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TECHNICAL MEMORANDUM

Molalla Avenue at Barclay Hills Drive Intersection

Safety Assessment

Date: January 2 2012 Project #: 10323.4

To: Nancy Kraushaar, City of Oregon City

From: Hermanus Steyn, Pr.Eng., P.E. and Charles Radosta, P.E.

This memorandum provides a summary of the existing roadway and operational characteristics of the intersection of Molalla Avenue and Barclay Hills Drive and addresses safety concerns related to westbound left turning vehicles.

Safety Concern

View of a vehicle waiting to turn left from Barclay Hills Drive onto Molalla Avenue

Barclay Hills Drive intersects with Molalla Avenue at a slightly-skewed T-intersection. Since the south leg of Molalla Avenue has a raised median, left-turning vehicles from Barclay Hills Drive are required to find simultaneous gaps in both directions rather than make a traditional two-stage left-turn. The public has raised concerns about the difficulty to complete this westbound left-turn. No additional crash data was available to confirm safety issues at this intersection.

Existing Conditions

Barclay Hills Drive Cross Section

Molalla Avenue is a three-lane arterial with an average daily traffic (ADT) of approximately 19,200 (year 2008 counts) that serves as a north-south connector between residential and commercial areas of Oregon City. Figure 1 shows a vicinity map of

the intersection. Barclay Hills Drive is a two-lane local road with an ADT of approximately 3,300 (year 2008 counts) serving several residential areas to the east and northeast. Barclay Hills Drive is one of three roads connecting this residential community to Molalla Avenue; Mt. Hood Street and Hilda Street being the other two connections.

To the north of this intersection, Molalla Avenue has a two-way center-turn lane, and immediately south of the intersection a landscaped median provides a pedestrian refuge for an unsignalized crossing. There are bicycle lanes on Molalla Avenue in both directions. The speed limit along Molalla Avenue is 30 miles per hour. TriMet bus stops exist on either side of the north leg of Molalla.

Field Observations

On August 2nd, Kittelson staff conducted site visits during the morning and the evening peak period to observe operations in the vicinity of the intersection.

- During the morning peak period, there were often long queues on Molalla Avenue at the Hilda Street signal but they cleared during each signal cycle. Vehicles turning left from Barclay Hills Drive could find a gap with limited delay.

- During the evening peak period, vehicles turning left from Barclay Hills Drive had longer delays compared to the morning peak period. A common contributor to delay for left-turning vehicles on Barclay Hills Drive were vehicles in the two-way center-turn lane going from Molalla Avenue southbound to Barclay Hills Drive eastbound or from Molalla Avenue northbound to the Chevron gas station on the west side of Molalla.

- While motorists from the west side (Chevron gas station) can complete a two-stage left by using the two-way center-turn lane, motorists from Barclay Hills Drive need to find a gap in both directions.
- Drivers turning in either direction from Barclay Hills had to creep forward past the stop bar and across the striped crosswalk to adequately evaluate whether a gap was acceptable in both directions to pull into traffic.

Street furniture in sight distance triangle and crosswalk location

Vehicle pulling forward to see

- During the morning and evening peak periods, the pedestrian crossing and refuge area were frequently used and it appears that the currently location is appropriately located based on the natural walking paths and other site constraints.
- Several bicycles were observed to travel along both the designated bicycle lanes and the sidewalk facilities.

Pedestrians Crossing Molalla Avenue

Cyclist on Molalla Avenue

Considerations for Potential Improvements

There are a couple of options that could be considered to allow left-turning vehicles entering Molalla from Barclay Hills to complete their turn to continue south on Molalla Avenue.

OPTION #1 – REMOVE REFUCED RAISED MEDIAN

Consideration was given to removing or relocating the pedestrian crosswalk and refuge, and installing a two-way left-turn lane.

- **Removing:** Vehicles making a left from eastbound Barclay Hills Drive to southbound Molalla Avenue would be able to make a two-stage left turn with a lower likelihood of delay. However, the existing crossing locations is used frequently and located in an appropriate location based on natural pedestrian travel paths and the surrounding site constraints.
- **Relocating:** Consideration was given to move the striped crosswalk to the south, just north of the Grocery Outlet right-in/right-out access. A legal crosswalk will still exist at the Barclay Hills Drive intersection and having another striped crosswalk approximately 50 feet away would be undesirable. In addition from a safety point of view, removing the refuge island at the intersection would expose pedestrians who will continue to cross along their existing natural walking paths.

These modifications appear cost prohibitive and are not recommended.

OPTION #2 – PUBLIC OUTREACH AND EDUCATION

Consider developing a public outreach campaign aimed at the residential communities to the east of Alder Street encouraging drivers to use Hilda Street instead of Barclay Hills Drive for access onto Molalla Avenue to travel south. The Hilda Street/Molalla Avenue is signalized, and would provide an alternate route onto southbound Molalla Avenue from the residential areas. Motorists will have a choice to continue using the Barclay Hills Drive intersection, or divert to Hilda Street. Figure 2 illustrates the transportation network and the potential trip diversion to access at the Hilda Street signal. The isolated neighborhoods to east and northeast of intersection should be reminded of the signalized intersection at Hilda Street.

