



MILWAUKIE

Dogwood City of the West

To: Planning Commission Packet Recipients
From: Denny Egner, Planning Director
Date: July 21, 2017 for July 25, 2017 Public Hearing
Subject: Supplemental Materials

Enclosed is supplemental materials for the agenda items below for the July 25 Planning Commission meeting.

- Agenda Item 2.1
 - May 23, 2017 Planning Commission Minutes
- Agenda Item 6.1 Public Hearing for S-2016-002 Logus Rd Subdivision
 - Supplemental Staff Report and Attachments
- Agenda Item 6.2 Public Hearing for PD-2017-001 Rusk Rd Planned Development
 - Supplemental Information Memo and Attachments

The packet PDF has been updated and posted, and can be viewed at <https://www.milwaukieoregon.gov/planning/planning-commission-174>. If you have trouble accessing the link, feel free to contact Alicia Martin at (503) 786-7600 or martina@milwaukieoregon.gov.

**CITY OF MILWAUKIE
PLANNING COMMISSION
MINUTES
Milwaukie City Hall
10722 SE Main Street
TUESDAY, MAY 23, 2017
6:30 PM**

COMMISSIONERS PRESENT

Greg Hemer, Chair
John Burns
Scott Jones
Kim Travis

STAFF PRESENT

Denny Egner, Planning Director
Brett Kelter, Associate Planner
Alex Roller, Engineering Tech II
Tim Ramis, City Attorney

COMMISSIONERS ABSENT

Adam Argo, Vice Chair
Shannah Anderson
Sherry Grau

1.0 Call to Order – Procedural Matters*

Chair Hemer called the meeting to order at 6:30 p.m. and read the conduct of meeting format into the record.

Note: The information presented constitutes summarized minutes only. The meeting video is available by clicking the Video link at <http://www.milwaukieoregon.gov/meetings>.

2.0 Planning Commission Minutes

2.1 March 28, 2017

It was moved by Commissioner Burns and seconded by Commissioner Jones to approve the Planning Commission minutes for March 28, 2017 as presented. The motion passed unanimously.

3.0 Information Items

Denny Egner, Planning Director, reported City Council would end its study sessions at 6:15 pm to accommodate televising the Planning Commission meetings at 6:30 pm. He noted the Commission's worksession on the North Milwaukie Industrial Area Plan this Thursday.

4.0 Audience Participation –This is an opportunity for the public to comment on any item not on the agenda. There was none.

5.0 Public Hearings

5.1 Summary: Rusk Rd Planned Development
Applicant/Owner: Brownstone Development, Inc. / Turning Point Church
Address: 13333 SE Rusk Rd
File: PD-2017-01 (master file)
Staff: Brett Kelter

Chair Hemer called the public hearing to order and read the conduct of the quasi-judicial hearing format into the record.

Chair Hemer declared a potential conflict of interest in that he had worked with Ernie Green of Brownstone Development at Milwaukie Lumber five or six years ago. He did not feel he had a true conflict of interest, and could be impartial. No other conflicts of interest or ex parte contacts were declared.

Brett Kelder, Associate Planner, presented the staff report- and reviewed key elements of the project and the requested variances. He noted the differences between the original proposal and the alternative plan submitted last week in response to suggestions and concerns from staff and public comments received. He addressed key issues as follows:

- The Habitat Conservation Area (HCA) designation would be corrected to include the entire White Oak grove, which the alternative plan accommodated. The applicant's topographic survey of the site revealed a greater floodplain area than shown on the FEMA map.
- Stormwater issues could be addressed onsite and traffic impacts would be addressed through the conditions of approval. Both site plans presented impacts to the natural resource area, which the applicant argued was necessary to provide more needed housing for the city. The applicant needed to show that alternatives with fewer impacts to the natural resources had been explored.
- The maximum base density allowed on the site was 80 units. The Commission would need to determine if the proposed plan for 92 units met the standard for "outstanding design" and "exceptional amenities" to warrant the applicant's requested 15% density bonus increase allowed through the planned development process.
- Staff believed the alternative plan was an improvement, but more information was needed for it to be thoroughly vetted and to better assess the impacts. The Commission was asked to identify any issues, questions, or concerns for staff to address at the continued hearing.

Staff addressed questions from the Commission with these key comments:

- Oregon Department of Transportation (ODOT) was aware of the intersection issues at Hwy 224 and Rusk Rd, but it was not a priority project. ODOT did not allow adjustments to signal times to mitigate traffic impacts. The increased traffic from the proposed development may increase the intersection's priority for ODOT, but a condition to add a right turn lane could help mitigate the impacts.
- The Planned Development designation was essentially a zone change that established the program and rules governing development on the site. The scope of the Commission's review included not only the site itself, but also the discretionary categories of "outstanding design" and "extraordinary amenities"; these features were intended to allow for increased density.
- Staff would have to research any requirements or liability related to previous fill on the site.
- Development review often required the balancing of conflicting policies, like affordable housing and the desire to protect habitat or the environment, as exemplified in this project. The Housing Needs Analysis found the City needed housing in this price range, but whether the project was too much development for the site was a valid question.
 - **Tim Ramis, City Attorney**, urged deciding the case based on the actual criteria before the Commission rather than a general discussion of policy. The key issue with respect to density was whether the "extraordinary design" features justified the density increase. He confirmed the design feature could be the extra affordable housing provided by the project.
- Staff confirmed that the proposed development would increase traffic on Rusk Rd during peak hours by a small percentage.

- If affordability of the units was part of why the development merited a density bonus, the Commission could recommend a condition for all or a certain percentage of the units be sold at a certain percentage of median income, adjusted over time, for example.
 - **Mr. Ramis** confirmed that if the applicant claimed a feature was a basis for approval, the feature became a de facto condition. He suggested asking the applicant to craft a condition that would be usable.
- For a Planned Development, the Commission could recommend shifting some of the development out of the floodplain into a more vertical development and using a mix of housing types, including multifamily and rowhouses, that would not ordinarily be allowed. During the preapplication process, staff suggested that the applicant look at alternative housing options.

Mr. Kelper noted comments received since the meeting materials were posted. He distributed a letter from Oregon Department of Fish & Wildlife (ODFW) received before the meeting, and noted he would research what “Oregon White Oak habitat are identified as strategy or priority habitat” as written in the letter meant.

Chair Hemer called for the applicant’s presentation.

Serah Breakstone and Scott Emmens, DOWL, presented the applicant’s proposal, and reviewed the features and benefits of the revised site plan.

- Eight of the 46 Oregon white oaks had to be removed to accommodate the street frontage improvements along Kellogg Creek Drive as required by the City. With the revised site plan, all the remaining trees would be retained.
- The floodplain mitigation proposed in the original site plan provided approximately 600 cu ft more of storage space than currently existed. The revised site plan would have much less impact to the floodplain and require less mitigation.

Jerry Johnson, Johnson Economics, stated he authored the City of Milwaukie’s Housing Needs Analysis (HNA) and had reviewed the applicant’s site plan for consistency with the HNA findings. He noted that with more people working in Milwaukie than living in Milwaukie, the area had an inherent demand for housing. The proposed attached housing development would provide more affordable housing to better match demand. He addressed Commissioner questions as follows:

- Guidelines for determining affordability of owner-occupied units were not available.— Instituting a program to require affordable units was difficult given a need to clearly define “affordable,” administering the program over time, and shared appreciation mortgage issues. Ultimately, product pricing becomes what the market would bear. Attached housing was less desirable than detached housing, but was more affordable.
- His finding was that about 68% of the housing demand in Milwaukie was for housing priced at \$380,000 and below.
- Providing 92 units at a lower price for affordable housing for moderate incomes was better than 80 units at a higher price, due to the lower land cost per lot and because the developer would have more flexibility to lower the price or to make more margin if the price stayed the same.
- The HNA calculation included 80 units on the R-3 portion of the property. Less than one-third of the city’s housing capacity was on vacant property, and most was assumed as infill redevelopment of other properties.

Zach Horowitz, Kittleson & Associates, confirmed the traffic impact study had a problem with

respect to the right-turn lane at the Rusk Road/Hwy 224 intersection. However, regardless of how the northbound approach on Rusk Rd was configured, it would meet ODOT's capacity standard under both AM and PM peak hour conditions.

- Kittleson collected additional traffic data at the Hwy 224/Webster Rd intersection. He described the results of the study, noting an 8% increase in traffic. This count was done while school was in session, unlike the prior traffic study. He was confident the 6-8% increase was reflective of typical traffic conditions at the site.
- Congestion levels would depend on which direction one was traveling. For example, westbound travelers on Hwy 224 during the morning peak hour experienced significantly more delay than eastbound traffic.
- The development would increase traffic on Rusk Rd, both north and southbound traffic south of Hwy 224, by approximately 10% during the AM peak hour and approximately 6% during the PM peak hour.
- He confirmed the traffic increase rates included a yearly inflation assumption of a .61% increase as identified in the City's Transportation System Plan (TSP).

Ms. Breakstone continued the applicant's presentation, noting several concerns about the conditions of approval and requested revisions as follows:

- Reevaluate or remove the condition requiring a turn lane on Rusk Rd at Hwy 224. Based on the Kittleson analysis and review by the City and DKS, the applicant understood there was some disagreement about whether the turn lane was warranted.
- Condition 2.C.f required a public easement on the soft surface trail through the site. The trail was specifically designed to minimize impacts to the natural area with its pervious surface and 30-in width. While the applicant did not object to making it a public easement, the trail design did not meet the City's standards for a public pedestrian connection.
 - The applicant would be willing to discuss North Clackamas Parks & Recreation District (NCPRD) taking ownership or maintaining the trail and adjacent habitat longterm as opposed to the HOA doing so, as had been discussed.
 - She confirmed the trail was one of the outstanding and exceptional design amenities of the planned development. There was no intention to close off the path to the public. The question was whether making the trail a public easement would change the design.
- **Mr. Emmens** commented:
 - He had received clarification about the necessary FEMA map revisions discussed in Condition 4.A.
 - Condition 6.A discussed a six-month expiration date of the approval and a potential Planning Commission review to consider whether an approval extension was in the public interest. With an October approval, six months was a tight deadline to begin construction. Since the other approvals were good for two years, it seemed reasonable to remove the condition or revise the deadline to match the two-year expiration period for the other applications.

The applicant's team responded to questions from the Commission.

- **Mr. Emmens** described how the stormwater runoff from all impervious surfaces, including rooftops, roadways, and sidewalks, would be collected and delivered to the biofiltration ponds, and then discharged into the wetlands.
- **Mr. Emmens** preferred the revised site plan because of its ability to save the white oaks and provide visual access to the wetlands and natural area.
- The range of unit values had been redistributed but not changed with the revised site plan because while the number of units backing up to the open space was reduced, the natural

space was also opened up to the central units.

- **Ms. Breakstone** explained the developer retained the 92 units in the revised plan because that number made the project economically feasible. Although the team looked at scenarios to reduce the number of lots, the revised site plan balanced all the different interests without losing additional units.
- Commissioners expressed concerns about whether the proposal met the character of the neighborhood and community. Illustrations showing how the various design elements interacted within the site and the context of the surrounding neighborhoods were requested. Fewer units would provide more break-up between the masses that might possibly integrate better with the community.
 - **Ms. Breakstone** acknowledged the development was denser than the surrounding neighborhood; however, the site was well-buffered from the adjacent residential neighborhoods by the natural area buffers, the church, and the roads. She believed the site's design and its natural location addressed the impacts to the neighborhood's character pretty well.
- **Mr. Emmens** clarified that site would be constructed in one phase, which would eliminate the need to construct a temporary road for the church, although construction of the homes could be spread out over two seasons.
- **Mr. Emmens** said that stormwater elements like rain gardens or pervious pavement were considered "outstanding" and "exceptional" and went beyond the minimum requirements.
 - **Mr. Emmens** explained the stormwater facilities were modeled after the City of Portland requirements, which incorporated the latest treatment technology, but would remain outside the flood elevations. He confirmed pervious pavement was an option.
- Regarding ODFW concern about the development's impact on the critical salmon and steelhead spawning habitat in Mt Scott Creek, the applicant's water resource engineer followed the Standard Local Operating Procedures for Endangered Species (SLOPES)) V process and all the criteria set forth by the National Marine and Fisheries Service.
- **Ms. Breakstone** was unsure whether consideration had been given to green building design elements. Doing so would potentially impact the price point to the extent that the homes would become a different product.

Chair Hemer called for public testimony.

In Support – None

In Opposition

Dorothea Van Bockel, 13391 SE Ruscliff Ln, stated she was not opposed to the development but had a number of concerns. She valued affordable housing in general, but encouraged the Commission to continue asking questions about design, the homes' quality in construction, access, and what was truly affordable. She also noted flooding and traffic issues, given the limited capacity of the floodplain and the school bus traffic throughout the day.

Allison Lutt-Markwart, 13430 SE Ruscliff Ln, expressed concern about the limited space for queuing when turning right off Ruscliff Ln to cross the highway, the impact on the flood zones, and the existing traffic congestion that already existed due to multiple activities at the church, athletic fields, dog park, and the Milwaukie Center.

Vince Alvarez, 12671 SE Where Else Ln, Chair, Lake Road Neighborhood District Association (NDA). He liked the revised site plan but was concerned about flooding issues. He

said impacting the flood zones needed to be a priority as increased development in the area would only make it worse. Traffic issues were also a concern for the NDA, so it was important to consider and possibly do more traffic studies.

Steve Tandy, 13330 SE Rusk Rd, expressed concern about the impact of additional traffic on the existing traffic from the three churches, athletic fields, and school buses traveling to Rusk Rd each day. He was concerned about emergency vehicle accessibility as well as the impact of the development given the inadequate Rusk Rd/Hwy 224 intersection. He believed in affordable housing, but did not see \$400,000 as affordable housing.

Steve Sterhan, 14000 SE Rusk Rd, noted that Rusk Rd had been used as a bypass since ODOT's updates on I-205. He had talked to Troy Johnson at Clackamas County about how narrow Rusk Rd was, noting he and his wife had witnessed more than 20 accidents in eight years at the "Deadman's Corner" intersection. With an additional 200 cars on the road a traffic-related death was inevitable. He confirmed he believed in affordable housing.

Dick Shook, 5418 SE Casa Del Rey Dr, read a statement expressing concerns as a 40-year resident on Mt Scott Creek about the impacts of additional impervious surface on Mt Scott and Camas Creeks, wetlands, and local springs, as well as increased flooding. With additional housing, parks must be maintained to provide outdoor recreation. The subject area should have been and still could be added to NCPRD. He felt the proposed number of units far exceeded the number that could be accommodated.

Lois Herring, 8945 SE 29th Ave, discussed her concerns with the November traffic study, and asked that it be redone when the nearby schools were in session. The applicant assumed townhouses would generate half the traffic of single-family detached housing, but she believed the proposed units would have at least one to two cars each. No public transit was available unless one crossed Rusk Rd, which was not pedestrian-friendly. The number of units should be reduced.

Judy Sherley, 5804 SE Kellogg Creek Dr, agreed NCPRD should take over the wetlands. She discussed traffic issues for Kellogg Creek Dr residents. She urged the Commission to require new traffic studies, both when school was in session and on a summer weekend, and asked for traffic signal improvements to Kellogg Creek Dr and at the Rusk Rd/Hwy 224 intersection. She believed the proposal should be reduced to 50 to 80 units.

Joseph Edge, Director, Oak Grove Community Council, stated the Council was the Clackamas County Community Planning Organization (CPO) representing the unincorporated residents across from the proposed development. The existing traffic study understated the actual traffic impacts considering the context of the site, transportation alternatives available, and destinations accessible through alternate modes. An alternative traffic impact study should be done that treated the townhouse units as single-family homes, or at least assign one vehicle per dwelling unit, given the proposed price point could likely require vehicle commuting. He also requested a recalculation of the stormwater facility needs based on the site in its predevelopment.

- The CPO had understood that development was technically feasible in the R-3 zone, but they were not convinced the proposal met the standard of "outstanding design". The CPO wanted to see some creative alternative plans in accordance with the variance request, including multifamily housing, which would be more affordable as workforce housing.

Erica Toussaint, 12399 SE Oatfield Rd, agreed with the concerns expressed about the white oaks and traffic, noting nothing was discussed about the traffic impacts on Aldercrest and Oatfield Rds. She was concerned about fill, noting flooding occurred on her property after the 1995 fill on this property. She did not believe the proposed homes addressed the need for affordable housing in Milwaukie. With one access road, residents of the proposed development would have worse traffic issues than current residents. She was concerned about the impacts on North Clackamas Park, adding the City needed to consider the use of nearby places. After construction was completed, she hoped there was some guarantee that NCPRD would take over the wetlands and trails instead of the HOA.

Andrew Collins-Anderson, Executive Director, North Clackamas Urban Watershed Council (NCUWC), 2416 SE Lake Rd, noted the subject property represented some of the last remaining quality wetlands for Mt Scott Creek, which had been highly developed. NCUWC had worked with Turning Point Church to do site restoration work through the Streamside Stewards Program funded through the Oregon Watershed Enhancement Board (OWEB) and Metro. It did not believe the applicant's proposed mitigation was adequate, as it seemed redundant. Management of these natural areas was critical, and HOAs did not have the necessary resources. He asked that the applicant be required to provide alternatives that did not impact the irreplaceable HCA or water quality resources (WQRs).

Laura Hickman, 13786 SE Briarfield Ct, noted Alder Creek Middle School let out at 4:05 pm, which contributed to the traffic impacts. She discussed concerns about bicycle and pedestrian safety, noting the North Clackamas School District's assessment of Rusk Rd's walkability as the most hazardous walking route in the Alder Creek area. She urged the Commission to look at the existing conditions. She confirmed she believed in affordable housing, but not in moving families into an already hazardous walking and biking situation.

Chris Runyard, 2325 NE 32nd Ct, Portland, explained he did habitat restoration on streams and wetlands in the region, and worked on this property for NCUWC. He concurred with the ODFW and -opposed cutting down any of the old growth Oregon white oaks, which were irreplaceable and sat on the remnants of an old wetland forest. There should be no impact to the wetland, HCA, WQR, or the lowlands. The applicant was aggressive about retaining 92 units, but 70 units could all be outside of the natural resource. He discussed the flooding issues. He noted some of the applicant's proposed mitigation had already been done. He believed the lowlands should be managed by NCPRD; HOAs did not have the expertise to do it right.

