



NO. 2020-03

AN ORDINANCE ADOPTING AN URBAN GROWTH BOUNDARY EXPANSION ANALYSIS AND COMPREHENSIVE PLAN AMENDMENT FOR THE CITY OF SANDY

Whereas, the Sandy City Council desires to amend its Urban Growth Boundary (UGB) to include 6.42 acres, including Gunderson Road, a stormwater tract, a portion of Highway 211, and parkland as identified in the UGB application File No. 20-002 UGB and identified in Exhibit A; and

Whereas, the City of Sandy sent notice to the Department of Land Conservation and Development (DLCD) on January 9, 2020 in anticipation of public hearings before the Planning Commission and City Council; and

Whereas, the City of Sandy sent notice to all property owners within 500 feet of the site on January 23, 2020 describing the proposal and the applicable hearing dates before the City Planning Commission, City Council, Clackamas County Planning Commission, and the Clackamas County Board of Commissioners; and

Whereas, the Planning Commission held a public hearing to review the application on February 11, 2020 and forwarded a recommendation by a vote of 6:0 to the City Council to approve the application and expand the UGB; and

Whereas, the City Council held a public hearing to review the application on March 2, 2020.

NOW, THEREFORE, THE CITY OF SANDY ORDAINS AS FOLLOWS,

Section 1: The application is approved and Sandy's Urban Growth Boundary is expanded to include the property identified in Exhibit A, which is attached and incorporated by reference.

Section 2: The City Council adopts by reference the March 2, 2020 staff report for File No. 20-002 UGB as its findings in support of the expansion.

Section 3: Staff is directed to take all additional actions that are necessary to implement the expansion, including providing Clackamas County and DLCD a copy of this ordinance and other documentation either agency may request or as may be required by law.

This ordinance is adopted by the Common Council of the City of Sandy and approved by the Mayor this 02 day of March 2020



Stan Pulliam, Mayor

ATTEST:



Jeff Aprati, City Recorder



Staff Report

Meeting Date: March 2, 2020
From: Kelly O'Neill, Development Services Director
SUBJECT: 20-002 UGB Expansion for Gunderson Road & Parkland

Background:

The applicant, Allied Homes and Development, proposes to expand the UGB expansion to accommodate Gunderson Road and parkland to the south of Bailey Meadows to fulfill conditions of approval from the Bailey Meadows land use application. The alignment for Gunderson Road is located on property (Tax Map 24E23 Tax Lot 701) that is located outside of Sandy's City limits and UGB. The subject property is currently designated Exclusive Farm Use (EFU) by Clackamas County, but is within the City of Sandy's Urban Reserve Area (URA). Under Oregon law, lands designated URA are "first priority" lands to be included in a UGB expansion. The portion of the property that is planned to be included within the amended UGB is limited to areas necessary for parkland, a portion of Highway 211 and land to construct the Gunderson Road extension, including land for the roadway, associated storm drainage improvements, accompanying utilities, grading, etc. The areas being considered in the UGB expansion are detailed as follows:

Area 1 - Parkland Area: 2.38 acres

Areas 2 and 6 - Permanent Slope Easement/Temporary Construction Easement Area: 30,970 square feet

Area 3 - Public Right-of-Way Dedication (for Gunderson Road): 1.02 acres

Area 4 - Public Utility Easement: 4,802 square feet

Area 5 - Stormwater Facility: 30,143 square feet

Area 7 - Highway (211) Area: 2.05 acres

As explained by the applicant if you add the square footage and acreage, the sum is greater than 6.42 acres because Areas 2 and 4 overlap and are included within Area 1. The total acreage is the same when Areas 2 and 4 are removed from the equation.

If the proposed UGB expansion is approved the applicant will proceed with an annexation, comprehensive map amendment, and zoning map amendment for the property brought into the UGB.

The Planning Commission reviewed the request at a public hearing on February 11, 2020 and forwarded a recommendation to approve the UGB expansion to the City Council.

Recommendation:

Approve the UGB expansion by passing Ordinance 2020-03.

Code Analysis:

See attached staff report.

Budgetary Impact:

Unknown

SUBJECT: File No. 20-002 UGB Expansion for Gunderson Road

AGENDA DATE: March 2, 2020

DEPARTMENT: Development Services Department

STAFF CONTACT: Kelly O’Neill Jr., Development Services Director

EXHIBITS:

Applicant’s Submittals:

- A. Land Use Application
- B. Narrative
- C. Transportation Impact Analysis
- D. Legal Description and Maps

Agency Comments:

- E. City Transportation Engineer, Replinger & Associates (January 20, 2020)

Public Comments:

- F. Paul Savage, 37506 Rachael Drive (February 2, 2020)

Staff Report:

- G. Planning Commission Staff Report dated February 11, 2020

Additional Submittal from Applicant:

- H. Letter from Michael Robinson from Schwabe, Williamson, and Wyatt (February 20, 2020)

Additional Agency Comments:

- I. Sandy Fire District Fire Marshall (February 26, 2020)
- J. Department of Land Conservation and Development (February 13, 2020)

I. BACKGROUND

A. PROCEEDING

Type IV UGB Expansion

B. FACTUAL INFORMATION

1. APPLICANT: Allied Homes & Development
2. OWNERS: Lawrence Pullen, Richard Pullen, and Sherrene TenEyck
3. PROJECT NAME: UGB Expansion for Gunderson Road and Parkland
4. LEGAL DESCRIPTION: T2S R4E Section 23 Tax Lot 701

5. PROPERTY LOCATION: North of Highway 211 and South of Ponder Lane
6. PROPOSED AREA: 6.42 acres
7. PROPOSAL: The applicant, Allied Homes and Development, proposes to expand the Sandy Urban Growth Boundary by approximately 6.42 acres to meet a need for certain public facilities (a minor arterial road, a portion of Highway 211, and parkland). The land is currently designated Urban Reserve.
8. CITY COMPREHENSIVE PLAN DESIGNATION: Low Density Residential
9. COUNTY COMPREHENSIVE PLAN DESIGNATION: Agriculture (AG)
10. COUNTY ZONING DISTRICT DESIGNATION: Exclusive Farm Use (EFU)
11. RESPONSE FROM GOVERNMENTAL AGENCIES, UTILITY PROVIDERS, CITY DEPARTMENTS AND THE GENERAL PUBLIC: City of Sandy Transportation Engineer, Sandy Fire District, Department of Land Conservation and Development (DLCD)

C. APPLICABLE CRITERIA: Sandy Development Code 17.12 Procedures for Decision Making; 17.18 Processing Applications; 17.22 Notices; Sandy Comprehensive Plan Goals and Policies and Oregon Statewide Planning Goals Nos. 1, 2, 6, 8, 11, 12, and 14; Clackamas County Comprehensive Plan Chapter 4; Oregon Administrative Rules Chapter 660, division 12; Oregon Administrative Rules Chapter 660, division 24.

D. BACKGROUND INFORMATION

The City of Sandy is also processing a land use application for the Bailey Meadows subdivision (File No. 19-023 SUB/VAR/TREE). The proposed subdivision is located near Highway 211 and Ponder Lane. The purpose of this UGB expansion is to accommodate Gunderson Road and parkland to the south of Bailey Meadows to fulfill conditions of approval from the Bailey Meadows land use application. The alignment for Gunderson Road is located on property (Tax Map 24E23 Tax Lot 701) that is located outside of Sandy’s City limits and UGB. The subject property is currently designated Exclusive Farm Use (EFU) by Clackamas County, but is within the City of Sandy’s Urban Reserve Area (URA). Under Oregon law, lands designated URA are “first priority” lands to be included in a UGB expansion. The portion of the property that is planned to be included within the amended UGB is limited to areas necessary for parkland, a portion of Highway 211 and land to construct the Gunderson Road extension, including land for the roadway, associated storm drainage improvements, accompanying utilities, grading, etc. The areas being considered in the UGB expansion are detailed in Exhibit D as follows:

Area 1 - Parkland Area: 2.38 acres

Areas 2 and 6 - Permanent Slope Easement/Temporary Construction Easement Area: 30,970 square feet

Area 3 - Public Right-of-Way Dedication (for Gunderson Road): 1.02 acres

Area 4 - Public Utility Easement: 4,802 square feet

Area 5 - Stormwater Facility: 30,143 square feet
Area 7 - Highway (211) Area: 2.05 acres

As explained by the applicant if you add the square footage and acreage, the sum is greater than 6.42 acres because Areas 2 and 4 overlap and are included within Area 1. The total acreage is the same when Areas 2 and 4 are removed from the equation.

If the proposed UGB expansion is approved the applicant will proceed with an annexation, comprehensive map amendment, and zoning map amendment for the property brought into the UGB.

E. PROCEDURAL CONSIDERATIONS

This request is being processed under a Type IV quasi-judicial review. Notification of the proposal was mailed to property owners within 500 feet of the subject property and to affected agencies on January 22, 2020. Notification of the proposal was sent to the Department of Land Conservation and Development (DLCD) on January 9, 2020 and a legal notice was published in the Sandy Post on January 29, 2020. The Planning Commission reviewed the request at a public hearing on February 11, 2020 and forwarded a recommendation to approve the UGB expansion to the City Council.

F. ADDITIONAL HEARING DATES

Pursuant to OAR 660-018-0021(2) and the Urban Growth Management Agreement (UGMA) between the City of Sandy and Clackamas County, this UGB amendment application is subject to a coordinated City-County effort. Here is additional information on meetings before the Clackamas County Planning Commission and Clackamas County Board of Commissioners:

March 9, 2020 at 6:30 PM – Clackamas County Planning Commission
Clackamas County Development Services Building Auditorium (Room 115)
150 Beaver Creek Road
Oregon City, OR 97045

March 18, 2020 at 9:30 AM – Clackamas County Board of Commissioners
Clackamas County Public Services Building BCC Hearing Room (4th Floor)
2051 Kaen Road
Oregon City, OR 97045

II. ANALYSIS OF CODE COMPLIANCE

ACRONYMS

Urban Growth Boundary = UGB

From DLCD: “Each Oregon city is surrounded by an urban growth boundary (UGB); a line drawn on planning maps to designate where a city expects to grow over a 20-year period. This growth can occur with new houses, industrial facilities, businesses, or public facilities such as parks and utilities. Restrictions in areas outside of a UGB protect farm and forest resource land and prohibit urban development. Generally speaking, it’s where the city ends and the farms and forests begin.”

Urban Reserve Area = URA

From DLCD: “By designating urban reserves, the agriculture and forest industries, private landowners, and public and private service providers, are aware of future long-term (for the next 50 years) expansion locations of the UGB.”

Transportation System Plan = TSP

The TSP serves as the transportation element of the City of Sandy Comprehensive Land Use Plan, establishing a system of facilities and services to meet local transportation needs.

Traffic Impact Analysis = TIA

A TIA evaluates the adequacy of the existing transportation system to serve a proposed development, and the expected effects of the proposed development on the transportation system.

Department of Land Conservation & Development = DLCD

From DLCD: “DLCD works in partnership with local governments, and state and federal agencies, to address the land use needs of the public, communities, regions, and the state.”

Land Conservation and Development Commission = LCDC

From LCDC: “Oregon's Land Conservation and Development Commission (LCDC), assisted by the department (DLCD), adopts state land-use goals and implements rules, assures local plan compliance with the goals, coordinates state and local planning, and manages the coastal zone program.”

Oregon Department of Transportation = ODOT

From ODOT: “Today, we develop programs related to Oregon’s system of highways, roads, and bridges; railways; public transportation services; transportation safety programs; driver and vehicle licensing; and motor carrier regulation.”

APPLICABLE CRITERIA

The UGB expansion is necessary to accommodate the extension of Gunderson Road as identified in the Sandy TSP, a portion of Highway 211, and to accommodate parkland in the general vicinity of the Nicolas Glen subdivision as identified in the Sandy Parks Master Plan.

The proposal complies with applicable Statewide Planning Goals 1, 2, 3, 4, 5, 6, 8, 10, 11, 12 and 14 as reviewed below.

Goal 1: Citizen Involvement

The application is being processed according to Chapter 17.12 of the Sandy Development Code, which involves public notification, public hearings, and appeal procedures. The application is being reviewed through a Type IV process that requires two public hearings before the City of Sandy. A notice of the proposal was sent to DLCD on January 9, 2020. The Planning Commission reviewed the application at a public hearing on February 11, 2020 and made a recommendation to approve the UGB expansion to City Council. City Council will hold a public hearing on March 2, 2020 to make a decision on the proposal.

The public will have the opportunity to review and comment on the application at several meetings, therefore staff finds this application is consistent with Goal 1.

Goal 2: Land Use Planning

The City's Comprehensive Plan guides land uses within the City's Urban Growth Boundary. This application is being processed by the City through a Type IV Quasi-Judicial process in accordance with the Development Code and Comprehensive Plan. The subject property is within the City's existing URA and will retain the present Clackamas County zoning designation until annexed into the City of Sandy. The proposed improvements on Tax Lot 701, including the planned transportation facility (Gunderson Road), stormwater facility for the transportation facility, a portion of Highway 211, and parkland are appropriate uses for the subject property. No private land uses are proposed on Tax Lot 701.

Goal 2 also requires the application to be coordinated with other affected units of government and requires an adequate factual base to support its approval. As discussed in this report, the City has notified other affected agencies of the application, including DLCD and ODOT. Clackamas County is concurrently reviewing the proposed expansion in accordance with its standards and state law.

Staff believes there is an adequate factual base in the record to support an approval of the application. An "adequate factual base" requires that substantial evidence exist in the entire record to support the decision – that is, evidence that reasonable persons would rely on in making day-to-day decisions. The City's TSP identifies Gunderson Road as a minor arterial that would accommodate growth in the area of the subject property, including providing a second access into the Bailey Meadows subdivision. The City's Parks Master Plan identifies a general need for a park in the surrounding area as well.

Therefore, staff finds this application is consistent with Goal 2.

Goal 3: Agricultural Lands

Pursuant to OAR 660-024-0020(1)(b), Goal 3 is not applicable to the decision.

Goal 4: Forest Lands

Pursuant to OAR 660-024-0020(1)(b), Goal 4 is not applicable to the decision.

Goal 5: Natural Resources, Scenic and Historic Areas, and Open Spaces

The decision does not affect a Goal 5 resource under OAR 660-023-0250(3)(a) or (b) because it does not "create[] or amend[] a resource list or a portion of an acknowledged plan or land use regulation adopted in order to protect a significant Goal 5 resource or to address specific requirements of Goal 5;" and does not "allow[] new uses that could be conflicting uses with a particular significant Goal 5 resource site on an acknowledged resource list."

The County did note that this site includes portions of the Historic Barlow Trail. However, the County did not identify the resource category of the Historic Barlow Trail, or what actions the City and the applicant could take to preserve or address the location of the Historic Barlow Trail. Nothing in the County's plan or zoning ordinance prohibits a road

from crossing the trail. No amendment to a designated Goal 5 resource is proposed with this application; therefore, consistent with the application of Goal 5 and its implementing administrative rule, the issue of addressing the Historic Barlow Trail is relevant, if at all, in the context of subsequent land use actions the City may take (for example, zoning and permitting) once the property is inside the UGB.

For these reasons, staff finds this application is consistent with Goal 5.

Goal 6: Air, Land, and Water Resources

Goal 6 is implemented by Comprehensive Plan policies to protect air, land, and water resource quality. These policies rely on coordination with the Department of Environmental Quality (DEQ) for their implementation. Specific standards related to the project include requirements for addressing stormwater runoff, grading, and erosion control standards related to a minor public facility (i.e. Gunderson Road) and requirements related to site preparation for parkland development. Therefore, staff finds this application is consistent with Goal 6.

Goal 8: Recreational Needs

Goal 8 is implemented by Comprehensive Plan policies pertaining to parks, open space, and recreation facilities. The proposed location of the parkland on the subject property, Tax Lot 701, is outside the UGB. The UGB expansion will include parkland and satisfy the recreational needs of citizens in the vicinity of the Bailey Meadows subdivision. The planned parkland dedication included in this application will benefit the residents of Sandy and provide parkland as identified in the Sandy Parks Master Plan. Goal 8 is satisfied by the evidence in this record because the City has found it needs part of the UGB for park needs. The remainder of Goal 8 addresses destination resorts, which are not applicable to this application. Therefore, staff finds this application is consistent with Goal 8.

Goal 10: Housing

No portion of the proposed 6.42-acre UGB expansion is proposed for housing and the applicant has never proposed housing for this area. The application for the expansion of the UGB is solely for the accommodation of Gunderson Road, a portion of Highway 211, and parkland. Therefore, staff finds this application is consistent with Goal 10.

Goal 11: Public Facilities and Services

The subject property is currently located outside the UGB and the City limits, but within the City's acknowledged URA. Since the purpose of the UGB expansion is to permit construction of a public road (Gunderson Road), inclusion of Highway 211, and parkland the area being considered for urban expansion will not necessitate extension of mainlines for water or sanitary sewer. Laterals may be required to service the parkland in the future. The public road installation is required to include stormwater infrastructure. This application will not impact the City's ability to provide urban services. The UGB expansion will serve the transportation system in the area consistent with the Sandy TSP and the parks needs in the vicinity consistent with the Sandy Parks Master Plan. Therefore, staff finds this application is consistent with Goal 11.

Goal 12: Transportation

A portion of the subject property is planned to be used as a public transportation facility (Gunderson Road), connecting to the local transportation system north of the site and providing for future extension possibilities to the west. The submitted TIA (Exhibit C) and the comments from the City of Sandy Transportation Engineer (Exhibit E) contain additional information regarding traffic impacts. The City Transportation Engineer stated the following: "I find the TIA and Addendum meet City requirements. The TIA and Addendum demonstrate that the development can be accommodated with a north access using Melissa Avenue and a south access using a new extension of Gunderson Road with an intersection with Highway 211. I recommend approval of the subdivision with conditions that assure the dedication of all appropriate rights-of-way and the construction of the Gunderson Road extension and the intersection of Gunderson Road and Highway 211, with a left-turn lane on Highway 211." The street extension and connectivity improvements create a safe and convenient transportation system to the south of the Bailey Meadows subdivision. Therefore, staff finds this application is consistent with Goal 12.

Goal 14: Urbanization

Tax Lot 701 is located within the URA and is currently designated as Exclusive Farm Use (EFU). An application for annexation to the City of Sandy will be processed separately and include a comprehensive plan amendment to apply City zoning to allow creation of the public transportation and parkland facilities. It should be noted that the City has a "Parks and Open Space" zoning designation that would ultimately apply to the area proposed for a parkland dedication. The City does not have a zoning designation specific to public facilities such as transportation facilities. Therefore, the likely zoning for the Gunderson Road area would be Single Family Residential (SFR). However, staff recommends a condition that would only permit public facilities for the area encompassing the Gunderson Road extension. The subject application accommodates urban population within the UGB by providing an efficient transportation network per the Sandy TSP and does not involve new commercial, industrial, or agricultural uses in the area proposed in the UGB expansion. The parkland will enhance the lives of the residents in the vicinity of the Bailey Meadows subdivision. Additionally, the proposed location for the parkland is appropriate by locating the park in the "donut hole" created by the expansion of the UGB to accommodate Gunderson Road. If the UGB is not expanded to include the area for the parkland, a "donut hole" would be created within the acknowledged URA. Interim use and development of Tax Lot 701 is not associated with the subject application. Therefore, staff finds this application is consistent with Goal 14.

Transportation Planning Rule Compliance - Oregon Administrative Rule Chapter 660, Division 12

OAR 660, Division 12, is the Oregon Transportation Planning Rule (the TPR) adopted by LCDC. The TPR implements Goal 12, Transportation, and is an independent approval standard in addition to Goal 12 for map amendments. OAR 660-012-0060(1) and (2) apply to amendments to acknowledged maps, as is the case with this application. The TPR requires a two-step analysis. First, under OAR 660-012-0060(1), the applicant shall determine if the application has a "significant affect," as that term is defined in OAR 660-012-0060(1). The City may rely on transportation improvements found in transportation system plans, as allowed by OAR 660-012-0060(3)(a), (b), and (c), to show that failing intersections will not be made worse or intersections not now failing will not fail. If there is a "significant affect," then the applicant must demonstrate appropriate mitigation under

OAR 660-012-0060(2). The City Transportation Engineer (Exhibit E) stated the following: “The [applicant’s traffic] engineer provides a detailed response to the criteria specified in the TPR. He explains that the proposed amendment to expand the UGB does not change the functional classification of any transportation facility and does not increase developable property that will increase trip generation. He concludes that the proposal helps to implement a project specified in the TSP. I think his argument is sound and supported by the analysis.”

One of the two primary reasons for the subject UGB application is to implement the City’s adopted TSP, by constructing Gunderson Road, a planned City Minor Arterial roadway. Refer to the submitted TIA (Exhibit C) and the comments from the City of Sandy Transportation Engineer (Exhibit E) for additional information. The subject property (Tax Lot 701) is in unincorporated Clackamas County and accessible from Highway 211. Highway 211 is currently classified as a major arterial in both the City and County TSPs but is under the jurisdiction of the State of Oregon Department of Transportation. The applicant met with City, County, and ODOT staff prior to submitting the applicable UGB expansion application to discuss the effects of the application. The City has coordinated the application with Clackamas County by providing the County with timely notice of this application, allowing the County to comment on the application, and including the County’s comments in the decision, as is reasonable. The City has also notified ODOT of the application and will continue to coordinate with ODOT.

Based on the applicant’s TIA and the opinion of the City’s transportation engineer, staff finds that the application satisfies the TPR.

Oregon Administrative Rule Chapter 660, Division 24

This application involves a UGB expansion to meet a need for the public facilities described in this report: a public transportation facility (i.e. Gunderson Road) as illustrated in the Sandy TSP, a portion of Highway 211, and land for park purposes as indicated in the Parks Master Plan. The Division 24 rule allows the City to consider one category of land needs (in this instance, public facilities) without simultaneously reviewing other categories of land needs. The application is not seeking to add land for additional residential, commercial or industrial development. Approving the application would only allow a road and public parkland in the area proposed for expansion.

Pursuant to OAR 660-024-0065(3), when the primary purpose for expanding the UGB is to accommodate a public facility with specific site characteristics, the study area can be limited to areas within the City’s URA that provide the required site characteristics. Pursuant to OAR 660-024-0065(3)(b), site characteristics include “size, topography and proximity.” In this instance, very specific site characteristics are associated with the need for the public facilities at issue (a road and additional parkland). In order to: (i) provide a second access from Highway 211 into the Bailey Meadows subdivision specifically (and the area around the subdivision generally); (ii) meet adequate sight distance requirements at the intersection of Highway 211; (iii) bring into the UGB the least amount of land necessary to provide the access and achieve adequate sight distance; and (iv) do so in the most economical way possible, the study area is reasonably limited to Tax Lot 701. In addition, this area is identified in the City’s TSP as the area within which Gunderson Road would connect to Highway 211. The conceptual alignment of Gunderson Road as proposed by the

applicant to meet the needs of the Sandy TSP is on property not currently within the UGB. The subject property, Tax Lot 701, is the most feasible location for Gunderson Road to safely intersect with Highway 211. The remnant parcel that would exist in the northeast portion of Tax Lot 701 is therefore the best location to accommodate the need for additional parkland without further expansion into the URA and avoids the creation of a “donut hole” within the URA itself.

The City's Public Open Space ("POS") zoning district allows parks as a permitted use outright per Sandy Development Code ("SDC") 17.32.10.A.1. The City's Single-Family Residential ("SFR") zoning district allows "Minor Public Facilities" as a permitted use outright per SDC 17.34.10.B.6. SDC 17.10.30 defines "Minor Public Facilities" to include "new or extended public streets." Finally, SDC 17.12.32 (for Type III applications) and 17.12.40 (for Type IV applications) allow the City Planning Commission and the City Council to impose conditions of approval on the decision. It is feasible to impose conditions of approval on the City map amendments and permitting applications for the Gunderson Road extension and parkland. This is sufficient to satisfy OAR 660-024-0050(6) and (7). The applicant has submitted a separate application to annex and rezone the subject property and will consent to the City's imposition of conditions of approval that would limit the use of the property specifically for road and park uses.

Based on the above information, the applicant's narrative and the applicant's TIA, staff finds that the applicable criteria in the Division 24 rule are satisfied.

III. RECOMMENDATION

By a motion of 6:0 the Planning Commission forwarded a recommendation of approval to City Council. Planning Commission and staff recommend the City Council approve the UGB expansion.



EXHIBIT A

LAND USE APPLICATION FORM

(Please print or type the information below)

Planning Department
39250 Pioneer Blvd.
Sandy OR 97055
503-489-2160

Name of Project City of Sandy Urban Growth Boundary Expansion

Location or Address Southeast of Ponder Lane, northwest of Oregon Highway 211

Map & Tax Lot Number T 25, R 4E, Section 23; Tax Lot(s) 701

Request: This application involves the expansion of the City of Sandy's Urban Growth Boundary to accommodate a public transportation facility (e.g. Gunderson Road).

Please contact the Applicant's consultant and legal counsel (below) with any inquiries:

AKS Engineering & Forestry, LLC - Chris Goodell: (503) 563-6151; chrisg@aks-eng.com
 Schwabe, Williamson & Wyatt - Michael Robinson: (503) 796-3756; mrobinson@schwabe.com

I am the (check one) owner lessee of the property listed above, and the statements and information contained herein are in all respects true, complete and correct to the best of my knowledge and belief.

Applicant (if different than owner) Allied Homes & Development	Owner Richard L Pullen, Lawrence Pullen, Sherrene Teneyck
Address 12404 SE Sunnyside Road, Suite 706	Address 37020 SE Deming Road
City/State/Zip Clackamas, OR 97015	City/State/Zip Sandy, OR 97055
Phone Please contact Applicant's consultant	Phone Please contact Applicant's consultant
Email Please contact Applicant's consultant	Email Please contact Applicant's consultant
Signature <small>DocuSigned by:</small> <i>Cody Bryan</i>	Signature <small>DocuSigned by:</small> <i>[Signature]</i> <small>DocuSigned by:</small> <i>[Signature]</i> <small>DocuSigned by:</small> <i>[Signature]</i>

If signed by Agent, owner's written authorization must be attached.

File No.	Date	Rec. No.	Fee \$
Type of Review (circle one): Type I Type II Type III Type IV			

EXHIBIT B

City of Sandy Urban Growth Boundary Amendment

Date: January 2020

Submitted to: City of Sandy
Planning Department
39250 Pioneer Boulevard
Sandy, OR 97055

Applicant: Allied Homes & Development
12042 SE Sunnyside Road, Suite 706
Clackamas, OR 97015

AKS Job Number: 7107



12965 SW Herman Road, Suite 100
Tualatin, OR 97062
(503) 563-6151

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Exhibits

- Exhibit A:** City of Sandy Land Use Application Form
 - Exhibit B:** Clackamas County Land Use Application Form
 - Exhibit C:** Property Ownership Information
 - Exhibit D:** Clackamas County Assessor’s Map
 - Exhibit E:** City of Sandy Noticing Materials
 - Exhibit F:** Lancaster Mobley Engineering Traffic Documentation
 - Exhibit G:** Supplemental Materials
-

Land Use Application for an Urban Growth Boundary Amendment

Submitted to:	City of Sandy Planning Department 39250 Pioneer Boulevard Sandy, OR 97055
Applicant:	Allied Homes & Development 12042 SE Sunnyside Road, Suite 706 Clackamas, OR 97015
Property Owners:	Lawrence Pullen 36940 Deming Road Sandy, OR 97055 Richard Pullen 36969 Deming Road Sandy, OR 97055 Sherrene TenEyck 37020 SE Deming Road Sandy, OR 97055
Applicant's Consultant:	AKS Engineering & Forestry, LLC 12965 SW Herman Road, Suite 100 Tualatin, OR 97062 Contact: Chris Goodell, AICP, LEED ^{AP} Email: chrisg@aks-eng.com Phone: (503) 563-6151
Applicant's Legal Counsel:	Schwabe, Williamson & Wyatt Pacwest Center 1211 SW 5 th Avenue, Suite 190 Portland, OR 97204 Contact: Michael Robinson Email: mrobinson@schwabe.com Phone: (503) 796-3756
Site Location:	North of Highway 211 and south of Ponder Lane

**Clackamas County
Assessor's Map:**

2 4E 23, Tax Lot 701

Site Size:

±14.24 acres

Land Use District:

Exclusive Farm Use (EFU)



I. Executive Summary

The City of Sandy is currently processing a land use application for the Bailey Meadows subdivision (local file No. 19-023 SUB/VAR/TREE). Bailey Meadows is located in the southwestern portion of the City, near Oregon Route 211 (OR 211) and SE Ponder Lane. A condition of approval is anticipated to be included in the City's Notice of Decision that would cause submittal of an application for an amendment to the City's UGB. This application, if approved, would permit the construction of Gunderson Road (a Minor Arterial roadway per City of Sandy's Transportation System Plan) and provide an additional means of access to Bailey Meadows. The purpose of this application is to fulfill this forthcoming condition of approval. Additionally, the Applicant is willing to dedicate a portion of the subject site for parkland.

The alignment for the Gunderson Road extension, as discussed above, falls within property (Clackamas County Assessor's Map 2 4E 23 Tax Lot 701) that is located outside of Sandy's City limits and UGB. This property is currently designated Exclusive Farm Use (EFU) by Clackamas County, but is within the City of Sandy's Urban Reserve Area (URA). The portion of the property that is planned to be included within the amended UGB is limited to areas necessary to construct the Gunderson Road extension, including land for the roadway, associated storm drainage improvements, accompanying utilities, grading, etc. and additional area for parkland dedication.

Based upon the Urban Growth Management Agreement between the City of Sandy and Clackamas County, this UGB amendment application is subject to a coordinated City-County effort. Although it is understood that the City will hold hearings for the application prior to the County doing so, the application is being submitted to both jurisdictions for review at the same time.

II. Site Description/Setting

The property (Tax Lot 701) included in this application has a total area of ±14.30 acres, though only the acreage required for the road right-of-way and associated improvements and parkland dedication are planned to be incorporated within the Sandy UGB. Tax Lot 701 is located outside of, but adjacent to the UGB, immediately south of the active Bailey Meadows Subdivision application (City of Sandy Local Case File No. 19-023 SUB/VAR/TREE), northwest of OR 211, and west of the intersection of SE Ponder Lane and OR 211.

The property is fairly flat with wooded areas on the northwest half and pasture on the eastern half. The property does not contain structures and access is served from OR 211 on the south side of the site.

III. Applicable Review Criteria

The Oregon Statewide Planning Goals, Oregon Administrative Rules, and Oregon Revised Statutes are relevant to the UGB Amendment application. Therefore, the responses are applicable for review by both the City of Sandy and Clackamas County.

The Sandy Comprehensive Plan Goals and Policies and the Clackamas County Comprehensive Plan Goals and Policies are applicable to the City and County jurisdictions respectively. If any of the findings for these items are needed for responses to other jurisdictions (e.g., City, County, ODOT, DLCD, or LCDC), they will be referenced specifically. This limitation applies to this complete application narrative.

OREGON STATEWIDE PLANNING GOALS AND GUIDELINES (The Goals)

The following Oregon Statewide Planning Goals are applicable to this action:

- Goal 1 – Citizen Involvement
- Goal 2 – Land Use Planning
- Goal 6 – Air, Land, and Water Resources Quality
- Goal 8 – Recreational Needs
- Goal 11 – Public Facilities and Services
- Goal 12 – Transportation
- Goal 14 – Urbanization

Goals 3 (Agricultural Lands) and 4 (Forest Lands) are not applicable to UGB amendments pursuant to Oregon Administrative Rule (OAR) 660-024-0020(1)(b) and have been omitted for brevity.

Goal 5 (Natural Resources, Scenic and Historic Areas, and Open Spaces) is not applicable, pursuant to OAR 660-023-0250(3)(a)-(c), because there are no identified Goal 5 resources on the property, and has been omitted for brevity.

Goal 7 (Areas Subject to Natural Hazards) is not applicable and has been omitted because the subject site does not contain mapped areas of steep slopes 25 percent or greater or other known hazard areas.

Goals 9 (Economic Development) and 10 (Housing) are not applicable because the proposed comprehensive plan amendments allow for a public transportation facility and are not associated with employment lands or residential development.

Goal 13 (Energy Conservation) is not applicable because the amendment does not affect the City or County goals or policies governing energy conservation.

Goals 15 (Willamette River Greenway), 16 (Estuarine Resources), 17 (Coastal Shorelands), 18 (Beaches and Dunes), and 19 (Ocean Resources) are not applicable because the subject site does not contain lands described in those goals. Thus, the approval criteria have been omitted for brevity.

Goal 1 (Citizen Involvement)

To develop a citizen involvement program that insures the opportunity for citizens to be involved in all phases of the planning process.

Response: Goal 1 calls for the opportunity for citizens to be involved in all phases of the planning process. The City of Sandy has an established citizen involvement program. The application will be processed according to Chapter 17.12 of the LDC, which involves public notification, public hearings, and decision appeal procedures, as established in City of Sandy LDC Section 17.12.30 and 17.12.40.

Clackamas County maintains a Committee for Citizen Involvement with membership that includes representatives of Community Planning Organizations. The application will be processed in accordance with Section 1307 of the Clackamas County Zoning and

Development Ordinance (ZDO) which involves public notification, public hearings, and decision appeal procedures. Therefore, the application is consistent with Goal 1.

Goal 2 (Land Use Planning)

To establish a land use planning process and policy framework as a basis for all decision and actions related to use of land and to assure an adequate factual base for such decisions and actions.

Response: This application will be processed by the City through a Quasi-Judicial Type IV procedure in accordance with LDC Chapter 17.12. The City and County have acknowledged comprehensive plans and land use development (zoning) codes that implement the irrespective comprehensive plans. The City will review and process this application consistent with the procedures detailed in the LDC. The County will review and process this application consistent with the process detailed in Section 1307 of the Clackamas County ZDO.

This application provides an adequate factual basis for the City and County to approve the application because it describes the current and planned future site characteristics and applies the relevant approval criteria to those characteristics. Therefore, following this process will ensure consistency with Statewide Planning Goal 2.

Goal 6 (Air, Water and Land Resources Quality)

To maintain and improve the quality of the air, water and land resources of the state.

Response: Goal 6 is implemented by Comprehensive Plan policies to protect air, land, and water resource quality. Generally, these policies rely on coordination with the Department of Environmental Quality (DEQ) for their implementation. Specific standards related to the project include requirements for addressing stormwater runoff, grading, and erosion control standards related to a minor public facility (i.e. Gunderson Road) and requirements related to site planning for parkland dedication will be addressed in the future. The property planned to be brought into the UGB is within the City's existing Urban Reserve Area and will retain its' existing zoning until annexed into the City in the future. Thus, the application is consistent with Goal 6.

Goal 8 (Recreational Needs)

To satisfy the recreational needs of the citizens of the state and visitors and, where appropriate, to provide for the siting of necessary recreational facilities including destination resorts.

Response: Goal 8 is implemented by Comprehensive Plan policies pertaining to parks, open space, and recreation facilities. The City's Comprehensive Plan with respect to Goal 8, its parks master plan, and its development regulations governing recreational needs (e.g., park dedication/fee in-lieu-of requirements, open space provisions, etc.) are supported by this application. The subject property is providing land to be brought within the UGB to dedicate as parkland and satisfy the recreational needs of citizens in the area. Although Bailey Meadows Subdivision provides for and meets SDC criteria for on-site needs, in this case the City and Applicant agree to an off-site improvement. The site-specific location for the off-site extension of Gunderson Road and parkland improvements are outside the UGB, as described in this written document, and require a UGB amendment to allow an

urban facility to be built on land currently within the County’s jurisdiction. The planned parkland dedication provided by this application will benefit the City and its residents. Therefore, Goal 8 is satisfied.

Goal 11 (Public Facilities and Services)

To plan and develop a timely, orderly and efficient arrangement of public facilities and services to serve as a framework for urban and rural development.

Response: The subject property is currently located outside the UGB and the City limits. Since the purpose of the amendment is to permit construction of a road, public facilities, water, and/or sanitary sewer service are not required. The property is planned for the extension of a public road and will include necessary stormwater infrastructure. Additionally, the Applicant is willing to dedicate area for a park facility to satisfy needs of the residents in the general vicinity. This application will not impact urban services or utilities and will serve the transportation system in the area consistent with the Sandy TSP. Therefore, this application is consistent with Goal 11.

Goal 12 (Transportation)

To provide and encourage a safe, convenient and economic transportation system.

Response: A portion of the subject property is planned to be used as a public transportation facility, connecting to the transportation system north of the site. The UGB Amendment & Gunderson Road Connection Traffic Impact Analysis (TIA) prepared by Lancaster Engineering is included in Exhibit F that documents compliance with Goal 12 and applicable State, County, and City transportation-related requirements. Please refer to the TIA for further information. The intended street and connectivity improvements encourage a safe, convenient, and economic transportation system. Therefore, this application is consistent with Goal 12.

Goal 14 (Urbanization)

To provide for an orderly and efficient transition from rural to urban land use, to accommodate urban population and urban employment inside urban growth boundaries, to ensure efficient use of land, and to provide for livable communities.

Response: Tax Lot 701 is located within the URA and is currently designated with Clackamas County EFU zoning designation. An application for annexation to the City of Sandy will be processed separately and include a comprehensive plan amendment to apply City zoning to allow creation of the public transportation and parkland facilities. The subject application accommodates urban population within the UGB by providing an efficient transportation network per the Sandy TSP and does not involve new commercial, industrial, or agricultural uses. Additionally, the Applicant is providing area for parkland to dedicate to the City and enhance the lives of the residents in the vicinity. The Applicant plans to obtain City Low-Density Residential (LDR) Comprehensive Plan and Single-Family Residential (SFR) Zoning designations for the property to permit both the minor public facility uses. Interim use and development, prior to annexation, is not associated with this application. Therefore, the application is consistent with Goal 14.

FINDINGS FOR TRANSPORTATION PLANNING RULE COMPLIANCE

Response: OAR 660, Division 12, is the Oregon Transportation Planning Rule (the TPR) adopted by the Land Conservation and Development Commission (LCDC). The TPR implements Goal 12, Transportation, and is an independent approval standard in addition to Goal 12 for map amendments. OAR 660-012-0060(1) and (2) apply to amendments to acknowledged maps, as is the case with this application.

The TPR requires a two-step analysis. First, under OAR 660-012-0060(1), the Applicant must determine if the application has a “significant affect,” as that term is defined in OAR 660-012-0060(1). The City may rely on transportation improvements found in transportation system plans, as allowed by OAR 660-012-0060(3)(a), (b), and (c), to show that failing intersections will not be made worse or intersections not now failing will not fail. If there is a “significant affect,” then the Applicant must demonstrate appropriate mitigation under OAR 660-012-0060(2), et seq.

OREGON ADMINISTRATIVE RULES

Chapter 660 Division 12 TRANSPORTATION PLANNING

660-012-0060 Plan and Land Use Regulation Amendments

- (1) If an amendment to a functional plan, an acknowledged comprehensive plan, or a land use regulation (including a zoning map) would significantly affect an existing or planned transportation facility, then the local government must put in place measures as provided in section (2) of this rule, unless the amendment is allowed under section (3), (9) or (10) of this rule. A plan or land use regulation amendment significantly affects a transportation facility if it would:
 - (a) Change the functional classification of an existing or planned transportation facility (exclusive of correction of map errors in an adopted plan);
 - (b) Change standards implementing a functional classification system; or
 - (c) Result in any of the effects listed in paragraphs (A) through (C) of this subsection based on projected conditions measured at the end of the planning period identified in the adopted TSP. As part of evaluating projected conditions, the amount of traffic projected to be generated within the area of the amendment may be reduced if the amendment includes an enforceable, ongoing requirement that would demonstrably limit traffic generation, including, but not limited to, transportation demand management. This reduction may diminish or completely eliminate the significant effect of the amendment.
 - (A) Types or levels of travel or access that are inconsistent with the functional classification of an existing or planned transportation facility;
 - (B) Degrade the performance of an existing or planned transportation facility such that it would not meet the performance standards identified in the TSP or comprehensive plan; or
 - (C) Degrade the performance of an existing or planned transportation facility that is otherwise projected to not meet the performance standards identified in the TSP or comprehensive plan.

Response: The analysis provided by Lancaster Engineering found that this amendment would not “significantly affect” an existing or planned transportation facility. In fact, the purpose of

the application is to implement the City’s adopted TSP, by providing for the completion of Gunderson Road, a planned City Minor Arterial roadway. Please refer to the TIA (Exhibit A) for further information. Therefore, the criteria are met.

- (2) If a local government determines that there would be a significant effect, then the local government must ensure that allowed land uses are consistent with the identified function, capacity, and performance standards of the facility measured at the end of the planning period identified in the adopted TSP through one or a combination of the remedies listed in (a) through (e) below, unless the amendment meets the balancing test in subsection (2)(e) of this section or qualifies for partial mitigation in section (11) of this rule. A local government using subsection (2)(e), section (3), section (10) or section (11) to approve an amendment recognizes that additional motor vehicle traffic congestion may result and that other facility providers would not be expected to provide additional capacity for motor vehicles in response to this congestion.
 - (a) Adopting measures that demonstrate allowed land uses are consistent with the planned function, capacity, and performance standards of the transportation facility.
 - (b) Amending the TSP or comprehensive plan to provide transportation facilities, improvements or services adequate to support the proposed land uses consistent with the requirements of this division; such amendments shall include a funding plan or mechanism consistent with section (4) or include an amendment to the transportation finance plan so that the facility, improvement, or service will be provided by the end of the planning period.
 - (c) Amending the TSP to modify the planned function, capacity or performance standards of the transportation facility.
 - (d) Providing other measures as a condition of development or through a development agreement or similar funding method, including, but not limited to, transportation system management measures or minor transportation improvements. Local governments shall, as part of the amendment, specify when measures or improvements provided pursuant to this subsection will be provided.
 - (e) Providing improvements that would benefit modes other than the significantly affected mode, improvements to facilities other than the significantly affected facility, or improvements at other locations, if:
 - (A) The provider of the significantly affected facility provides a written statement that the system-wide benefits are sufficient to balance the significant effect, even though the improvements would not result in consistency for all performance standards;
 - (B) The providers of facilities being improved at other locations provide written statements of approval; and
 - (C) The local jurisdictions where facilities are being improved provide written statements of approval.

Response: Since a “significant affect” is not found, this section does not apply. Please refer to the TIA (Exhibit A) for further information. Therefore, the criteria are met.

- (3) Notwithstanding sections (1) and (2) of this rule, a local government may approve an amendment that would significantly affect an existing transportation facility without assuring that the allowed land uses are consistent with the function, capacity and performance standards of the facility where:
 - (a) In the absence of the amendment, planned transportation facilities, improvements and services as set forth in section (4) of this rule would not be

adequate to achieve consistency with the identified function, capacity or performance standard for that facility by the end of the planning period identified in the adopted TSP;

- (b) Development resulting from the amendment will, at a minimum, mitigate the impacts of the amendment in a manner that avoids further degradation to the performance of the facility by the time of the development through one or a combination of transportation improvements or measures;
- (c) The amendment does not involve property located in an interchange area as defined in paragraph (4)(d)(C); and
- (d) For affected state highways, ODOT provides a written statement that the proposed funding and timing for the identified mitigation improvements or measures are, at a minimum, sufficient to avoid further degradation to the performance of the affected state highway. However, if a local government provides the appropriate ODOT regional office with written notice of a proposed amendment in a manner that provides ODOT reasonable opportunity to submit a written statement into the record of the local government proceeding, and ODOT does not provide a written statement, then the local government may proceed with applying subsections (a) through (c) of this section.

Response: Since a “significant affect” is not found, this section does not apply. Please refer to the TIA (Exhibit A) for further information. Therefore, the criteria are met.

- (4) Determinations under sections (1)–(3) of this rule shall be coordinated with affected transportation facility and service providers and other affected local governments.
 - (a) In determining whether an amendment has a significant effect on an existing or planned transportation facility under subsection (1)(c) of this rule, local governments shall rely on existing transportation facilities and services and on the planned transportation facilities, improvements and services set forth in subsections (b) and (c) below.
 - (b) Outside of interstate interchange areas, the following are considered planned facilities, improvements and services:
 - (A) Transportation facilities, improvements or services that are funded for construction or implementation in the Statewide Transportation Improvement Program or a locally or regionally adopted transportation improvement program or capital improvement plan or program of a transportation service provider.
 - (B) Transportation facilities, improvements or services that are authorized in a local transportation system plan and for which a funding plan or mechanism is in place or approved. These include, but are not limited to, transportation facilities, improvements or services for which: transportation systems development charge revenues are being collected; a local improvement district or reimbursement district has been established or will be established prior to development; a development agreement has been adopted; or conditions of approval to fund the improvement have been adopted.
 - (C) Transportation facilities, improvements or services in a metropolitan planning organization (MPO) area that are part of the area's federally-approved, financially constrained regional transportation system plan.

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- (D) Improvements to state highways that are included as planned improvements in a regional or local transportation system plan or comprehensive plan when ODOT provides a written statement that the improvements are reasonably likely to be provided by the end of the planning period.
 - (E) Improvements to regional and local roads, streets or other transportation facilities or services that are included as planned improvements in a regional or local transportation system plan or comprehensive plan when the local government(s) or transportation service provider(s) responsible for the facility, improvement or service provides a written statement that the facility, improvement or service is reasonably likely to be provided by the end of the planning period.

Response: The subject site is located outside of interstate interchange areas. Therefore, these criteria apply. That said, the amendment is sought to implement a portion of the City's adopted TSP (e.g. Gunderson Road). The amendment has no other purpose and does not include re-designation/amendments that serve another purpose than those already considered as part of the City's TSP.

- (c) Within interstate interchange areas, the improvements included in (b)(A)–(C) are considered planned facilities, improvements and services, except where:
 - (A) ODOT provides a written statement that the proposed funding and timing of mitigation measures are sufficient to avoid a significant adverse impact on the Interstate Highway system, then local governments may also rely on the improvements identified in paragraphs (b)(D) and (E) of this section; or
 - (B) There is an adopted interchange area management plan, then local governments may also rely on the improvements identified in that plan and which are also identified in paragraphs (b)(D) and (E) of this section.

Response: The subject site is located outside of interstate interchange areas. Therefore, the above criteria are not applicable.

- (e) For purposes of this section, a written statement provided pursuant to paragraphs (b)(D), (b)(E) or (c)(A) provided by ODOT, a local government or transportation facility provider, as appropriate, shall be conclusive in determining whether a transportation facility, improvement or service is a planned transportation facility, improvement or service. In the absence of a written statement, a local government can only rely upon planned transportation facilities, improvements and services identified in paragraphs (b)(A)–(C) to determine whether there is a significant effect that requires application of the remedies in section (2).

Response: This section of the TPR requires coordination with affected transportation service providers. The Oregon Department of Transportation (ODOT) provides the road that serves the subject property. The subject property (Tax Lot 701) is within unincorporated Clackamas County and served by OR 211. Additionally, OR 211 is functionally classified as a Major Arterial in both the City and County TSPs but is under the jurisdiction of the State of Oregon. The Applicant met with City, County, and ODOT staff prior to submitting this application to discuss the effects of the application on their respective roads. The City will ensure coordination of the application with Clackamas County, as required by ORS

197.015, by providing the County with timely notice of this application, allowing the County to comment on the application, and including the County's comments in the decision, as is reasonable. The City will also coordinate with ODOT and TriMet as applicable. Therefore, the criteria of OAR 660-012-0060 (4) are met.

- (5) The presence of a transportation facility or improvement shall not be a basis for an exception to allow residential, commercial, institutional or industrial development on rural lands under this division or OAR 660-004-0022 and 660-004-0028.

Response: The application is to include land within the UGB to allow the siting of a public transportation facility and dedication of parkland. This project does not involve an exception to allow residential, commercial, institutional, or industrial development on rural lands. The criterion is not applicable.

- (6) In determining whether proposed land uses would affect or be consistent with planned transportation facilities as provided in sections (1) and (2), local governments shall give full credit for potential reduction in vehicle trips for uses located in mixed-use, pedestrian-friendly centers, and neighborhoods as provided in subsections (a)–(d) below;

- (a) Absent adopted local standards or detailed information about the vehicle trip reduction benefits of mixed-use, pedestrian-friendly development, local governments shall assume that uses located within a mixed-use, pedestrian-friendly center, or neighborhood, will generate 10% fewer daily and peak hour trips than are specified in available published estimates, such as those provided by the Institute of Transportation Engineers (ITE) Trip Generation Manual that do not specifically account for the effects of mixed-use, pedestrian-friendly development. The 10% reduction allowed for by this section shall be available only if uses which rely solely on auto trips, such as gas stations, car washes, storage facilities, and motels are prohibited;
- (b) Local governments shall use detailed or local information about the trip reduction benefits of mixed-use, pedestrian-friendly development where such information is available and presented to the local government. Local governments may, based on such information, allow reductions greater than the 10% reduction required in subsection (a) above;
- (c) Where a local government assumes or estimates lower vehicle trip generation as provided in subsection (a) or (b) above, it shall assure through conditions of approval, site plans, or approval standards that subsequent development approvals support the development of a mixed-use, pedestrian-friendly center or neighborhood and provide for on-site bike and pedestrian connectivity and access to transit as provided for in OAR 660-012-0045(3) and (4). The provision of on-site bike and pedestrian connectivity and access to transit may be accomplished through application of acknowledged ordinance provisions which comply with 660-012-0045(3) and (4) or through conditions of approval or findings adopted with the plan amendment that assure compliance with these rule requirements at the time of development approval; and
- (d) The purpose of this section is to provide an incentive for the designation and implementation of pedestrian-friendly, mixed-use centers and neighborhoods by lowering the regulatory barriers to plan amendments which accomplish this type of development. The actual trip reduction benefits of mixed-use, pedestrian-friendly development will vary from case to case and may be somewhat higher or lower than presumed pursuant to subsection (a) above. The Commission concludes that this assumption is warranted given general information about the expected effects of mixed-use, pedestrian-friendly

development and its intent to encourage changes to plans and development patterns. Nothing in this section is intended to affect the application of provisions in local plans or ordinances which provide for the calculation or assessment of systems development charges or in preparing conformity determinations required under the federal Clean Air Act.

Response: The analysis provided by Lancaster Engineering does not rely upon credit for potential reductions in vehicle trips as described in this section. Therefore, these criteria do not apply.

Chapter 660 Division 14 APPLICATION OF THE STATEWIDE PLANNING GOALS TO NEWLY INCORPORATED CITIES, ANNEXATION, AND URBAN DEVELOPMENT ON RURAL LANDS

660-014-0060 Annexations of Lands Subject to an Acknowledged Comprehensive Plan

A city annexation made in compliance with a comprehensive plan acknowledged pursuant to ORS 197.251(1) or 197.625 shall be considered by the commission to have been made in accordance with the goals unless the acknowledged comprehensive plan and implementing ordinances do not control the annexation.

Response: This application includes an analysis of compliance with the goals and policies of the City of Sandy Comprehensive Land Use Plan (adopted October 20, 1997). Therefore, a City annexation for the subject property should be considered by the commission to have been made in accordance with the goals. The criterion is met.

...

Chapter 660 Division 24 URBAN GROWTH BOUNDARIES

660-024-0000 Purpose and Applicability

- (1) The rules in this division clarify procedures and requirements of Goal 14 regarding a local government adoption or amendment of an urban growth boundary (UGB). The rules in this division do not apply to the simplified UGB process under OAR chapter 660, division 38.
- (2) The rules in this division interpret Goal 14 as amended by the Land Conservation and Development Commission (LCDC or commission) on or after April 28, 2005, and are not applicable to plan amendments or land use decisions governed by previous versions of Goal 14 still in effect.
- (3) The rules in this division adopted on October 5, 2006, are effective April 5, 2007. The rules in this division amended on March 20, 2008, are effective April 18, 2008. The rules in this division adopted March 13, 2009, and amendments to rules in this division adopted on that date, are effective April 16, 2009, except as follows:
 - (a) A local government may choose to not apply this division to a plan amendment concerning the evaluation or amendment of a UGB, regardless of the date of that amendment, if the local government initiated the evaluation or amendment of the UGB prior to April 5, 2007;
 - (b) For purposes of this rule, "initiated" means that the local government either:
 - (A) Issued the public notice specified in OAR 660-018-0020 for the proposed plan amendment concerning the evaluation or amendment of the UGB; or
 - (B) Received LCDC approval of a periodic review work program that includes a work task to evaluate the UGB land supply or amend the UGB;

(c) A local government choice whether to apply this division must include the entire division and may not differ with respect to individual rules in the division.

(4) The rules in this division adopted on December 4, 2015, are effective January 1, 2016, except that a local government may choose to not apply the amendments to rules in this division adopted December 4, 2015 to a plan amendment concerning the amendment of a UGB, regardless of the date of that amendment, if the local government initiated the amendment of the UGB prior to January 1, 2016.

Response: The purpose of this division applies to the subject amendment of the UGB, which complies with the dates listed above.

...

660-024-0040 Land Need

(3) A local government may review and amend the UGB in consideration of one category of land need (for example, housing need) without a simultaneous review and amendment in consideration of other categories of land need (for example, employment need).

Response: This UGB amendment satisfies one need, public facilities (e.g. Gunderson Road and parkland dedication). Accordingly, other needs are not considered.

...

(7) The determination of 20-year land needs for transportation and public facilities for an urban area must comply with applicable requirements of Goals 11 and 12, rules in OAR chapter 660, divisions 11 and 12, and public facilities requirements in ORS 197.712 and 197.768. The determination of school facility needs must also comply with 195.110 and 197.296 for local governments specified in those statutes.

Response: This UGB amendment satisfies one need, public facilities (e.g. Gunderson Road and parkland dedication). Accordingly, other needs are not considered.

660-024-0050 Land Inventory and Response to Deficiency

(1) When evaluating or amending a UGB, a local government must inventory land inside the UGB to determine whether there is adequate development capacity to accommodate 20-year needs determined in OAR 660-024-0040. For residential land, the buildable land inventory must include vacant and redevelopable land, and be conducted in accordance with OAR 660-007-0045 or 660-008-0010, whichever is applicable, and ORS 197.296 for local governments subject to that statute. For employment land, the inventory must include suitable vacant and developed land designated for industrial or other employment use, and must be conducted in accordance with OAR 660-009-0015.

Response: This application involves a City of Sandy UGB Amendment to provide a public transportation facility (i.e. Gunderson Road) as illustrated in the Sandy TSP and to dedicate land to provide a park. The conceptual alignment of Gunderson Road shown in the Sandy TSP is on property not currently within the UGB; thus, the UGB amendment is needed to provide an efficient transportation network and serve residential lands already previously brought into the UGB. The subject property, Tax Lot 701, is the most feasible location where the extension of the transportation network and connection to OR 211 can be made safely. Please see the supplemental materials and TIA for further detailed

information. Additionally, please refer to the narrative responses which address OAR 660-024-0050(6) and (7) and OAR 660-024-0065(3).

(2) As safe harbors, a local government, except a city with a population over 25,000 or a metropolitan service district described in ORS 197.015(13), may use the following assumptions to inventory the capacity of buildable lands to accommodate housing needs:

- (a) The infill potential of developed residential lots or parcels of one-half acre or more may be determined by subtracting one-quarter acre (10,890 square feet) for the existing dwelling and assuming that the remainder is buildable land;
- (b) Existing lots of less than one-half acre that are currently occupied by a residence may be assumed to be fully developed.

(3) As safe harbors when inventorying land to accommodate industrial and other employment needs, a local government may assume that a lot or parcel is vacant if it is:

- (a) Equal to or larger than one-half acre, if the lot or parcel does not contain a permanent building; or
- (b) Equal to or larger than five acres, if less than one-half acre of the lot or parcel is occupied by a permanent building.

(4) If the inventory demonstrates that the development capacity of land inside the UGB is inadequate to accommodate the estimated 20-year needs determined under OAR 660-024-0040, the local government must amend the plan to satisfy the need deficiency, either by increasing the development capacity of land already inside the city or by expanding the UGB, or both, and in accordance with ORS 197.296 where applicable. Prior to expanding the UGB, a local government must demonstrate that the estimated needs cannot reasonably be accommodated on land already inside the UGB. If the local government determines there is a need to expand the UGB, changes to the UGB must be determined by evaluating alternative boundary locations consistent with Goal 14 and applicable rules at OAR 660-024-0060 or 660-024-0065 and 660-024-0067.

Response: On February 6, 2017 the City of Sandy adopted the Urban Growth Boundary Expansion Analysis, Final Report. The analysis concluded the existing UGB did not contain sufficient residential lands to meet the City's housing needs to 2034 and subsequently annexed in property north of Tax Lot 701. To satisfy the needs of lands previously brought into the UGB, according to 660-024-050(4) above, the local government must amend the plan to satisfy the need by amending the UGB when applicable. Therefore, this application involves a Sandy UGB Amendment to respond to a public transportation facility need. Changes to the Sandy UGB are made consistent with Goal 14 and OAR 660-024-0065 and 660-024-0067, as addressed in this written document. OAR 660-024-0060 is not applicable to this application because the property is not within the Portland Metro UGB.

(5) In evaluating an amendment of a UGB submitted under ORS 197.626, the director or the commission may determine that a difference between the estimated 20-year needs determined under OAR 660-024-0040 and the amount of land and development capacity added to the UGB by the submitted amendment is unlikely to significantly affect land supply or resource land protection, and as a result, may determine that the proposed amendment complies with section (4) of this rule.

Response: ORS 197.626 is not applicable to the UGB amendment because the amendment is not by a metropolitan service district, does not add more than 50 acres within the UGB, does not designate new lands as an urban reserve, does not amend the boundary of urban reserve

by a metropolitan service district, or designate or amend rural reserves. Therefore, the above criterion is not applicable to the application.

- (6) When land is added to the UGB, the local government must assign appropriate urban plan designations to the added land, consistent with the need determination and the requirements of section (7) of this rule, if applicable. The local government must also apply appropriate zoning to the added land consistent with the plan designation or may maintain the land as urbanizable land until the land is rezoned for the planned urban uses, either by retaining the zoning that was assigned prior to inclusion in the boundary or by applying other interim zoning that maintains the land's potential for planned urban development. The requirements of ORS 197.296 regarding planning and zoning also apply when local governments specified in that statute add land to the UGB.

Response: The land involved within the amendment area is anticipated to be designated Low Density Residential (LDR), but to retain Clackamas County zoning until annexed into the City of Sandy.

- (7) Lands included within a UGB pursuant to OAR 660-024-0065(3) to provide for a particular industrial use, or a particular public facility, must be planned and zoned for the intended use and must remain planned and zoned for that use unless the city removes the land from the UGB.

Response: The lands brought into the UGB are within the City's existing URA and will retain their existing Clackamas County zoning until annexed into the City in the future. Upon annexation and the application of City zoning designations to those lands, the land is intended to be converted for use as a public transportation facility and parkland and remain as such.