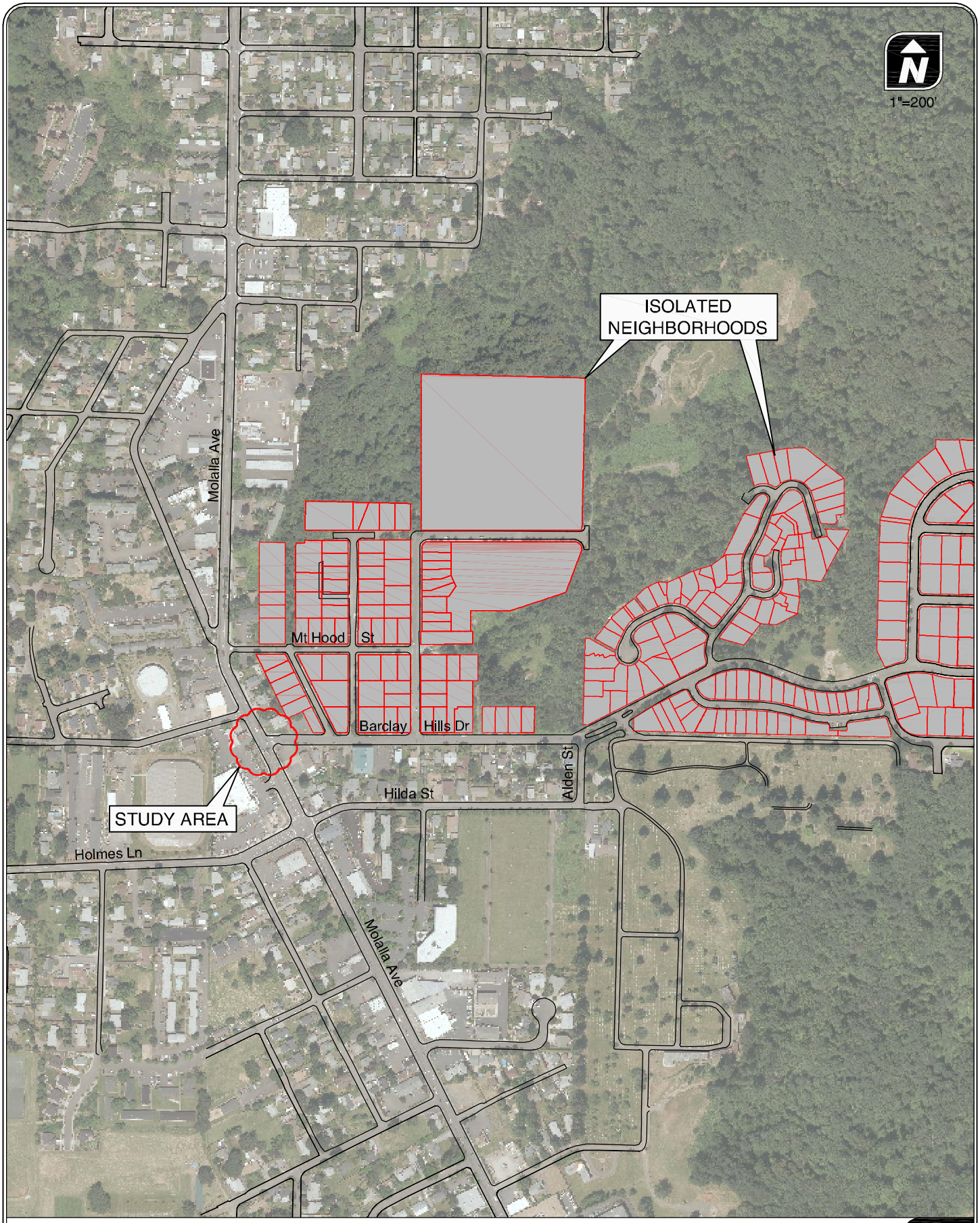
No turning movement counts were available at the Hilda Street/Molalla Avenue intersection to review the traffic operations at the signalized intersection, but the number of potential diverted traffic to the signal would have a negligible affect on the intersection operations.

The existing width of Barclay Hills Drive in the vicinity of the intersection is approximately 30 feet. Consideration can be given to re-stripe this approach to allow for a three-lane cross section having left- & right-turn westbound lanes and one eastbound lane with widths of approximately 10 feet. Narrower lanes in this location may be appropriate given the residential uses served by this facility; however, vehicles will be making turns that typically requires more space to complete their respective maneuvers.

In addition, the City may consider working with property owners and the neighborhood association to minimize private sign obstructions within the vision triangles to improve intersection sight distance.