Greg Baartz-Bowman, 10677 SE 28th Ave, Milwaukie, acknowledged the need for housing but argued it should not be at the expense of the wetlands and old growth Oregon white oaks. He noted that Milwaukie citizens had chosen to protect old growth oaks in the recent past, and added 97% of old growth Oregon white oaks had been cut down in the valley over the last 150 years. The community wanted affordable housing, the Oregon white oaks, and the wetlands

Chair Hemer noted all the public testimony cards that were submitted would be retained and public testimony would continue at the next meeting.

It was moved by Commissioner Travis and seconded by Commissioner Burns to continue the public hearing for PD-2017-001 for 13333 SE Rusk Rd to a date certain of May 25, 2017. The motion passed unanimously.

6.0 Worksession Items - None

7.0 Planning Department Other Business/Updates - None

8.0 Planning Commission Committee Updates and Discussion Items – This is an opportunity for comment or discussion for items not on the agenda.

9.0 Forecast for Future Meetings:

- May 25, 2017 1. Special Session: North Milwaukie Industrial Area Framework Plan and Implementation Strategy
- June 23, 2017 1. Public Hearing: PD-2017-002 13333 SE Rusk Rd- *continued tentative*
2. Public Hearing: DEV-2017-006/VR-2017-002 29th Ave Triplex
3. Public Hearing: S-2017-002 4217 SE Railroad Ave
4. Public Hearing: VR-2017-004 11630 SE 27th Ave ADU

Meeting adjourned at approximately 10:06 pm.

Respectfully submitted,

Alicia Martin, Administrative Specialist II

Greg Hemer, Chair



To: Planning Commission

Through: Dennis Egner, Planning Director

From: Mary Heberling, Assistant Planner & Brett Kelter, Associate Planner

Date: July 20, 2017, for July 25, 2017, Public Hearing

Subject: Supplemental Staff Report

File: S-2016-002, VR-2016-010, PLA-2016-002

This supplemental staff report addresses comments that were reviewed from David and Virginia Seitz and Leslie Schnocker. The staff report issued on July 18, 2017 did not address these comments.

COMMENTS

Don and Virginia Seitz, Property Owners at 4591 SE Logus Rd:

As property owners of the site directly east to the proposed subdivision, they provided comments requesting the City not approve the application without their suggested amendments. They have two concerns:

1. The donation of land and construction costs for public roads as proposed are inequitable.

The main concern is that if/when they choose to redevelop their property, they would be required to build 25 ft of the proposed 40-ft wide street connection between Melody Ln and Logus Rd on the west side of their property. The current applicant is being required to dedicate 15 ft of ROW for that proposed street connection and will not be required build or pave any of the dedication. They feel this is not equitable and would cost them more money, almost half a million dollars, to build 25 ft of road versus the 15 ft of ROW dedication from the applicant, which they believe is cheaper.

They are asking for an alternative which specifies that the Logus connector will not be required to have utilities and may be only as wide as needed for fire truck access (20 ft). They feel the purpose of the connection between Melody Ln and Logus Rd is only needed for fire access and this alternative better meets the needs of the area versus a 40 ft road.

2. The creation of a 15-ft gravel road along the edge of their property will have negative impacts on their current use and enjoyment of their property, whether or not they decide to subdivide in the future.

Their concerns are that opening a graveled public street along the 300-ft length of the property will open the whole property to public view, trespass, and litter and trash. They are also concerned that it may become a shortcut for people on Melody Ln to drive to and from the east along Logus Rd.

They are asking that the City require the applicant to build a fence along the eastern edge of the 15 ft graveled ROW from their hedge in front yard to the extension of Melody Ln. They further ask for the fence to be wood, 6 ft in height, with a 20 ft farm gate at an appropriate place for access in the back of their property.

Staff Response:

1. The City of Milwaukie Engineering Department based their recommendation to require a 15-ft ROW dedication for the street connection between Melody Ln and Logus Rd on:
 - a. Location of the existing structures on both sites.
 - b. Width of existing property frontage on Logus Road.
 - c. The proportionality analysis required for development exactions.

The existing single family structure on 4543 SE Logus Rd (the subdivision site) is closer to their east property line than the existing single family structure on 4591 SE Logus Rd is to their west property line. (See Map 3 below) Without needing to move or demolish the current single family structure on the subdivision site, requiring 15 ft of ROW will allow both of the existing single family structures to remain intact.

In order to require public improvements on exactions, MMC 19.700 requires that the City do a proportional analysis to ensure that the improvement value is roughly in proportion to the impact of the development. The proportionality analysis completed for this development determined that improvements would only be required for the Melody Ln right-of-way. The value of the 4,796 sq ft of land dedicated and the additional improvements being constructed between the end of existing Melody Lane and the west edge were deemed proportional to the effect of 3 additional new lots.

The applicant is also proposing to build Melody Ln from where it currently ends to the east property line of the site. It will be consistent with the current conditions of Melody Ln and include construction of a 5-ft wide setback sidewalk, 5-ft wide planter strip, curb and gutter, and 25 ft of asphalt. Currently, Melody Ln ends farther west than the applicant's property line. Without building this stretch of unimproved street, cars would not be able to access the required extension of Melody Ln. The City can only require the extension of two 8-ft travel lanes of Melody Ln to the applicant's property, but the applicant is choosing to build more of Melody Ln to better create the connection. These extra improvements on the Melody Lane extension are taken into account during the proportionality analysis. Given the extra cost for the applicant to connect Melody Ln with a street segment meeting full city street standards, the City cannot require improvements to a proposed new North/South street that would connect Melody Ln and Logus Rd. Rather, 15 ft ROW dedication is the best option due to the proportionality of the cost. Note that this connection is needed given that Melody Ln is a dead-end street and without the connection it will exceed the length allowed for a dead-end street.

The City would prefer a full 40-ft ROW for the new north/south street, however there are provisions in the code that allow alternate widths and road cross sections. The code allows for components to be located in easements and for narrower ROW. The

final width for this new street is undetermined at this time. The property owners (the commenters) to the east of the applicant at 4591 SE Logus Rd, at the time of redevelopment, will be required to dedicate 25 ft of ROW to complete the proposed 40-ft road between Melody Ln and Logus Rd.

The amount of road that will need to be built by the property owners at 4591 SE Logus Rd will depend on the amount of money the current applicant for the subdivision will be paying to build/dedicate roads. The owners of 4591 SE Logus Rd state that they will have an inequitable burden for the improvement of roads when and if they choose to develop their property. As noted above, the development of their property will be subject to improvements and exactions that will be proportional to the impact of the development. A quick analysis of the property indicates that 4 lots could be created out of the parent property. In concept, a proportionality analysis would find that 2 lots would likely be responsible for covering the dedication and cost of improvements for the extension of Melody Lane. The 3rd lot would be responsible for ROW and half street improvements along the frontage of the new north-south street. The 4th lot, with the existing house, would not be responsible for any improvements because it currently exists and will not have any new impact on the street system. The remaining improvements required along the north-south street would need to be paid out of the City street fund since there is no additional development that would occur along its frontage. Another option, would be to create a local improvement district that would encompass all of the lots that might benefit from the north-south street (including potential lots to the east) and access those lots for the cost of the north-south improvements.

2. The City is not requiring a gravel road on the 15-ft ROW dedication between Melody Ln and Logus Rd. The lots should remain as they currently exist until the road between Melody Ln and Logus Rd is being built and paved. The extension of Melody Ln will have physical barriers to prevent cars from going further east on Melody Ln and south to connect to Logus Rd. Until full improvements are made, there should be no traffic between Melody Ln and Logus Rd on that 15 ft ROW dedication. The reserve strip on the east side of the 15-foot dedication will limit access to this ROW until it is fully constructed.

See Map 3 (below) for depiction of where the properties are located on Logus Rd.

Map 3

- **Leslie Schockner, Property Owners at 4681 SE Logus Rd**

Leslie Schockner is the property owner of the large lot farthest to the east of the 3 large lots east of the applicant's property. Ms. Schockner provided the same concerns as the Seitz's comments above. In particular, the concern was surrounding the fairness in cost comparison with the amount the current applicant for the subdivision would be paying for roads/dedication and potential cost to the property owners directly east at 4591 SE Logus Rd (the Seitz's). Ms. Schockner provided a spreadsheet comparing the costs of developing the property at 4591 SE Logus Rd versus the property at 4543 SE Logus Rd. The spreadsheet shows that the applicant would be paying \$272,500 in cost versus \$443,300 for the property owners to the east at 4591 SE Logus Rd to develop the street connections for their site.

Ms. Schockner also made a similar comment on how they were not sure why a 40 ft road is being proposed to connect Melody Ln and Logus Rd if it will not be connecting to any other streets to the north or south. She stated it is only needed for fire access and therefore does not need to be 40 ft wide.

Staff Response:

The response made to the Seitz comments above are similar to the response for Ms. Schockner's comments. See the response above.

Additionally, the comments received claimed that the cost to build the Logus/Melody connection road would be roughly \$330,000, in total \$443,000 for all improvements. It appears that this estimate was created using the City's fee in lieu of construction (FILOC) values. These values have been set above what market value would be for the applicant to construct the improvements themselves, partially because any City initiated project must include contractors that meet all the requirements of Oregon's Bureau of Labor Industries (BOLI). In many cases, with the higher FILOC cost, the applicant will elect to construct, as it would be cheaper. The FILOC values are not a method of cost estimation. Approximate cost estimates completed by the Engineering Department indicate a value between \$90,000 and \$140,000 if 4591 SE Logus Rd constructs a 25 ft to 40-ft wide street for 300

ft. However, 4591 SE Logus Rd would not be required to build the full 40 ft of road because this would not be proportional to the 3 lots that are being created.

The 40-ft road between Melody Ln and Logus Rd is being required by the Engineering Department due to the increase in the number of units that will be accessing the extension of Melody Ln, especially when all of the lots (including the 3 large lots to the east of the applicant’s site) will be developed. There is potential for 9 new dwelling units (not including the subdivision proposal) that will be taking access from the new extension of Melody Ln. The connection between Melody Ln and Logus Rd is also important because the extension of Melody Ln will be a dead-end street when it reaches the farthest east lot. As mentioned before, without the connection Melody Ln will exceed the length allowed for a dead-end street.

ATTACHMENTS

Attachments are provided as indicated by the checked boxes. All material is available for viewing upon request.

| | PC Packet | Public Copies | E- Packet |
|--|-------------------------------------|-------------------------------------|-------------------------------------|
| 1. Revised Recommended Findings in Support of Approval (pages 6-8) | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 2. Revised Recommended Conditions of Approval | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 3. Additional Comment Received for Attachment 4 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |

Key:

Early PC Mailing = paper materials provided to Planning Commission at the time of public notice 20 days prior to the hearing.

PC Packet = paper materials provided to Planning Commission 7 days prior to the hearing.

Public Copies = paper copies of the packet available for review at City facilities and at the Planning Commission meeting.

E-Packet = packet materials available online at <https://www.milwaukieoregon.gov/planning/planning-commission-174>.

10. MMC Chapter 19.500 Supplementary Development Regulations

MMC 19.500 establishes various supplementary regulations for development.

A. MMC Section 19.502 Accessory Structures

MMC 19.502 establishes standards for accessory structures. In particular, MMC Subsection 19.502.2.A establishes specific provisions for residential accessory structures, including development standards, design standards, and requirements related to roof pitch.

(1) MMC Subsection 19.502.2.A.1 Development Standards

MMC 19.502.2.A.1 establishes height, footprint, and setback standards for residential accessory structures.

The subject property includes two existing detached accessory structures, both of which are proposed to remain in place. A recreational room and garage will remain on Lot 1 and a utility building will remain on Lot 2. Table 2 presents the relevant data for each structure with respect to the applicable standards of MMC 19.502.2.A.1.

| <u>Table 2 – Residential Accessory Structures</u> <u>Height and Footprint Standards</u> | | | |
|--|---|-------------------------------------|-------------------------------------|
| <u>Standard</u> | <u>Requirement</u> <u>(for Type C Structures)</u> | <u>Structure on</u> <u>Lot 1</u> | <u>Structure on</u> <u>Lot 2</u> |
| <u>Maximum Building Height</u> | <u>Lesser of 25 ft OR not taller than highest point of primary structure (allowed at least 15 ft regardless)</u> | <u>20 ft</u> | <u>15 ft</u> |
| <u>Maximum Building Footprint</u> | <u>Lesser of 75% of primary structure OR 1,500 sq ft (allowed at least 850 sq ft if lot area > 10,000 sq ft)</u> | <u>1,720 sq ft *</u> | <u>1,500 sq ft *</u> |
| <u>Required Rear Yard</u> | <u>Base zone requirement = 20 ft for R-7</u> | <u>9.51 ft **</u> | <u>50 ft</u> |
| <u>Required Side Yard</u> | <u>Base zone requirement = 5 ft or 10 ft for R-7</u> | <u>1.33 ft ***</u> | <u>3 ft ****</u> |
| <u>Required Front Yard</u> | <u>Not allowed in front yard unless structure is at least 40 ft from front lot line</u> | <u>83 ft</u> | <u>45 ft</u> |
| <u>Building Separation</u> | <u>Minimum of 5 ft between exterior wall of accessory structure and any other structure on site</u> | <u>5 ft</u> | <u>NA</u> |

* Both structures were constructed prior to the 2002 adoption of size restrictions for accessory structures.

** The applicant is proposing a variance for the rear yard setback on Lot 1.

*** The side yard setback would be met, but the City Engineering Department has required 15 ft ROW dedication, which causes the side yard setback requirement to not be met. Since the City is requiring the ROW dedication, the side yard requirement does not need a variance.

**** The applicant is proposing a variance for the side yard setback on Lot 2.

The size and height allowances for the accessory structure on Lot 1 are dependent on the existing primary structure, which is a two-story house with a footprint of approximately 1,810 sq ft and a building height of approximately 20 ft. The accessory structure on Lot 1 meets the height standard, but is

nonconforming with respect to the standards for the maximum allowed footprint and side yard setback. For those aspects, Lot 1 is subject to the applicable provisions of MMC Chapter 19.800 Nonconforming Uses and Development.

The accessory structure on Lot 2 is located within the front yard and is at least 40 ft from the front lot line; the height and footprint standards are impossible to evaluate without a primary structure on the lot. According to the definition established in MMC Section 19.201, an accessory structure is one that is "incidental and subordinate to the main use of property and located on the same lot as the main use." The existence of an accessory structure on Lot 2 without a primary structure creates a nonconforming situation that will require an approved variance request to remain in conjunction with development of a primary structure. A condition has been established to require that the existing accessory structure on Lot 2 be removed unless it becomes accessory to a primary structure.

The existing nonconforming aspects of the accessory structures on both lots are subject to the provisions of MMC 19.800. As conditioned, the applicable standards of MMC 19.502.2.A.1 are met for Lot 2.

(2) MMC Subsection 19.502.2.A.2 Design Standards

MMC 19.502.2.A.2 establishes design standards for accessory structures. Metal siding is prohibited on structures more than 10 ft high or with a footprint greater than 200 sq ft, unless the siding replicates the siding on the primary dwelling or has the appearance of siding commonly used for residential structures. In addition, structures located in a front, side, or street-side yard that are visible from the right-of-way at a pedestrian level shall use exterior siding and roofing materials that are commonly used on residential structures.

Both existing accessory structures were constructed prior to the 2002 adoption of design standards for accessory structures. Both accessory structures are nonconforming with respect to the prohibition on metal siding and are subject to the applicable provisions of MMC 19.800.

The Planning Commission finds that the existing nonconforming aspects on both parcels are subject to the provisions of MMC 19.800. As conditioned, the Planning Commission finds that the proposed partition meets the applicable standards of MMC 19.502.2.A.2 for Parcel 2.

C.B. MMC Section 19.504 Site Design Standards

MMC 19.504 establishes standards for site design, including clear vision areas, transition area measures, and flag lot design and development standards. Specifically, MMC Subsection 19.504.2 Maintenance of Minimum Ordinance Requirements

MMC 19.504.2 states that no lot area, yard, other open space, or off-street parking or loading area shall be reduced by conveyance or otherwise below the minimum requirements of this title, except by dedication or conveyance for a public use.

The existing single-family residence on Lot 1 would be closer than 20 ft for the street side-yard setback after the dedication of 15 ft for a road to connect Melody Ln and Logus Rd. Since the 15 ft is for a public road, the street side-yard setback is not an issue with meeting the minimum requirements.

The Planning Commission finds that the standard is met.

As conditioned, the Planning Commission finds that the applicable standards of MMC 19.500 are met.

10-11. MMC 19.607 Off-St Parking Standards for Residential Areas

MMC 19.607 establishes off-street parking standards for residential areas.

The applicant's materials indicate awareness of these requirements and will address compliance during the development permit process. The existing single-family home on the proposed Lot 1 has 2 off-street parking spaces per the 2 car garage.

The Planning Commission finds that the proposal meets the off-street parking standards.

11-12. MMC 19.700 contains regulations for Public Facility Improvements.

The proposal complies with these regulations as described in this finding.

- A. MMC Chapter 19.700 applies to partitions, subdivisions, new construction, and modification or expansion of an existing structure or a change or intensification in use that result in any projected increase in vehicle trips or any increase in gross floor area on the site.

The applicant proposes to subdivide the existing parcel into 4 new lots. The subdivision triggers the requirements of MMC Chapter 19.700.

MMC 19.700 applies to the proposed development.

- B. MMC 19.703 contains the requirements for the review process for all proposed developments subject to Chapter 19.700.

- a. MMC 19.703.1 requires a pre-application conference for proposals that require a land use application. *The requirement was satisfied on September 17, 2015.*
- b. MMC 19.703.3.B requires that development shall provide transportation improvements and mitigation at the time of development in rough proportion to the potential impacts of the development per MMC 19.705.

The applicant is proposing to dedicate a 7-ft frontage ROW along SE Logus Rd. This will upgrade the existing ROW to a width of 40 as requested by Milwaukie Engineering Department. The existing ROW on Melody Ln is 40 ft. The required ROW is 40 ft. The proposed site plan and improvement plan show a proposed ROW of 40 ft along the projected alignment of the continuation of Melody Ln. The proposed ROW dedication and improvement will be from the west property line to the east property line of the boundary of the subdivision. Driveway curb cuts and ADA rams will be required to meet the Milwaukie Public Works Standards.

As conditioned, the proposal is consistent with MMC 19.703.3

- C. MMC 19.704 requires submission of a transportation impact study documenting the development impacts on the surrounding transportation system.

