfy the collector street gaps east of 175th Avenue and north of Scholls Ferry Road, and would be the most effective at dispersing motor vehicle trips, as it is the only option offering drivers a network of continuous east-to-west collector streets paralleling Scholls Ferry Road from Tile Flat Road to areas east of Murray Boulevard. It would also have the least impact to intersection operations along Scholls Ferry Road, as the Loon Drive-Barrows Road intersection with Scholls Ferry Road has enough excess capacity to accommodate the expected increase in side street traffic.