Recommendations

We recommend the City pursue the second option with the possibility of restriping Barclay Hills approach to a three lane cross section and clearing the intersection sight distance triangles. Converting the constructed and well-utilized pedestrian crosswalk into a two-way left turn lane would be costly and would deprive the pedestrians of a safe and accessible place to cross Molalla Avenue. Rather, it is advised that the City reach out to the residents of the eastern and northeastern neighborhood to use the signalized intersection at Hilda Street for an alternate access to southbound Molalla Avenue. Even though this could result in extra trip length for vehicles, it will likely decrease their delay in making the left turn and reduce the probability of crashes because the turn movements are occurring at a signal.



STUDY VICINITY MAP
MOLALLA AVENUE / BARCLAY HILLS DRIVE INTERSECTION
OREGON CITY, OR

FIGURE 1

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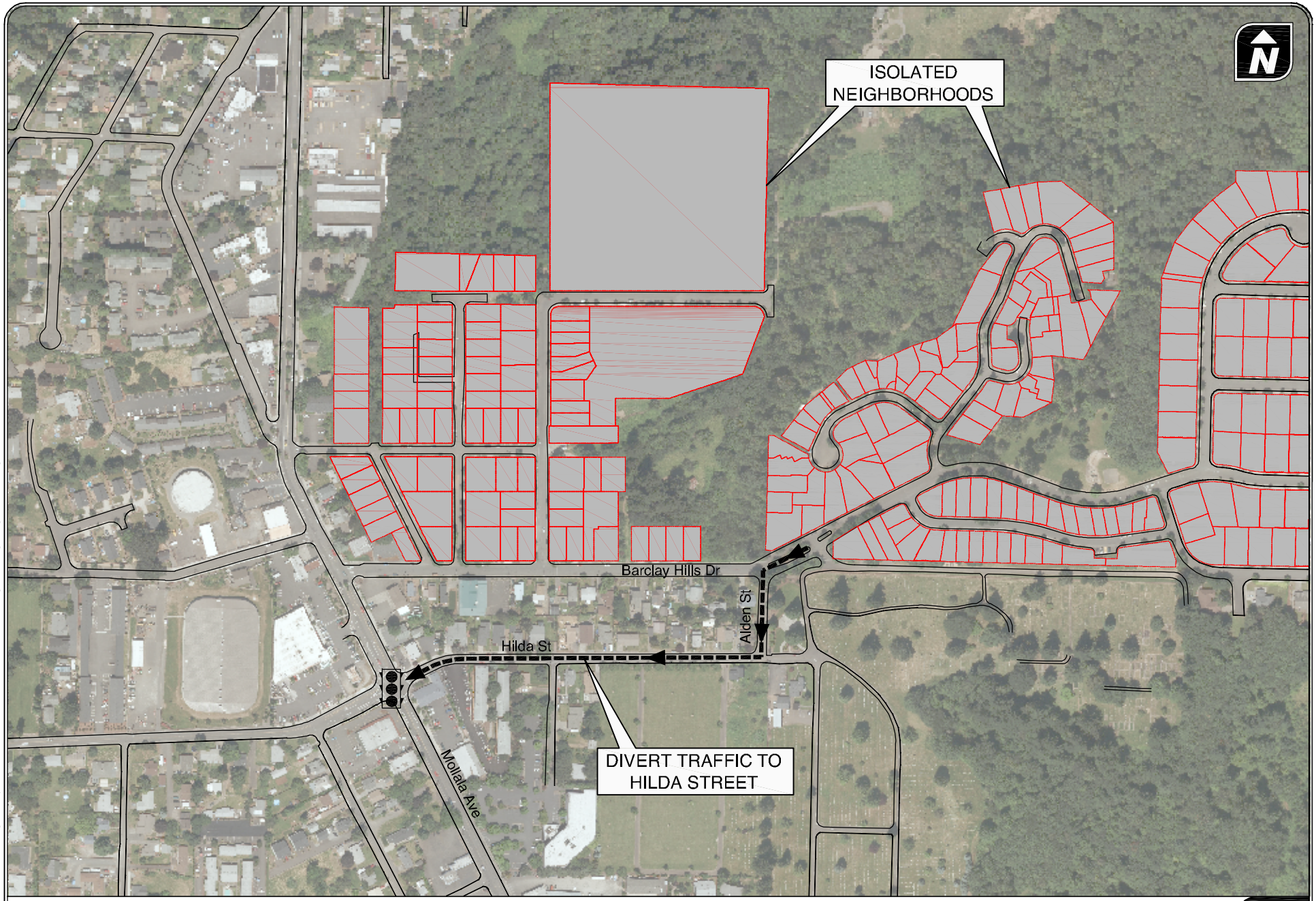

OPTION #2
ENCOURAGE PUBLIC TO ACCESS MOLALLA AVE AT HILDA ST
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FIGURE 2

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