All of the trips for Lot 1 of the proposed development affect SE Logus Rd. All of the trips for Lots 2, 3, and 4 will affect the new extension of SE Melody Ln. The proposed development will not trigger a significant increase in trip generation on either neighborhood streets and therefore the subdivision itself does not require a transportation impact study.

MMC 19.704 does not apply to the proposed development.

Revised Recommended Conditions of Approval
Master File #S-2016-002, Julian Illingworth Subdivision

Conditions

1. At the time of submission of the final plat application, the following shall be resolved:
 - a. A written narrative describing all changes made to the final plat that are not related to these conditions of approval.
 - b. A final plat that substantially conforms to the plans received by the Planning Department on May 31, 2017 and approved by this action, except as modified by these conditions of approval.
 - c. The final plat shall include spaces for signatures by the Milwaukie Planning Director and Milwaukie Engineering Director, and a note indicating that this subdivision is subject to the requirements of City of Milwaukie Land Use Application S-2016-001; VR-2016-007.
2. Prior to approval of the final plat, the following shall be resolved:
 - a. Establish a deed restriction for Lot 2 to ensure that, within 24 months of final plat approval for this land division, the existing accessory structure on Lot 2 shall be removed unless:

Lot 2 is maintained in mutual ownership with an adjacent lot containing a primary structure and shall remain in mutual ownership with that adjacent lot. If Lot 2 is sold without an adjacent lot, the accessory structure will be dismantled upon sale.
 - b. Remove the existing electric stove-top from the pool-house studio and treat the space as an accessory use structure, not an accessory dwelling unit.
 - ~~c.~~ Submit a storm water management plan to the City of Milwaukie Engineering Department for review and approval. The plan shall be prepared in accordance with Section 2 – Stormwater Design Standards of the City of Milwaukie Public Works Standards. Private properties may only connect to public storm system if percolation tests show that infiltration cannot be obtained on site. In the event the storm management system contains underground injection control devices, submit proof of acceptance of the storm system design from the Department of Environmental Quality.
 - ~~d.~~ Submit full-engineered plans for construction of all required public improvements, reviewed and approved by the City of Milwaukie Engineering Department.
 - ~~e.~~ Obtain a right-of-way permit for construction of all required public improvements listed in these recommended conditions of approval.
 - ~~f.~~ Pay an inspection fee equal to 5.5% of the cost of the public improvements.
 - ~~g.~~ Provide a payment and performance bond for 100 percent of the cost of the required public improvements.
 - ~~h.~~ Provide an erosion control plan and obtain an erosion control permit.
 - ~~i.~~ Construct 8-in wastewater main to the east end of development property in Melody Lane right-of-way. A new sanitary manhole is required at the end of wastewater main.

- j. Extend 6-in water main to east end of development property in Melody Ln right-of-way. Move existing blowoff to the east end of water main extension.
- k. Install all underground utilities, including stubs for utility service prior to surfacing any streets. Relocate or provide a private utility easement for all utilities encroaching onto adjacent properties.
- l. Dedicate 7 ft on the SE Logus Rd frontage of development property.
- m. Dedicate 40 ft of right-of-way on for the extension of SE Melody Ln fronting the proposed development property.
- n. Dedicate 15 ft of right-of-way along the east side of development property from SE Logus Rd to newly dedicated Melody Ln right-of-way.
- o. Construct all sidewalks, ramps and driveways on SE Melody Lane.
- p. Construct a driveway approach to meet all guidelines of the Americans with Disabilities Act (ADA) to each new lot. The driveway approach aprons shall be between 9 ft and 20 ft in width and least 7.5 ft from the side property line. Driveway approach is also required for 4422 SE Melody Ln.
- q. Dedicate reserve strip to the City of Milwaukie at the end of Melody Ln. The reserve strip will be 1-ft wide and will run from the southeast corner of Lot 4, and will extend to the SE Logus Rd right-of-way fronting Taxlot 12100.
- r. Clear vision areas shall be maintained at all driveways and accessways and on the corners of all property adjacent to an intersection.
- s. Provide a final approved set of Mylar and electronic PDF “As Constructed” drawings to the City of Milwaukie prior to final inspection.
- t. Remove all signs, structures, or vegetation in excess of three feet in height located in “vision clearance areas” at intersections of streets, driveways, and alleys fronting the proposed development.

2. ~~Prior to approval of the final plat, the following shall be resolved:~~

- a. ~~Establish a deed restriction for Lot 2 to ensure that, within 24 months of final plat approval for this land division, the existing accessory structure on Lot 2 shall be removed unless:~~
 - (1) ~~Lot 2 is maintained in mutual ownership with an adjacent lot (Lot 3) containing a primary structure and shall remain in mutual ownership with that adjacent lot. If Lot 2 is sold without an adjacent lot Lot 3, the accessory structure will be dismantled upon sale.~~
- b. ~~Remove the existing electric stove top from the pool house studio and treat the space as an accessory use, not an accessory dwelling unit.~~

3. Prior to final inspection for any building on the proposed development, the following shall be resolved:

- a. Connect all residential roof drains to private drywell or other approved structure.

To: City of Milwaukie Planning Commission
From: Don and Virginia Seitz
Subject: Subdivision Proposal for 4543 SE Logus Rd

My name is Don Seitz and I am speaking on behalf of my wife Virginia and myself against this proposal as presented. We have owned and lived in the house on the lot adjacent to this lot for over 45 years. The proposal as presented would impose significant adverse effects on the value of our property should we choose to sell, or develop it ourselves, as well as on our privacy and private enjoyment of our property, even if we never choose to subdivide.

We appreciate the time and expertise provided by City staff to help us understand the proposal and its implications. Unfortunately, the more we understand, the more it seems that approval of this application would be highly inequitable to us in particular.

1. Donation of land and construction costs for public roads as proposed are inequitable. The heart of the issue for us is that the proposal imposes on us, who are not even part of the application, almost half a million dollars in costs to provide public roads, should we decide to subdivide and develop our lot in the same way as the applicant. It has always been my belief that the City should be equitable in the way it applies its policies.

That is not the case here. The applicant is only having to provide a 15 ft right of way compared to the imposition of a 25 ft land donation on us to the City for the Logus connector road. In addition, we would be expected to provide ALL of the construction costs to connect Melody to Logus. Using the in-lieu costs provided by the City, that would cost us \$330,000, which added to the Melody extension we would have to do, would total over \$440,000 just for roads. To state it slightly differently, this application will incur only \$96,000 in construction costs donated to the City to extend Melody to the subject property line, while we would be obligated to incur \$330,000 in construction costs to build the Logus connector, in addition to the 25 ft land donation strip. A 25 ft strip, by the way, would mean that we would have to tear down and rebuild our garage, which would be a further expense. And our property is smaller than the applicant property. It is simply not fair for the City to insist on land and construction donations for public streets that are so widely varying in the costs to individual landowners.

We are therefore asking for an alternative which specifies that the Logus connector will not be required to have utilities, and may be only as wide as needed for Fire trucks, which we understand is 20 feet¹ This would meet the need for access by emergency equipment, which is what we understand to be the justification for the connector since Melody is too long for a turn-around. It is clear from looking at the map that this extension will never connect up with another road to become a true local road – its only purpose is for fire access. That would bring the costs to us back in line with what the applicant has contributed to the City under this proposal. We would of course, under

¹ “To accommodate the need to move the vehicles and access equipment on them quickly, the Uniform Fire Code calls for a 20-foot wide clear passage.” <http://www.oregon.gov/LCD/docs/publications/neighborstreet.pdf>

this scenario, commit to putting in the required utilities and parking off Melody, if we subdivided our property, just as the applicant here is proposing.²

2. The creation of a 15-foot gravel road along the edge of our property will have negative impacts on our current use and enjoyment of our property, whether or not we ever decide to subdivide. In addition to our concerns with the costs this application would impose on us, should we choose to subdivide at some time in the future, this application will have immediate and ongoing effects on our current use of our property. Opening a graveled public street along the whole length of our property will open the whole property to public view, to issues of trespass, and to issues of litter and trash, not to mention that it is likely to become a shortcut for people on Melody to drive to and from the east along Logus. And who will be maintaining that road, since we all know what the rains do to gravel roads?

None of these 4 large lots have been fenced in the back so the access issue applies to all three of the properties east of the Logus connector. All of these properties have been used historically for truck farming, and are not maintained to residential front yard standards. This road will open them up to public view, thereby creating pressure to change the way the property has been used and maintained. I operate a sawmill for myself in the back. I also compost large amounts of organic material for my garden, some of which is dumped by large trucks. None of this is “pretty” but all of it is useful and restorative to the land I have been working for a long time. I also have other heavy equipment that I use on occasion for myself, and for helping out friends.

In order to address these issues related to the graveled Logus connector on the applicant property, we ask that you require the applicant to build a fence along the eastern edge of the 15 ft graveled right of way from our hedge in front back to Melody. We further ask for privacy and access reasons, that the fence be wood, 6 ft in height, and with a 20 foot farm gate at an appropriate place for access in the back so I can get my equipment in and out.

In summary, as a matter of simple equity, I ask that you not approve this application without our two suggested amendments.

² As an aside I don't get why the Logus connector has to be 40 ft, when Logus itself is not that wide, nor will it be made that wide if the City ever gets around to putting in sidewalks on the western length from 49th to 43rd to match the improved eastern section of Logus. See attached aerial map of the intersection of the improved and unimproved Logus at 49th.

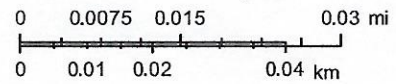
Map showing how *Connector* would not connect up with *another* *cross street*
 City of Milwaukie Zoning



July 19, 2017

1:1,128

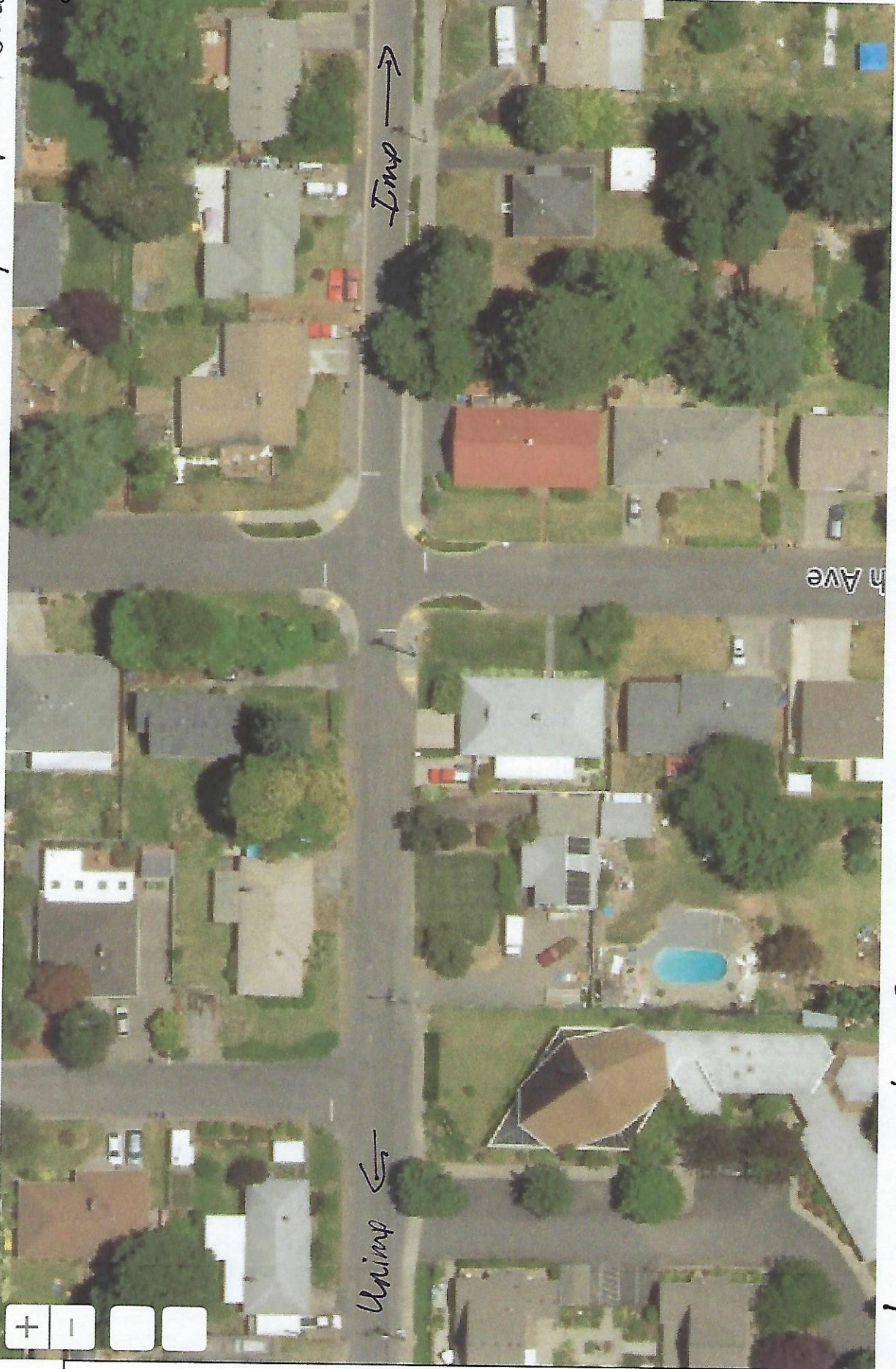
- | | | | |
|---------------|---------------|---------------|---------------|
| 1s1e23u.tif | Green: Band_2 | 1s1e26u.tif | Green: Band_2 |
| Red: Band_1 | Blue: Band_3 | Red: Band_1 | Blue: Band_3 |
| Green: Band_2 | 1s1e25u.tif | Green: Band_2 | 1s1e36u.tif |
| Blue: Band_3 | Red: Band_1 | Blue: Band_3 | Red: Band_1 |
| 1s1e24u.tif | Green: Band_2 | 1s1e35u.tif | Green: Band_2 |
| Red: Band_1 | Blue: Band_3 | Red: Band_1 | Blue: Band_3 |



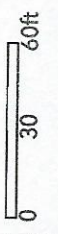
Data Resource Center/Metro



Logan Road - Milwaukee Zoning 30' R0 W - Smaller paving for improved section



Logan @ 49th - Improved section to right (18'-20' roadway + sidewalks = 30')
- Unimproved to left - 20' roadway in front of 4 large properties



-122.612 45.450 Degrees



To: Planning Commission
Through: Dennis Egner, Planning Director
From: Brett Kelper, Associate Planner
Date: July 20, 2017, for July 25, 2017, Public Hearing
Subject: Supplemental Information for File: PD-2017-001 (master file)
Address: 13333 SE Rusk Rd

SUPPLEMENTAL INFORMATION

Based on ongoing conversations with staff from the North Clackamas Parks & Recreation District (NCPRD) about long-term management of the proposed open space tract, City staff has adjusted one portion of the revised Recommended Findings and several sections of the revised Conditions that were attached to the staff report sent out on July 18 (see Attachments 1 and 2, respectively). The operations analysis worksheets (i.e., the data) from the updated traffic count conducted by the applicant team on July 1 is also included in this mailing, as an appendix to the applicant's Exhibit G-3, Supplemental Traffic Memo (see Attachment 3).

ATTACHMENTS

Attachments are provided as indicated by the checked boxes. All material is available for viewing upon request.

| | Supplement to PC | Public Copies | E- Packet |
|--|-------------------------------------|-------------------------------------|-------------------------------------|
| 1. Adjustments to Recommended Findings in Support of Approval (Track Changes version only—latest changes highlighted in yellow) | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| • Finding 7-a-2(c) (Page 4) | | | |
| 2. Adjustments to Recommended Conditions of Approval | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| a. Track Changes version—latest changes highlighted in yellow | | | |
| b. Clean version | | | |
| 3. Appendix to Exhibit G-3 (Supplemental Traffic Memo)—Operations Analysis Worksheets for July 1, 2017 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |

Key:

Supplement to PC = paper materials provided to Planning Commission 7 days prior to the hearing.

Public Copies = paper copies of the packet available for review at City facilities and at the Planning Commission meeting.

E-Packet = packet materials available online at <https://www.milwaukieoregon.gov/planning/planning-commission-174>.

applicable in a PD zone, unless the Planning Commission grants a variance from said standards in its approval of the PD or the accompanying subdivision plat. The City Attorney has concurred with the conclusion of City staff that a formal variance request is not required for adjustments related to the flexibility inherent in the stated purpose of the PD zone to encourage greater flexibility of design and provide a more efficient and desirable use of common open space, with an allowance for some increase in density as a reward for outstanding design (e.g., housing type, lot size, lot dimension, setbacks, and similar standards).

(a) Minimum Size of a PD Zone

MMC Subsection 19.311.3.A requires a minimum of 2 contiguous acres of land for a Planned Development.

The subject property is approximately 13.8 acres in size and provides an adequate area for development.

(b) Special Improvements

MMC Subsection 19.311.3.B establishes the City's authority to require the developer to provide special or oversize sewer lines, water lines, roads and streets, or other service facilities.

The City's Engineering Department has determined that no special or oversize facilities are required to ensure that the proposed development provides adequate public facilities.

(c) Density Increase and Control

MMC Subsection 19.311.3.C allows an increase in density of up to 20% above the maximum allowed in the underlying zone(s), if the City Council determines that the proposed Planned Development is outstanding in planned land use and design and provides exceptional advantages in living conditions and amenities not found in similar developments constructed under regular zoning.

Subtracting the area occupied by floodplain, proposed rights-of-way, and required open space, as required by the density-calculation standards provided in MMC Subsection 19.202.4, the maximum allowable density for the net area of the subject property is 80 units. The applicant has proposed a total of 92 units, which is a 15% increase. The applicant has listed the following elements as evidence of the project's outstanding design and exceptional advantages:

- *Over 7 acres of open space, which will protect natural resource and floodplain areas on the site and provide recreational opportunities with a soft-surface trail system. The open space tract includes a stand of mature Oregon white oak trees that have been identified by public testimony as a priority for preservation. Staff notes that, to ensure ongoing maintenance of the open space, the area should either be dedicated to the City or North Clackamas Parks & Recreation District or that a Home Owners' Association be established with Covenants, Conditions, and Restrictions that require ongoing maintenance.*

Revised Recommended Conditions of Approval
Master File #PD-2017-001
Kellogg Creek Planned Development

Conditions

1. The applicant shall submit a final plat application within 6 months of the preliminary plat approval in accordance with MMC Section 17.24.040. The applicant shall obtain approval of the final plat prior to the expiration of this preliminary plat approval. If the applicant chooses to phase the final plat approval, a revised stormwater report shall be provided with the submittal for each phase. A payment and performance bond for 100% of the cost of the required public improvements shall be provided with the submittal materials for the first phase.
2. The applicant's final plat application shall include the items listed on the City of Milwaukie Final Plat Checklist. The following specific items and changes are required as part of the application:

a. Provide a written narrative describing all changes made to the final plat that are not related to these conditions of approval.

b. Provide a final plat that substantially conforms to the revised plans approved by this action, which are the plans stamped received by the City on ~~April 7~~ July 11, 2017; and modified by the ~~revised landscaping plans updated floodplain mitigation exhibit received on April 12~~ July 17, 2017; ~~the revised Natural Resource Review report and plans received on April 12, 2017; and the revised mitigation plans received on April 20, 2017;~~ except as otherwise modified by these conditions of approval.