- (8) As a safe harbor regarding requirements concerning "efficiency," a local government that chooses to use the density and mix safe harbors in OAR 660-024-0040(8) is deemed to have met the Goal 14 efficiency requirements under:
- (a) Sections (1) and (4) of this rule regarding evaluation of the development capacity of residential land inside the UGB to accommodate the estimated 20-year needs; and
 - (b) Goal 14 regarding a demonstration that residential needs cannot be reasonably accommodated on residential land already inside the UGB, but not with respect to:
 - (A) A demonstration that residential needs cannot be reasonably accommodated by rezoning non-residential land, and
 - (B) Compliance with Goal 14 Boundary Location factors.

Response: The density and mix safe harbors standards in OAR 660-024-0040(8) are not applicable to this application. The criteria do not apply.

...

660-024-0065 Establishment of Study Area to Evaluate Land for Inclusion in the UGB

- (1) When considering a UGB amendment to accommodate a need deficit identified in OAR 660-024-0050(4), a city outside of Metro must determine which land to add to the UGB by evaluating alternative locations within a "study area" established pursuant to this rule. To establish the study area, the city must first identify a "preliminary study area" which shall not include land within a different UGB or the corporate limits of a city within a different UGB. The preliminary study area shall include:

-
- (a) All lands in the city’s acknowledged urban reserve, if any;
 - (b) All lands that are within the following distance from the acknowledged UGB:
 - (A) For cities with a UGB population less than 10,000: one-half mile;
 - (B) For cities with a UGB population equal to or greater than 10,000: one mile;
 - (c) All exception areas contiguous to an exception area that includes land within the distance specified in subsection (b) and that are within the following distance from the acknowledged UGB:
 - (A) For cities with a UGB population less than 10,000: one mile;
 - (B) For cities with a UGB population equal to or greater than 10,000: one and one-half miles;
 - (d) At the discretion of the city, the preliminary study area may include land that is beyond the distance specified in subsections (b) and (c).
- (2) A city that initiated the evaluation or amendment of its UGB prior to January 1, 2016, may choose to identify a preliminary study area applying the standard in this section rather than section (1). For such cities, the preliminary study area shall consist of:
- (a) All land adjacent to the acknowledged UGB, including all land in the vicinity of the UGB that has a reasonable potential to satisfy the identified need deficiency, and
 - (b) All land in the city’s acknowledged urban reserve established under OAR chapter 660, division 21, if applicable.

Response: This application involves a UGB Amendment to accommodate a need deficit identified in OAR 660-024-0050(4), as described above. Additionally, the purpose is to provide a specific public transportation facility and the location must be compliant with the Sandy TSP. Therefore, the above criteria are not applicable. Please see the following narrative response addressing OAR 660-024-0065(3).

- (3) When the primary purpose for expansion of the UGB is to accommodate a particular industrial use that requires specific site characteristics, or to accommodate a public facility that requires specific site characteristics, and the site characteristics may be found in only a small number of locations, the preliminary study area may be limited to those locations within the distance described in section (1) or (2), whichever is appropriate, that have or could be improved to provide the required site characteristics. For purposes of this section:
- (a) The definition of “site characteristics” in OAR 660-009-0005(11) applies for purposes of identifying a particular industrial use.
 - (b) A “public facility” may include a facility necessary for public sewer, water, storm water, transportation, parks, schools, or fire protection. Site characteristics may include but are not limited to size, topography and proximity.

Response: The primary purpose of this UGB Amendment application is to accommodate Gunderson Road, a future minor arterial roadway depicted in the Sandy TSP. Additionally, on February 6, 2017 the City of Sandy adopted the Urban Growth Boundary Expansion Analysis, Final Report. The analysis contains “Map #9 – Transportation System Plan and Street Stubs” which includes the Gunderson Road extension to OR 211.

To provide this public transportation facility improvement, the road should be extended to match the conceptual alignment in the Sandy TSP. In doing so, the road extension requires use of the subject property due to the specific location dictated in the Sandy TSP. Due to geometrical issues, safety concerns, and potential for transportation hazards, the alignment illustrated in the Sandy TSP is not practicable for construction. This application provides for a solution to extend Gunderson Road and fulfill the anticipated condition of approval associated with Bailey Meadows Subdivision. The location shown in the Supplemental Materials of Exhibit G can be improved to provide the required site characteristics and execute the extension of the transportation network to satisfy the needs of citizens in the general area. Please see the TIA and Supplemental Materials of Exhibit G for further details.

...

660-024-0067 Evaluation of Land in the Study Area for Inclusion in the UGB; Priorities

- (1) A city considering a UGB amendment must decide which land to add to the UGB by evaluating all land in the study area determined under OAR 660-024-0065, as follows:
 - (a) Beginning with the highest priority category of land described in section (2), the city must apply section (5) to determine which land in that priority category is suitable to satisfy the need deficiency determined under OAR 660-024-0050 and select for inclusion in the UGB as much of the land as necessary to satisfy the need.
 - (b) If the amount of suitable land in the first priority category is not sufficient to satisfy all the identified need deficiency, the city must apply section (5) to determine which land in the next priority is suitable and select for inclusion in the UGB as much of the suitable land in that priority as necessary to satisfy the need. The city must proceed in this manner until all the land need is satisfied, except as provided in OAR 660-024-0065(9).
 - (c) If the amount of suitable land in a particular priority category in section (2) exceeds the amount necessary to satisfy the need deficiency, the city must choose which land in that priority to include in the UGB by applying the criteria in section (7) of this rule.
 - (d) In evaluating the sufficiency of land to satisfy a need under this section, the city may use the factors identified in sections (5) and (6) of this rule to reduce the forecast development capacity of the land to meet the need.
 - (e) Land that is determined to not be suitable under section (5) of this rule to satisfy the need deficiency determined under OAR 660-024-0050 is not required to be selected for inclusion in the UGB unless its inclusion is necessary to serve other higher priority lands.
- (2) Priority of Land for inclusion in a UGB:
 - (a) First Priority is urban reserve, exception land, and nonresource land. Lands in the study area that meet the description in paragraphs (A) through (C) of this subsection are of equal (first) priority:
 - (A) Land designated as an urban reserve under OAR chapter 660, division 21, in an acknowledged comprehensive plan;
 - (B) Land that is subject to an acknowledged exception under ORS 197.732; and
 - (C) Land that is nonresource land.

Response: The land to be brought within the UGB is within the City of Sandy’s Adopted URA. Therefore, the land is first priority for inclusion in a UGB. The criteria are met.

- (b) Second Priority is marginal land: land within the study area that is designated as marginal land under ORS 197.247 (1991 Edition) in the acknowledged comprehensive plan.
- (c) Third Priority is forest or farm land that is not predominantly high-value farm land: land within the study area that is designated for forest or agriculture uses in the acknowledged comprehensive plan and that is not predominantly high-value farmland as defined in ORS 195.300, or that does not consist predominantly of prime or unique soils, as determined by the United States Department of Agriculture Natural Resources Conservation Service (USDA NRCS). In selecting which lands to include to satisfy the need, the city must use the agricultural land capability classification system or the cubic foot site class system, as appropriate for the acknowledged comprehensive plan designation, to select lower capability or cubic foot site class lands first.
- (d) Fourth Priority is agricultural land that is predominantly high-value farmland: land within the study area that is designated as agricultural land in an acknowledged comprehensive plan and is predominantly high-value farmland as defined in ORS 195.300. A city may not select land that is predominantly made up of prime or unique farm soils, as defined by the USDA NRCS, unless there is an insufficient amount of other land to satisfy its land need. In selecting which lands to include to satisfy the need, the city must use the agricultural land capability classification system to select lower capability lands first.

Response: The land to be brought within the UGB is within the City of Sandy’s URA and is therefore first priority for inclusion. Therefore, second, third, and fourth priority lands are not under consideration.

SANDY COMPREHENSIVE PLAN GOALS AND POLICIES

Goal 1 – Citizen Involvement

- POLICY 1:** The City of Sandy shall maintain a citizen involvement program to allow opportunity for citizen involvement in the ongoing planning process.
- POLICY 2:** Comprehensive Plan changes shall include the opportunity for participation of citizens affected by the change.
- POLICY 4:** The City shall disseminate information and public notice to the residents of the Sandy area concerning on-going planning activities and pending actions.

Response: The City of Sandy has an established citizen involvement program. The application will be processed according to Chapter 17.12 of the LDC, which involves public notification, public hearings, and decision appeal procedures, as established in City of Sandy LDC Section 17.12.30 and 17.12.40. Therefore, the application is consistent with Goal 1.

Goal 2 – Land Use Planning

- POLICY 2:** Changes to the Comprehensive Plan Map shall be consistent with the policies of the Comprehensive Plan, state law, and intergovernmental agreements.

Response: Changes to the Comprehensive Plan Map are consistent with SDC Chapter 17.12 and the applicable policies of the Comprehensive Plan, as detailed in this written narrative. Consistency with applicable State statute and rules and the Urban Growth Management

Agreement (UGMA) between City of Sandy and Clackamas County have been addressed in this document. The amendment is Therefore, Policy 2 above is met.

POLICY 10: Due to the demand which new development places upon the community's infrastructure, the city may impose off-site improvement requirements necessitated by a development. Each development shall provide for all onsite needs, and in areas which represent a critical link in the facility and service delivery systems, the city may require the over-sizing of these systems. The City may negotiate late-comer fees or other arrangements to compensate developers for over-sizing of facilities.

Response: The Applicant is submitting this application to satisfy an anticipated condition of approval associated with City of Sandy Local File No. 19-023 SUB/VAR/TREE. Although Bailey Meadows Subdivision provides for and meets SDC criteria for on-site needs, in this case the City and Applicant agree to an off-site improvement requirement (i.e., Gunderson Road extension and parkland dedication). The off-site extension of Gunderson Road and improvements are outside the UGB, as described in this written document, and require a UGB amendment to allow an urban facility to be built on land currently within the County's jurisdiction. The policy above is understood and met by this application submittal.

POLICY 14: Proposed plan elements such as parks, roadways, schools, etc., are intended to be conceptual. Actual locations and quantities should be determined through the development process.

Response: The alignment of the extension of Gunderson Road to OR 211, a proposed plan element in the City's TSP, is conceptual. The actual location should be determined through the development process, as outlined above. To provide this public transportation facility improvement, the road should be extended to match the conceptual alignment in the Sandy TSP. However, due to geometrical issues, safety concerns, and potential for transportation hazards, the alignment illustrated in the Sandy TSP is not practicable for construction. This application provides for a solution to extend Gunderson Road and determine the actual functional location through site analysis and development review. The location shown in the Supplemental Materials of Exhibit G can be improved to provide the required site characteristics and execute the extension of the transportation network to satisfy the needs of citizens in the general area. Please see the TIA and Supplemental Materials of Exhibit G for further details.

Additionally, according to the Sandy Parks Master Plan adopted May 15, 1997, there is not a conceptual location for a park on or near the subject site. Therefore, the location for the improvement should be determined through the development process. Though parkland dedication is not required of the Bailey Meadows Subdivision application, the Applicant is providing it and it must be brought within the Sandy UGB and annexed to allow for it. Policy 14 above is met.

Goal 5 – Natural Resources

Response: Goal 5 is not applicable to the decision. The decision does not affect a Goal 5 resource under OAR 660-023-0250(3)(a)-(c) because:

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- a) The decision does not “create or amend” a resource list or a portion of an acknowledged plan or land use regulation adopted in order to protect a significant Goal 5 resource or to address specific requirements of Goal 5.”
 - b) The decision does not “allow” new uses that could be conflicting uses with a particular significant Goal 5 resource site on an acknowledged resource list.”
 - c) While the decision “amends an acknowledged UGB” no “factual information [was] submitted demonstrating that a resource site, or the impact areas of such a site, is included in the amended UGB area.”

Goal 6 – Air, Water, and Land Resources Quality

POLICY 4: Reduce congestion and delay on major streets to lessen localized pollution impacts of automobile travel through methods such as signal timing, access management, intersection improvements, etc.

Response: The City’s Comprehensive Plan with respect to Goal 6 and its development regulations governing land, air, and water quality are not affected by the decision. The intent of extending Gunderson Road to OR 211 is to enhance neighborhood circulation, thereby reducing congestion and delay in the area. This mitigates localized pollution impacts of vehicle activity in the area.

Goal 7 – Areas Subject to Natural Hazards

Response: The City’s Comprehensive Plan, with respect to Goal 7 and its development regulations governing natural hazards, is not affected by the decision. The subject site does not contain mapped areas of steep slopes 25 percent or greater or other known hazard areas.

Goal 8 – Recreational Needs

POLICY 1: Ensure that new residential development contributes equitably to park land acquisition, development, and maintenance.

POLICY 2: Establish methods to maintain and enhance the quality and quantity of parks, open space, and recreational facilities and services. Ensure that these facilities and services serve the diverse recreational needs and interests of area residents and are accessible to all members of the community.

POLICY 10: The conceptual location of community and neighborhood parks and areas of open space have been indicated on the City of Sandy Land Use Map. Actual park locations may be determined based on more site-specific information.

Response: According to the Sandy Parks Master Plan adopted May 15, 1997, there is not a conceptual location for a park on or near the subject site. Therefore, the location for the improvement should be determined through the development process. Though parkland dedication is not required of the Bailey Meadows Subdivision application, the Applicant is providing it and it must be brought within the Sandy UGB and annexed to allow for it. Goal 8 above is met.

Goal 9 – Economic Development

Response: The City’s Comprehensive Plan with respect to Goal 9 and its employment lands are not affected by the decision.

Goal 10 – Housing

Response: The subject property associated with this application to be incorporated within the UGB will be strictly for the purpose of constructing a public transportation facility and providing land for a park, and is not planned to include land for residential use. Therefore, the City’s Comprehensive Plan with respect to Goal 10 and residential land is not affected by the decision.

Goal 11 – Public Facilities and Services

Response: The City’s Comprehensive Plan contains an acknowledged Goal 11 element that includes policies to ensure sufficient and adequate public services are available (or will be available as appropriate) to serve lands within the UGB. The property north of the subject site, Bailey Meadows Subdivision, was found to be sufficiently served by public services at the time it was annexed into the City in June 2017. This application involves amending the City’s UGB to permit the extension of a public transportation facility (i.e., Gunderson Road) to allow for a future connection to OR 211. If approved, the extension is intended as an additional access to the subdivision and to distribute traffic from local streets to the surrounding area. The extension is not required for subdivision approval. Although providing parkland on the northeast portion of Tax Lot 701 will enhance quality of life for the residents in the area, it is not required for subdivision approval. Goal 11 is satisfied.

POLICY 3: Consider the needs of emergency service providers in the review of all development. Particular attention should be paid to:

- a) Street and driveway layout and site design features that ensure emergency vehicle access and building identification.
- b) Fire hydrant locations and fire flow.
- c) Security through appropriate lighting and landscape design.

Response: Policy 3 above, regarding emergency service provider access, is discussed in detail under Goal 12, Policy 2.

Goal 12 – Transportation

POLICY 1: Support a pattern of connected streets, sidewalks, and bicycle routes to: a) provide safe and convenient options for cars, bikes, and pedestrians; b) create a logical, recognizable pattern of circulation; and, c) spread traffic over local streets so that collector and arterial streets are not overburdened.

Response: This application involves the extension of a public transportation facility (i.e., Gunderson Road) to allow Bailey Meadows Subdivision a future connection to OR 211, as illustrated in the City of Sandy TSP. If approved, the extension is intended as an additional access to the subdivision and to distribute traffic from local streets to the surrounding area. The extension is planned to support a pattern of connected streets as stated above but is not required for subdivision approval.

POLICY 2: Work with fire district, police, and other emergency service providers to ensure that adequate emergency access is possible on all streets.

Response: Appendix D, Section D107 of the Oregon Fire Code addresses standards regarding fire apparatus access roads for one or two-family developments. As discussed in the Bailey

Meadows Subdivision application (City of Sandy Local File No. 19-023 SUB/VAR/TREE), the subdivision currently provides two separate and approved fire apparatus access roads (Melissa Avenue and SE Ponder Lane) and shall meet the requirements of Section D104.3.

The extension of Gunderson Road would provide an additional access to the subdivision. Therefore, if approved, the Gunderson Road extension will provide the secondary access to the subdivision and SE Ponder Lane will not be utilized to serve as an emergency access as described above.

Additionally, the nature of Policy 2 above requires coordination of the application by the City with affected governmental entities. Coordination requires notice of an application, an opportunity for an affected governmental entity to comment on the application, and the City's incorporation of the comments to a reasonable extent. The City can find that coordination of this application will be accomplished in two ways: by the Applicant prior to application submittal, and by the City in the review process for the application. Goal 12, Policy 2 is satisfied.

POLICY 21: Work with ODOT to determine locations for necessary traffic control signals. Proposed locations for future traffic signals have been determined for the downtown area in the City of Sandy Transportation System Plan. Other locations need to be determined in order to improve the safety and convenience of pedestrians, bicycles, and automobiles. The location of traffic signals should be consistent with the street network indicated in the Comprehensive Plan Map and current traffic engineering standards.

POLICY 22: Submit notice of development proposals impacting Highways 26 and 211 to ODOT for review and comment.

Response: The above criteria applies to City processes for noticing and coordinating with ODOT, as applicable. The standards above apply as the project plans to extend Gunderson Road to OR 211. Direct action by the Applicant will be taken as applicable. Policy 21 and 22 can be satisfied.

Goal 13 – Energy Conservation

Response: The City's Comprehensive Plan with respect to Goal 13 and its standards governing energy conservation are not affected by the decision.

Goal 14 – Urbanization

POLICY 1: Maintain an urban growth boundary with sufficient residential, commercial, industrial, and public use lands necessary to support forecast population and employment for a 20-year horizon. The City will evaluate and update the 20- year land supply at each periodic review plan update.

Response: This application to amend the City UGB is necessary to provide a public transportation facility (i.e., Gunderson Road) to support residential land north of the project site which was included within the UGB and subsequently annexed in 2017. Additionally, this application provides parkland dedication which will benefit residential lands in the vicinity. As described above, the City is required to maintain a UGB with sufficient residential lands, as addressed in the February 2017 City of Sandy Urban Growth Boundary Expansion Analysis. This application will provide a public road as illustrated in

the Sandy TSP that aligns with the existing transportation network in the area and implement a connection to OR 211.

POLICY 2: Urban growth should be directed in a generally contiguous manner consistent with the city's ability to economically maintain and extend public services and facilities.

POLICY 3: The City of Sandy shall encourage the development of land according to the following priorities:

- a) Vacant, buildable lands or underutilized lands located within developed or developing areas.
- b) Lands contiguous to development areas where services can be easily and economically extended.
- c) Lands which are significantly separated from developing areas by vacant land, or areas which would place an undue burden on the city's infrastructure.

Response: The project site is currently vacant, with pasture and vegetated areas. As stated above, urban growth should be directed in a contiguous manner and the planned Gunderson Road extension will facilitate growth north of the project site while having no impact on urban services or utilities. Per Goal 14, Policy 3(b) above, the City shall encourage the development of land which is contiguous to development areas where services can be easily and economically extended. The extension of Gunderson Road will provide access and distribute traffic from local streets to the surrounding area and provide parkland dedication, a benefit to lands north of the project site and those within the City limits.

POLICY 4: An Urban Growth Boundary (UGB) and Urban Reserve Area (URA) shall be jointly adopted by the City of Sandy and Clackamas County. Procedures for coordinated management of the unincorporated lands within the UGB and URA shall be specified in an intergovernmental agreement adopted by the Sandy City Council and the Clackamas County Board of Commissioners.

Response: The property involved in this application, Tax Lot 701, is associated with an UGMA, as it is within the Sandy Adopted URA. The applicable elements are addressed within this written narrative.

POLICY 6: Designated URA lands will be considered for inclusion within the UGB on a phased basis, primary at periodic review. Legislative amendments to the UGB shall be large enough to facilitate cohesive neighborhood framework planning and efficient provision of public facilities. Property owners will also have the opportunity to request that land within the designated URA be included within the Sandy UGB, based on the criteria outlined in LCDC Goal 14 and the Urban Growth Management Agreement with Clackamas County.

Response: This application involves a property owner's (i.e., the Applicant's) request that Tax Lot 701, land within the designated Sandy URA, be included with the Sandy UGB. The applicable criteria, including Land Conservation and Development Commission (LCDC) Goal 14 noted above, have been addressed in this written document. Policy 6 is relevant and satisfied.

POLICY 7: The City of Sandy shall have the lead role in designating planned land uses and densities for incorporated and unincorporated lands within the UGB and the URA. The Comprehensive Plan shall constitute the comprehensive plan for all land within the Urban Growth Boundary and Urban Reserve Area.

Response: The subject application involves property which is located within the URA. This written document contains analysis of the City’s comprehensive plan goals and policies associated with the property. Therefore, Policy 7 is applicable.

POLICY 8: The City of Sandy shall have the lead role in coordinating public facility planning (streets, sanitary and storm sewers, water, parks and open space, schools) within the UGB and the URA.

Response: Tax Lot 701 is located within the Sandy Adopted URA. Therefore, Policy 8 is applicable, and the City of Sandy shall have the lead role in coordinating this application for the planned public transportation facilities and parkland.

POLICY 9: County zoning shall apply to unincorporated lands within the UGB and URA until annexation to the City of Sandy.

Response: Tax Lot 701 is located within the Sandy Adopted URA and is currently designated with Clackamas County EFU zoning. An application for annexation and a comprehensive plan amendment is necessary to apply City zoning to allow for the public transportation facilities and parkland. Policy 9 is applicable and satisfied.

POLICY 11: Clackamas County shall have the lead role in processing land use and development applications for unincorporated lands within the UGB and URA.

Response: Tax Lot 701 is located within the Sandy Adopted URA. Therefore, Policy 11 is applicable, and the City of Sandy shall coordinate with Clackamas County in processing the subject land use and development application for unincorporated lands within the URA.

POLICY 12: The City of Sandy will support development within the areas outside the city limits but within the Sandy Urban Growth Boundary or Urban Reserve Area based on the following standards and restrictions:

- a) County zoning in effect at the time of adoption of the Urban Reserve Area will be frozen until the unincorporated land is included within the UGB and annexed for urban development.
- b) New commercial and industrial uses will generally be discouraged outside the City limits and within the UGB or within the Urban Reserve Area.
- c) Agricultural and forest uses will be allowed in accordance with Clackamas County zoning.
- d) The City and County shall coordinate plans for interim rural residential development within the designated Urban Reserve Area. The following strategies will be used to ensure that interim rural development does not inhibit long-term urbanization of lands within the Sandy UGB and Urban Reserve Area:
 - 1) shadow plats
 - 2) cluster development
 - 3) redevelopment plans
 - 4) non-remonstrance agreements or deed restrictions for annexation and provision of urban facilities

Response: Tax Lot 701 is located within the Sandy Adopted URA and is currently designated with Clackamas County EFU zoning. An application for annexation and a comprehensive plan amendment is necessary to apply City zoning allowing this urban development (i.e.,

creation of a public transportation facility and parkland). Therefore, the subject application does not involve new commercial, industrial, or agricultural uses. The Applicant understands that City Low-Density Residential (LDR) Comprehensive Plan and Single-Family Residential (SFR) Zoning designations are intended for the property. Interim use and development, prior to annexation, is not associated with this application. The application complies with the applicable components of Policy 12 above.

CLACKAMAS COUNTY COMPREHENSIVE PLAN GOALS AND POLICIES

GOALS

The overall goals of the plan are:

- Balance public and private interests and adopt a coordinated set of goals and policies to guide future development in Clackamas County.
- Identify the most appropriate land uses for individual sites by evaluating site characteristics in light of market demand, human needs, technology, and state, regional, and County goals.
- Provide for growth in areas where public facilities can economically be provided to support growth.
- Create development opportunities most compatible with the fiscal and financial capacity of the County and its residents.

Response: This application balances public and private interests by complying with goals and policies in the Clackamas County Comprehensive Plan. The primary purpose of this application is to facilitate a transportation need in the area by extending Gunderson Road to provide a connection to OR 211, as illustrated in the Sandy TSP. Additionally, the Applicant plans to provide area for parkland. The project site is relatively flat with no existing improvements which makes it an appropriate site to facilitate the City's transportation vision. To distribute traffic from local streets to arterials and collectors, the extension of this public facility can economically be provided to support growth north of the subject site. The overall goals of the plan are incorporated into this UGB Amendment.

Chapter 4: LAND USE

URBANIZATION

URBANIZATION GOALS

- Clearly distinguish Urban and Urban Reserve areas from non-urban areas.
- Encourage development in areas where adequate public services and facilities can be provided in an orderly and economic way.
- Insure an adequate supply of land to meet immediate and future urban needs.
- Provide for an orderly and efficient transition to urban land use.
- Distinguish lands immediately available for urban uses from Future Urban areas within Urban Growth Boundaries.

Response: The subject property is within the Sandy Urban Reserve Area. This application supports development in an area of the City where a public transportation facility has been deemed necessary to accommodate planned growth. Tax Lot 701 is relatively flat and unimproved, allowing the extension of Gunderson Road to be provided in an economic way and

facilitate the needs of urban residential housing north of the site. This application provides for an efficient transition to urban land use because the portion of land to be annexed is the necessary area for the improvement and land will not be annexed to allow or develop homes. The area for parkland dedication will enhance the lives of local residents. The subject site will be available for urban uses, specifically both minor public facilities, after annexation.

4.A. General Urbanization Policies

4.A.2 Coordinate with affected cities in designating urban areas outside of Metro. Land designated as a Rural Reserve, as shown on Map 4-9, shall not be designated as an Urban Reserve or added to an urban growth boundary. The following areas may be designated as Urban:

4.A.2.3. Land to which public facilities and services can be provided in an orderly and economic way.

Response: The subject property is not designated as a Rural Reserve on Map 4-9. Tax Lot 701 is planned to provide a public transportation facility to meet the needs of the surrounding area.

4.A.3 Land use planning for urban areas shall integrate all applicable policies found throughout the Plan including the following:

4.A.3.1. Locate land uses of higher density or intensity to increase the effectiveness of transportation and other public facility investments.

Response: The purpose of this application is to allow the extension of a public transportation facility (e.g. Gunderson Road) thereby providing the improvement illustrated in the Sandy TSP and to provide land for a park. Therefore, the application will increase effectiveness of the City's transportation network.

4.A.4 Establish Urban Growth Management Areas and Urban Growth Management Agreements to clarify planning responsibilities between the County and cities for areas of mutual interest.

Response: The Urban Growth Management Agreement (UGMA) between Clackamas County and the City of Sandy coordinates the development and amendment of comprehensive plans and implementing measures affecting the City's urban growth. The document is addressed in this written document and is included as Exhibit H.

4.E. Urban Reserve Area Policies

4.E.1. The following policies apply to Urban Reserve areas established pursuant to OAR 660, Division 21:

4.E.1.1 Clackamas County shall recommend to Metro land in Clackamas County which should be designated Urban Reserve, when Urban Reserve amendments to the Region 2040 Urban Growth Management Functional Plan are considered by Metro. The cities of Sandy, Molalla, Estacada and Canby, in coordination with Clackamas County, may designate and adopt other urban reserve areas in a manner consistent with OAR 660-021-0000.

Response: The Urban Growth Management Agreement (UGMA) between Clackamas County and the City of Sandy coordinates the development and amendment of comprehensive plans and implementing measures affecting the City's urban growth. The document is addressed in this written narrative and is included as Exhibit H.

4.E.1.5 Lands within a designated Urban Reserve area shall continue to be planned and zoned for rural uses in a manner that ensures a range of opportunities for the orderly, economic and efficient provision of urban services when these lands are included in the Urban Growth Boundary. Planning and zoning shall be done in a manner consistent with OAR 660-021-0000 and the Metro Code, in areas where Metro has jurisdiction.

Response: Tax Lot 701 is located within the Sandy Adopted URA and is currently designated with Clackamas County EFU zoning. An application for annexation to the City of Sandy will be processed separately and include a comprehensive plan amendment to apply City zoning to allow for the urban development (i.e., creation of a minor public transportation facility and parkland). The Applicant plans to obtain City Low-Density Residential (LDR) Comprehensive Plan and Single-Family Residential (SFR) Zoning designations for the property. Interim use and development, prior to annexation, is not associated with this application

4.E.2. The following policies apply to Urban Reserve areas established pursuant to OAR 660, Division 27, as shown on Map 4-9:

4.E.2.3 The County shall not amend the Comprehensive Plan or Zoning and Development Ordinance or the Comprehensive Plan Map or zoning designations:

- a. To allow within Urban Reserve areas, new uses that were not allowed on the date the Urban Reserve areas were designated, except those uses authorized by amendments to the Oregon Revised Statutes or Oregon Administrative Rules enacted after designation of Urban Reserve areas.
- b. To allow within Urban Reserve areas, the creation of new lots or parcels smaller than allowed on the date Urban Reserve areas were designated, except as authorized by amendments to the Oregon Revised Statutes or Oregon Administrative Rules enacted after designation of Urban Reserve areas.

Response: Tax Lot 701 is located within the Sandy Adopted URA and is currently designated with Clackamas County EFU zoning. An application for annexation to the City of Sandy will be processed separately and include a comprehensive plan amendment to apply City zoning to allow for the urban development (i.e., creation of a minor public transportation facility and parkland). The Applicant plans to obtain City Low-Density Residential (LDR) Comprehensive Plan and Single-Family Residential (SFR) Zoning designations for the property. Interim use and development, prior to annexation, is not associated with this application. This application will not allow new uses that were not allowed on the date the URA was designated or allow the creation of new lots.

URBAN GROWTH MANAGEMENT AGREEMENT BETWEEN CITY OF SANDY AND CLACKAMAS COUNTY

IV. Boundaries

- A. The Urban Growth Boundary (UGB) and Urban Growth Area (UGA) shall be as shown on map Attachment "A" to this agreement.

-
- B. The Urban Reserve Area (URA) shall be established as shown on map Attachment “A” to this Agreement. The URA shall establish the planned limits of the City’s urban growth for the mutually coordinated population and employment growth for a 30 to 50-year timeframe.
 - C. Amendments to the City’s and County’s Comprehensive Plans which modify the Urban Growth Boundary or Urban Reserve Area shall be deemed incorporated into this agreement. Any amendment proposed to the City’s UGB or URA shall be a coordinated city-county effort with adoption by both city and county. The county shall not consider adoption of any City UGB or URA amendment unless adopted by the city first. The city shall be responsible for initiating all legislative documents.

Response: This application involves an amendment to the City’s UGB and should be a coordinated city-county effort with adoption by both the City of Sandy and Clackamas County. As stated above, the City is responsible for initiating the legislative amendments.

V. Coordination and Planning

- A. The City comprehensive plan shall establish urban comprehensive plan land use designations and densities for all incorporated and unincorporated lands within the Urban Growth Boundary and Urban Reserve Areas.
- B. The City shall have the lead role on all urban legislative and quasi-judicial plan amendments within the City’s UGB and URA, with notice to the County. Proposed amendments to the comprehensive plan may be made at any time, whether initiated by the city or in response to a development application. The city may hear and act on comprehensive plan and zone change applications prior to annexation, although such actions will not be effective until the effective date of annexation.
- C. After annexation to the City, the County zoning districts will continue to apply in accordance with the provisions of ORS 215.130 until the City applies its own land use plan and/or zoning designations.

Response: An application for annexation to the City of Sandy will be processed separately and include a comprehensive plan amendment to apply City zoning to allow for the urban development (i.e., creation of a minor public transportation facility and parkland). The Applicant plans to obtain City Low-Density Residential (LDR) Comprehensive Plan and Single-Family Residential (SFR) Zoning designations for the property. Interim use and development, prior to annexation, is not associated with this application.

- D. The City shall be responsible for public facilities planning with the County.
- E. The City shall be responsible for preparing and adopting a local transportation system plan for all lands within the City’s UGB and URA. As required by OAR 660, Division 12, the City shall coordinate its transportation planning with the County, affected state agencies, special districts and affected private transportation service providers.

Response: The Sandy TSP provides

- F. Where applications are made for a use of property under the same ownership that is divided by the City limit boundary, the City shall be responsible for processing both the City and County applications. Except as otherwise provided in this Agreement, the application for the County portion of the property shall be evaluated pursuant to City Code procedures, but applying the applicable substantive provisions of the County’s Comprehensive Plan and Zoning and Development Ordinance.

VI. Zoning and Development Proposals in Unincorporated UGA and URA

...

B. Land use applications for the following permits within the unincorporated UGB or URA shall be forwarded to the City prior to a County Decision. These applications shall include:

1. Comprehensive plan and zone changes
2. Subdivisions and partitions
3. Conditional use permits
4. Design review applications for new commercial or industrial buildings, and communication towers. Any city comments shall be made within 14 days.

Response: This UGB Amendment application involves a comprehensive plan and zone change for a property within the unincorporated UGB and URA and is therefore submitted to the City prior to a County decision.

IV. Conclusion

The required findings have been made and this written narrative and accompanying documentation demonstrate that the application is consistent with the applicable provisions of the Oregon Statewide Planning Goals, Oregon Administrative Rules, Oregon Revised Statutes, City of Sandy Comprehensive Plan, and Clackamas County Comprehensive Plan. The City and County can rely upon this information in their approval of this application.

EXHIBIT C

Technical Memorandum

To: Cody Bjugan, Allied Homes & Development
From: Jessica Hijar
Date: January 6, 2020
Subject: UGB Amendment & Gunderson Road Connection
Traffic Impact Analysis, Addendum #1



**LANCASTER
ENGINEERING**

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Portland, OR 97204
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This memorandum is written as an addendum to the Bailey Meadows Subdivision Traffic Impact Analysis prepared by Lancaster Engineering dated June 20, 2019. Specifically, analysis is provided regarding the potential new roadway connection to Highway 211. The current planning effort includes a connection of Gunderson Road to Highway 211 as considered in the City of Sandy's Transportation System Plan (TSP).

In addition, this memorandum addresses the Transportation Planning Rule and associated approval criteria relative to the proposed Urban Growth Boundary (UGB) amendment, comprehensive plan and zone map amendments, and annexation applications. All of these are necessary to accommodate a connection of Gunderson Road to Highway 211.

Future Roadway Connection

The planned connection of Gunderson Road to Highway 211 will provide an additional route into and out of the Bailey Meadows subdivision as well as the existing neighborhood to the north. This will reduce reliance on Melissa Avenue, which will provide access to the Bailey Meadows subdivision via Dubarko Road. The planned intersection of Gunderson Road at Highway 211 will be a three-legged intersection that is stop-controlled for the SE Gunderson Road approach. Future development on the south side of Highway 211 could extend the street to the east, to eventually connect with Cascadia Village Drive, as shown in the TSP. The existing characteristics of the subject roadways are shown in Table 1. The existing and future intersection configurations are shown in Figure 1 on page two.

Table 1: Vicinity Roadway Characteristics

Street Name	Jurisdiction	Classification	Speed (MPH)	Curbs	Sidewalks	Bicycle Lanes
Highway 211	ODOT	District Highway	45-55 mph posted	No	No	Partial
Gunderson Road (planned)	City of Sandy	Future Minor Arterial	Not Posted	Partial	Partial	Yes

LEGEND

● STUDY INTERSECTION (EXISTING)

○ STUDY INTERSECTION (PROPOSED)

⊥ STOP SIGN

↔ BIKE LANE

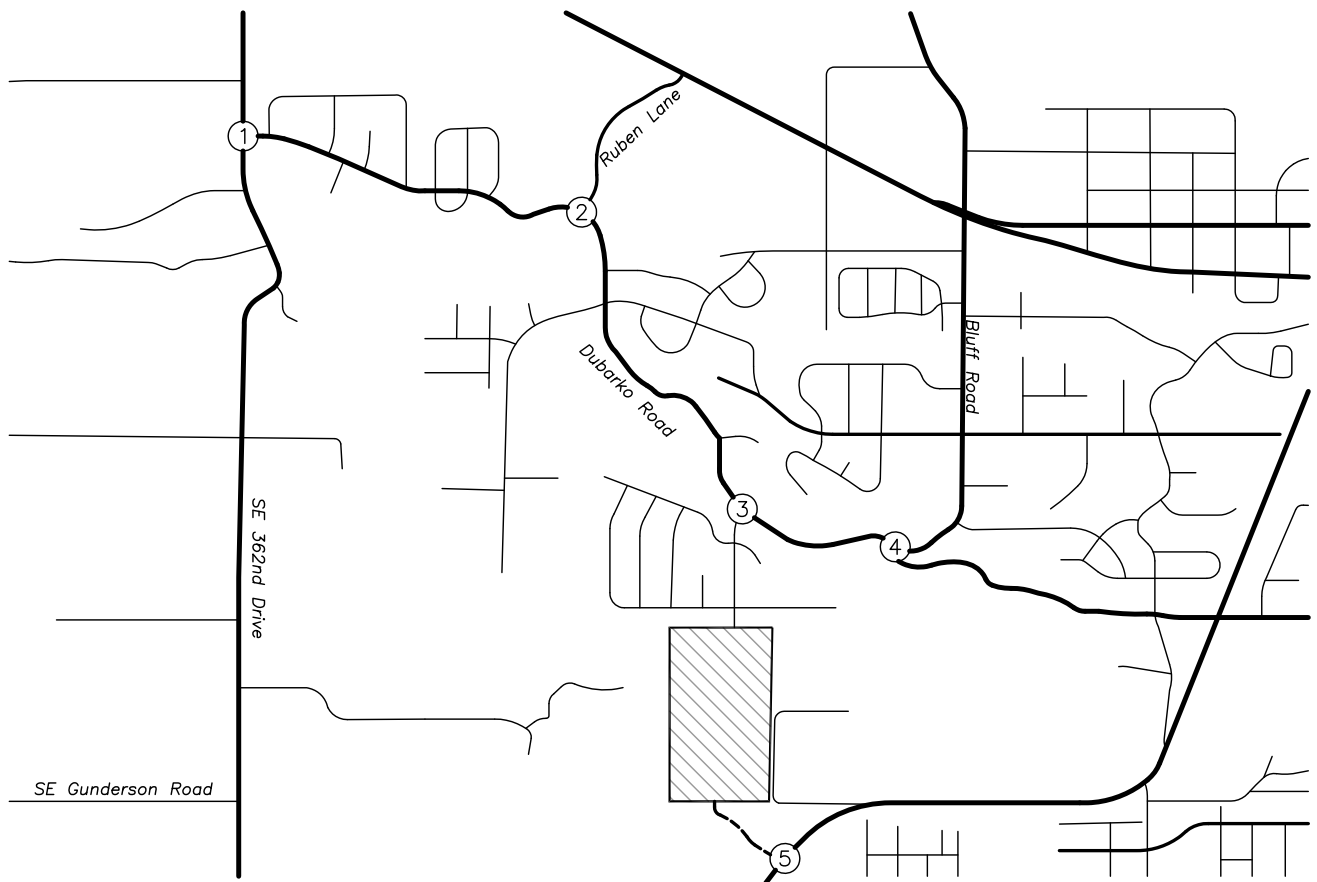
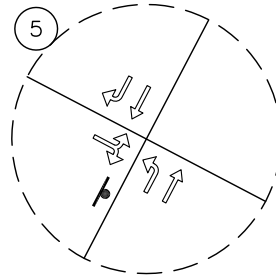
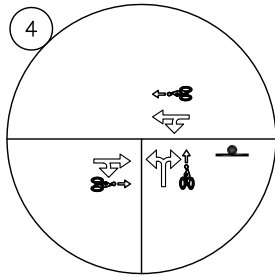
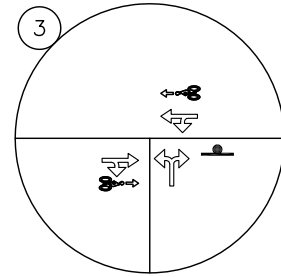
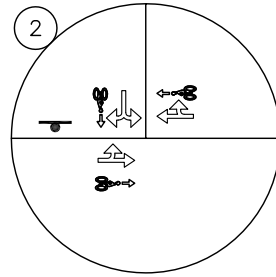
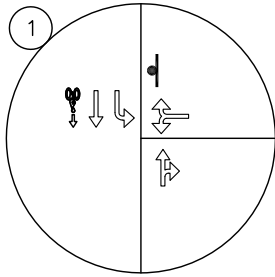
▨ PROJECT SITE

— ARTERIAL ROADWAY

— COLLECTOR ROADWAY

— LOCAL ROADWAY

- - - FUTURE MINOR ARTERIAL



VICINITY MAP



FIGURE 1

PAGE 2



Trip Distribution

The Gunderson connection to Highway 211 is expected to serve trips to and from the Bailey Meadows subdivision, as well as trips from the existing neighborhood north of Bailey Meadows, which currently uses only Melissa Avenue. Based on travel time studies, it is not expected that traffic from outside the immediate area (such as residents in Bornstedt Village or Cascadia Village) would use the new Gunderson Road connection as a bypass route. Those trips would have to use Gunderson Road, three different streets within Bailey Meadows, Melissa Avenue, and Dubarko Road. This would be a very circuitous route and would not be faster than existing travel routes serving these neighborhoods.

Bailey Meadows Trips

The overall directional distribution of site trips to and from Bailey Meadows was based on the original TIS, but trip routing was modified to reflect the new street connection.

To & From the East

It is expected that the 15 percent of site trips in the TIS previously assigned to Dubarko Road to the east will all use the new Gunderson Road connection. Turning left onto Highway 211 at the new intersection will have significantly lower delay than turning left or crossing Highway 211 at Dubarko Road.

Contribution: 15% via Gunderson

To & From the South

A total of 10 percent of the trips are expected to be to and from the south, and all these trips will use the Gunderson Road connection to Highway 211, since that will be a much more direct route.

Contribution: 10% via Gunderson

To & From the West

Trips to and from the west (30%) were assigned primarily to 362nd Avenue, as this is the quickest route to shopping destinations as well as Highway 26 west of Sandy. Travel time studies show that the route using Dubarko Road to 362nd Avenue is identical in time to the route using Highway 211 to 362nd Avenue. Therefore, the 30% was split evenly via Melissa Avenue to the north and Gunderson Road to the south.

Contribution: 15% via Gunderson

The total percentage of site trips using Gunderson Road is 40 percent, or 378 of the site's 944 trips per day.



Rerouted Existing Trips

Since 40 percent of the Bailey Meadows trips are expected to use the Gunderson Road connection to Highway 211, it is expected that a similar, although slightly lower percentage of the existing neighborhood traffic would also use Gunderson. Since the existing neighborhood is north of the project site, the use of Gunderson could decrease from 40 percent to approximately 30 percent. As shown in the TIS, the existing traffic volume on Melissa Avenue was measured to be 1160 vehicles per day.

In total, 30 percent of the existing 1160 average daily traffic (ADT) on Melissa Avenue would reroute via Gunderson Road, or 348 trips per day.

In summary, the table below shows the total daily traffic volumes to the north (via Melissa Avenue) and to the south (via Gunderson Road) with the future street connection in place.

Table 2: Trip Distribution Summary

	Daily Traffic Volumes	
	Melissa Avenue	Gunderson Road
Existing neighborhood traffic	1160	0
Existing neighborhood traffic w/ Gunderson	812	348
Bailey Meadows site trips with Gunderson	566	378
<i>Total Daily Volume with Gunderson</i>	<i>1378</i>	<i>726</i>

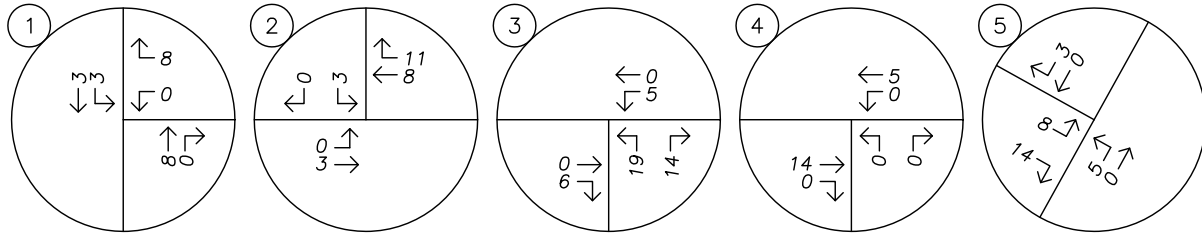
The updated trip distribution and assignment during the morning and evening peak hours are shown in Figure 2 on page five.

LEGEND

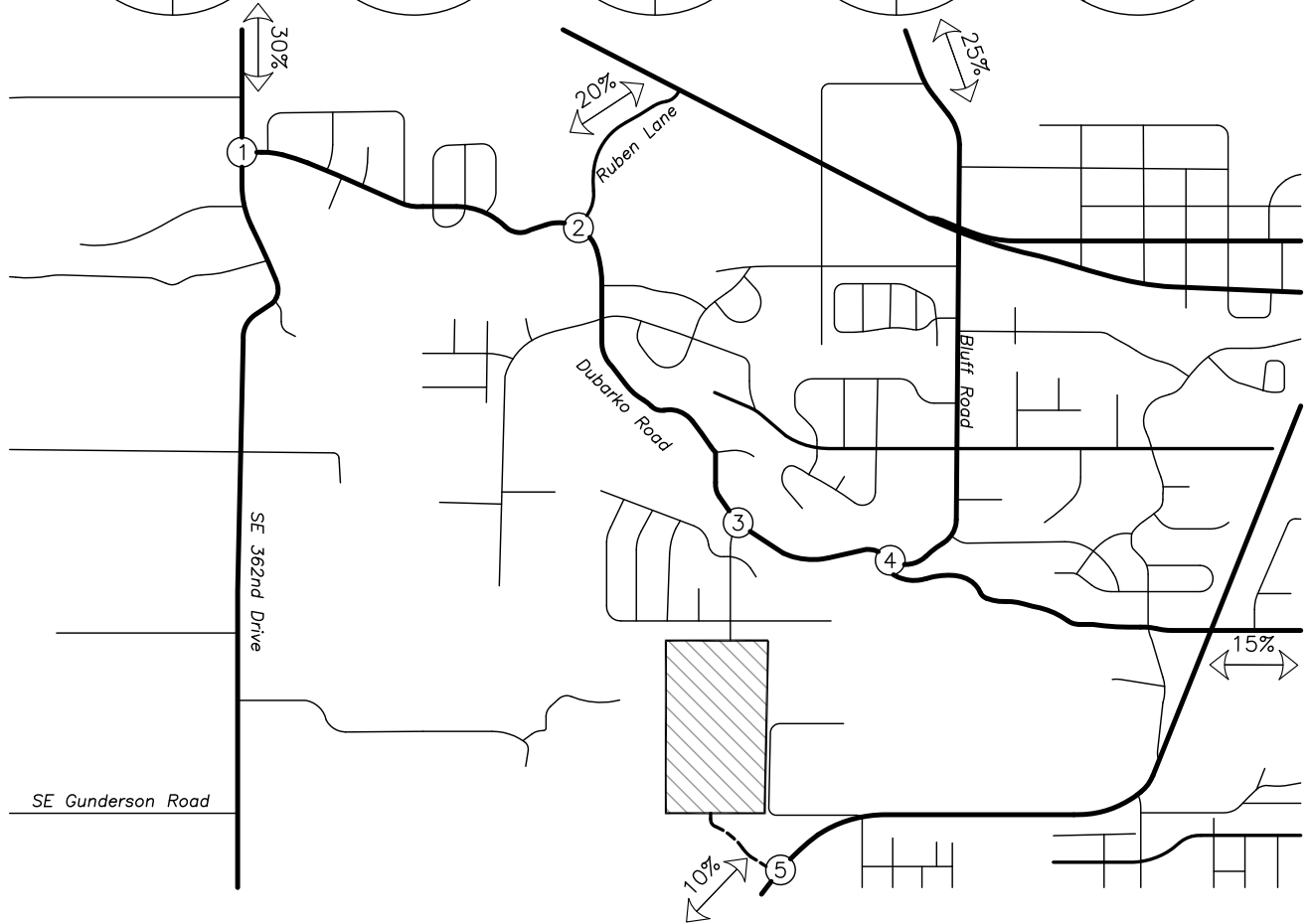
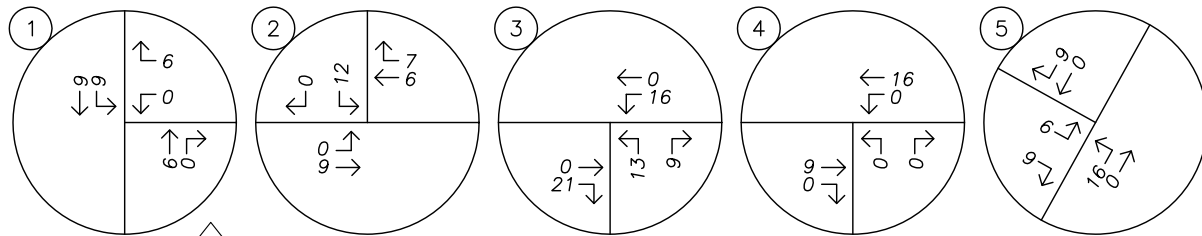
XX% PERCENT OF PROJECT TRIPS

TRIP GENERATION			
	IN	OUT	TOTAL
AM	19	55	74
PM	62	37	99

AM PEAK HOUR



PM PEAK HOUR



SITE TRIP DISTRIBUTION & ASSIGNMENT
 Proposed Development Plan – Site Trips
 AM & PM Peak Hours





Traffic Volumes

Existing Conditions

Twenty-four-hour speed data was collected on Highway 211 near the intersection with Ponder Lane on December 4th, 2018. The morning and evening peak hours of traffic occurred between 7:00 AM and 8:00 AM and between 4:00 PM and 5:00 PM, respectively.

Since Highway 211 is under the jurisdiction of ODOT, highway traffic volumes were seasonally adjusted to reflect the 30th highest hour per methodologies in ODOT's Analysis Procedures Manual (APM). Based on the commuter seasonal trend in ODOT's 2018 Seasonal Trend Table, a seasonal factor of 1.122 was calculated and applied to through volumes on Highway 211.

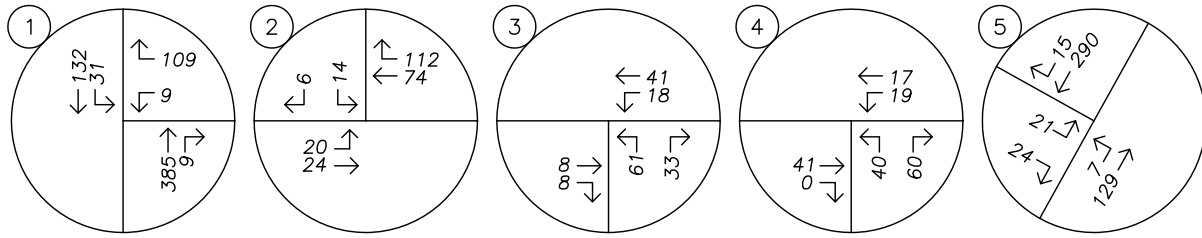
Buildout Conditions

A compounded growth rate of two percent per year was used to estimate growth on all streets under the City of Sandy jurisdiction as described within the TIS. Growth rates for traffic volumes on Highway 211 were derived using ODOT's 2037 Future Volume Tables in accordance with the APM. Using data corresponding to mileposts 3.75 and 5.07, a linear growth rate of 2.8 percent was calculated and applied to through volumes on the highway. Traffic volumes were projected over a period of four years in order to estimate the year 2022 buildout traffic volumes (traffic count data was collected in 2018).

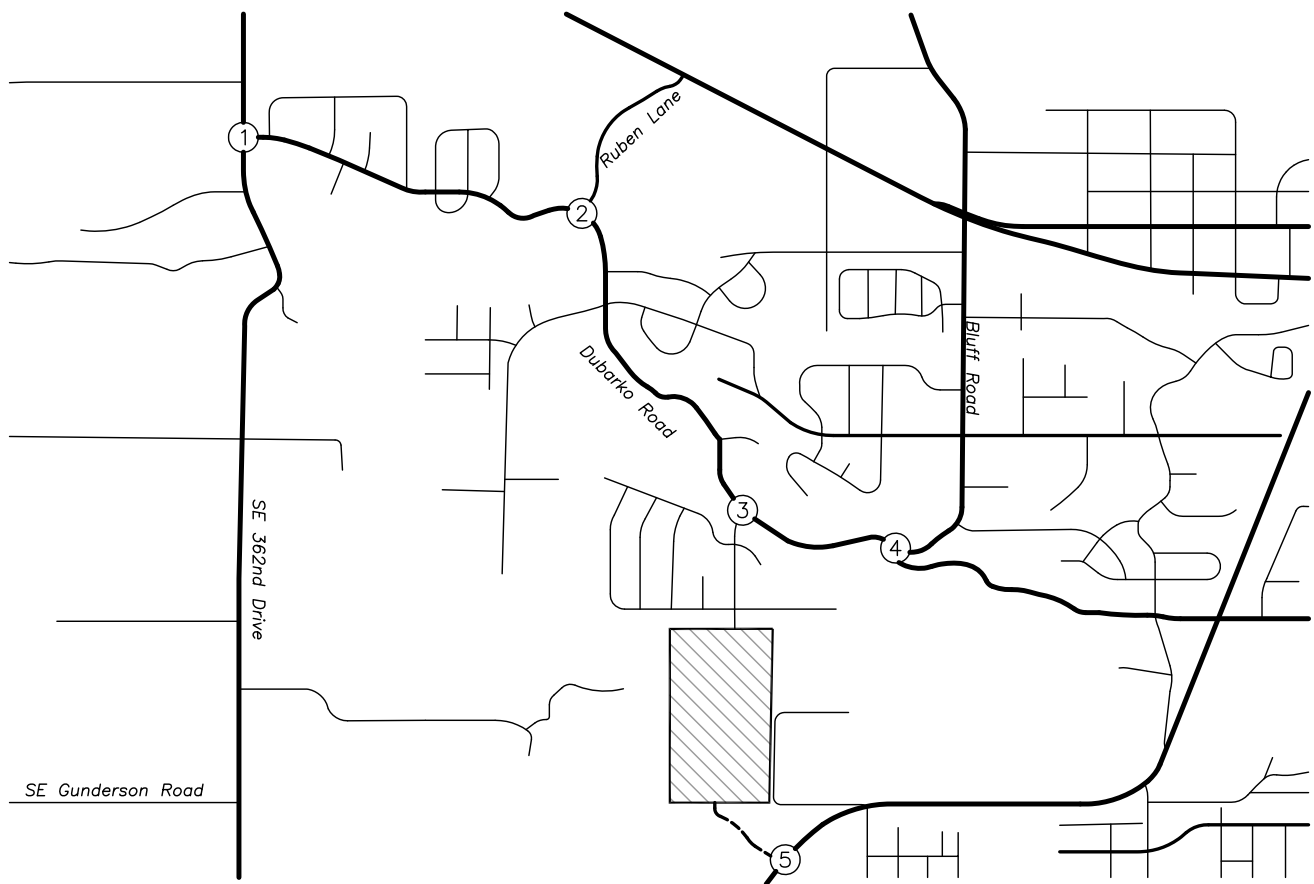
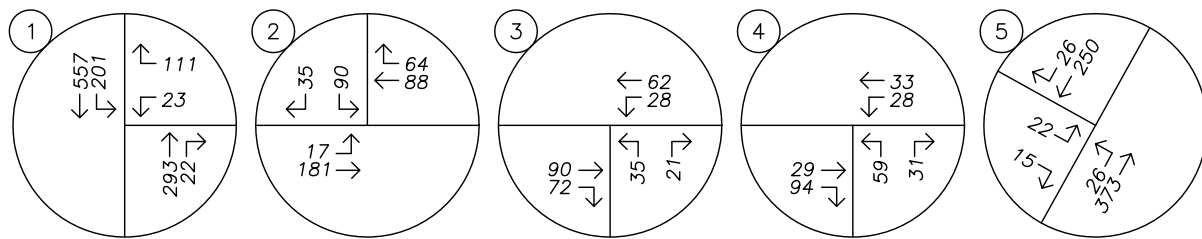
The year 2022 buildout scenario was updated to include a redistribution of existing trips that are likely to use the new Highway 211 roadway connection. Finally, site trips generated by the Bailey Meadows subdivision, discussed previously within the Trip Distribution section, were added to the projected year 2022 volumes in order to obtain the year 2022 buildout traffic volumes.

The year 2022 buildout traffic volumes are shown in Figure 3 on page seven.

AM PEAK HOUR



PM PEAK HOUR



TRAFFIC VOLUMES
 Year 2022 Buildout Traffic Volumes
 AM & PM Peak Hours



FIGURE
 3

PAGE
 7



Preliminary Traffic Signal Warrants

Preliminary traffic signal warrants were examined for all study intersections based on methodologies in the *Manual on Uniform Traffic Control Devices*¹ (MUTCD) and the Analysis Procedures Manual. Warrant 1, *Eight Hour Vehicular Volumes*, was used from the MUTCD. Warrants were evaluated based on the common assumption that traffic counted during the evening peak hour represents ten percent of the AADT and that the eighth-highest hour is 5.6 percent of the daily traffic. Volumes were used for the evening peak hour under the year 2022 buildout scenario.

For the intersection under ODOT jurisdiction, the APM dictates that minor-street right turns are only used if the volume exceeds 85 percent of the lane capacity, and even then, only the increment of volume in excess of 85 percent can be used. In this case, none of the right turns can be used for the purpose of the signal warrant analysis.

Due to insufficient minor street volumes, traffic signal warrants are not met at the intersection of SE Gunderson Road at Highway 211 under year 2022 buildout scenario.

Left-Turn Lane Warrants

Left-turn lane warrants were examined at the planned intersection of Highway 211 at SE Gunderson Road. A left-turn refuge is primarily a safety consideration for the major-street approach, removing left-turning vehicles from the through traffic stream.

Warrants were examined based on the design curves developed by the Texas Transportation Institute, as adopted by the APM. This methodology evaluates the need for a left-turn lane based on the number of left-turning vehicles, the number of travel lanes, the number of advancing and opposing vehicles, and the roadway travel speed.

A left-turn lane is warranted at the intersection of SE Gunderson Road at Highway 211 under the year 2022 buildout scenario and it is recommended that a left-turn lane be constructed as part of the intersection improvements.

¹ Federal Highway Administration (FTA), American Traffic Safety Services Association (ATSSA), Institute of Transportation Engineers (ITE), American Association of State Highway and Transportation Officials (AASHTO), *Manual of Uniform Traffic Control Devices for Streets and Highways* (MUTCD), 2009 Edition, 2010



Operational Analysis

A capacity analysis was conducted for the study intersection per the unsignalized intersection analysis methodologies in the *Highway Capacity Manual*² (HCM). Intersections are generally evaluated based on the average control delay experienced by vehicles and are assigned a grade according to their operation. The level of service (LOS) of an intersection can range from LOS A, which indicates very little or no delay experienced by vehicles, to LOS F, which indicates a high degree of congestion and delay. The volume-to-capacity (v/c) ratio is a measure that compares the traffic volumes (demand) against the available capacity of an intersection.

The City of Sandy’s TSP states that both signalized and unsignalized intersections are required to operate at LOS D or better.

The applicable minimum operational standards for ODOT facilities are established under the Oregon Highway Plan and are based on the classification of the roadway and its v/c ratio. District highways located outside the Urban Growth Boundary and within an unincorporated community has a peak hour v/c ratio target of 0.80.

Table 3: Intersection Capacity Analysis Summary

	Morning Peak Hour			Evening Peak Hour		
	Delay	LOS	V/C	Delay	LOS	V/C
SE 362nd Drive at Dubarko Road						
Year 2022 Buildout Conditions	13	B	0.24	19	C	0.36
Ruben Lane at Dubarko Road						
Year 2022 Buildout Conditions	10	A	0.03	12	B	0.21
Dubarko Road at Melissa Avenue						
Year 2022 Buildout Conditions	9	A	0.13	10	B	0.09
Dubarko Road at Bluff Road						
Year 2022 Buildout Conditions	8	A	0.16	8	A	0.15
Highway 211 at SE Gunderson Road						
Year 2022 Buildout Conditions	11	B	0.08	13	B	0.08

All intersections are projected to operate within the City of Sandy and ODOT’s operational standards under all analysis scenarios.

² Transportation Research Board, *Highway Capacity Manual, 6th Edition, 2016.*



Intersection Location

The City of Sandy TSP shows a planning-level depiction of the Gunderson Road extension that was outside of the UGB at the time the TSP was adopted but is within the current UGB. This is shown below in Figure 4.



Figure 4: Alignment from Sandy TSP

However, upon closer investigation and engineering analysis, it was determined that the alignment shown on the TSP was not feasible for construction of an intersection with Highway 211, primarily due to poor sight distance, the need for a perpendicular intersection, and a very steep superelevated roadway section.

Looking to the northeast from the TSP-identified location, sight distance is limited by both horizontal and vertical curves on Highway 211. In addition, sight distance from the future fourth leg of the intersection would be particularly poor. At

the TSP-identified location, the highway was designed for moving traffic, not for accommodation of an intersection. Due to the high design speed and the horizontal curve, superelevation (the banking of the roadway around the curve) is very steep. This facilitates through traffic on the highway, but makes an intersection at this location problematic, due to difficult turning and crossing movements across the steep curve.

Need for UGB Expansion

The nearest suitable intersection location was found to be farther to the southwest, at the location currently proposed for a UGB amendment. From this location, it is far enough from the horizontal and vertical curves to the northeast to have adequate sight distance and far enough southwest of the curve to not be in a

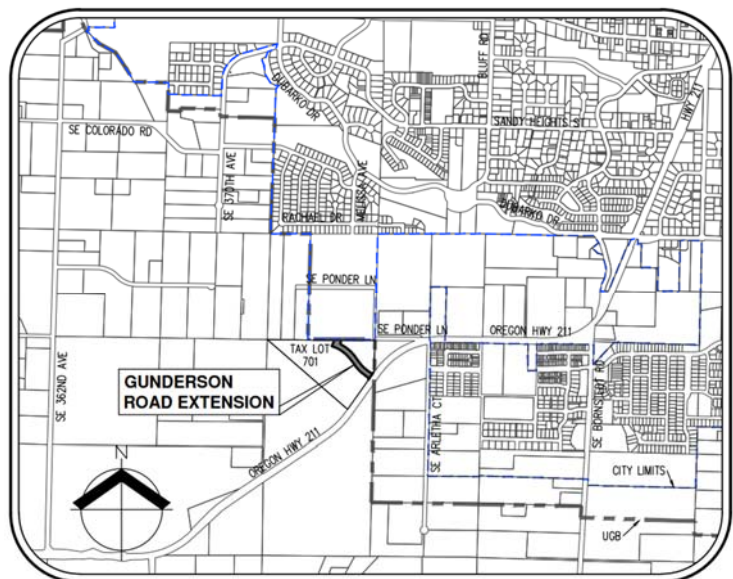


Figure 5: Planned Alignment



superelevated roadway section. However, this alignment is outside of the current UGB of the City of Sandy, as shown in Figure 5. As such, a UGB amendment is proposed to accommodate the road extension.

With the proposed UGB amendment, there will be a triangle-shaped remnant piece of property that will also be brought into the UGB. This remnant is approximately 2.38 acres in size and is proposed to be dedicated as a public neighborhood park. This will be a small, passive-use neighborhood park that will be used primarily by the residents in the area. Trips to and from the park will be primarily pedestrian and bicycle trips and no separate parking lot is planned.

Oregon Administrative Rules

The proposed UGB amendment, comprehensive plan and zone map amendments, and annexation applications trigger the need to address the Transportation Planning Rule (TPR) and associated criteria from the Oregon Administrative Rules. These are addressed below.

OAR 660-012-0060 Transportation Planning Rule

The primary purpose of the TPR is to account for the potential transportation impacts associated with any amendments to adopted plans and land use regulations. The TPR is quoted in *italics* below, with a response immediately following each section.

1. *If an amendment to a functional plan, an acknowledged comprehensive plan, or a land use regulation (including a zoning map) would significantly affect an existing or planned transportation facility, then the local government must put in place measures as provided in section (2) of this rule, unless the amendment is allowed under section (3), (9) or (10) of this rule. A plan or land use regulation amendment significantly affects a transportation facility if it would:*
 - (a) *Change the functional classification of an existing or planned transportation facility (exclusive of correction of map errors in an adopted plan);*

Response: The proposed UGB amendment, comprehensive plan and zone map amendment, and annexation will not change the functional classification of any transportation facilities. In fact, it will implement planned roadway connections in the TSP.

- (b) *Change standards implementing a functional classification system; or*

Response: The standards that implement the functional classification system are contained in the TSP and will not change as part of this proposal.

- (c) *Result in any of the effects listed in paragraphs (A) through (C) of this subsection based on projected conditions measured at the end of the planning period identified in the adopted TSP. As part of evaluating projected conditions, the amount of traffic projected to be generated within the area of the amendment may be reduced if the amendment includes an enforceable, ongoing*



January 6, 2020
Page 12 of 14

requirement that would demonstrably limit traffic generation, including, but not limited to, transportation demand management. This reduction may diminish or completely eliminate the significant effect of the amendment.

- (A) Types or levels of travel or access that are inconsistent with the functional classification of an existing or planned transportation facility;*
- (B) Degrade the performance of an existing or planned transportation facility such that it would not meet the performance standards identified in the TSP or comprehensive plan; or*
- (C) Degrade the performance of an existing or planned transportation facility that is otherwise projected to not meet the performance standards identified in the TSP or comprehensive plan.*

Response: The proposed UGB amendment and associated plan amendments will facilitate the Gunderson Road connection and will not result in developable property that will increase trip generation. In fact, by facilitating an important street connection it is implementing the City of Sandy TSP, will improve connectivity for the neighborhood, and will improve performance of the surrounding transportation system. The proposal will not result in a significant effect as defined by the TPR and no mitigations are necessary.

OAR 660-024-0065 Establishment of Study Area to Evaluate Land for Inclusion in the UGB

This section of the OAR is specific to UGB expansions and speaks to public facilities (such as transportation facilities) that require specific site characteristics. The OAR is quoted in *italics* below, with a response immediately following each section.

- 3. When the primary purpose for expansion of the UGB is to accommodate a particular industrial use that requires specific site characteristics, or to accommodate a public facility that requires specific site characteristics, and the site characteristics may be found in only a small number of locations, the preliminary study area may be limited to those locations within the distance described in section (1) or (2), whichever is appropriate, that have or could be improved to provide the required site characteristics. For purposes of this section:*
 - (a) The definition of “site characteristics” in OAR 660-009-0005(11) applies for purposes of identifying a particular industrial use.*

Response: In OAR 660-009-0005(11), “Site Characteristics” are defined by visibility, proximity to a particular transportation facility, and major transportation routes. In this case, the “site” for the UGB amendment is very narrowly defined and the location between the subdivision and Highway 211 is dictated by engineering standards that must be satisfied for a safe and efficient intersection location.

- (b) A “public facility” may include a facility necessary for public sewer, water, storm water, transportation, parks, schools, or fire protection. Site characteristics may include but are not limited to size, topography and proximity.*



Response: Since the primary purpose of the proposed UGB amendment is to accommodate the extension of Gunderson Road to Highway 211, it is by definition a “public facility”. Site characteristics such as topography are what have dictated the need for the intersection in the location as proposed. Additionally, the applicant is providing area for a neighborhood park, a minor public facility.

Summary & Conclusions

The proposed UGB amendment, comprehensive plan and zone map amendments, and annexation will implement the City of Sandy TSP and result in improved operation at the study area roadways and intersections. The connection will improve conditions for the existing neighborhood to the north of the Bailey Meadows subdivision by providing another means of vehicular access to the area.



January 6, 2020
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Appendix

Traffic Signal Warrant Analysis



Project: 18197 - Ponder Subdivision
 Date: 1/6/2020
 Scenario: Year 2022 Buildout Conditions - Evening Peak Hour

Major Street: Highway 211 Minor Street: SE Gunderson Road
 Number of Lanes: 1 Number of Lanes: 1
 PM Peak Hour Volumes: 675 PM Peak Hour Volumes: 22

Warrant Used:
 X 100 percent of standard warrants used
 70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
Major St.	Minor St.	100% Warrants	70% Warrants	100% Warrants	70% Warrants
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500

WARRANT 1, CONDITION B		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
Major St.	Minor St.	100% Warrants	70% Warrants	100% Warrants	70% Warrants
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
<i>Warrant 1</i>			
<i>Condition A: Minimum Vehicular Volume</i>			
Major Street	6,750	8,850	
Minor Street*	220	2,650	No
<i>Condition B: Interruption of Continuous Traffic</i>			
Major Street	6,750	13,300	
Minor Street*	220	1,350	No
<i>Combination Warrant</i>			
Major Street	6,750	10,640	
Minor Street*	220	2,120	No

* Minor street right-turning traffic volumes reduced by 85% of the turn lane capacity.



Project: Bailey Meadows Subdivision
Intersection: Highway 211 at SE Gunderson Road
Date: 1/6/2020
Scenario: 2022 Buildout conditions

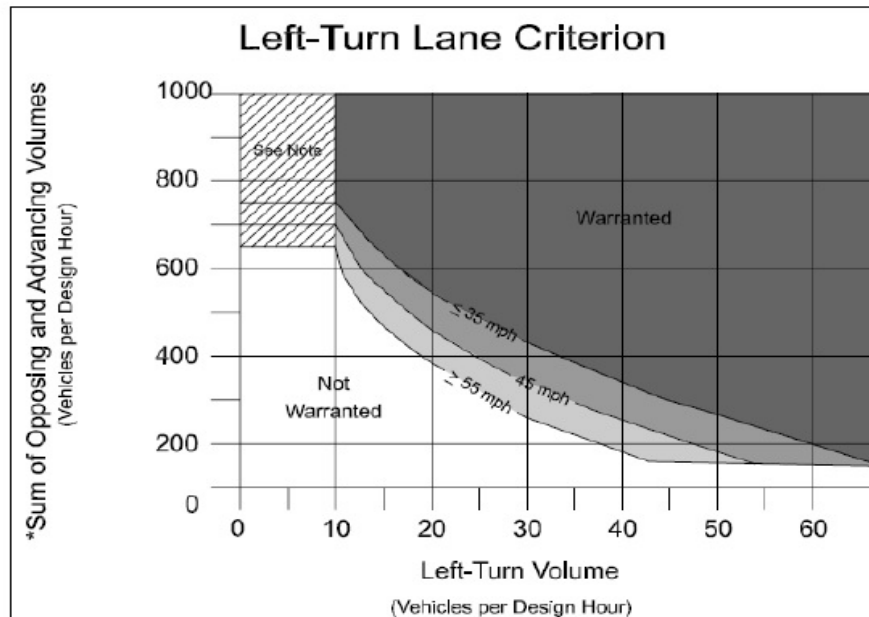
Speed? 45 mph

PM Peak Hour

Left-Turn Volume	26
Approaching DHV	250
# of Advancing Through Lanes	1
Opposing DHV	399
# of Opposing Through Lanes	1

O+A DHV 649

Lane Needed? **Yes**



Source: Oregon DOT Analysis Procedures Manual 2008

$$*(\text{Advancing Vol} / \# \text{ of Advancing Through Lanes}) + (\text{Opposing Vol} / \# \text{ of Opposing Through Lanes})$$

Note: The criterion is not met from zero to ten left turn vehicles per hour, but careful consideration should be given to installing a left turn lane due to the increased potential for accidents in the through lanes. While the turn volumes are low, the adverse safety and operational impacts may require installation of a left turn. The final determination will be based on a field study.

Lanes, Volumes, Timings
1: SE 362nd Drive & Dubarko Road

12/13/2019



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	9	109	385	9	31	132
Future Volume (vph)	9	109	385	9	31	132
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	115	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.876		0.997			
Flt Protected	0.996				0.950	
Satd. Flow (prot)	1641	0	1857	0	1703	1792
Flt Permitted	0.996				0.950	
Satd. Flow (perm)	1641	0	1857	0	1703	1792
Link Speed (mph)	25		35			35
Link Distance (ft)	435		701			662
Travel Time (s)	11.9		13.7			12.9
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	1%	1%	2%	2%	6%	6%
Adj. Flow (vph)	11	128	453	11	36	155
Shared Lane Traffic (%)						
Lane Group Flow (vph)	139	0	464	0	36	155
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	39.7%
Analysis Period (min)	15
	ICU Level of Service A

HCM 6th TWSC
1: SE 362nd Drive & Dubarko Road

12/13/2019

Intersection						
Int Delay, s/veh	2.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔		↔	↔
Traffic Vol, veh/h	9	109	385	9	31	132
Future Vol, veh/h	9	109	385	9	31	132
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	115	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	1	1	2	2	6	6
Mvmt Flow	11	128	453	11	36	155

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	686	459	0	0	464
Stage 1	459	-	-	-	-
Stage 2	227	-	-	-	-
Critical Hdwy	6.41	6.21	-	-	4.16
Critical Hdwy Stg 1	5.41	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-
Follow-up Hdwy	3.509	3.309	-	-	2.254
Pot Cap-1 Maneuver	415	604	-	-	1077
Stage 1	638	-	-	-	-
Stage 2	813	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	401	604	-	-	1077
Mov Cap-2 Maneuver	401	-	-	-	-
Stage 1	617	-	-	-	-
Stage 2	813	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.1	0	1.6
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	582	1077
HCM Lane V/C Ratio	-	-	0.239	0.034
HCM Control Delay (s)	-	-	13.1	8.5
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.9	0.1

Lanes, Volumes, Timings
2: Dubarko Road & Ruben Lane

12/13/2019



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↶		↷	
Traffic Volume (vph)	20	24	74	112	14	6
Future Volume (vph)	20	24	74	112	14	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.919		0.959	
Flt Protected		0.978			0.966	
Satd. Flow (prot)	0	1753	1712	0	1558	0
Flt Permitted		0.978			0.966	
Satd. Flow (perm)	0	1753	1712	0	1558	0
Link Speed (mph)		25	25		25	
Link Distance (ft)		560	633		717	
Travel Time (s)		15.3	17.3		19.6	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	6%	6%	2%	2%	13%	13%
Adj. Flow (vph)	22	27	83	126	16	7
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	49	209	0	23	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	27.4%
Analysis Period (min)	15
	ICU Level of Service A

HCM 6th TWSC
2: Dubarko Road & Ruben Lane

12/13/2019

Intersection						
Int Delay, s/veh	1.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↷		↶	
Traffic Vol, veh/h	20	24	74	112	14	6
Future Vol, veh/h	20	24	74	112	14	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	6	6	2	2	13	13
Mvmt Flow	22	27	83	126	16	7

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	209	0	0	217	146
Stage 1	-	-	-	146	-
Stage 2	-	-	-	71	-
Critical Hdwy	4.16	-	-	6.53	6.33
Critical Hdwy Stg 1	-	-	-	5.53	-
Critical Hdwy Stg 2	-	-	-	5.53	-
Follow-up Hdwy	2.254	-	-	3.617	3.417
Pot Cap-1 Maneuver	1338	-	-	747	873
Stage 1	-	-	-	855	-
Stage 2	-	-	-	925	-
Platoon blocked, %		-	-		
Mov Cap-1 Maneuver	1338	-	-	734	873
Mov Cap-2 Maneuver	-	-	-	734	-
Stage 1	-	-	-	840	-
Stage 2	-	-	-	925	-

Approach	EB	WB	SB
HCM Control Delay, s	3.5	0	9.8
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1338	-	-	-	771
HCM Lane V/C Ratio	0.017	-	-	-	0.029
HCM Control Delay (s)	7.7	0	-	-	9.8
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1

Lanes, Volumes, Timings
 3: Melissa Avenue & Dubarko Road

12/13/2019



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	8	8	18	41	61	33
Future Volume (vph)	8	8	18	41	61	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.932			0.952		
Flt Protected				0.985	0.969	
Satd. Flow (prot)	1451	0	0	1835	1718	0
Flt Permitted				0.985	0.969	
Satd. Flow (perm)	1451	0	0	1835	1718	0
Link Speed (mph)	25			25	25	
Link Distance (ft)	1479			1123	1279	
Travel Time (s)	40.3			30.6	34.9	
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79
Heavy Vehicles (%)	22%	22%	2%	2%	2%	2%
Adj. Flow (vph)	10	10	23	52	77	42
Shared Lane Traffic (%)						
Lane Group Flow (vph)	20	0	0	75	119	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9		15	15		9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	21.9%
Analysis Period (min)	15
	ICU Level of Service A

HCM 6th TWSC
3: Melissa Avenue & Dubarko Road

12/13/2019

Intersection						
Int Delay, s/veh	6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	8	8	18	41	61	33
Future Vol, veh/h	8	8	18	41	61	33
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	79	79	79	79	79	79
Heavy Vehicles, %	22	22	2	2	2	2
Mvmt Flow	10	10	23	52	77	42

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	20	0	113
Stage 1	-	-	-	-	15
Stage 2	-	-	-	-	98
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1596	-	884
Stage 1	-	-	-	-	1008
Stage 2	-	-	-	-	926
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1596	-	871
Mov Cap-2 Maneuver	-	-	-	-	871
Stage 1	-	-	-	-	993
Stage 2	-	-	-	-	926

Approach	EB	WB	NB
HCM Control Delay, s	0	2.2	9.4
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	931	-	-	1596	-
HCM Lane V/C Ratio	0.128	-	-	0.014	-
HCM Control Delay (s)	9.4	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.4	-	-	0	-

Lanes, Volumes, Timings
4: Dubarko Road & Bluff Road

12/13/2019



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	41	0	19	17	40	60
Future Volume (vph)	41	0	19	17	40	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t					0.919	
Fl _t Protected				0.974	0.980	
Satd. Flow (prot)	1696	0	0	1698	1645	0
Fl _t Permitted				0.974	0.980	
Satd. Flow (perm)	1696	0	0	1698	1645	0
Link Speed (mph)	25			25	25	
Link Distance (ft)	750			780	615	
Travel Time (s)	20.5			21.3	16.8	
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles (%)	12%	12%	9%	9%	4%	4%
Adj. Flow (vph)	59	0	27	24	57	86
Shared Lane Traffic (%)						
Lane Group Flow (vph)	59	0	0	51	143	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Stop			Stop	Stop	




Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	21.2%
Analysis Period (min)	15
	ICU Level of Service A

HCM 6th AWSC
 4: Dubarko Road & Bluff Road

12/13/2019

Intersection	
Intersection Delay, s/veh	7.7
Intersection LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	41	0	19	17	40	60
Future Vol, veh/h	41	0	19	17	40	60
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles, %	12	12	9	9	4	4
Mvmt Flow	59	0	27	24	57	86
Number of Lanes	1	0	0	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	7.8	7.8	7.7
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1
Vol Left, %	40%	0%	53%
Vol Thru, %	0%	100%	47%
Vol Right, %	60%	0%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	100	41	36
LT Vol	40	0	19
Through Vol	0	41	17
RT Vol	60	0	0
Lane Flow Rate	143	59	51
Geometry Grp	1	1	1
Degree of Util (X)	0.154	0.072	0.064
Departure Headway (Hd)	3.877	4.396	4.456
Convergence, Y/N	Yes	Yes	Yes
Cap	913	807	796
Service Time	1.95	2.466	2.528
HCM Lane V/C Ratio	0.157	0.073	0.064
HCM Control Delay	7.7	7.8	7.8
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.5	0.2	0.2

Lanes, Volumes, Timings
5: Highway 211 & SE Gunderson Road

12/13/2019



Lane Group	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations						
Traffic Volume (vph)	21	24	7	129	290	15
Future Volume (vph)	21	24	7	129	290	15
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Storage Length (ft)	0	0	100			100
Storage Lanes	1	0	1			1
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.928					0.850
Flt Protected	0.977		0.950			
Satd. Flow (prot)	1556	0	1630	1716	1716	1458
Flt Permitted	0.977		0.950			
Satd. Flow (perm)	1556	0	1630	1716	1716	1458
Link Speed (mph)	30			30	30	
Link Distance (ft)	827			1043	1164	
Travel Time (s)	18.8			23.7	26.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	23	26	8	140	315	16
Shared Lane Traffic (%)						
Lane Group Flow (vph)	49	0	8	140	315	16
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	26.6% ICU Level of Service A
Analysis Period (min)	15

HCM 6th TWSC
5: Highway 211 & SE Gunderson Road

12/13/2019

Intersection						
Int Delay, s/veh	1.1					
Movement	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations	Y		Y	↑	↑	Y
Traffic Vol, veh/h	21	24	7	129	290	15
Future Vol, veh/h	21	24	7	129	290	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	100	-	-	100
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	23	26	8	140	315	16

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	471	315	331	0	-	0
Stage 1	315	-	-	-	-	-
Stage 2	156	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	551	725	1228	-	-	-
Stage 1	740	-	-	-	-	-
Stage 2	872	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	547	725	1228	-	-	-
Mov Cap-2 Maneuver	547	-	-	-	-	-
Stage 1	735	-	-	-	-	-
Stage 2	872	-	-	-	-	-

Approach	SE	NE	SW
HCM Control Delay, s	11.2	0.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NEL	NET SELn1	SWT	SWR
Capacity (veh/h)	1228	-	629	-
HCM Lane V/C Ratio	0.006	-	0.078	-
HCM Control Delay (s)	8	-	11.2	-
HCM Lane LOS	A	-	B	-
HCM 95th %tile Q(veh)	0	-	0.3	-

Lanes, Volumes, Timings
1: SE 362nd Drive & Dubarko Road

12/13/2019



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	23	111	293	22	201	557
Future Volume (vph)	23	111	293	22	201	557
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	115	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.888		0.991			
Flt Protected	0.992				0.950	
Satd. Flow (prot)	1641	0	1846	0	1787	1881
Flt Permitted	0.992				0.950	
Satd. Flow (perm)	1641	0	1846	0	1787	1881
Link Speed (mph)	25		35			35
Link Distance (ft)	435		701			662
Travel Time (s)	11.9		13.7			12.9
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	2%	1%	1%
Adj. Flow (vph)	25	121	318	24	218	605
Shared Lane Traffic (%)						
Lane Group Flow (vph)	146	0	342	0	218	605
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	46.0%			ICU Level of Service A		
Analysis Period (min)	15					

HCM 6th TWSC
 1: SE 362nd Drive & Dubarko Road

12/13/2019

Intersection						
Int Delay, s/veh	3.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		T		T	T
Traffic Vol, veh/h	23	111	293	22	201	557
Future Vol, veh/h	23	111	293	22	201	557
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	115	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	1	1
Mvmt Flow	25	121	318	24	218	605

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	1371	330	0	0	342
Stage 1	330	-	-	-	-
Stage 2	1041	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.11
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.209
Pot Cap-1 Maneuver	161	712	-	-	1223
Stage 1	728	-	-	-	-
Stage 2	340	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	132	712	-	-	1223
Mov Cap-2 Maneuver	132	-	-	-	-
Stage 1	598	-	-	-	-
Stage 2	340	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	18.7	0	2.3
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	406	1223
HCM Lane V/C Ratio	-	-	0.359	0.179
HCM Control Delay (s)	-	-	18.7	8.6
HCM Lane LOS	-	-	C	A
HCM 95th %tile Q(veh)	-	-	1.6	0.6

Lanes, Volumes, Timings
2: Dubarko Road & Ruben Lane

12/13/2019



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	17	181	88	64	90	35
Future Volume (vph)	17	181	88	64	90	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.943		0.962	
Flt Protected		0.996			0.965	
Satd. Flow (prot)	0	1874	1792	0	1746	0
Flt Permitted		0.996			0.965	
Satd. Flow (perm)	0	1874	1792	0	1746	0
Link Speed (mph)		25	25		25	
Link Distance (ft)		560	633		717	
Travel Time (s)		15.3	17.3		19.6	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	1%	1%	0%	0%	1%	1%
Adj. Flow (vph)	19	203	99	72	101	39
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	222	171	0	140	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	36.1%
Analysis Period (min)	15
	ICU Level of Service A

HCM 6th TWSC
2: Dubarko Road & Ruben Lane

12/13/2019

Intersection						
Int Delay, s/veh	3.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↷		↶	
Traffic Vol, veh/h	17	181	88	64	90	35
Future Vol, veh/h	17	181	88	64	90	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	1	1	0	0	1	1
Mvmt Flow	19	203	99	72	101	39

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	171	0	-	0	376
Stage 1	-	-	-	-	135
Stage 2	-	-	-	-	241
Critical Hdwy	4.11	-	-	-	6.41
Critical Hdwy Stg 1	-	-	-	-	5.41
Critical Hdwy Stg 2	-	-	-	-	5.41
Follow-up Hdwy	2.209	-	-	-	3.509
Pot Cap-1 Maneuver	1412	-	-	-	627
Stage 1	-	-	-	-	894
Stage 2	-	-	-	-	801
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1412	-	-	-	618
Mov Cap-2 Maneuver	-	-	-	-	618
Stage 1	-	-	-	-	881
Stage 2	-	-	-	-	801

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	11.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1412	-	-	-	680
HCM Lane V/C Ratio	0.014	-	-	-	0.207
HCM Control Delay (s)	7.6	0	-	-	11.7
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.8

Lanes, Volumes, Timings
 3: Melissa Avenue & Dubarko Road

12/13/2019



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	90	72	28	62	35	21
Future Volume (vph)	90	72	28	62	35	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.940			0.949		
Flt Protected				0.985	0.970	
Satd. Flow (prot)	1768	0	0	1872	1749	0
Flt Permitted				0.985	0.970	
Satd. Flow (perm)	1768	0	0	1872	1749	0
Link Speed (mph)	25			25	25	
Link Distance (ft)	1479			1123	1279	
Travel Time (s)	40.3			30.6	34.9	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	1%	1%	0%	0%	0%	0%
Adj. Flow (vph)	106	85	33	73	41	25
Shared Lane Traffic (%)						
Lane Group Flow (vph)	191	0	0	106	66	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9		15	15		9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	27.3%
Analysis Period (min)	15
	ICU Level of Service A

HCM 6th TWSC
3: Melissa Avenue & Dubarko Road

12/13/2019

Intersection						
Int Delay, s/veh	2.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	90	72	28	62	35	21
Future Vol, veh/h	90	72	28	62	35	21
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	1	1	0	0	0	0
Mvmt Flow	106	85	33	73	41	25

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	191	0	288
Stage 1	-	-	-	-	149
Stage 2	-	-	-	-	139
Critical Hdwy	-	-	4.1	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	-	-	2.2	-	3.5
Pot Cap-1 Maneuver	-	-	1395	-	707
Stage 1	-	-	-	-	884
Stage 2	-	-	-	-	893
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1395	-	689
Mov Cap-2 Maneuver	-	-	-	-	689
Stage 1	-	-	-	-	862
Stage 2	-	-	-	-	893

Approach	EB	WB	NB
HCM Control Delay, s	0	2.4	10.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	756	-	-	1395	-
HCM Lane V/C Ratio	0.087	-	-	0.024	-
HCM Control Delay (s)	10.2	-	-	7.6	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0.1	-

Lanes, Volumes, Timings
4: Dubarko Road & Bluff Road

12/13/2019



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	29	94	28	33	59	31
Future Volume (vph)	29	94	28	33	59	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.897			0.954		
Flt Protected				0.978	0.968	
Satd. Flow (prot)	1704	0	0	1858	1737	0
Flt Permitted				0.978	0.968	
Satd. Flow (perm)	1704	0	0	1858	1737	0
Link Speed (mph)	25			25	25	
Link Distance (ft)	750			780	615	
Travel Time (s)	20.5			21.3	16.8	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	0%	0%	0%	0%	1%	1%
Adj. Flow (vph)	34	111	33	39	69	36
Shared Lane Traffic (%)						
Lane Group Flow (vph)	145	0	0	72	105	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9		15	15		9
Sign Control	Stop			Stop	Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	25.8% ICU Level of Service A
Analysis Period (min)	15

HCM 6th AWSC
4: Dubarko Road & Bluff Road

12/13/2019

Intersection	
Intersection Delay, s/veh	7.7
Intersection LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	29	94	28	33	59	31
Future Vol, veh/h	29	94	28	33	59	31
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	0	0	0	0	1	1
Mvmt Flow	34	111	33	39	69	36
Number of Lanes	1	0	0	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	7.4	7.8	7.9
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1
Vol Left, %	66%	0%	46%
Vol Thru, %	0%	24%	54%
Vol Right, %	34%	76%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	90	123	61
LT Vol	59	0	28
Through Vol	0	29	33
RT Vol	31	94	0
Lane Flow Rate	106	145	72
Geometry Grp	1	1	1
Degree of Util (X)	0.124	0.148	0.086
Departure Headway (Hd)	4.213	3.682	4.29
Convergence, Y/N	Yes	Yes	Yes
Cap	841	959	825
Service Time	2.29	1.761	2.368
HCM Lane V/C Ratio	0.126	0.151	0.087
HCM Control Delay	7.9	7.4	7.8
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.4	0.5	0.3

Lanes, Volumes, Timings
5: Highway 211 & SE Gunderson Road

12/13/2019



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	22	15	26	373	250	26
Future Volume (vph)	22	15	26	373	250	26
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Storage Length (ft)	0	0	100			100
Storage Lanes	1	0	1			1
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.946					0.850
Flt Protected	0.971		0.950			
Satd. Flow (prot)	1576	0	1630	1716	1716	1458
Flt Permitted	0.971		0.950			
Satd. Flow (perm)	1576	0	1630	1716	1716	1458
Link Speed (mph)	30			45	45	
Link Distance (ft)	1495			875	917	
Travel Time (s)	34.0			13.3	13.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	24	16	28	405	272	28
Shared Lane Traffic (%)						
Lane Group Flow (vph)	40	0	28	405	272	28
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	31.3% ICU Level of Service A
Analysis Period (min)	15

HCM 6th TWSC
5: Highway 211 & SE Gunderson Road

12/13/2019

Intersection						
Int Delay, s/veh	1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↘		↘	↑	↑	↘
Traffic Vol, veh/h	22	15	26	373	250	26
Future Vol, veh/h	22	15	26	373	250	26
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	100	-	-	100
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	24	16	28	405	272	28

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	733	272	300	0	-	0
Stage 1	272	-	-	-	-	-
Stage 2	461	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	388	767	1261	-	-	-
Stage 1	774	-	-	-	-	-
Stage 2	635	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	379	767	1261	-	-	-
Mov Cap-2 Maneuver	379	-	-	-	-	-
Stage 1	757	-	-	-	-	-
Stage 2	635	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.2	0.5	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1261	-	477	-	-
HCM Lane V/C Ratio	0.022	-	0.084	-	-
HCM Control Delay (s)	7.9	-	13.2	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.3	-	-

Bailey Meadows Subdivision

Traffic Impact Analysis

Sandy, Oregon

Date:

June 20, 2019

Prepared for:

Cody Bjugan, Allied Homes & Development

Prepared by:

Jessica Hijar

Todd Mobley, PE



RENEWS: 12/31/2020



LANCASTER
ENGINEERING



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Executive Summary

1. A 100-lot single family detached swelling unit subdivision is proposed for the following tax lots in Sandy, Oregon: 24E23 800, 801, 802, 803, and 804.
2. Access to the project is planned via an existing right-of-way street stub on Melissa Avenue that was created to provide access to the subject site as part of the adjoining Nicholas Glen No. 2 subdivision.
3. The proposed subdivision is calculated to generate 74 trips during the morning peak hour, 99 trips during the evening peak hour, and 944 trips each weekday.
4. Based on a review of the most recent five years of crash history, no significant safety issues or trends are evident at the study intersections.
5. Due to insufficient major and minor street volumes, preliminary traffic signal warrants were not met at the study intersections under all analysis scenarios.
6. Left-turn lane warrants were analyzed for the intersection of Melissa Avenue at Dubarko Road and not met under any analysis scenario.
7. All study intersections, including the intersection of Melissa Avenue at Dubarko Road, are currently operating within the City's performance standards and are projected to continue operating acceptably through year 2022, with or without the addition of site trips from the proposed development.



Project Description

Introduction

The proposed development will include the construction of a 100-lot subdivision to be located on tax lots 24E23 800, 801, 802, 803, and 804 in Sandy, Oregon. The site is currently within the City of Sandy Urban Growth Boundary, the city limits, and is zoned Single Family Residential (SFR), which allows the subdivision as proposed. The project will be built in three phases, with the expected completion year of 2022.

This report includes traffic counts and a full operational analysis at the intersections listed below. This scope was developed based on City of Sandy's Traffic Impact Analysis (TIA) requirements and was approved by Replinger and Associates, the City's consulting transportation engineer. Coordination of the scope of work with the Oregon Department of Transportation (ODOT) was not necessary since no intersections on the state highway are affected.

1. SE 362nd Drive at Dubarko Road,
2. Ruben Lane at Dubarko Road,
3. Dubarko Road at Melissa Avenue, and
4. Dubarko Road at Bluff Road.

The purpose of this study is to determine whether the transportation system within the vicinity of the site is capable of supporting the existing uses as well as the proposed subdivision and to determine if mitigation is necessary. Detailed information on traffic counts, trip generation calculations, safety analyses, and level-of-service calculations is included in the appendix to this report.

Location Description

The subject site is located south of Rachel Drive and west of Ponder Lane in Sandy, Oregon. Although roadway stubs will be provided within the site for future roadway connections, access to the project is planned via an existing right-of-way street stub on Melissa Avenue that was created to provide access to the subject site as part of the adjoining Nicholas Glen No. 2 subdivision.

Access to the subdivision cannot be provided via SE Ponder Lane in the southeast corner of the site since the existing right-of-way along SE Ponder Lane does not allow for two directions of travel and the current configuration of SE Ponder Lane at Highway 211 cannot support additional vehicle trips. There is not sufficient right-of-way available to realign Ponder Lane at its intersection with Highway 211. It is expected that additional access will be available to the east of the site as other properties develop.

Vicinity Streets

Five roadways have been identified in the traffic study scope. Table 1 provides a description of each of the roadways.



Table 1: Vicinity Roadway Descriptions

Street Name	Jurisdiction	Classification	Speed (MPH)	Curbs	Sidewalks	Bicycle Lanes
SE 362 nd Drive	City of Sandy	Rural Minor Arterial	35 mph posted	Partial	Partial	Partial
Ruben Lane	City of Sandy	Collector	25 mph posted	Yes	Partial	Yes
Dubarko Road	City of Sandy	Minor Arterial	25 mph posted	Yes	Yes	Partial
Melissa Avenue	City of Sandy	Local Road	25 mph statutory	Yes	Yes	No
Bluff Road	City of Sandy	Minor Arterial	25 mph posted	Partial	Partial	Partial

Study Intersections

Four nearby intersections were identified in discussions with City staff that are expected to be impacted by the proposed project. Table 2 below provides a summary of each of the study intersections.

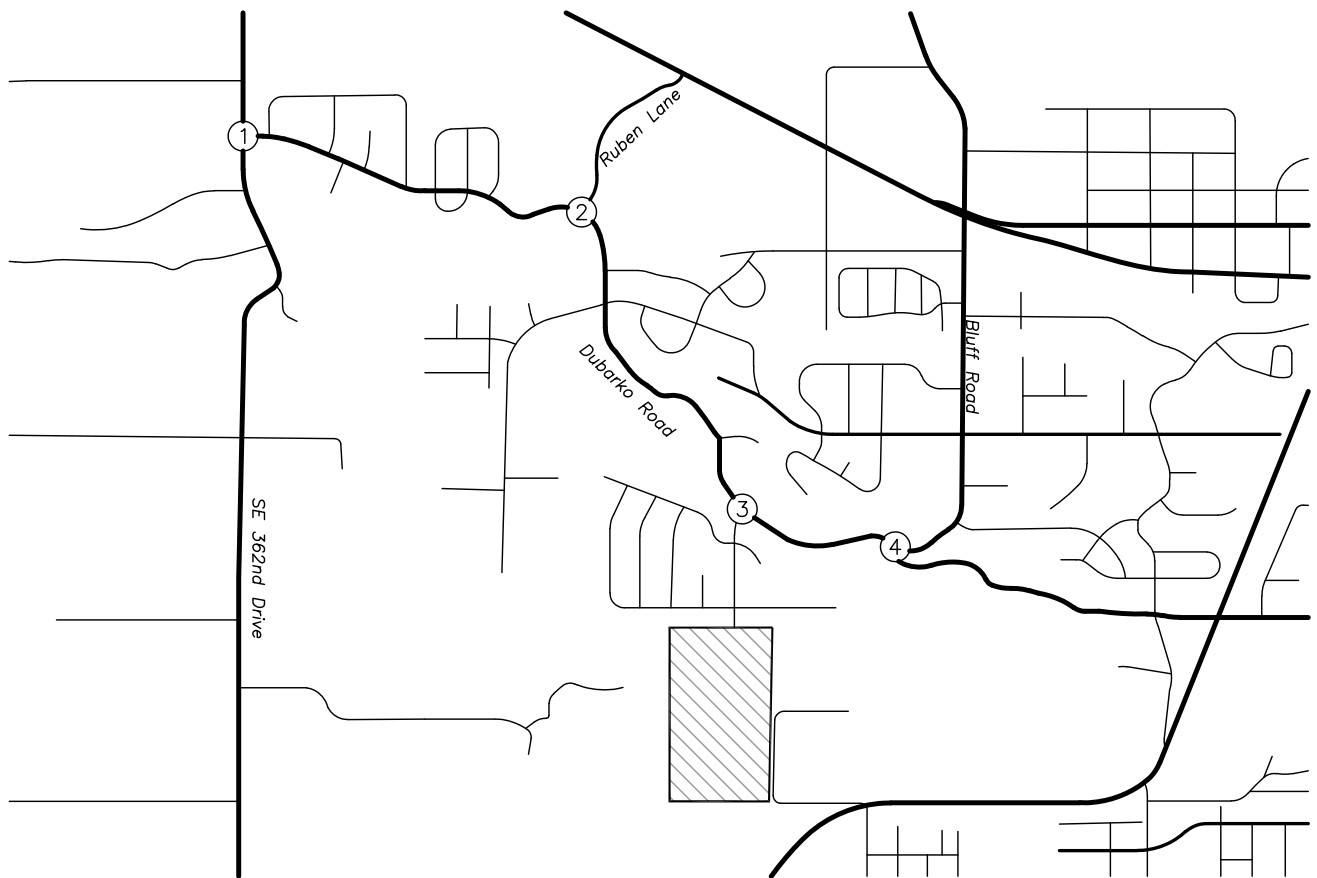
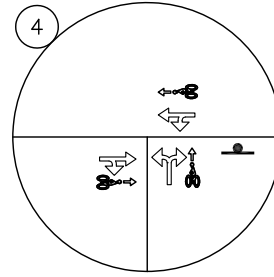
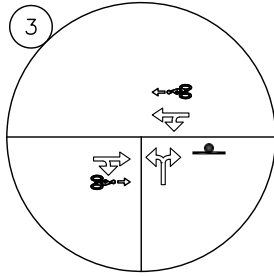
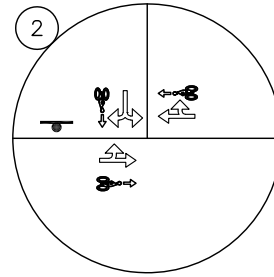
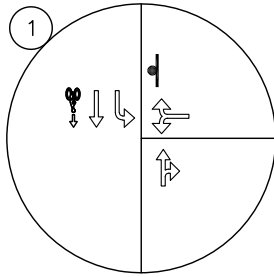
Table 2: Vicinity Intersection Descriptions

Number	Intersection	Geometry	Traffic Control	Stopped Approaches
1	SE 362 nd Drive at Dubarko Road	Three-Legged	Two-Way Stop Controlled	Westbound
2	Ruben Lane at Dubarko Road	Three-Legged	Two-Way Stop Controlled	Southbound
3	Dubarko Road at Melissa Avenue	Three-Legged	Two-Way Stop Controlled	Northbound
4	Dubarko Road at Bluff Rod	Three-Legged	All-Way Stop Controlled	All

The figure on the following page shows the site vicinity and the study intersection configurations.

LEGEND

-  STUDY INTERSECTION (EXISTING)
-  STOP SIGN
-  BIKE LANE
-  PROJECT SITE
-  ARTERIAL ROADWAY
-  COLLECTOR ROADWAY
-  LOCAL ROADWAY



VICINITY MAP



FIGURE 1

PAGE 4



Site Trips

Trip Generation

To estimate the number of trips that will be generated by the proposed use, trip rates from the *Trip Generation Manual*¹ were used. Data from land use codes 210, *Single-Family Detached Housing*, was used to estimate the proposed development's trip generation based on the number of dwelling units.

The trip generation calculations show that the proposed subdivision is projected to generate 74 morning peak hour trips, 99 evening peak hour trips, and 944 average weekday trips. The trip generation estimates are summarized in Table 3 below and detailed trip generation calculations are included as an attachment to this report.

Table 3: Trip Generation Summary

Land Use Code	Size	Morning Peak Hour			Evening Peak Hour			Weekday Total
		In	Out	Total	In	Out	Total	
210 – Single-Family Detached Housing	100 units	19	55	74	62	37	99	944

Custom Trip Rates

Based on traffic counts collected at the existing intersection of Melissa Avenue at Dubarko Road and 24-hour counts collected along Melissa Avenue, a localized trip rate was derived for the existing subdivision that accesses Dubarko Road via Melissa Avenue. The custom trip rate was calculated to be 0.49 trips per unit during the morning peak hour, 0.63 trips per unit during the evening peak hour, and 6.90 trips per unit during each weekday. A comparison of the ITE trip rates and the trip rates based on localized data is provided in the following table.

Table 4: Trip Rate Comparison

Data	Morning Trip Rate	Evening Trip Rate	Weekday Trip Rate
ITE	0.74 trips/unit	0.99 trips/unit	9.44 trips/unit
Local Data	0.49 trips/unit	0.63 trips/unit	6.90 trips/unit

Since the localized data shows lower trip rates during all analysis periods, it can be expected that the proposed subdivision will yield site trips at a similar rate. Although this lower trip generation rate was not used for analysis, it should be noted that the trip generation based on ITE rates represents a conservative, worst-case analysis.

¹ Institute of Transportation Engineers (ITE), *Trip Generation Manual*, 10th Edition, 2017.



Trip Distribution

The directional distribution of site trips to and from the proposed development was calculated based on travel patterns of trips to and from the existing neighborhood that is served by Melissa Avenue. In addition, the locations of likely trip destinations, locations of major transportation facilities in the site vicinity, and existing travel patterns at the study intersections.

The following trip distribution was estimated and used for analysis:

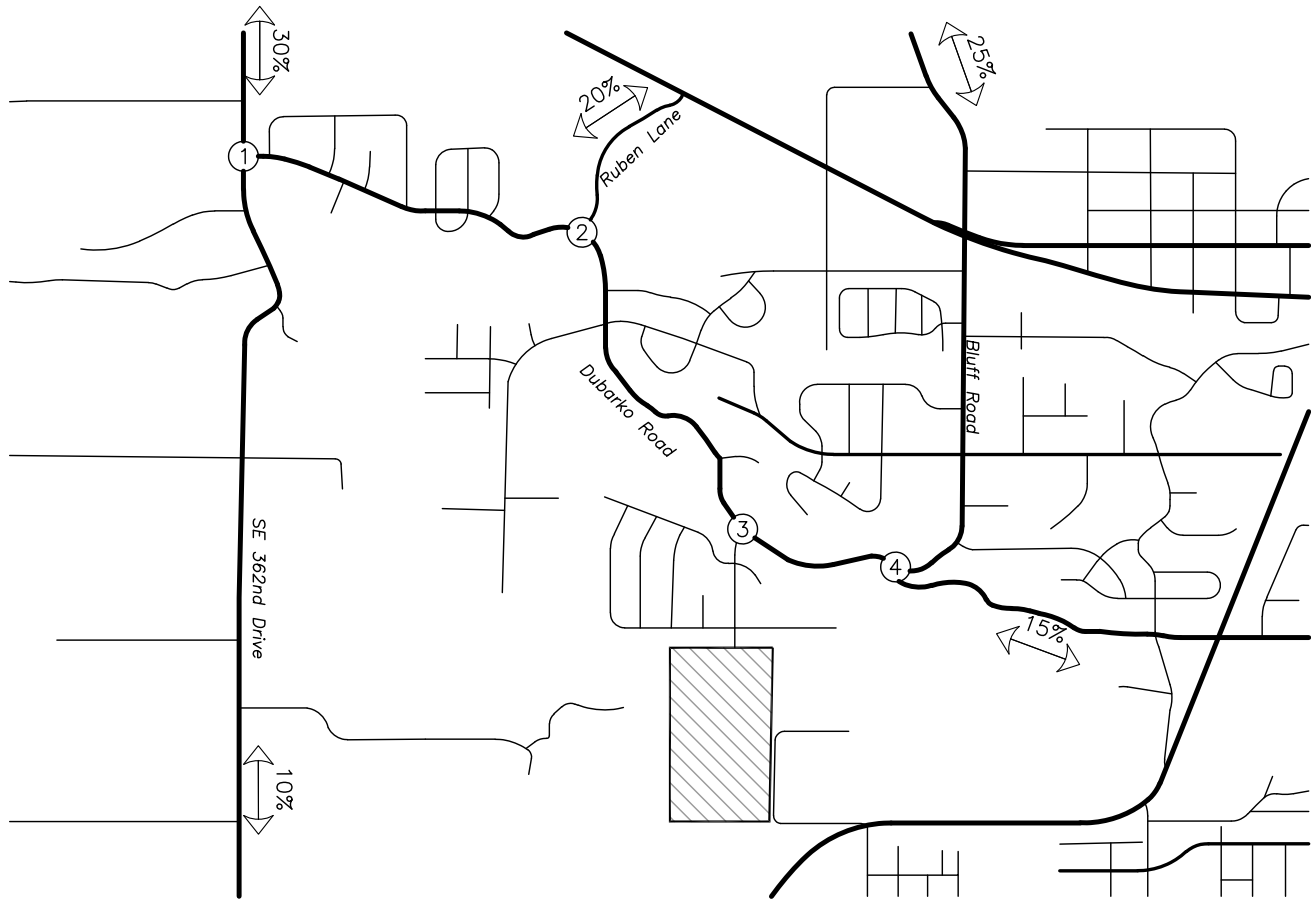
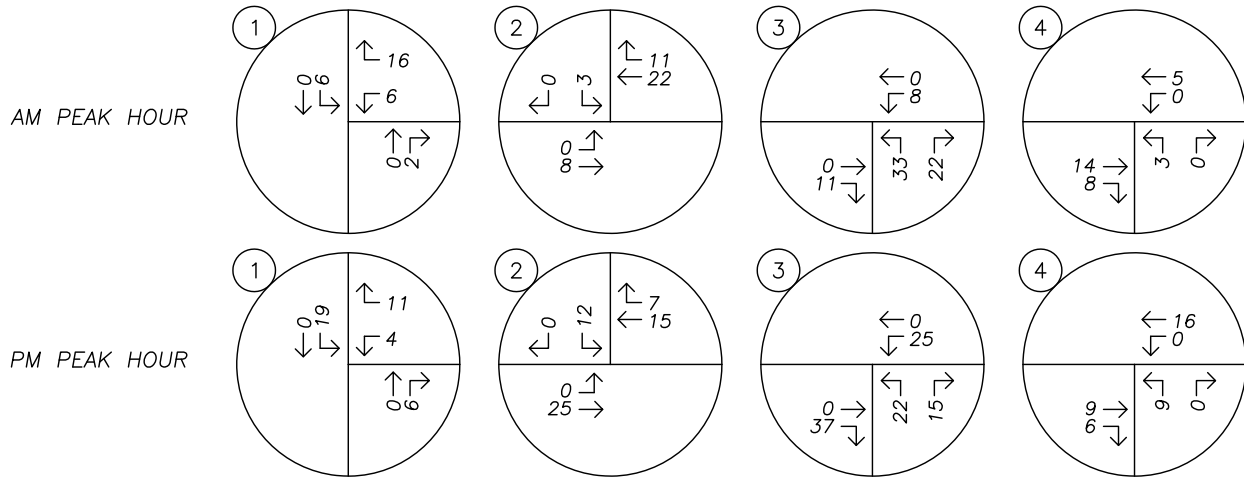
- Approximately 30 percent of site trips will travel to/from the north along SE 362nd Drive;
- Approximately 25 percent of site trips will travel to/from the north along Bluff Road;
- Approximately 20 percent of site trips will travel to/from the north on Ruben Lane;
- Approximately 15 percent of site trips will travel to/from the east along Dubarko Road; and
- Approximately 10 percent of site trips will travel to/from the south along SE 362nd Drive.

Figure 2 on page 7 shows the distribution and assignment of site trips for the proposed development.

LEGEND

XX% PERCENT OF PROJECT TRIPS

TRIP GENERATION			
	IN	OUT	TOTAL
AM	19	55	74
PM	62	37	99



SITE TRIP DISTRIBUTION & ASSIGNMENT
 Proposed Development Plan – Site Trips
 AM & PM Peak Hours



FIGURE
2

PAGE
7



Traffic Volumes

Existing Conditions

Traffic counts were conducted at the intersection of Melissa Avenue at Dubarko Road on Thursday, April 25th, 2019 from 7:00 AM to 9:00 AM, and from 4:00 PM to 6:00 PM. Traffic counts were conducted at all other study intersections on Wednesday, May 22nd, 2019 from 4:00 PM to 6:00 PM, and on Thursday, May 23rd, 2019 from 7:00 AM to 9:00 AM. Each intersection's respective morning and evening peak hours were used for analysis.

Background Conditions

In order to calculate the future traffic volumes on local streets, an exponential growth rate of two percent per year for an assumed period of three years was applied to the measured existing traffic volumes to approximate year 2022 background conditions.

In-Process Trips

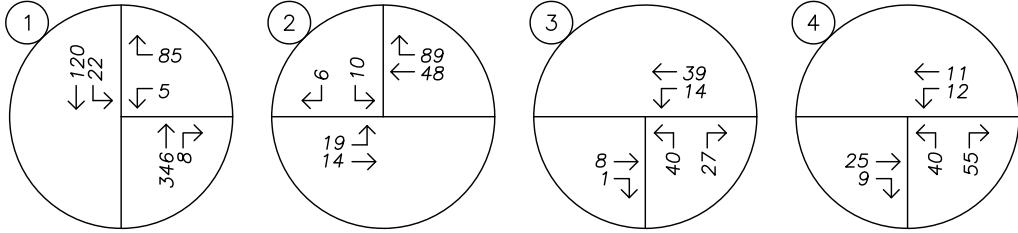
In-process trips associated with previously approved developments were added to the background volumes in order to represent future traffic volumes at the study intersections prior to the approval of the subject development. Trips associated with the approved 138-unit Sandy Heights Apartments were added to the study intersections.

Buildout Conditions

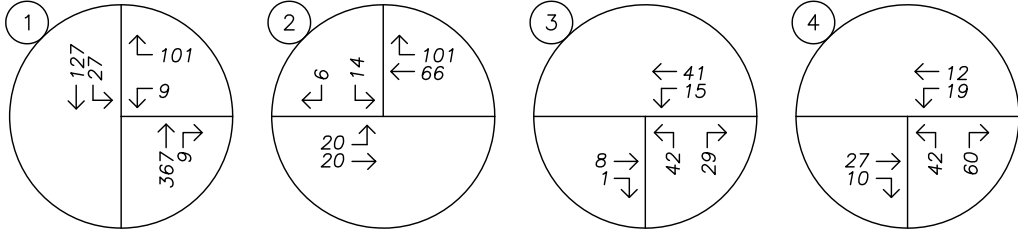
Trips to be generated by the proposed development, as described earlier within the *Site Trips* section, were added to the projected year 2022 background traffic volumes to obtain the expected year 2022 buildout volumes.

Figure 3 on page 9 shows the existing, year 2022 background, and year 2022 buildout traffic volumes for the morning peak hour. Figure 4 on page 10 shows the existing, year 2022 background, and year 2022 buildout traffic volumes for the evening peak hour.

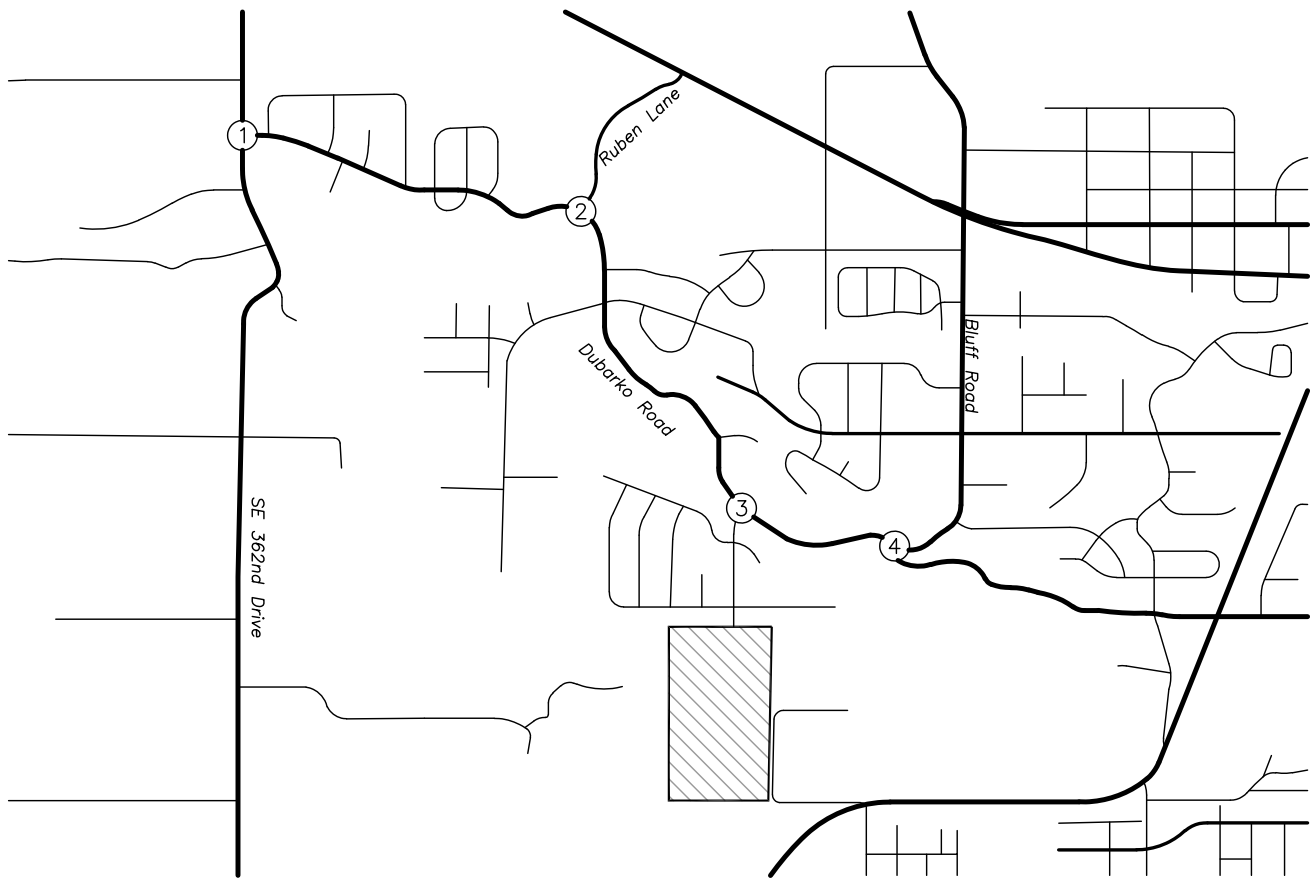
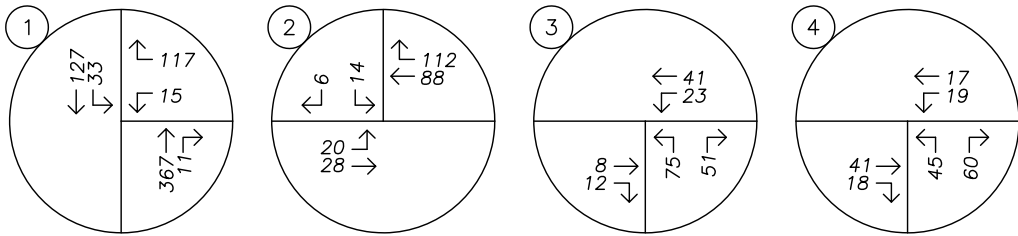
Year 2019
Existing Conditions



Year 2022
Background Conditions



Year 2022
Buildout Conditions



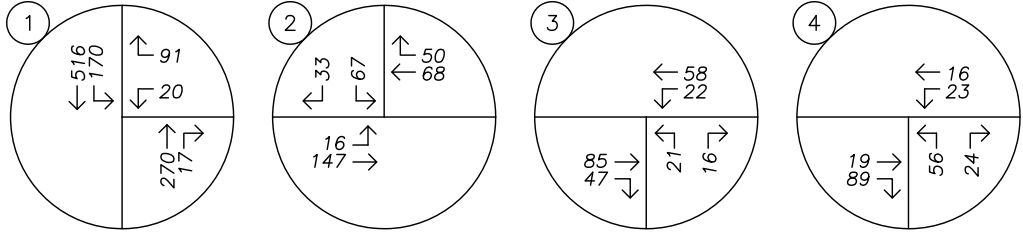
TRAFFIC VOLUMES
All Analysis Scenarios
AM Peak Hour



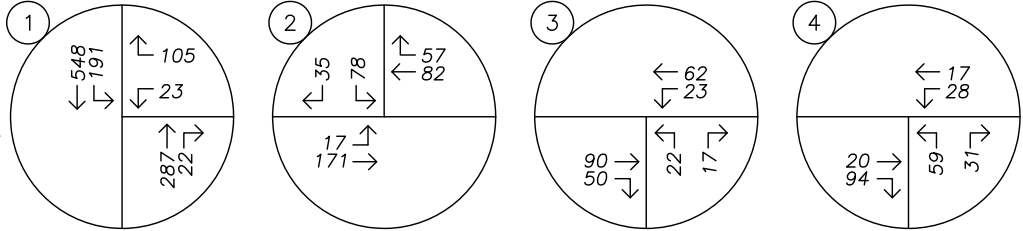
FIGURE
3

PAGE
9

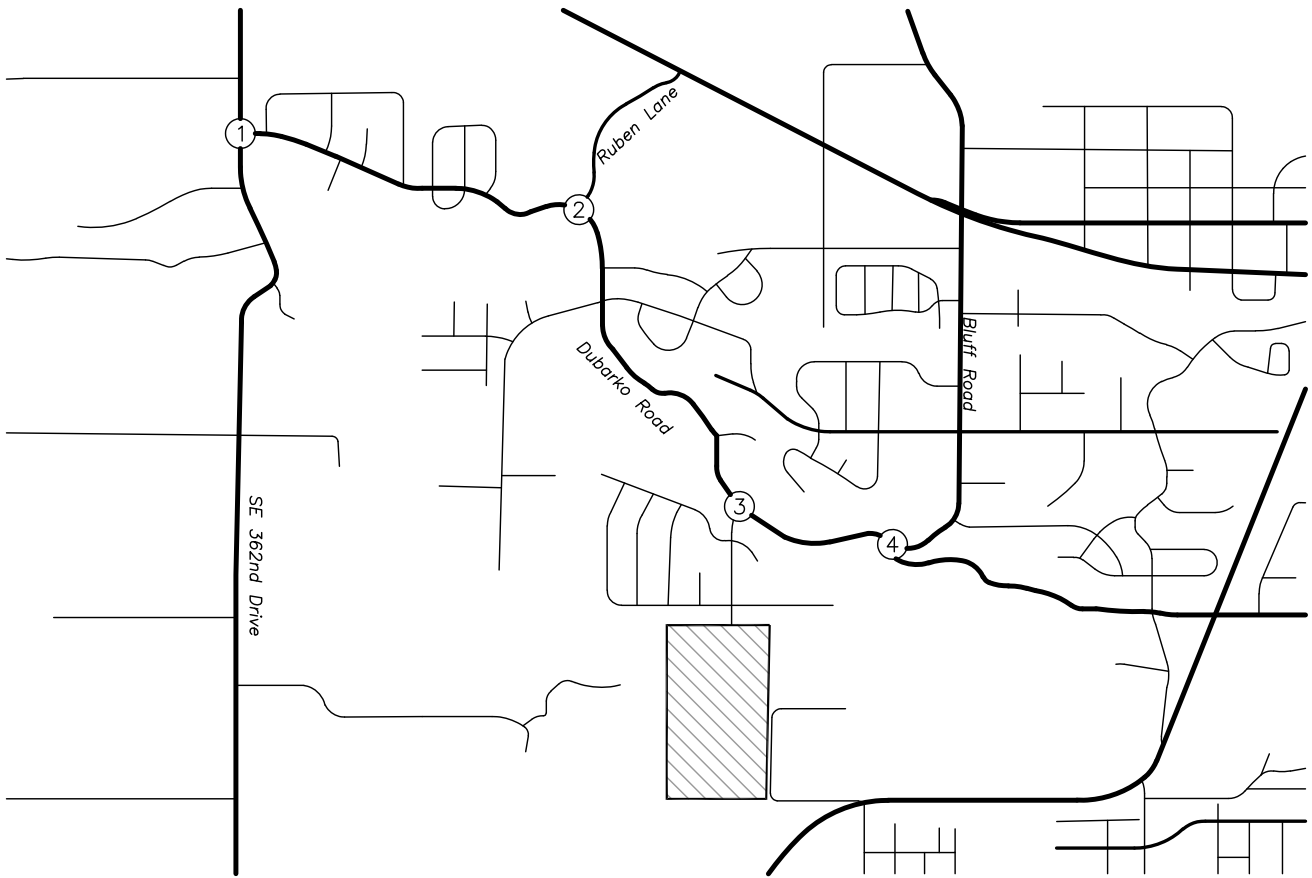
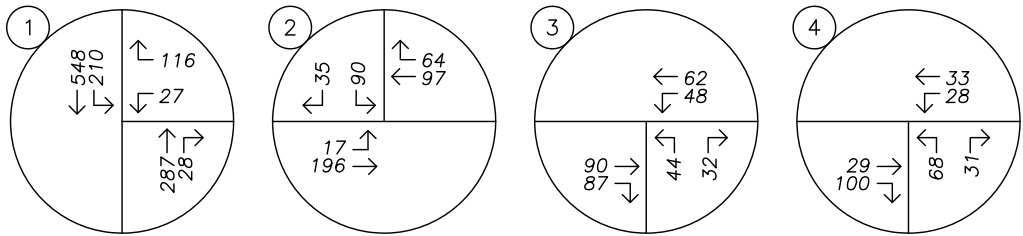
Year 2019
Existing Conditions



Year 2022
Background Conditions



Year 2022
Buildout Conditions



TRAFFIC VOLUMES
All Analysis Scenarios
PM Peak Hour



FIGURE
4

PAGE
10



Safety Analysis

Crash History Review

Using data obtained from the ODOT's Crash Analysis and Reporting Unit, a review of the most recent available five years of crash history (January 2012 to December 2016) at the study intersections was performed. The crash data was evaluated based on the number of crashes, the type of collisions, the severity of the collisions, and the resulting crash rate for the intersection. Crash rates provide the ability to compare safety risks at different intersections by accounting for both the number of crashes that have occurred during the study period and the number of vehicles that typically travel through the intersection. Crash rates were calculated using the common assumption that traffic counted during the evening peak hour represents approximately 10 percent of the annual average daily traffic (AADT) at the intersection. Crash rates in excess of 1.0 crashes per million entering vehicles (CMEV) may be indicative of design deficiencies and therefore require a need for further investigation and possible mitigation.

Table 5: Crash Analysis Summary

Intersection	Crash Type		Crash Severity	Total	AADT	Crash Rate
	Turn	Sideswipe	PDO			
Dubarko Road at SE 362 nd Drive	0	1	1	1	10,840	0.05
Dubarko Road at Melissa Avenue	2	0	2	2	2,490	0.44

The calculated crash rates at the intersections of Dubarko Road at SE 362nd Drive and at Melissa Avenue are not indicative of safety deficiencies or design flaws. No mitigation is recommended.

No reported crashes were found at the intersections of Dubarko Road at Ruben Lane and Dubarko Road at Bluff Road during the analysis period. Accordingly, no safety concerns were identified at these study intersections.

Warrant Analysis

Traffic Signal Warrants

Traffic signal warrants were examined for all study intersections based on the methodologies in the *Manual on Uniform Traffic Control Devices*² (MUTCD). Warrant 1, *Eight Hour Vehicular Volumes*, was used from the MUTCD. Warrants were evaluated based on the common assumption that traffic counted during the evening peak hour represents ten percent of the AADT. Volumes were used for the year 2022 buildout conditions. Traffic signal warrants were not met at any of the study intersections due to low major and minor street

² Federal Highway Administration (FTA), America Traffic Safety Services Association (ATSSA), Institute of Transportation Engineers (ITE), American Association of State Highway and Transportation Officials (AASHTO), *Manual on Uniform Traffic Control Devices for Streets and Highways* (MUTCD), 2009 Edition, 2010.



traffic volumes. Detailed information on the traffic signal warrant analysis is included in the attached appendix.

Left-Turn Lane Warrants

Left-turn lane warrants were examined for the westbound left-turn lane at the intersection of Melissa Avenue at Dubarko Road. A left-turn refuge is primarily a safety consideration for the major-street approach, removing left-turning vehicles from the through traffic stream. Warrants were based on the methodology outlined in the National Cooperative Highway Research Program (NCHRP) Report Number 457³. These turn-lane warrants were evaluated based on the number of left-turning vehicles, the number of advancing and opposing vehicles, and the roadway travel speed.

Left-turn lanes were not warranted during any of the analysis scenarios. No new left-turn lanes are recommended.

³ Bonneson, James A. and Michael D. Fontaine, *NCHRP Report 457: An Engineering Study Guide for Evaluating Intersection Improvements*, Transportation Research Board, 2001.



Operational Analysis

Delay & Capacity Analysis

A capacity and delay analysis was conducted for the study intersection per the unsignalized intersection analysis methodologies in the *Highway Capacity Manual*⁴ (HCM). Intersections are generally evaluated based on the average control delay experienced by vehicles and are assigned a grade according to their operation. The level of service (LOS) of an intersection can range from LOS A, which indicates very little or no delay experienced by vehicles, to LOS F, which indicates a high degree of congestion and delay. The volume-to-capacity (v/c) ratio is a measure that compares the traffic volumes (demand) against the available capacity of an intersection.

The City of Sandy’s Transportation System Plan states that both signalized and unsignalized intersections are required to operate at LOS D or better.

Based on the results of the operational analysis, shown in Table 6, the study intersections are currently operating acceptably and are projected to continue operating acceptably through the 2022 buildout year of the site. Detailed calculations as well as tables showing the relationship between delay and LOS are included in the appendix to this report.

Table 6: Intersection Capacity Analysis Summary

	Morning Peak Hour			Evening Peak Hour		
	Delay	LOS	V/C	Delay	LOS	V/C
SE 362nd Drive at Dubarko Road						
Existing Conditions	12	B	0.17	16	C	0.27
Year 2022 Background Conditions	13	B	0.22	18	C	0.34
Year 2022 Buildout Conditions	13	B	0.27	21	C	0.40
Ruben Lane at Dubarko Road						
Existing Conditions	9	A	0.02	11	B	0.15
Year 2022 Background Conditions	10	A	0.03	11	B	0.18
Year 2022 Buildout Conditions	10	A	0.03	12	B	0.21
Dubarko Road at Melissa Avenue						
Existing Conditions	9	A	0.09	10	A	0.05
Year 2022 Background Conditions	9	A	0.09	10	A	0.06
Year 2022 Buildout Conditions	10	A	0.17	11	B	0.12
Dubarko Road at Bluff Road						
Existing Conditions	8	A	0.15	8	A	0.13
Year 2022 Background Conditions	8	A	0.16	8	A	0.14
Year 2022 Buildout Conditions	8	A	0.17	8	A	0.16

⁴ Transportation Research Board, *Highway Capacity Manual, 6th Edition, 2016.*



Conclusions

Based on a review of the most recent five years of crash history, no significant safety issues or trends are evident at the study intersections.

Due to insufficient major and minor street volumes, traffic signal warrants were not met at the study intersections under all analysis scenarios.

Left-turn lane warrants were analyzed for the intersection of Melissa Avenue at Dubarko Road and not estimated to be met under any analysis scenario.

All study intersections, including the intersection of Melissa Avenue and Dubarko Road are currently operating within the City's performance standards and are projected to continue operating acceptably through year 2022, with or without the addition of site trips from the proposed development.



Appendix



TRIP GENERATION CALCULATIONS

Land Use: Single-Family Detached Housing
Land Use Code: 210
Setting/Location: General Urban/Suburban
Variable: Dwelling Units
Variable Value: 100

AM PEAK HOUR

Trip Rate: 0.74

	Enter	Exit	Total
Directional Distribution	25%	75%	
Trip Ends	19	55	74

PM PEAK HOUR

Trip Rate: 0.99

	Enter	Exit	Total
Directional Distribution	63%	37%	
Trip Ends	62	37	99

WEEKDAY

Trip Rate: 9.44

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	472	472	944

SATURDAY

Trip Rate: 9.54

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	477	477	954

All Traffic Data Services, Inc.
alltrafficdata.net

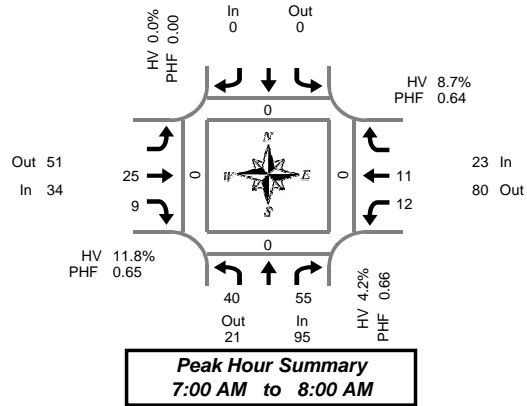
Melissa Ave S-O Dubarko Rd

Start Time	25-Apr-19 Thu	NB	SB							Total
12:00 AM		2	5							7
01:00		1	1							2
02:00		1	0							1
03:00		7	2							9
04:00		20	1							21
05:00		30	5							35
06:00		57	11							68
07:00		67	15							82
08:00		37	17							54
09:00		30	17							47
10:00		25	18							43
11:00		23	22							45
12:00 PM		35	25							60
01:00		16	24							40
02:00		29	46							75
03:00		35	58							93
04:00		44	64							108
05:00		30	54							84
06:00		32	74							106
07:00		28	40							68
08:00		16	36							52
09:00		9	30							39
10:00		5	12							17
11:00		0	4							4
Total		579	581							1160
Percent		49.9%	50.1%							
AM Peak	-	07:00	11:00	-	-	-	-	-	-	07:00
Vol.	-	67	22	-	-	-	-	-	-	82
PM Peak	-	16:00	18:00	-	-	-	-	-	-	16:00
Vol.	-	44	74	-	-	-	-	-	-	108
Grand Total		579	581							1160
Percent		49.9%	50.1%							
ADT		ADT 11,874	AADT 11,874							

Total Vehicle Summary



Clay Carney
(503) 833-2740



Dubarko Rd & Bluff Rd

Thursday, May 23, 2019
7:00 AM to 9:00 AM

5-Minute Interval Summary 7:00 AM to 9:00 AM

Interval Start Time	Northbound Dubarko Rd			Southbound Dubarko Rd			Eastbound Bluff Rd			Westbound Bluff Rd			Interval Total	Pedestrians Crosswalk				
	L	R	Bikes			Bikes	T	R	Bikes	L	T	Bikes		North	South	East	West	
7:00 AM	3	4	0			0	2	1	0	0	1	0	0	11	0	0	0	0
7:05 AM	1	8	0			0	2	0	0	1	0	0	0	12	0	0	0	0
7:10 AM	3	7	0			0	5	1	0	2	1	0	0	19	0	0	0	0
7:15 AM	8	6	0			0	4	0	0	0	1	0	0	19	0	0	0	0
7:20 AM	2	7	0			0	0	0	0	1	1	0	0	11	0	0	0	0
7:25 AM	6	7	0			0	3	2	0	4	2	0	0	24	0	0	0	0
7:30 AM	3	2	0			0	6	1	0	1	0	0	0	13	0	0	0	0
7:35 AM	1	3	0			0	1	0	0	1	1	0	0	7	0	0	0	0
7:40 AM	3	1	0			0	1	1	0	1	1	0	0	8	0	0	0	0
7:45 AM	1	2	0			0	0	2	0	1	0	0	0	6	0	0	0	0
7:50 AM	5	6	0			0	1	0	0	0	3	0	0	15	0	0	0	0
7:55 AM	4	2	0			0	0	1	0	0	0	0	0	7	0	0	0	0
8:00 AM	2	1	0			0	1	2	0	2	0	0	0	8	0	0	0	0
8:05 AM	2	1	0			0	0	1	0	0	0	0	0	4	0	0	0	0
8:10 AM	1	5	0			0	2	0	0	1	2	0	0	11	0	0	0	0
8:15 AM	2	7	0			0	0	0	0	2	1	0	0	12	0	0	0	0
8:20 AM	3	2	0			0	3	0	0	1	0	0	0	9	0	0	0	0
8:25 AM	3	5	0			0	1	3	0	1	0	0	0	13	0	0	0	0
8:30 AM	0	5	0			0	0	2	0	1	0	0	0	8	0	0	0	0
8:35 AM	3	0	0			0	0	2	0	0	0	0	0	5	0	0	0	0
8:40 AM	3	2	0			0	0	2	0	0	1	0	0	8	0	0	0	0
8:45 AM	1	1	0			0	1	1	0	3	1	0	0	8	0	0	0	0
8:50 AM	0	1	0			0	0	1	0	1	0	0	0	3	0	0	0	0
8:55 AM	1	0	0			0	0	2	0	0	0	0	0	3	0	0	0	0
Total Survey	61	85	0			0	33	25	0	24	16	0	0	244	0	0	0	0

15-Minute Interval Summary 7:00 AM to 9:00 AM

Interval Start Time	Northbound Dubarko Rd			Southbound Dubarko Rd			Eastbound Bluff Rd			Westbound Bluff Rd			Interval Total	Pedestrians Crosswalk				
	L	R	Bikes			Bikes	T	R	Bikes	L	T	Bikes		North	South	East	West	
7:00 AM	7	19	0			0	9	2	0	3	2	0	0	42	0	0	0	0
7:15 AM	16	20	0			0	7	2	0	5	4	0	0	54	0	0	0	0
7:30 AM	7	6	0			0	8	2	0	3	2	0	0	28	0	0	0	0
7:45 AM	10	10	0			0	1	3	0	1	3	0	0	28	0	0	0	0
8:00 AM	5	7	0			0	3	3	0	3	2	0	0	23	0	0	0	0
8:15 AM	8	14	0			0	4	3	0	4	1	0	0	34	0	0	0	0
8:30 AM	6	7	0			0	0	6	0	1	1	0	0	21	0	0	0	0
8:45 AM	2	2	0			0	1	4	0	4	1	0	0	14	0	0	0	0
Total Survey	61	85	0			0	33	25	0	24	16	0	0	244	0	0	0	0

Peak Hour Summary 7:00 AM to 8:00 AM

By Approach	Northbound Dubarko Rd			Southbound Dubarko Rd			Eastbound Bluff Rd			Westbound Bluff Rd			Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	95	21	116	0	0	0	0	0	34	51	85	0	23	80	103	0	152
%HV	4.2%				0.0%				11.8%				8.7%			6.6%	
PHF	0.66				0.00				0.65				0.64			0.70	

By Movement	Northbound Dubarko Rd			Southbound Dubarko Rd			Eastbound Bluff Rd			Westbound Bluff Rd			Total				
	L	R	Total			Total	T	R	Total	L	T	Total					
Volume	40	55	95			0	25	9	34	12	11	23	152				
%HV	2.5%	NA	5.5%	4.2%	NA	NA	NA	0.0%	NA	12.0%	11.1%	11.8%	8.3%	9.1%	NA	8.7%	6.6%
PHF	0.63		0.65	0.66			0.57	0.75	0.65	0.50	0.69	0.64	0.70				

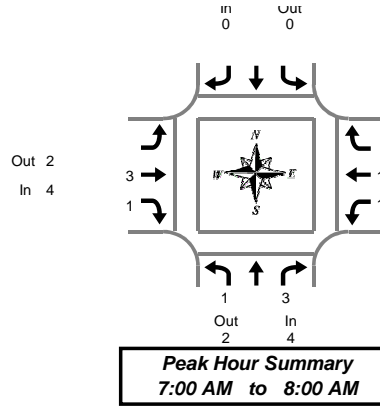
Rolling Hour Summary 7:00 AM to 9:00 AM

Interval Start Time	Northbound Dubarko Rd			Southbound Dubarko Rd			Eastbound Bluff Rd			Westbound Bluff Rd			Interval Total	Pedestrians Crosswalk				
	L	R	Bikes			Bikes	T	R	Bikes	L	T	Bikes		North	South	East	West	
7:00 AM	40	55	0			0	25	9	0	12	11	0	0	152	0	0	0	0
7:15 AM	38	43	0			0	19	10	0	12	11	0	0	133	0	0	0	0
7:30 AM	30	37	0			0	16	11	0	11	8	0	0	113	0	0	0	0
7:45 AM	29	38	0			0	8	15	0	9	7	0	0	106	0	0	0	0
8:00 AM	21	30	0			0	8	16	0	12	5	0	0	92	0	0	0	0

Heavy Vehicle Summary



Clay Carney
(503) 833-2740



Dubarko Rd & Bluff Rd

Thursday, May 23, 2019
7:00 AM to 9:00 AM

Peak Hour Summary
7:00 AM to 8:00 AM

Heavy Vehicle 5-Minute Interval Summary

7:00 AM to 9:00 AM

Interval Start Time	Northbound Dubarko Rd			Southbound Dubarko Rd			Eastbound Bluff Rd			Westbound Bluff Rd			Interval Total		
	L	R	Total			Total	T	R	Total	L	T	Total			
7:00 AM	0	0	0			0			0	0	1	1	1		
7:05 AM	0	1	1			0			0	0	1	1	2		
7:10 AM	0	0	0			0			1	0	0	0	1		
7:15 AM	1	0	1			0			1	0	0	0	2		
7:20 AM	0	0	0			0			0	0	0	0	0		
7:25 AM	0	0	0			0			0	0	0	0	0		
7:30 AM	0	0	0			0			1	0	1	0	1		
7:35 AM	0	1	1			0			0	0	0	0	1		
7:40 AM	0	0	0			0			0	1	1	0	1		
7:45 AM	0	0	0			0			0	0	0	0	0		
7:50 AM	0	1	1			0			0	0	0	0	1		
7:55 AM	0	0	0			0			0	0	0	0	0		
8:00 AM	0	0	0			0			0	0	0	0	0		
8:05 AM	0	0	0			0			0	0	0	0	0		
8:10 AM	0	1	1			0			0	0	0	0	1		
8:15 AM	1	0	1			0			0	0	0	0	1		
8:20 AM	0	0	0			0			1	0	1	0	1		
8:25 AM	0	1	1			0			0	0	0	0	1		
8:30 AM	0	1	1			0			0	0	0	0	1		
8:35 AM	0	0	0			0			0	0	0	0	0		
8:40 AM	0	0	0			0			0	0	0	0	0		
8:45 AM	0	0	0			0			0	0	0	0	0		
8:50 AM	0	0	0			0			0	0	0	0	0		
8:55 AM	0	0	0			0			0	0	0	0	0		
Total Survey	2	6	8			0			4	1	5	1	1	2	15

Heavy Vehicle 15-Minute Interval Summary

7:00 AM to 9:00 AM

Interval Start Time	Northbound Dubarko Rd			Southbound Dubarko Rd			Eastbound Bluff Rd			Westbound Bluff Rd			Interval Total		
	L	R	Total			Total	T	R	Total	L	T	Total			
7:00 AM	0	1	1			0			1	0	1	1	1	4	
7:15 AM	1	0	1			0			1	0	1	0	0	2	
7:30 AM	0	1	1			0			1	1	2	0	0	3	
7:45 AM	0	1	1			0			0	0	0	0	0	1	
8:00 AM	0	1	1			0			0	0	0	0	0	1	
8:15 AM	1	1	2			0			1	0	1	0	0	3	
8:30 AM	0	1	1			0			0	0	0	0	0	1	
8:45 AM	0	0	0			0			0	0	0	0	0	0	
Total Survey	2	6	8			0			4	1	5	1	1	2	15

Heavy Vehicle Peak Hour Summary

7:00 AM to 8:00 AM

By Approach	Northbound Dubarko Rd			Southbound Dubarko Rd			Eastbound Bluff Rd			Westbound Bluff Rd			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	4	2	6	0	0	0	4	2	6	2	6	8	10
PHF	0.50			0.00			0.50			0.25			0.50

By Movement	Northbound Dubarko Rd			Southbound Dubarko Rd			Eastbound Bluff Rd			Westbound Bluff Rd			Total
	L	R	Total			Total	T	R	Total	L	T	Total	
Volume	1	3	4			0	3	1	4	1	1	2	10
PHF	0.25	0.75	0.50			0.00	0.38	0.25	0.50	0.25	0.25	0.25	0.50

Heavy Vehicle Rolling Hour Summary

7:00 AM to 9:00 AM

Interval Start Time	Northbound Dubarko Rd			Southbound Dubarko Rd			Eastbound Bluff Rd			Westbound Bluff Rd			Interval Total		
	L	R	Total			Total	T	R	Total	L	T	Total			
7:00 AM	1	3	4			0			3	1	4	1	1	2	10
7:15 AM	1	3	4			0			2	1	3	0	0	0	7
7:30 AM	1	4	5			0			2	1	3	0	0	0	8
7:45 AM	1	4	5			0			1	0	1	0	0	0	6
8:00 AM	1	3	4			0			1	0	1	0	0	0	5

Peak Hour Summary



Clay Carney
(503) 833-2740

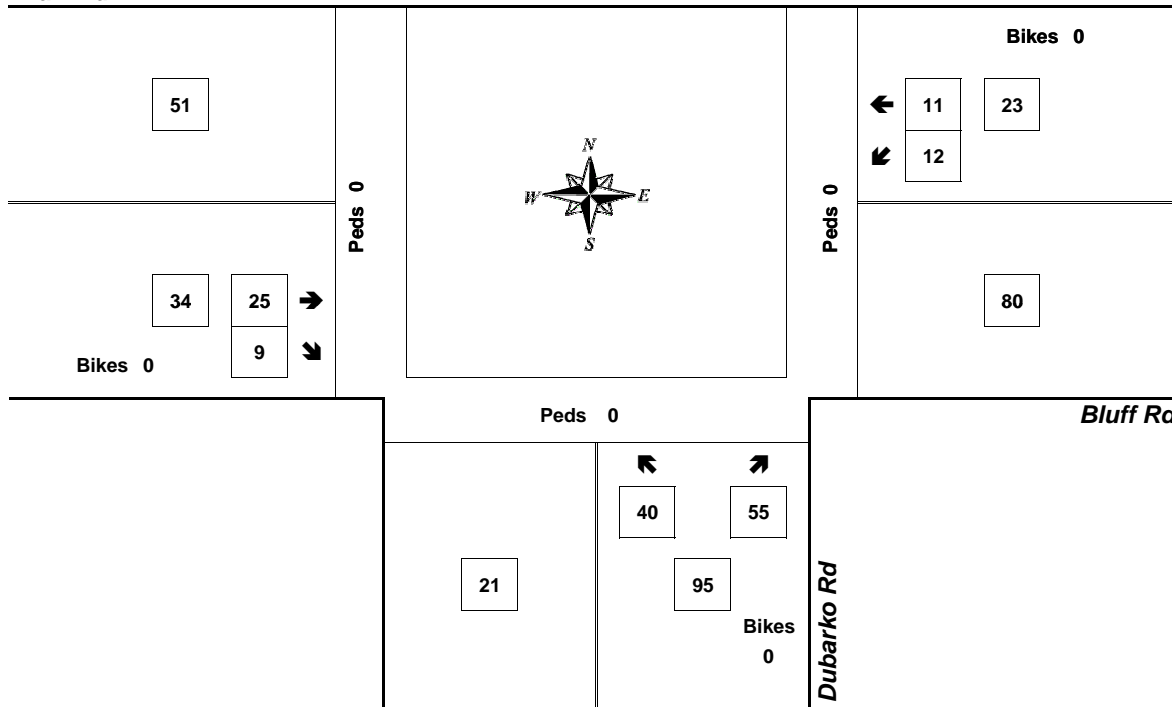
Dubarko Rd & Bluff Rd

7:00 AM to 8:00 AM
Thursday, May 23, 2019

Bikes
0

Bluff Rd

Peds 0



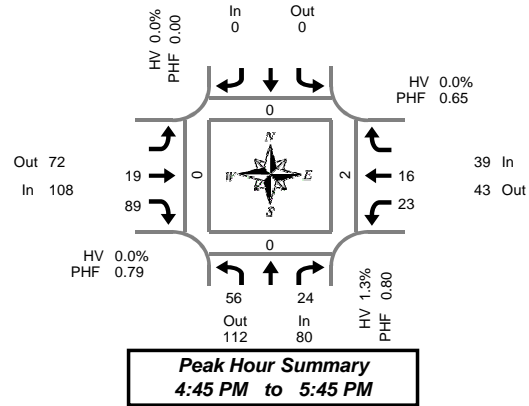
Approach	PHF	HV%	Volume
EB	0.65	11.8%	34
WB	0.64	8.7%	23
NB	0.66	4.2%	95
SB	0.00	0.0%	0
Intersection	0.70	6.6%	152

Count Period: 7:00 AM to 9:00 AM

Total Vehicle Summary



Clay Carney
(503) 833-2740



Dubarko Rd & Bluff Rd

Wednesday, May 22, 2019

4:00 PM to 6:00 PM

5-Minute Interval Summary

4:00 PM to 6:00 PM

Interval Start Time	Northbound Dubarko Rd			Southbound Dubarko Rd			Eastbound Bluff Rd			Westbound Bluff Rd			Interval Total	Pedestrians Crosswalk			
	L	R	Bikes			Bikes	T	R	Bikes	L	T	Bikes		North	South	East	West
4:00 PM	4	0	0			0	4	7	0	5	0	0	20	0	0	0	0
4:05 PM	2	0	0			0	1	4	0	3	3	0	13	0	0	0	0
4:10 PM	7	1	0			0	1	4	0	2	0	0	15	0	0	0	0
4:15 PM	5	1	0			0	2	7	0	1	1	0	17	0	0	0	0
4:20 PM	3	0	0			0	0	5	0	2	3	0	13	0	0	0	0
4:25 PM	7	2	0			0	3	8	0	3	0	0	23	0	0	0	0
4:30 PM	6	2	0			0	0	6	0	1	0	0	15	0	0	0	0
4:35 PM	2	2	0			0	3	9	0	1	0	0	17	0	0	0	0
4:40 PM	7	3	0			0	2	7	0	1	0	0	20	0	0	0	0
4:45 PM	7	0	0			0	0	10	0	3	0	0	20	0	0	0	0
4:50 PM	8	4	0			0	2	5	0	1	0	0	20	0	0	0	0
4:55 PM	3	1	0			0	0	6	0	0	1	0	11	0	0	0	0
5:00 PM	4	3	0			0	1	5	0	3	2	0	18	0	0	0	0
5:05 PM	6	1	1			0	3	8	0	1	2	0	21	0	0	1	0
5:10 PM	1	0	0			0	4	9	0	1	0	0	15	0	0	0	0
5:15 PM	3	0	0			0	1	9	0	1	2	0	16	0	0	0	0
5:20 PM	7	4	0			0	3	6	0	1	3	0	24	0	0	0	0
5:25 PM	1	2	0			0	0	8	0	3	1	0	15	0	0	0	0
5:30 PM	5	2	0			0	1	6	0	5	1	0	20	0	0	0	0
5:35 PM	3	0	0			0	2	9	0	2	3	0	19	0	0	0	0
5:40 PM	8	7	0			0	2	8	0	2	1	0	28	0	0	1	0
5:45 PM	7	1	0			0	0	3	0	0	1	0	12	0	0	0	0
5:50 PM	6	2	0			0	1	6	0	1	0	0	16	0	0	0	0
5:55 PM	3	0	0			0	1	2	0	1	2	0	9	0	0	0	0
Total Survey	115	38	1			0	37	157	0	44	26	0	417	0	0	2	0

15-Minute Interval Summary

4:00 PM to 6:00 PM

Interval Start Time	Northbound Dubarko Rd			Southbound Dubarko Rd			Eastbound Bluff Rd			Westbound Bluff Rd			Interval Total	Pedestrians Crosswalk			
	L	R	Bikes			Bikes	T	R	Bikes	L	T	Bikes		North	South	East	West
4:00 PM	13	1	0			0	6	15	0	10	3	0	48	0	0	0	0
4:15 PM	15	3	0			0	5	20	0	6	4	0	53	0	0	0	0
4:30 PM	15	7	0			0	5	22	0	3	0	0	52	0	0	0	0
4:45 PM	18	5	0			0	2	21	0	4	1	0	51	0	0	0	0
5:00 PM	11	4	1			0	8	22	0	5	4	0	54	0	0	1	0
5:15 PM	11	6	0			0	4	23	0	5	6	0	55	0	0	0	0
5:30 PM	16	9	0			0	5	23	0	9	5	0	67	0	0	1	0
5:45 PM	16	3	0			0	2	11	0	2	3	0	37	0	0	0	0
Total Survey	115	38	1			0	37	157	0	44	26	0	417	0	0	2	0

Peak Hour Summary

4:45 PM to 5:45 PM

By Approach	Northbound Dubarko Rd			Southbound Dubarko Rd			Eastbound Bluff Rd			Westbound Bluff Rd			Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	80	112	192	1	0	0	0	0	108	72	180	0	39	43	82	0	227
%HV	1.3%				0.0%				0.0%				0.4%				
PHF	0.80				0.00				0.79				0.65				0.85

By Movement	Northbound Dubarko Rd			Southbound Dubarko Rd			Eastbound Bluff Rd			Westbound Bluff Rd			Total
	L	R	Total			Total	T	R	Total	L	T	Total	
Volume	56	24	80			0	19	89	108	23	16	39	227
%HV	1.8%	NA	0.0%	1.3%	NA	NA	NA	0.0%	NA	0.0%	0.0%	0.0%	0.4%
PHF	0.78	0.67	0.80			0.00	0.59	0.86	0.79	0.58	0.67	0.65	0.85

Rolling Hour Summary

4:00 PM to 6:00 PM

Interval Start Time	Northbound Dubarko Rd			Southbound Dubarko Rd			Eastbound Bluff Rd			Westbound Bluff Rd			Interval Total	Pedestrians Crosswalk			
	L	R	Bikes			Bikes	T	R	Bikes	L	T	Bikes		North	South	East	West
4:00 PM	61	16	0			0	18	78	0	23	8	0	204	0	0	0	0
4:15 PM	59	19	1			0	20	85	0	18	9	0	210	0	0	1	0
4:30 PM	55	22	1			0	19	88	0	17	11	0	212	0	0	1	0
4:45 PM	56	24	1			0	19	89	0	23	16	0	227	0	0	2	0
5:00 PM	54	22	1			0	19	79	0	21	18	0	213	0	0	2	0

Peak Hour Summary



Clay Carney
(503) 833-2740

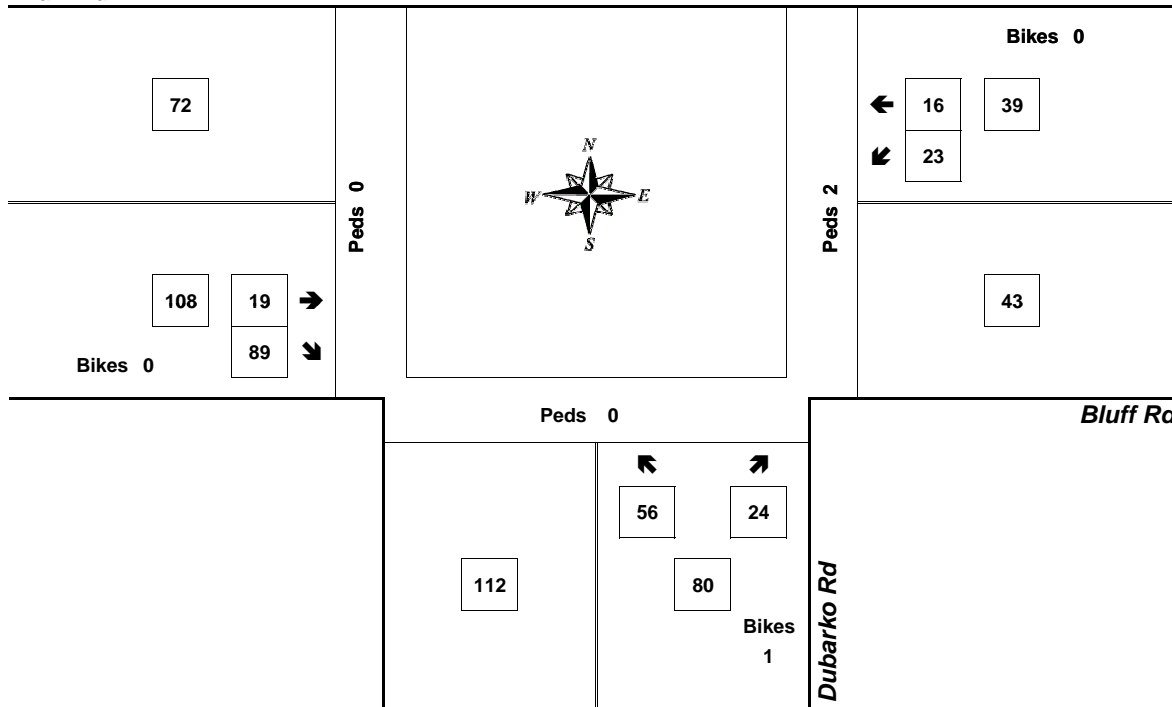
Dubarko Rd & Bluff Rd

4:45 PM to 5:45 PM
Wednesday, May 22, 2019

Bikes
0

Bluff Rd

Peds 0



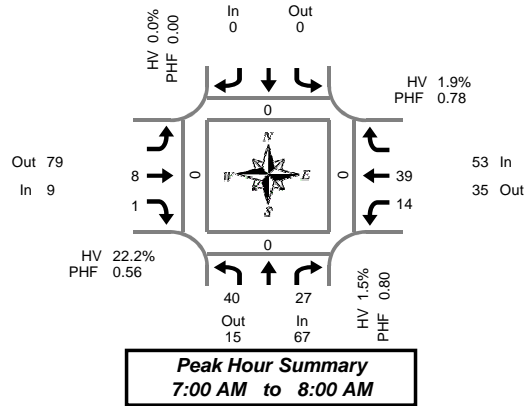
Approach	PHF	HV%	Volume
EB	0.79	0.0%	108
WB	0.65	0.0%	39
NB	0.80	1.3%	80
SB	0.00	0.0%	0
Intersection	0.85	0.4%	227

Count Period: 4:00 PM to 6:00 PM

Total Vehicle Summary



Clay Carney
(503) 833-2740



Melissa Ave & Dubarko Rd

Thursday, April 25, 2019

7:00 AM to 9:00 AM

5-Minute Interval Summary

7:00 AM to 9:00 AM

Interval Start Time	Northbound Melissa Ave			Southbound Melissa Ave			Eastbound Dubarko Rd			Westbound Dubarko Rd			Interval Total	Pedestrians Crosswalk			
	L	R	Bikes			Bikes	T	R	Bikes	L	T	Bikes		North	South	East	West
7:00 AM	5	2	0			0	0	0	0	2	3	0	12	0	0	0	0
7:05 AM	4		6	0		0	0	0	0	2	4	0	16	0	0	0	0
7:10 AM	2	2	0			0	1	0	0	1	2	0	8	0	0	0	0
7:15 AM	4	1	0			0	0	0	0	0	4	0	9	0	0	0	0
7:20 AM	2	3	0			0	2	0	0	2	3	0	12	0	0	0	0
7:25 AM	2	3	0			0	0	1	0	0	6	0	12	0	0	0	0
7:30 AM	6	4	0			0	1	0	0	3	3	0	17	0	0	0	0
7:35 AM	0	0	0			0	1	0	0	1	3	0	5	0	0	0	0
7:40 AM	2	1	0			0	1	0	0	0	4	0	8	0	0	0	0
7:45 AM	4	1	0			0	0	0	0	0	2	0	7	0	0	0	0
7:50 AM	6	1	0			0	1	0	0	2	3	0	13	0	0	0	0
7:55 AM	3	3	0			0	1	0	0	1	2	0	10	0	0	0	0
8:00 AM	3	0	0			0	0	0	0	0	1	0	4	0	0	0	0
8:05 AM	4	0	0			0	1	0	0	1	2	0	8	0	0	0	0
8:10 AM	3	1	0			0	0	1	0	0	2	0	7	0	0	0	0
8:15 AM	1	0	0			0	1	1	0	1	3	0	7	0	0	0	0
8:20 AM	1	3	0			0	3	1	0	1	4	0	13	0	0	0	0
8:25 AM	3	2	0			0	2	0	0	1	4	0	12	0	0	0	0
8:30 AM	3	3	0			0	5	0	0	0	2	0	13	0	0	0	0
8:35 AM	2	1	0			0	4	1	0	0	1	0	9	0	0	0	0
8:40 AM	0	2	0			0	4	1	0	1	3	0	11	0	0	0	0
8:45 AM	0	2	0			0	5	1	0	0	5	0	13	0	0	0	0
8:50 AM	0	1	0			0	2	2	0	1	2	0	8	0	0	0	0
8:55 AM	2	0	0			0	0	0	0	3	3	0	8	0	0	0	0
Total Survey	62		42	0		0	35	9	0	23	71	0	242	0	0	0	0

15-Minute Interval Summary

7:00 AM to 9:00 AM

Interval Start Time	Northbound Melissa Ave			Southbound Melissa Ave			Eastbound Dubarko Rd			Westbound Dubarko Rd			Interval Total	Pedestrians Crosswalk			
	L	R	Bikes			Bikes	T	R	Bikes	L	T	Bikes		North	South	East	West
7:00 AM	11		10	0		0	1	0	0	5	9	0	36	0	0	0	0
7:15 AM	8		7	0		0	2	1	0	2	13	0	33	0	0	0	0
7:30 AM	8		5	0		0	3	0	0	4	10	0	30	0	0	0	0
7:45 AM	13		5	0		0	2	0	0	3	7	0	30	0	0	0	0
8:00 AM	10		1	0		0	1	1	0	1	5	0	19	0	0	0	0
8:15 AM	5		5	0		0	6	2	0	3	11	0	32	0	0	0	0
8:30 AM	5		6	0		0	13	2	0	1	6	0	33	0	0	0	0
8:45 AM	2		3	0		0	7	3	0	4	10	0	29	0	0	0	0
Total Survey	62		42	0		0	35	9	0	23	71	0	242	0	0	0	0

Peak Hour Summary

7:00 AM to 8:00 AM

By Approach	Northbound Melissa Ave			Southbound Melissa Ave			Eastbound Dubarko Rd			Westbound Dubarko Rd			Total	Pedestrians Crosswalk					
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total		Bikes	North	South	East	West	
Volume	67	15	82	0	0	0	9	79	88	0	53	35	88	0	129	0	0	0	0
%HV	1.5%			0.0%			22.2%			1.9%			3.1%						
PHF	0.80			0.00			0.56			0.78			0.79						

By Movement	Northbound Melissa Ave			Southbound Melissa Ave			Eastbound Dubarko Rd			Westbound Dubarko Rd			Total				
	L	R	Total			Total	T	R	Total	L	T	Total					
Volume	40		27	67		0	8	1	9	14	39	53	129				
%HV	2.5%	NA	0.0%	1.5%	NA	NA	NA	0.0%	NA	12.5%	#####	22.2%	7.1%	0.0%	NA	1.9%	3.1%
PHF	0.77		0.68	0.80		0.00	0.67	0.25	0.56	0.70	0.75	0.78	0.79				

Rolling Hour Summary

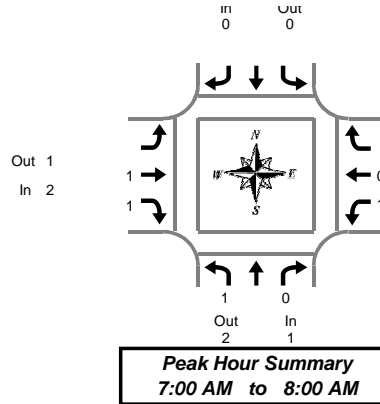
7:00 AM to 9:00 AM

Interval Start Time	Northbound Melissa Ave			Southbound Melissa Ave			Eastbound Dubarko Rd			Westbound Dubarko Rd			Interval Total	Pedestrians Crosswalk			
	L	R	Bikes			Bikes	T	R	Bikes	L	T	Bikes		North	South	East	West
7:00 AM	40		27	0		0	8	1	0	14	39	0	129	0	0	0	0
7:15 AM	39		18	0		0	8	2	0	10	35	0	112	0	0	0	0
7:30 AM	36		16	0		0	12	3	0	11	33	0	111	0	0	0	0
7:45 AM	33		17	0		0	22	5	0	8	29	0	114	0	0	0	0
8:00 AM	22		15	0		0	27	8	0	9	32	0	113	0	0	0	0

Heavy Vehicle Summary



Clay Carney
(503) 833-2740



Melissa Ave & Dubarko Rd

Thursday, April 25, 2019

7:00 AM to 9:00 AM

Heavy Vehicle 5-Minute Interval Summary 7:00 AM to 9:00 AM

Interval Start Time	Northbound Melissa Ave			Southbound Melissa Ave			Eastbound Dubarko Rd			Westbound Dubarko Rd			Interval Total
	L	R	Total			Total	T	R	Total	L	T	Total	
7:00 AM	1	0	1			0			0	1	0	1	2
7:05 AM	0	0	0			0			0	0	0	0	0
7:10 AM	0	0	0			0			0	0	0	0	0
7:15 AM	0	0	0			0			0	0	0	0	0
7:20 AM	0	0	0			0			0	0	0	0	0
7:25 AM	0	0	0			0			0	1	1	0	1
7:30 AM	0	0	0			0			0	0	0	0	0
7:35 AM	0	0	0			0			0	0	0	0	0
7:40 AM	0	0	0			0			0	0	0	0	0
7:45 AM	0	0	0			0			0	0	0	0	0
7:50 AM	0	0	0			0			0	0	0	0	0
7:55 AM	0	0	0			0			1	0	1	0	1
8:00 AM	0	0	0			0			0	0	0	0	0
8:05 AM	0	0	0			0			0	0	0	0	0
8:10 AM	1	0	1			0			0	0	0	0	1
8:15 AM	1	0	1			0			0	0	1	0	2
8:20 AM	0	1	1			0			0	0	0	0	1
8:25 AM	0	0	0			0			0	0	0	0	0
8:30 AM	0	1	1			0			0	0	0	0	1
8:35 AM	0	0	0			0			0	0	0	0	0
8:40 AM	0	0	0			0			0	0	0	0	0
8:45 AM	0	0	0			0			0	0	0	0	0
8:50 AM	0	0	0			0			0	0	0	0	0
8:55 AM	0	0	0			0			0	0	0	0	0
Total Survey	3	2	5			0			1	1	2	2	9

Heavy Vehicle 15-Minute Interval Summary 7:00 AM to 9:00 AM

Interval Start Time	Northbound Melissa Ave			Southbound Melissa Ave			Eastbound Dubarko Rd			Westbound Dubarko Rd			Interval Total	
	L	R	Total			Total	T	R	Total	L	T	Total		
7:00 AM	1	0	1			0			0	0	1	0	1	2
7:15 AM	0	0	0			0			0	1	1	0	0	1
7:30 AM	0	0	0			0			0	0	0	0	0	0
7:45 AM	0	0	0			0			1	0	1	0	0	1
8:00 AM	1	0	1			0			0	0	0	0	0	1
8:15 AM	1	1	2			0			0	0	0	1	0	3
8:30 AM	0	1	1			0			0	0	0	0	0	1
8:45 AM	0	0	0			0			0	0	0	0	0	0
Total Survey	3	2	5			0			1	1	2	2	0	9

Heavy Vehicle Peak Hour Summary 7:00 AM to 8:00 AM

By Approach	Northbound Melissa Ave			Southbound Melissa Ave			Eastbound Dubarko Rd			Westbound Dubarko Rd			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	1	2	3	0	0	0	2	1	3	1	1	2	4
PHF	0.25			0.00			0.50			0.25			0.50

By Movement	Northbound Melissa Ave			Southbound Melissa Ave			Eastbound Dubarko Rd			Westbound Dubarko Rd			Total
	L	R	Total			Total	T	R	Total	L	T	Total	
Volume	1	0	1			0	1	1	2	1	0	1	4
PHF	0.25	0.00	0.25			0.00	0.25	0.25	0.50	0.25	0.00	0.25	0.50

Heavy Vehicle Rolling Hour Summary 7:00 AM to 9:00 AM

Interval Start Time	Northbound Melissa Ave			Southbound Melissa Ave			Eastbound Dubarko Rd			Westbound Dubarko Rd			Interval Total	
	L	R	Total			Total	T	R	Total	L	T	Total		
7:00 AM	1	0	1			0			1	1	2	1	0	4
7:15 AM	1	0	1			0			1	1	2	0	0	3
7:30 AM	2	1	3			0			1	0	1	1	0	5
7:45 AM	2	2	4			0			1	0	1	1	0	6
8:00 AM	2	2	4			0			0	0	0	1	0	5

Peak Hour Summary



Clay Carney
(503) 833-2740

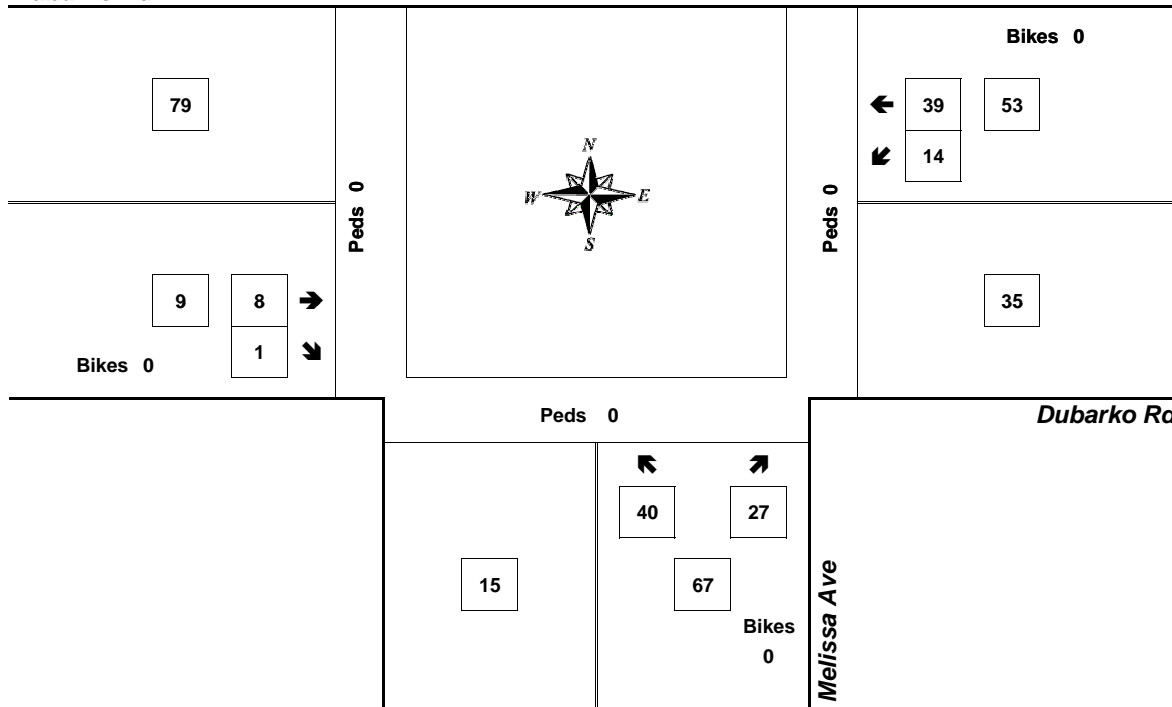
Melissa Ave & Dubarko Rd

7:00 AM to 8:00 AM
Thursday, April 25, 2019

Bikes
0

Dubarko Rd

Peds 0



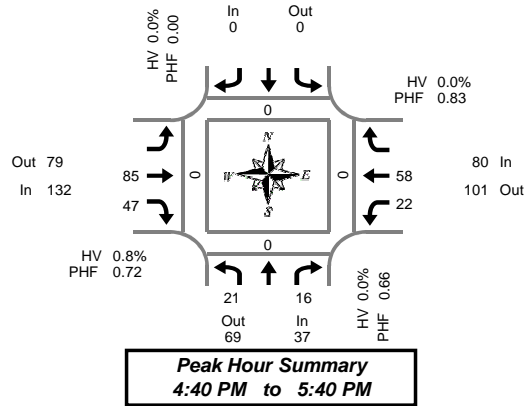
Approach	PHF	HV%	Volume
EB	0.56	22.2%	9
WB	0.78	1.9%	53
NB	0.80	1.5%	67
SB	0.00	0.0%	0
Intersection	0.79	3.1%	129

Count Period: 7:00 AM to 9:00 AM

Total Vehicle Summary



Clay Carney
(503) 833-2740



Melissa Ave & Dubarko Rd

Thursday, April 25, 2019

4:00 PM to 6:00 PM

5-Minute Interval Summary

4:00 PM to 6:00 PM

Interval Start Time	Northbound Melissa Ave			Southbound Melissa Ave			Eastbound Dubarko Rd			Westbound Dubarko Rd			Interval Total	Pedestrians Crosswalk			
	L	R	Bikes			Bikes	T	R	Bikes	L	T	Bikes		North	South	East	West
4:00 PM	1	3	0			0	12	4	0	3	6	0	29	0	0	0	0
4:05 PM	0	2	0			0	4	2	0	0	3	0	11	0	0	0	0
4:10 PM	4	2	0			0	3	2	0	0	7	0	18	0	0	0	1
4:15 PM	2	2	0			0	5	4	0	2	2	0	17	0	1	0	0
4:20 PM	2	2	0			0	7	1	0	0	1	0	13	0	0	0	0
4:25 PM	3	2	0			0	5	2	0	0	5	0	17	0	0	0	0
4:30 PM	0	1	0			0	7	4	0	2	4	0	18	0	0	0	0
4:35 PM	1	0	0			0	8	2	0	3	5	0	19	0	0	0	0
4:40 PM	1	2	0			0	5	7	0	5	6	0	26	0	0	0	0
4:45 PM	5	2	0			0	4	5	0	0	4	0	20	0	0	0	0
4:50 PM	2	1	0			0	7	8	0	3	6	0	27	0	0	0	0
4:55 PM	2	2	0			0	7	5	0	0	5	0	21	0	0	0	0
5:00 PM	0	0	0			0	14	5	0	1	1	0	21	0	0	0	0
5:05 PM	1	0	0			0	9	1	0	0	5	0	16	0	0	0	0
5:10 PM	2	1	0			0	5	3	0	3	7	0	21	0	0	0	0
5:15 PM	0	1	0			0	4	1	0	1	3	0	10	0	0	0	0
5:20 PM	3	3	0			0	10	4	0	3	4	0	27	0	0	0	0
5:25 PM	1	1	0			0	4	2	0	1	5	0	14	0	0	0	0
5:30 PM	2	1	0			0	7	3	0	3	7	0	23	0	0	0	0
5:35 PM	2	2	0			0	9	3	0	2	5	0	23	0	0	0	0
5:40 PM	3	0	0			0	3	6	0	0	1	0	13	0	0	0	0
5:45 PM	1	1	0			0	8	2	0	4	5	0	21	0	0	0	1
5:50 PM	3	0	0			0	5	2	0	0	5	0	15	0	0	0	0
5:55 PM	2	0	0			0	9	4	0	0	2	0	17	0	0	0	1
Total Survey	43	31	0			0	161	82	0	36	104	0	457	0	1	0	3

15-Minute Interval Summary

4:00 PM to 6:00 PM

Interval Start Time	Northbound Melissa Ave			Southbound Melissa Ave			Eastbound Dubarko Rd			Westbound Dubarko Rd			Interval Total	Pedestrians Crosswalk			
	L	R	Bikes			Bikes	T	R	Bikes	L	T	Bikes		North	South	East	West
4:00 PM	5	7	0			0	19	8	0	3	16	0	58	0	0	0	1
4:15 PM	7	6	0			0	17	7	0	2	8	0	47	0	1	0	0
4:30 PM	2	3	0			0	20	13	0	10	15	0	63	0	0	0	0
4:45 PM	9	5	0			0	18	18	0	3	15	0	68	0	0	0	0
5:00 PM	3	1	0			0	28	9	0	4	13	0	58	0	0	0	0
5:15 PM	4	5	0			0	18	7	0	5	12	0	51	0	0	0	0
5:30 PM	7	3	0			0	19	12	0	5	13	0	59	0	0	0	0
5:45 PM	6	1	0			0	22	8	0	4	12	0	53	0	0	0	2
Total Survey	43	31	0			0	161	82	0	36	104	0	457	0	1	0	3

Peak Hour Summary

4:40 PM to 5:40 PM

By Approach	Northbound Melissa Ave			Southbound Melissa Ave			Eastbound Dubarko Rd			Westbound Dubarko Rd			Total	Pedestrians Crosswalk					
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total		North	South	East	West		
Volume	37	69	106	0	0	0	132	79	211	0	80	101	181	0	249	0	0	0	0
%HV	0.0%			0.0%			0.8%			0.0%			0.4%						
PHF	0.66			0.00			0.72			0.83			0.85						

By Movement	Northbound Melissa Ave			Southbound Melissa Ave			Eastbound Dubarko Rd			Westbound Dubarko Rd			Total			
	L	R	Total			Total	T	R	Total	L	T	Total				
Volume	21	16	37			0	85	47	132	22	58	80	249			
%HV	0.0%	NA	0.0%	0.0%	NA	NA	0.0%	NA	1.2%	0.0%	0.8%	0.0%	0.0%	NA	0.0%	0.4%
PHF	0.58		0.80	0.66		0.00	0.71	0.59	0.72	0.69	0.85	0.83	0.85			

Rolling Hour Summary

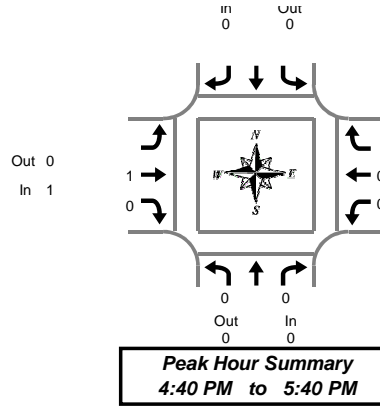
4:00 PM to 6:00 PM

Interval Start Time	Northbound Melissa Ave			Southbound Melissa Ave			Eastbound Dubarko Rd			Westbound Dubarko Rd			Interval Total	Pedestrians Crosswalk			
	L	R	Bikes			Bikes	T	R	Bikes	L	T	Bikes		North	South	East	West
4:00 PM	23	21	0			0	74	46	0	18	54	0	236	0	1	0	1
4:15 PM	21	15	0			0	83	47	0	19	51	0	236	0	1	0	0
4:30 PM	18	14	0			0	84	47	0	22	55	0	240	0	0	0	0
4:45 PM	23	14	0			0	83	46	0	17	53	0	236	0	0	0	0
5:00 PM	20	10	0			0	87	36	0	18	50	0	221	0	0	0	2

Heavy Vehicle Summary



Clay Carney
(503) 833-2740



Melissa Ave & Dubarko Rd

Thursday, April 25, 2019
4:00 PM to 6:00 PM

Heavy Vehicle 5-Minute Interval Summary 4:00 PM to 6:00 PM

Interval Start Time	Northbound Melissa Ave			Southbound Melissa Ave			Eastbound Dubarko Rd			Westbound Dubarko Rd			Interval Total
	L	R	Total			Total	T	R	Total	L	T	Total	
4:00 PM	0	0	0			0	0	1	1	0	1	2	1
4:05 PM	0	0	0			0	0	0	0	0	1	1	1
4:10 PM	1	0	1			0	0	0	0	0	0	0	1
4:15 PM	0	0	0			0	0	0	0	0	0	0	0
4:20 PM	0	0	0			0	0	0	0	0	0	0	0
4:25 PM	0	0	0			0	0	0	0	0	0	0	0
4:30 PM	0	0	0			0	0	0	0	0	0	0	0
4:35 PM	0	0	0			0	0	0	0	0	0	0	0
4:40 PM	0	0	0			0	0	0	0	0	0	0	0
4:45 PM	0	0	0			0	0	0	0	0	0	0	0
4:50 PM	0	0	0			0	0	0	0	0	0	0	0
4:55 PM	0	0	0			0	0	0	0	0	0	0	0
5:00 PM	0	0	0			0	0	0	0	0	0	0	0
5:05 PM	0	0	0			0	0	0	0	0	0	0	0
5:10 PM	0	0	0			0	0	0	0	0	0	0	0
5:15 PM	0	0	0			0	1	0	1	0	0	0	1
5:20 PM	0	0	0			0	0	0	0	0	0	0	0
5:25 PM	0	0	0			0	0	0	0	0	0	0	0
5:30 PM	0	0	0			0	0	0	0	0	0	0	0
5:35 PM	0	0	0			0	0	0	0	0	0	0	0
5:40 PM	0	0	0			0	0	0	0	0	0	0	0
5:45 PM	0	0	0			0	0	0	0	0	0	0	0
5:50 PM	0	0	0			0	0	0	0	0	0	0	0
5:55 PM	0	0	0			0	0	0	0	0	0	0	0
Total Survey	1	0	1			0	1	1	2	0	2	2	5

Heavy Vehicle 15-Minute Interval Summary 4:00 PM to 6:00 PM

Interval Start Time	Northbound Melissa Ave			Southbound Melissa Ave			Eastbound Dubarko Rd			Westbound Dubarko Rd			Interval Total
	L	R	Total			Total	T	R	Total	L	T	Total	
4:00 PM	1	0	1			0	0	1	1	0	2	2	4
4:15 PM	0	0	0			0	0	0	0	0	0	0	0
4:30 PM	0	0	0			0	0	0	0	0	0	0	0
4:45 PM	0	0	0			0	0	0	0	0	0	0	0
5:00 PM	0	0	0			0	0	0	0	0	0	0	0
5:15 PM	0	0	0			0	1	0	1	0	0	0	1
5:30 PM	0	0	0			0	0	0	0	0	0	0	0
5:45 PM	0	0	0			0	0	0	0	0	0	0	0
Total Survey	1	0	1			0	1	1	2	0	2	2	5

Heavy Vehicle Peak Hour Summary 4:40 PM to 5:40 PM

By Approach	Northbound Melissa Ave			Southbound Melissa Ave			Eastbound Dubarko Rd			Westbound Dubarko Rd			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	0	0	0	0	0	0	1	0	1	0	1	1	1
PHF	0.00			0.00			0.25			0.00			0.25

By Movement	Northbound Melissa Ave			Southbound Melissa Ave			Eastbound Dubarko Rd			Westbound Dubarko Rd			Total
	L	R	Total			Total	T	R	Total	L	T	Total	
Volume	0	0	0			0	1	0	1	0	0	0	1
PHF	0.00	0.00	0.00			0.00	0.25	0.00	0.25	0.00	0.00	0.00	0.25

Heavy Vehicle Rolling Hour Summary 4:00 PM to 6:00 PM

Interval Start Time	Northbound Melissa Ave			Southbound Melissa Ave			Eastbound Dubarko Rd			Westbound Dubarko Rd			Interval Total
	L	R	Total			Total	T	R	Total	L	T	Total	
4:00 PM	1	0	1			0	0	1	1	0	2	2	4
4:15 PM	0	0	0			0	0	0	0	0	0	0	0
4:30 PM	0	0	0			0	1	0	1	0	0	0	1
4:45 PM	0	0	0			0	1	0	1	0	0	0	1
5:00 PM	0	0	0			0	1	0	1	0	0	0	1

Peak Hour Summary



Clay Carney
(503) 833-2740

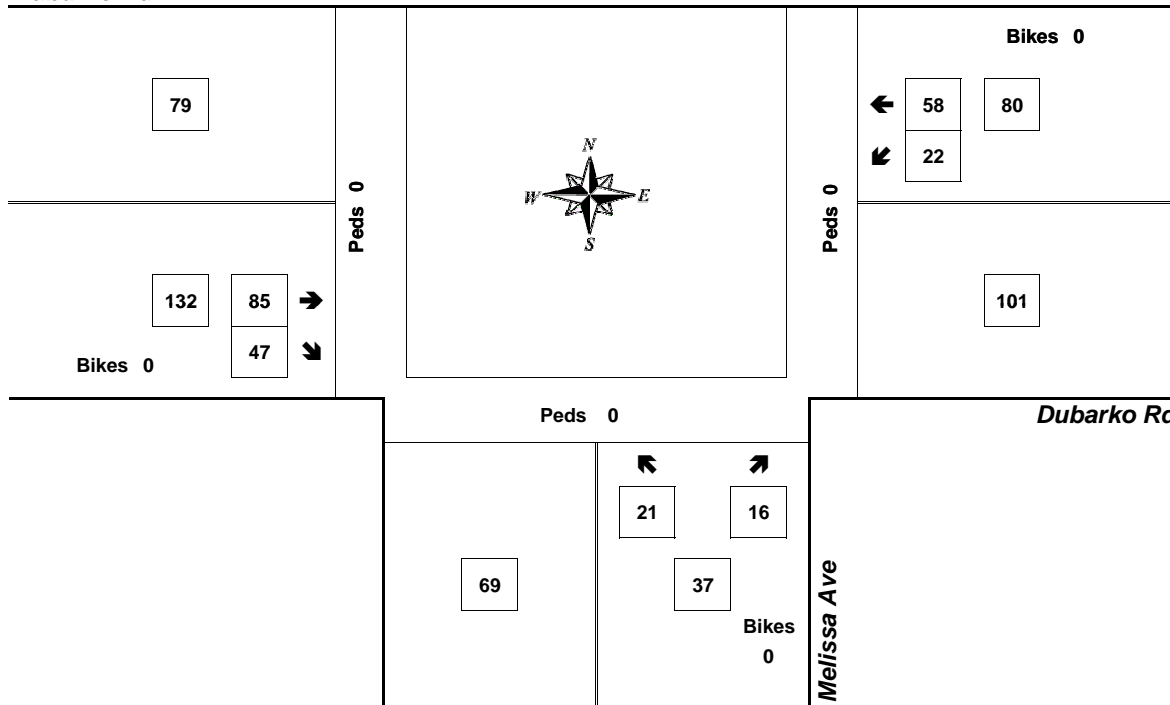
Melissa Ave & Dubarko Rd

4:40 PM to 5:40 PM
Thursday, April 25, 2019

Bikes
0

Dubarko Rd

Peds 0



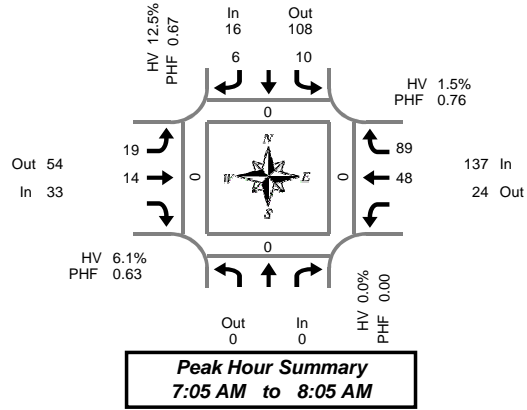
Approach	PHF	HV%	Volume
EB	0.72	0.8%	132
WB	0.83	0.0%	80
NB	0.66	0.0%	37
SB	0.00	0.0%	0
Intersection	0.85	0.4%	249

Count Period: 4:00 PM to 6:00 PM

Total Vehicle Summary



Clay Carney
(503) 833-2740



Ruben Ln & Dubarko Rd

Thursday, May 23, 2019
7:00 AM to 9:00 AM

5-Minute Interval Summary 7:00 AM to 9:00 AM

Interval Start Time	Northbound Ruben Ln				Southbound Ruben Ln				Eastbound Dubarko Rd			Westbound Dubarko Rd			Interval Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	L	R	Bikes	L	T	Bikes	T	R	Bikes	North		South	East	West	
7:00 AM				0	2	0	0	1	0	0	4	8	0	15	0	0	1	0	
7:05 AM				0	0	0	0	0	1	0	5	9	0	15	0	0	0	0	
7:10 AM				0	1	0	0	1	2	0	4	8	0	16	0	0	0	0	
7:15 AM				0	1	0	0	1	0	0	7	12	0	21	0	0	0	0	
7:20 AM				0	3	0	0	2	1	0	3	6	0	15	0	0	0	0	
7:25 AM				0	0	1	0	2	1	0	4	6	0	14	0	0	0	0	
7:30 AM				0	0	0	0	0	1	0	2	8	0	11	0	0	0	0	
7:35 AM				0	1	4	0	3	3	0	2	5	0	18	0	0	0	0	
7:40 AM				0	0	0	0	1	1	0	3	8	0	13	0	0	0	0	
7:45 AM				0	0	0	0	4	1	0	4	4	0	13	0	0	0	0	
7:50 AM				0	1	0	0	2	2	0	4	9	0	18	0	0	0	0	
7:55 AM				0	1	0	0	1	0	0	4	10	0	16	0	0	0	0	
8:00 AM				0	2	1	0	2	1	0	6	4	0	16	0	0	0	0	
8:05 AM				0	2	1	0	1	2	0	0	5	0	11	0	0	0	0	
8:10 AM				0	3	0	0	2	0	0	1	3	0	9	0	0	0	0	
8:15 AM				0	0	0	0	3	4	0	4	2	0	13	0	0	0	0	
8:20 AM				0	0	0	0	0	2	0	5	8	0	15	0	0	0	0	
8:25 AM				0	0	0	0	3	2	0	2	5	0	12	0	0	0	0	
8:30 AM				0	2	0	0	0	4	0	3	5	0	14	0	0	0	0	
8:35 AM				0	1	1	0	2	1	0	1	4	0	10	0	0	0	0	
8:40 AM				0	2	0	0	1	2	0	3	5	0	13	0	0	0	0	
8:45 AM				0	3	2	0	2	2	0	2	4	0	15	0	0	0	0	
8:50 AM				0	1	0	0	4	3	0	3	5	0	16	0	0	0	0	
8:55 AM				0	2	1	0	1	3	0	2	5	0	14	0	0	0	0	
Total Survey				0	28	11	0	39	39	0	78	148	0	343	0	0	1	0	

15-Minute Interval Summary 7:00 AM to 9:00 AM

Interval Start Time	Northbound Ruben Ln				Southbound Ruben Ln				Eastbound Dubarko Rd			Westbound Dubarko Rd			Interval Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	L	R	Bikes	L	T	Bikes	T	R	Bikes	North		South	East	West	
7:00 AM				0	3	0	0	2	3	0	13	25	0	46	0	0	1	0	
7:15 AM				0	4	1	0	5	2	0	14	24	0	50	0	0	0	0	
7:30 AM				0	1	4	0	4	5	0	7	21	0	42	0	0	0	0	
7:45 AM				0	2	0	0	7	3	0	12	23	0	47	0	0	0	0	
8:00 AM				0	7	2	0	5	3	0	7	12	0	36	0	0	0	0	
8:15 AM				0	0	0	0	6	8	0	11	15	0	40	0	0	0	0	
8:30 AM				0	5	1	0	3	7	0	7	14	0	37	0	0	0	0	
8:45 AM				0	6	3	0	7	8	0	7	14	0	45	0	0	0	0	
Total Survey				0	28	11	0	39	39	0	78	148	0	343	0	0	1	0	

Peak Hour Summary 7:05 AM to 8:05 AM

By Approach	Northbound Ruben Ln				Southbound Ruben Ln				Eastbound Dubarko Rd			Westbound Dubarko Rd			Total	Pedestrians Crosswalk					
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out		Total	North	South	East	West	
Volume	0	0	0	0	16	108	124	0	33	54	87	0	137	24	161	0	186	0	0	0	0
%HV	0.0%				12.5%				6.1%			1.5%			3.2%						
PHF	0.00				0.67				0.63			0.76			0.89						

By Movement	Northbound Ruben Ln				Southbound Ruben Ln				Eastbound Dubarko Rd			Westbound Dubarko Rd			Total		
	Total	L	R	Total	L	T	Total	T	R	Total	T	R	Total				
Volume	0	10	6	16	19	14	33	48	89	137	186						
%HV	NA	NA	NA	0.0%	20.0%	NA	0.0%	12.5%	0.0%	14.3%	NA	6.1%	NA	2.1%	1.1%	1.5%	3.2%
PHF		0.00	0.50	0.30	0.67	0.59	0.70	0.63	0.75	0.77	0.76	0.89					

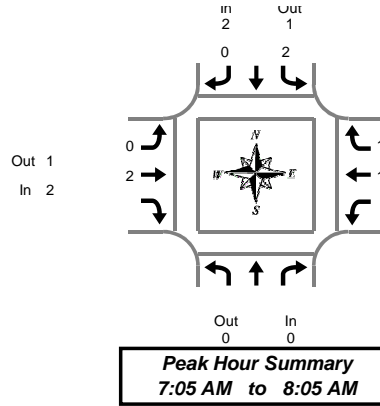
Rolling Hour Summary 7:00 AM to 9:00 AM

Interval Start Time	Northbound Ruben Ln				Southbound Ruben Ln				Eastbound Dubarko Rd			Westbound Dubarko Rd			Interval Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	L	R	Bikes	L	T	Bikes	T	R	Bikes	North		South	East	West	
7:00 AM				0	10	5	0	18	13	0	46	93	0	185	0	0	1	0	
7:15 AM				0	14	7	0	21	13	0	40	80	0	175	0	0	0	0	
7:30 AM				0	10	6	0	22	19	0	37	71	0	165	0	0	0	0	
7:45 AM				0	14	3	0	21	21	0	37	64	0	160	0	0	0	0	
8:00 AM				0	18	6	0	21	26	0	32	55	0	158	0	0	0	0	

Heavy Vehicle Summary



Clay Carney
(503) 833-2740



Ruben Ln & Dubarko Rd

Thursday, May 23, 2019
7:00 AM to 9:00 AM

Heavy Vehicle 5-Minute Interval Summary 7:00 AM to 9:00 AM

Interval Start Time	Northbound Ruben Ln			Southbound Ruben Ln			Eastbound Dubarko Rd			Westbound Dubarko Rd			Interval Total	
	In	Out	Total	L	R	Total	L	T	Total	T	R	Total		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	1	1	
7:05 AM	0	0	0	0	0	0	0	0	0	0	0	1	1	
7:10 AM	0	1	1	0	1	1	0	0	0	0	0	0	1	
7:15 AM	0	0	0	0	0	0	0	0	0	0	1	0	1	
7:20 AM	0	1	1	0	1	1	0	0	0	0	0	0	1	
7:25 AM	0	0	0	0	0	0	0	1	1	0	0	0	1	
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	
7:35 AM	0	0	0	0	0	0	0	1	1	0	0	0	1	
7:40 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	
7:50 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	
7:55 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	
8:05 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	
8:10 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	
8:15 AM	0	0	0	0	0	0	0	0	0	0	1	1	1	
8:20 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	
8:25 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	
8:35 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	
8:40 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	
8:50 AM	0	0	0	0	0	0	0	0	0	1	0	1	1	
8:55 AM	0	0	0	0	0	0	0	0	0	0	1	1	1	
Total Survey			0	2		0	2	0	2		2	4	6	10

Heavy Vehicle 15-Minute Interval Summary 7:00 AM to 9:00 AM

Interval Start Time	Northbound Ruben Ln			Southbound Ruben Ln			Eastbound Dubarko Rd			Westbound Dubarko Rd			Interval Total	
	In	Out	Total	L	R	Total	L	T	Total	T	R	Total		
7:00 AM	0	1	1	0	1	1	0	0	0	0	2	2	3	
7:15 AM	0	1	1	0	1	1	0	1	1	1	0	1	3	
7:30 AM	0	0	0	0	0	0	0	1	1	0	0	0	1	
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	
8:15 AM	0	0	0	0	0	0	0	0	0	0	1	1	1	
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	
8:45 AM	0	0	0	0	0	0	0	0	0	1	1	2	2	
Total Survey			0	2		0	2	0	2		2	4	6	10

Heavy Vehicle Peak Hour Summary 7:05 AM to 8:05 AM

By Approach	Northbound Ruben Ln			Southbound Ruben Ln			Eastbound Dubarko Rd			Westbound Dubarko Rd			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	0	0	0	2	1	3	2	1	3	2	4	6	6
PHF	0.00			0.25			0.25			0.25			0.50

By Movement	Northbound Ruben Ln			Southbound Ruben Ln			Eastbound Dubarko Rd			Westbound Dubarko Rd			Total	
	In	Out	Total	L	R	Total	L	T	Total	T	R	Total		
Volume			0	2		0	2	0	2		1	1	2	6
PHF			0.00	0.25		0.00	0.25	0.00	0.25		0.25	0.25	0.25	0.50

Heavy Vehicle Rolling Hour Summary 7:00 AM to 9:00 AM

Interval Start Time	Northbound Ruben Ln			Southbound Ruben Ln			Eastbound Dubarko Rd			Westbound Dubarko Rd			Interval Total
	In	Out	Total	L	R	Total	L	T	Total	T	R	Total	
7:00 AM	0	2	2	0	2	2	0	2	2	1	2	3	7
7:15 AM	0	1	1	0	1	1	0	2	2	1	0	1	4
7:30 AM	0	0	0	0	0	0	0	1	1	0	1	1	2
7:45 AM	0	0	0	0	0	0	0	0	0	0	1	1	1
8:00 AM	0	0	0	0	0	0	0	0	0	1	2	3	3

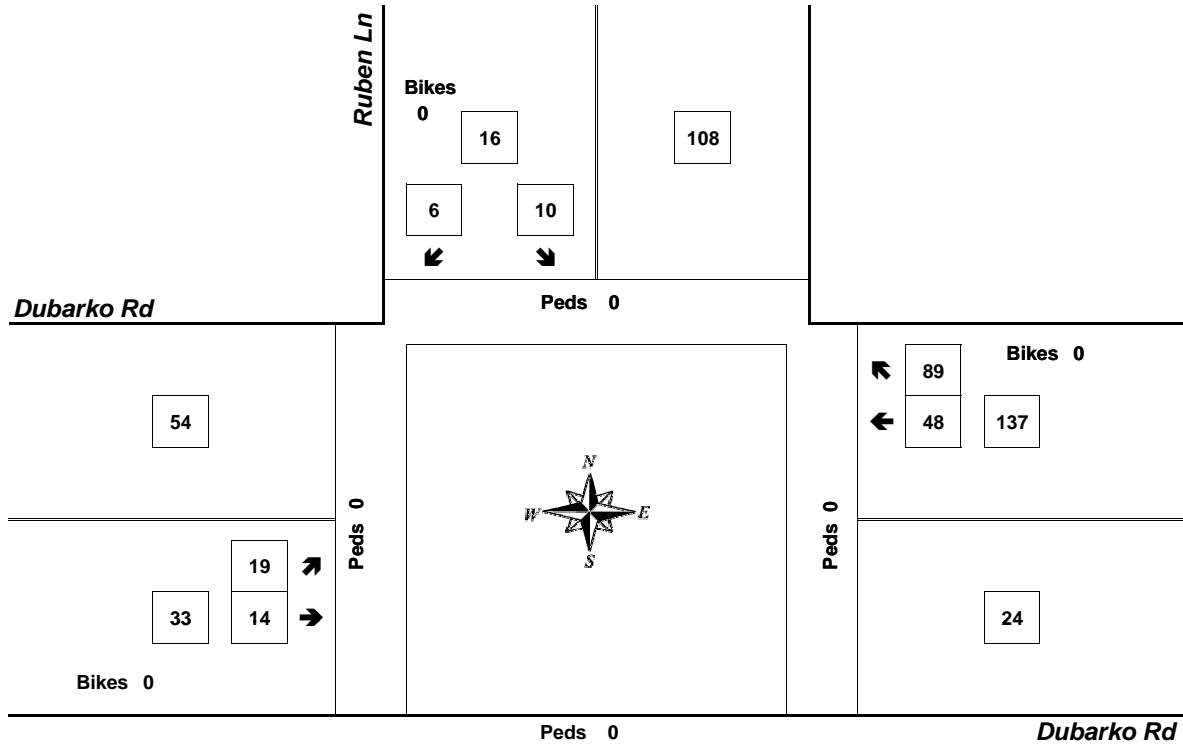
Peak Hour Summary



Clay Carney
(503) 833-2740

Ruben Ln & Dubarko Rd

7:05 AM to 8:05 AM
Thursday, May 23, 2019



Bikes
0

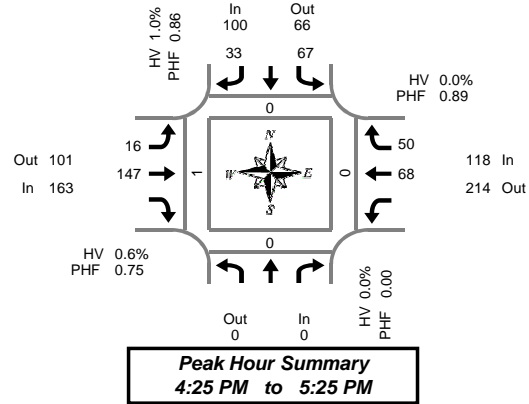
Approach	PHF	HV%	Volume
EB	0.63	6.1%	33
WB	0.76	1.5%	137
NB	0.00	0.0%	0
SB	0.67	12.5%	16
Intersection	0.89	3.2%	186

Count Period: 7:00 AM to 9:00 AM

Total Vehicle Summary



Clay Carney
(503) 833-2740



Ruben Ln & Dubarko Rd

Wednesday, May 22, 2019

4:00 PM to 6:00 PM

5-Minute Interval Summary

4:00 PM to 6:00 PM

Interval Start Time	Northbound Ruben Ln				Southbound Ruben Ln				Eastbound Dubarko Rd			Westbound Dubarko Rd			Interval Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	L	R	Total	Bikes	L	T	Bikes	T	R	Bikes		North	South	East	West
4:00 PM	0	3	3	0	1	0	1	0	1	6	0	6	2	0	19	0	0	0	0
4:05 PM	0	5	5	0	0	0	1	7	0	3	4	0	20	0	0	0	0	0	
4:10 PM	0	8	8	0	2	0	1	11	0	5	4	0	31	0	0	0	1	0	
4:15 PM	0	10	10	0	2	0	1	4	0	4	4	0	25	0	0	0	0	0	
4:20 PM	0	9	9	0	0	0	0	13	0	4	2	0	28	0	0	0	0	0	
4:25 PM	0	5	5	0	3	0	1	16	0	5	5	0	35	0	0	0	0	0	
4:30 PM	0	6	6	0	2	0	0	15	0	7	6	0	36	0	0	0	1	0	
4:35 PM	0	3	3	0	2	0	0	5	0	4	3	0	17	0	0	0	0	0	
4:40 PM	0	5	5	0	5	0	2	13	0	7	6	0	38	0	0	0	0	0	
4:45 PM	0	6	6	0	4	0	3	6	0	2	1	0	22	0	0	0	0	0	
4:50 PM	0	5	5	0	1	0	1	7	0	7	5	0	26	0	0	0	0	0	
4:55 PM	0	5	5	0	4	0	0	9	0	9	3	0	30	0	0	0	0	0	
5:00 PM	0	8	8	0	2	0	0	16	0	3	5	0	34	0	0	0	0	0	
5:05 PM	0	7	7	0	3	0	2	17	0	7	4	0	40	0	0	0	0	0	
5:10 PM	0	6	6	0	1	0	3	16	0	2	3	0	31	0	0	0	0	0	
5:15 PM	0	6	6	0	3	0	1	13	0	8	5	0	36	0	0	0	0	0	
5:20 PM	0	5	5	0	3	0	3	14	0	7	4	0	36	0	0	0	0	0	
5:25 PM	0	4	4	0	5	0	1	10	0	2	1	0	23	1	0	0	0	0	
5:30 PM	0	2	2	0	2	0	1	14	0	7	4	0	30	0	0	0	0	0	
5:35 PM	0	6	6	0	1	0	0	6	0	4	3	0	20	0	0	0	0	0	
5:40 PM	0	3	3	0	2	0	0	7	0	6	11	0	29	0	0	0	0	0	
5:45 PM	0	8	8	0	1	0	0	13	0	7	2	0	31	0	0	0	0	0	
5:50 PM	0	6	6	0	3	0	2	12	0	5	3	0	31	0	0	0	0	0	
5:55 PM	0	5	5	0	0	0	2	19	0	3	2	0	31	1	0	0	0	0	
Total Survey	0	136	136	0	52	0	26	269	0	124	92	0	699	2	0	0	2	0	

15-Minute Interval Summary

4:00 PM to 6:00 PM

Interval Start Time	Northbound Ruben Ln				Southbound Ruben Ln				Eastbound Dubarko Rd			Westbound Dubarko Rd			Interval Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	L	R	Total	Bikes	L	T	Bikes	T	R	Bikes		North	South	East	West
4:00 PM	0	16	16	0	3	0	3	24	0	14	10	0	70	0	0	0	1	0	
4:15 PM	0	24	24	0	5	0	2	33	0	13	11	0	88	0	0	0	0	0	
4:30 PM	0	14	14	0	9	0	2	33	0	18	15	0	91	0	0	0	1	0	
4:45 PM	0	16	16	0	9	0	4	22	0	18	9	0	78	0	0	0	0	0	
5:00 PM	0	21	21	0	6	0	5	49	0	12	12	0	105	0	0	0	0	0	
5:15 PM	0	15	15	0	11	0	5	37	0	17	10	0	95	1	0	0	0	0	
5:30 PM	0	11	11	0	5	0	1	27	0	17	18	0	79	0	0	0	0	0	
5:45 PM	0	19	19	0	4	0	4	44	0	15	7	0	93	1	0	0	0	0	
Total Survey	0	136	136	0	52	0	26	269	0	124	92	0	699	2	0	0	2	0	

Peak Hour Summary

4:25 PM to 5:25 PM

By Approach	Northbound Ruben Ln				Southbound Ruben Ln				Eastbound Dubarko Rd			Westbound Dubarko Rd			Total	Pedestrians Crosswalk				
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out		Total	North	South	East	West
Volume	0	0	0	0	100	66	166	0	163	101	264	0	118	214	332	0	381	0	0	1
%HV	0.0%				1.0%				0.6%			0.0%			0.5%					
PHF	0.00				0.86				0.75			0.89			0.89					

By Movement	Northbound Ruben Ln				Southbound Ruben Ln				Eastbound Dubarko Rd			Westbound Dubarko Rd			Total		
	Total	L	R	Total	L	T	Total	L	T	Total	T	R	Total				
Volume	0	67	33	100	16	147	163	68	50	118	381						
%HV	NA	NA	NA	0.0%	0.0%	NA	3.0%	1.0%	6.3%	0.0%	NA	0.6%	NA	0.0%	0.0%	0.0%	0.5%
PHF		0.00	0.80	0.75	0.86	0.57	0.75	0.75	0.89	0.83	0.89	0.89					

Rolling Hour Summary

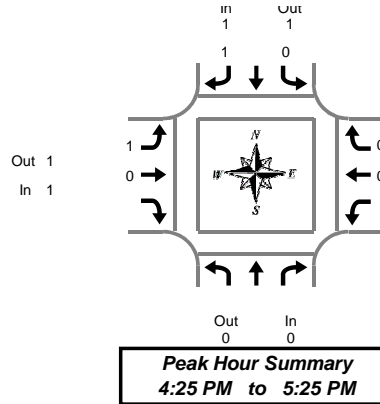
4:00 PM to 6:00 PM

Interval Start Time	Northbound Ruben Ln				Southbound Ruben Ln				Eastbound Dubarko Rd			Westbound Dubarko Rd			Interval Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	L	R	Total	Bikes	L	T	Bikes	T	R	Bikes		North	South	East	West
4:00 PM	0	70	70	0	26	0	11	112	0	63	45	0	327	0	0	0	2	0	
4:15 PM	0	75	75	0	29	0	13	137	0	61	47	0	362	0	0	0	1	0	
4:30 PM	0	66	66	0	35	0	16	141	0	65	46	0	369	1	0	0	1	0	
4:45 PM	0	63	63	0	31	0	15	135	0	64	49	0	357	1	0	0	0	0	
5:00 PM	0	66	66	0	26	0	15	157	0	61	47	0	372	2	0	0	0	0	

Heavy Vehicle Summary



Clay Carney
(503) 833-2740



Ruben Ln & Dubarko Rd

Wednesday, May 22, 2019

4:00 PM to 6:00 PM

Heavy Vehicle 5-Minute Interval Summary

4:00 PM to 6:00 PM

Interval Start Time	Northbound Ruben Ln			Southbound Ruben Ln			Eastbound Dubarko Rd			Westbound Dubarko Rd			Interval Total	
	In	Out	Total	L	R	Total	L	T	Total	T	R	Total		
4:00 PM			0	0	1	1	0	0	0	0	0	0	0	1
4:05 PM			0	0	0	0	0	0	0	0	0	0	0	0
4:10 PM			0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM			0	1	0	0	1	0	0	0	0	0	0	1
4:20 PM			0	0	0	0	0	0	0	0	0	0	0	0
4:25 PM			0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM			0	0	0	0	0	0	0	0	0	0	0	0
4:35 PM			0	0	1	1	0	0	0	0	0	0	0	1
4:40 PM			0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM			0	0	0	0	0	0	0	0	0	0	0	0
4:50 PM			0	0	0	0	1	0	1	0	0	0	0	1
4:55 PM			0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM			0	0	0	0	0	0	0	0	0	0	0	0
5:05 PM			0	0	0	0	0	0	0	0	0	0	0	0
5:10 PM			0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM			0	0	0	0	0	0	0	0	0	0	0	0
5:20 PM			0	0	0	0	0	0	0	0	0	0	0	0
5:25 PM			0	0	0	0	0	1	1	0	0	0	0	1
5:30 PM			0	0	0	0	0	0	0	0	0	0	0	0
5:35 PM			0	0	0	0	0	0	0	0	0	0	0	0
5:40 PM			0	0	0	0	0	0	0	0	1	1	1	1
5:45 PM			0	0	0	0	0	0	0	0	0	0	0	0
5:50 PM			0	0	0	0	0	2	2	0	0	0	0	2
5:55 PM			0	0	0	0	0	0	0	0	0	0	0	0
Total Survey			0	1	2	3	1	3	4	0	1	1	8	

Heavy Vehicle 15-Minute Interval Summary

4:00 PM to 6:00 PM

Interval Start Time	Northbound Ruben Ln			Southbound Ruben Ln			Eastbound Dubarko Rd			Westbound Dubarko Rd			Interval Total	
	In	Out	Total	L	R	Total	L	T	Total	T	R	Total		
4:00 PM			0	0	1	1	0	0	0	0	0	0	0	1
4:15 PM			0	1	0	1	0	0	0	0	0	0	0	1
4:30 PM			0	0	1	1	0	0	0	0	0	0	0	1
4:45 PM			0	0	0	0	1	0	1	0	0	0	0	1
5:00 PM			0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM			0	0	0	0	0	1	1	0	0	0	0	1
5:30 PM			0	0	0	0	0	0	0	0	1	1	1	1
5:45 PM			0	0	0	0	0	2	2	0	0	0	0	2
Total Survey			0	1	2	3	1	3	4	0	1	1	8	

Heavy Vehicle Peak Hour Summary

4:25 PM to 5:25 PM

By Approach	Northbound Ruben Ln			Southbound Ruben Ln			Eastbound Dubarko Rd			Westbound Dubarko Rd			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	0	0	0	1	1	2	1	1	2	0	0	0	2
PHF	0.00			0.25			0.25			0.00			0.50

By Movement	Northbound Ruben Ln			Southbound Ruben Ln			Eastbound Dubarko Rd			Westbound Dubarko Rd			Total	
	In	Out	Total	L	R	Total	L	T	Total	T	R	Total		
Volume			0	0	1	1	1	0	1		0	0	0	2
PHF			0.00	0.00	0.25	0.25	0.25	0.00	0.25		0.00	0.00	0.00	0.50

Heavy Vehicle Rolling Hour Summary

4:00 PM to 6:00 PM

Interval Start Time	Northbound Ruben Ln			Southbound Ruben Ln			Eastbound Dubarko Rd			Westbound Dubarko Rd			Interval Total
	In	Out	Total	L	R	Total	L	T	Total	T	R	Total	
4:00 PM			0	1	2	3	1	0	1	0	0	0	4
4:15 PM			0	1	1	2	1	0	1	0	0	0	3
4:30 PM			0	0	1	1	1	1	2	0	0	0	3
4:45 PM			0	0	0	0	1	1	2	0	1	1	3
5:00 PM			0	0	0	0	0	3	3	0	1	1	4

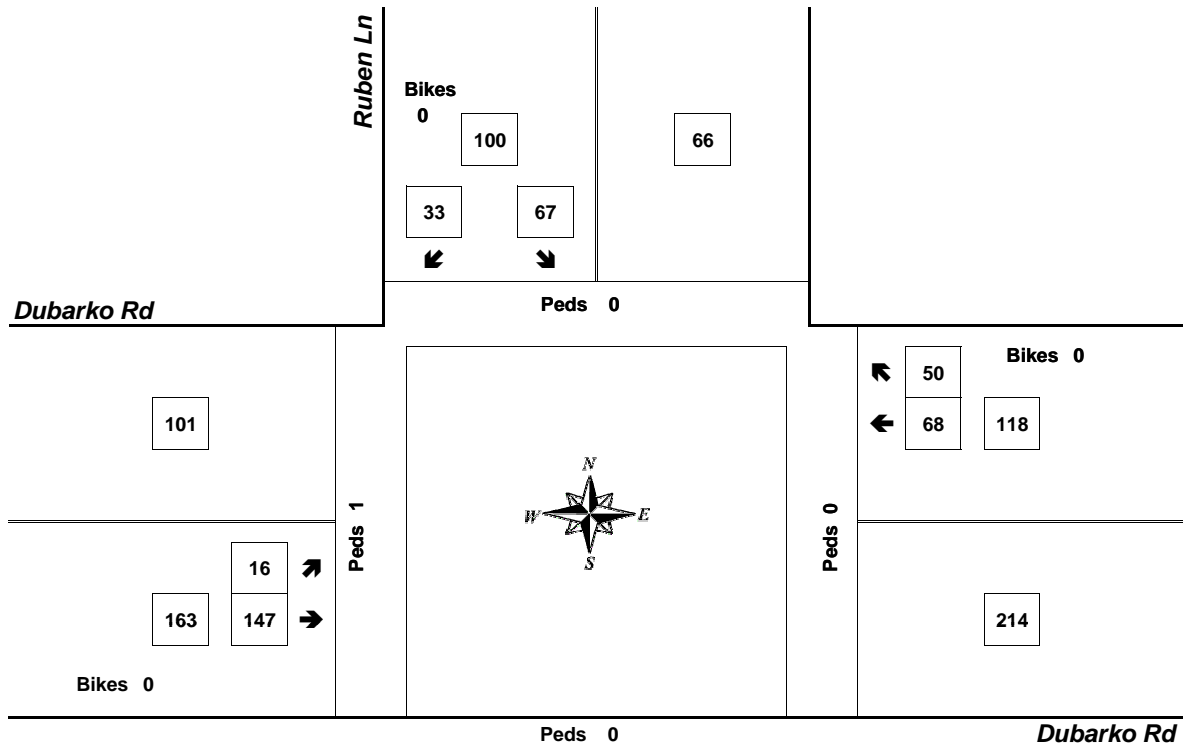
Peak Hour Summary



Clay Carney
(503) 833-2740

Ruben Ln & Dubarko Rd

4:25 PM to 5:25 PM
Wednesday, May 22, 2019



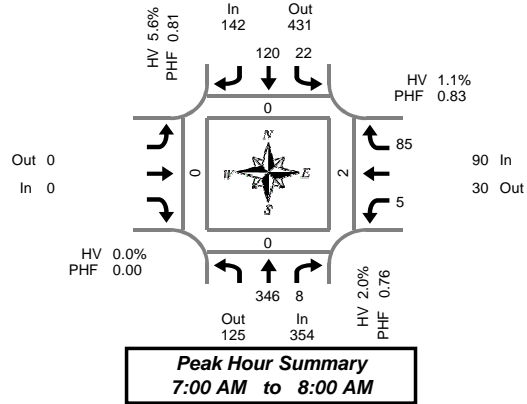
Approach	PHF	HV%	Volume
EB	0.75	0.6%	163
WB	0.89	0.0%	118
NB	0.00	0.0%	0
SB	0.86	1.0%	100
Intersection	0.89	0.5%	381

Count Period: 4:00 PM to 6:00 PM

Total Vehicle Summary



Clay Carney
(503) 833-2740



SE 362nd Ave & Dubarko Rd

Thursday, May 23, 2019

7:00 AM to 9:00 AM

5-Minute Interval Summary

7:00 AM to 9:00 AM

Interval Start Time	Northbound SE 362nd Ave			Southbound SE 362nd Ave			Eastbound Dubarko Rd		Westbound Dubarko Rd			Interval Total	Pedestrians Crosswalk			
	T	R	Bikes	L	T	Bikes	Bikes	L	R	Bikes	North		South	East	West	
7:00 AM	33	0	0	0	10	0	0	1	11	0	55	0	0	0	0	
7:05 AM	50	1	0	1	7	0	0	0	8	0	67	0	0	0	0	
7:10 AM	32	0	0	3	9	0	0	1	6	0	51	0	0	0	0	
7:15 AM	34	0	0	3	6	0	0	0	9	0	52	0	0	1	0	
7:20 AM	32	1	0	4	13	0	0	0	6	0	56	0	0	0	0	
7:25 AM	25	1	0	1	12	0	0	0	9	0	48	0	0	1	0	
7:30 AM	21	0	0	2	12	0	0	1	7	0	43	0	0	0	0	
7:35 AM	24	1	0	4	8	0	0	0	7	0	44	0	0	0	0	
7:40 AM	34	0	0	1	8	0	0	2	4	0	49	0	0	0	0	
7:45 AM	26	2	0	1	17	0	0	0	5	0	51	0	0	0	0	
7:50 AM	17	2	0	2	11	0	0	0	10	0	42	0	0	0	0	
7:55 AM	18	0	0	0	7	0	0	0	3	0	28	0	0	0	0	
8:00 AM	26	0	0	4	7	0	0	1	8	0	46	0	0	0	0	
8:05 AM	27	2	0	2	15	0	0	1	4	0	51	0	0	1	0	
8:10 AM	33	0	0	1	6	0	0	1	0	0	41	0	0	0	0	
8:15 AM	24	2	0	4	16	0	0	0	3	0	49	0	0	0	0	
8:20 AM	29	0	0	4	6	0	0	1	6	0	46	0	0	0	0	
8:25 AM	33	1	0	3	7	0	0	0	4	0	48	0	0	0	0	
8:30 AM	21	2	0	3	11	0	0	0	6	0	43	0	0	0	0	
8:35 AM	24	2	0	2	15	0	0	0	6	0	49	0	0	0	0	
8:40 AM	21	2	0	1	12	0	0	1	2	0	39	0	0	0	0	
8:45 AM	21	2	0	5	16	0	0	1	7	0	52	0	0	0	0	
8:50 AM	26	2	0	5	16	0	0	0	3	0	52	0	0	0	0	
8:55 AM	16	1	0	1	18	0	0	1	5	0	42	0	0	0	0	
Total Survey	647	24	0	57	265	0	0	0	12	139	0	1,144	0	0	3	0

15-Minute Interval Summary

7:00 AM to 9:00 AM

Interval Start Time	Northbound SE 362nd Ave			Southbound SE 362nd Ave			Eastbound Dubarko Rd		Westbound Dubarko Rd			Interval Total	Pedestrians Crosswalk			
	T	R	Bikes	L	T	Bikes	Bikes	L	R	Bikes	North		South	East	West	
7:00 AM	115	1	0	4	26	0	0	2	25	0	173	0	0	0	0	
7:15 AM	91	2	0	8	31	0	0	0	24	0	156	0	0	2	0	
7:30 AM	79	1	0	7	28	0	0	3	18	0	136	0	0	0	0	
7:45 AM	61	4	0	3	35	0	0	0	18	0	121	0	0	0	0	
8:00 AM	86	2	0	7	28	0	0	3	12	0	138	0	0	1	0	
8:15 AM	86	3	0	11	29	0	0	1	13	0	143	0	0	0	0	
8:30 AM	66	6	0	6	38	0	0	1	14	0	131	0	0	0	0	
8:45 AM	63	5	0	11	50	0	0	2	15	0	146	0	0	0	0	
Total Survey	647	24	0	57	265	0	0	0	12	139	0	1,144	0	0	3	0

Peak Hour Summary

7:00 AM to 8:00 AM

By Approach	Northbound SE 362nd Ave				Southbound SE 362nd Ave				Eastbound Dubarko Rd				Westbound Dubarko Rd				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	354	125	479	0	142	431	573	0	0	0	0	0	90	30	120	0	586	0	0	2	0
%HV	2.0%				5.6%				0.0%				1.1%				2.7%				
PHF	0.76				0.81				0.00				0.83				0.85				

By Movement	Northbound SE 362nd Ave			Southbound SE 362nd Ave			Eastbound Dubarko Rd		Westbound Dubarko Rd			Total
	T	R	Total	L	T	Total	Total	L	R	Total		
Volume	346	8	354	22	120	142	0	5	85	90	586	
%HV	NA	2.0%	0.0%	2.0%	13.6%	4.2%	NA	5.6%	NA	NA	2.7%	
PHF	0.75	0.50	0.76	0.55	0.81	0.81	0.00	0.42	0.85	0.83	0.85	

Rolling Hour Summary

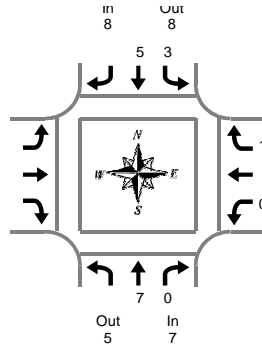
7:00 AM to 9:00 AM

Interval Start Time	Northbound SE 362nd Ave			Southbound SE 362nd Ave			Eastbound Dubarko Rd		Westbound Dubarko Rd			Interval Total	Pedestrians Crosswalk			
	T	R	Bikes	L	T	Bikes	Bikes	L	R	Bikes	North		South	East	West	
7:00 AM	346	8	0	22	120	0	0	5	85	0	586	0	0	2	0	
7:15 AM	317	9	0	25	122	0	0	6	72	0	551	0	0	3	0	
7:30 AM	312	10	0	28	120	0	0	7	61	0	538	0	0	1	0	
7:45 AM	299	15	0	27	130	0	0	5	57	0	533	0	0	1	0	
8:00 AM	301	16	0	35	145	0	0	7	54	0	558	0	0	1	0	

Heavy Vehicle Summary



Clay Carney
(503) 833-2740



SE 362nd Ave & Dubarko Rd

Thursday, May 23, 2019

7:00 AM to 9:00 AM

Peak Hour Summary
7:00 AM to 8:00 AM

Heavy Vehicle 5-Minute Interval Summary 7:00 AM to 9:00 AM

Interval Start Time	Northbound SE 362nd Ave			Southbound SE 362nd Ave			Eastbound Dubarko Rd			Westbound Dubarko Rd			Interval Total
	T	R	Total	L	T	Total			Total	L	R	Total	
7:00 AM	0	0	0	0	0	0			0	0	0	0	0
7:05 AM	2	0	2	0	0	0			0	0	0	0	2
7:10 AM	1	0	1	0	0	0			0	0	0	0	1
7:15 AM	1	0	1	0	0	0			0	0	0	0	1
7:20 AM	1	0	1	1	0	1			0	0	1	1	3
7:25 AM	0	0	0	0	0	0			0	0	0	0	0
7:30 AM	0	0	0	1	2	3			0	0	0	0	3
7:35 AM	1	0	1	1	0	1			0	0	0	0	2
7:40 AM	0	0	0	0	0	0			0	0	0	0	0
7:45 AM	1	0	1	0	2	2			0	0	0	0	3
7:50 AM	0	0	0	0	1	1			0	0	0	0	1
7:55 AM	0	0	0	0	0	0			0	0	0	0	0
8:00 AM	0	0	0	0	1	1			0	0	0	0	1
8:05 AM	1	0	1	0	0	0			0	0	0	0	1
8:10 AM	0	0	0	0	0	0			0	0	0	0	0
8:15 AM	3	1	4	0	1	1			0	0	0	0	5
8:20 AM	0	0	0	0	0	0			0	0	0	0	0
8:25 AM	0	0	0	0	2	2			0	0	1	1	3
8:30 AM	0	0	0	0	0	0			0	0	0	0	0
8:35 AM	0	0	0	0	2	2			0	0	0	0	2
8:40 AM	1	0	1	0	0	0			0	0	0	0	1
8:45 AM	1	0	1	0	0	0			0	0	0	0	1
8:50 AM	1	0	1	0	1	1			0	0	0	0	2
8:55 AM	6	0	6	0	1	1			0	0	1	1	8
Total Survey	20	1	21	3	13	16			0	0	3	3	40

Heavy Vehicle 15-Minute Interval Summary 7:00 AM to 9:00 AM

Interval Start Time	Northbound SE 362nd Ave			Southbound SE 362nd Ave			Eastbound Dubarko Rd			Westbound Dubarko Rd			Interval Total
	T	R	Total	L	T	Total			Total	L	R	Total	
7:00 AM	3	0	3	0	0	0			0	0	0	0	3
7:15 AM	2	0	2	1	0	1			0	0	1	1	4
7:30 AM	1	0	1	2	2	4			0	0	0	0	5
7:45 AM	1	0	1	0	3	3			0	0	0	0	4
8:00 AM	1	0	1	0	1	1			0	0	0	0	2
8:15 AM	3	1	4	0	3	3			0	0	1	1	8
8:30 AM	1	0	1	0	2	2			0	0	0	0	3
8:45 AM	8	0	8	0	2	2			0	0	1	1	11
Total Survey	20	1	21	3	13	16			0	0	3	3	40

Heavy Vehicle Peak Hour Summary 7:00 AM to 8:00 AM

By Approach	Northbound SE 362nd Ave			Southbound SE 362nd Ave			Eastbound Dubarko Rd			Westbound Dubarko Rd			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	7	5	12	8	8	16	0	0	0	1	3	4	16
PHF	0.44			0.50			0.00			0.25			0.67

By Movement	Northbound SE 362nd Ave			Southbound SE 362nd Ave			Eastbound Dubarko Rd			Westbound Dubarko Rd			Total
	T	R	Total	L	T	Total			Total	L	R	Total	
Volume	7	0	7	3	5	8			0	0	1	1	16
PHF	0.44	0.00	0.44	0.38	0.42	0.50			0.00	0.00	0.25	0.25	0.67

Heavy Vehicle Rolling Hour Summary 7:00 AM to 9:00 AM

Interval Start Time	Northbound SE 362nd Ave			Southbound SE 362nd Ave			Eastbound Dubarko Rd			Westbound Dubarko Rd			Interval Total
	T	R	Total	L	T	Total			Total	L	R	Total	
7:00 AM	7	0	7	3	5	8			0	0	1	1	16
7:15 AM	5	0	5	3	6	9			0	0	1	1	15
7:30 AM	6	1	7	2	9	11			0	0	1	1	19
7:45 AM	6	1	7	0	9	9			0	0	1	1	17
8:00 AM	13	1	14	0	8	8			0	0	2	2	24

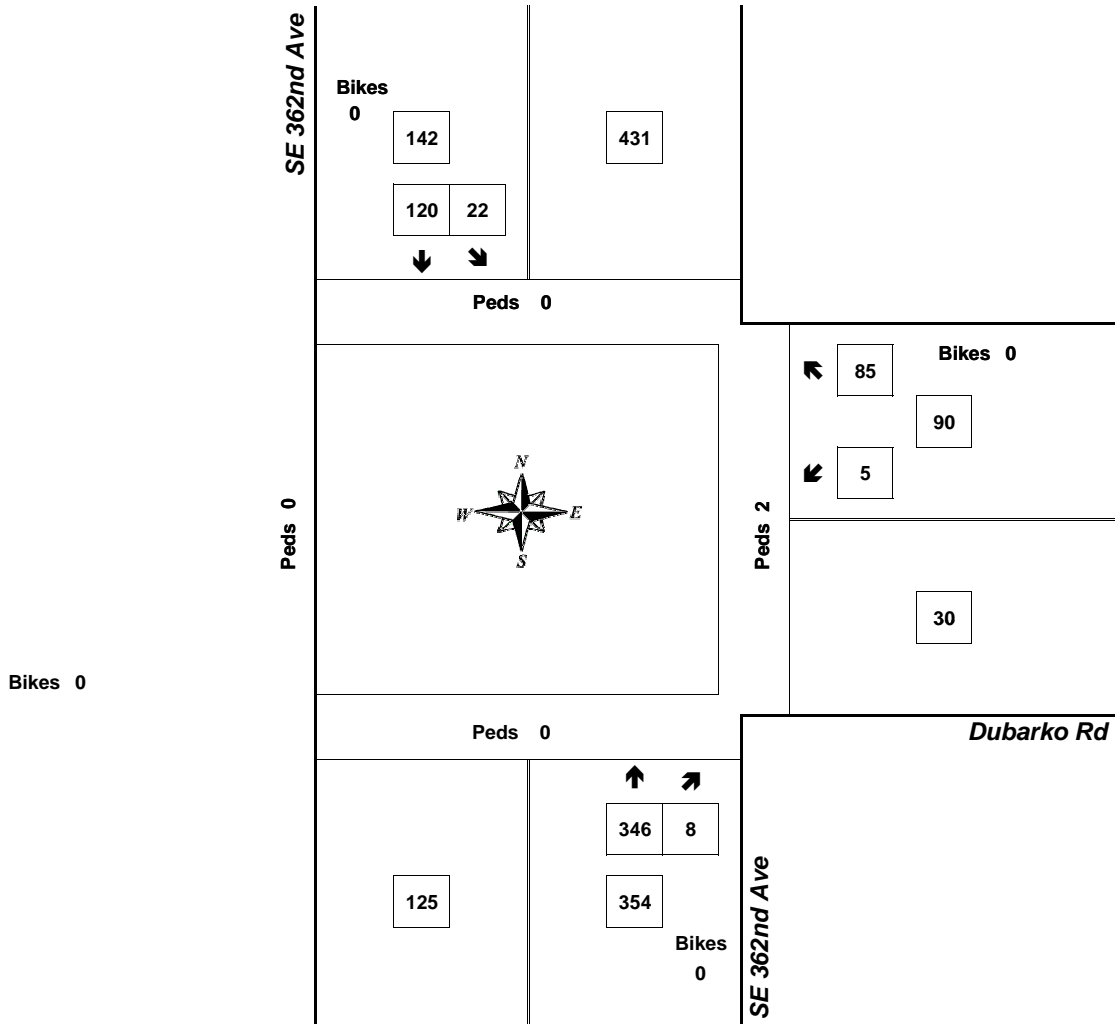
Peak Hour Summary



Clay Carney
(503) 833-2740

SE 362nd Ave & Dubarko Rd

7:00 AM to 8:00 AM
Thursday, May 23, 2019



Approach	PHF	HV%	Volume
EB	0.00	0.0%	0
WB	0.83	1.1%	90
NB	0.76	2.0%	354
SB	0.81	5.6%	142
Intersection	0.85	2.7%	586

Count Period: 7:00 AM to 9:00 AM

Total Vehicle Summary

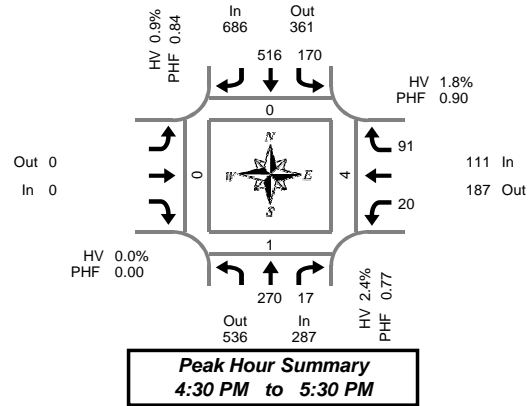


Clay Carney
(503) 833-2740

SE 362nd Ave & Dubarko Rd

Wednesday, May 22, 2019

4:00 PM to 6:00 PM



5-Minute Interval Summary

4:00 PM to 6:00 PM

Interval Start Time	Northbound SE 362nd Ave			Southbound SE 362nd Ave			Eastbound Dubarko Rd		Westbound Dubarko Rd			Interval Total	Pedestrians Crosswalk			
	T	R	Bikes	L	T	Bikes	Bikes	L	R	Bikes	North		South	East	West	
4:00 PM	25	0	0	11	35	0	0	0	1	6	0	78	1	0	3	0
4:05 PM	21	2	0	7	36	0	0	0	1	5	0	72	0	0	0	0
4:10 PM	19	2	0	8	36	0	0	0	1	6	0	72	0	0	0	0
4:15 PM	26	3	0	8	32	0	0	0	0	4	0	73	0	0	1	0
4:20 PM	22	1	0	14	45	0	0	0	3	4	0	89	0	0	0	0
4:25 PM	21	2	0	15	34	0	0	0	0	5	0	77	0	0	0	0
4:30 PM	19	2	0	18	30	0	0	0	1	8	0	78	0	0	2	0
4:35 PM	27	0	0	9	42	0	0	0	0	9	0	87	0	0	0	0
4:40 PM	17	3	0	12	33	0	0	0	2	9	0	76	0	0	0	0
4:45 PM	28	0	0	7	46	0	0	0	1	6	0	88	0	0	0	0
4:50 PM	28	2	0	14	33	0	0	0	3	7	0	87	0	0	0	0
4:55 PM	30	2	0	10	51	0	0	0	4	3	0	100	0	0	0	0
5:00 PM	30	1	0	15	42	0	0	0	3	11	0	102	0	0	0	0
5:05 PM	21	4	0	16	45	0	0	0	0	7	0	93	0	0	0	0
5:10 PM	21	1	0	20	49	0	0	0	2	6	0	99	0	0	0	0
5:15 PM	16	1	0	14	60	0	0	0	1	7	0	99	0	0	0	0
5:20 PM	17	1	0	19	42	0	0	0	2	12	0	93	0	1	0	0
5:25 PM	16	0	0	16	43	0	0	0	1	6	0	82	0	0	2	0
5:30 PM	19	0	0	16	24	0	0	0	2	4	0	65	0	0	0	0
5:35 PM	16	1	0	12	33	0	0	0	2	7	0	71	0	0	0	0
5:40 PM	26	0	0	9	39	0	0	0	1	6	0	81	0	0	0	0
5:45 PM	18	2	0	13	36	0	0	0	2	5	0	76	0	0	0	0
5:50 PM	19	2	0	17	43	0	0	0	1	7	0	89	0	0	0	0
5:55 PM	17	3	0	17	29	0	0	0	1	7	0	74	0	0	0	0
Total Survey	519	35	0	317	938	0	0	0	35	157	0	2,001	1	1	8	0

15-Minute Interval Summary

4:00 PM to 6:00 PM

Interval Start Time	Northbound SE 362nd Ave			Southbound SE 362nd Ave			Eastbound Dubarko Rd		Westbound Dubarko Rd			Interval Total	Pedestrians Crosswalk			
	T	R	Bikes	L	T	Bikes	Bikes	L	R	Bikes	North		South	East	West	
4:00 PM	65	4	0	26	107	0	0	0	3	17	0	222	1	0	3	0
4:15 PM	69	6	0	37	111	0	0	0	3	13	0	239	0	0	1	0
4:30 PM	63	5	0	39	105	0	0	0	3	26	0	241	0	0	2	0
4:45 PM	86	4	0	31	130	0	0	0	8	16	0	275	0	0	0	0
5:00 PM	72	6	0	51	136	0	0	0	5	24	0	294	0	0	0	0
5:15 PM	49	2	0	49	145	0	0	0	4	25	0	274	0	1	2	0
5:30 PM	61	1	0	37	96	0	0	0	5	17	0	217	0	0	0	0
5:45 PM	54	7	0	47	108	0	0	0	4	19	0	239	0	0	0	0
Total Survey	519	35	0	317	938	0	0	0	35	157	0	2,001	1	1	8	0

Peak Hour Summary

4:30 PM to 5:30 PM

By Approach	Northbound SE 362nd Ave				Southbound SE 362nd Ave				Eastbound Dubarko Rd				Westbound Dubarko Rd				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	287	536	823	0	686	361	1,047	0	0	0	0	0	111	187	298	0	1,084	0	1	4	0
%HV	2.4%				0.9%				0.0%				1.8%				1.4%				
PHF	0.77				0.84				0.00				0.90				0.92				

By Movement	Northbound SE 362nd Ave			Southbound SE 362nd Ave			Eastbound Dubarko Rd		Westbound Dubarko Rd			Total		
	T	R	Total	L	T	Total	Total	L	R	Total				
Volume	270	17	287	170	516	686	0	20	91	111	1,084			
%HV	NA	2.6%	0.0%	2.4%	1.2%	0.8%	NA	0.9%	NA	NA	NA	1.1%	1.8%	1.4%
PHF	0.77	0.61	0.77	0.80	0.84	0.84	0.00	0.50	0.88	0.90	0.92			

Rolling Hour Summary

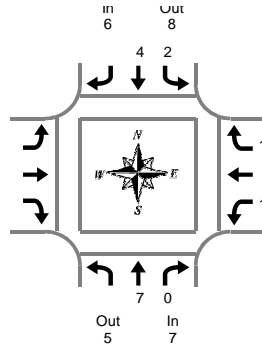
4:00 PM to 6:00 PM

Interval Start Time	Northbound SE 362nd Ave			Southbound SE 362nd Ave			Eastbound Dubarko Rd		Westbound Dubarko Rd			Interval Total	Pedestrians Crosswalk			
	T	R	Bikes	L	T	Bikes	Bikes	L	R	Bikes	North		South	East	West	
4:00 PM	283	19	0	133	453	0	0	0	17	72	0	977	1	0	6	0
4:15 PM	290	21	0	158	482	0	0	0	19	79	0	1,049	0	0	3	0
4:30 PM	270	17	0	170	516	0	0	0	20	91	0	1,084	0	1	4	0
4:45 PM	268	13	0	168	507	0	0	0	22	82	0	1,060	0	1	2	0
5:00 PM	236	16	0	184	485	0	0	0	18	85	0	1,024	0	1	2	0

Heavy Vehicle Summary



Clay Carney
(503) 833-2740



SE 362nd Ave & Dubarko Rd

Wednesday, May 22, 2019

4:00 PM to 6:00 PM

Heavy Vehicle 5-Minute Interval Summary 4:00 PM to 6:00 PM

Interval Start Time	Northbound SE 362nd Ave			Southbound SE 362nd Ave			Eastbound Dubarko Rd			Westbound Dubarko Rd			Interval Total
	T	R	Total	L	T	Total			Total	L	R	Total	
4:00 PM	2	0	2	0	1	1			0	0	0	0	3
4:05 PM	0	0	0	0	0	0			0	0	1	1	1
4:10 PM	2	0	2	0	1	1			0	0	0	0	3
4:15 PM	1	0	1	0	1	1			0	0	0	0	2
4:20 PM	0	0	0	0	1	1			0	0	0	0	1
4:25 PM	0	0	0	0	0	0			0	0	0	0	0
4:30 PM	0	0	0	0	3	3			0	0	0	0	3
4:35 PM	1	0	1	0	0	0			0	0	0	0	1
4:40 PM	0	0	0	1	0	1			0	1	0	1	2
4:45 PM	0	0	0	0	0	0			0	0	0	0	0
4:50 PM	0	0	0	0	0	0			0	0	0	0	0
4:55 PM	0	0	0	0	1	1			0	0	0	0	1
5:00 PM	0	0	0	0	0	0			0	0	0	0	0
5:05 PM	2	0	2	0	0	0			0	0	0	0	2
5:10 PM	0	0	0	0	0	0			0	0	0	0	0
5:15 PM	1	0	1	0	0	0			0	0	0	0	1
5:20 PM	1	0	1	0	0	0			0	0	1	1	2
5:25 PM	2	0	2	1	0	1			0	0	0	0	3
5:30 PM	1	0	1	0	1	1			0	0	0	0	2
5:35 PM	0	0	0	0	0	0			0	0	0	0	0
5:40 PM	0	0	0	0	0	0			0	0	0	0	0
5:45 PM	0	0	0	0	0	0			0	0	0	0	0
5:50 PM	0	0	0	1	0	1			0	0	0	0	1
5:55 PM	1	0	1	0	1	1			0	0	0	0	2
Total Survey	14	0	14	3	10	13			0	1	2	3	30

Heavy Vehicle 15-Minute Interval Summary 4:00 PM to 6:00 PM

Interval Start Time	Northbound SE 362nd Ave			Southbound SE 362nd Ave			Eastbound Dubarko Rd			Westbound Dubarko Rd			Interval Total
	T	R	Total	L	T	Total			Total	L	R	Total	
4:00 PM	4	0	4	0	2	2			0	0	1	1	7
4:15 PM	1	0	1	0	2	2			0	0	0	0	3
4:30 PM	1	0	1	1	3	4			0	1	0	1	6
4:45 PM	0	0	0	0	1	1			0	0	0	0	1
5:00 PM	2	0	2	0	0	0			0	0	0	0	2
5:15 PM	4	0	4	1	0	1			0	0	1	1	6
5:30 PM	1	0	1	0	1	1			0	0	0	0	2
5:45 PM	1	0	1	1	1	2			0	0	0	0	3
Total Survey	14	0	14	3	10	13			0	1	2	3	30

Heavy Vehicle Peak Hour Summary 4:30 PM to 5:30 PM

By Approach	Northbound SE 362nd Ave			Southbound SE 362nd Ave			Eastbound Dubarko Rd			Westbound Dubarko Rd			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	7	5	12	6	8	14	0	0	0	2	2	4	15
PHF	0.44			0.38			0.00			0.50			0.63

By Movement	Northbound SE 362nd Ave			Southbound SE 362nd Ave			Eastbound Dubarko Rd			Westbound Dubarko Rd			Total
	T	R	Total	L	T	Total			Total	L	R	Total	
Volume	7	0	7	2	4	6			0	1	1	2	15
PHF	0.44	0.00	0.44	0.50	0.33	0.38			0.00	0.25	0.25	0.50	0.63

Heavy Vehicle Rolling Hour Summary 4:00 PM to 6:00 PM

Interval Start Time	Northbound SE 362nd Ave			Southbound SE 362nd Ave			Eastbound Dubarko Rd			Westbound Dubarko Rd			Interval Total
	T	R	Total	L	T	Total			Total	L	R	Total	
4:00 PM	6	0	6	1	8	9			0	1	1	2	17
4:15 PM	4	0	4	1	6	7			0	1	0	1	12
4:30 PM	7	0	7	2	4	6			0	1	1	2	15
4:45 PM	7	0	7	1	2	3			0	0	1	1	11
5:00 PM	8	0	8	2	2	4			0	0	1	1	13

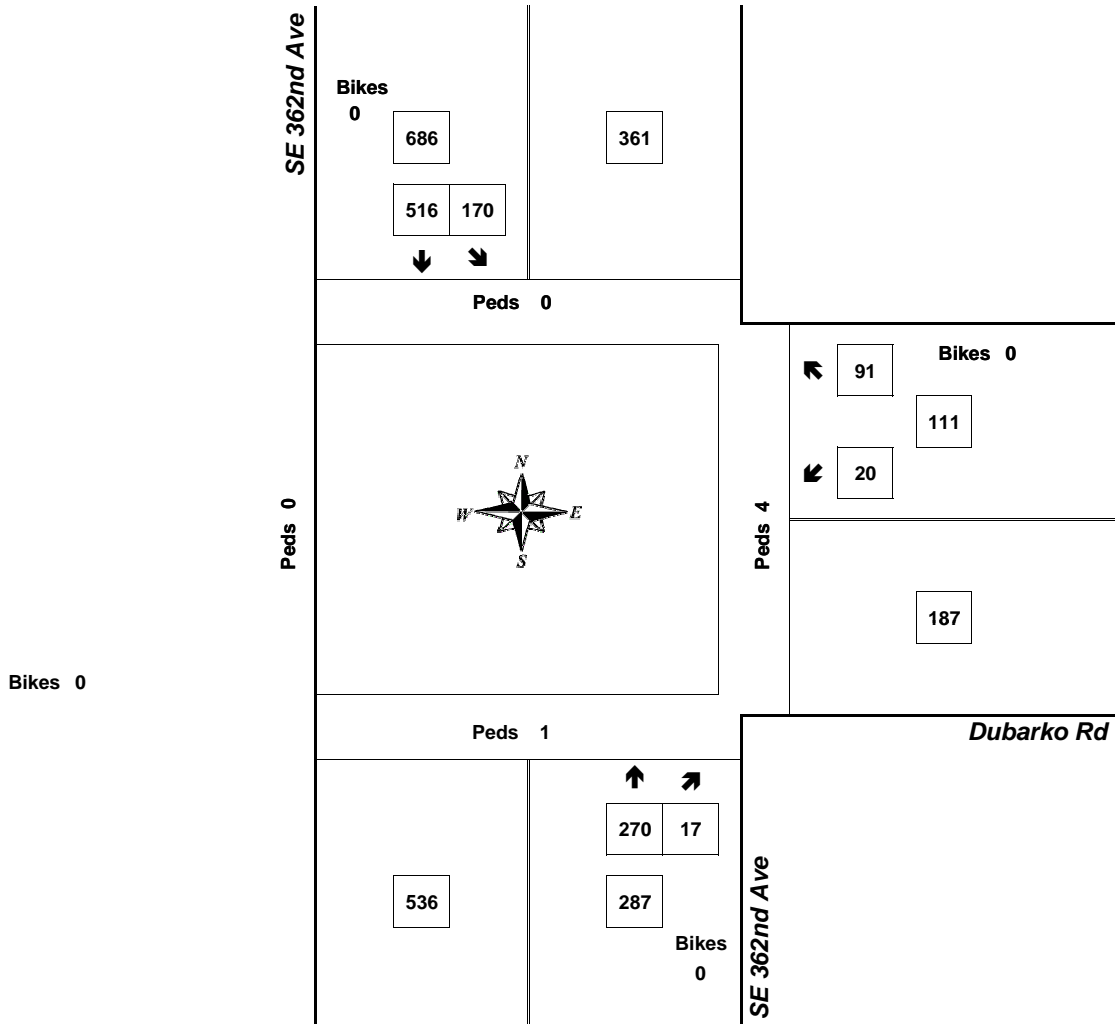
Peak Hour Summary



Clay Carney
(503) 833-2740

SE 362nd Ave & Dubarko Rd

4:30 PM to 5:30 PM
Wednesday, May 22, 2019



Approach	PHF	HV%	Volume
EB	0.00	0.0%	0
WB	0.90	1.8%	111
NB	0.77	2.4%	287
SB	0.84	0.9%	686
Intersection	0.92	1.4%	1,084

Count Period: 4:00 PM to 6:00 PM

CITY OF SANDY, CLACKAMAS COUNTY

CITY OF SANDY, CLACKAMAS COUNTY

DUBARKO RD at BLUFF RD, City of Sandy, Clackamas County, 01/01/2012 to 12/31/2016

SER#	S	D	M	P	R	J	S	W	DATE	CLASS	CITY STREET	INT-TYPE	SPCL USE	TRLR QTY	MOVE	A	S	RD DPT	E	L	G	N	H	R	TIME	FROM	SECOND STREET	DIRECT	LEGS	TRAF-	RNDBT	SURF	COLL	OWNER	FROM	PRTC	INJ	G	E	LICNS	PED	UNLOC?	D	C	S	V	L	K	LAT	LONG	LRS	LOCTN	(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V#	TYPE	TO	P#	TYPE	SVRTY	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE
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Disclaimer: The information contained in this report is compiled from individual driver and police crash reports submitted to the Oregon Department of Transportation as required in ORS 811.720. The Crash Analysis and Reporting Unit is committed to providing the highest quality crash data to customers. However, because submittal of crash report forms is the responsibility of the individual driver, the Crash Analysis and Reporting Unit can not guarantee that all qualifying crashes are represented nor can assurances be made that all details pertaining to a single crash are accurate. Note: Legislative changes to DMV's vehicle crash reporting requirement, effective 01/01/2004, may result in fewer property damage only crashes being eligible for inclusion in the Statewide Crash Data File.

CITY OF SANDY, CLACKAMAS COUNTY

CITY OF SANDY, CLACKAMAS COUNTY

DUBARKO RD at MELISSA AVE, City of Sandy, Clackamas County, 01/01/2012 to 12/31/2016

1 - 2 of 2 Crash records shown.

SER#	P	R	J	S	W	DATE	CLASS	CITY STREET	RD CHAR	INT-TYPE	SPCL USE	MOVE	A	S																
															INVEST	E	A	U	I	C	O	DAY	DIST	FIRST STREET	RD CHAR	(MEDIAN)	INT-REL	OFFRD	WTHR	CRASH
RD DPT	E	L	G	N	H	R	TIME	FROM	SECOND STREET	DIRECT	LEGS	TRAF-	RNDBT	SURF	COLL	OWNER	FROM	P#	TYPE	SVRTY	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE		
UNLOC?	D	C	S	V	L	K	LAT	LONG	LRS	LOCTN	(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V#	TYPE	TO	P#	TYPE	SVRTY	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE	
00557	N	N	N			02/07/2014	16	DUBARKO RD	INTER	3-LEG	N	N	SNOW	ANGL-STP	01	NONE	0	TURN-L										124	08	
						FR	0	MELISSA AVE	S				ICE	TURN		PRVTE	SE-S										000	124	00	
N						3P			06	0			DAY	PDO		PSNGR CAR			01	DRVR	NONE	59	M	OR-Y	002		017		08	
N						45 23 30.2562959	-122 16 36.081048																							
																02	NONE	0	STOP									011		00
																PRVTE	S -N			01	DRVR	NONE	57	F	OR-Y	000		000		00
																PSNGR CAR														
01045	N	N	N			03/26/2015	16	DUBARKO RD	INTER	3-LEG	N	N	CLR	ANGL-OTH	01	NONE	0	STRGHT											02	
						TH	0	MELISSA AVE	CN				DRY	TURN		PRVTE	NW-SE										000		00	
N						8A			04	0			DAWN	PDO		PSNGR CAR			01	DRVR	NONE	23	F	OR-Y	000		000		00	
N						45 23 30.26 36.08	-122 16 36.08																							
																02	NONE	0	TURN-L									015		00
																PRVTE	S -NW			01	DRVR	NONE	00	F	UNK	028		000		02
																PSNGR CAR														

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CITY OF SANDY, CLACKAMAS COUNTY

DUBARKO RD at MELISSA AVE, City of Sandy, Clackamas County, 01/01/2012 to 12/31/2016

CITY OF SANDY, CLACKAMAS COUNTY

DUBARKO RD at RUBEN LN, City of Sandy, Clackamas County, 01/01/2012 to 12/31/2016

SER#	S	D	M	P	R	J	S	W	DATE	CLASS	CITY STREET	INT-TYPE	SPCL USE	INVEST	E	A	U	I	C	O	DAY	DIST	FIRST STREET	RD CHAR	(MEDIAN)	INT-REL	OFFRD	WTHR	CRASH	TRLR QTY	MOVE	A	S	RD DPT	E	L	G	N	H	R	TIME	FROM	SECOND STREET	DIRECT	LEGS	TRAF-	RNDBT	SURF	COLL	OWNER	FROM	PRTC	INJ	G	E	LICNS	PED	UNLOC?	D	C	S	V	L	K	LAT	LONG	LRS	LOCTN	(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V#	TYPE	TO	P#	TYPE	SVRTY	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE
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CITY OF SANDY, CLACKAMAS COUNTY

Traffic Signal Warrant Analysis



Project: 18197 - Ponder Subdivision
 Date: 6/20/2019
 Scenario: Year 2021 Buildout Conditions - Morning Peak Hour

Major Street: SE 362nd Drive Minor Street: Dubarko Road
 Number of Lanes: 1 Number of Lanes: 1
 PM Peak Hour Volumes: 538 PM Peak Hour Volumes: 103

Warrant Used:
 100 percent of standard warrants used
 70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
Major St.	Minor St.	100% Warrants	70% Warrants	100% Warrants	70% Warrants
WARRANT 1, CONDITION A					
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
WARRANT 1, CONDITION B					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
<i>Warrant 1</i>			
<i>Condition A: Minimum Vehicular Volume</i>			
Major Street	5,380	8,850	
Minor Street*	1,030	2,650	No
<i>Condition B: Interruption of Continuous Traffic</i>			
Major Street	5,380	13,300	
Minor Street*	1,030	1,350	No
<i>Combination Warrant</i>			
Major Street	5,380	10,640	
Minor Street*	1,030	2,120	No

* Minor street right-turning traffic volumes reduced by 25%.

Traffic Signal Warrant Analysis



Project: 18197 - Ponder Subdivision
 Date: 6/20/2019
 Scenario: Year 2021 Buildout Conditions - Morning Peak Hour

Major Street:	Dubarko Road	Minor Street:	Ruben Lane
Number of Lanes:	1	Number of Lanes:	1
PM Peak Hour Volumes:	248	PM Peak Hour Volumes:	19

Warrant Used:

 X 100 percent of standard warrants used
 70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
<u>Major St.</u>	<u>Minor St.</u>	<u>100% Warrants</u>	<u>70% Warrants</u>	<u>100% Warrants</u>	<u>70% Warrants</u>
WARRANT 1, CONDITION A					
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
WARRANT 1, CONDITION B					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
<i>Warrant 1</i>			
<i>Condition A: Minimum Vehicular Volume</i>			
Major Street	2,480	8,850	
Minor Street*	190	2,650	No
<i>Condition B: Interruption of Continuous Traffic</i>			
Major Street	2,480	13,300	
Minor Street*	190	1,350	No
<i>Combination Warrant</i>			
Major Street	2,480	10,640	
Minor Street*	190	2,120	No

* Minor street right-turning traffic volumes reduced by 25%.

Traffic Signal Warrant Analysis



Project: 18197 - Ponder Subdivision
 Date: 6/20/2019
 Scenario: Year 2021 Buildout Conditions - Morning Peak Hour

Major Street:	Dubarko Road	Minor Street:	Melissa Avenue
Number of Lanes:	1	Number of Lanes:	1
PM Peak Hour Volumes:	84	PM Peak Hour Volumes:	113

Warrant Used:

 X 100 percent of standard warrants used
 70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
<u>Major St.</u>	<u>Minor St.</u>	<u>100% Warrants</u>	<u>70% Warrants</u>	<u>100% Warrants</u>	<u>70% Warrants</u>
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500

WARRANT 1, CONDITION B

<u>Major St.</u>	<u>Minor St.</u>	<u>100% Warrants</u>	<u>70% Warrants</u>	<u>100% Warrants</u>	<u>70% Warrants</u>
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
<i>Warrant 1</i>			
<i>Condition A: Minimum Vehicular Volume</i>			
Major Street	840	8,850	
Minor Street*	1,130	2,650	No
<i>Condition B: Interruption of Continuous Traffic</i>			
Major Street	840	13,300	
Minor Street*	1,130	1,350	No
<i>Combination Warrant</i>			
Major Street	840	10,640	
Minor Street*	1,130	2,120	No

* Minor street right-turning traffic volumes reduced by 25%.

Traffic Signal Warrant Analysis



Project: 18197 - Ponder Subdivision
 Date: 6/20/2019
 Scenario: Year 2021 Buildout Conditions - Morning Peak Hour

Major Street:	Dubarko Road	Minor Street:	Bluff Road
Number of Lanes:	1	Number of Lanes:	1
PM Peak Hour Volumes:	164	PM Peak Hour Volumes:	36

Warrant Used:

 X 100 percent of standard warrants used
 70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
<u>Major St.</u>	<u>Minor St.</u>	<u>100% Warrants</u>	<u>70% Warrants</u>	<u>100% Warrants</u>	<u>70% Warrants</u>
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500

WARRANT 1, CONDITION B

<u>Major St.</u>	<u>Minor St.</u>	<u>100% Warrants</u>	<u>70% Warrants</u>	<u>100% Warrants</u>	<u>70% Warrants</u>
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
<i>Warrant 1</i>			
<i>Condition A: Minimum Vehicular Volume</i>			
Major Street	1,640	8,850	
Minor Street*	360	2,650	No
<i>Condition B: Interruption of Continuous Traffic</i>			
Major Street	1,640	13,300	
Minor Street*	360	1,350	No
<i>Combination Warrant</i>			
Major Street	1,640	10,640	
Minor Street*	360	2,120	No

Traffic Signal Warrant Analysis



Project: 18197 - Ponder Subdivision
 Date: 6/20/2019
 Scenario: Year 2021 Buildout Conditions - Evening Peak Hour

Major Street: SE 362nd Drive Minor Street: Dubarko Road
 Number of Lanes: 1 Number of Lanes: 1
 PM Peak Hour Volumes: 1073 PM Peak Hour Volumes: 114

Warrant Used:

 X 100 percent of standard warrants used
 70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
Major St.	Minor St.	100% Warrants	70% Warrants	100% Warrants	70% Warrants
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500

WARRANT 1, CONDITION B

Major St.	Minor St.	100% Warrants	70% Warrants	100% Warrants	70% Warrants
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
<i>Warrant 1</i>			
<i>Condition A: Minimum Vehicular Volume</i>			
Major Street	10,730	8,850	No
Minor Street*	1,140	2,650	
<i>Condition B: Interruption of Continuous Traffic</i>			
Major Street	10,730	13,300	No
Minor Street*	1,140	1,350	
<i>Combination Warrant</i>			
Major Street	10,730	10,640	No
Minor Street*	1,140	2,120	

* Minor street right-turning traffic volumes reduced by 25%.

Traffic Signal Warrant Analysis



Project: 18197 - Ponder Subdivision
 Date: 6/20/2019
 Scenario: Year 2021 Buildout Conditions - Evening Peak Hour

Major Street:	Dubarko Road	Minor Street:	Ruben Lane
Number of Lanes:	1	Number of Lanes:	1
PM Peak Hour Volumes:	374	PM Peak Hour Volumes:	116

Warrant Used:

 X 100 percent of standard warrants used
 70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
<u>Major St.</u>	<u>Minor St.</u>	<u>100% Warrants</u>	<u>70% Warrants</u>	<u>100% Warrants</u>	<u>70% Warrants</u>
WARRANT 1, CONDITION A					
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
WARRANT 1, CONDITION B					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
<i>Warrant 1</i>			
<i>Condition A: Minimum Vehicular Volume</i>			
Major Street	3,740	8,850	
Minor Street*	1,160	2,650	No
<i>Condition B: Interruption of Continuous Traffic</i>			
Major Street	3,740	13,300	
Minor Street*	1,160	1,350	No
<i>Combination Warrant</i>			
Major Street	3,740	10,640	
Minor Street*	1,160	2,120	No

* Minor street right-turning traffic volumes reduced by 25%.

Traffic Signal Warrant Analysis



Project: 18197 - Ponder Subdivision
 Date: 6/20/2019
 Scenario: Year 2021 Buildout Conditions - Evening Peak Hour

Major Street:	Dubarko Road	Minor Street:	Melissa Avenue
Number of Lanes:	1	Number of Lanes:	1
PM Peak Hour Volumes:	287	PM Peak Hour Volumes:	68

Warrant Used:

 X 100 percent of standard warrants used
 70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
<u>Major St.</u>	<u>Minor St.</u>	<u>100% Warrants</u>	<u>70% Warrants</u>	<u>100% Warrants</u>	<u>70% Warrants</u>
WARRANT 1, CONDITION A					
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
WARRANT 1, CONDITION B					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
<i>Warrant 1</i>			
<i>Condition A: Minimum Vehicular Volume</i>			
Major Street	2,870	8,850	
Minor Street*	680	2,650	No
<i>Condition B: Interruption of Continuous Traffic</i>			
Major Street	2,870	13,300	
Minor Street*	680	1,350	No
<i>Combination Warrant</i>			
Major Street	2,870	10,640	
Minor Street*	680	2,120	No

* Minor street right-turning traffic volumes reduced by 25%.

Traffic Signal Warrant Analysis



Project: 18197 - Ponder Subdivision
 Date: 6/20/2019
 Scenario: Year 2021 Buildout Conditions - Evening Peak Hour

Major Street:	Dubarko Road	Minor Street:	Bluff Road
Number of Lanes:	1	Number of Lanes:	1
PM Peak Hour Volumes:	220	PM Peak Hour Volumes:	61

Warrant Used:

 X 100 percent of standard warrants used
 70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
<u>Major St.</u>	<u>Minor St.</u>	<u>100% Warrants</u>	<u>70% Warrants</u>	<u>100% Warrants</u>	<u>70% Warrants</u>
WARRANT 1, CONDITION A					
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
WARRANT 1, CONDITION B					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
<i>Warrant 1</i>			
<i>Condition A: Minimum Vehicular Volume</i>			
Major Street	2,200	8,850	
Minor Street*	610	2,650	No
<i>Condition B: Interruption of Continuous Traffic</i>			
Major Street	2,200	13,300	
Minor Street*	610	1,350	No
<i>Combination Warrant</i>			
Major Street	2,200	10,640	
Minor Street*	610	2,120	No

* Minor street right-turning traffic volumes reduced by 25%.

Left-Turn Lane Warrant Analysis



Project: 18197 - Ponder Subdivision
 Intersection: Melissa Avenue at Dubarko Road
 Date: 6/20/2019
 Scenario: 2021 Buildout AM

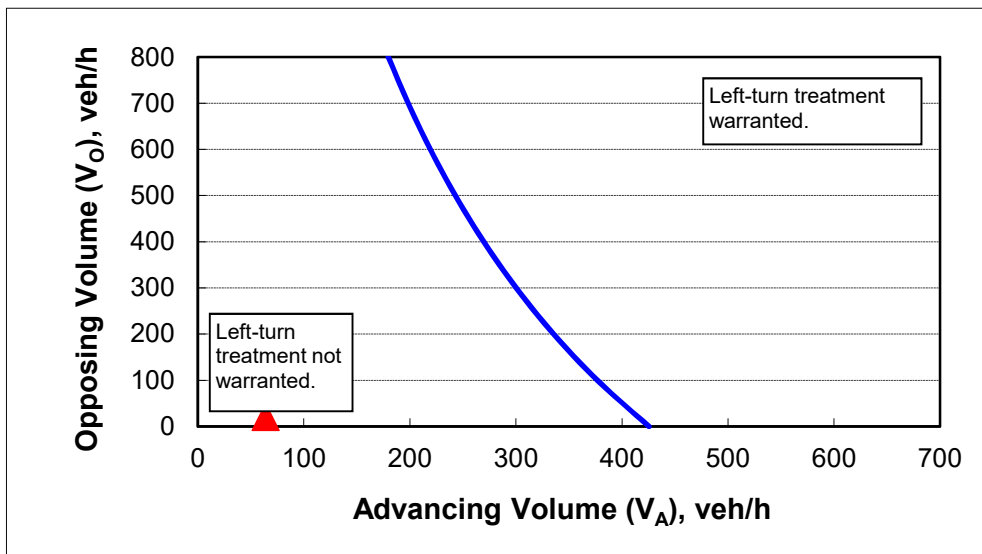
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	25
Left-turns in advancing volume (V_A), veh/hr:	23
Advancing volume (V_A), veh/h:	64
Opposing volume (V_O), veh/h:	20

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	415
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS (2-Lane Roadway)

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Left-Turn Lane Warrant Analysis



Project: 18197 - Ponder Subdivision
 Intersection: Melissa Avenue at Dubarko Road
 Date: 6/20/2019
 Scenario: 2021 Buildout PM

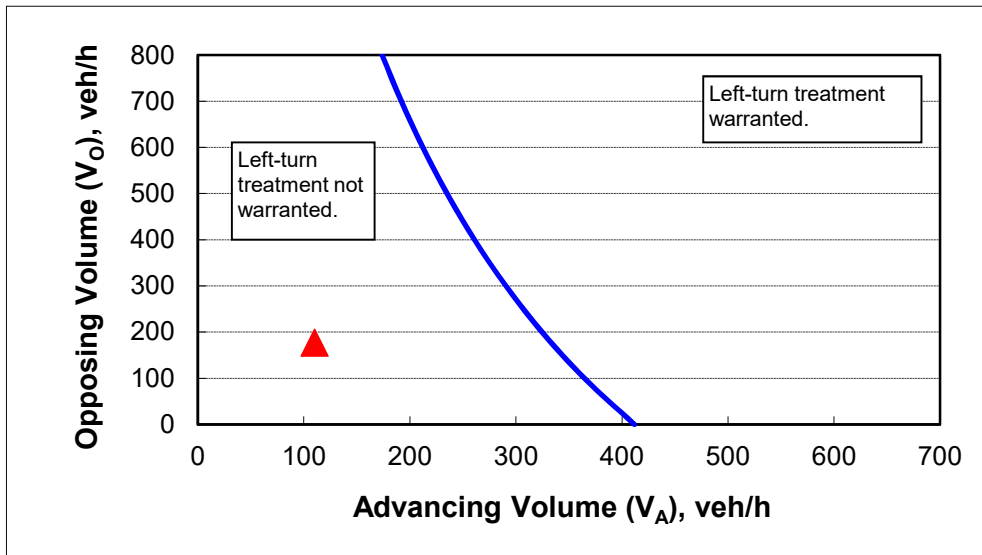
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	25
Left-turns in advancing volume (V_A), veh/hr:	48
Advancing volume (V_A), veh/h:	110
Opposing volume (V_O), veh/h:	177

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	333
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS (2-Lane Roadway)

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

HCM 2010 TWSC
 1: SE 362nd Drive & Dubarko Road

05/28/2019

Intersection						
Int Delay, s/veh	2.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔		↔	↔
Traffic Vol, veh/h	5	85	346	8	22	120
Future Vol, veh/h	5	85	346	8	22	120
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	115	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	1	1	2	2	6	6
Mvmt Flow	6	100	407	9	26	141

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	605	412	0	0	416
Stage 1	412	-	-	-	-
Stage 2	193	-	-	-	-
Critical Hdwy	6.41	6.21	-	-	4.16
Critical Hdwy Stg 1	5.41	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-
Follow-up Hdwy	3.509	3.309	-	-	2.254
Pot Cap-1 Maneuver	462	642	-	-	1122
Stage 1	671	-	-	-	-
Stage 2	842	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	451	642	-	-	1122
Mov Cap-2 Maneuver	451	-	-	-	-
Stage 1	671	-	-	-	-
Stage 2	822	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.9	0	1.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	627	1122
HCM Lane V/C Ratio	-	-	0.169	0.023
HCM Control Delay (s)	-	-	11.9	8.3
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.6	0.1

Intersection

Int Delay, s/veh 1.6

Movement EBL EBT WBT WBR SBL SBR

Lane Configurations		↶	↷		↶	
Traffic Vol, veh/h	19	14	48	89	10	6
Future Vol, veh/h	19	14	48	89	10	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	6	6	2	2	13	13
Mvmt Flow	21	16	54	100	11	7

Major/Minor Major1 Major2 Minor2

Conflicting Flow All	154	0	-	0	162	104
Stage 1	-	-	-	-	104	-
Stage 2	-	-	-	-	58	-
Critical Hdwy	4.16	-	-	-	6.53	6.33
Critical Hdwy Stg 1	-	-	-	-	5.53	-
Critical Hdwy Stg 2	-	-	-	-	5.53	-
Follow-up Hdwy	2.254	-	-	-	3.617	3.417
Pot Cap-1 Maneuver	1402	-	-	-	804	922
Stage 1	-	-	-	-	893	-
Stage 2	-	-	-	-	937	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1402	-	-	-	792	922
Mov Cap-2 Maneuver	-	-	-	-	792	-
Stage 1	-	-	-	-	893	-
Stage 2	-	-	-	-	923	-

Approach EB WB SB

HCM Control Delay, s	4.4	0	9.4
HCM LOS			A




Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1

Capacity (veh/h)	1402	-	-	-	836
HCM Lane V/C Ratio	0.015	-	-	-	0.022
HCM Control Delay (s)	7.6	0	-	-	9.4
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection

Int Delay, s/veh 5.5

Movement EBT EBR WBL WBT NBL NBR

Lane Configurations						
Traffic Vol, veh/h	8	1	14	39	40	27
Future Vol, veh/h	8	1	14	39	40	27
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	79	79	79	79	79	79
Heavy Vehicles, %	22	22	2	2	2	2
Mvmt Flow	10	1	18	49	51	34

Major/Minor Major1 Major2 Minor1

Conflicting Flow All	0	0	11	0	96	11
Stage 1	-	-	-	-	11	-
Stage 2	-	-	-	-	85	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1608	-	903	1070
Stage 1	-	-	-	-	1012	-
Stage 2	-	-	-	-	938	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1608	-	892	1070
Mov Cap-2 Maneuver	-	-	-	-	892	-
Stage 1	-	-	-	-	1012	-
Stage 2	-	-	-	-	927	-




Approach EB WB NB

HCM Control Delay, s	0	1.9	9.1
HCM LOS			A

Minor Lane/Major Mvmt NBLn1 EBT EBR WBL WBT

Capacity (veh/h)	956	-	-	1608	-
HCM Lane V/C Ratio	0.089	-	-	0.011	-
HCM Control Delay (s)	9.1	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Intersection	
Intersection Delay, s/veh	7.6
Intersection LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	25	9	12	11	40	55
Future Vol, veh/h	25	9	12	11	40	55
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles, %	12	12	9	9	4	4
Mvmt Flow	36	13	17	16	57	79
Number of Lanes	1	0	0	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	7.5	7.7	7.6
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1
Vol Left, %	42%	0%	52%
Vol Thru, %	0%	74%	48%
Vol Right, %	58%	26%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	95	34	23
LT Vol	40	0	12
Through Vol	0	25	11
RT Vol	55	9	0
Lane Flow Rate	136	49	33
Geometry Grp	1	1	1
Degree of Util (X)	0.145	0.057	0.04
Departure Headway (Hd)	3.844	4.21	4.435
Convergence, Y/N	Yes	Yes	Yes
Cap	927	844	801
Service Time	1.892	2.267	2.495
HCM Lane V/C Ratio	0.147	0.058	0.041
HCM Control Delay	7.6	7.5	7.7
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.5	0.2	0.1

HCM 2010 TWSC
 1: SE 362nd Drive & Dubarko Road

05/28/2019

Intersection						
Int Delay, s/veh	2.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔		↔	↔
Traffic Vol, veh/h	20	91	270	17	170	516
Future Vol, veh/h	20	91	270	17	170	516
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	115	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	1	1
Mvmt Flow	22	99	293	18	185	561

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	1233	303	0	0	312
Stage 1	303	-	-	-	-
Stage 2	930	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.11
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.209
Pot Cap-1 Maneuver	195	737	-	-	1254
Stage 1	749	-	-	-	-
Stage 2	384	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	166	737	-	-	1254
Mov Cap-2 Maneuver	166	-	-	-	-
Stage 1	749	-	-	-	-
Stage 2	327	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15.7	0	2.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	455	1254
HCM Lane V/C Ratio	-	-	0.265	0.147
HCM Control Delay (s)	-	-	15.7	8.4
HCM Lane LOS	-	-	C	A
HCM 95th %tile Q(veh)	-	-	1.1	0.5

Intersection

Int Delay, s/veh 3.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	16	147	68	50	67	33
Future Vol, veh/h	16	147	68	50	67	33
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	1	1	0	0	1	1
Mvmt Flow	18	165	76	56	75	37

Major/Minor

	Major1	Major2	Minor2
Conflicting Flow All	133	0	305
Stage 1	-	-	104
Stage 2	-	-	201
Critical Hdwy	4.11	-	6.41
Critical Hdwy Stg 1	-	-	5.41
Critical Hdwy Stg 2	-	-	5.41
Follow-up Hdwy	2.209	-	3.509
Pot Cap-1 Maneuver	1458	-	689
Stage 1	-	-	923
Stage 2	-	-	835
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1458	-	679
Mov Cap-2 Maneuver	-	-	679
Stage 1	-	-	923
Stage 2	-	-	823

Approach

	EB	WB	SB
HCM Control Delay, s	0.7	0	10.6
HCM LOS			B

Minor Lane/Major Mvmt

	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1458	-	-	-	750
HCM Lane V/C Ratio	0.012	-	-	-	0.15
HCM Control Delay (s)	7.5	0	-	-	10.6
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.5

Intersection

Int Delay, s/veh 2.1

Movement EBT EBR WBL WBT NBL NBR

Lane Configurations						
Traffic Vol, veh/h	85	47	22	58	21	16
Future Vol, veh/h	85	47	22	58	21	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	1	1	0	0	0	0
Mvmt Flow	100	55	26	68	25	19

Major/Minor Major1 Major2 Minor1

Conflicting Flow All	0	0	155	0	248	128
Stage 1	-	-	-	-	128	-
Stage 2	-	-	-	-	120	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1438	-	745	927
Stage 1	-	-	-	-	903	-
Stage 2	-	-	-	-	910	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1438	-	731	927
Mov Cap-2 Maneuver	-	-	-	-	731	-
Stage 1	-	-	-	-	903	-
Stage 2	-	-	-	-	893	-




Approach EB WB NB

HCM Control Delay, s	0	2.1	9.7
HCM LOS			A

Minor Lane/Major Mvmt NBLn1 EBT EBR WBL WBT

Capacity (veh/h)	805	-	-	1438	-
HCM Lane V/C Ratio	0.054	-	-	0.018	-
HCM Control Delay (s)	9.7	-	-	7.5	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

Intersection	
Intersection Delay, s/veh	7.4
Intersection LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	19	89	23	16	56	24
Future Vol, veh/h	19	89	23	16	56	24
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	0	0	0	0	1	1
Mvmt Flow	22	105	27	19	66	28
Number of Lanes	1	0	0	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	7.2	7.6	7.7
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1
Vol Left, %	70%	0%	59%
Vol Thru, %	0%	18%	41%
Vol Right, %	30%	82%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	80	108	39
LT Vol	56	0	23
Through Vol	0	19	16
RT Vol	24	89	0
Lane Flow Rate	94	127	46
Geometry Grp	1	1	1
Degree of Util (X)	0.109	0.127	0.055
Departure Headway (Hd)	4.175	3.606	4.282
Convergence, Y/N	Yes	Yes	Yes
Cap	853	983	829
Service Time	2.228	1.668	2.345
HCM Lane V/C Ratio	0.11	0.129	0.055
HCM Control Delay	7.7	7.2	7.6
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.4	0.4	0.2

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Intersection						
Int Delay, s/veh	2.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔		↔	↔
Traffic Vol, veh/h	9	101	367	9	27	127
Future Vol, veh/h	9	101	367	9	27	127
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	115	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	1	1	2	2	6	6
Mvmt Flow	11	119	432	11	32	149

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	650	437	0	0	442
Stage 1	437	-	-	-	-
Stage 2	213	-	-	-	-
Critical Hdwy	6.41	6.21	-	-	4.16
Critical Hdwy Stg 1	5.41	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-
Follow-up Hdwy	3.509	3.309	-	-	2.254
Pot Cap-1 Maneuver	435	622	-	-	1097
Stage 1	653	-	-	-	-
Stage 2	825	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	422	622	-	-	1097
Mov Cap-2 Maneuver	422	-	-	-	-
Stage 1	653	-	-	-	-
Stage 2	801	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.7	0	1.5
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	599	1097
HCM Lane V/C Ratio	-	-	0.216	0.029
HCM Control Delay (s)	-	-	12.7	8.4
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.8	0.1

Intersection

Int Delay, s/veh 1.5

Movement EBL EBT WBT WBR SBL SBR

Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	20	20	66	101	14	6
Future Vol, veh/h	20	20	66	101	14	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	6	6	2	2	13	13
Mvmt Flow	22	22	74	113	16	7

Major/Minor Major1 Major2 Minor2

Conflicting Flow All	188	0	-	0	198	131
Stage 1	-	-	-	-	131	-
Stage 2	-	-	-	-	67	-
Critical Hdwy	4.16	-	-	-	6.53	6.33
Critical Hdwy Stg 1	-	-	-	-	5.53	-
Critical Hdwy Stg 2	-	-	-	-	5.53	-
Follow-up Hdwy	2.254	-	-	-	3.617	3.417
Pot Cap-1 Maneuver	1362	-	-	-	766	890
Stage 1	-	-	-	-	869	-
Stage 2	-	-	-	-	929	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1362	-	-	-	754	890
Mov Cap-2 Maneuver	-	-	-	-	754	-
Stage 1	-	-	-	-	869	-
Stage 2	-	-	-	-	914	-

Approach EB WB SB

HCM Control Delay, s	3.8	0	9.7
HCM LOS			A

Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1

Capacity (veh/h)	1362	-	-	-	790
HCM Lane V/C Ratio	0.016	-	-	-	0.028
HCM Control Delay (s)	7.7	0	-	-	9.7
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1

Intersection

Int Delay, s/veh 5.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	8	1	15	41	42	29
Future Vol, veh/h	8	1	15	41	42	29
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	79	79	79	79	79	79
Heavy Vehicles, %	22	22	2	2	2	2
Mvmt Flow	10	1	19	52	53	37

Major/Minor

	Major1	Major2	Minor1		
Conflicting Flow All	0	0	11	0	101 11
Stage 1	-	-	-	-	11 -
Stage 2	-	-	-	-	90 -
Critical Hdwy	-	-	4.12	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	-	-	2.218	-	3.518 3.318
Pot Cap-1 Maneuver	-	-	1608	-	898 1070
Stage 1	-	-	-	-	1012 -
Stage 2	-	-	-	-	934 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1608	-	887 1070
Mov Cap-2 Maneuver	-	-	-	-	887 -
Stage 1	-	-	-	-	1012 -
Stage 2	-	-	-	-	923 -




Approach

	EB	WB	NB
HCM Control Delay, s	0	1.9	9.2
HCM LOS			A

Minor Lane/Major Mvmt

	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	954	-	-	1608	-
HCM Lane V/C Ratio	0.094	-	-	0.012	-
HCM Control Delay (s)	9.2	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Intersection	
Intersection Delay, s/veh	7.6
Intersection LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	27	10	19	12	42	60
Future Vol, veh/h	27	10	19	12	42	60
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles, %	12	12	9	9	4	4
Mvmt Flow	39	14	27	17	60	86
Number of Lanes	1	0	0	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	7.6	7.8	7.6
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1
Vol Left, %	41%	0%	61%
Vol Thru, %	0%	73%	39%
Vol Right, %	59%	27%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	102	37	31
LT Vol	42	0	19
Through Vol	0	27	12
RT Vol	60	10	0
Lane Flow Rate	146	53	44
Geometry Grp	1	1	1
Degree of Util (X)	0.156	0.062	0.055
Departure Headway (Hd)	3.864	4.233	4.475
Convergence, Y/N	Yes	Yes	Yes
Cap	919	838	794
Service Time	1.923	2.299	2.54
HCM Lane V/C Ratio	0.159	0.063	0.055
HCM Control Delay	7.6	7.6	7.8
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.6	0.2	0.2

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Intersection

Int Delay, s/veh 3.4

Movement WBL WBR NBT NBR SBL SBT

Lane Configurations	Y		T		T	T
Traffic Vol, veh/h	23	105	287	22	191	548
Future Vol, veh/h	23	105	287	22	191	548
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	115	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	1	1
Mvmt Flow	25	114	312	24	208	596

Major/Minor Minor1 Major1 Major2

Conflicting Flow All	1335	324	0	0	336	0
Stage 1	324	-	-	-	-	-
Stage 2	1011	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.11	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.209	-
Pot Cap-1 Maneuver	169	717	-	-	1229	-
Stage 1	733	-	-	-	-	-
Stage 2	352	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	140	717	-	-	1229	-
Mov Cap-2 Maneuver	140	-	-	-	-	-
Stage 1	733	-	-	-	-	-
Stage 2	292	-	-	-	-	-

Approach WB NB SB

HCM Control Delay, s	18.1	0	2.2
HCM LOS	C		

Minor Lane/Major Mvmt NBT NBRWBLn1 SBL SBT

Capacity (veh/h)	-	-	412	1229	-
HCM Lane V/C Ratio	-	-	0.338	0.169	-
HCM Control Delay (s)	-	-	18.1	8.5	-
HCM Lane LOS	-	-	C	A	-
HCM 95th %tile Q(veh)	-	-	1.5	0.6	-

Intersection

Int Delay, s/veh 3.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↷		↶	
Traffic Vol, veh/h	17	171	82	57	78	35
Future Vol, veh/h	17	171	82	57	78	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	1	1	0	0	1	1
Mvmt Flow	19	192	92	64	88	39

Major/Minor

	Major1	Major2	Minor2		
Conflicting Flow All	156	0	-	0	354
Stage 1	-	-	-	-	124
Stage 2	-	-	-	-	230
Critical Hdwy	4.11	-	-	-	6.41
Critical Hdwy Stg 1	-	-	-	-	5.41
Critical Hdwy Stg 2	-	-	-	-	5.41
Follow-up Hdwy	2.209	-	-	-	3.509
Pot Cap-1 Maneuver	1430	-	-	-	646
Stage 1	-	-	-	-	904
Stage 2	-	-	-	-	811
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1430	-	-	-	636
Mov Cap-2 Maneuver	-	-	-	-	636
Stage 1	-	-	-	-	904
Stage 2	-	-	-	-	799

Approach

	EB	WB	SB
HCM Control Delay, s	0.7	0	11.2
HCM LOS			B

Minor Lane/Major Mvmt

	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1430	-	-	-	705
HCM Lane V/C Ratio	0.013	-	-	-	0.18
HCM Control Delay (s)	7.6	0	-	-	11.2
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.7

Intersection

Int Delay, s/veh 2.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	90	50	23	62	22	17
Future Vol, veh/h	90	50	23	62	22	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	1	1	0	0	0	0
Mvmt Flow	106	59	27	73	26	20

Major/Minor

	Major1	Major2	Minor1		
Conflicting Flow All	0	0	165	0	262
Stage 1	-	-	-	-	135
Stage 2	-	-	-	-	127
Critical Hdwy	-	-	4.1	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	-	-	2.2	-	3.5
Pot Cap-1 Maneuver	-	-	1426	-	731
Stage 1	-	-	-	-	896
Stage 2	-	-	-	-	904
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1426	-	716
Mov Cap-2 Maneuver	-	-	-	-	716
Stage 1	-	-	-	-	896
Stage 2	-	-	-	-	886

Approach

	EB	WB	NB
HCM Control Delay, s	0	2	9.8
HCM LOS			A

Minor Lane/Major Mvmt

	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	792	-	-	1426	-
HCM Lane V/C Ratio	0.058	-	-	0.019	-
HCM Control Delay (s)	9.8	-	-	7.6	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

Intersection	
Intersection Delay, s/veh	7.6
Intersection LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	20	94	28	17	59	31
Future Vol, veh/h	20	94	28	17	59	31
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	0	0	0	0	1	1
Mvmt Flow	24	111	33	20	69	36
Number of Lanes	1	0	0	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	7.3	7.7	7.8
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1
Vol Left, %	66%	0%	62%
Vol Thru, %	0%	18%	38%
Vol Right, %	34%	82%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	90	114	45
LT Vol	59	0	28
Through Vol	0	20	17
RT Vol	31	94	0
Lane Flow Rate	106	134	53
Geometry Grp	1	1	1
Degree of Util (X)	0.122	0.135	0.063
Departure Headway (Hd)	4.162	3.631	4.314
Convergence, Y/N	Yes	Yes	Yes
Cap	854	975	822
Service Time	2.222	1.7	2.385
HCM Lane V/C Ratio	0.124	0.137	0.064
HCM Control Delay	7.8	7.3	7.7
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.4	0.5	0.2

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Intersection						
Int Delay, s/veh	3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔		↔	↑
Traffic Vol, veh/h	15	117	367	11	33	127
Future Vol, veh/h	15	117	367	11	33	127
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	115	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	1	1	2	2	6	6
Mvmt Flow	18	138	432	13	39	149

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	665	438	0	0	445
Stage 1	438	-	-	-	-
Stage 2	227	-	-	-	-
Critical Hdwy	6.41	6.21	-	-	4.16
Critical Hdwy Stg 1	5.41	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-
Follow-up Hdwy	3.509	3.309	-	-	2.254
Pot Cap-1 Maneuver	427	621	-	-	1094
Stage 1	653	-	-	-	-
Stage 2	813	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	412	621	-	-	1094
Mov Cap-2 Maneuver	412	-	-	-	-
Stage 1	653	-	-	-	-
Stage 2	784	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.3	0	1.7
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	587	1094
HCM Lane V/C Ratio	-	-	0.265	0.035
HCM Control Delay (s)	-	-	13.3	8.4
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	1.1	0.1

Intersection

Int Delay, s/veh 1.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	20	28	88	112	14	6
Future Vol, veh/h	20	28	88	112	14	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	6	6	2	2	13	13
Mvmt Flow	22	31	99	126	16	7

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	225	0	-	0	238
Stage 1	-	-	-	-	162
Stage 2	-	-	-	-	76
Critical Hdwy	4.16	-	-	-	6.53
Critical Hdwy Stg 1	-	-	-	-	5.53
Critical Hdwy Stg 2	-	-	-	-	5.53
Follow-up Hdwy	2.254	-	-	-	3.617
Pot Cap-1 Maneuver	1320	-	-	-	727
Stage 1	-	-	-	-	841
Stage 2	-	-	-	-	920
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1320	-	-	-	715
Mov Cap-2 Maneuver	-	-	-	-	715
Stage 1	-	-	-	-	841
Stage 2	-	-	-	-	904

Approach	EB	WB	SB
HCM Control Delay, s	3.2	0	9.9
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1320	-	-	-	752
HCM Lane V/C Ratio	0.017	-	-	-	0.03
HCM Control Delay (s)	7.8	0	-	-	9.9
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1

HCM 2010 TWSC
 3: Melissa Avenue & Dubarko Road

06/06/2019

Intersection

Int Delay, s/veh 6.6

Movement EBT EBR WBL WBT NBL NBR

Lane Configurations						
Traffic Vol, veh/h	8	12	23	41	75	51
Future Vol, veh/h	8	12	23	41	75	51
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	79	79	79	79	79	79
Heavy Vehicles, %	22	22	2	2	2	2
Mvmt Flow	10	15	29	52	95	65

Major/Minor Major1 Major2 Minor1

Conflicting Flow All	0	0	25	0	128	18
Stage 1	-	-	-	-	18	-
Stage 2	-	-	-	-	110	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1589	-	866	1061
Stage 1	-	-	-	-	1005	-
Stage 2	-	-	-	-	915	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1589	-	850	1061
Mov Cap-2 Maneuver	-	-	-	-	850	-
Stage 1	-	-	-	-	1005	-
Stage 2	-	-	-	-	898	-

Approach EB WB NB

HCM Control Delay, s	0	2.6	9.7
HCM LOS			A

Minor Lane/Major Mvmt NBLn1 EBT EBR WBL WBT

Capacity (veh/h)	924	-	-	1589	-
HCM Lane V/C Ratio	0.173	-	-	0.018	-
HCM Control Delay (s)	9.7	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.6	-	-	0.1	-

Intersection	
Intersection Delay, s/veh	7.8
Intersection LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	41	18	19	17	45	60
Future Vol, veh/h	41	18	19	17	45	60
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles, %	12	12	9	9	4	4
Mvmt Flow	59	26	27	24	64	86
Number of Lanes	1	0	0	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	7.8	7.9	7.8
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1
Vol Left, %	43%	0%	53%
Vol Thru, %	0%	69%	47%
Vol Right, %	57%	31%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	105	59	36
LT Vol	45	0	19
Through Vol	0	41	17
RT Vol	60	18	0
Lane Flow Rate	150	84	51
Geometry Grp	1	1	1
Degree of Util (X)	0.164	0.099	0.064
Departure Headway (Hd)	3.944	4.224	4.488
Convergence, Y/N	Yes	Yes	Yes
Cap	897	838	788
Service Time	2.024	2.302	2.572
HCM Lane V/C Ratio	0.167	0.1	0.065
HCM Control Delay	7.8	7.8	7.9
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.6	0.3	0.2

HCM 2010 TWSC
 1: SE 362nd Drive & Dubarko Road

06/06/2019

Intersection						
Int Delay, s/veh	3.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔		↔	↔
Traffic Vol, veh/h	27	116	287	28	210	548
Future Vol, veh/h	27	116	287	28	210	548
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	115	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	1	1
Mvmt Flow	29	126	312	30	228	596

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	1379	327	0	0	342
Stage 1	327	-	-	-	-
Stage 2	1052	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.11
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.209
Pot Cap-1 Maneuver	159	714	-	-	1223
Stage 1	731	-	-	-	-
Stage 2	336	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	129	714	-	-	1223
Mov Cap-2 Maneuver	129	-	-	-	-
Stage 1	731	-	-	-	-
Stage 2	273	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	20.5	0	2.4
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	385	1223
HCM Lane V/C Ratio	-	-	0.404	0.187
HCM Control Delay (s)	-	-	20.5	8.6
HCM Lane LOS	-	-	C	A
HCM 95th %tile Q(veh)	-	-	1.9	0.7

Intersection

Int Delay, s/veh 3.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↷		↶	
Traffic Vol, veh/h	17	196	97	64	90	35
Future Vol, veh/h	17	196	97	64	90	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	1	1	0	0	1	1
Mvmt Flow	19	220	109	72	101	39

Major/Minor

	Major1	Major2	Minor2
Conflicting Flow All	181	0	403
Stage 1	-	-	145
Stage 2	-	-	258
Critical Hdwy	4.11	-	6.41
Critical Hdwy Stg 1	-	-	5.41
Critical Hdwy Stg 2	-	-	5.41
Follow-up Hdwy	2.209	-	3.509
Pot Cap-1 Maneuver	1400	-	605
Stage 1	-	-	885
Stage 2	-	-	787
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1400	-	596
Mov Cap-2 Maneuver	-	-	596
Stage 1	-	-	885
Stage 2	-	-	775

Approach

	EB	WB	SB
HCM Control Delay, s	0.6	0	11.9
HCM LOS			B

Minor Lane/Major Mvmt

	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1400	-	-	-	659
HCM Lane V/C Ratio	0.014	-	-	-	0.213
HCM Control Delay (s)	7.6	0	-	-	11.9
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.8

Intersection

Int Delay, s/veh 3.3

Movement EBT EBR WBL WBT NBL NBR

Lane Configurations						
Traffic Vol, veh/h	90	87	48	62	44	32
Future Vol, veh/h	90	87	48	62	44	32
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	1	1	0	0	0	0
Mvmt Flow	106	102	56	73	52	38

Major/Minor Major1 Major2 Minor1

Conflicting Flow All	0	0	208	0	343	157
Stage 1	-	-	-	-	157	-
Stage 2	-	-	-	-	186	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1375	-	657	894
Stage 1	-	-	-	-	876	-
Stage 2	-	-	-	-	851	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1375	-	629	894
Mov Cap-2 Maneuver	-	-	-	-	629	-
Stage 1	-	-	-	-	876	-
Stage 2	-	-	-	-	815	-

Approach EB WB NB

HCM Control Delay, s	0	3.4	10.7
HCM LOS			B

Minor Lane/Major Mvmt NBLn1 EBT EBR WBL WBT

Capacity (veh/h)	719	-	-	1375	-
HCM Lane V/C Ratio	0.124	-	-	0.041	-
HCM Control Delay (s)	10.7	-	-	7.7	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.4	-	-	0.1	-

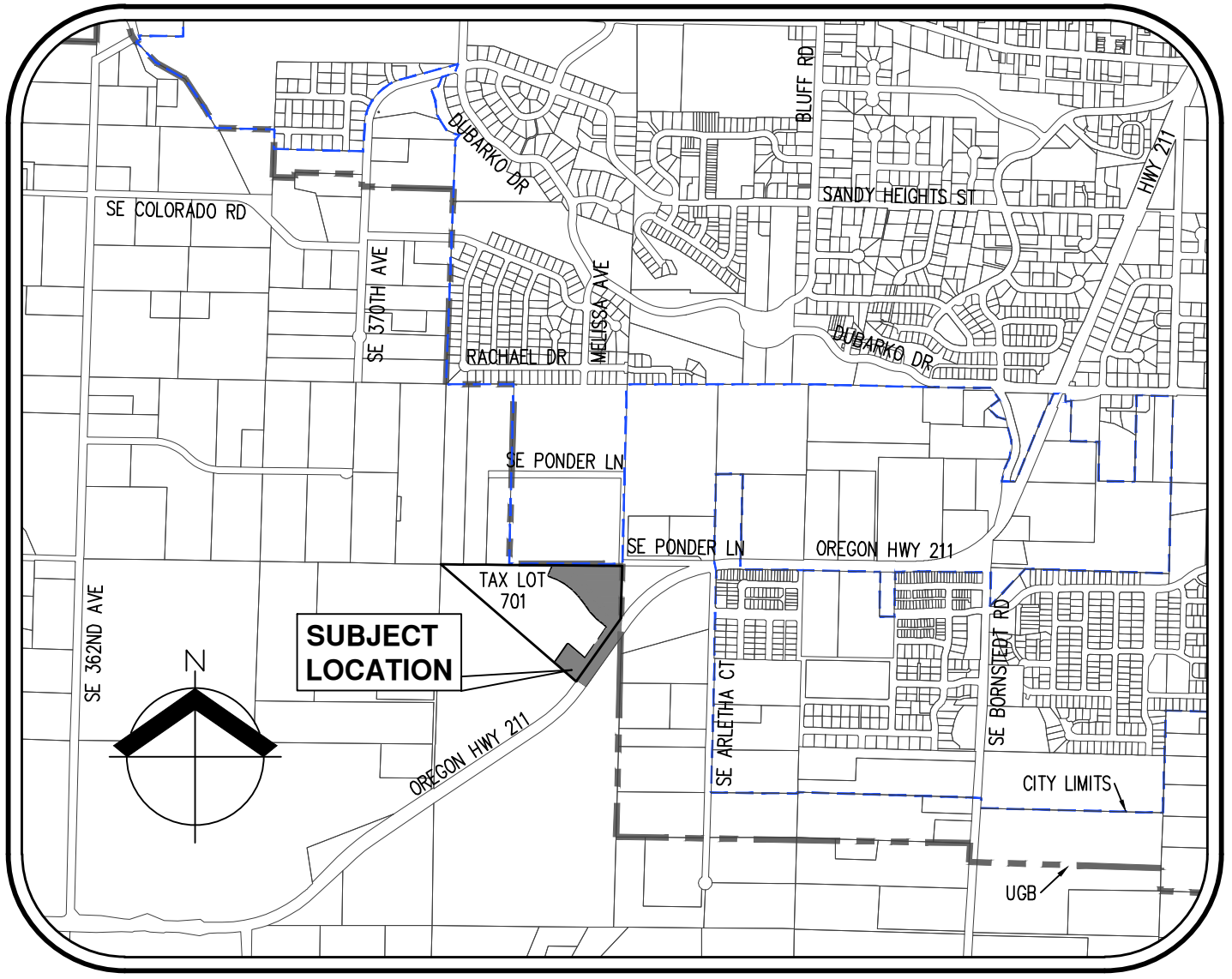
Intersection	
Intersection Delay, s/veh	7.7
Intersection LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	29	100	28	33	68	31
Future Vol, veh/h	29	100	28	33	68	31
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	0	0	0	0	1	1
Mvmt Flow	34	118	33	39	80	36
Number of Lanes	1	0	0	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	7.5	7.8	8
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1
Vol Left, %	69%	0%	46%
Vol Thru, %	0%	22%	54%
Vol Right, %	31%	78%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	99	129	61
LT Vol	68	0	28
Through Vol	0	29	33
RT Vol	31	100	0
Lane Flow Rate	116	152	72
Geometry Grp	1	1	1
Degree of Util (X)	0.137	0.156	0.086
Departure Headway (Hd)	4.249	3.695	4.316
Convergence, Y/N	Yes	Yes	Yes
Cap	833	955	819
Service Time	2.33	1.78	2.401
HCM Lane V/C Ratio	0.139	0.159	0.088
HCM Control Delay	8	7.5	7.8
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.5	0.6	0.3

EXHIBIT D



VICINITY MAP
NOT TO SCALE



EXHIBIT A

Legal Description

A tract of land, and a portion of right-of-way, located in the Northeast One-Quarter of Section 23, Township 2 South, Range 4 East, Willamette Meridian, Clackamas County, Oregon, and being more particularly described as follows:

Commencing at the northeast corner of Parcel 1 of Partition Plat 2018-030, Clackamas County Plat Records; thence along the north line of Document Number 93-28438, Clackamas County Deed Records, South 89°52'25" East 823.67 feet to the Point of Beginning; thence continuing along said north line, South 89°52'25" East 495.53 feet to the northeast corner of said deed; thence along the east line of said deed and the southerly extension thereof, South 01°24'04" West 532.91 feet to the southeasterly right-of-way line of Woodburn-Sandy Highway (40.00 feet from centerline); thence along said southeasterly right-of-way line, South 35°02'39" West 438.40 feet; thence leaving said southeasterly right-of-way line, North 54°57'21" West 80.00 feet to the northwesterly right-of-way line of Woodburn-Sandy Highway (40.00 feet from centerline), also being the southwesterly corner of said deed; thence along the southwesterly line of said deed, North 49°21'56" West 200.96 feet; thence leaving said southwesterly line, North 35°02'39" East 150.72 feet; thence South 49°21'56" East 160.76 feet to a line which is parallel with and 40.00 feet northwesterly of, when measured at right angles to, said northwesterly right-of-way line; thence along said parallel line, North 35°02'39" East 295.25 feet; thence leaving said parallel line, North 54°57'21" West 25.00 feet; thence along a curve to the right with a Radius of 533.00 feet, a Delta of 23°05'54", a Length of 214.88 feet, and a Chord of North 43°24'23" West 213.42 feet; thence along a curve to the left with a Radius of 467.00 feet, a Delta of 41°16'55", a Length of 336.48 feet, and a Chord of North 52°29'54" West 329.25 feet to a point of non-tangency (Radial Bearing of South 16°51'38" West); thence North 23°37'27" East 93.53 feet to the Point of Beginning.

The above described tract of land contains 5.29 acres, more or less.

1/7/2020

REGISTERED
PROFESSIONAL
LAND SURVEYOR

Benjamin R Huff

OREGON
MARCH 14, 2017
BENJAMIN R HUFF
84738PLS

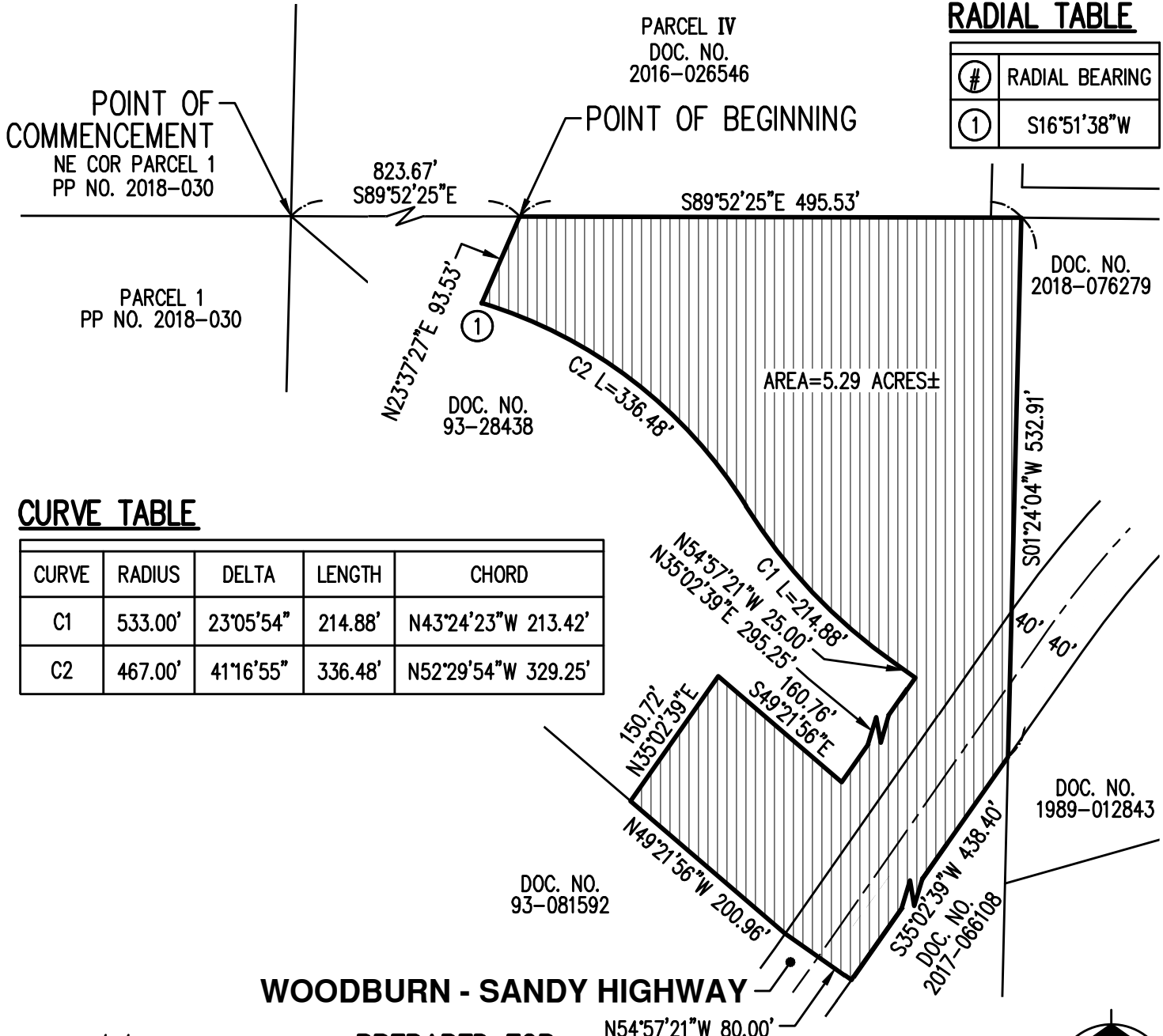
RENEWS: 6/30/21

EXHIBIT B

A TRACT OF LAND, AND A PORTION OF RIGHT-OF-WAY,
 LOCATED IN THE NORTHEAST 1/4 OF SECTION 23,
 TOWNSHIP 2 SOUTH, RANGE 4 EAST, WILLAMETTE MERIDIAN,
 CLACKAMAS COUNTY, OREGON

RADIAL TABLE

#	RADIAL BEARING
①	S16°51'38"W



CURVE TABLE

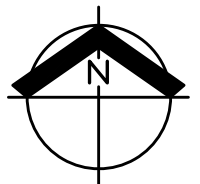
CURVE	RADIUS	DELTA	LENGTH	CHORD
C1	533.00'	23°05'54"	214.88'	N43°24'23"W 213.42'
C2	467.00'	41°16'55"	336.48'	N52°29'54"W 329.25'

1/7/2020

PREPARED FOR

ALLIED HOMES & DEVELOPMENT
 12042 SE SUNNYSIDE ROAD, SUITE 706
 CLACKAMAS, OR 97015

SCALE: 1" = 150 FEET



REGISTERED
 PROFESSIONAL
 LAND SURVEYOR

Benjamin R Huff
 OREGON
 MARCH 14, 2017
 BENJAMIN R HUFF
 84738PLS
 RENEWS: 6/30/21

EXHIBIT MAP	EXHIBIT B
AKS ENGINEERING & FORESTRY, LLC 12965 SW HERMAN RD, STE 100 TUALATIN, OR 97062 503.563.6151 WWW.AKS-ENG.COM	DRWN: WCB CHKD: BRH AKS JOB: 7107



EXHIBIT KEY MAP

TAX LOT 807
TAX MAP
2 4E 23

TAX LOT 800
TAX MAP
2 4E 23

TAX LOT 803
TAX MAP 2 4E 23

PONDER LANE

TAX LOT 502
TAX MAP 2 4E 23

TAX LOT 701
TAX MAP 2 4E 23

TAX LOT 700
TAX MAP 2 4E 23

TAX LOT 518
TAX MAP 2 4E 23

TAX LOT 501
TAX MAP 2 4E 23

TAX LOT 600
TAX MAP 2 4E 23

**WOODBURN-SANDY
HIGHWAY**

- ① PARK LAND
- ② PERMANENT SLOPE EASEMENT/
TEMPORARY CONSTRUCTION EASEMENT
- ③ PUBLIC RIGHT-OF-WAY DEDICATION
- ④ PUBLIC UTILITY EASEMENT
- ⑤ STORMWATER TRACT
- ⑥ PERMANENT SLOPE EASEMENT/
TEMPORARY CONSTRUCTION EASEMENT
- ⑦ HIGHWAY ANNEXATION

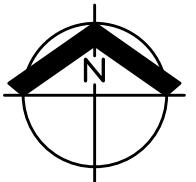
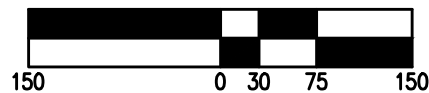
1/7/2020

**REGISTERED
PROFESSIONAL
LAND SURVEYOR**

PREPARED FOR

ALLIED HOMES & DEVELOPMENT
12042 SE SUNNYSIDE ROAD, SUITE 706
CLACKAMAS, OR 97015

SCALE: 1"=150 FEET



Benjamin R Huff
OREGON
MARCH 14, 2017
BENJAMIN R HUFF
84738PLS
RENEWS: 6/30/21

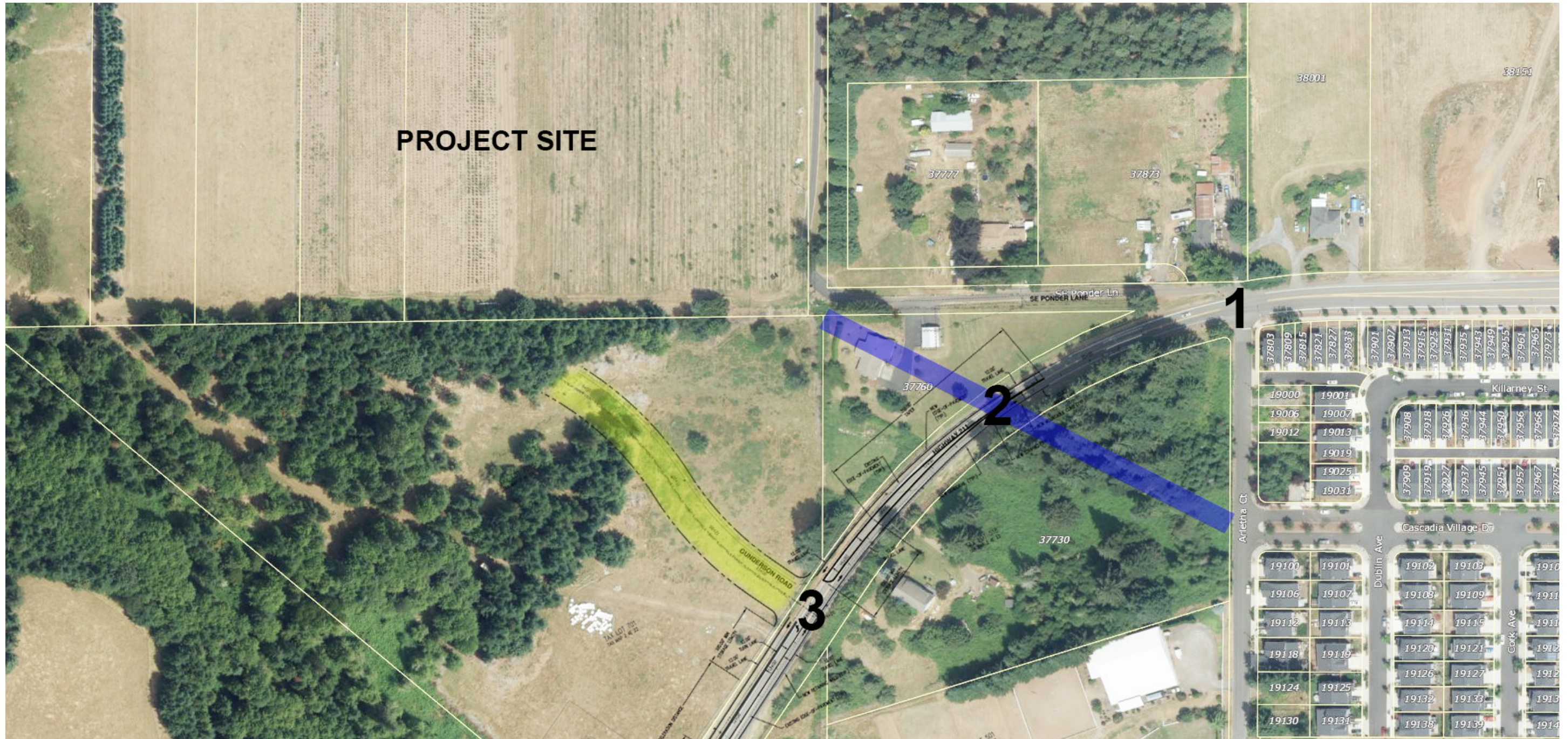
SE PONDER LANE - SANDY

AKS ENGINEERING & FORESTRY, LLC
12965 SW HERMAN RD, STE 100
TUALATIN, OR 97062
503.563.6151 WWW.AKS-ENG.COM



EXHIBIT
KEY

DRWN: WCB
CHKD: BRH
AKS JOB:
7107



- 1. Existing Intersection Location**
- 2. TSP-Identified Alignment**
- 3. Proposed Alignment**

1. Existing Intersection Location



- Intersection not usable for new development given available width, very flat skew angle of approach, and topography.
- Rebuilding a new street and intersection in this location would involve properties that are not under control of the applicant or the City of Sandy

3. Proposed Alignment



Looking North

Looking South



- Location is far enough south to have adequate sight distance looking back to the north toward the curve. Excellent sight lines looking south.
- Superelevation is minimal due to location south of curve.

2. TSP-Identified Alignment



Looking North



Looking South



- Sight distance limited by horizontal and vertical curves in both directions. Sight distance is particularly poor for the future south leg, which would connect to Cascadia Village Drive.
- Superelevation (banking of the roadway around the curve) is very steep and makes this location problematic for an intersection due to difficult turning and crossing movements across the steep curve.

EXHIBIT E

REPLINGER & ASSOCIATES LLC TRANSPORTATION ENGINEERING

January 20, 2020

Mr. Kelly O'Neill
City of Sandy
39250 Pioneer Blvd.
Sandy, OR 97055

**SUBJECT: REVIEW OF TRANSPORTATION IMPACT ANALYSIS – BAILEY MEADOWS
SUBDIVISION**

Dear Kelly:

In response to your request, I have reviewed materials submitted in support of the Bailey Meadows Subdivision. The materials consisted of the Transportation Impact Analysis (TIA) for the Bailey Meadows Subdivision and TIA Addendum #1. The TIA is dated June 20, 2019 and Addendum #1 is dated January 6, 2020. Both were prepared under the direction of Todd Mobley, PE of Lancaster Engineering.

The TIA and Addendum describe a proposal to construct a 100-lot subdivision of single-family dwellings. The site is in the southwest part of Sandy, south of Dubarko Road and north of Highway 211. The proposed accesses are Melissa Avenue to the north and a new extension of Gunderson Road to the south. The original TIA evaluated access to the north only; the Addendum provides additional information including an analysis dependent on an extension of Gunderson Road and a new intersection with Highway 211.

The comments below focus on the revised proposal with the new extension of Gunderson Road and the connection with Highway 211 as described in the Addendum.

Overall

I find the TIA and Addendum address the city's requirements and provide an adequate basis to evaluate impacts of the proposed development.

Comments

1. Study Area. The study addresses the appropriate intersections. It includes analyses of:

- SE 362nd Drive at Dubarko Road
- Ruben Lane at Dubarko Road
- Melissa Avenue at Dubarko Road
- Bluff Road at Dubarko Road
- Gunderson Road at Highway 211

- 2. Traffic Counts.** The AM and PM peak hour traffic counts for the first four intersections listed above were conducted on April and May 2019. The counts for Highway 211 were conducted in December 2018. The engineer adjusted the December traffic counts on Highway 211 to account for seasonal variations according to the procedures defined by the Oregon Department of Transportation (ODOT). The Highway 211 counts were also adjusted to reflect 2019 base conditions by applying an annual growth factor of 2.8 percent. The counts and adjustments appear reasonable.
- 3. Trip Generation.** The TIA uses trip generation for single-family houses from the Institute of Transportation Engineers' (ITE) *Trip Generation Manual*. The calculations of trip generation were based on 100 single-family dwellings. The engineer calculates that the 100-unit subdivision would produce 74 new AM peak hour trips; 99 PM new peak hour trips; and 994 new daily trips. The calculation of trips generated by the subdivision appears reasonable.
- 4. Trip Distribution.** The TIA and Addendum provide information about trip distribution from the site. As described above, the original proposal relied upon Melissa Avenue for the exclusive access to the site; the Addendum describes the subdivision with both a north and south access. As described in the Addendum, the engineer assumed 30 percent of the traffic would travel to and from the north on 362nd Drive via Dubarko Road; 20 percent would travel to and from the north on Ruben Lane via Dubarko Road; 25 percent would travel to and from the north on Bluff Road via Dubarko Road; 15 percent would travel to and from the east on Dubarko Road; and 10 percent would travel to and from the southwest on Highway 211.

As described in detail in the Addendum, the engineer also accounted for changes in travel patterns because of the new connection provided using Melissa Avenue and Gunderson Road through the subdivision. Traffic generated by existing developments north of the new subdivision would have the option of connecting with Highway 211 via Melissa Avenue and the new Gunderson Road extension. Likewise, traffic traveling into Sandy from the southwest on Highway 211 could use the new Gunderson Road extension to access Dubarko Road, Ruben Lane and other destinations to the north. The engineer specifically accounts for the rerouting of existing traffic due to the new connections as well as the traffic from the proposed development and use of Melissa Avenue and the new Gunderson Road extension.

The trip distribution and rerouting due to new connections seem reasonable.

- 5. Traffic Growth.** The TIA uses a 2 percent annual increase for facilities under the jurisdiction of the City of Sandy. For Highway 211, the engineer used a 2.8 percent annual growth rate based on ODOT's Future Volume Tables. In addition, the TIA specifically accounts for the recently approved Sandyplace apartment complex on Dubarko Road. Background volumes

were prepared for 2022, the year in which the development is expected to be completed. These assumptions account for future traffic and appear reasonable.

6. **Analysis.** Traffic volumes were calculated for the intersections cited in #1, above. Intersection level-of-service (LOS) and the volume-to-capacity (v/c) ratio were provided. ODOT uses the v/c ratio for its standard of intersection performance. Performance of the intersections was calculated for existing 2019 conditions; 2022 background conditions; and 2022 conditions with the proposed subdivision.

All five study area intersections are calculated to meet applicable City and ODOT performance standards. The intersections are calculated to operate at level of service (LOS) "C" or better during both the AM and PM peak hours. The new intersection of Gunderson Road at Highway 211 is calculated to operate at LOS "B" with a volume to capacity (v/c) ratio of 0.08 during the AM and PM peak hours. This easily meets ODOT's performance standard.

The engineer recommends no mitigation for traffic from this proposal. I concur.

7. **Crash Information.** The TIA provides information on crashes for the most recent available five-year period (2012 through 2016). For the five-year period, 1 crash was reported at the SE 362nd Drive/Dubarko Road intersection. Two crashes were reported at the Melissa Avenue /Dubarko Road intersection. The calculated crash rate at both intersections is low and the engineer determined that the crash rates are not indicative of safety deficiencies or design flaws. He did not recommend mitigation for safety issues. I concur.

8. **Subdivision Access.** The site plan provides for two access points: Melissa Avenue to the north and an extension of Gunderson Road connecting to Highway 211 to the south.

The Addendum provides a detailed discussion of the concept described in the Transportation System Plan (TSP) that provides for an extension of Gunderson Road an intersection with Highway 211 and an extension to the east to connect with Cascadia Village Drive. As described in the Addendum, the TSP "shows a planning-level depiction of the Gunderson Road extension." The Addendum further explains that "upon closer investigation and engineering analysis, it was determined that the alignment shown on the TSP was not feasible for construction of an intersection with Highway 211, primarily due to poor sight distance, the need for a perpendicular intersection, and a very steep super-elevated roadway section."

The Addendum describes the selection of a suitable location for a new intersection on Highway 211 to the southwest that was far enough from the curves on Highway 211 to provide adequate sight distance and avoid the super-elevated roadway section. As noted in the Addendum, the selected location is outside the current City of Sandy urban growth boundary (UGB). The Addendum further describes the proposal to expand the UGB to

include the proposed roadway. The Addendum notes that a remnant parcel of approximately 2.38 acres would thus be included in the UGB. The applicant proposed this remnant be utilized as a neighborhood park with no parking facilities. As such, it would produce no new traffic, but would be accessed by walking and bicycling.

- 9. *Left-Turn Lane and Signal Warrants.*** The engineer analyzed the subject intersections for left-turn lanes using standard methods based on traffic volumes, travel speeds, and lanes.

For the new, proposed intersection Highway 211 and Gunderson Road, the engineer concludes that a left turn lane was warranted. He notes that a left-turn lane is a safety consideration because it removes left-turning vehicles from the through traffic lane. He recommends that a left-turn lane be constructed in connection with the Gunderson Road/Highway 211 intersection. I concur.

He also analyzed traffic signal warrants at the study area intersections. Traffic signal warrants are not met at any locations including the new, proposed Gunderson Road/Highway 211 intersection.

- 10. *OAR 660-12-0060 Transportation Planning Rule (TPR).*** The engineer provides a detailed response to the criteria specified in the TPR. He explains that the proposed amendment to expand the UGB does not change the functional classification of any transportation facility and does not increase developable property that will increase trip generation. He concludes that the proposal helps to implement a project specified in the TSP. I think his argument is sound and supported by the analysis.

- 11. *OAR 660-024-0065 Establishment of Study Area to Evaluate Land for Inclusion in the UGB.*** The Addendum provides a detailed analysis of this section of the OAR's. The engineer argues that the location proposed for the new intersection is "dictated by engineering standards that must be satisfied for a safe and efficient intersection location." I think the engineer provides a reasonable explanation and justification for the UGB expansion.

- 12. *Conclusions and Recommendations.*** The engineer concludes that traffic operations will be acceptable at all study area intersections. The southern access to the subdivision is dependent on constructing a segment of Gunderson Road, which is specified in the TSP. The engineering analysis described in the Addendum explains why the location for the proposed Gunderson Road/Highway 211 intersection was selected. The Addendum provides justification for an expansion of the UGB and explains that the proposal complies with the TPR. The engineer recommends the installation of a left-turn lane on Highway 211 for the new intersection of Gunderson Road and Highway 211. I concur with these conclusions and the engineer's recommendations.

Mr. Kelly O'Neill
January 20, 2020
Page 5

Conclusion and Recommendations

I find the TIA and Addendum meet City requirements. The TIA and Addendum demonstrate that the development can be accommodated with a north access using Melissa Avenue and a south access using a new extension of Gunderson Road with an intersection with Highway 211.

I recommend approval of the subdivision with conditions that assure the dedication of all appropriate rights-of-way and the construction of the Gunderson Road extension and the intersection of Gunderson Road and Highway 211, with a left-turn lane on Highway 211. Furthermore, all construction involving facilities under the jurisdiction of the Oregon Department of Transportation shall be performed to ODOT standards and specifications.

If you have any questions or need any further information concerning this review, please contact me at replinger-associates@comcast.net.

Sincerely,



John Replinger, PE
Principal

BaileyMeadowsSubdTIA012020

EXHIBIT F

City of Sandy
Planning Division/Commission
Sandy, OR

Date: Feb 2, 2020

Re: UGB Expansion – File No. 20-002 Gunderson Road and Park

I understand one agenda item for the February 11, 2020 Sandy Planning Commission meeting is the Allied Homes and Development proposal to expand the Sandy UGB by approximately 5.29 acres for the purpose of Gunderson road improvements/expansion from HWY 211 into their proposed 100 home Bailey Meadows subdivision plus reserve land for a public park.

I would like to acknowledge my full support of the proposed UGB expansion. This is something that should have been included in the original UGB expansion at this location. The 5.29 acre UGB expansion will help accommodate the additional traffic from the subdivision's 200-250 additional automobiles to help comply with the City of Sandy TSP. The allocation of future acreage for a neighborhood park is also very much needed and appreciated.

Thank you,

Paul Savage
37506 Rachael Drive
Sandy, OR 97055

Exhibit G



Staff Report

Meeting Date: February 11, 2020
From: Kelly O'Neill, Development Services Director
SUBJECT: 20-002 UGB Expansion for Gunderson Road

Background:

The applicant, Allied Homes and Development, proposes to expand the Sandy Urban Growth Boundary by approximately 5.29 acres to meet a need for certain public facilities (a minor arterial road and parkland). The land is currently designated Urban Reserve. The portion of the property that is planned to be included within the amended UGB is limited to areas necessary for parkland and land to construct the Gunderson Road extension, including land for the roadway, associated storm drainage improvements, accompanying utilities, grading, etc. The areas being considered in the UGB expansion are detailed in Exhibit D as follows:

Area 1 - Parkland Area: 2.38 acres

Areas 2 and 6 - Permanent Slope Easement/Temporary Construction Easement Area: 30,970 square feet

Area 3 - Public Right-of-Way Dedication (for Gunderson Road): 1.02 acres

Area 4 - Public Utility Easement: 4,802 square feet

Area 5 - Stormwater Facility: 30,143 square feet

Area 7 - Highway (211) Area: 39,880 square feet

As explained by the applicant if you add the square footage and acreage, the sum is greater than 5.29 acres because Areas 2 and 4 overlap and are included within Area 1. The total acreage is the same when Areas 2 and 4 are removed from the equation.

If the proposed UGB expansion is approved the applicant will proceed with an annexation, comprehensive map amendment, and zoning map amendment for the property brought into the UGB.

Recommendation:

Staff recommends the Planning Commission open a public hearing to receive public testimony. Staff recommends the Planning Commission forward a recommendation of approval to City Council.

SUBJECT: File No. 20-002 UGB Expansion for Gunderson Road

AGENDA DATE: February 11, 2020

DEPARTMENT: Development Services Department

STAFF CONTACT: Kelly O’Neill Jr., Development Services Director

EXHIBITS:

Applicant’s Submittals:

- A. Land Use Application
- B. Narrative
- C. Transportation Impact Analysis
- D. Legal Description and Maps

Agency Comments:

- E. City Transportation Engineer, Replinger & Associates (January 20, 2020)

Public Comments:

- F. Paul Savage, 37506 Rachael Drive (February 2, 2020)

I. BACKGROUND

A. PROCEEDING

Type IV UGB Expansion

B. FACTUAL INFORMATION

1. APPLICANT: Allied Homes & Development
2. OWNERS: Lawrence Pullen, Richard Pullen, and Sherrene TenEyck
3. PROJECT NAME: UGB Expansion for Gunderson Road and Parkland
4. LEGAL DESCRIPTION: T2S R4E Section 23 Tax Lot 701
5. PROPERTY LOCATION: North of Highway 211 and South of Ponder Lane
6. PROPOSED AREA: 5.29 acres
7. PROPOSAL: The applicant, Allied Homes and Development, proposes to expand the Sandy Urban Growth Boundary by approximately 5.29 acres to meet a need for certain

public facilities (a minor arterial road and parkland). The land is currently designated Urban Reserve.

8. CITY COMPREHENSIVE PLAN DESIGNATION: Low Density Residential
9. COUNTY COMPREHENSIVE PLAN DESIGNATION: Agriculture (AG)
10. COUNTY ZONING DISTRICT DESIGNATION: Exclusive Farm Use (EFU)
11. RESPONSE FROM GOVERNMENTAL AGENCIES, UTILITY PROVIDERS, CITY DEPARTMENTS AND THE GENERAL PUBLIC: City of Sandy Transportation Engineer

C. APPLICABLE CRITERIA: Sandy Development Code 17.12 Procedures for Decision Making; 17.18 Processing Applications; 17.22 Notices; Sandy Comprehensive Plan Goals and Policies and Oregon Statewide Planning Goals Nos. 1, 2, 6, 8, 11, 12, and 14; Clackamas County Comprehensive Plan Chapter 4; Oregon Administrative Rules Chapter 660, division 12; Oregon Administrative Rules Chapter 660, division 24.

D. BACKGROUND INFORMATION

The City of Sandy is also processing a land use application for the Bailey Meadows subdivision (File No. 19-023 SUB/VAR/TREE). The proposed subdivision is located near Highway 211 and Ponder Lane. The purpose of this UGB expansion is to accommodate Gunderson Road and parkland to the south of Bailey Meadows to fulfill anticipated conditions of approval from the Bailey Meadows land use application. The alignment for Gunderson Road is located on property (Tax Map 24E23 Tax Lot 701) that is located outside of Sandy’s City limits and UGB. The subject property is currently designated Exclusive Farm Use (EFU) by Clackamas County, but is within the City of Sandy’s Urban Reserve Area (URA). Under Oregon law, lands designated URA are “first priority” lands to be included in a UGB expansion. The portion of the property that is planned to be included within the amended UGB is limited to areas necessary for parkland and land to construct the Gunderson Road extension, including land for the roadway, associated storm drainage improvements, accompanying utilities, grading, etc. The areas being considered in the UGB expansion are detailed in Exhibit D as follows:

Area 1 - Parkland Area: 2.38 acres

Areas 2 and 6 - Permanent Slope Easement/Temporary Construction Easement Area: 30,970 square feet

Area 3 - Public Right-of-Way Dedication (for Gunderson Road): 1.02 acres

Area 4 - Public Utility Easement: 4,802 square feet

Area 5 - Stormwater Facility: 30,143 square feet

Area 7 - Highway (211) Area: 39,880 square feet

As explained by the applicant if you add the square footage and acreage, the sum is greater than 5.29 acres because Areas 2 and 4 overlap and are included within Area 1. The total acreage is the same when Areas 2 and 4 are removed from the equation.

If the proposed UGB expansion is approved the applicant will proceed with an annexation, comprehensive map amendment, and zoning map amendment for the property brought into the UGB.

E. PROCEDURAL CONSIDERATIONS

This request is being processed under a Type IV quasi-judicial review. Notification of the proposal was mailed to property owners within 500 feet of the subject property and to affected agencies on January 22, 2020. Notification of the proposal was sent to the Department of Land Conservation and Development (DLCD) on January 9, 2020 and a legal notice was published in the Sandy Post on January 29, 2020. The Planning Commission will review the request at a public hearing on February 11, 2020 and forward a recommendation to the City Council for final decision on this request.

F. ADDITIONAL HEARING DATES

Pursuant to OAR 660-018-0021(2) and the Urban Growth Management Agreement (UGMA) between the City of Sandy and Clackamas County, this UGB amendment application is subject to a coordinated City-County effort. Here is additional information on meetings before the City Council, Clackamas County Planning Commission, and Clackamas County Board of Commissioners:

March 2, 2020 at 7:00 PM – City of Sandy City Council
City Hall Council Chambers (lower level of building)
39250 Pioneer Boulevard
Sandy, OR 97055

March 9, 2020 at 6:30 PM – Clackamas County Planning Commission
Clackamas County Development Services Building Auditorium (Room 115)
150 Beaver Creek Road
Oregon City, OR 97045

March 18, 2020 at 9:30 AM – Clackamas County Board of Commissioners
Clackamas County Public Services Building BCC Hearing Room (4th Floor)
2051 Kaen Road
Oregon City, OR 97045

II. ANALYSIS OF CODE COMPLIANCE

ACRONYMS

Urban Growth Boundary = UGB

From DLCD: “Each Oregon city is surrounded by an urban growth boundary (UGB); a line drawn on planning maps to designate where a city expects to grow over a 20-year period. This growth can occur with new houses, industrial facilities, businesses, or public facilities such as parks and utilities. Restrictions in areas outside of a UGB protect farm and forest resource land

and prohibit urban development. Generally speaking, it's where the city ends and the farms and forests begin.”

Urban Reserve Area = URA

From DLCDC: “By designating urban reserves, the agriculture and forest industries, private landowners, and public and private service providers, are aware of future long-term (for the next 50 years) expansion locations of the UGB.”

Transportation System Plan = TSP

The TSP serves as the transportation element of the City of Sandy Comprehensive Land Use Plan, establishing a system of facilities and services to meet local transportation needs.

Traffic Impact Analysis = TIA

A TIA evaluates the adequacy of the existing transportation system to serve a proposed development, and the expected effects of the proposed development on the transportation system.

Department of Land Conservation & Development = DLCDC

From DLCDC: “DLCDC works in partnership with local governments, and state and federal agencies, to address the land use needs of the public, communities, regions, and the state.”

Land Conservation and Development Commission = LCDC

From LCDC: “Oregon's Land Conservation and Development Commission (LCDC), assisted by the department (DLCDC), adopts state land-use goals and implements rules, assures local plan compliance with the goals, coordinates state and local planning, and manages the coastal zone program.

Oregon Department of Transportation = ODOT

From ODOT: “Today, we develop programs related to Oregon’s system of highways, roads, and bridges; railways; public transportation services; transportation safety programs; driver and vehicle licensing; and motor carrier regulation.”

APPLICABLE CRITERIA

The UGB expansion is necessary to accommodate the extension of Gunderson Road as identified in the Sandy TSP and to accommodate parkland in the general vicinity of the Nicolas Glen subdivision as identified in the Sandy Parks Master Plan.

The proposal complies with applicable Statewide Planning Goals 1, 2, 6, 8, 11, 12 and 14 as reviewed below.

Goal 1: Citizen Involvement

The application will be processed according to Chapter 17.12 of the Sandy Development Code, which involves public notification, public hearings, and appeal procedures. The application is being reviewed through a Type IV process that requires two public hearings before the City of Sandy. A notice of the proposal was sent to DLCDC on January 9, 2020.

The Planning Commission will review the application at a public hearing on February 11, 2020 and make a recommendation to City Council. City Council will hold a public hearing on March 2, 2020 to make a decision on the proposal. The public will have the opportunity to review and comment on the application at several meetings, therefore staff finds this application is consistent with Goal 1.

Goal 2: Land Use Planning

The City's Comprehensive Plan guides land uses within the City's Urban Growth Boundary. This application is processed by the City through a Type IV Quasi-Judicial process in accordance with the Development Code and Comprehensive Plan. The subject property is within the City's existing URA and will retain the present Clackamas County zoning designation until annexed into the City of Sandy. The proposed improvements on Tax Lot 701, including the planned transportation facility (Gunderson Road), stormwater facility for the transportation facility, and parkland are appropriate uses for the subject property. No private land uses are proposed on Tax Lot 701.

Goal 2 also requires the application to be coordinated with other affected units of government and requires an adequate factual base to support its approval. As discussed in this report, the City has notified other affected agencies of the application, including DLCD and ODOT. Clackamas County will also review the proposed expansion in accordance with its standards and state law.

Staff believes there is an adequate factual base in the record to support an approval of the application. An "adequate factual base" requires that substantial evidence exist in the entire record to support the decision – that is, evidence that reasonable persons would rely on in making day-to-day decisions. The City's TSP identifies Gunderson Road as a minor arterial that would accommodate growth in the area of the subject property, including providing a second access into the Bailey Meadows subdivision. The City's Parks Master Plan identifies a general need for a park in the surrounding area as well.

Therefore, staff finds this application is consistent with Goal 2.

Goal 6: Air, Land, and Water Resources

Goal 6 is implemented by Comprehensive Plan policies to protect air, land, and water resource quality. These policies rely on coordination with the Department of Environmental Quality (DEQ) for their implementation. Specific standards related to the project include requirements for addressing stormwater runoff, grading, and erosion control standards related to a minor public facility (i.e. Gunderson Road) and requirements related to site preparation for parkland development. Therefore, staff finds this application is consistent with Goal 6.

Goal 8: Recreational Needs

Goal 8 is implemented by Comprehensive Plan policies pertaining to parks, open space, and recreation facilities. The proposed location of the parkland on the subject property, Tax Lot 701, is outside the UGB. The UGB expansion will include parkland and satisfy the recreational needs of citizens in the vicinity of the Bailey Meadows subdivision. The planned

parkland dedication included in this application will benefit the residents of Sandy and provide parkland as identified in the Sandy Parks Master Plan. Therefore, staff finds this application is consistent with Goal 8.

Goal 11: Public Facilities and Services

The subject property is currently located outside the UGB and the City limits, but within the City's acknowledged URA. Since the purpose of the UGB expansion is to permit construction of a public road (Gunderson Road) and parkland the area being considered for urban expansion will not necessitate extension of mainlines for water or sanitary sewer. Laterals may be required to service the parkland in the future. The public road installation is required to include stormwater infrastructure. This application will not impact the City's ability to provide urban services. The UGB expansion will serve the transportation system in the area consistent with the Sandy TSP and the parks needs in the vicinity consistent with the Sandy Parks Master Plan. Therefore, staff finds this application is consistent with Goal 11.

Goal 12: Transportation

A portion of the subject property is planned to be used as a public transportation facility (Gunderson Road), connecting to the local transportation system north of the site and providing for future extension possibilities to the west. The submitted TIA (Exhibit C) and the comments from the City of Sandy Transportation Engineer (Exhibit E) contain additional information regarding traffic impacts. The City Transportation Engineer stated the following: "I find the TIA and Addendum meet City requirements. The TIA and Addendum demonstrate that the development can be accommodated with a north access using Melissa Avenue and a south access using a new extension of Gunderson Road with an intersection with Highway 211. I recommend approval of the subdivision with conditions that assure the dedication of all appropriate rights-of-way and the construction of the Gunderson Road extension and the intersection of Gunderson Road and Highway 211, with a left-turn lane on Highway 211." The street extension and connectivity improvements create a safe and convenient transportation system to the south of the Bailey Meadows subdivision. Therefore, staff finds this application is consistent with Goal 12.

Goal 14: Urbanization

Tax Lot 701 is located within the URA and is currently designated as Exclusive Farm Use (EFU). An application for annexation to the City of Sandy will be processed separately and include a comprehensive plan amendment to apply City zoning to allow creation of the public transportation and parkland facilities. It should be noted that the City has a "Parks and Open Space" zoning designation that would ultimately apply to the area proposed for a parkland dedication. The City does not have a zoning designation specific to public facilities such as transportation facilities. Therefore, the likely zoning for the Gunderson Road area would be Single Family Residential (SFR). However, staff would recommend a condition that would only permit public facilities for the area encompassing the Gunderson Road extension. The subject application accommodates urban population within the UGB by providing an efficient transportation network per the Sandy TSP and does not involve new commercial, industrial, or agricultural uses in the area proposed in the UGB expansion.

The parkland will enhance the lives of the residents in the vicinity of the Bailey Meadows subdivision. Interim use and development of Tax Lot 701 is not associated with the subject application. Therefore, staff finds this application is consistent with Goal 14.

Transportation Planning Rule Compliance - Oregon Administrative Rule Chapter 660, Division 12

OAR 660, Division 12, is the Oregon Transportation Planning Rule (the TPR) adopted by LCDC. The TPR implements Goal 12, Transportation, and is an independent approval standard in addition to Goal 12 for map amendments. OAR 660-012-0060(1) and (2) apply to amendments to acknowledged maps, as is the case with this application. The TPR requires a two-step analysis. First, under OAR 660-012-0060(1), the applicant shall determine if the application has a “significant affect,” as that term is defined in OAR 660-012-0060(1). The City may rely on transportation improvements found in transportation system plans, as allowed by OAR 660-012-0060(3)(a), (b), and (c), to show that failing intersections will not be made worse or intersections not now failing will not fail. If there is a “significant affect,” then the applicant must demonstrate appropriate mitigation under OAR 660-012-0060(2). The City Transportation Engineer (Exhibit E) stated the following: “The [applicant’s traffic] engineer provides a detailed response to the criteria specified in the TPR. He explains that the proposed amendment to expand the UGB does not change the functional classification of any transportation facility and does not increase developable property that will increase trip generation. He concludes that the proposal helps to implement a project specified in the TSP. I think his argument is sound and supported by the analysis.”

One of the two primary reasons for the subject UGB application is to implement the City’s adopted TSP, by constructing Gunderson Road, a planned City Minor Arterial roadway. Refer to the submitted TIA (Exhibit C) and the comments from the City of Sandy Transportation Engineer (Exhibit E) for additional information. The subject property (Tax Lot 701) is in unincorporated Clackamas County and accessible from Highway 211. Highway 211 is currently classified as a major arterial in both the City and County TSPs but is under the jurisdiction of the State of Oregon Department of Transportation. The applicant met with City, County, and ODOT staff prior to submitting the applicable UGB expansion application to discuss the effects of the application. The City has coordinated the application with Clackamas County by providing the County with timely notice of this application, allowing the County to comment on the application, and including the County’s comments in the decision, as is reasonable. The City has also notified ODOT of the application and will continue to coordinate with ODOT.

Based on the applicant’s TIA and the opinion of the City’s transportation engineer, staff finds that the application satisfies the TPR.

Oregon Administrative Rule Chapter 660, Division 24

This application involves a UGB expansion to meet a need for the public facilities described in this report: a public transportation facility (i.e. Gunderson Road) as illustrated in the Sandy TSP and land for park purposes as indicated in the Parks Master Plan. The Division 24 rule allows the City to consider one category of land needs (in this instance, public

facilities) without simultaneously reviewing other categories of land needs. The application is not seeking to add land for additional residential, commercial or industrial development. Approving the application would only allow a road and public parkland in the area proposed for expansion.

When the primary purpose for expanding the UGB is to accommodate a public facility with specific site characteristics, the study area can be limited to areas within the City's URA that provide the required site characteristics. In this instance, the proximity of lands to the existing UGB boundary and to Highway 211 to meet the need results in a study area that is reasonably limited to TL 701. The conceptual alignment of Gunderson Road as proposed by the applicant to meet the needs of the Sandy TSP is on property not currently within the UGB. The subject property, Tax Lot 701, is the most feasible location for Gunderson Road to safely intersect with Highway 211. The remnant parcel that would exist in the northeast portion of TL 701 is therefore the best location to accommodate the need for additional parkland without further expansion into the URA.

Based on the above, the applicant's narrative and the applicant's TIA, staff finds that the applicable criteria in the Division 24 rule are satisfied.

III. RECOMMENDATION

Staff recommends the Planning Commission forward a recommendation of approval to City Council.

February 20, 2020

Michael C. Robinson

Admitted in Oregon
T: 503-796-3756
C: 503-407-2578
mrobinson@schwabe.com

VIA E-MAIL

Mr. Glen Hamburg, Planner II
Clackamas County Department of Transportation and Development
Planning and Zoning Division
150 Beaver Creek Road, Room 225
Oregon City, OR 97045

RE: Clackamas County File No. Z0004-20-CP; Joint Submittal to City of Sandy and Clackamas County by Allied Homes & Development to Expand the City of Sandy Urban Growth Boundary Within the Acknowledged City of Sandy Urban Reserve Area by 6.42 Acres, Including 4.37 Acres for Tax Lot 701 and 2.05 Acres for Oregon Highway 211

Dear Mr. Hamburg:

This office represents Allied Homes & Development (the "Applicant"). Thank you for providing your questions and the opportunity for the Applicant to answer them. This letter responds to the questions that you have asked the Applicant to answer regarding satisfaction of the approval criteria for this Urban Growth Boundary ("UGB") amendment.

The principal issue before the County Planning Commission and the Board of Commissioners does not concern residential lands or other types of specific land uses but rather two needed public facilities which cannot be accommodated within the existing UGB and which are proposed to be located within the acknowledged Urban Reserve Area (the "URA"). Much of the focus on the County analysis is based on the assumption that the Applicant proposes residential uses in the amended UGB; this is incorrect and is not proposed by the Applicant or the City. The sole purpose of the UGB amendment is to work cooperatively with the City and its citizens to provide two needed public facilities notwithstanding that the Applicant is not obligated to provide them in its subdivision. The Applicant hopes the County staff, the County Planning Commission and the County Board of Commissioners will understand the significance of this approach to resolving this land use issue. Furthermore, the area proposed for the UGB amendment is in the acknowledged Urban Reserve Area; it has already been committed for first priority UGB expansions and notwithstanding that it may be in farm use now, its status as an acknowledged URA means that it is not intended to be farm use in the future but rather is intended to accommodate future urban needs identified by the City of Sandy.

Please place this letter before the Clackamas County Planning Commission prior to its initial evidentiary hearing on March 9, 2020 and before the Clackamas County Board of

Commissioners at its evidentiary hearing on March 18, 2020 and in the official Clackamas County Planning and Zoning Division file for this Application.

1. What the UGB Amendment application requests.

The Applicant submitted the UGB Application to expand the City of Sandy (the “City”) UGB by 6.42 acres, all within the URA. The UGB amendment will allow the extension of Gunderson Road, a Minor Arterial Street shown on the City’s acknowledged Transportation System Plan (the “TSP”) to connect the proposed Bailey Meadows Subdivision (the “Subdivision”) with Oregon Highway 211 and to provide an area for a public park where such area cannot be provided in the proposed Bailey Meadows Subdivision.

The UGB amendment is not proposed to accommodate additional residential land inside the UGB; therefore, Statewide Planning Goal (“Goal”) 10, “Housing,” is not relevant to this Application and a Goal 10 analysis is not required.

The City Planning Commission recommended approval of the UGB Amendment following the conclusion of its initial evidentiary hearing on February 11, 2020. The Sandy City Council will consider the UGB amendment at its public hearing on March 2, 2020.

2. Why the UGB amendment is necessary.

The UGB amendment is within the City’s acknowledged URA. Urban Reserve Areas are the first priority for expansion of the UGB. OAR 660-024-0067(2)(a)(A) Statewide Planning Goal (the “Goal”) 14, “Urbanization,” “Land Need,” Subsection (2) provides that a change to a UGB shall be based on the following, including “demonstrated need for *** streets and roads *** parks or open space, or any combination of the need categories in this subsection (2).” Goal 10 also provides that “prior to expanding an Urban Growth Boundary, local government shall demonstrate that needs cannot reasonably be accommodated on land already inside the Urban Growth Boundary.”

The UGB Amendment application explains why the amendment is necessary to accommodate Gunderson Road, a City Minor Arterial Street and a public park. **Exhibit 1** is Page 10 of the January 6, 2020 Traffic Impact Analysis (the “TIA”) from Mr. Todd Mobley of LancasterMobley explaining that the City’s acknowledged TSP shows the intersection of Gunderson Road with Oregon Highway 211 on a curve which, as Mr. Mobley explains, “however, upon closer investigation and the engineering analysis, it was determined that the alignment shown in the TSP was not feasible for construction of an intersection with Highway 211, primarily due to poor sight distance and need for a perpendicular intersection, and a very steep super-elevated roadway section.”

Additionally, Mr. Mobley explained the need for the UGB expansion for Gunderson Road:

“The nearest suitable intersection location was found to be farther to the southwest, at the location currently proposed for a UGB amendment. From this location, it is far enough from the horizontal and vertical curves to the northeast to have adequate sight distance and far enough southwest of the curve to not be in a super-elevated roadway section. However, this alignment is outside of the current UGB of the City of Sandy, as shown in Figure 5. As such, a UGB amendment is proposed to accommodate the road extension.” (Id.)

Because the City has determined a need for Gunderson Road in its TSP and while the Applicant does not believe it is necessary to serve the Subdivision, because the City does, the Applicant agreed to submit the UGB Expansion application to provide the establishment of Gunderson Road within the URA through this UGB amendment at a location acceptable to the City and the Oregon Department of Transportation (“ODOT”). ODOT has signed the Application form consenting to its 2.05 acres in the Oregon Highway 211 right-of-way to be included in the UGB Application.

The second need for the UGB amendment is for a public park. While the Applicant has told the City that it cannot provide the public park within its subdivision and the City does not have the lawful authority to require the public park, the Applicant and the City have agreed to seek this UGB amendment to provide for a public park location. The public park location is proposed to be in the “donut hole” that would otherwise be left between the UGB expansion for Gunderson Road and the existing UGB.

As explained in more detail below, both public facility needs, allowed by Goal 10, are proposed based on determinative geography; in other words, Gunderson Road cannot be located elsewhere in order to meet standards necessary to connect it to Oregon Highway 211 and the public park cannot be located within the existing UGB in the area proposed to serve the proposed Bailey Meadows Subdivision and the existing Nicholas Glen Subdivision (**Exhibit 2**; email from City Planning Directory Kelly O’Neill dated February 7, 2020). The remainder of this letter addresses the remaining questions.

3. Response to eight facts contained in Mr. Hamburg’s January 31, 2020 email.

This section responds to Mr. Hamburg’s January 31, 2020 facts.

“1. The proposed connection to the highway outside the current UGB is *not* needed for the 100-lot subdivision. Rather, that subdivision is approvable by the City even without this connection, and the working assumption is that the connection will not be conditioned on it (or the park or the stormwater facilities) actually being built. Indeed, because the submitted traffic study shows that the subdivision does not need this connection, it may not be possible to condition the subdivision’s approval on the construction of the off-site improvements.”

Applicant's Response: It is true that the extension of Gunderson Road outside of the current UGB is not needed for the proposed 100-lot Bailey Meadows Subdivision from the Applicant's viewpoint. However, the City believes the road extension is necessary and that fact is undisputable because Gunderson Road is part of the City's acknowledged TSP. The TSP, unfortunately, shows Gunderson Road connecting to Oregon Highway 211 in a location that ODOT cannot approve. This UGB amendment, in part, provides an expansion of the UGB within the acknowledged URA in order to allow the road to be constructed and intersect with Oregon Highway 211. The fact that the subdivision does not generate the need for the road does not mean it is not needed and Goal 10 clearly allows UGB expansions for public facilities including roads and streets.

"2. The findings of the June 2020 [sic] traffic study are still considered valid by the applicant. Again, the study found that, rather than locating the highway connection where shown in the TSP, a highway connection could be provided at at least two other locations already within the UGB to serve both the 100-lot subdivision and other planned/zoned residential areas inside the current UGB."

Applicant's Response: This fact ignores the January 6, 2020 TIA in **Exhibit 2**. Notwithstanding the Applicant's June, 2019 TIA for the Subdivision application, this fact is incorrect that the Gunderson Road intersection could be provided in at least two other locations.

"3. There is no reason a park could not be located in the plat of the proposed subdivision or on adjacent/nearby properties that are already within the UGB."

Applicant's Response: The park cannot be located in the plat of the proposed the Subdivision nor on adjacent or nearby properties that are already within the UGB for several reasons. First, the Applicant is not obligated to provide a park land dedication within a subdivision under relevant law but wishes to cooperate with the City to provide the needed park. Notwithstanding the Applicant's argument regarding the park site as it applied to the subdivision application, the City's Parks and Trails Advisory Board believes that a park is necessary in this area, as do the residents of the Nicholas Glen Subdivision. Second, Mr. O'Neill's email demonstrates that there is no availability for a park within developed subdivisions and a park cannot be developed in areas that have not been proposed for development. Locating the park in the "donut hole" within the acknowledged URA that would be created by the expansion for Gunderson Road, which must be located in the proposed location in order to appropriately intersect with Oregon Highway 211, is an appropriate use of the land for a public park.

"4. A park in the proposed location is not identified in the City's adopted Parks Master Plan. In fact, in a separate application before the City for annexation of the proposed UGB expansion area, the applicant states, 'According to the Sandy Parks Master Plan adopted May 15, 1997, there is not a conceptual location for a park on or near the subject site.'"

Applicant's Response: Notwithstanding the Applicant's argument about the need for a park on its property, testimony before the City Planning Commission by residents of the Nicholas Glen

Subdivision and the City's Parks and Trails Advisory Board demonstrates the need for a park in this area. Mr. O'Neill's email explains why a park location is not otherwise possible within the existing UGB.

“5. While last week the City verbally expressed on the phone the *possibility* of zoning the proposed park space as Parks and Open Space (POS), the actual application pending with the City for annexation and amendment of the Comprehensive Plan Map and Zoning Map requests the entire UGB expansion area for residential development instead, with two different zoning designations Low Density Residential (LDR) and Single Family Residential (SFR). Even if a different application were to be submitted (and publically noticed) in order to zone the park area POS, it sounds like the remainder of the UGB expansion area (approximately three acres) would still be zoned for residential development. There is no proposed new zoning map included with the copy of annexation/Map amendment application that I received, so I'm not able to see which portions of the UGB expansion area are currently being sought for LDR zoning and which for SFR zoning.”

Applicant's Response: This is an issue that is appropriately addressed by conditions of approval by both the City and the County and is not an impediment to the UGB Amendment Application. The City can condition the UGB expansion on non-residential use of the expanded UGB. The County can also do so. The record must reflect the Applicant's representation that none of the UGB area requested for an expansion shall be used for residential development; only for the two public purposes that the UGB expansion will accommodate. This is fully consistent with Goal 10's provision that these types of public uses are permissible. Further, the Applicant has submitted a separate concurrent Comprehensive Plan map and zoning map amendment and annexation application to the City that will zone the expanded UGB area subject to appropriate conditions of approval so that it may only be used for these two public purposes.

“6. No Goal 10 analysis has been conducted for three acres of additional residential land in the UGB.”

Applicant's Response: A Goal 10 analysis is not required where the Applicant is not proposing additional residential land.

“7. There is no existing agreement with all owners of the subject lot of record for the proposed park land to be dedicated to the City, and the City has no plans for when/how the park land will be developed/constructed.”

Applicant's Response: The owner of Tax Lot 701, which will include the area proposed for the public park, has consented to the UGB Amendment application, so the statement that there is “no existing agreement with all owners of the subject lot of record” is incorrect.

“8. Road and other construction will occur on the historic Barlow Road.

Applicant’s Response: The historic Barlow Road is noted in Clackamas County Comprehensive Plan Chapter 9, “Open Space, Parks and Historic Sites,” Policy 2.0. The Barlow Road Historic Corridor is subject to the Clackamas County Zoning and Development Ordinance (the “ZDO”) provisions governing the corridor (Historic Corridor “HC”) zoning district. However, nothing in the Plan prohibits a road from crossing the historic Barlow Road or the HC zoning district. If that were the case, road connections would be prohibited throughout the County. Indeed, your fact states only that the road will cross the historic Barlow Road but it does not say that it is prohibited. However, once the property is within the UGB, it will not be subject to either the County Plan or to ZDO Chapter 707.

4. Response to Administrative Rule questions.

A. OAR 660-024-0050(4).

Exhibit 3 is OAR 660-024-0050(4). First, the County can find that the need for the Gunderson Road extension and the public park are based on evidence in the record. The evidence supporting Gunderson Road is based on the January 6, 2020 Traffic Impact Analysis prepared by LancasterMobley. The need for the public park is based on the email from Mr. O’Neill.

OAR 660-024-0050(1) requires an inventory when a local government seeks to amend a UGB. However, the inventory principally addresses residential and employment land, neither of which is proposed for this Application. Therefore, the County can find that OAR 660-024-0050 is either irrelevant to the Application because it proposes a UGB for a public street and public park or, if it is relevant, that the record submitted by the Applicant is sufficient to satisfy the administrative rule.

The evidence demonstrates that the need for the two public facilities cannot be accommodated within the UGB for the reasons explained in this letter.

B. OAR 660-024-0050(6).

Exhibit 4 is OAR 660-024-0050(6). The City proposes appropriate zones to allow the public street and the public park with the conditions of approval that neither may be used for residential land.

The City’s Public Open Space (“POS”) zoning district allows parks as a permitted use outright. Sandy Development Code (“SDC”) 17.32.10.A.1. The City’s Single-Family Residential (“SFR”) zoning district allows “Minor Public Facilities” as a permitted use outright. SDC 17.34.10.B.7. SDC 17.10.30 defines “Minor Public Facilities” to include “new or extended public streets.” Finally, SDC 17.12.32 (for Type III applications) and 17.12.40 (for Type IV applications) allow the City Planning Commission and the City Council to impose conditions of approval on the decision. It is feasible to impose conditions of approval as required by the

County on the City map amendments and permitting applications for the Gunderson Road extension and the public park. This is sufficient to satisfy OAR 660-024-0050(6). The Applicant's representations made in this letter are binding on the Applicant and the Applicant proposes that the County impose this condition of approval on its decision approving the UGB amendment.

C. OAR 660-024-0065.

Because OAR 660-024-0065(1) references OAR 660-024-0050(4), which is concerned with residential and employment land, the County need not require compliance with OAR 660-024-0065. However, if the County deems that this administrative rule is applicable, then the "Preliminary Study Area" under OAR 660-024-0065(1) is the area analyzed in the LancasterMobley January 6, 2020 Traffic Impact Analysis. For these same reasons, OAR 660-024-0065(3) does not apply because that section is related to expansion of the UGB to accommodate an industrial use. OAR 660-024-0065(4) is in applicable because it addresses land conditions not found on this site. Finally, the County can find that OAR 660-024-0065(5), (6) and (7) are inapplicable because they relate to residential and employment land needs.

The County can find that OAR 660-024-0065(8) is irrelevant to this Application based on the specific locational needs of the two public facilities.

D. Goal 5, "Natural Resources, Scenic and Historic Areas, and Open Spaces."

The County asked how the Application is consistent with Goal 5 because this site includes the Historic Barlow Trail. However, the County has not identified the category of Historic Barlow Trail, or what means it wishes the City and the Applicant to take to preserve or address the location of the Historic Barlow Trail. The Applicant has suggested a condition of approval. Also, as noted above, this City's acknowledged Plan contains a Policy addressing the Historic Barlow Trail:

**"Goal 5 is satisfied by inventorying the required resources.
The administrative rule implementing the Goal 5, OAR
Chapter 660, Division 16 is satisfied by the County's
Comprehensive Plan."**

No amendment to a designated Goal 5 resource is proposed by this Application; therefore, consistent with the application of Goal 5 and its implementing administrative rule, the issue of properly addressing Barlow Road becomes a matter of the City's zoning and permitting actions once the property is inside the UGB. The Applicant commits to and will accept a condition of approval requiring it to coordinate with the County on Barlow Road when it submits and application to construct and permit Gunderson Road.

Exhibit 5 is OAR 660-024-0065. The City's Comprehensive Plan (the "Plan") Goal 5, "Historic and Cultural Resource Protection Policies," Policy 25, acknowledges the Barlow Road Historic Corridor Background Report and Management Plan prepared by

Clackamas County. The Applicant requests that the County impose a condition of approval on its decision approving the UGB amendment requiring:

“The Applicant shall consider the Barlow Road Historic Corridor and to minimize impact by the extension of Gunderson Road.”

The County can find that the appropriate way to address the Historic Barlow Trail is through a condition of approval in the City’s annexation and concurrent Comprehensive Plan map and zoning map amendment for the Gunderson Road extension.

E. Goal 8, “Recreational Needs.”

Goal 8 is satisfied by the evidence in this record because the City has found it needs part of the UGB for park needs. Goal 8, “Recreation Planning.” The remainder of Goal 8 addresses destination resorts, which are not applicable to this application.

F. Goal 10, “Housing.”

The County’s assumption that the 6.42 acre UGB expansion is for housing is incorrect. The Applicant has never proposed housing for this area. The Application for the expansion of the UGB is solely for the accommodation of the public road and the public park. Additionally, the UGB Amendment application is not intended to serve the subdivision. The Applicant has explained on numerous occasions that the two are not linked except by virtue of the fact that the Applicant has submitted the Bailey Meadows Subdivision Application to the City. The County can find that Goal 10 is not implicated by this application.

G. Goal 14, “Urbanization.”

The County can find that it is not possible to connect Gunderson Road within the UGB for the reasons explained in the January 6, 2020 LancasterMoblely memorandum. Additionally, the City’s evidence is that the proposed location for the public park is appropriate and by locating the park in the “donut hole” created by the expansion of the UGB to accommodate Gunderson Road, that is an appropriate future use serving the existing and future residential areas within the existing UGB.

Finally, the County can find that it is uncommon for parks to be designed prior to their establishment. However, while the proposed UGB area for the public park is slightly larger than what would be required in the event the Applicant were willing to or required to dedicate to the public park area, that does not mean that the City’s evidence regarding the need for the public park in this location should be disregarded. Further, if the UGB is not expanded to include the area for the public park, then the County will leave a “donut hole” within the acknowledged URA and eventually the URA will accommodate a UGB expansion for this area.

5. Conclusion.

The evidence in the record before the Planning Commission and the Board of Commissioners demonstrates that the relevant approval criteria for the UGB amendment are satisfied. The Applicant respectfully requests that the County address each public facility separately and although the Planning Commission can recommend approval of, and the Board of Commissioners can approve the UGB amendment to accommodate both the public road and the public park, the County has the authority to approve one and not the other use based on the evidence before it if it finds that action appropriate.

As noted at the beginning of this letter, this UGB amendment is for the purpose of fulfilling identified public needs by the City of Sandy that cannot be accommodated in the existing UGB and addresses issues raised by City staff and the neighbors. The Applicant is not obligated to submit this UGB Amendment application but did so in order to work with the City and its citizens to address these two issues. The evidence in the record is sufficient for the County to approve this UGB Amendment application. The Applicant hopes that the County acknowledges the valuable purpose that this UGB amendment application serves and will approve the application.

Very truly yours,



Michael C. Robinson

MCR:jmhi
Enclosures

Cc Ms. Jennifer Hughes *(via email) (w/enclosures)*
Mr. Kelly O'Neill *(via email) (w/enclosures)*
Mr. David Doughman *(via email) (w/enclosures)*
Mr. Cody Bjugan *(via email) (w/enclosures)*
Mr. Monty Hurley *(via email) (w/enclosures)*
Mr. Chris Goodell *(via email) (w/enclosures)*
Ms. Marie Holladay *(via email) (w/enclosures)*
Mr. Todd Mobley *(via email) (w/enclosures)*
Mr. Vu Nguyen *(via email) (w/enclosures)*
Mr. Rand Waltz *(via email) (w/enclosures)*
Mr. Daniel Stumpf *(via email) (w/enclosures)*

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EXHIBIT LIST

- Exhibit 1** LancasterMobley January 6, 2020 Traffic Impact Analysis
- Exhibit 2** Sandy Planning Director February 7, 2020 email
- Exhibit 3** OAR 660-024-0050(4)
- Exhibit 4** OAR 660-024-0050(6)
- Exhibit 5** OAR 660-024-0065

EXHIBIT C

Technical Memorandum

To: Cody Bjugan, Allied Homes & Development
 From: Jessica Hajar
 Date: January 6, 2020
 Subject: UGB Amendment & Gunderson Road Connection
 Traffic Impact Analysis, Addendum #1



RENEWS: 12/31/2020



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This memorandum is written as an addendum to the Bailey Meadows Subdivision Traffic Impact Analysis prepared by Lancaster Engineering dated June 20, 2019. Specifically, analysis is provided regarding the potential new roadway connection to Highway 211. The current planning effort includes a connection of Gunderson Road to Highway 211 as considered in the City of Sandy's Transportation System Plan (TSP).

In addition, this memorandum addresses the Transportation Planning Rule and associated approval criteria relative to the proposed Urban Growth Boundary (UGB) amendment, comprehensive plan and zone map amendments, and annexation applications. All of these are necessary to accommodate a connection of Gunderson Road to Highway 211.

Future Roadway Connection

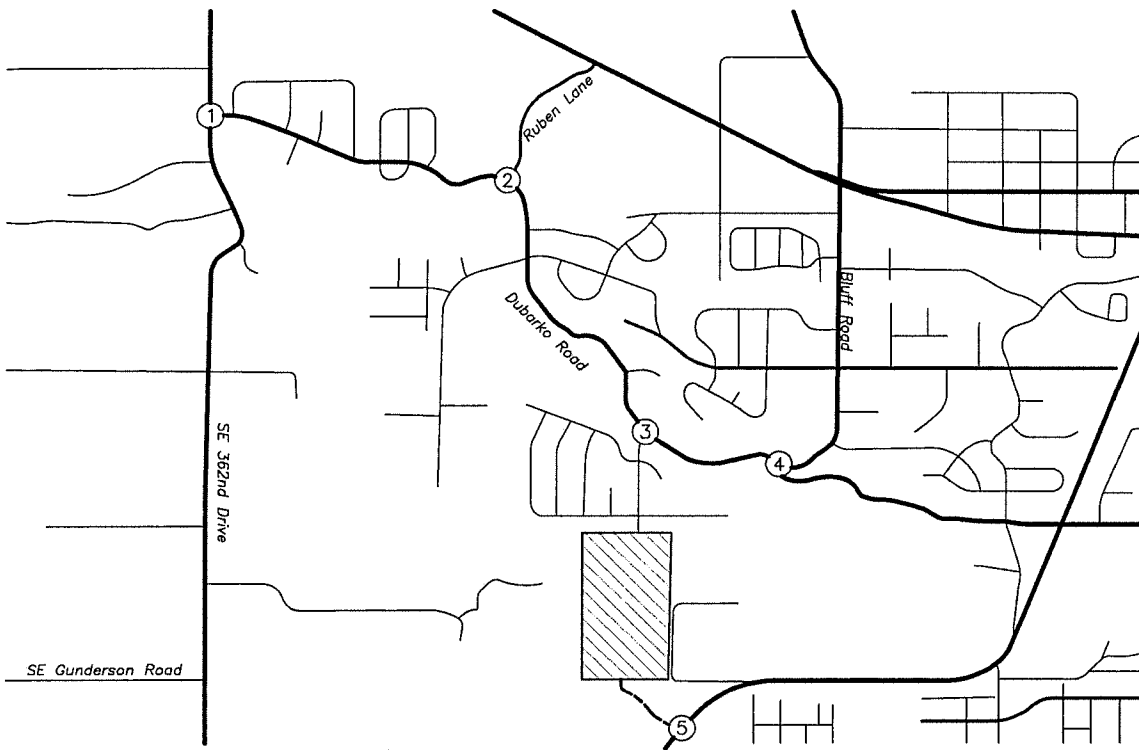
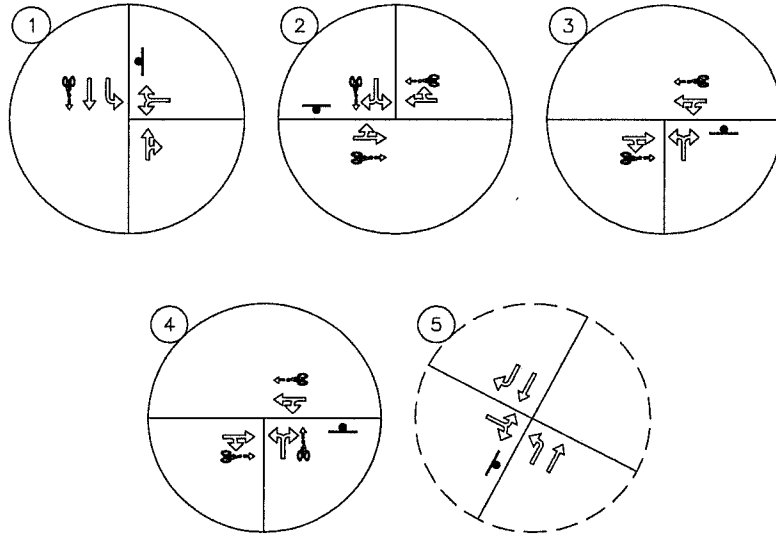
The planned connection of Gunderson Road to Highway 211 will provide an additional route into and out of the Bailey Meadows subdivision as well as the existing neighborhood to the north. This will reduce reliance on Melissa Avenue, which will provide access to the Bailey Meadows subdivision via Dubarko Road. The planned intersection of Gunderson Road at Highway 211 will be a three-legged intersection that is stop-controlled for the SE Gunderson Road approach. Future development on the south side of Highway 211 could extend the street to the east, to eventually connect with Cascadia Village Drive, as shown in the TSP. The existing characteristics of the subject roadways are shown in Table 1. The existing and future intersection configurations are shown in Figure 1 on page two.

Table 1: Vicinity Roadway Characteristics

Street Name	Jurisdiction	Classification	Speed (MPH)	Curbs	Sidewalks	Bicycle Lanes
Highway 211	ODOT	District I Highway	45-55 mph posted	No	No	Partial
Gunderson Road (planned)	City of Sandy	Future Minor Arterial	Not Posted	Partial	Partial	Yes

LEGEND

- STUDY INTERSECTION (EXISTING)
- STUDY INTERSECTION (PROPOSED)
- ⊥ STOP SIGN
- 🚲 BIKE LANE
- ▨ PROJECT SITE
- ARTERIAL ROADWAY
- COLLECTOR ROADWAY
- LOCAL ROADWAY
- - - FUTURE MINOR ARTERIAL



Le VICINITY MAP



FIGURE 1
PAGE 2

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Trip Distribution

The Gunderson connection to Highway 211 is expected to serve trips to and from the Bailey Meadows subdivision, as well as trips from the existing neighborhood north of Bailey Meadows, which currently uses only Melissa Avenue. Based on travel time studies, it is not expected that traffic from outside the immediate area (such as residents in Bornstedt Village or Cascadia Village) would use the new Gunderson Road connection as a bypass route. Those trips would have to use Gunderson Road, three different streets within Bailey Meadows, Melissa Avenue, and Dubarko Road. This would be a very circuitous route and would not be faster than existing travel routes serving these neighborhoods.

Bailey Meadows Trips

The overall directional distribution of site trips to and from Bailey Meadows was based on the original TIS, but trip routing was modified to reflect the new street connection.

To & From the East

It is expected that the 15 percent of site trips in the TIS previously assigned to Dubarko Road to the east will all use the new Gunderson Road connection. Turning left onto Highway 211 at the new intersection will have significantly lower delay than turning left or crossing Highway 211 at Dubarko Road.

Contribution: 15% via Gunderson

To & From the South

A total of 10 percent of the trips are expected to be to and from the south, and all these trips will use the Gunderson Road connection to Highway 211, since that will be a much more direct route.

Contribution: 10% via Gunderson

To & From the West

Trips to and from the west (30%) were assigned primarily to 362nd Avenue, as this is the quickest route to shopping destinations as well as Highway 26 west of Sandy. Travel time studies show that the route using Dubarko Road to 362nd Avenue is identical in time to the route using Highway 211 to 362nd Avenue. Therefore, the 30% was split evenly via Melissa Avenue to the north and Gunderson Road to the south.

Contribution: 15% via Gunderson

The total percentage of site trips using Gunderson Road is 40 percent, or 378 of the site's 944 trips per day.

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Rerouted Existing Trips

Since 40 percent of the Bailey Meadows trips are expected to use the Gunderson Road connection to Highway 211, it is expected that a similar, although slightly lower percentage of the existing neighborhood traffic would also use Gunderson. Since the existing neighborhood is north of the project site, the use of Gunderson could decrease from 40 percent to approximately 30 percent. As shown in the TIS, the existing traffic volume on Melissa Avenue was measured to be 1160 vehicles per day.

In total, 30 percent of the existing 1160 average daily traffic (ADT) on Melissa Avenue would reroute via Gunderson Road, or 348 trips per day.

In summary, the table below shows the total daily traffic volumes to the north (via Melissa Avenue) and to the south (via Gunderson Road) with the future street connection in place.

Table 2: Trip Distribution Summary

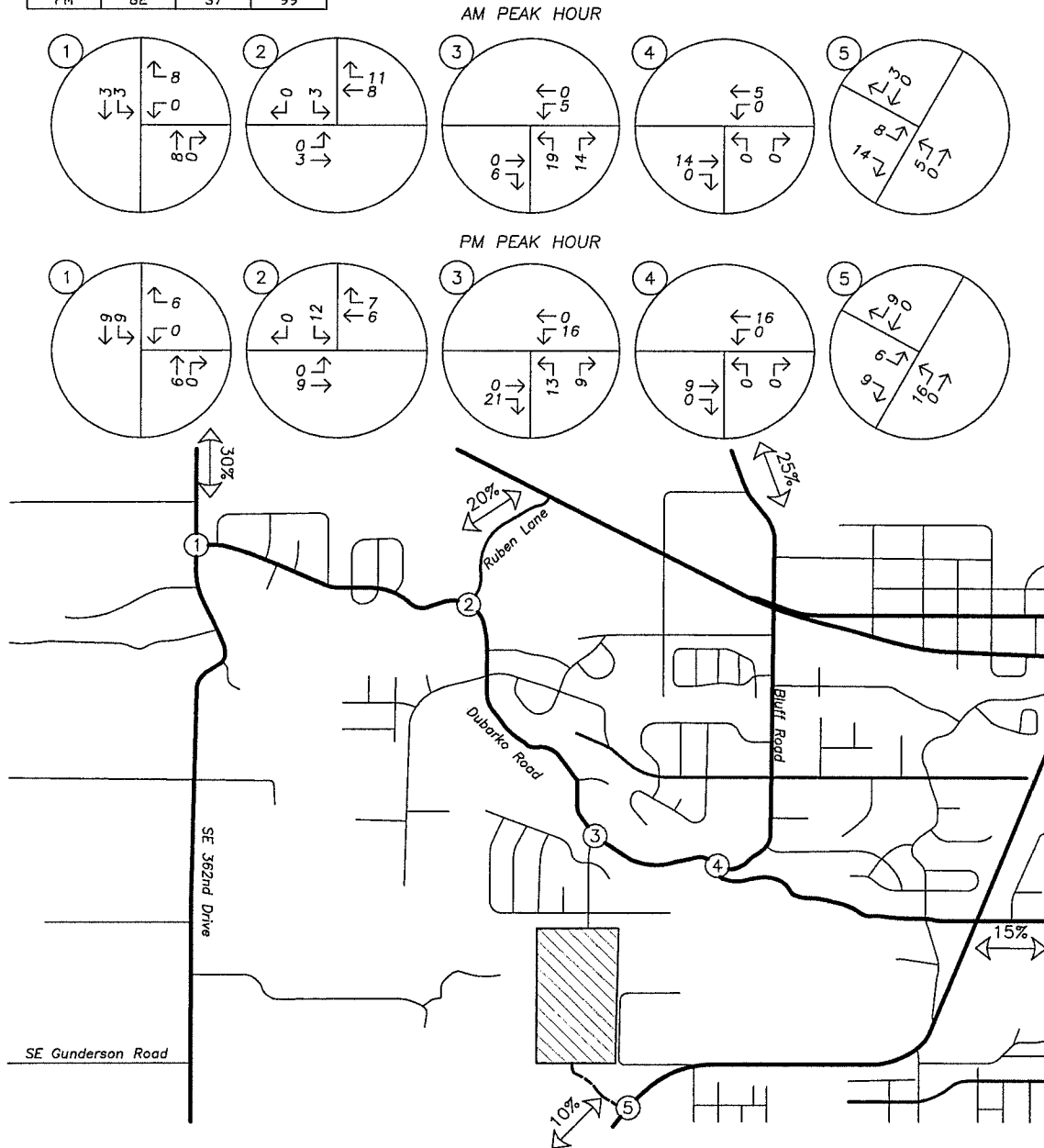
	Daily Traffic Volumes	
	Melissa Avenue	Gunderson Road
Existing neighborhood traffic	1160	0
Existing neighborhood traffic w/ Gunderson	812	348
Bailey Meadows site trips with Gunderson	566	378
<i>Total Daily Volume with Gunderson</i>	<i>1378</i>	<i>726</i>

The updated trip distribution and assignment during the morning and evening peak hours are shown in Figure 2 on page five.

LEGEND

XX% PERCENT OF PROJECT TRIPS

TRIP GENERATION			
	IN	OUT	TOTAL
AM	19	55	74
PM	62	37	99



SITE TRIP DISTRIBUTION & ASSIGNMENT
Proposed Development Plan - Site Trips
AM & PM Peak Hours



FIGURE
2
PAGE
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Traffic Volumes

Existing Conditions

Twenty-four-hour speed data was collected on Highway 211 near the intersection with Ponder Lane on December 4th, 2018. The morning and evening peak hours of traffic occurred between 7:00 AM and 8:00 AM and between 4:00 PM and 5:00 PM, respectively.

Since Highway 211 is under the jurisdiction of ODOT, highway traffic volumes were seasonally adjusted to reflect the 30th highest hour per methodologies in ODOT's Analysis Procedures Manual (APM). Based on the commuter seasonal trend in ODOT's 2018 Seasonal Trend Table, a seasonal factor of 1.122 was calculated and applied to through volumes on Highway 211.

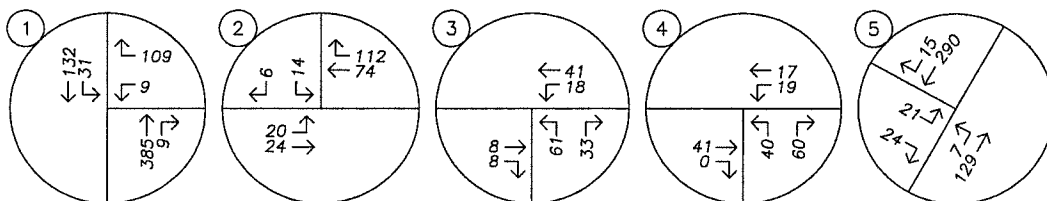
Buildout Conditions

A compounded growth rate of two percent per year was used to estimate growth on all streets under the City of Sandy jurisdiction as described within the TIS. Growth rates for traffic volumes on Highway 211 were derived using ODOT's 2037 Future Volume Tables in accordance with the APM. Using data corresponding to mileposts 3.75 and 5.07, a linear growth rate of 2.8 percent was calculated and applied to through volumes on the highway. Traffic volumes were projected over a period of four years in order to estimate the year 2022 buildout traffic volumes (traffic count data was collected in 2018).

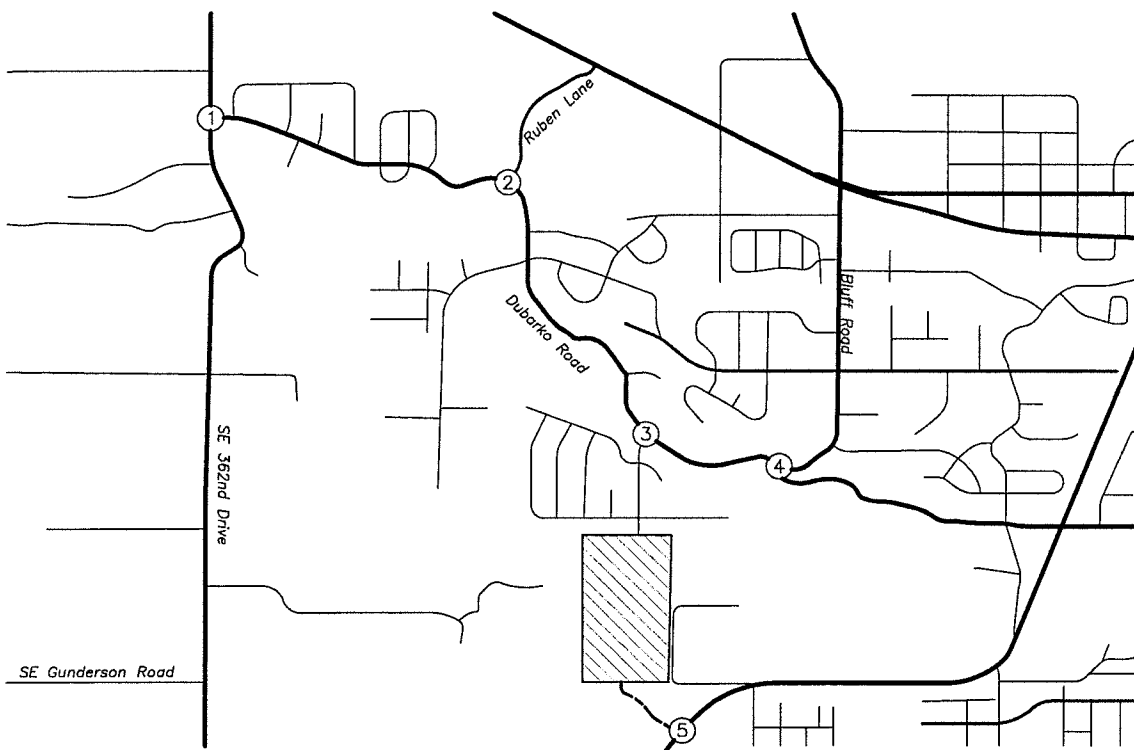
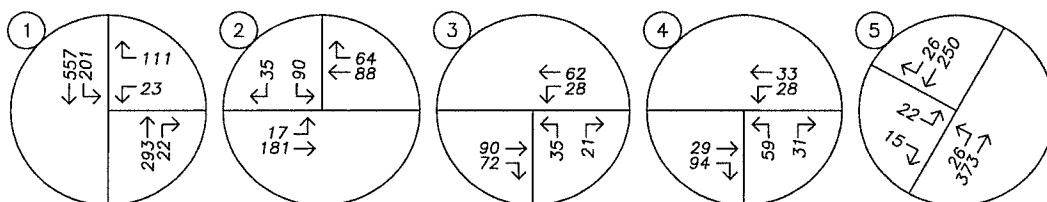
The year 2022 buildout scenario was updated to include a redistribution of existing trips that are likely to use the new Highway 211 roadway connection. Finally, site trips generated by the Bailey Meadows subdivision, discussed previously within the Trip Distribution section, were added to the projected year 2022 volumes in order to obtain the year 2022 buildout traffic volumes.

The year 2022 buildout traffic volumes are shown in Figure 3 on page seven.

AM PEAK HOUR



PM PEAK HOUR



TRAFFIC VOLUMES
 Year 2022 Buildout Traffic Volumes
 AM & PM Peak Hours



FIGURE
3

PAGE
7



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Preliminary Traffic Signal Warrants

Preliminary traffic signal warrants were examined for all study intersections based on methodologies in the *Manual on Uniform Traffic Control Devices*¹ (MUTCD) and the Analysis Procedures Manual. Warrant 1, *Eight Hour Vehicular Volumes*, was used from the MUTCD. Warrants were evaluated based on the common assumption that traffic counted during the evening peak hour represents ten percent of the AADT and that the eighth-highest hour is 5.6 percent of the daily traffic. Volumes were used for the evening peak hour under the year 2022 buildout scenario.

For the intersection under ODOT jurisdiction, the APM dictates that minor-street right turns are only used if the volume exceeds 85 percent of the lane capacity, and even then, only the increment of volume in excess of 85 percent can be used. In this case, none of the right turns can be used for the purpose of the signal warrant analysis.

Due to insufficient minor street volumes, traffic signal warrants are not met at the intersection of SE Gunderson Road at Highway 211 under year 2022 buildout scenario.

Left-Turn Lane Warrants

Left-turn lane warrants were examined at the planned intersection of Highway 211 at SE Gunderson Road. A left-turn refuge is primarily a safety consideration for the major-street approach, removing left-turning vehicles from the through traffic stream.

Warrants were examined based on the design curves developed by the Texas Transportation Institute, as adopted by the APM. This methodology evaluates the need for a left-turn lane based on the number of left-turning vehicles, the number of travel lanes, the number of advancing and opposing vehicles, and the roadway travel speed.

A left-turn lane is warranted at the intersection of SE Gunderson Road at Highway 211 under the year 2022 buildout scenario and it is recommended that a left-turn lane be constructed as part of the intersection improvements.

¹ Federal Highway Administration (FTA), American Traffic Safety Services Association (ATSSA), Institute of Transportation Engineers (ITE), American Association of State Highway and Transportation Officials (AASHTO), *Manual of Uniform Traffic Control Devices for Streets and Highways* (MUTCD), 2009 Edition, 2010

Operational Analysis

A capacity analysis was conducted for the study intersection per the unsignalized intersection analysis methodologies in the *Highway Capacity Manual*² (HCM). Intersections are generally evaluated based on the average control delay experienced by vehicles and are assigned a grade according to their operation. The level of service (LOS) of an intersection can range from LOS A, which indicates very little or no delay experienced by vehicles, to LOS F, which indicates a high degree of congestion and delay. The volume-to-capacity (v/c) ratio is a measure that compares the traffic volumes (demand) against the available capacity of an intersection.

The City of Sandy's TSP states that both signalized and unsignalized intersections are required to operate at LOS D or better.

The applicable minimum operational standards for ODOT facilities are established under the Oregon Highway Plan and are based on the classification of the roadway and its v/c ratio. District highways located outside the Urban Growth Boundary and within an unincorporated community has a peak hour v/c ratio target of 0.80.

Table 3: Intersection Capacity Analysis Summary

	Morning Peak Hour			Evening Peak Hour		
	Delay	LOS	V/C	Delay	LOS	V/C
SE 362nd Drive at Dubarko Road						
Year 2022 Buildout Conditions	13	B	0.24	19	C	0.36
Ruben Lane at Dubarko Road						
Year 2022 Buildout Conditions	10	A	0.03	12	B	0.21
Dubarko Road at Melissa Avenue						
Year 2022 Buildout Conditions	9	A	0.13	10	B	0.09
Dubarko Road at Bluff Road						
Year 2022 Buildout Conditions	8	A	0.16	8	A	0.15
Highway 211 at SE Gunderson Road						
Year 2022 Buildout Conditions	11	B	0.08	13	B	0.08

All intersections are projected to operate within the City of Sandy and ODOT's operational standards under all analysis scenarios.

²Transportation Research Board, *Highway Capacity Manual, 6th Edition, 2016*.

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Intersection Location

The City of Sandy TSP shows a planning-level depiction of the Gunderson Road extension that was outside of the UGB at the time the TSP was adopted but is within the current UGB. This is shown below in Figure 4.

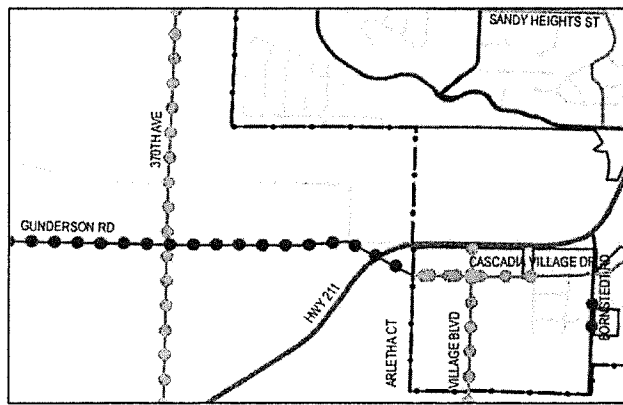


Figure 4: Alignment from Sandy TSP

However, upon closer investigation and engineering analysis, it was determined that the alignment shown on the TSP was not feasible for construction of an intersection with Highway 211, primarily due to poor sight distance, the need for a perpendicular intersection, and a very steep superelevated roadway section.

Looking to the northeast from the TSP-identified location, sight distance is limited by both horizontal and vertical curves on Highway 211. In addition, sight distance from the future fourth leg of the intersection would be particularly poor. At

the TSP-identified location, the highway was designed for moving traffic, not for accommodation of an intersection. Due to the high design speed and the horizontal curve, superlevation (the banking of the roadway around the curve) is very steep. This facilitates through traffic on the highway, but makes an intersection at this location problematic, due to difficult turning and crossing movements across the steep curve.

Need for UGB Expansion

The nearest suitable intersection location was found to be farther to the southwest, at the location currently proposed for a UGB amendment. From this location, it is far enough from the horizontal and vertical curves to the northeast to have adequate sight distance and far enough southwest of the curve to not be in a

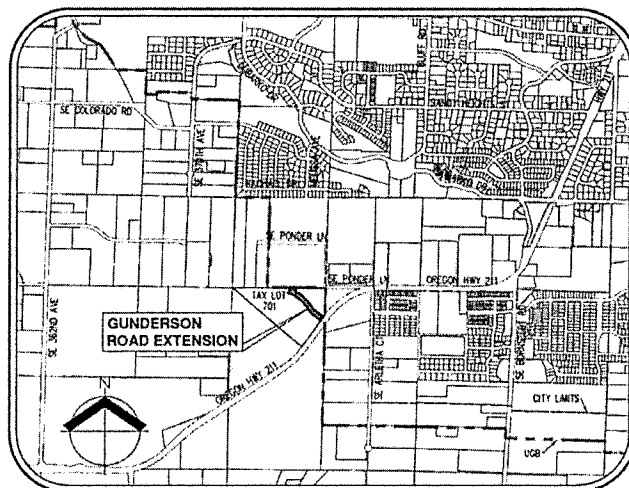


Figure 5: Planned Alignment

superelevated roadway section. However, this alignment is outside of the current UGB of the City of Sandy, as shown in Figure 5. As such, a UGB amendment is proposed to accommodate the road extension.

With the proposed UGB amendment, there will be a triangle-shaped remnant piece of property that will also be brought into the UGB. This remnant is approximately 2.38 acres in size and is proposed to be dedicated as a public neighborhood park. This will be a small, passive-use neighborhood park that will be used primarily by the residents in the area. Trips to and from the park will be primarily pedestrian and bicycle trips and no separate parking lot is planned.

Oregon Administrative Rules

The proposed UGB amendment, comprehensive plan and zone map amendments, and annexation applications trigger the need to address the Transportation Planning Rule (TPR) and associated criteria from the Oregon Administrative Rules. These are addressed below.

OAR 660-012-0060 Transportation Planning Rule

The primary purpose of the TPR is to account for the potential transportation impacts associated with any amendments to adopted plans and land use regulations. The TPR is quoted in *italics* below, with a response immediately following each section.

1. *If an amendment to a functional plan, an acknowledged comprehensive plan, or a land use regulation (including a zoning map) would significantly affect an existing or planned transportation facility, then the local government must put in place measures as provided in section (2) of this rule, unless the amendment is allowed under section (3), (9) or (10) of this rule. A plan or land use regulation amendment significantly affects a transportation facility if it would:*

- (a) Change the functional classification of an existing or planned transportation facility (exclusive of correction of map errors in an adopted plan);*

Response: The proposed UGB amendment, comprehensive plan and zone map amendment, and annexation will not change the functional classification of any transportation facilities. In fact, it will implement planned roadway connections in the TSP.

- (b) Change standards implementing a functional classification system; or*

Response: The standards that implement the functional classification system are contained in the TSP and will not change as part of this proposal.

- (c) Result in any of the effects listed in paragraphs (A) through (C) of this subsection based on projected conditions measured at the end of the planning period identified in the adopted TSP. As part of evaluating projected conditions, the amount of traffic projected to be generated within the area of the amendment may be reduced if the amendment includes an enforceable, ongoing*

January 6, 2020
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requirement that would demonstrably limit traffic generation, including, but not limited to, transportation demand management. This reduction may diminish or completely eliminate the significant effect of the amendment.

- (A) Types or levels of travel or access that are inconsistent with the functional classification of an existing or planned transportation facility;*
- (B) Degrade the performance of an existing or planned transportation facility such that it would not meet the performance standards identified in the TSP or comprehensive plan; or*
- (C) Degrade the performance of an existing or planned transportation facility that is otherwise projected to not meet the performance standards identified in the TSP or comprehensive plan.*

Response: The proposed UGB amendment and associated plan amendments will facilitate the Gunderson Road connection and will not result in developable property that will increase trip generation. In fact, by facilitating an important street connection it is implementing the City of Sandy TSP, will improve connectivity for the neighborhood, and will improve performance of the surrounding transportation system. The proposal will not result in a significant effect as defined by the TPR and no mitigations are necessary.

OAR 660-024-0065 Establishment of Study Area to Evaluate Land for Inclusion in the UGB

This section of the OAR is specific to UGB expansions and speaks to public facilities (such as transportation facilities) that require specific site characteristics. The OAR is quoted in *italics* below, with a response immediately following each section.

- 3. When the primary purpose for expansion of the UGB is to accommodate a particular industrial use that requires specific site characteristics, or to accommodate a public facility that requires specific site characteristics, and the site characteristics may be found in only a small number of locations, the preliminary study area may be limited to those locations within the distance described in section (1) or (2), whichever is appropriate, that have or could be improved to provide the required site characteristics. For purposes of this section:*

- (a) The definition of "site characteristics" in OAR 660-009-0005(11) applies for purposes of identifying a particular industrial use.*

Response: In OAR 660-009-0005(11), "Site Characteristics" are defined by visibility, proximity to a particular transportation facility, and major transportation routes. In this case, the "site" for the UGB amendment is very narrowly defined and the location between the subdivision and Highway 211 is dictated by engineering standards that must be satisfied for a safe and efficient intersection location.

- (b) A "public facility" may include a facility necessary for public sewer, water, storm water, transportation, parks, schools, or fire protection. Site characteristics may include but are not limited to size, topography and proximity.*

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Response: Since the primary purpose of the proposed UGB amendment is to accommodate the extension of Gunderson Road to Highway 211, it is by definition a “public facility”. Site characteristics such as topography are what have dictated the need for the intersection in the location as proposed. Additionally, the applicant is providing area for a neighborhood park, a minor public facility.

Summary & Conclusions

The proposed UGB amendment, comprehensive plan and zone map amendments, and annexation will implement the City of Sandy TSP and result in improved operation at the study area roadways and intersections. The connection will improve conditions for the existing neighborhood to the north of the Bailey Meadows subdivision by providing another means of vehicular access to the area.

County Staff's Questions for Z0004-20-CP

January 24, 2020

Applicant responses = *black italic text*

City responses = *red italic text*

A. Status of subdivision application and its conditions of approval

1. Has 19-023 SUB/VAR/TREE been approved?

No. A hearing with the City Planning Commission was held on January 23, 2020. At the end of the hearing, the public hearing was closed, but the record was held open for two one-week periods. The Planning Commission is slated to meet again on February 11, 2020 for deliberation and to make a decision on the application.

2. How does Clackamas County obtain a copy of minutes from the hearings on this application?

Please contact City staff members Emily Meharg or Kelly O'Neil Jr. for this information. The Planning Commission minutes from the first hearing (December 17, 2019) regarding Bailey Meadows is located on the City website here:

<https://sandy.civicweb.net/Portal/MeetingInformation.aspx?Org=Cal&Id=233>

The minutes from the January 23, 2020 Planning Commission meeting are still being written. City staff will forward the draft minutes for January 23, 2020 when they are finished.

3. The application for Z0004-20-CP states that a condition of 19-023's approval is "anticipated" to "cause submittal of" an application for an amendment to the City's UGB. Will this anticipated condition on 19-023 require actual *approval* of the UGB amendment proposed in this application, or will the condition only require that an application be submitted?

An application for an amendment to the UGB was submitted by the applicant to the City on January 9, 2020.

4. Can the subdivision proposed in 19-023 be platted and built without the UGB expansion proposed in Z0004-20-CP?

The applicant has submitted this UGB application in order to work cooperatively with the City and the neighbors to the proposed subdivision but as explained in the applicant's subdivision materials, including oral and written testimony provided to the Sandy Planning Commission, the extension of Gunderson Road and the provision of park and is not legally required of the applicant in order for the City to approve the subdivision. Nevertheless, because Gunderson Road is shown on the City's acknowledged TSP(although its intersection with the state highway cannot be achieved and the applicant and the City have agreed on a new alignment), the applicant is seeking to implement the TSP by expanding the UGB in the City's acknowledged Urban Reserve Area("URA"). Further, Proposed condition of approval A1. For the subdivision does not require the UGB amendment in order for the subdivision to proceed but neither the road extension nor the park land dedication can be constructed without the UGB extension.

B. Details on UGB expansion area

The "Exhibit Key Map" included with Z0004-20-CP identifies how portions of the expansion area may be used (e.g., for park land, for a stormwater tract).

1. What is the size of each of these constituent areas?

The applicant provided this information on January 24, 2020.

C. UGB/City enclaves

1. Does the City of Sandy have any rule/policy prohibiting the creation of jurisdictional enclaves (i.e., "islands" or "donut holes")? Are there any City rules/policies prohibiting an enclave of land not within a UGB but surrounded entirely by UGB lands? Are there any City rules/policies prohibiting an enclave of land under the jurisdiction of the County but surrounded entirely by lands incorporated in to the City?

We are unaware of any such rule/policy. That said, it is not desirable from a practical perspective. The City annexation criteria has a preference to not have islands, cherry stems, or shoestring annexations (see Section 17.78.00 (C.) of the Sandy Development Code. However, there is no prohibition against these sorts of annexation. Also, please keep in mind the subject application being reviewed by Clackamas County is a UGB expansion, not an annexation application.

2. If there are no such rules/policies, why should the area proposed for park land in the "Exhibit Key Map" not be left outside of the City's UGB?

The park will be a City park that should be in the City. Typically, parkland owned by a city inside a UGB, but outside city jurisdictional lines is limited to passive recreation (i.e. trails and open space) as it is not urbanized land. The parkland being proposed with this UGB application would be active recreation (i.e. playgrounds, maybe facilities necessitating sanitary sewer and water) and therefor must be annexed into City limits. Even if the County zoning for this property would allow an active recreation park the City of Sandy desires to have control over the development process for the parkland and therefore wants jurisdiction.

3. If there are such rules/policies prohibiting jurisdictional enclaves, why couldn't the proposed intersection be moved slightly south to avoid creating an enclave if the park land is left outside of the City's UGB?

It does not seem like this accomplishes anything other than creating a slightly larger enclave.

D. Road need and location

1. The application for 19-023, including a November 25, 2019, letter from Michael C. Robinson, represents that the Gunderson Rd connection to Hwy 211 is not needed to serve the expected traffic demand created by the 100-lot subdivision in 19-023, and that traffic created by the subdivision can be adequately served with only an extension of Melissa Ave (and an emergency vehicle access to the highway at Ponder Ln).

Is this still the case? Is the Gunderson Rd highway connection *needed* to meet the proposed subdivision's traffic demands?

The applicant's statement goes to the initial issue of whether the subdivision application can be approved by the City without the extension of Gunderson road outside of the City's UGB but the UGB approval is not needed to approve the subdivision application. However, as explained above, the UGB expansion is needed to extend Gunderson Road to the state highway in order to implement the City's acknowledged TSP and the UGB expansion would leave an area outside of the UGB, so the applicant included that area within the UGB expansion in order to provide park land to the City. As the Sandy Planning Director stated, there are no areas nearby within the UGB in which to provide additional parkland to serve this subdivision and other existing subdivisions within the City. The two issues-what is required for approval of the subdivision and the expansion of the UGB-are separate issues.

2. The June 20, 2019, TIA from Lancaster Engineering states that "it is expected that additional access [to Hwy 211] will be available to the east of the [proposed 100-lot subdivision] as other properties develop". Indeed, the subdivision plans show that a connection to the east is anticipated, and the subdivision's proposed street layout would provide for the extension(s).
Moreover, Mr. Robinson's November 25 letter quotes Lancaster Engineering as saying that, as an *alternative* to the proposed Gunderson Rd connection to Hwy 211, "a future street connection serving the area north of Highway 211 could be established to the east [of the proposed subdivision], in the location of Arletha Court or Village Boulevard."

Is this still the case? If not, what studies and determinations were made since these statements that areas east of the proposed subdivision and north of the highway (e.g., on Tax Lot 24E23-00300 already within City limits, or on Tax Lots 24E23-00400 or 24E24B-02800 already within the UGB) were no longer possible?

This was the applicant's response to issues raised by City staff about a second vehicular connection to the proposed subdivision but does not detract from the need for the UGB expansion to implement the City's TSP.

3. Other than the Ponder Ln intersection and the proposed Gunderson Rd intersection, what other locations *within the UGB* were considered for a road connection to the north side of the highway, and why are those locations not feasible?

When the existing Transportation System Plan (TSP) was created in December 2011 the road alignment for Gunderson Road was conceptually located on the map. Current city staff believes the location of Gunderson Road was not fully evaluated for alignment potential. If it would have been fully evaluated the evaluation would have shown the conceptual location was not possible due to sight distance, and other factors. Fast forward to 2017. In 2017 when the UGB expansion was adopted staff at that time assumed the conceptual location of Gunderson Road in the TSP had been evaluated during the 2011 TSP process. In hindsight we would have included Tax Lot 701 in the UGB expansion and this UGB process the applicant has undertaken would not be necessary. However, in talking with DLCD they had no concerns that this was missed during the 2017 UGB expansion. C'est la vie.

4. Other than the Ponder Ln intersection and the proposed Gunderson Rd intersection, what other locations *outside of the UGB* were considered for a road connection to the highway, and why are those locations not feasible?

Alignments further to the northeast would not meet City standards for minimum curve radii for arterial roadways and ODOT requirements for perpendicular access. Also, connecting to and

extending Cascadia Village Drive northwest of Highway 211 as Gunderson Road as prescribed in the TSP would not be possible. Alignments further to the southwest have natural resource constraints and are further away from the existing UGB/City. A road alignment to the southwest would be of diminished utility in serving urban transportation demands from the City of Sandy.

5. Other than the cost to the developer of acquiring property for right-of-way from properties to the east, which the connectivity plans for the 100-lot subdivision already anticipate, why couldn't the 100-lot subdivision be served with a connection to the highway further east on the north side of Hwy 211 in an area already within the UGB?

This would not match the City's TSP, which shows the general location where the connection is desired.

6. Why is it necessary to include a section of an existing State highway in the UGB expansion?

This was included to accommodate improvements along the highway for a turn lane and to provide a connection to the stormwater management facility. BTW, the City of Sandy is in negotiations with ODOT for a jurisdictional transfer of HWY 211 from downtown Sandy to just west of Gunderson Road.

7. Where are the proposed right-of-way dedication and construction easements in relation to the historic Barlow Road? How will the historic Barlow Road be disturbed with the planned road construction?

The County Assessor's map indicates the alignment of the historic Barlow Road. It is similar to the Hwy 211 alignment. There will be road construction activities in a portion of the area shown on the Assessor's map where the Barlow Road is indicated.

E. Park land

1. The City's Planning Commission calculates that 1.29 acres of park land is, according to City rules, due to be dedicated for a 100-lot subdivision. What demonstrates the need for approximately 2.38 acres off additional park land?

This is the amount of land that remains after right-of-way is dedicated for the Gunderson Road extension. The City's position on park land dedication is that a fee in lieu should be accepted rather than require dedication in future subdivisions. However, the City, its residents and the City's Trails and Parks Advisory Board, would all like to see a public park in this area. This area for park land dedication will go beyond serving this subdivision and will accommodate demands for future subdivisions in the URA when the UGB is expanded.

2. The proposed park land is not identified in the City's Parks Master Plan. Why is a park needed here, at this particular location? What facilities with the park include?

The Parks Master Plan identifies a park in the Nicolas Glen subdivision immediately north of the proposed subdivision in File No. 19-023 SUB/VAR/TREE; however, for reasons unbeknownst to current City staff that park development never occurred. Since that park was never dedicated nor developed the Parks and Trails Advisory Board would like parkland in the general vicinity of Bailey Meadows. The City of Sandy is currently in the process of a Parks Master Plan revision

(we hired ESA) and my guess is the additional parkland as proposed will be needed based on the results and analysis completed by ESA.

3. Why can't needed park land be provided within the City's existing UGB?

The identified location in the UGB expansion is preferred.

4. Why can't park land, presumably serving adjacent development, be located *within those adjacent developments*?

There are no developments adjacent to Bailey Meadows currently being proposed.

5. Why aren't Knollwood Park, Hamilton Ridge Playground, Barlow Ridge Park, and the Bornstedt Park & Splashpad sufficient to serve the area's residents?

Our Parks and Trails Advisory Board doesn't believe these other parks you have identified are sufficient. Knollwood, Hamilton Ridge, and Barlow are all small parks that serve existing neighborhoods. These are small parks. Bornstedt Park is across Highway 211 and does not serve children in Nicolas Glen or the proposed Bailey Meadows, unless you are arriving by vehicle to play at the splashpad. The residents of Nicolas Glen and we assume the future residents of Bailey Meadows will want a park they can safely walk to.

6. Why is a new park in the area not located nearer to existing development, rather than at the edge of the UGB and along the highway?

This is the area proposed for parkland at this time.

7. If the area is to be a park, why isn't the City's Comprehensive Plan Map being amended to designate this park land area as "Parks and Open Space"? Why will the area instead be dedicated "Low Density Residential"?

It will most likely be Parks and Open Space (POS). This will be a staff recommendation to our hearing bodies. In our telephone conversation, Kelly indicated that the park would likely be designated Parks and Open Space (POS).

8. Lancaster Engineering determined that the proposed park will be a "passive-use neighborhood park that will be used primarily by the residents in the area" and that "trips to and from the park will be primarily pedestrian and bicycle trips and no separate parking lot is planned."

How did Lancaster Engineering make this determination, given that the park is not in the Parks Master Plan and that, according to the applicant, how the park will be developed will be determined at some undefined point in the future?

Also given that the park will be nearly twice as large as what City rules require for a 100-lot subdivision, and given that it will be located at a new highway intersection and across the highway from existing development, how is the applicant certain the park will not need/have a parking lot?

Two-acre parks are considered neighborhood parks that are intended to serve a ½ mile around it. Visitors generally arrive by walking or bicycles. Parking is not a typical feature for neighborhood parks. Other parks within the City of Sandy that are larger and more active use, such as the Sandy Bluff Park & Dog Park, Cascadia Park, and Bornstedt Park & Splashpad, do not have parking lots. The only park in the City with off-street parking is Meinig Memorial Park, which is a regional facility and served large events and festivals.

9. Is dedication of park land to the City a condition of the subdivision's approval? If not, what assurances are there that the acreage will actually be used for a park, and not for additional housing or other development?

If zoned POS, housing will not be a permitted use. Additionally, A condition of approval requests that the applicant attempt to provide park land dedication through the UGB expansion application.

F. Stormwater tract area

1. What will the stormwater tract area shown in the "Exhibit Key Map" contain? What types and sizes of facilities will it have?

The stormwater facility will be in the form of a pond that provides detention and water quality treatment. It will be vegetated with native species and will have inlet and outlet structures, typical of these features. Stormwater facilities within the City of Sandy follow the City of Portland Stormwater Management Manual (SWMM) standards. The stormwater facility will have to follow the provisions of the SWMM.

2. What development will the stormwater tract serve?

The stormwater facility will serve Gunderson Road extension and any necessary additional paving along Hwy 211.

3. Is the stormwater tract necessary to serve the development proposed in 19-023?

No.

4. Why couldn't the proposed stormwater tract be located within the City's existing UGB?

Existing topography prevents this. The applicant is proposing the stormwater facility at the low point for gravity purposes.

5. What other sites have been evaluated for the siting of these facilities, and why are those other sites not appropriate?

Due topography, this is the only location that can accommodate the Gunderson Road and Hwy 211 improvements. Again, the applicant has to place this facility at the low point for gravity purposes.

6. Where are proposed stormwater facilities in relation to the historic Barlow Road crossing the property?

Based on the County Assessor's map, the stormwater facility is planned between the Barlow Road corridor and Hwy 211.

Land Conservation and Development Department

Chapter 660

Division 24

URBAN GROWTH BOUNDARIES

660-024-0050

Land Inventory and Response to Deficiency

(4) If the inventory demonstrates that the development capacity of land inside the UGB is inadequate to accommodate the estimated 20-year needs determined under OAR 660-024-0040, the local government must amend the plan to satisfy the need deficiency, either by increasing the development capacity of land already inside the city or by expanding the UGB, or both, and in accordance with ORS 197.296 where applicable. Prior to expanding the UGB, a local government must demonstrate that the estimated needs cannot reasonably be accommodated on land already inside the UGB. If the local government determines there is a need to expand the UGB, changes to the UGB must be determined by evaluating alternative boundary locations consistent with Goal 14 and applicable rules at OAR 660-024-0060 or 660-024-0065 and 660-024-0067.

Land Conservation and Development Department

Chapter 660

Division 24

URBAN GROWTH BOUNDARIES

660-024-0050

Land Inventory and Response to Deficiency

(6) When land is added to the UGB, the local government must assign appropriate urban plan designations to the added land, consistent with the need determination and the requirements of section (7) of this rule, if applicable. The local government must also apply appropriate zoning to the added land consistent with the plan designation or may maintain the land as urbanizable land until the land is rezoned for the planned urban uses, either by retaining the zoning that was assigned prior to inclusion in the boundary or by applying other interim zoning that maintains the land's potential for planned urban development. The requirements of ORS 197.296 regarding planning and zoning also apply when local governments specified in that statute add land to the UGB.

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Land Conservation and Development

Department

Chapter 660

Division 24

URBAN GROWTH BOUNDARIES

660-024-0065 

Establishment of Study Area to Evaluate Land for Inclusion in the UGB

(1) When considering a UGB amendment to accommodate a need deficit identified in OAR 660-024-0050(4), a city outside of Metro must determine which land to add to the UGB by evaluating alternative locations within a "study area" established pursuant to this rule. To establish the study area, the city must first identify a "preliminary study area" which shall not include land within a different UGB or the corporate limits of a city within a different UGB. The preliminary study area shall include:

- (a) All lands in the city's acknowledged urban reserve, if any;
 - (b) All lands that are within the following distance from the acknowledged UGB:
 - (A) For cities with a UGB population less than 10,000: one-half mile;
 - (B) For cities with a UGB population equal to or greater than 10,000: one mile;
 - (c) All exception areas contiguous to an exception area that includes land within the distance specified in subsection (b) and that are within the following distance from the acknowledged UGB:
 - (A) For cities with a UGB population less than 10,000: one mile;
 - (B) For cities with a UGB population equal to or greater than 10,000: one and one-half miles;
 - (d) At the discretion of the city, the preliminary study area may include land that is beyond the distance specified in subsections (b) and (c).
- (2) A city that initiated the evaluation or amendment of its UGB prior to January 1, 2016, may choose to identify a preliminary study area applying the standard in this section rather than section (1). For such cities, the preliminary study area shall consist of:
- (a) All land adjacent to the acknowledged UGB, including all land in the vicinity of the UGB that has a reasonable potential to satisfy the identified need deficiency, and
 - (b) All land in the city's acknowledged urban reserve established under OAR chapter 660, division 21, if applicable.
- (3) When the primary purpose for expansion of the UGB is to accommodate a particular industrial use that requires specific site characteristics, or to accommodate a public facility that requires specific site characteristics, and the site characteristics may be found in only a small number of locations, the preliminary study area may be limited to those locations within the distance described in section (1) or (2), whichever is appropriate, that have or could be improved to provide the required site characteristics. For purposes of this section:
- (a) The definition of "site characteristics" in OAR 660-009-0005(11) applies for purposes of identifying a particular industrial use.
 - (b) A "public facility" may include a facility necessary for public sewer, water, storm water, transportation, parks, schools, or fire protection. Site characteristics may include but are not limited to size, topography and proximity.
- (4) The city may exclude land from the preliminary study area if it determines that:

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(a) Based on the standards in section (7) of this rule, it is impracticable to provide necessary public facilities or services to the land;

(b) The land is subject to significant development hazards, due to a risk of:

(A) Landslides: The land consists of a landslide deposit or scarp flank that is described and mapped on the Statewide Landslide Information Database for Oregon (SLIDO) Release 3.2 Geodatabase published by the Oregon Department of Geology and Mineral Industries (DOGAMI) December 2014, provided that the deposit or scarp flank in the data source is mapped at a scale of 1:40,000 or finer. If the owner of a lot or parcel provides the city with a site-specific analysis by a certified engineering geologist demonstrating that development of the property would not be subject to significant landslide risk, the city may not exclude the lot or parcel under this paragraph;

(B) Flooding, including inundation during storm surges: the land is within the Special Flood Hazard Area (SFHA) identified on the applicable Flood Insurance Rate Map (FIRM);

(C) Tsunamis: the land is within a tsunami inundation zone established pursuant to ORS 455.446;

(c) The land consists of a significant scenic, natural, cultural or recreational resource described in this subsection:

(A) Land that is designated in an acknowledged comprehensive plan prior to initiation of the UGB amendment, or that is mapped on a published state or federal inventory at a scale sufficient to determine its location for purposes of this rule, as:

(i) Critical or essential habitat for a species listed by a state or federal agency as threatened or endangered;

(ii) Core habitat for Greater Sage Grouse; or

(iii) Big game migration corridors or winter range, except where located on lands designated as urban reserves or exception areas;

(B) Federal Wild and Scenic Rivers and State Scenic Waterways, including Related Adjacent Lands described by ORS 390.805, as mapped by the applicable state or federal agency responsible for the scenic program;

(C) Designated Natural Areas on the Oregon State Register of Natural Heritage Resources;

(D) Wellhead protection areas described under OAR 660-023-0140, and delineated on a local comprehensive plan;

(E) Aquatic areas subject to Statewide Planning Goal 16 that are in a Natural or Conservation management unit designated in an acknowledged comprehensive plan;

(F) Lands subject to acknowledged comprehensive plan or land use regulations that implement Statewide Planning Goal 17, Coastal Shoreland, Use Requirement 1;

(G) Lands subject to acknowledged comprehensive plan or land use regulations that implement Statewide Planning Goal 18, Implementation Requirement 2;

(d) The land is owned by the federal government and managed primarily for rural uses.

(5) After excluding land from the preliminary study area under section (4), the city must adjust the area, if necessary, so that it includes an amount of land that is at least twice the amount of land needed for the deficiency determined under OAR 660-024-0050(4) or, if applicable, twice the particular land need described in section (3). Such adjustment shall be made by expanding the distance specified under the applicable section (1) or (2) and applying section (4) to the expanded area.

(6) For purposes of evaluating the priority of land under OAR 660-024-0067, the "study area" shall consist of all land that remains in the preliminary study area described in section (1), (2) or (3) of this rule after adjustments to the area based on sections (4) and (5), provided that when a purpose of the UGB expansion is to accommodate a public park need, the city must also consider whether land excluded under subsection (4)(a) through (c) of this rule can reasonably accommodate the park use.

(7) For purposes of subsection (4)(a), the city may consider it impracticable to provide necessary public facilities or services to the following lands:

(a) Contiguous areas of at least five acres where 75 percent or more of the land has a slope of 25 percent or greater, provided that contiguous areas 20 acres or more that are less than 25 percent slope may not be excluded under this subsection. Slope shall be measured as the increase in elevation divided by the horizontal distance at maximum ten-foot contour intervals;

(b) Land that is isolated from existing service networks by physical, topographic, or other impediments to service provision such that it is impracticable to provide necessary facilities or services to the land within the planning period. The city's determination shall be based on an evaluation of:

(A) The likely amount of development that could occur on the land within the planning period;

(B) The likely cost of facilities and services; and,

(C) Any substantial evidence collected by or presented to the city regarding how similarly situated land in the region has, or has not, developed over time.

(c) As used in this section, "impediments to service provision" may include but are not limited to:

(A) Major rivers or other water bodies that would require new bridge crossings to serve planned urban development;

(B) Topographic features such as canyons or ridges with slopes exceeding 40 percent and vertical relief of greater than 80 feet;

(C) Freeways, rail lines, or other restricted access corridors that would require new grade separated crossings to serve planned urban development;

(D) Significant scenic, natural, cultural or recreational resources on an acknowledged plan inventory and subject to protection measures under the plan or implementing regulations, or on a published state or federal inventory, that would prohibit or substantially impede the placement or construction of necessary public facilities and services.

(8) Land may not be excluded from the preliminary study area based on a finding of impracticability that is primarily a result of existing development patterns. However, a city may forecast development capacity for such land as provided in OAR 660-024-0067(1)(d).

(9) Notwithstanding OAR 660-024-0050(4) and section (1) of this rule, except during periodic review or other legislative review of the UGB, the city may approve an application under ORS 197.610 to 197.625 for a UGB amendment to add an amount of land less than necessary to satisfy the land need deficiency determined under OAR 660-024-0050(4), provided the amendment complies with all other applicable requirements.

Statutory/Other Authority: ORS 197.040, 197A.305, 197A.320 & 197.235 & Statewide Planning Goal 14

Statutes/Other Implemented: ORS 195.036, 197.015, 197.295 - 197.314, 197.610 - 197.650, 197.764 & 197A.300 - 197A.325

History:




LCDD 6-2015, f. 12-29-15, cert. ef. 1-1-16

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SANDY FIRE DISTRICT NO. 72

17460 Bruns Avenue • P.O. Box 518 Sandy, Oregon 97055

Business Phone: 503.668.8093 • Facsimile: 503.668.7941

Exhibit I

February 24, 2020

Clackamas County Planning and Zoning Division
Attn: Glen Hamburg, Planner II
150 Beaver Creek Road
Oregon City, OR 97045

RE: Planning File Number Z0004-20-CP. Expansion of the City of Sandy's UGB to allow a road connection between Hwy 211 and the new Bailey Meadows subdivision

Mr. Hamburg,

I would like to thank you for taking my call last Friday and answering my questions. After further discussions with the City of Sandy Planning Division and the Sandy Fire District Administrative Staff, I would like to provide my written testimony showing support for the proposed expansion of the City of Sandy's urban growth boundary.

By allowing this expansion, the applicant would be able to provide the much-needed secondary fire department access (Gunderson Road) that would connect the proposed Bailey Meadows subdivision to Hwy 211. Connecting the Bailey Meadows subdivision to Hwy 211 and Melissa Avenue would also benefit the existing Nicolas Glen subdivision that is currently served by only one means of fire department access. The separated fire department access roads to both the existing subdivision and proposed subdivision could also enhance emergency service capabilities by eliminating a potential of impairment/congestion at a single point of access as well as providing first responders options that could decrease emergency response times in the event of a medical, police or fire emergency.

Sincerely,

Gary Boyles
Fire Marshal



Oregon

Kate Brown, Governor

Exhibit J

Department of Land Conservation and Development

Metro Regional Solutions Center

1600 SW Fourth Avenue, Suite 109

Portland, OR 97201

www.oregon.gov/LCD

13 February 2020



Kelly O'Neill, Development Services Director

City of Sandy

39250 Pioneer Blvd

Sandy, OR 97055

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sent via email

RE: Local File No.20-002 UGB Expansion/PAPA 002-20

Dear Kelly,

On 29 October 2019 the department had a conference call with the City and the applicant for the UGB road expansion to discuss the process. The discussion balanced the process of a goal exception vs. an urban growth boundary expansion for a public facility in an urban reserve. It was decided in that conversation that an urban growth boundary expansion would be a better option than a goal exception. The UGB expansion would be specific to a public facility; a road way and a park. We also discussed in November and again in January that the findings would need to address the following:

EVALUATION:

660-024-0040 Land Need

(7) The determination of 20-year land needs for transportation and public facilities for an urban area must comply with applicable requirements of Goals 11 and 12, rules in OAR chapter 660, divisions 11 and 12, and public facilities requirements in ORS 197.712 and 197.768. The determination of school facility needs must also comply with 195.110 and 197.296 for local governments specified in those statutes.

660-024-0050 Land Inventory and Response to Deficiency

(7) Lands included within a UGB pursuant to OAR 660-024-0065(3) to provide for a particular industrial use, or a particular public facility, must be planned and zoned for the intended use and must remain planned and zoned for that use unless the city removes the land from the UGB.

660-024-0065 Establishment of Study Area to Evaluate Land for Inclusion in the UGB

(3) When the primary purpose for expansion of the UGB is to accommodate a particular industrial use that requires specific site characteristics, or to accommodate a public facility that requires specific site characteristics, and the site characteristics may be found in only a small number of locations, the preliminary study area may be limited to

those locations within the distance described in section (1) or (2), whichever is appropriate, that have or could be improved to provide the required site characteristics. For purposes of this section:

(a) The definition of “site characteristics” in OAR 660-009-0005(11) applies for purposes of identifying a particular industrial use.

(b) A “public facility” may include a facility necessary for public sewer, water, storm water, transportation, parks, schools, or fire protection. Site characteristics may include but are not limited to size, topography and proximity.

[660-024-0067](#) **Evaluation of Land in the Study Area for Inclusion in the UGB; Priorities**

The staff report does not adequately address the above criteria required for an UGB expansion for a public facility in an urban reserve, the department recommends adding to the finding for the City Council staff report to address the above criteria. Specifically, a more detailed analysis of the site specific roadway and park needs is warranted, with discussion of the reasons this particular site is best suited to meet public facility needs and why an additional .75 acres is needed. Goal 14: Urbanization section of the staff report speaks to the zoning of the proposed property, it appears that the recommendation is for Single Family Residential (SFR) and not Parks and Open Space (POS) with the recommended condition that only public facilities can be built on the proposed road area. The department recommends zoning the entire expansion area POS, this will ensure that the development is consistent with the arguments supporting UGB expansion.

Please let me know if you have any questions. Please include this letter in the record for the City Council hearing on the 2 March 2020.

Respectfully,

Jennifer Donnelly
Regional Representative

cc: Gordon Howard, DLCD
Kevin Young, DLCD
Jennifer Hughes, Clackamas County Planning Director
Glen Hamburg, Planner Clackamas County