Note that plans for the open space tract (particularly the location of the soft-surface trail system) are understood to be conceptual and that specific details shall be determined prior to final plat approval. The final details shall be approved by the Planning Director after review by North Clackamas Parks & Recreation Department (NCPRD) staff. If the open space tract remains in the ownership of the developer or a Home Owners' Association (HOA), maintenance of the trail system shall be set forth in the long-term maintenance plan as noted in Condition 2-i, below. Plans for the community garden are also understood to be conceptual, with details to be finalized prior to final plat approval, with ongoing maintenance provided by the HOA.

b-c. The modifications required by these conditions of approval include the following revisions to all relevant plan sheets:

- (1) As per Finding 14-c, extend the northbound right-turn lane at the Rusk Road/Highway 224 intersection sufficient to meet applicable ODOT standards.
- (2) As per Finding 12-a, provide sufficient detail to demonstrate that the pedestrian and bicycle pathways on Tracts E, F, and H are at least 5 ft wide, constructed of hard surface materials that are permeable for stormwater, and meet all other applicable design standards of MMC Subsection 19.504.9.E, including the requirement for lighting to a minimum level of 0.5 footcandles.
- (3) As per Finding 11-f(2), revise the mitigation planting plan to ensure that all mitigation plantings are species found on the Milwaukie Native Plants List. In addition, establish a long-term maintenance plan for all mitigation plantings within the open space tract.

- (4) As per Finding 11-f(2), re-evaluate the assessment of WQR classification at the various sample points noted in the applicant's technical report. Revise the configuration of Mitigation Area A accordingly.

- e.d. The final plat submittal shall include a complete set of revised plans. The revised plans shall be consistent with one another, accurate with respect to the proposed development details, drawn to scale, and providing a legend that clearly identifies all detailed features. The final plat shall include spaces for signatures by the Milwaukie Planning Director and Milwaukie Engineering Director, and a note indicating that the subdivision is subject to the requirements of City of Milwaukie Land Use Application master file PD-2017-001.
- e.e. Provide a concurrence letter from the Department of State Lands (DSL) regarding the delineated wetland on the site.
- e.f. Provide ~~a draft of all proposed~~ public easements and/or deed restrictions as required by this approval, including for public access to the soft-surface trail system on Tract G; public access to the bicycle and pedestrian connection from Street B to Rusk Road on Tract G; public access to the pedestrian connection across Tracts E and F; and private access through Alley C for the church.
- g. Provide ~~a draft of the proposed~~ Covenants, Conditions, and Restrictions (CC&Rs) for the ~~Home Owners Association (HOA)~~ that will be established for the proposed development. Details shall address maintenance of the ~~soft-surface trail system~~, publicly accessible pedestrian and bicycle connections on the various tracts, ~~and as well as of~~ common areas such as the community garden.
- h. ~~Either dedicate the open space tract to the City or North Clackamas Parks & Recreation District (NCPRD) or demonstrate that the HOA and CC&Rs will ensure adequate long-term maintenance of the mitigation plantings and restoration areas within the open space tract. Note that, under the HOA option, if proper maintenance of the open space tract does not occur, the CC&Rs shall City hereby establishes the right for the City to undertake maintenance of the open space tract and shall clearly state that the City may put a lien on all of the properties within the development to pay for all maintenance costs.~~
- f.i. As per Finding 11-f(2), establish a long-term maintenance plan for the open space tract. The maintenance plan shall be coordinated with NCPRD; approved by the Planning Director; and shall address such topics as survival of mitigation plantings, tree health, public access, trail maintenance, litter management, weed control, and similar issues.

3. Prior to approval of the Final Plat, the following items shall be resolved:

- a. Submit a final stormwater management plan to the City of Milwaukie Engineering Department for review and approval. The plan shall be prepared in accordance with Section 2 – Stormwater Design Standards of the City of Milwaukie Public Works Standards. Submit full-engineered plans for construction of all required public improvements, reviewed and approved by the City of Milwaukie Engineering Department. All utilities shall conform to the Milwaukie Public Works Standards.
- b. Obtain a City right-of-way permit for construction of all required public improvements listed in these recommended conditions of approval for the public right(s)-of-way under City of Milwaukie jurisdiction.
- c. Pay an inspection fee equal to 5.5% of the cost of the public improvements.

- d. Provide a payment and performance bond for 100% of the cost of the required public improvements.
- e. Provide an erosion control plan and obtain an erosion control permit.
- f. Dedicate 14 ft of right-of-way on SE Kellogg Creek Drive fronting the subject property to accommodate the required parking and bike facilities.
- g. Install all underground utilities, including stubs for utility service prior to surfacing any streets. Utilities shall be designed to minimize or eliminate infiltration of floodwaters into the system. New and replacement sanitary sewage systems shall be designed to minimize or eliminate infiltration of floodwaters into the system and discharge from the systems into floodwaters. Relocate or provide a private utility easement for all utilities encroaching onto adjacent properties.
- h. Construct a 5-ft set-back sidewalk, 4-ft planter strip, curb and gutter, 7-ft parking strip, and 10-ft travel lane for each half of right-of-way on Street A and Street B.
- i. Construct all ADA ramps and driveways on Street A and Street B.
- j. Extend the right-turn lane for northbound traffic at the Rusk Road/Highway 224 intersection in accordance with the applicable ODOT standards.
- k. Construct a driveway approach to meet all guidelines of the Americans with Disabilities Act (ADA) to each new lot that takes direct access from a public street. The driveway approach aprons shall be between 9 ft and 20 ft in width and least 7.5 ft from the side property line.
- l. Clear vision areas shall be maintained at all driveways and accessways and on the corners of all property adjacent to an intersection. Remove all signs, structures, or vegetation more than 3 ft in height located in “vision clearance areas” at intersections of streets, driveways, and alleys fronting the proposed development.
- m. Provide a 12-month Maintenance Bond upon completion of the construction.
- n. Provide a final approved set of Mylar and electronic PDF “As Constructed” drawings to the City of Milwaukie prior to final inspection.
- o. Construct and receive County Engineering inspection for all required public improvements in the public right(s)-of-way under Clackamas County jurisdiction. All frontage improvements in or adjacent to Clackamas County right-of-way shall be designed and constructed in accordance with *Clackamas County Roadway Standards*.

Prior to commencement of site work the applicant shall obtain a Development Permit from the Clackamas County Engineering Division for design and construction of required improvements to Kellogg Creek Drive. To obtain the Permit, the applicant shall submit plans prepared and stamped by an Engineer registered in the State of Oregon, provide a Performance Guarantee, and pay an Inspection Fee. The Performance Guarantee is 125% of the approved Engineer’s cost estimate for the required improvements.

Prior to commencement of utility work within the Kellogg Creek Drive or Rusk Road rights-of-way, a Utility Placement Permit shall be obtained from the Clackamas County Engineering Division.

Required improvements to Kellogg Creek Drive include the following:

- (1) A minimum 16-ft-wide one-half street improvement for a local roadway. The applicant shall widen Kellogg Creek Drive so that the minimum total road width

along the site frontage is 32 ft. The structural section for Kellogg Creek Drive improvements shall consist of 4 in of asphalt concrete, per *Clackamas County Roadway Standards Standard Drawing C100*.

- (2) Standard curb, or curb and gutter if curblin slope is less than 1%.
- (3) Adjacent to the curb, a 5-ft landscape strip, including street trees, shall be constructed along the entire site frontage.
- (4) **Except where modified by the City Engineering Director, Aa** minimum 5-ft-wide unobstructed sidewalk shall be constructed along the entire site frontage, per Standard Drawing S960. Where the sidewalk does not connect to sidewalk on adjacent property, the end of the sidewalk shall include a concrete ADA accessible ramp, providing a transition from the new sidewalk to the edge of the pavement. **The applicant shall conduct an exploratory excavation using an airspade, hydrovac, or similar tool where improvements will be adjacent to existing white oak trees. The applicant's arborist shall determine whether the improvements will affect any roots critical to the health or stability of the oak trees and shall prescribe additional treatment methods as needed to minimize the possibility of tree failure, as preservation of the trees was noted as a priority in Finding 7-a-2(c).**
- (5) Inbound and outbound tapers shall be provided per Section 250.6.4 of the *Clackamas County Roadway Standards*. The full road improvement shall extend to the westerly project property line, with the outbound taper beginning at that point.
- (6) Dual curb ramps shall be constructed at proposed intersections with Kellogg Creek Drive, per Standard Drawing S910. A perpendicular curb ramp shall be constructed at the westerly project boundary, per Standard Drawing S940. Crosswalk striping shall be modified as necessary based on required road widening. The designer shall complete the County ADA Assessment Checklist and provide a copy with the improvement plans. The County has adopted the following curb ramp design and construction standards:

| Feature | Design Standard | Construction Standard |
|--------------------------------------|-----------------|-----------------------|
| Ramp Slope | 7.5% | 8.33% |
| Ramp Cross Slope | 1.5% | 2.0% |
| Landing (turning space) Cross Slope | 1.5% | 2.0% |

- (7) Drainage facilities shall be in conformance with Water Environment Services regulations and *Clackamas County Roadway Standards*, Chapter 4. Stormwater detention facilities shall not be located within the public right-of-way.
- (8) The applicant shall grant an 8-ft-wide public utility easement adjacent to the public right-of-way along the entire site frontage of Kellogg Creek Drive.
- p. Record all required easements and/or deed restrictions with the Clackamas County Recorder's office and provide a copy of each to the City Planning Department.
- q. Submit a letter from the project landscape designer attesting that all required site plantings have been completed in conformance with the approved site plans and with City standards, including all mitigation plantings. This includes removal of all invasive or nuisance species vegetation (as identified on the Milwaukie Native Plant List), noxious materials, and man-made debris such as concrete rubble from within all

- WQR and HCA locations on the site, on the north and south sides of the creek, as per Finding 11.
- r. As per Finding 11, demarcate the boundary of the delineated wetland within the open space tract, using permanent signage and/or split-rail fencing.
 - s. As per Finding 11, provide at least two pet-waste bag dispensing devices dispersed along the soft-surface trail system.
4. Prior to issuance of any building permit, the following shall be resolved:
 - a. Obtain approval of the necessary FEMA map revision for those lots that are currently in the floodplain.
 5. Prior to final inspection of any building permit, the following shall be resolved:
 - a. Provide a narrative describing all actions taken to comply with these conditions of approval. In addition, describe any changes made after the issuance of this land use decision that are not related to these conditions of approval.
 - b. Connect all residential roof drains to a private drywell or other approved structure. Private properties may only connect to public storm system if percolation tests show that infiltration cannot be obtained on site or if the water table is too shallow. In the event the storm management system contains underground injection control devices, submit proof of acceptance of the storm system design from the Department of Environmental Quality.
 6. Ongoing conditions of approval include the following:
 - a. As per Finding 7, fencing in yards adjacent to the open space tract shall remain free of sight-obscuring materials, to allow visibility into the adjacent open space.
 - b. As per Finding 11, where practicable, lights on lots adjacent to WQR and HCA areas shall be placed so that they do not shine directly into any WQR and/or HCA location.

Additional Requirements

The following items are not conditions of approval necessary to meet applicable land use review criteria. They relate to other development standards and permitting requirements contained in the Milwaukie Municipal Code (MMC) and Public Works Standards that are required at various points in the development and permitting process.

1. Prior to commencement of any earth-disturbing activities, the applicant shall obtain an erosion control permit.
2. Limitations on Development Activity

Development activity on the site shall be limited to 7:00 a.m. to 10:00 p.m. Monday through Friday and 8:00 a.m. to 5:00 p.m. Saturday and Sunday, as per MMC Subsection 8.08.070(I).
3. Final Development Plan and Program

As per the requirements of MMC Subsections 19.311.12 through 19.311.15, no excavation, grading, construction, improvement, or building shall begin, and no permits therefor shall be issued, until the following items must be addressed regarding the final development plan and program:

 - a. Prior to the effective date of the ordinance adopting the final development plan and program and accompanying change to the zoning map, file with the City Recorder's office a final development plan and program that includes any modifications that were part of the final plan approved by City Council.

- b. The City shall prepare a notice to acknowledge that the final development plan and program approved by City Council constitutes zoning for the subject property. The notice shall contain a legal description of the property and reference to the certified copy of the final development plan and program filed in the office of the City Recorder. The applicant shall record a copy of this acknowledgment notice in the County Recorder's office.
- c. An application for approval of variations to the recorded final plan and program may be submitted in writing. Such variations may be approved by the City staff provided they do not alter dwelling unit densities, alter dwelling unit type ratios, increase or change the type or location of commercial or residential structures, change the boundaries of the planned development, or change the location and area of public open spaces and recreational areas.

4. Landscaping Maintenance

As per MMC Subsection 19.402.11.B.9, a minimum of 80% of all required mitigation plantings for WQR or HCA disturbance shall remain alive on the second anniversary of the date the planting is completed.

5. Requirements from Clackamas Fire District #1 (CFD#1)

- a. A Fire Access and Water Supply plan is required for subdivisions. The plan shall show fire apparatus access, fire lanes, fire hydrants, fire lines, available fire flow, FDC location (if applicable), building square footage, and type of construction. The applicant shall provide fire flow tests per NFPA 291, and shall be no older than 12 months. Work to be completed by experienced and responsible persons and coordinated with the local water authority.
- b. Access
 - (1) Provide address numbering that is clearly visible from the street.
 - (2) The inside turning radius and outside turning radius for a 20-ft-wide road shall not be less than 28 ft and 48 ft respectively, measured from the same center point.
 - (3) Provide an approved turnaround for dead end access roads exceeding 150 ft in length.
 - (4) Fire Department turnarounds shall meet the dimensions found in the fire code applications guide.
- c. Water Supply
 - (1) Fire Hydrants, One and Two-Family Dwellings & Accessory Structures: Where a portion of a structure is more than 600 ft from a hydrant on a fire apparatus access road, as measured in an approved route around the exterior of the structure(s), additional fire hydrants and mains shall be provided.
 - (2) Prior to the start of combustible construction required fire hydrants shall be operational and accessible.
 - (3) For one and two family dwellings located in areas with reliable municipal fire fighting water supply the following shall apply:
 - <3,600 sq ft (including attached garage)
 - (a) 1,000 gpm @ 20 psi with hydrant within 600 ft of furthest portion of new residential construction, (OFC Section B105.2)

>3,600 sq ft (including attached garage)

- (a) Shall meet fire flow requirements specified in Appendix B of the current Oregon Fire Code, (OFC, Table B105.1)
- (b) Shall meet hydrant coverage as specified in Appendix C of the current Oregon Fire Code, (OFC, Table C105.1)

6. Expiration of Approval

- a. As per MMC Subsection 19.311.16, if substantial construction or development in compliance with the approved final development plan and program has not occurred within 6 months of its effective date, the Planning Commission may initiate a review of the PD Zone and hold a public hearing to determine whether its continuation (in whole or in part) is in the public interest. Notification and hearing shall be in accordance with MMC Section 19.1007 Type IV Review. If found not to be, the Planning Commission shall recommend to the City Council that the PD Zone be removed by appropriate amendment to the Zoning Ordinance and the property changed back to original zoning.
- b. Beyond the limitations of MMC 19.311.6, proposals requiring any kind of development permit must complete both of the following steps, as per MMC Subsection 19.1001.7.E.1.a:
 - (1) Obtain and pay for all necessary development permits and start construction within two (2) years of land use approval.
 - (2) Pass final inspection and/or obtain a certificate of occupancy within four (4) years of land use approval.

**Revised Recommended Conditions of Approval
Master File #PD-2017-001
Kellogg Creek Planned Development**

Conditions

1. The applicant shall submit a final plat application within 6 months of the preliminary plat approval in accordance with MMC Section 17.24.040. The applicant shall obtain approval of the final plat prior to the expiration of this preliminary plat approval. If the applicant chooses to phase the final plat approval, a revised stormwater report shall be provided with the submittal for each phase. A payment and performance bond for 100% of the cost of the required public improvements shall be provided with the submittal materials for the first phase.
2. The applicant's final plat application shall include the items listed on the City of Milwaukie Final Plat Checklist. The following specific items and changes are required as part of the application:

- a. Provide a written narrative describing all changes made to the final plat that are not related to these conditions of approval.
- b. Provide a final plat that substantially conforms to the revised plans approved by this action, which are the plans stamped received by the City on July 11, 2017; and modified by the updated floodplain mitigation exhibit received on July 17, 2017; except as otherwise modified by these conditions of approval.

Note that plans for the open space tract (particularly the location of the soft-surface trail system) are understood to be conceptual and that specific details shall be determined prior to final plat approval. The final details shall be approved by the Planning Director after review by North Clackamas Parks & Recreation Department (NCPRD) staff. If the open space tract remains in the ownership of the developer or a Home Owners' Association (HOA), maintenance of the trail system shall be set forth in the long-term maintenance plan as noted in Condition 2-i, below. Plans for the community garden are also understood to be conceptual, with details to be finalized prior to final plat approval, with ongoing maintenance provided by the HOA.

- c. The modifications required by these conditions of approval include the following revisions to all relevant plan sheets:
 - (1) As per Finding 14-c, extend the northbound right-turn lane at the Rusk Road/Highway 224 intersection sufficient to meet applicable ODOT standards.
 - (2) As per Finding 12-a, provide sufficient detail to demonstrate that the pedestrian and bicycle pathways on Tracts E, F, and H are at least 5 ft wide, constructed of hard surface materials that are permeable for stormwater, and meet all other applicable design standards of MMC Subsection 19.504.9.E, including the requirement for lighting to a minimum level of 0.5 footcandles.
 - (3) As per Finding 11-f(2), revise the mitigation planting plan to ensure that all mitigation plantings are species found on the Milwaukie Native Plants List.
 - (4) As per Finding 11-f(2), re-evaluate the assessment of WQR classification at the various sample points noted in the applicant's technical report. Revise the configuration of Mitigation Area A accordingly.
- d. The final plat submittal shall include a complete set of revised plans. The revised plans shall be consistent with one another, accurate with respect to the proposed development details, drawn to scale, and providing a legend that clearly identifies all

detailed features. The final plat shall include spaces for signatures by the Milwaukie Planning Director and Milwaukie Engineering Director, and a note indicating that the subdivision is subject to the requirements of City of Milwaukie Land Use Application master file PD-2017-001.

- e. Provide a concurrence letter from the Department of State Lands (DSL) regarding the delineated wetland on the site.
 - f. Provide public easements and/or deed restrictions as required by this approval, including for public access to the soft-surface trail system on Tract G; public access to the bicycle and pedestrian connection from Street B to Rusk Road on Tract G; public access to the pedestrian connection across Tracts E and F; and private access through Alley C for the church.
 - g. Provide Covenants, Conditions, and Restrictions (CC&Rs) for the HOA that will be established for the proposed development. Details shall address maintenance of the publicly accessible pedestrian and bicycle connections on the various tracts as well as of common areas such as the community garden.
 - h. Either dedicate the open space tract to NCPRD or demonstrate that the HOA and CC&Rs will ensure adequate long-term maintenance of the mitigation plantings and restoration areas within the open space tract. Note that, under the HOA option, if proper maintenance of the open space tract does not occur, the CC&Rs shall establish the right for the City to undertake maintenance of the open space tract and shall clearly state that the City may put a lien on all of the properties within the development to pay for all maintenance costs.
 - i. As per Finding 11-f(2), establish a long-term maintenance plan for the open space tract. The maintenance plan shall be coordinated with NCPRD; approved by the Planning Director; and shall address such topics as survival of mitigation plantings, tree health, public access, trail maintenance, litter management, weed control, and similar issues.
3. Prior to approval of the Final Plat, the following items shall be resolved:
- a. Submit a final stormwater management plan to the City of Milwaukie Engineering Department for review and approval. The plan shall be prepared in accordance with Section 2 – Stormwater Design Standards of the City of Milwaukie Public Works Standards. Submit full-engineered plans for construction of all required public improvements, reviewed and approved by the City of Milwaukie Engineering Department. All utilities shall conform to the Milwaukie Public Works Standards.
 - b. Obtain a City right-of-way permit for construction of all required public improvements listed in these recommended conditions of approval for the public right(s)-of-way under City of Milwaukie jurisdiction.
 - c. Pay an inspection fee equal to 5.5% of the cost of the public improvements.
 - d. Provide a payment and performance bond for 100% of the cost of the required public improvements.
 - e. Provide an erosion control plan and obtain an erosion control permit.
 - f. Dedicate 14 ft of right-of-way on Kellogg Creek Drive fronting the subject property to accommodate the required parking and bike facilities.
 - g. Install all underground utilities, including stubs for utility service prior to surfacing any streets. Utilities shall be designed to minimize or eliminate infiltration of floodwaters into the system. New and replacement sanitary sewage systems shall be designed to

minimize or eliminate infiltration of floodwaters into the system and discharge from the systems into floodwaters. Relocate or provide a private utility easement for all utilities encroaching onto adjacent properties.

- h. Construct a 5-ft set-back sidewalk, 4-ft planter strip, curb and gutter, 7-ft parking strip, and 10-ft travel lane for each half of right-of-way on Street A and Street B.
- i. Construct all ADA ramps and driveways on Street A and Street B.
- j. Extend the right-turn lane for northbound traffic at the Rusk Road/Highway 224 intersection in accordance with the applicable ODOT standards.
- k. Construct a driveway approach to meet all guidelines of the Americans with Disabilities Act (ADA) to each new lot that takes direct access from a public street. The driveway approach aprons shall be between 9 ft and 20 ft in width and least 7.5 ft from the side property line.
- l. Clear vision areas shall be maintained at all driveways and accessways and on the corners of all property adjacent to an intersection. Remove all signs, structures, or vegetation more than 3 ft in height located in "vision clearance areas" at intersections of streets, driveways, and alleys fronting the proposed development.
- m. Provide a 12-month Maintenance Bond upon completion of the construction.
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Prior to commencement of site work the applicant shall obtain a Development Permit from the Clackamas County Engineering Division for design and construction of required improvements to Kellogg Creek Drive. To obtain the Permit, the applicant shall submit plans prepared and stamped by an Engineer registered in the State of Oregon, provide a Performance Guarantee, and pay an Inspection Fee. The Performance Guarantee is 125% of the approved Engineer's cost estimate for the required improvements.

Prior to commencement of utility work within the Kellogg Creek Drive or Rusk Road rights-of-way, a Utility Placement Permit shall be obtained from the Clackamas County Engineering Division.

Required improvements to Kellogg Creek Drive include the following:

- (1) A minimum 16-ft-wide one-half street improvement for a local roadway. The applicant shall widen Kellogg Creek Drive so that the minimum total road width along the site frontage is 32 ft. The structural section for Kellogg Creek Drive improvements shall consist of 4 in of asphalt concrete, per *Clackamas County Roadway Standards Standard Drawing C100*.
- (2) Standard curb, or curb and gutter if curblin slope is less than 1%.
- (3) Adjacent to the curb, a 5-ft landscape strip, including street trees, shall be constructed along the entire site frontage.
- (4) Except where modified by the City Engineering Director, a minimum 5-ft-wide unobstructed sidewalk shall be constructed along the entire site frontage, per

Standard Drawing S960. Where the sidewalk does not connect to sidewalk on adjacent property, the end of the sidewalk shall include a concrete ADA accessible ramp, providing a transition from the new sidewalk to the edge of the pavement. The applicant shall conduct an exploratory excavation using an airspade, hydrovac, or similar tool where improvements will be adjacent to existing white oak trees. The applicant’s arborist shall determine whether the improvements will affect any roots critical to the health or stability of the oak trees and shall prescribe additional treatment methods as needed to minimize the possibility of tree failure, as preservation of the trees was noted as a priority in Finding 7-a-2(c).

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| Feature | Design Standard | Construction Standard |
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- (7) Drainage facilities shall be in conformance with Water Environment Services regulations and *Clackamas County Roadway Standards*, Chapter 4. Stormwater detention facilities shall not be located within the public right-of-way.
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- p. Record all required easements and/or deed restrictions with the Clackamas County Recorder’s office and provide a copy of each to the City Planning Department.
 - q. Submit a letter from the project landscape designer attesting that all required site plantings have been completed in conformance with the approved site plans and with City standards, including all mitigation plantings. This includes removal of all invasive or nuisance species vegetation (as identified on the Milwaukie Native Plant List), noxious materials, and man-made debris such as concrete rubble from within all WQR and HCA locations on the site, on the north and south sides of the creek, as per Finding 11.
 - r. As per Finding 11, demarcate the boundary of the delineated wetland within the open space tract, using permanent signage and/or split-rail fencing.
 - s. As per Finding 11, provide at least two pet-waste bag dispensing devices dispersed along the soft-surface trail system.

4. Prior to issuance of any building permit, the following shall be resolved:
 - a. Obtain approval of the necessary FEMA map revision for those lots that are currently in the floodplain.
5. Prior to final inspection of any building permit, the following shall be resolved:
 - a. Provide a narrative describing all actions taken to comply with these conditions of approval. In addition, describe any changes made after the issuance of this land use decision that are not related to these conditions of approval.
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Development activity on the site shall be limited to 7:00 a.m. to 10:00 p.m. Monday through Friday and 8:00 a.m. to 5:00 p.m. Saturday and Sunday, as per MMC Subsection 8.08.070(l).
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As per the requirements of MMC Subsections 19.311.12 through 19.311.15, no excavation, grading, construction, improvement, or building shall begin, and no permits therefor shall be issued, until the following items must be addressed regarding the final development plan and program:
 - a. Prior to the effective date of the ordinance adopting the final development plan and program and accompanying change to the zoning map, file with the City Recorder's office a final development plan and program that includes any modifications that were part of the final plan approved by City Council.
 - b. The City shall prepare a notice to acknowledge that the final development plan and program approved by City Council constitutes zoning for the subject property. The notice shall contain a legal description of the property and reference to the certified copy of the final development plan and program filed in the office of the City Recorder. The applicant shall record a copy of this acknowledgment notice in the County Recorder's office.

- c. An application for approval of variations to the recorded final plan and program may be submitted in writing. Such variations may be approved by the City staff provided they do not alter dwelling unit densities, alter dwelling unit type ratios, increase or change the type or location of commercial or residential structures, change the boundaries of the planned development, or change the location and area of public open spaces and recreational areas.

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As per MMC Subsection 19.402.11.B.9, a minimum of 80% of all required mitigation plantings for WQR or HCA disturbance shall remain alive on the second anniversary of the date the planting is completed.

5. Requirements from Clackamas Fire District #1 (CFD#1)

- a. A Fire Access and Water Supply plan is required for subdivisions. The plan shall show fire apparatus access, fire lanes, fire hydrants, fire lines, available fire flow, FDC location (if applicable), building square footage, and type of construction. The applicant shall provide fire flow tests per NFPA 291, and shall be no older than 12 months. Work to be completed by experienced and responsible persons and coordinated with the local water authority.
- b. Access
 - (1) Provide address numbering that is clearly visible from the street.
 - (2) The inside turning radius and outside turning radius for a 20-ft-wide road shall not be less than 28 ft and 48 ft respectively, measured from the same center point.
 - (3) Provide an approved turnaround for dead end access roads exceeding 150 ft in length.
 - (4) Fire Department turnarounds shall meet the dimensions found in the fire code applications guide.
- c. Water Supply
 - (1) Fire Hydrants, One and Two-Family Dwellings & Accessory Structures: Where a portion of a structure is more than 600 ft from a hydrant on a fire apparatus access road, as measured in an approved route around the exterior of the structure(s), additional fire hydrants and mains shall be provided.
 - (2) Prior to the start of combustible construction required fire hydrants shall be operational and accessible.
 - (3) For one and two family dwellings located in areas with reliable municipal fire fighting water supply the following shall apply:
 - <3,600 sq ft (including attached garage)
 - (a) 1,000 gpm @ 20 psi with hydrant within 600 ft of furthest portion of new residential construction, (OFC Section B105.2)
 - >3,600 sq ft (including attached garage)
 - (a) Shall meet fire flow requirements specified in Appendix B of the current Oregon Fire Code, (OFC, Table B105.1)
 - (b) Shall meet hydrant coverage as specified in Appendix C of the current Oregon Fire Code, (OFC, Table C105.1)

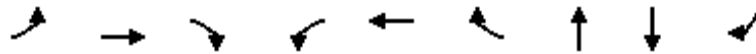
6. Expiration of Approval

- a. As per MMC Subsection 19.311.16, if substantial construction or development in compliance with the approved final development plan and program has not occurred within 6 months of its effective date, the Planning Commission may initiate a review of the PD Zone and hold a public hearing to determine whether its continuation (in whole or in part) is in the public interest. Notification and hearing shall be in accordance with MMC Section 19.1007 Type IV Review. If found not to be, the Planning Commission shall recommend to the City Council that the PD Zone be removed by appropriate amendment to the Zoning Ordinance and the property changed back to original zoning.
- b. Beyond the limitations of MMC 19.311.6, proposals requiring any kind of development permit must complete both of the following steps, as per MMC Subsection 19.1001.7.E.1.a:
 - (1) Obtain and pay for all necessary development permits and start construction within two (2) years of land use approval.
 - (2) Pass final inspection and/or obtain a certificate of occupancy within four (4) years of land use approval.

Queues

1: SE Rusk Rd & Milwaukie Expy

06/11/2017



| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBT | SBT | SBR |
|-------------------------|------|------|------|------|--------|------|------|------|------|
| Lane Group Flow (vph) | 6 | 825 | 27 | 18 | 2207 | 12 | 211 | 66 | 7 |
| v/c Ratio | 0.07 | 0.35 | 0.03 | 0.18 | 0.89 | 0.01 | 0.90 | 0.26 | 0.03 |
| Control Delay | 55.5 | 8.4 | 0.0 | 50.5 | 13.7 | 0.5 | 84.4 | 45.3 | 0.1 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 55.5 | 8.4 | 0.0 | 50.5 | 13.7 | 0.5 | 84.4 | 45.3 | 0.1 |
| Queue Length 50th (ft) | 5 | 103 | 0 | 14 | 312 | 0 | 155 | 44 | 0 |
| Queue Length 95th (ft) | 19 | 193 | 0 | m18 | m#1044 | m0 | #294 | 88 | 0 |
| Internal Link Dist (ft) | | 263 | | | 2471 | | 389 | 744 | |
| Turn Bay Length (ft) | 470 | | 110 | 455 | | 100 | | | 75 |
| Base Capacity (vph) | 165 | 2367 | 1051 | 315 | 2488 | 872 | 246 | 263 | 288 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.04 | 0.35 | 0.03 | 0.06 | 0.89 | 0.01 | 0.86 | 0.25 | 0.02 |

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

1: SE Rusk Rd & Milwaukie Expy

06/11/2017



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|-------|-------|------|------|-------|------|------|------|------|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 6 | 784 | 26 | 17 | 2097 | 11 | 140 | 28 | 33 | 21 | 42 | 7 |
| Future Volume (vph) | 6 | 784 | 26 | 17 | 2097 | 11 | 140 | 28 | 33 | 21 | 42 | 7 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.0 | 6.0 | 6.0 | 4.0 | 6.0 | 6.0 | | 4.0 | | | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 1.00 | | | 1.00 | 1.00 |
| Frbp, ped/bikes | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 1.00 | | 1.00 | | | 1.00 | 1.00 |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | | | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | | 0.98 | | | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | 0.97 | | | 0.98 | 1.00 |
| Satd. Flow (prot) | 1805 | 3374 | 1463 | 1805 | 3438 | 1188 | | 1693 | | | 1588 | 1129 |
| Flt Permitted | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | 0.75 | | | 0.89 | 1.00 |
| Satd. Flow (perm) | 1805 | 3374 | 1463 | 1805 | 3438 | 1188 | | 1316 | | | 1438 | 1129 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 6 | 825 | 27 | 18 | 2207 | 12 | 147 | 29 | 35 | 22 | 44 | 7 |
| RTOR Reduction (vph) | 0 | 0 | 9 | 0 | 0 | 4 | 0 | 6 | 0 | 0 | 0 | 6 |
| Lane Group Flow (vph) | 6 | 825 | 18 | 18 | 2207 | 8 | 0 | 205 | 0 | 0 | 66 | 1 |
| Confl. Peds. (#/hr) | | | 1 | | | | 1 | | | | | |
| Heavy Vehicles (%) | 0% | 7% | 8% | 0% | 5% | 36% | 5% | 11% | 6% | 29% | 12% | 43% |
| Turn Type | Prot | NA | Perm | Prot | NA | Perm | Perm | NA | | Perm | NA | Perm |
| Protected Phases | 5 | 2 | | 1 | 6 | | | 8 | | | 4 | |
| Permitted Phases | | | 2 | | | 6 | 8 | | | 4 | | 4 |
| Actuated Green, G (s) | 1.4 | 81.8 | 81.8 | 3.2 | 83.6 | 83.6 | | 21.0 | | | 21.0 | 21.0 |
| Effective Green, g (s) | 1.4 | 81.8 | 81.8 | 3.2 | 83.6 | 83.6 | | 21.0 | | | 21.0 | 21.0 |
| Actuated g/C Ratio | 0.01 | 0.68 | 0.68 | 0.03 | 0.70 | 0.70 | | 0.18 | | | 0.18 | 0.18 |
| Clearance Time (s) | 4.0 | 6.0 | 6.0 | 4.0 | 6.0 | 6.0 | | 4.0 | | | 4.0 | 4.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | | | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 21 | 2299 | 997 | 48 | 2395 | 827 | | 230 | | | 251 | 197 |
| v/s Ratio Prot | 0.00 | 0.24 | | c0.01 | c0.64 | | | | | | | |
| v/s Ratio Perm | | | 0.01 | | | 0.01 | | c0.16 | | | 0.05 | 0.00 |
| v/c Ratio | 0.29 | 0.36 | 0.02 | 0.38 | 0.92 | 0.01 | | 0.89 | | | 0.26 | 0.01 |
| Uniform Delay, d1 | 58.8 | 8.0 | 6.2 | 57.4 | 15.4 | 5.6 | | 48.4 | | | 42.8 | 40.9 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 0.91 | 0.72 | 1.00 | | 1.00 | | | 1.00 | 1.00 |
| Incremental Delay, d2 | 7.4 | 0.4 | 0.0 | 2.5 | 4.1 | 0.0 | | 32.1 | | | 0.6 | 0.0 |
| Delay (s) | 66.2 | 8.5 | 6.2 | 54.6 | 15.2 | 5.6 | | 80.5 | | | 43.4 | 40.9 |
| Level of Service | E | A | A | D | B | A | | F | | | D | D |
| Approach Delay (s) | | 8.8 | | | 15.4 | | | 80.5 | | | 43.1 | |
| Approach LOS | | A | | | B | | | F | | | D | |

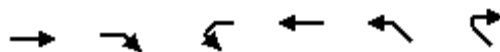
Intersection Summary

| | | | |
|-----------------------------------|-------|---------------------------|------|
| HCM 2000 Control Delay | 18.4 | HCM 2000 Level of Service | B |
| HCM 2000 Volume to Capacity ratio | 0.91 | | |
| Actuated Cycle Length (s) | 120.0 | Sum of lost time (s) | 14.0 |
| Intersection Capacity Utilization | 85.9% | ICU Level of Service | E |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis 3: SE Ruscliffe Rd & SE Rusk Rd

06/11/2017



| Movement | EBT | EBR | WBL | WBT | NWL | NWR |
|-----------------------------------|-------------|-------------|-------------|------|----------------------|------|
| Lane Configurations | ↔ | | | ↔ | ↔ | |
| Traffic Volume (veh/h) | 181 | 1 | 2 | 175 | 3 | 8 |
| Future Volume (Veh/h) | 181 | 1 | 2 | 175 | 3 | 8 |
| Sign Control | Free | | | Free | Stop | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 |
| Hourly flow rate (vph) | 248 | 1 | 3 | 240 | 4 | 11 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | None | | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | 553 | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | | | 249 | | 494 | 248 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | | | 249 | | 494 | 248 |
| tC, single (s) | | | 4.1 | | 6.7 | 6.3 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | | | 2.2 | | 3.8 | 3.4 |
| p0 queue free % | | | 100 | | 99 | 99 |
| cM capacity (veh/h) | | | 1328 | | 482 | 764 |
| Direction, Lane # | EB 1 | WB 1 | NW 1 | | | |
| Volume Total | 249 | 243 | 15 | | | |
| Volume Left | 0 | 3 | 4 | | | |
| Volume Right | 1 | 0 | 11 | | | |
| cSH | 1700 | 1328 | 661 | | | |
| Volume to Capacity | 0.15 | 0.00 | 0.02 | | | |
| Queue Length 95th (ft) | 0 | 0 | 2 | | | |
| Control Delay (s) | 0.0 | 0.1 | 10.6 | | | |
| Lane LOS | | A | B | | | |
| Approach Delay (s) | 0.0 | 0.1 | 10.6 | | | |
| Approach LOS | | | B | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 0.4 | | | |
| Intersection Capacity Utilization | | | 20.8% | | ICU Level of Service | A |
| Analysis Period (min) | | | 15 | | | |

HCM Unsignalized Intersection Capacity Analysis

4: SE Rusk Rd & SE Kellogg Creek Dr

06/11/2017

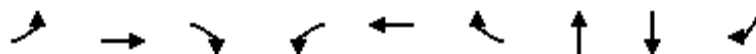


| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|-------------|-------------|-------------|----------------------|------|------|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 42 | 14 | 34 | 137 | 114 | 66 |
| Future Volume (Veh/h) | 42 | 14 | 34 | 137 | 114 | 66 |
| Sign Control | Stop | | | Free | Free | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.64 | 0.64 | 0.64 | 0.64 | 0.64 | 0.64 |
| Hourly flow rate (vph) | 66 | 22 | 53 | 214 | 178 | 103 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | | | None | None | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | 923 | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 550 | 230 | 281 | | | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 550 | 230 | 281 | | | |
| tC, single (s) | 6.5 | 6.3 | 4.1 | | | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.6 | 3.4 | 2.2 | | | |
| p0 queue free % | 86 | 97 | 96 | | | |
| cM capacity (veh/h) | 463 | 797 | 1276 | | | |
| Direction, Lane # | EB 1 | NB 1 | SB 1 | | | |
| Volume Total | 88 | 267 | 281 | | | |
| Volume Left | 66 | 53 | 0 | | | |
| Volume Right | 22 | 0 | 103 | | | |
| cSH | 517 | 1276 | 1700 | | | |
| Volume to Capacity | 0.17 | 0.04 | 0.17 | | | |
| Queue Length 95th (ft) | 15 | 3 | 0 | | | |
| Control Delay (s) | 13.4 | 1.9 | 0.0 | | | |
| Lane LOS | B | A | | | | |
| Approach Delay (s) | 13.4 | 1.9 | 0.0 | | | |
| Approach LOS | B | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | 2.6 | | | | | |
| Intersection Capacity Utilization | 32.4% | | | ICU Level of Service | A | |
| Analysis Period (min) | 15 | | | | | |

Queues

1: SE Rusk Rd & Milwaukie Expy

06/11/2017



| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBT | SBT | SBR |
|-------------------------|------|------|------|-------|------|------|-------|------|------|
| Lane Group Flow (vph) | 18 | 1861 | 243 | 135 | 1482 | 13 | 174 | 170 | 27 |
| v/c Ratio | 0.19 | 0.90 | 0.25 | 0.74 | 0.61 | 0.01 | 0.96 | 0.61 | 0.08 |
| Control Delay | 57.6 | 29.3 | 8.2 | 70.8 | 11.8 | 0.8 | 101.5 | 53.8 | 0.5 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 57.6 | 29.3 | 8.2 | 70.8 | 11.8 | 0.8 | 101.5 | 53.8 | 0.5 |
| Queue Length 50th (ft) | 14 | 682 | 53 | 90 | 357 | 0 | 124 | 121 | 0 |
| Queue Length 95th (ft) | 38 | #891 | 98 | m#200 | m580 | m0 | #237 | 187 | 2 |
| Internal Link Dist (ft) | | 263 | | | 2471 | | 389 | 767 | |
| Turn Bay Length (ft) | 470 | | 110 | 455 | | 100 | | | 75 |
| Base Capacity (vph) | 156 | 2067 | 982 | 184 | 2443 | 1139 | 224 | 352 | 385 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.12 | 0.90 | 0.25 | 0.73 | 0.61 | 0.01 | 0.78 | 0.48 | 0.07 |

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

1: SE Rusk Rd & Milwaukie Expy

06/11/2017



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|-------|------|-------|------|------|------|-------|------|------|------|------|
| Lane Configurations | ↶ | ↷ | ↷ | ↶ | ↷ | ↷ | | ↷ | | | ↷ | ↷ |
| Traffic Volume (vph) | 17 | 1712 | 224 | 124 | 1363 | 12 | 81 | 38 | 41 | 43 | 113 | 25 |
| Future Volume (vph) | 17 | 1712 | 224 | 124 | 1363 | 12 | 81 | 38 | 41 | 43 | 113 | 25 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.0 | 6.0 | 6.0 | 4.0 | 6.0 | 6.0 | | 4.0 | | | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 1.00 | | | 1.00 | 1.00 |
| Frbp, ped/bikes | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 1.00 | | 1.00 | | | 1.00 | 1.00 |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | | | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | | 0.97 | | | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | 0.98 | | | 0.99 | 1.00 |
| Satd. Flow (prot) | 1703 | 3438 | 1573 | 1770 | 3505 | 1615 | | 1735 | | | 1816 | 1495 |
| Flt Permitted | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | 0.53 | | | 0.85 | 1.00 |
| Satd. Flow (perm) | 1703 | 3438 | 1573 | 1770 | 3505 | 1615 | | 950 | | | 1567 | 1495 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 18 | 1861 | 243 | 135 | 1482 | 13 | 88 | 41 | 45 | 47 | 123 | 27 |
| RTOR Reduction (vph) | 0 | 0 | 37 | 0 | 0 | 4 | 0 | 11 | 0 | 0 | 0 | 22 |
| Lane Group Flow (vph) | 18 | 1861 | 206 | 135 | 1482 | 9 | 0 | 163 | 0 | 0 | 170 | 5 |
| Confl. Peds. (#/hr) | | | 3 | | | | 3 | | | | | |
| Heavy Vehicles (%) | 6% | 5% | 0% | 2% | 3% | 0% | 1% | 5% | 5% | 9% | 1% | 8% |
| Turn Type | Prot | NA | Perm | Prot | NA | Perm | Perm | NA | | Perm | NA | Perm |
| Protected Phases | 5 | 2 | | 1 | 6 | | | 8 | | | 4 | |
| Permitted Phases | | | 2 | | | 6 | 8 | | | 4 | | 4 |
| Actuated Green, G (s) | 3.3 | 72.1 | 72.1 | 12.4 | 81.2 | 81.2 | | 21.5 | | | 21.5 | 21.5 |
| Effective Green, g (s) | 3.3 | 72.1 | 72.1 | 12.4 | 81.2 | 81.2 | | 21.5 | | | 21.5 | 21.5 |
| Actuated g/C Ratio | 0.03 | 0.60 | 0.60 | 0.10 | 0.68 | 0.68 | | 0.18 | | | 0.18 | 0.18 |
| Clearance Time (s) | 4.0 | 6.0 | 6.0 | 4.0 | 6.0 | 6.0 | | 4.0 | | | 4.0 | 4.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | | | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 46 | 2065 | 945 | 182 | 2371 | 1092 | | 170 | | | 280 | 267 |
| v/s Ratio Prot | 0.01 | c0.54 | | c0.08 | 0.42 | | | | | | | |
| v/s Ratio Perm | | | 0.13 | | | 0.01 | | c0.17 | | | 0.11 | 0.00 |
| v/c Ratio | 0.39 | 0.90 | 0.22 | 0.74 | 0.63 | 0.01 | | 0.96 | | | 0.61 | 0.02 |
| Uniform Delay, d1 | 57.4 | 20.8 | 11.0 | 52.2 | 10.9 | 6.3 | | 48.8 | | | 45.4 | 40.6 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 0.95 | 0.93 | 1.00 | | 1.00 | | | 1.00 | 1.00 |
| Incremental Delay, d2 | 5.4 | 6.9 | 0.5 | 12.7 | 1.0 | 0.0 | | 55.6 | | | 3.7 | 0.0 |
| Delay (s) | 62.8 | 27.7 | 11.5 | 62.4 | 11.1 | 6.3 | | 104.4 | | | 49.1 | 40.6 |
| Level of Service | E | C | B | E | B | A | | F | | | D | D |
| Approach Delay (s) | | 26.2 | | | 15.3 | | | 104.4 | | | 47.9 | |
| Approach LOS | | C | | | B | | | F | | | D | |

Intersection Summary










| | | | |
|-----------------------------------|-------|---------------------------|------|
| HCM 2000 Control Delay | 26.2 | HCM 2000 Level of Service | C |
| HCM 2000 Volume to Capacity ratio | 0.89 | | |
| Actuated Cycle Length (s) | 120.0 | Sum of lost time (s) | 14.0 |
| Intersection Capacity Utilization | 81.5% | ICU Level of Service | D |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

3: SE Rusk Rd & SE Ruscliffe Rd

06/11/2017

| |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations |  | |  | | |  |
| Traffic Volume (veh/h) | 18 | 21 | 142 | 2 | 8 | 447 |
| Future Volume (Veh/h) | 18 | 21 | 142 | 2 | 8 | 447 |
| Sign Control | Stop | | Free | | | Free |
| Grade | 0% | | 0% | | | 0% |
| Peak Hour Factor | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 |
| Hourly flow rate (vph) | 21 | 25 | 169 | 2 | 10 | 532 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | | None | | | None |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | | 553 |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 722 | 170 | | | 171 | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 722 | 170 | | | 171 | |
| tC, single (s) | 6.4 | 6.2 | | | 4.1 | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | | | 2.2 | |
| p0 queue free % | 95 | 97 | | | 99 | |
| cM capacity (veh/h) | 394 | 879 | | | 1418 | |
| Direction, Lane # | WB 1 | NB 1 | SB 1 | | | |
| Volume Total | 46 | 171 | 542 | | | |
| Volume Left | 21 | 0 | 10 | | | |
| Volume Right | 25 | 2 | 0 | | | |
| cSH | 563 | 1700 | 1418 | | | |
| Volume to Capacity | 0.08 | 0.10 | 0.01 | | | |
| Queue Length 95th (ft) | 7 | 0 | 1 | | | |
| Control Delay (s) | 12.0 | 0.0 | 0.2 | | | |
| Lane LOS | B | | A | | | |
| Approach Delay (s) | 12.0 | 0.0 | 0.2 | | | |
| Approach LOS | B | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 0.9 | | | |
| Intersection Capacity Utilization | | | 39.9% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |

HCM Unsignalized Intersection Capacity Analysis

4: SE Rusk Rd & SE Kellogg Creek Dr

06/11/2017

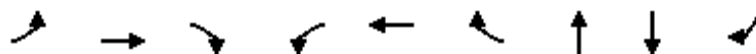


| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|-------------|-------------|-------------|----------------------|------|------|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 32 | 19 | 18 | 115 | 377 | 90 |
| Future Volume (Veh/h) | 32 | 19 | 18 | 115 | 377 | 90 |
| Sign Control | Stop | | | Free | Free | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 36 | 22 | 20 | 131 | 428 | 102 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | | | None | None | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | | 920 |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 650 | 479 | 530 | | | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 650 | 479 | 530 | | | |
| tC, single (s) | 6.4 | 6.2 | 4.1 | | | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | 2.2 | | | |
| p0 queue free % | 92 | 96 | 98 | | | |
| cM capacity (veh/h) | 424 | 591 | 1048 | | | |
| Direction, Lane # | EB 1 | NB 1 | SB 1 | | | |
| Volume Total | 58 | 151 | 530 | | | |
| Volume Left | 36 | 20 | 0 | | | |
| Volume Right | 22 | 0 | 102 | | | |
| cSH | 475 | 1048 | 1700 | | | |
| Volume to Capacity | 0.12 | 0.02 | 0.31 | | | |
| Queue Length 95th (ft) | 10 | 1 | 0 | | | |
| Control Delay (s) | 13.6 | 1.3 | 0.0 | | | |
| Lane LOS | B | A | | | | |
| Approach Delay (s) | 13.6 | 1.3 | 0.0 | | | |
| Approach LOS | B | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 1.3 | | | |
| Intersection Capacity Utilization | | | 35.3% | ICU Level of Service | A | |
| Analysis Period (min) | | | 15 | | | |

Queues

1: SE Rusk Rd & Milwaukie Expy

06/11/2017



| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBT | SBT | SBR |
|-------------------------|------|------|------|------|--------|------|------|------|------|
| Lane Group Flow (vph) | 6 | 836 | 27 | 18 | 2235 | 12 | 213 | 67 | 7 |
| v/c Ratio | 0.07 | 0.35 | 0.03 | 0.18 | 0.90 | 0.01 | 0.90 | 0.27 | 0.03 |
| Control Delay | 55.5 | 8.5 | 0.0 | 50.5 | 14.4 | 0.5 | 85.5 | 45.4 | 0.1 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 55.5 | 8.5 | 0.0 | 50.5 | 14.4 | 0.5 | 85.5 | 45.4 | 0.1 |
| Queue Length 50th (ft) | 5 | 105 | 0 | 14 | 317 | 0 | 157 | 45 | 0 |
| Queue Length 95th (ft) | 19 | 197 | 0 | m17 | m#1068 | m0 | #298 | 89 | 0 |
| Internal Link Dist (ft) | | 263 | | | 2471 | | 389 | 744 | |
| Turn Bay Length (ft) | 470 | | 110 | 455 | | 100 | | | 75 |
| Base Capacity (vph) | 165 | 2366 | 1050 | 315 | 2486 | 871 | 246 | 264 | 288 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.04 | 0.35 | 0.03 | 0.06 | 0.90 | 0.01 | 0.87 | 0.25 | 0.02 |

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

1: SE Rusk Rd & Milwaukie Expy

06/11/2017



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|-------|-------|------|------|-------|------|------|------|------|
| Lane Configurations | ↖ | ↗↗ | ↖ | ↖ | ↗↗ | ↖ | | ↕ | | | ↖ | ↖ |
| Traffic Volume (vph) | 6 | 794 | 26 | 17 | 2123 | 11 | 142 | 28 | 33 | 21 | 43 | 7 |
| Future Volume (vph) | 6 | 794 | 26 | 17 | 2123 | 11 | 142 | 28 | 33 | 21 | 43 | 7 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.0 | 6.0 | 6.0 | 4.0 | 6.0 | 6.0 | | 4.0 | | | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 1.00 | | | 1.00 | 1.00 |
| Frbp, ped/bikes | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 1.00 | | 1.00 | | | 1.00 | 1.00 |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | | | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | | 0.98 | | | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | 0.97 | | | 0.98 | 1.00 |
| Satd. Flow (prot) | 1805 | 3374 | 1463 | 1805 | 3438 | 1188 | | 1693 | | | 1590 | 1129 |
| Flt Permitted | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | 0.75 | | | 0.89 | 1.00 |
| Satd. Flow (perm) | 1805 | 3374 | 1463 | 1805 | 3438 | 1188 | | 1314 | | | 1442 | 1129 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 6 | 836 | 27 | 18 | 2235 | 12 | 149 | 29 | 35 | 22 | 45 | 7 |
| RTOR Reduction (vph) | 0 | 0 | 9 | 0 | 0 | 4 | 0 | 6 | 0 | 0 | 0 | 6 |
| Lane Group Flow (vph) | 6 | 836 | 18 | 18 | 2235 | 8 | 0 | 207 | 0 | 0 | 67 | 1 |
| Confl. Peds. (#/hr) | | | 1 | | | | 1 | | | | | |
| Heavy Vehicles (%) | 0% | 7% | 8% | 0% | 5% | 36% | 5% | 11% | 6% | 29% | 12% | 43% |
| Turn Type | Prot | NA | Perm | Prot | NA | Perm | Perm | NA | | Perm | NA | Perm |
| Protected Phases | 5 | 2 | | 1 | 6 | | | 8 | | | | 4 |
| Permitted Phases | | | 2 | | | 6 | 8 | | | 4 | | 4 |
| Actuated Green, G (s) | 1.4 | 81.8 | 81.8 | 3.2 | 83.6 | 83.6 | | 21.0 | | | 21.0 | 21.0 |
| Effective Green, g (s) | 1.4 | 81.8 | 81.8 | 3.2 | 83.6 | 83.6 | | 21.0 | | | 21.0 | 21.0 |
| Actuated g/C Ratio | 0.01 | 0.68 | 0.68 | 0.03 | 0.70 | 0.70 | | 0.18 | | | 0.18 | 0.18 |
| Clearance Time (s) | 4.0 | 6.0 | 6.0 | 4.0 | 6.0 | 6.0 | | 4.0 | | | 4.0 | 4.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | | | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 21 | 2299 | 997 | 48 | 2395 | 827 | | 229 | | | 252 | 197 |
| v/s Ratio Prot | 0.00 | 0.25 | | c0.01 | c0.65 | | | | | | | |
| v/s Ratio Perm | | | 0.01 | | | 0.01 | | c0.16 | | | 0.05 | 0.00 |
| v/c Ratio | 0.29 | 0.36 | 0.02 | 0.38 | 0.93 | 0.01 | | 0.90 | | | 0.27 | 0.01 |
| Uniform Delay, d1 | 58.8 | 8.1 | 6.2 | 57.4 | 15.8 | 5.6 | | 48.5 | | | 42.8 | 40.9 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 0.91 | 0.72 | 1.00 | | 1.00 | | | 1.00 | 1.00 |
| Incremental Delay, d2 | 7.4 | 0.4 | 0.0 | 2.6 | 4.8 | 0.0 | | 34.7 | | | 0.6 | 0.0 |
| Delay (s) | 66.2 | 8.5 | 6.2 | 54.6 | 16.2 | 5.6 | | 83.2 | | | 43.4 | 40.9 |
| Level of Service | E | A | A | D | B | A | | F | | | D | D |
| Approach Delay (s) | | 8.9 | | | 16.4 | | | 83.2 | | | 43.2 | |
| Approach LOS | | A | | | B | | | F | | | D | |

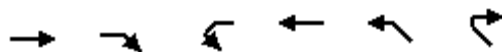
Intersection Summary

| | | | |
|-----------------------------------|-------|---------------------------|------|
| HCM 2000 Control Delay | 19.2 | HCM 2000 Level of Service | B |
| HCM 2000 Volume to Capacity ratio | 0.92 | | |
| Actuated Cycle Length (s) | 120.0 | Sum of lost time (s) | 14.0 |
| Intersection Capacity Utilization | 86.7% | ICU Level of Service | E |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis 3: SE Ruscliffe Rd & SE Rusk Rd

06/11/2017



| Movement | EBT | EBR | WBL | WBT | NWL | NWR |
|-----------------------------------|-------------|-------------|-------------|----------------------|------|------|
| Lane Configurations | ↔ | | | ↔ | ↔ | |
| Traffic Volume (veh/h) | 183 | 1 | 2 | 177 | 3 | 8 |
| Future Volume (Veh/h) | 183 | 1 | 2 | 177 | 3 | 8 |
| Sign Control | Free | | | Free | Stop | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 |
| Hourly flow rate (vph) | 251 | 1 | 3 | 242 | 4 | 11 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | None | | | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | 553 | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | | | 252 | | 500 | 252 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | | | 252 | | 500 | 252 |
| tC, single (s) | | | 4.1 | | 6.7 | 6.3 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | | | 2.2 | | 3.8 | 3.4 |
| p0 queue free % | | | 100 | | 99 | 99 |
| cM capacity (veh/h) | | | 1325 | | 478 | 761 |
| Direction, Lane # | EB 1 | WB 1 | NW 1 | | | |
| Volume Total | 252 | 245 | 15 | | | |
| Volume Left | 0 | 3 | 4 | | | |
| Volume Right | 1 | 0 | 11 | | | |
| cSH | 1700 | 1325 | 657 | | | |
| Volume to Capacity | 0.15 | 0.00 | 0.02 | | | |
| Queue Length 95th (ft) | 0 | 0 | 2 | | | |
| Control Delay (s) | 0.0 | 0.1 | 10.6 | | | |
| Lane LOS | | A | B | | | |
| Approach Delay (s) | 0.0 | 0.1 | 10.6 | | | |
| Approach LOS | | | B | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 0.4 | | | |
| Intersection Capacity Utilization | | | 20.9% | ICU Level of Service | A | |
| Analysis Period (min) | | | 15 | | | |

HCM Unsignalized Intersection Capacity Analysis

4: SE Rusk Rd & SE Kellogg Creek Dr

06/11/2017

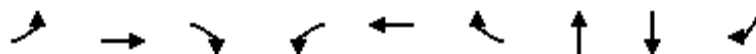


| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|-------------|-------------|-------------|----------------------|------|------|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 43 | 14 | 34 | 139 | 115 | 67 |
| Future Volume (Veh/h) | 43 | 14 | 34 | 139 | 115 | 67 |
| Sign Control | Stop | | | Free | Free | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.64 | 0.64 | 0.64 | 0.64 | 0.64 | 0.64 |
| Hourly flow rate (vph) | 67 | 22 | 53 | 217 | 180 | 105 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | | | None | None | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | 923 | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 556 | 232 | 285 | | | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 556 | 232 | 285 | | | |
| tC, single (s) | 6.5 | 6.3 | 4.1 | | | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.6 | 3.4 | 2.2 | | | |
| p0 queue free % | 85 | 97 | 96 | | | |
| cM capacity (veh/h) | 459 | 794 | 1271 | | | |
| Direction, Lane # | EB 1 | NB 1 | SB 1 | | | |
| Volume Total | 89 | 270 | 285 | | | |
| Volume Left | 67 | 53 | 0 | | | |
| Volume Right | 22 | 0 | 105 | | | |
| cSH | 513 | 1271 | 1700 | | | |
| Volume to Capacity | 0.17 | 0.04 | 0.17 | | | |
| Queue Length 95th (ft) | 16 | 3 | 0 | | | |
| Control Delay (s) | 13.5 | 1.9 | 0.0 | | | |
| Lane LOS | B | A | | | | |
| Approach Delay (s) | 13.5 | 1.9 | 0.0 | | | |
| Approach LOS | B | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 2.6 | | | |
| Intersection Capacity Utilization | | 32.7% | | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |

Queues

1: SE Rusk Rd & Milwaukie Expy

06/11/2017



| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBT | SBT | SBR |
|-------------------------|------|------|------|-------|------|------|-------|------|------|
| Lane Group Flow (vph) | 18 | 1884 | 247 | 137 | 1500 | 13 | 176 | 172 | 27 |
| v/c Ratio | 0.19 | 0.91 | 0.25 | 0.76 | 0.62 | 0.01 | 0.96 | 0.61 | 0.08 |
| Control Delay | 57.6 | 30.8 | 8.3 | 73.0 | 12.1 | 0.8 | 100.0 | 53.4 | 0.5 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 57.6 | 30.8 | 8.3 | 73.0 | 12.1 | 0.8 | 100.0 | 53.4 | 0.5 |
| Queue Length 50th (ft) | 14 | 701 | 55 | 93 | 366 | 0 | 125 | 122 | 0 |
| Queue Length 95th (ft) | 38 | #911 | 101 | m#205 | m590 | m0 | #240 | 189 | 2 |
| Internal Link Dist (ft) | | 263 | | | 2471 | | 389 | 767 | |
| Turn Bay Length (ft) | 470 | | 110 | 455 | | 100 | | | 75 |
| Base Capacity (vph) | 156 | 2060 | 979 | 181 | 2432 | 1134 | 224 | 351 | 385 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.12 | 0.91 | 0.25 | 0.76 | 0.62 | 0.01 | 0.79 | 0.49 | 0.07 |

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

1: SE Rusk Rd & Milwaukie Expy

06/11/2017



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|-------|------|-------|------|------|------|-------|------|------|------|------|
| Lane Configurations | ↖ | ↗↗ | ↖ | ↖ | ↗↗ | ↖ | | ↕ | | | ↗ | ↖ |
| Traffic Volume (vph) | 17 | 1733 | 227 | 126 | 1380 | 12 | 82 | 38 | 42 | 44 | 114 | 25 |
| Future Volume (vph) | 17 | 1733 | 227 | 126 | 1380 | 12 | 82 | 38 | 42 | 44 | 114 | 25 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.0 | 6.0 | 6.0 | 4.0 | 6.0 | 6.0 | | 4.0 | | | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 1.00 | | 1.00 | | | 1.00 | 1.00 |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | | | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | | 0.96 | | | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | 0.98 | | | 0.99 | 1.00 |
| Satd. Flow (prot) | 1703 | 3438 | 1573 | 1770 | 3505 | 1615 | | 1735 | | | 1815 | 1495 |
| Flt Permitted | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | 0.53 | | | 0.85 | 1.00 |
| Satd. Flow (perm) | 1703 | 3438 | 1573 | 1770 | 3505 | 1615 | | 950 | | | 1563 | 1495 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 18 | 1884 | 247 | 137 | 1500 | 13 | 89 | 41 | 46 | 48 | 124 | 27 |
| RTOR Reduction (vph) | 0 | 0 | 37 | 0 | 0 | 4 | 0 | 11 | 0 | 0 | 0 | 22 |
| Lane Group Flow (vph) | 18 | 1884 | 210 | 137 | 1500 | 9 | 0 | 165 | 0 | 0 | 172 | 5 |
| Confl. Peds. (#/hr) | | | 3 | | | | 3 | | | | | |
| Heavy Vehicles (%) | 6% | 5% | 0% | 2% | 3% | 0% | 1% | 5% | 5% | 9% | 1% | 8% |
| Turn Type | Prot | NA | Perm | Prot | NA | Perm | Perm | NA | | Perm | NA | Perm |
| Protected Phases | 5 | 2 | | 1 | 6 | | | 8 | | | 4 | |
| Permitted Phases | | | 2 | | | 6 | 8 | | | 4 | | 4 |
| Actuated Green, G (s) | 3.3 | 71.9 | 71.9 | 12.2 | 80.8 | 80.8 | | 21.9 | | | 21.9 | 21.9 |
| Effective Green, g (s) | 3.3 | 71.9 | 71.9 | 12.2 | 80.8 | 80.8 | | 21.9 | | | 21.9 | 21.9 |
| Actuated g/C Ratio | 0.03 | 0.60 | 0.60 | 0.10 | 0.67 | 0.67 | | 0.18 | | | 0.18 | 0.18 |
| Clearance Time (s) | 4.0 | 6.0 | 6.0 | 4.0 | 6.0 | 6.0 | | 4.0 | | | 4.0 | 4.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | | | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 46 | 2059 | 942 | 179 | 2360 | 1087 | | 173 | | | 285 | 272 |
| v/s Ratio Prot | 0.01 | c0.55 | | c0.08 | 0.43 | | | | | | | |
| v/s Ratio Perm | | | 0.13 | | | 0.01 | | c0.17 | | | 0.11 | 0.00 |
| v/c Ratio | 0.39 | 0.92 | 0.22 | 0.77 | 0.64 | 0.01 | | 0.95 | | | 0.60 | 0.02 |
| Uniform Delay, d1 | 57.4 | 21.3 | 11.1 | 52.5 | 11.2 | 6.4 | | 48.5 | | | 45.1 | 40.2 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 0.95 | 0.92 | 1.00 | | 1.00 | | | 1.00 | 1.00 |
| Incremental Delay, d2 | 5.4 | 7.8 | 0.5 | 15.0 | 1.1 | 0.0 | | 54.0 | | | 3.6 | 0.0 |
| Delay (s) | 62.8 | 29.2 | 11.7 | 65.1 | 11.4 | 6.4 | | 102.5 | | | 48.6 | 40.3 |
| Level of Service | E | C | B | E | B | A | | F | | | D | D |
| Approach Delay (s) | | 27.4 | | | 15.8 | | | 102.5 | | | 47.5 | |
| Approach LOS | | C | | | B | | | F | | | D | |










Intersection Summary

| | | | |
|-----------------------------------|-------|---------------------------|------|
| HCM 2000 Control Delay | 27.0 | HCM 2000 Level of Service | C |
| HCM 2000 Volume to Capacity ratio | 0.90 | | |
| Actuated Cycle Length (s) | 120.0 | Sum of lost time (s) | 14.0 |
| Intersection Capacity Utilization | 82.3% | ICU Level of Service | E |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis 3: SE Rusk Rd & SE Ruscliffe Rd

06/11/2017

| |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations |  | |  | | |  |
| Traffic Volume (veh/h) | 18 | 21 | 144 | 2 | 8 | 452 |
| Future Volume (Veh/h) | 18 | 21 | 144 | 2 | 8 | 452 |
| Sign Control | Stop | | Free | | Free | |
| Grade | 0% | | 0% | | 0% | |
| Peak Hour Factor | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 |
| Hourly flow rate (vph) | 21 | 25 | 171 | 2 | 10 | 538 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | None | | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | | 553 |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 730 | 172 | | | 173 | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 730 | 172 | | | 173 | |
| tC, single (s) | 6.4 | 6.2 | | | 4.1 | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | | | 2.2 | |
| p0 queue free % | 95 | 97 | | | 99 | |
| cM capacity (veh/h) | 390 | 877 | | | 1416 | |
| Direction, Lane # | WB 1 | NB 1 | SB 1 | | | |
| Volume Total | 46 | 173 | 548 | | | |
| Volume Left | 21 | 0 | 10 | | | |
| Volume Right | 25 | 2 | 0 | | | |
| cSH | 558 | 1700 | 1416 | | | |
| Volume to Capacity | 0.08 | 0.10 | 0.01 | | | |
| Queue Length 95th (ft) | 7 | 0 | 1 | | | |
| Control Delay (s) | 12.0 | 0.0 | 0.2 | | | |
| Lane LOS | B | | A | | | |
| Approach Delay (s) | 12.0 | 0.0 | 0.2 | | | |
| Approach LOS | B | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 0.9 | | | |
| Intersection Capacity Utilization | | | 40.2% | ICU Level of Service | A | |
| Analysis Period (min) | 15 | | | | | |

HCM Unsignalized Intersection Capacity Analysis 4: SE Rusk Rd & SE Kellogg Creek Dr

06/11/2017

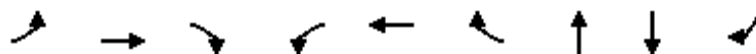


| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|-------------|-------------|-------------|----------------------|------|------|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 32 | 19 | 18 | 116 | 382 | 91 |
| Future Volume (Veh/h) | 32 | 19 | 18 | 116 | 382 | 91 |
| Sign Control | Stop | | | Free | Free | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 36 | 22 | 20 | 132 | 434 | 103 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | | | None | None | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | | 920 |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 658 | 486 | 537 | | | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 658 | 486 | 537 | | | |
| tC, single (s) | 6.4 | 6.2 | 4.1 | | | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | 2.2 | | | |
| p0 queue free % | 91 | 96 | 98 | | | |
| cM capacity (veh/h) | 420 | 586 | 1041 | | | |
| Direction, Lane # | EB 1 | NB 1 | SB 1 | | | |
| Volume Total | 58 | 152 | 537 | | | |
| Volume Left | 36 | 20 | 0 | | | |
| Volume Right | 22 | 0 | 103 | | | |
| cSH | 470 | 1041 | 1700 | | | |
| Volume to Capacity | 0.12 | 0.02 | 0.32 | | | |
| Queue Length 95th (ft) | 10 | 1 | 0 | | | |
| Control Delay (s) | 13.7 | 1.3 | 0.0 | | | |
| Lane LOS | B | A | | | | |
| Approach Delay (s) | 13.7 | 1.3 | 0.0 | | | |
| Approach LOS | B | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 1.3 | | | |
| Intersection Capacity Utilization | | | 35.6% | ICU Level of Service | A | |
| Analysis Period (min) | | | 15 | | | |

Queues

1: SE Rusk Rd & Milwaukie Expy

06/11/2017



| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBT | SBT | SBR |
|-------------------------|------|------|------|------|--------|------|------|------|------|
| Lane Group Flow (vph) | 6 | 836 | 31 | 19 | 2235 | 12 | 241 | 69 | 7 |
| v/c Ratio | 0.07 | 0.36 | 0.03 | 0.19 | 0.91 | 0.01 | 0.97 | 0.26 | 0.02 |
| Control Delay | 55.5 | 8.7 | 0.1 | 50.8 | 15.0 | 0.5 | 98.0 | 45.1 | 0.1 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 55.5 | 8.7 | 0.1 | 50.8 | 15.0 | 0.5 | 98.0 | 45.1 | 0.1 |
| Queue Length 50th (ft) | 5 | 105 | 0 | 15 | 317 | 0 | 182 | 46 | 0 |
| Queue Length 95th (ft) | 19 | 197 | 0 | m18 | m#1068 | m0 | #350 | 91 | 0 |
| Internal Link Dist (ft) | | 263 | | | 2471 | | 389 | 744 | |
| Turn Bay Length (ft) | 470 | | 110 | 455 | | 100 | | | 75 |
| Base Capacity (vph) | 165 | 2338 | 1038 | 315 | 2458 | 862 | 248 | 264 | 288 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.04 | 0.36 | 0.03 | 0.06 | 0.91 | 0.01 | 0.97 | 0.26 | 0.02 |

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

1: SE Rusk Rd & Milwaukie Expy

06/11/2017



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|-------|-------|------|------|-------|------|------|------|------|
| Lane Configurations | ↖ | ↗ | ↘ | ↖ | ↗ | ↘ | | ↕ | | | ↗ | ↘ |
| Traffic Volume (vph) | 6 | 794 | 29 | 18 | 2123 | 11 | 154 | 35 | 40 | 21 | 45 | 7 |
| Future Volume (vph) | 6 | 794 | 29 | 18 | 2123 | 11 | 154 | 35 | 40 | 21 | 45 | 7 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.0 | 6.0 | 6.0 | 4.0 | 6.0 | 6.0 | | 4.0 | | | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 1.00 | | 1.00 | | | 1.00 | 1.00 |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | | | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | | 0.98 | | | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | 0.97 | | | 0.98 | 1.00 |
| Satd. Flow (prot) | 1805 | 3374 | 1463 | 1805 | 3438 | 1188 | | 1691 | | | 1593 | 1129 |
| Flt Permitted | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | 0.76 | | | 0.89 | 1.00 |
| Satd. Flow (perm) | 1805 | 3374 | 1463 | 1805 | 3438 | 1188 | | 1321 | | | 1440 | 1129 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 6 | 836 | 31 | 19 | 2235 | 12 | 162 | 37 | 42 | 22 | 47 | 7 |
| RTOR Reduction (vph) | 0 | 0 | 10 | 0 | 0 | 4 | 0 | 7 | 0 | 0 | 0 | 6 |
| Lane Group Flow (vph) | 6 | 836 | 21 | 19 | 2235 | 8 | 0 | 234 | 0 | 0 | 69 | 1 |
| Confl. Peds. (#/hr) | | | 1 | | | | 1 | | | | | |
| Heavy Vehicles (%) | 0% | 7% | 8% | 0% | 5% | 36% | 5% | 11% | 6% | 29% | 12% | 43% |
| Turn Type | Prot | NA | Perm | Prot | NA | Perm | Perm | NA | | Perm | NA | Perm |
| Protected Phases | 5 | 2 | | 1 | 6 | | | 8 | | | 4 | |
| Permitted Phases | | | 2 | | | 6 | 8 | | | 4 | | 4 |
| Actuated Green, G (s) | 1.4 | 80.8 | 80.8 | 3.2 | 82.6 | 82.6 | | 22.0 | | | 22.0 | 22.0 |
| Effective Green, g (s) | 1.4 | 80.8 | 80.8 | 3.2 | 82.6 | 82.6 | | 22.0 | | | 22.0 | 22.0 |
| Actuated g/C Ratio | 0.01 | 0.67 | 0.67 | 0.03 | 0.69 | 0.69 | | 0.18 | | | 0.18 | 0.18 |
| Clearance Time (s) | 4.0 | 6.0 | 6.0 | 4.0 | 6.0 | 6.0 | | 4.0 | | | 4.0 | 4.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | | | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 21 | 2271 | 985 | 48 | 2366 | 817 | | 242 | | | 264 | 206 |
| v/s Ratio Prot | 0.00 | 0.25 | | c0.01 | c0.65 | | | | | | | |
| v/s Ratio Perm | | | 0.01 | | | 0.01 | | c0.18 | | | 0.05 | 0.00 |
| v/c Ratio | 0.29 | 0.37 | 0.02 | 0.40 | 0.94 | 0.01 | | 0.97 | | | 0.26 | 0.01 |
| Uniform Delay, d1 | 58.8 | 8.5 | 6.5 | 57.4 | 16.7 | 5.9 | | 48.7 | | | 42.0 | 40.1 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 0.91 | 0.72 | 1.00 | | 1.00 | | | 1.00 | 1.00 |
| Incremental Delay, d2 | 7.4 | 0.5 | 0.0 | 2.8 | 5.6 | 0.0 | | 48.5 | | | 0.5 | 0.0 |
| Delay (s) | 66.2 | 9.0 | 6.5 | 55.1 | 17.5 | 5.9 | | 97.2 | | | 42.6 | 40.1 |
| Level of Service | E | A | A | E | B | A | | F | | | D | D |
| Approach Delay (s) | | 9.3 | | | 17.8 | | | 97.2 | | | 42.3 | |
| Approach LOS | | A | | | B | | | F | | | D | |

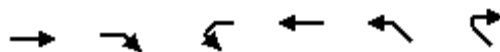
Intersection Summary

| | | | |
|-----------------------------------|-------|---------------------------|------|
| HCM 2000 Control Delay | 21.7 | HCM 2000 Level of Service | C |
| HCM 2000 Volume to Capacity ratio | 0.95 | | |
| Actuated Cycle Length (s) | 120.0 | Sum of lost time (s) | 14.0 |
| Intersection Capacity Utilization | 88.2% | ICU Level of Service | E |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis 3: SE Ruscliffe Rd & SE Rusk Rd

06/11/2017



| Movement | EBT | EBR | WBL | WBT | NWL | NWR |
|-----------------------------------|-------------|-------------|-------------|------|----------------------|------|
| Lane Configurations | ↔ | | | ↔ | ↔ | |
| Traffic Volume (veh/h) | 209 | 1 | 2 | 183 | 3 | 8 |
| Future Volume (Veh/h) | 209 | 1 | 2 | 183 | 3 | 8 |
| Sign Control | Free | | | Free | Stop | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 |
| Hourly flow rate (vph) | 286 | 1 | 3 | 251 | 4 | 11 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | None | | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | 553 | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | | | 287 | | 544 | 286 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | | | 287 | | 544 | 286 |
| tC, single (s) | | | 4.1 | | 6.7 | 6.3 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | | | 2.2 | | 3.8 | 3.4 |
| p0 queue free % | | | 100 | | 99 | 98 |
| cM capacity (veh/h) | | | 1287 | | 450 | 727 |
| Direction, Lane # | EB 1 | WB 1 | NW 1 | | | |
| Volume Total | 287 | 254 | 15 | | | |
| Volume Left | 0 | 3 | 4 | | | |
| Volume Right | 1 | 0 | 11 | | | |
| cSH | 1700 | 1287 | 624 | | | |
| Volume to Capacity | 0.17 | 0.00 | 0.02 | | | |
| Queue Length 95th (ft) | 0 | 0 | 2 | | | |
| Control Delay (s) | 0.0 | 0.1 | 10.9 | | | |
| Lane LOS | | A | B | | | |
| Approach Delay (s) | 0.0 | 0.1 | 10.9 | | | |
| Approach LOS | | | B | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 0.3 | | | |
| Intersection Capacity Utilization | | | 21.2% | | ICU Level of Service | A |
| Analysis Period (min) | | | 15 | | | |

HCM Unsignalized Intersection Capacity Analysis

4: SE Rusk Rd & SE Kellogg Creek Dr

06/11/2017

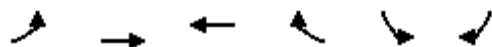


| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|-------------|-------------|-------------|----------------------|------|------|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 69 | 21 | 35 | 139 | 115 | 73 |
| Future Volume (Veh/h) | 69 | 21 | 35 | 139 | 115 | 73 |
| Sign Control | Stop | | | Free | Free | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.64 | 0.64 | 0.64 | 0.64 | 0.64 | 0.64 |
| Hourly flow rate (vph) | 108 | 33 | 55 | 217 | 180 | 114 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | | | None | None | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | | 923 |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 564 | 237 | 294 | | | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 564 | 237 | 294 | | | |
| tC, single (s) | 6.5 | 6.3 | 4.1 | | | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.6 | 3.4 | 2.2 | | | |
| p0 queue free % | 76 | 96 | 96 | | | |
| cM capacity (veh/h) | 453 | 790 | 1262 | | | |
| Direction, Lane # | EB 1 | NB 1 | SB 1 | | | |
| Volume Total | 141 | 272 | 294 | | | |
| Volume Left | 108 | 55 | 0 | | | |
| Volume Right | 33 | 0 | 114 | | | |
| cSH | 503 | 1262 | 1700 | | | |
| Volume to Capacity | 0.28 | 0.04 | 0.17 | | | |
| Queue Length 95th (ft) | 28 | 3 | 0 | | | |
| Control Delay (s) | 14.9 | 1.9 | 0.0 | | | |
| Lane LOS | B | A | | | | |
| Approach Delay (s) | 14.9 | 1.9 | 0.0 | | | |
| Approach LOS | B | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 3.7 | | | |
| Intersection Capacity Utilization | | | 34.9% | ICU Level of Service | A | |
| Analysis Period (min) | | | 15 | | | |

HCM Unsignalized Intersection Capacity Analysis

5: SE Kellogg Creek Dr & Site Driveway

06/11/2017

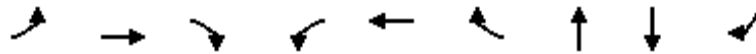


| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|-------|------|----------------------|------|------|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 0 | 57 | 101 | 7 | 33 | 0 |
| Future Volume (Veh/h) | 0 | 57 | 101 | 7 | 33 | 0 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.61 | 0.61 | 0.61 | 0.61 | 0.61 | 0.61 |
| Hourly flow rate (vph) | 0 | 93 | 166 | 11 | 54 | 0 |
| Pedestrians | | | | | 2 | |
| Lane Width (ft) | | | | | 12.0 | |
| Walking Speed (ft/s) | | | | | 4.0 | |
| Percent Blockage | | | | | 0 | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 179 | | | | 266 | 174 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 179 | | | | 266 | 174 |
| tC, single (s) | 4.1 | | | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.2 | | | | 3.5 | 3.3 |
| p0 queue free % | 100 | | | | 93 | 100 |
| cM capacity (veh/h) | 1407 | | | | 726 | 874 |
| Direction, Lane # | EB 1 | WB 1 | SB 1 | | | |
| Volume Total | 93 | 177 | 54 | | | |
| Volume Left | 0 | 0 | 54 | | | |
| Volume Right | 0 | 11 | 0 | | | |
| cSH | 1407 | 1700 | 726 | | | |
| Volume to Capacity | 0.00 | 0.10 | 0.07 | | | |
| Queue Length 95th (ft) | 0 | 0 | 6 | | | |
| Control Delay (s) | 0.0 | 0.0 | 10.4 | | | |
| Lane LOS | | | B | | | |
| Approach Delay (s) | 0.0 | 0.0 | 10.4 | | | |
| Approach LOS | | | B | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 1.7 | | | |
| Intersection Capacity Utilization | | 16.2% | | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |

Queues

1: SE Rusk Rd & Milwaukie Expy

06/11/2017



| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBT | SBT | SBR |
|-------------------------|------|------|------|-------|------|------|------|------|------|
| Lane Group Flow (vph) | 18 | 1884 | 261 | 143 | 1500 | 13 | 191 | 180 | 27 |
| v/c Ratio | 0.19 | 0.94 | 0.27 | 0.82 | 0.63 | 0.01 | 0.95 | 0.58 | 0.08 |
| Control Delay | 57.6 | 33.7 | 8.6 | 79.8 | 12.8 | 0.7 | 97.1 | 50.5 | 0.4 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 57.6 | 33.7 | 8.6 | 79.8 | 12.8 | 0.7 | 97.1 | 50.5 | 0.4 |
| Queue Length 50th (ft) | 14 | 701 | 58 | 108 | 395 | 0 | 134 | 123 | 0 |
| Queue Length 95th (ft) | 38 | #911 | 106 | m#216 | m591 | m0 | #269 | 198 | 2 |
| Internal Link Dist (ft) | | 263 | | | 2471 | | 389 | 767 | |
| Turn Bay Length (ft) | 470 | | 110 | 455 | | 100 | | | 75 |
| Base Capacity (vph) | 156 | 2014 | 962 | 175 | 2375 | 1109 | 225 | 354 | 385 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.12 | 0.94 | 0.27 | 0.82 | 0.63 | 0.01 | 0.85 | 0.51 | 0.07 |

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

1: SE Rusk Rd & Milwaukie Expy

06/11/2017



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|-------|------|-------|------|------|------|-------|------|------|------|------|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 17 | 1733 | 240 | 132 | 1380 | 12 | 89 | 41 | 45 | 44 | 121 | 25 |
| Future Volume (vph) | 17 | 1733 | 240 | 132 | 1380 | 12 | 89 | 41 | 45 | 44 | 121 | 25 |
| Ideal Flow (vphp) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.0 | 6.0 | 6.0 | 4.0 | 6.0 | 6.0 | | 4.0 | | | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 1.00 | | | 1.00 | 1.00 |
| Frbp, ped/bikes | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 1.00 | | 1.00 | | | 1.00 | 1.00 |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | | | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | | 0.97 | | | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | 0.98 | | | 0.99 | 1.00 |
| Satd. Flow (prot) | 1703 | 3438 | 1573 | 1770 | 3505 | 1615 | | 1736 | | | 1818 | 1495 |
| Flt Permitted | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | 0.54 | | | 0.86 | 1.00 |
| Satd. Flow (perm) | 1703 | 3438 | 1573 | 1770 | 3505 | 1615 | | 957 | | | 1577 | 1495 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 18 | 1884 | 261 | 143 | 1500 | 13 | 97 | 45 | 49 | 48 | 132 | 27 |
| RTOR Reduction (vph) | 0 | 0 | 41 | 0 | 0 | 4 | 0 | 10 | 0 | 0 | 0 | 22 |
| Lane Group Flow (vph) | 18 | 1884 | 220 | 143 | 1500 | 9 | 0 | 181 | 0 | 0 | 180 | 5 |
| Confl. Peds. (#/hr) | | | 3 | | | | 3 | | | | | |
| Heavy Vehicles (%) | 6% | 5% | 0% | 2% | 3% | 0% | 1% | 5% | 5% | 9% | 1% | 8% |
| Turn Type | Prot | NA | Perm | Prot | NA | Perm | Perm | NA | | Perm | NA | Perm |
| Protected Phases | 5 | 2 | | 1 | 6 | | | 8 | | | 4 | |
| Permitted Phases | | | 2 | | | 6 | 8 | | | 4 | | 4 |
| Actuated Green, G (s) | 3.3 | 70.3 | 70.3 | 11.9 | 78.9 | 78.9 | | 23.8 | | | 23.8 | 23.8 |
| Effective Green, g (s) | 3.3 | 70.3 | 70.3 | 11.9 | 78.9 | 78.9 | | 23.8 | | | 23.8 | 23.8 |
| Actuated g/C Ratio | 0.03 | 0.59 | 0.59 | 0.10 | 0.66 | 0.66 | | 0.20 | | | 0.20 | 0.20 |
| Clearance Time (s) | 4.0 | 6.0 | 6.0 | 4.0 | 6.0 | 6.0 | | 4.0 | | | 4.0 | 4.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | | | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 46 | 2014 | 921 | 175 | 2304 | 1061 | | 189 | | | 312 | 296 |
| v/s Ratio Prot | 0.01 | c0.55 | | c0.08 | 0.43 | | | | | | | |
| v/s Ratio Perm | | | 0.14 | | | 0.01 | | c0.19 | | | 0.11 | 0.00 |
| v/c Ratio | 0.39 | 0.94 | 0.24 | 0.82 | 0.65 | 0.01 | | 0.96 | | | 0.58 | 0.02 |
| Uniform Delay, d1 | 57.4 | 22.8 | 12.0 | 53.0 | 12.3 | 7.1 | | 47.6 | | | 43.5 | 38.7 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 0.94 | 0.91 | 1.00 | | 1.00 | | | 1.00 | 1.00 |
| Incremental Delay, d2 | 5.4 | 9.7 | 0.6 | 21.3 | 1.2 | 0.0 | | 52.2 | | | 2.6 | 0.0 |
| Delay (s) | 62.8 | 32.5 | 12.6 | 71.0 | 12.4 | 7.1 | | 99.7 | | | 46.1 | 38.7 |
| Level of Service | E | C | B | E | B | A | | F | | | D | D |
| Approach Delay (s) | | 30.3 | | | 17.5 | | | 99.7 | | | 45.2 | |
| Approach LOS | | C | | | B | | | F | | | D | |










Intersection Summary

| | | | |
|-----------------------------------|-------|---------------------------|------|
| HCM 2000 Control Delay | 29.1 | HCM 2000 Level of Service | C |
| HCM 2000 Volume to Capacity ratio | 0.93 | | |
| Actuated Cycle Length (s) | 120.0 | Sum of lost time (s) | 14.0 |
| Intersection Capacity Utilization | 88.8% | ICU Level of Service | E |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis 3: SE Rusk Rd & SE Ruscliffe Rd

06/11/2017

| |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations |  | |  | | |  |
| Traffic Volume (veh/h) | 18 | 21 | 157 | 2 | 8 | 478 |
| Future Volume (Veh/h) | 18 | 21 | 157 | 2 | 8 | 478 |
| Sign Control | Stop | | Free | | | Free |
| Grade | 0% | | 0% | | | 0% |
| Peak Hour Factor | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 |
| Hourly flow rate (vph) | 21 | 25 | 187 | 2 | 10 | 569 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | | None | | | None |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | | 553 |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 777 | 188 | | | 189 | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 777 | 188 | | | 189 | |
| tC, single (s) | 6.4 | 6.2 | | | 4.1 | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | | | 2.2 | |
| p0 queue free % | 94 | 97 | | | 99 | |
| cM capacity (veh/h) | 366 | 859 | | | 1397 | |
| Direction, Lane # | WB 1 | NB 1 | SB 1 | | | |
| Volume Total | 46 | 189 | 579 | | | |
| Volume Left | 21 | 0 | 10 | | | |
| Volume Right | 25 | 2 | 0 | | | |
| cSH | 532 | 1700 | 1397 | | | |
| Volume to Capacity | 0.09 | 0.11 | 0.01 | | | |
| Queue Length 95th (ft) | 7 | 0 | 1 | | | |
| Control Delay (s) | 12.4 | 0.0 | 0.2 | | | |
| Lane LOS | B | | A | | | |
| Approach Delay (s) | 12.4 | 0.0 | 0.2 | | | |
| Approach LOS | B | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 0.9 | | | |
| Intersection Capacity Utilization | | 41.6% | | ICU Level of Service | | A |
| Analysis Period (min) | | 15 | | | | |

HCM Unsignalized Intersection Capacity Analysis

4: SE Rusk Rd & SE Kellogg Creek Dr

06/11/2017

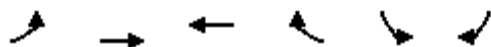


| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|-------------|-------------|-------------|----------------------|------|------|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 45 | 22 | 24 | 116 | 382 | 117 |
| Future Volume (Veh/h) | 45 | 22 | 24 | 116 | 382 | 117 |
| Sign Control | Stop | | | Free | Free | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 51 | 25 | 27 | 132 | 434 | 133 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | | | None | None | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | | 920 |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 686 | 500 | 567 | | | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 686 | 500 | 567 | | | |
| tC, single (s) | 6.4 | 6.2 | 4.1 | | | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | 2.2 | | | |
| p0 queue free % | 87 | 96 | 97 | | | |
| cM capacity (veh/h) | 400 | 574 | 1015 | | | |
| Direction, Lane # | EB 1 | NB 1 | SB 1 | | | |
| Volume Total | 76 | 159 | 567 | | | |
| Volume Left | 51 | 27 | 0 | | | |
| Volume Right | 25 | 0 | 133 | | | |
| cSH | 445 | 1015 | 1700 | | | |
| Volume to Capacity | 0.17 | 0.03 | 0.33 | | | |
| Queue Length 95th (ft) | 15 | 2 | 0 | | | |
| Control Delay (s) | 14.8 | 1.7 | 0.0 | | | |
| Lane LOS | B | A | | | | |
| Approach Delay (s) | 14.8 | 1.7 | 0.0 | | | |
| Approach LOS | B | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 1.7 | | | |
| Intersection Capacity Utilization | | | 37.7% | ICU Level of Service | A | |
| Analysis Period (min) | | | 15 | | | |

HCM Unsignalized Intersection Capacity Analysis

5: SE Kellogg Creek Dr & Church Driveway

06/11/2017



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|-------|------|----------------------|------|------|
| Lane Configurations | | ↔ | ↔ | | ↔ | |
| Traffic Volume (veh/h) | 0 | 51 | 109 | 32 | 16 | 1 |
| Future Volume (Veh/h) | 0 | 51 | 109 | 32 | 16 | 1 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 |
| Hourly flow rate (vph) | 0 | 59 | 125 | 37 | 18 | 1 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 162 | | | | 202 | 144 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 162 | | | | 202 | 144 |
| tC, single (s) | 4.1 | | | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.2 | | | | 3.5 | 3.3 |
| p0 queue free % | 100 | | | | 98 | 100 |
| cM capacity (veh/h) | 1429 | | | | 791 | 909 |
| Direction, Lane # | EB 1 | WB 1 | SB 1 | | | |
| Volume Total | 59 | 162 | 19 | | | |
| Volume Left | 0 | 0 | 18 | | | |
| Volume Right | 0 | 37 | 1 | | | |
| cSH | 1429 | 1700 | 796 | | | |
| Volume to Capacity | 0.00 | 0.10 | 0.02 | | | |
| Queue Length 95th (ft) | 0 | 0 | 2 | | | |
| Control Delay (s) | 0.0 | 0.0 | 9.6 | | | |
| Lane LOS | | | A | | | |
| Approach Delay (s) | 0.0 | 0.0 | 9.6 | | | |
| Approach LOS | | | A | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 0.8 | | | |
| Intersection Capacity Utilization | | 17.7% | | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |