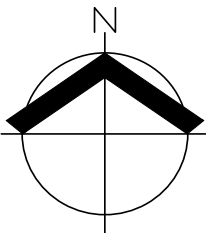




US FISH & WILDLIFE SERVICE  
NATIONAL WETLAND INVENTORY (2018)



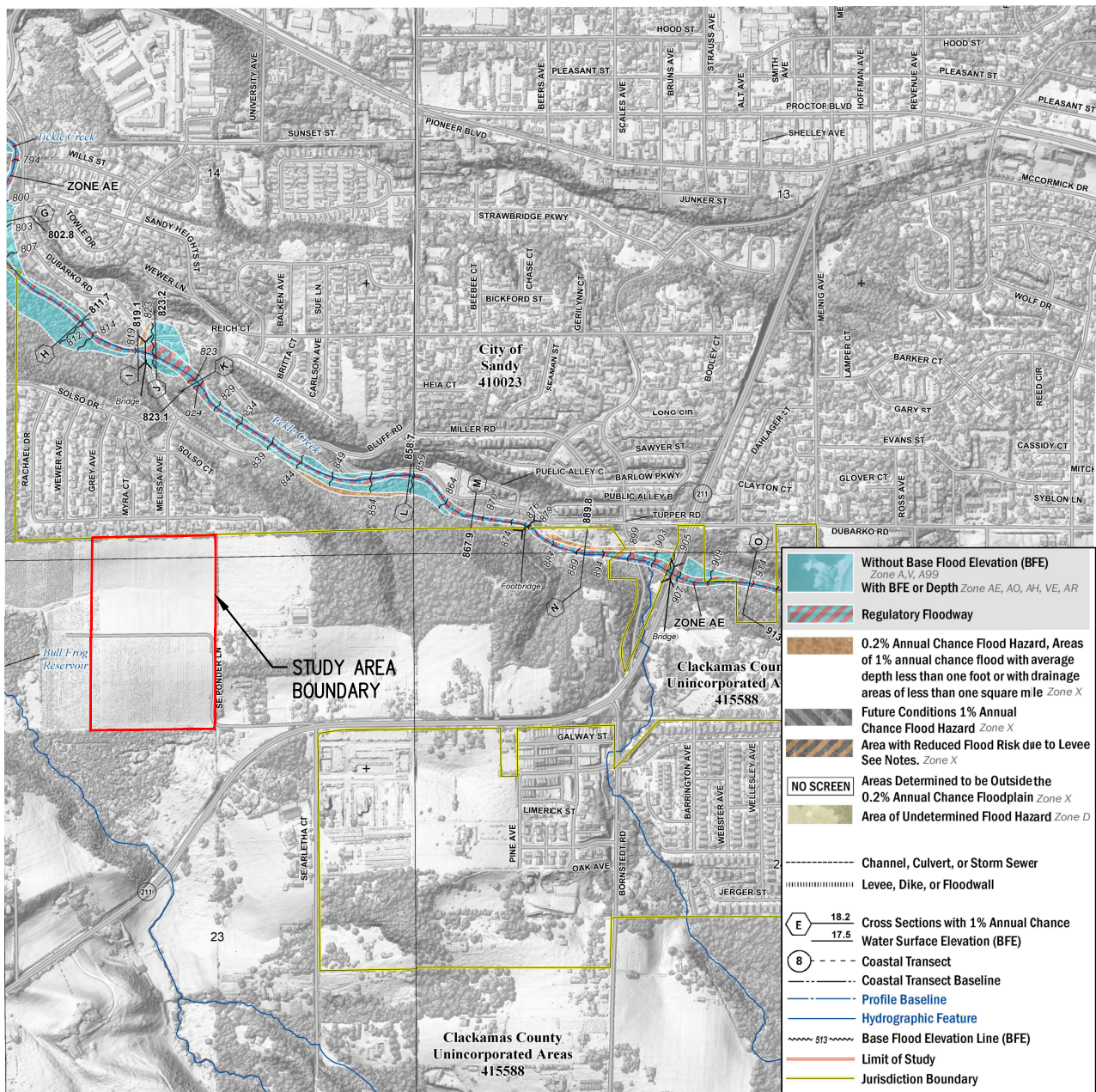
SCALE: 1" = 400 FEET



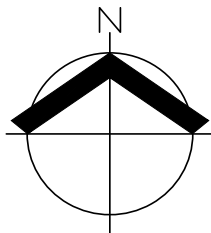
DATE: 06/06/2019

<b>NATIONAL WETLAND INVENTORY MAP</b> <b>BAILEY MEADOWS SUBDIVISION - SANDY FLOOD &amp; SLOPE HAZARD ANALYSIS</b>		<b>FIGURE</b> <b>4</b>
AKS ENGINEERING & FORESTRY, LLC 12965 SW HERMAN RD SUITE 100 TUALATIN, OR 97062 www.aks-eng.com PHONE: 503.563.6151 FAX: 503.563.6152		DRWN: SAS CHKD: SAR AKS JOB: 7107
		

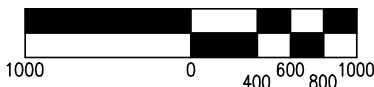




FEMA FIRM PANEL MAP (2018)



SCALE: 1" = 1000 FEET



DATE: 06/06/2019

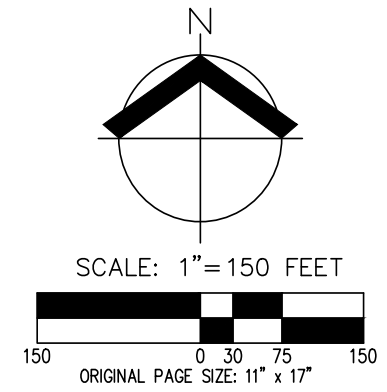
<b>FEMA FLOODPLAIN MAP</b>		<b>FIGURE</b>
<b>BAILEY MEADOWS SUBDIVISION - SANDY FLOOD &amp; SLOPE HAZARD ANALYSIS</b>		<b>5</b>
AKS ENGINEERING & FORESTRY, LLC	SUITE 100	DRWN: SAS
12965 SW HERMAN RD	TUALATIN, OR 97062	CHKD: SAR
PHONE: 503.563.6151	www.aks-eng.com	AKS JOB:
FAX: 503.563.6152		7107







USGS HIGH RESOLUTION ORTHOIMAGERY  
APRIL 2012



SAMPLE PLOT SHOWN WAS RECORDED BY AKS ENGINEERING & FORESTRY, LLC ON DECEMBER 4, 2018 AND WAS LOCATED USING A TRIMBLE GEO 7X HANDHELD GPS RECEIVER WITH SUB-METER ACCURACY.

1-FOOT INTERVAL GROUND CONTOURS DERIVED FROM NOAA LIDAR DATA.

DATE: 06/06/2019

<b>WETLAND DETERMINATION MAP</b>		FIGURE
BAILEY MEADOWS SUBDIVISION - SANDY FLOOD & SLOPE HAZARD ANALYSIS		<b>6</b>
AKS ENGINEERING & FORESTRY, LLC 12965 SW HERMAN RD, STE 100 TUALATIN, OR 97062 P: 503.563.6151 F: 503.563.6152 aks-eng.com		DRWN: JRI CHKD: SAR AKS JOB: 7107







## Appendix B: Precipitation Data

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Climatological Data for ESTACADA 2 SE, OR - December 2018

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2018-12-01	M	M	M	M	M	M	M	M
2018-12-02	57	36	46.5	7	0	M	M	M
2018-12-03	49	31	40.0	0	0	0.03	M	M
2018-12-04	M	M	M	M	M	M	M	M
2018-12-05	M	M	M	M	M	M	M	M
2018-12-06	M	M	M	M	M	M	M	M
2018-12-07	M	M	M	M	M	M	M	M
2018-12-08	M	M	M	M	M	M	M	M
2018-12-09	M	M	M	M	M	M	M	M
2018-12-10	M	M	M	M	M	M	M	M
2018-12-11	M	M	M	M	M	M	M	M
2018-12-12	M	M	M	M	M	M	M	M
2018-12-13	M	M	M	M	M	M	M	M
2018-12-14	M	M	M	M	M	M	M	M
2018-12-15	M	M	M	M	M	M	M	M
2018-12-16	M	M	M	M	M	M	M	M
2018-12-17	M	M	M	M	M	M	M	M
2018-12-18	M	M	M	M	M	M	M	M
2018-12-19	M	M	M	M	M	M	M	M
2018-12-20	M	M	M	M	M	M	M	M
2018-12-21	M	M	M	M	M	M	M	M
2018-12-22	M	M	M	M	M	M	M	M
2018-12-23	M	M	M	M	M	M	M	M
2018-12-24	M	M	M	M	M	M	M	M
2018-12-25	M	M	M	M	M	M	M	M
2018-12-26	M	M	M	M	M	M	M	M
2018-12-27	M	M	M	M	M	M	M	M
2018-12-28	M	M	M	M	M	M	M	M
2018-12-29	M	M	M	M	M	M	M	M
2018-12-30	M	M	M	M	M	M	M	M
2018-12-31	M	M	M	M	M	M	M	M
Average Sum	53.0	33.5	43.3	7	0	0.03	M	M



Climatological Data for ESTACADA 2 SE, OR - November 2018

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2018-11-01	M	M	M	M	M	M	M	M
2018-11-02	63	44	53.5	14	4	M	M	M
2018-11-03	65	44	54.5	15	5	0.01	M	M
2018-11-04	57	46	51.5	12	2	0.24	M	M
2018-11-05	64	48	56.0	16	6	0.07	M	M
2018-11-06	57	46	51.5	12	2	0.34	M	M
2018-11-07	M	M	M	M	M	M	M	M
2018-11-08	M	M	M	M	M	M	M	M
2018-11-09	M	M	M	M	M	M	M	M
2018-11-10	57	29	43.0	3	0	0.00	M	M
2018-11-11	53	29	41.0	1	0	0.00	M	M
2018-11-12	63	29	46.0	6	0	0.00	M	M
2018-11-13	66	33	49.5	10	0	0.00	M	M
2018-11-14	49	33	41.0	1	0	0.00	M	M
2018-11-15	53	40	46.5	7	0	0.09	M	M
2018-11-16	61	40	50.5	11	1	0.01	M	M
2018-11-17	60	42	51.0	11	1	0.00	M	M
2018-11-18	62	45	53.5	14	4	0.00	M	M
2018-11-19	63	35	49.0	9	0	0.00	M	M
2018-11-20	66	33	49.5	10	0	0.00	M	M
2018-11-21	59	33	46.0	6	0	0.00	M	M
2018-11-22	51	44	47.5	8	0	0.10	M	M
2018-11-23	M	M	M	M	M	M	M	M
2018-11-24	51	38	44.5	5	0	0.66	M	M
2018-11-25	54	31	42.5	3	0	0.01	M	M
2018-11-26	49	37	43.0	3	0	0.02	M	M
2018-11-27	56	44	50.0	10	0	0.71	M	M
2018-11-28	57	43	50.0	10	0	0.18	M	M
2018-11-29	M	M	M	M	M	0.31	M	M
2018-11-30	M	M	M	M	M	M	M	M
Average Sum	58.1	38.5	48.3	197	25	2.75	M	M



Climatological Data for ESTACADA 2 SE, OR - October 2018

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2018-10-01	69	55	62.0	22	12	0.00	0.0	0
2018-10-02	76	56	66.0	26	16	0.00	0.0	0
2018-10-03	74	40	57.0	17	7	0.00	0.0	0
2018-10-04	71	46	58.5	19	9	0.00	0.0	0
2018-10-05	66	42	54.0	14	4	0.00	0.0	0
2018-10-06	53	46	49.5	10	0	1.05	0.0	0
2018-10-07	54	43	48.5	9	0	0.02	0.0	0
2018-10-08	57	46	51.5	12	2	0.21	0.0	0
2018-10-09	60	52	56.0	16	6	0.60	0.0	0
2018-10-10	60	48	54.0	14	4	0.03	0.0	0
2018-10-11	65	39	52.0	12	2	0.00	0.0	0
2018-10-12	70	39	54.5	15	5	0.00	0.0	0
2018-10-13	70	40	55.0	15	5	0.00	0.0	0
2018-10-14	72	37	54.5	15	5	0.00	0.0	0
2018-10-15	72	40	56.0	16	6	0.00	0.0	0
2018-10-16	83	51	67.0	27	17	0.00	0.0	0
2018-10-17	M	M	M	M	M	0.00	0.0	0
2018-10-18	81	47	64.0	24	14	0.00	0.0	0
2018-10-19	74	39	56.5	17	7	0.00	0.0	0
2018-10-20	73	39	56.0	16	6	0.00	0.0	0
2018-10-21	68	39	53.5	14	4	0.00	0.0	0
2018-10-22	M	M	M	M	M	0.00	0.0	0
2018-10-23	71	39	55.0	15	5	0.00	0.0	0
2018-10-24	M	M	M	M	M	M	0.0	0
2018-10-25	M	M	M	M	M	M	0.0	0
2018-10-26	M	M	M	M	M	M	0.0	0
2018-10-27	M	M	M	M	M	M	0.0	0
2018-10-28	67	46	56.5	17	7	M	M	0
2018-10-29	63	46	54.5	15	5	0.89	0.0	0
2018-10-30	56	43	49.5	10	0	0.33	0.0	0
2018-10-31	M	M	M	M	M	M	0.0	0
Average Sum	67.7	44.1	55.9	387	148	3.13	0.0	0.0

Climatological Data for ESTACADA 2 SE, OR - September 2018

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2018-09-01	76	51	63.5	24	14	0.00	0.0	0
2018-09-02	74	46	60.0	20	10	0.00	0.0	0
2018-09-03	81	47	64.0	24	14	0.00	0.0	0
2018-09-04	79	44	61.5	22	12	0.00	0.0	0
2018-09-05	83	45	64.0	24	14	0.00	0.0	0
2018-09-06	91	54	72.5	33	23	0.00	0.0	0
2018-09-07	87	50	68.5	29	19	0.00	0.0	0
2018-09-08	86	55	70.5	31	21	0.00	0.0	0
2018-09-09	77	51	64.0	24	14	0.00	0.0	0
2018-09-10	81	51	66.0	26	16	0.08	0.0	0
2018-09-11	72	52	62.0	22	12	0.02	0.0	0
2018-09-12	64	52	58.0	18	8	0.20	0.0	0
2018-09-13	66	48	57.0	17	7	0.22	0.0	0
2018-09-14	69	48	58.5	19	9	0.00	0.0	0
2018-09-15	73	47	60.0	20	10	0.00	0.0	0
2018-09-16	70	47	58.5	19	9	0.11	0.0	0
2018-09-17	65	47	56.0	16	6	0.29	0.0	0
2018-09-18	69	44	56.5	17	7	0.00	0.0	0
2018-09-19	M	M	M	M	M	0.00	0.0	0
2018-09-20	72	44	58.0	18	8	0.00	0.0	0
2018-09-21	73	44	58.5	19	9	0.00	0.0	0
2018-09-22	77	54	65.5	26	16	0.24	0.0	0
2018-09-23	69	48	58.5	19	9	0.09	0.0	0
2018-09-24	67	45	56.0	16	6	0.01	0.0	0
2018-09-25	73	41	57.0	17	7	0.00	0.0	0
2018-09-26	82	43	62.5	23	13	0.00	0.0	0
2018-09-27	83	46	64.5	25	15	0.00	0.0	0
2018-09-28	85	46	65.5	26	16	0.00	0.0	0
2018-09-29	91	49	70.0	30	20	0.00	0.0	0
2018-09-30	65	50	57.5	18	8	0.01	0.0	0
Average Sum	75.9	47.9	61.9	642	352	1.27	0.0	0.0



WETS Table

WETS Station: ESTACADA 2 SE, OR								
Requested years: 1971 - 2000								
Month	Avg Max Temp	Avg Min Temp	Avg Mean Temp	Avg Precip	30% chance precip less than	30% chance precip more than	Avg number days precip 0.10 or more	Avg Snowfall
Jan	45.9	34.4	40.2	8.04	5.26	9.66	14	0.8
Feb	49.9	36.0	43.0	6.95	4.93	8.24	13	0.9
Mar	55.2	37.9	46.5	6.22	4.79	7.22	14	0.1
Apr	60.4	40.5	50.4	5.11	4.08	5.86	12	0.0
May	66.5	45.1	55.8	4.03	2.88	4.77	10	0.0
Jun	71.9	49.4	60.7	2.68	1.64	3.24	6	0.0
Jul	78.4	53.0	65.7	1.07	0.57	1.29	3	0.0
Aug	78.6	52.9	65.7	1.28	0.41	1.52	3	0.0
Sep	73.2	49.2	61.2	2.46	1.18	2.96	5	0.0
Oct	61.3	43.5	52.4	4.77	2.66	5.81	9	0.0
Nov	51.0	38.8	44.9	8.45	6.07	9.98	15	0.3
Dec	45.6	34.5	40.0	8.47	6.11	10.00	15	0.6
Annual:					53.70	64.03		
Average	61.5	42.9	52.2	-	-	-	-	-
Total	-	-	-	59.55			120	2.6

GROWING SEASON DATES

Years with missing data:	24 deg = 4	28 deg = 2	32 deg = 1
Years with no occurrence:	24 deg = 6	28 deg = 0	32 deg = 0
Data years used:	24 deg = 26	28 deg = 28	32 deg = 29
Probability	24 F or higher	28 F or higher	32 F or higher
50 percent *	1/25 to 1/6: 346 days	2/18 to 12/4: 289 days	4/4 to 11/13: 223 days
70 percent *	1/9 to 1/23: 379 days	2/9 to 12/14: 308 days	3/26 to 11/22: 241 days

\* Percent chance of the growing season occurring between the Beginning and Ending dates.

STATS TABLE - total precipitation (inches)

Yr	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annl
1909	12.86	8.54	3.40	2.44	3.38	0.22	2.53	1.03	2.24	4.16	19.72	5.09	65.61
1910	9.12	10.75	4.37	3.77	2.76	1.61	T	0.26	1.18	4.56	10.15	5.88	54.41
1911	11.03	4.55	2.03	3.00	5.27	2.40	0.34	0.24	6.50	1.57	5.15	7.01	49.09
1912	9.86	6.95	2.38	4.18	4.60	4.89	0.64	3.25	2.11	4.76	6.97	8.44	59.03
1913	7.52	1.92	9.21	4.11	3.10	4.90	0.74	0.83	3.63	6.35	6.81	3.21	52.33
1914	10.71	6.14	4.77	4.79	2.46	2.75	0.10	0.02	4.89	6.18	5.02	2.32	50.15
1915	6.40	4.02	3.23	3.82	6.70	3.02	1.86	0.01	0.78	4.33	12.24	11.07	57.48
1916	3.58	9.66	13.20	4.88	4.51	2.87	3.56	0.73	1.61	2.51	8.89	5.04	61.04



## Appendix C: Wetland Determination Data Form

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**WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region**

Project/Site: Bailey Meadows City/County: Sandy/Clackamas Sampling Date: 12/4/2018  
 Applicant/Owner: Allied Homes & Development State: OR Sampling Point: 1  
 Investigator(s): Stacey Reed and Sonya Templeton Section, Township, Range: Sec. 23, T.2S. R.4E. W.M.  
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): <3%  
 Subregion (LRR): A, Northwest Forests and Coast Lat: \_\_\_\_\_ Long: \_\_\_\_\_ Datum: \_\_\_\_\_  
 Soil Map Unit Name: Cottrell silty clay loam (Unit 24B), 2% to 8% slopes; Non-hydric NWI classification: None  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes \_\_\_\_\_ No X (If no, explain in Remarks)  
 Are Vegetation X, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes X No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present?	Yes <u>X</u>	No _____	<b>Is the Sampled Area within a Wetland?</b>	Yes _____	No <u>X</u>
Hydric Soil Present?	Yes _____	No <u>X</u>			
Wetland Hydrology Present?	Yes _____	No <u>X</u>			

**Precipitation:**  
 According to the AgACIS Estacada 2 SE station, 0.00 inches of rainfall was received on the day of the site visit and 2.02 inches within the two weeks prior.

**Remarks:**  
 Planted Christmas tree farm. Plot is located in lowest elevation area on-site.

**VEGETATION**

Tree Stratum (Plot Size: 30' r or _____)	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test worksheet:</b>	
1. _____	_____	_____	_____	Number of Dominant Species	
2. _____	_____	_____	_____	That Are OBL, FACW, or FAC: <u>1</u> (A)	
3. _____	_____	_____	_____	Total Number of Dominant	
4. _____	_____	_____	_____	Species Across All Strata: <u>1</u> (B)	
	0% = Total Cover			Percent of Dominant Species	
<b>Sapling/Shrub Stratum (Plot Size: 10' r or _____)</b>				That Are OBL, FACW, or FAC: <u>100%</u> (A/B)	
1. _____	_____	_____	_____	<b>Prevalence Index worksheet:</b>	
2. _____	_____	_____	_____	Total % Cover of: <u>_____</u> Multiply by: _____	
3. _____	_____	_____	_____	OBL species <u>0</u> x 1 = <u>0</u>	
4. _____	_____	_____	_____	FACW species <u>0</u> x 2 = <u>0</u>	
5. _____	_____	_____	_____	FAC species <u>20</u> x 3 = <u>60</u>	
	0% = Total Cover			FACU species <u>0</u> x 4 = <u>0</u>	
<b>Herb Stratum (Plot Size: 5' r or _____)</b>				UPL species <u>0</u> x 5 = <u>0</u>	
1. <u>Agrostis capillaris</u>	<u>20%</u>	<u>Yes</u>	<u>FAC</u>	Column Totals: <u>20</u> (A) <u>60</u> (B)	
2. _____	_____	_____	_____	Prevalence Index = B/A = <u>3.00</u>	
3. _____	_____	_____	_____	<b>Hydrophytic Vegetation Indicators:</b>	
4. _____	_____	_____	_____	<u>1</u> - Rapid Test for Hydrophytic Vegetation	
5. _____	_____	_____	_____	<u>X</u> <u>2</u> - Dominance Test is >50%	
6. _____	_____	_____	_____	<u>X</u> <u>3</u> - Prevalence Index is ≤3.0 <sup>1</sup>	
7. _____	_____	_____	_____	<u>4</u> - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)	
8. _____	_____	_____	_____	<u>5</u> - Wetland Non-Vascular Plants <sup>1</sup>	
9. _____	_____	_____	_____	Problematic Hydrophytic Vegetation (Explain) <sup>1</sup>	
10. _____	_____	_____	_____	<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present.	
11. _____	_____	_____	_____		
	20% = Total Cover			<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No _____	
<b>Woody Vine Stratum (Plot Size: 10' r or _____)</b>					
1. _____	_____	_____	_____		
2. _____	_____	_____	_____		
	0% = Total Cover				
% Bare Ground in Herb Stratum <u>80%</u>					

**Remarks:**  
 Vegetation in between tree plantings is maintained.



<b>SOIL</b>							<b>Sampling Point:</b>	<b>1</b>
<b>Profile Description (Describe to the depth needed to document the indicator or confirm the absence of indicators):</b>								
Depth (inches)	Matrix Color (moist) %		Redox Features Color (moist) % Type <sup>1</sup>			Loc <sup>2</sup>	Texture	Remarks
0-16	10YR 3/2+	100					SiL	
<sup>1</sup> Type: C=Concentration, D=Depletion, RM=Reduced Matrix CS=Covered or Coated Sand Grains. <sup>2</sup> Location: PL=Pore Lining, M=Matrix.								
<b>Hydric Soil Indicators (Applicable to all LRRs, unless otherwise noted):</b>					<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b>			
<input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Redox Depressions (F8)					<input type="checkbox"/> 2 cm Muck (A10) <input type="checkbox"/> Red Parent Material (TF2) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)			
					<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.			
<b>Restrictive Layer (if present):</b>						<b>Hydric Soil Present?</b>		
Type: _____						Yes _____ No <input checked="" type="checkbox"/>		
Depth (inches): _____								
<b>Remarks:</b>								
<b>HYDROLOGY</b>								
<b>Wetland Hydrology Indicators:</b>								
<u>Primary Indicators (minimum of one required; check all that apply)</u>					<u>Secondary Indicators (2 or more required)</u>			
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Other (Explain in Remarks)					<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Raised Ant Mounds (D6) (LRR A) <input type="checkbox"/> Frost-Heave Hummocks (D7)			
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)								
<b>Field Observations:</b>						<b>Wetland Hydrology Present?</b>		
Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____						Yes _____ No <input checked="" type="checkbox"/>		
Water Table Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): >16" _____								
Saturation Present? (includes capillary fringe) Yes _____ No <input checked="" type="checkbox"/> Depth (inches): >16" _____								
<b>Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:</b>								
<b>Remarks:</b>								
Soil is dry throughout.								



## **Appendix D: Representative Site Photographs**



**Photo A.** View facing east from Plot 1.



**Photo B.** View facing west towards Bull Frog Reservoir.



**Photo C.** View facing east of project site upslope of Plot 1.



**Photo D.** View facing west of Plot 1 (location of shovel).

*Photos taken by Sonya Templeton December 4, 2019*



## Geotechnical Engineering Report

Bailey Meadows  
SE Ponder Lane  
Sandy, Oregon

GeoPacific Engineering, Inc. Project No. 19-5205  
June 18, 2019

---

14835 SW 72<sup>nd</sup> Avenue  
Portland, Oregon 97224

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**Real-World Geotechnical Solutions**  
**Investigation • Design • Construction Support**

## **TABLE OF CONTENTS**

1.0	PROJECT INFORMATION .....	1
2.0	SITE AND PROJECT DESCRIPTION .....	2
3.0	REGIONAL GEOLOGIC SETTING .....	2
4.0	REGIONAL SEISMIC SETTING .....	3
4.1	Portland Hills Fault Zone .....	3
4.2	Grant Butte and Damascus-Tickle Creek Fault Zones .....	3
4.3	Cascadia Subduction Zone .....	3
5.0	FIELD EXPLORATION AND SUBSURFACE CONDITIONS .....	4
5.1	Subsurface Conditions .....	4
5.2	Groundwater and Soil Moisture .....	5
6.0	CONCLUSIONS AND RECOMMENDATIONS .....	5
6.1	Site Preparation Recommendations .....	5
6.2	Engineered Fill .....	6
6.3	Excavating Conditions and Utility Trench Backfill .....	6
6.4	Erosion Control Considerations .....	7
6.5	Wet Weather Earthwork .....	7
6.6	Spread Foundations .....	8
6.7	Concrete Slabs-on-Grade .....	9
6.8	Footing and Roof Drains .....	9
6.9	Permanent Below-Grade Walls .....	10
6.10	Pavement Design .....	12
7.0	SEISMIC DESIGN .....	12
8.0	UNCERTAINTIES AND LIMITATIONS .....	14
	REFERENCES .....	15
	CHECKLIST OF RECOMMENDED GEOTECHNICAL TESTING AND OBSERVATION .....	16
	APPENDIX .....	



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### **List of Appendices**

Figures  
Exploration Logs

### **List of Figures**

- 1 Vicinity Map
- 2 Site Plan and Exploration Locations
- 3 Typical Perimeter Footing Drain Detail



**Real-World Geotechnical Solutions**  
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Updated June 18, 2019  
Project No. 19-5205

**Cody Bjugan**  
**Allied Homes and Development**  
12042 SE Sunnyside Road, Suite #706  
Clackamas, Oregon 97015  
Via email: [cody@investpdx.com](mailto:cody@investpdx.com)

**SUBJECT: GEOTECHNICAL ENGINEERING REPORT**  
**BAILEY MEADOWS**  
**SE PONDER LANE**  
**T2S R4E SECTION 23 TAX LOTS 800, 801, 802, 803, & 804**  
**SANDY, OREGON**

#### **1.0 PROJECT INFORMATION**

This report presents the results of a geotechnical engineering study conducted by GeoPacific Engineering, Inc. (GeoPacific) for the above-referenced project. The purpose of our investigation was to evaluate subsurface conditions at the site, and to provide geotechnical recommendations for site development. This geotechnical study was performed in accordance with GeoPacific Proposal No. P-6946, dated April 8, 2019, and your subsequent authorization of our proposal and *General Conditions for Geotechnical Services*.

**Site Location:** SE Ponder Lane  
T2S R4E Section 23 Tax Lots 800, 801, 802, 803, & 804  
Sandy, Oregon  
(Figures 1 and 2)

---

**Developer:** **Cody Bjugan**  
**Allied Homes and Development**  
12042 SE Sunnyside Road, Suite #706  
Clackamas, Oregon 97015

---

**Jurisdictional Agency:** City of Sandy, Oregon

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**Civil Engineer:** AKS Engineering & Forestry, LLC.  
12965 SW Herman Road, Suite 100  
Tualatin, Oregon 97062  
Tel (503) 563-6151



## **2.0 SITE AND PROJECT DESCRIPTION**

The subject site is composed of five tax lots located on the southwest and north side of SE Ponder Lane, in Sandy, Clackamas County, Oregon (Figures 1 & 2). The property totals approximately 23.6 acres in size and is rectangular in shape. Topography is gently sloping to the west with grades of approximately 5 to 10 percent at elevations of 900 to 945 feet above mean sea level. The site is currently occupied by a gravel driveway and vegetation consists primarily of short grasses, tree stock, and rows of berries.

Based upon communication with the client and review of preliminary project plans (Figure 2), GeoPacific understands that site development will consist of a 100 lot subdivision for single-family homes, new public streets, stormwater facility, and associated underground utility installations. It is our understanding that the homes will be constructed with typical spread foundations and crawl spaces. We anticipate that maximum structural loading on column footings and continuous strip footings of the homes will be on the order of 10 to 35 kips, and 4 kips/ft respectively. The grading plan provided for our review indicates maximum cuts and fills will be on the order of 15 feet or less. Retaining walls up to 12 feet are planned for the stormwater facility.

## **3.0 REGIONAL GEOLOGIC SETTING**

Regionally, the subject site lies within the Willamette Valley/Puget Sound lowland, a broad structural depression situated between the Coast Range on the west and the Cascade Range on the east. A series of discontinuous faults subdivide the Willamette Valley into a mosaic of fault-bounded, structural blocks (Yeats et al., 1996). Uplifted structural blocks form bedrock highlands, while down-warped structural blocks form sedimentary basins.

The subject site is underlain by the Pliocene to Pleistocene aged (about 2 million years ago) Gravel Deposits, which consist of highly weathered cobbles, mudflow deposits, and sand deposits analogous to the Springwater Formation (Schlicker and Finlayson, 1979). The Pliocene to Pleistocene Gravels Formation is typically composed of rounded volcanic rock that is poorly sorted in a matrix consisting of silt and clay. The consistency of the Pliocene to Pleistocene Gravels Formation is generally hard where decomposed to clayey silt and medium-dense to very dense where highly weathered.

Underlying the Pliocene to Pleistocene Gravels Formation is the Pliocene aged (3 to 4 million years old) Troutdale Formation (Schlicker and Finlayson, 1979). In the site vicinity, the Troutdale Formation consists primarily of massive mudstone, claystone, and siltstone with minor sandstone and water-laid tuff that has been highly weathered to silt, clay, and sand. Ripples, channels and cross bedding structures are common, indicating a fluvial origin of deposition. Locally, the Troutdale Formation may contain organic material including wood and logs.

#### 4.0 REGIONAL SEISMIC SETTING

At least three major fault zones capable of generating damaging earthquakes are thought to exist in the vicinity of the subject site. These include the Portland Hills Fault Zone, the Grant Butte and Damascus-Trickle Creek Fault Zones, and the Cascadia Subduction Zone.

##### 4.1 Portland Hills Fault Zone

The Portland Hills Fault Zone is a series of NW-trending faults that include the central Portland Hills Fault, the western Oatfield Fault, and the eastern East Bank Fault. These faults occur in a northwest-trending zone that varies in width between 3.5 and 5.0 miles. The combined three faults reportedly vertically displace the Columbia River Basalt by 1,130 feet and appear to control thickness changes in late Pleistocene (approx. 780,000 years) sediment (Madin, 1990). The Portland Hills Fault occurs along the Willamette River at the base of the Portland Hills, and is located approximately 12.8 miles west of the site. The Oatfield Fault occurs along the western side of the Portland Hills, and is located approximately 14.9 miles west of the site. The East Bank Fault occurs along the eastern margin of the Willamette River, and is located approximately 13 miles northwest of the site. The accuracy of the fault mapping is stated to be within 500 meters (Wong, et al., 2000).

According to the USGS Earthquake Hazards Program, the fault was originally mapped as a down-to-the-northeast normal fault, but has also been mapped as part of a regional-scale zone of right-lateral, oblique slip faults, and as a steep escarpment caused by asymmetrical folding above a south-west dipping, blind thrust fault. The Portland Hills fault offsets Miocene Columbia River Basalts, and Miocene to Pliocene sedimentary rocks of the Troutdale Formation. No fault scarps on surficial Quaternary deposits have been described along the fault trace, and the fault is mapped as buried by the Pleistocene aged Missoula flood deposits. No historical seismicity is correlated with the mapped portion of the Portland Hills Fault Zone, but in 1991 a M3.5 earthquake occurred on a NW-trending shear plane located 1.3 miles east of the fault (Yelin, 1992). Although there is no definitive evidence of recent activity, the Portland Hills Fault Zone is assumed to be potentially active (Geomatrix Consultants, 1995).

##### 4.2 Grant Butte and Damascus-Tickle Creek Fault Zones

The Grant Butte fault zone was mapped along the north side of Mt. Scott and Powell Butte by Madin (1990). It was also extended eastward to Grant Butte on the basis of mapping by CH2M Hill and others (1991) and informally named the Grant Butte fault (Cornforth and Geomatrix, 1992). The Damascus-Tickle Creek fault zone displaces Pliocene and possibly Pleistocene sediments in the vicinity of Boring, Oregon (Madin, 1992; Lite, 1992). Relatively short faults define a 17-km-long fault zone that is apparently linked to the Grant Butte fault on the basis of stratigraphic relationships showing middle and late Pleistocene activity. Geomatrix (1995) assigns a probability of 0.5 for activity on structures within these fault zones. The nearest portion of the Grant Butte and Damascus-Tickle Creek fault zone is mapped approximately 5.3 miles northwest of the subject site.

##### 4.3 Cascadia Subduction Zone

The Cascadia Subduction Zone is a 680-mile-long zone of active tectonic convergence where oceanic crust of the Juan de Fuca Plate is subducting beneath the North American continent at a rate of 4 cm per year (Goldfinger et al., 1996). A growing body of geologic evidence suggests that prehistoric subduction zone earthquakes have occurred (Atwater, 1992; Carver, 1992; Peterson et al., 1993; Geomatrix Consultants, 1995). This evidence includes: (1) buried tidal marshes



recording episodic, sudden subsidence along the coast of northern California, Oregon, and Washington, (2) burial of subsided tidal marshes by tsunami wave deposits, (3) paleoliquefaction features, and (4) geodetic uplift patterns on the Oregon coast. Radiocarbon dates on buried tidal marshes indicate a recurrence interval for major subduction zone earthquakes of 250 to 650 years with the last event occurring 300 years ago (Atwater, 1992; Carver, 1992; Peterson et al., 1993; Geomatrix Consultants, 1995). The inferred seismogenic portion of the plate interface lies approximately along the Oregon Coast at depths of between 20 and 40 kilometers below the surface.

## 5.0 FIELD EXPLORATION AND SUBSURFACE CONDITIONS

Our site-specific exploration for this report was conducted on May 7, 2019. Sixteen exploratory test pits were excavated with a medium sized backhoe to depths ranging between 9 and 12.5 feet at the approximate locations shown on Figure 2. It should be noted that exploration locations were located in the field by pacing or taping distances from apparent property corners and other site features shown on the plans provided. As such, the locations of the explorations should be considered approximate.

A GeoPacific Engineering Geologist continuously monitored the field exploration program and logged the borings. Soils observed in the explorations were classified in general accordance with the Unified Soil Classification System (USCS). During exploration, our geologist also noted geotechnical conditions such as soil consistency, moisture and groundwater conditions. Logs of test pits are attached to this report. The following report sections are based on the exploration program and summarize subsurface conditions encountered at the site.

### 5.1 Subsurface Conditions

**Undocumented Fill:** An approximately 2 feet thick stockpile of undocumented fill was encountered at the ground surface in test pit TP-10. The fill generally consisted of moderately to highly organic, gravelly silt (ML) that contained abundant woody debris/wood chips. We anticipate that other areas of undocumented fill may be present outside our test pit locations – especially in the vicinity of the existing driveway.

**Topsoil Horizon:** The ground surface in test pits TP-1 through TP-9 and TP-11 through TP-16 was directly underlain by a topsoil horizon generally consisting of dark brown, low to moderately organic silt (ML-OL). Generally, the topsoil horizon was loose, contained fine roots throughout, and extended to a depth of approximately 6 to 15 inches below the ground surface. A moderately organic, 6 inch thick buried topsoil horizon was encountered beneath the fill in test pit TP-10.

**Residual Soil:** Underlying the topsoil horizon in test pits TP-1 through TP-9 and TP-11 through TP-16 and the buried topsoil horizon in test pit TP-10 was residual soil derived from in place weathering of the underlying Pliocene-Pleistocene Gravels. These soils generally consisted of light reddish brown clayey silt (ML) to silty clay (CL) with varying quantities of weathered gravel. The residual soil typically had a stiff to very stiff consistency and extended to depths of 4 to 10 feet in test pits TP-2, TP-5, TP-9, and TP-11 through TP-16 and beyond the maximum depth of exploration in test pits TP-1, TP-3, TP-4, TP-6 through TP-8, and TP-10 (10 to 11 feet).

**Pliocene-Pleistocene Gravels:** In test pits TP-2, TP-5, TP-9, and TP-11 through TP-16, the residual soil was underlain by weathered Pliocene to Pleistocene aged Gravel Deposits. These deposits generally consisted of stiff to very stiff, clayey silt (ML) to silty clay (CL) with gravel or dense, gravel (GM) with a silty clay to clayey silt matrix. The weathered gravel deposits were light

reddish brown to gray in color and contained abundant black staining. The gravel deposits encountered in test pits TP-2, TP-5, TP-9, and TP-11 through TP-16 extended beyond the maximum depth of exploration in test pits (9 to 12.5 feet).

## 5.2 Groundwater and Soil Moisture

On May 7, 2019, observed soil moisture conditions were generally damp to moist. Minor perched groundwater seepage was encountered in test pit TP-4 at a depth of approximately 5 feet. Discharge was visually estimated at ½ gallon per minute. Regional geologic mapping indicates static groundwater is present and a depth of 60 and 80 feet below ground surface (Snyder, 2008). It is anticipated that groundwater conditions will vary depending on the season, local subsurface conditions, changes in site utilization, and other factors. Perched groundwater may be encountered in localized areas. Seeps and springs may exist in areas not explored, and may become evident during site grading. If the seasonal fluctuation of the static groundwater table underlying the subject site require detailed understanding, piezometers may be installed and periodically monitored.

## 6.0 CONCLUSIONS AND RECOMMENDATIONS

Our site investigation indicates that the proposed construction appears to be geotechnically feasible, provided that the recommendations of this report are incorporated into the design and construction phases of the project. Our explorations indicate the native soils on site are stiff to very stiff and are suitable for development utilizing conventional spread footing foundations.

### 6.1 Site Preparation Recommendations

Areas of proposed construction and areas to receive fill should be cleared of any organic and inorganic debris. Inorganic debris and organic materials from clearing should be removed from the site. Organic-rich soils and root zones should then be stripped from construction areas of the site or where engineered fill is to be placed. Depth of stripping of existing topsoil is estimated to be approximately 6 to 9 inches across the majority of the site, however depth of organic soil layers may increase in areas where trees and dense vegetation is present. The final depth of soil removal will be determined because of a site inspection after the stripping/excavation has been performed. Stripped topsoil should be removed from areas proposed for placement of engineered fill. Any remaining topsoil should be stockpiled only in designated areas and stripping operations should be observed and documented by the geotechnical engineer or his representative.

If encountered, undocumented fills and any subsurface structures (dry wells, basements, driveway and landscaping fill, old utility lines, septic leach fields, etc.) should be completely removed and the excavations backfilled with engineered fill.

We recommend that areas proposed for placement of engineered fill are scarified to a minimum depth of 12 inches and recompacted prior to placement of structural fill. Prior to placement of engineered fill, the underlying soils be over-excavated, ripped, aerated to optimum moisture content, and recompacted to project specifications for engineered fill as determined by the Standard Proctor (ASTM D698).

Areas proposed to be left at grade may require additional over-excavation of foundation areas in order to reach soils which will provide adequate bearing support for the proposed foundations. Site earthwork may be impacted by shallow groundwater. Stabilization of subgrade soils will require aeration and recompaction. If subgrade soils are found to be difficult to stabilize, over-excavation,

placement of granular soils, or cement treatment of subgrade soils may be feasible options. GeoPacific should be onsite to observe preparation of subgrade soil conditions prior to placement of engineered fill.

## 6.2 Engineered Fill

All grading for the proposed construction should be performed as engineered grading in accordance with the applicable building code at the time of construction with the exceptions and additions noted herein. Site grading should be conducted in accordance with the requirements outlined in the 2015 International Building Code (IBC), Chapter 18 and Appendix J. Areas proposed for fill placement should be prepared as described in the *Site Preparation Recommendations* section. Surface soils should then be scarified and recompacted prior to placement of structural fill. Site preparation, soil stripping, and grading activities should be observed and documented by a geotechnical engineer or his representative. Proper test frequency and earthwork documentation usually requires daily observation and testing during stripping, rough grading, and placement of engineered fill.

Onsite native soils consisting of silt and clay appear to be suitable for use as engineered fill. Soils containing greater than 5 percent organic content should not be used as structural fill. Imported fill material must be approved by the geotechnical engineer prior to being imported to the site. Oversize material greater than 6 inches in size should not be used within 3 feet of foundation footings, and material greater than 12 inches in diameter should not be used in engineered fill.

Engineered fill should be compacted in horizontal lifts not exceeding 12 inches using standard compaction equipment. We recommend that engineered fill be compacted to at least 95 percent of the maximum dry density determined by ASTM D698 (Standard Proctor) or equivalent. Field density testing should conform to ASTM D2922 and D3017, or D1556. All engineered fill should be observed and tested by the project geotechnical engineer or his representative. Typically, one density test is performed for at least every 2 vertical feet of fill placed or every 500 yd<sup>3</sup>, whichever requires more testing. Because testing is performed on an on-call basis, we recommend that the earthwork contractor be held contractually responsible for test scheduling and frequency.

Site earthwork may be impacted by shallow groundwater, soil moisture and wet weather conditions. Earthwork in wet weather would likely require extensive use of additional crushed aggregate, cement or lime treatment, or other special measures, at considerable additional cost compared to earthwork performed under dry-weather conditions.

## 6.3 Excavating Conditions and Utility Trench Backfill

We anticipate that onsite soils can generally be excavated using conventional heavy equipment. Maintenance of safe working conditions, including temporary excavation stability, is the responsibility of the contractor. Actual slope inclinations at the time of construction should be determined based on safety requirements and actual soil and groundwater conditions. All temporary cuts in excess of 4 feet in height should be sloped in accordance with U.S. Occupational Safety and Health Administration (OSHA) regulations (29 CFR Part 1926), or be shored. The existing native soils classify as Type B Soil and temporary excavation side slope inclinations as steep as 1H:1V may be assumed for planning purposes. These cut slope inclinations are applicable to excavations above the water table only.

Shallow, perched groundwater may be encountered during the wet weather season and should be anticipated in excavations and utility trenches. Vibrations created by traffic and construction equipment may cause some caving and raveling of excavation walls. In such an event, lateral

support for the excavation walls should be provided by the contractor to prevent loss of ground support and possible distress to existing or previously constructed structural improvements.

Underground utility pipes should be installed in accordance with the procedures specified in ASTM D2321 and City of Sandy standards. We recommend that structural trench backfill be compacted to at least 95 percent of the maximum dry density obtained by the Standard Proctor (ASTM D698) or equivalent. Initial backfill lift thicknesses for a ¾"-0 crushed aggregate base may need to be as great as 4 feet to reduce the risk of flattening underlying flexible pipe. Subsequent lift thickness should not exceed 1 foot. If imported granular fill material is used, then the lifts for large vibrating plate-compaction equipment (e.g. hoe compactor attachments) may be up to 2 feet, provided that proper compaction is being achieved and each lift is tested. Use of large vibrating compaction equipment should be carefully monitored near existing structures and improvements due to the potential for vibration-induced damage.

Adequate density testing should be performed during construction to verify that the recommended relative compaction is achieved. Typically, at least one density test is taken for every 4 vertical feet of backfill on each 100-lineal-foot section of trench.

#### 6.4 Erosion Control Considerations

During our field exploration program, we observed soil conditions that may be considered moderately susceptible to erosion, primarily located in the moderately sloping portions of the site. In our opinion, the primary concern regarding erosion potential will occur during construction in areas that have been stripped of vegetation. Erosion at the site during construction can be minimized by implementing the project erosion control plan, which should include judicious use of straw wattles, fiber rolls, and silt fences. If used, these erosion control devices should remain in place throughout site preparation and construction.

Erosion and sedimentation of exposed soils can also be minimized by quickly re-vegetating exposed areas of soil, and by staging construction such that large areas of the project site are not denuded and exposed at the same time. Areas of exposed soil requiring immediate and/or temporary protection against exposure should be covered with either mulch or erosion control netting/blankets. Areas of exposed soil requiring permanent stabilization should be seeded with an approved grass seed mixture, or hydroseeded with an approved seed-mulch-fertilizer mixture.

#### 6.5 Wet Weather Earthwork

Soils underlying the site are likely to be moisture sensitive and will be difficult to handle or traverse with construction equipment during periods of wet weather. Earthwork is typically most economical when performed under dry weather conditions. Earthwork performed during the wet-weather season will require expensive measures such as cement treatment or imported granular material to compact areas where fill may be proposed to the recommended engineering specifications. If earthwork is to be performed or fill is to be placed in wet weather or under wet conditions when soil moisture content is difficult to control, the following recommendations should be incorporated into the contract specifications.

- Earthwork should be performed in small areas to minimize exposure to wet weather. Excavation or the removal of unsuitable soils should be followed promptly by the placement and compaction of clean engineered fill. The size and type of construction equipment used may have to be limited to prevent soil disturbance. Under some circumstances, it may be necessary to excavate soils with a backhoe to minimize subgrade disturbance caused by equipment traffic;



- The ground surface within the construction area should be graded to promote run-off of surface water and to prevent the ponding of water;
- Material used as engineered fill should consist of clean, granular soil containing less than 5 percent passing the No. 200 sieve. The fines should be non-plastic. Alternatively, cement treatment of on-site soils may be performed to facilitate wet weather placement;
- The ground surface within the construction area should be sealed by a smooth drum vibratory roller, or equivalent, and under no circumstances should be left uncompacted and exposed to moisture. Soils which become too wet for compaction should be removed and replaced with clean granular materials;
- Excavation and placement of fill should be observed by the geotechnical engineer to verify that all unsuitable materials are removed and suitable compaction and site drainage is achieved; and
- Geotextile silt fences, straw wattles, and fiber rolls should be strategically located to control erosion.

If cement or lime treatment is used to facilitate wet weather construction, GeoPacific should be contacted to provide additional recommendations and field monitoring.

## 6.6 Spread Foundations

Based upon communication with the client and review of preliminary project plans (Figure 2), GeoPacific understands that site development will consist of a 98 lot subdivision for single-family homes, new public streets, stormwater facilities, and associated underground utility installations. It is our understanding that the homes will be constructed with typical spread foundations and crawl spaces. We anticipate that maximum structural loading on column footings and continuous strip footings of the homes will be on the order of 10 to 35 kips, and 4 kips/ft respectively.

The proposed structures may be supported on shallow foundations bearing on stiff, native soils and/or engineered fill, appropriately designed and constructed as recommended in this report. We understand that much of the site proposed for construction of residential homes will be left at existing grades. Engineered fill may be placed on some lots. Areas where homes are to be constructed where no engineered fill will be placed should either be prepared as recommended for roadway areas; or the foundation envelopes of the proposed homes should be over-excavated to expose native soils on a lot by lot basis. (See *Site Preparation Recommendations* section).

Foundation design, construction, and setback requirements should conform to the applicable building code at the time of construction. For maximization of bearing strength and protection against frost heave, spread footings should be embedded at a minimum depth of 18 inches below exterior grade. If soft soil conditions are encountered at footing subgrade elevation, they should be removed and replaced with compacted crushed aggregate.

The anticipated allowable soil bearing pressure is 1,500 lbs/ft<sup>2</sup> for footings bearing on competent, native soil and/or engineered fill. The recommended maximum allowable bearing pressure may be increased by 1/3 for short-term transient conditions such as wind and seismic loading. For loads heavier than 35 kips, the geotechnical engineer should be consulted. If heavier loads than described above are proposed, it may be necessary to over-excavate point load areas and replace with additional compacted crushed aggregate. The coefficient of friction between on-site soil and poured-in-place concrete may be taken as 0.42, which includes no factor of safety. The maximum anticipated total and differential footing movements (generally from soil expansion and/or settlement) are 1 inch and ¾ inch over a span of 20 feet, respectively. We anticipate that the

majority of the estimated settlement will occur during construction, as loads are applied. Excavations near structural footings should not extend within a 1H:1V plane projected downward from the bottom edge of footings.

Footing excavations should penetrate through topsoil and any disturbed soil to competent subgrade that is suitable for bearing support. All footing excavations should be trimmed neat, and all loose or softened soil should be removed from the excavation bottom prior to placing reinforcing steel bars. Due to the moisture sensitivity of on-site native soils, foundations constructed during the wet weather season may require over-excavation of footings and backfill with compacted, crushed aggregate.

Our recommendations are for residential construction incorporating raised wood floors and conventional spread footing foundations. After site development, a Final Soil Engineer's Report should either confirm or modify the above recommendations.

### **6.7 Concrete Slabs-on-Grade**

Preparation of areas beneath concrete slab-on-grade floors should be performed as recommended in the *Site Preparation Recommendations* section. Care should be taken during excavation for foundations and floor slabs, to avoid disturbing subgrade soils. If subgrade soils have been adversely impacted by wet weather or otherwise disturbed, the surficial soils should be scarified to a minimum depth of 8 inches, moisture conditioned to within about 3 percent of optimum moisture content, and compacted to engineered fill specifications. Alternatively, disturbed soils may be removed and the removal zone backfilled with additional crushed rock.

For evaluation of the concrete slab-on-grade floors using the beam on elastic foundation method, a modulus of subgrade reaction of 150 kcf (87 pci) should be assumed for the medium stiff, fine-grained soils anticipated to be present at foundation subgrade elevation following adequate site preparation as described above. This value assumes the concrete slab system is designed and constructed as recommended herein, with a minimum thickness of 8 inches of 1½"-0 crushed aggregate beneath the slab. The total thickness of crushed aggregate will be dependent on the subgrade conditions at the time of construction, and should be verified visually by proof-rolling. Under-slab aggregate should be compacted to at least 95 percent of its maximum dry density as determined by ASTM D1557 (Modified Proctor) or equivalent.

In areas where moisture will be detrimental to floor coverings or equipment inside the proposed structure, appropriate vapor barrier and damp-proofing measures should be implemented. A commonly applied vapor barrier system consists of a 10-mil polyethylene vapor barrier placed directly over the capillary break material. Other damp/vapor barrier systems may also be feasible. Appropriate design professionals should be consulted regarding vapor barrier and damp proofing systems, ventilation, building material selection and mold prevention issues, which are outside GeoPacific's area of expertise.

### **6.8 Footing and Roof Drains**

Construction should include typical measures for controlling subsurface water beneath the structure, including positive crawlspace drainage to an adequate low-point drain exiting the foundation, visqueen covering the expose ground in the crawlspace, and crawlspace ventilation (foundation vents). The client should be informed and educated that some slow flowing water in the crawlspaces is considered normal and not necessarily detrimental to the home given these other design elements incorporated into its construction. Appropriate design professionals should

be consulting regarding crawlspace ventilation, building material selection and mold prevention issues, which are outside GeoPacific's area of expertise.

Down spouts and roof drains should collect roof water in a system separate from the footing drains to reduce the potential for clogging. Roof drain water should be directed to an appropriate discharge point and storm system well away from structural foundations. Grades should be sloped downward and away from buildings to reduce the potential for ponded water near structures.

If the proposed structure will have a raised floor, and no concrete slab-on-grade floors are used, perimeter footing drains may be eliminated at the discretion of the geotechnical engineer based on soil conditions encountered at the site and experience with standard local construction practices. Where it is desired to reduce the potential for moist crawl spaces, footing drains may be installed. If concrete slab-on-grade floors are used, perimeter footing drains should be installed as recommended below.

Where necessary, perimeter footing drains should consist of 3 or 4-inch diameter, perforated plastic pipe embedded in a minimum of 1 ft<sup>3</sup> per lineal foot of clean, free-draining drain rock. The drain pipe and surrounding drain rock should be wrapped in non-woven geotextile (Mirafi 140N, or approved equivalent) to minimize the potential for clogging and/or ground loss due to piping. A minimum 0.5 percent fall should be maintained throughout the drain and non-perforated pipe outlet. Figure 3 presents a typical perimeter footing drain detail. In our opinion, footing drains may outlet at the curb, or on the back sides of lots where sufficient fall is not available to allow drainage to meet the street.

#### **6.9 Permanent Below-Grade Walls**

Lateral earth pressures against below-grade retaining walls will depend upon the inclination of any adjacent slopes, type of backfill, degree of wall restraint, method of backfill placement, degree of backfill compaction, drainage provisions, and magnitude and location of any adjacent surcharge loads. At-rest soil pressure is exerted on a retaining wall when it is restrained against rotation. In contrast, active soil pressure will be exerted on a wall if its top is allowed to rotate or yield a distance of roughly 0.001 times its height or greater.

If the subject retaining walls will be free to rotate at the top, they should be designed for an active earth pressure equivalent to that generated by a fluid weighing 35 pcf for level backfill against the wall. For restrained wall, an at-rest equivalent fluid pressure of 55 pcf should be used in design, again assuming level backfill against the wall. These values assume that the recommended drainage provisions are incorporated, and hydrostatic pressures are not allowed to develop against the wall.

During a seismic event, lateral earth pressures acting on below-grade structural walls will increase by an incremental amount that corresponds to the earthquake loading. Based on the Mononobe-Okabe equation and peak horizontal accelerations appropriate for the site location, seismic loading should be modeled using the active or at-rest earth pressures recommended above, plus an incremental rectangular-shaped seismic load of magnitude 6.5H, where H is the total height of the wall.

We assume relatively level ground surface below the base of the walls. As such, we recommend passive earth pressure of 300 pcf for use in design, assuming wall footings are cast against competent native soils or engineered fill. If the ground surface slopes down and away from the base of any of the walls, a lower passive earth pressure should be used and GeoPacific should be contacted for additional recommendations.



A coefficient of friction of 0.42 may be assumed along the interface between the base of the wall footing and subgrade soils. The recommended coefficient of friction and passive earth pressure values do not include a safety factor, and an appropriate safety factor should be included in design. The upper 12 inches of soil should be neglected in passive pressure computations unless it is protected by pavement or slabs on grade.

The above recommendations for lateral earth pressures assume that the backfill behind the subsurface walls will consist of properly compacted structural fill, and no adjacent surcharge loading. If the walls will be subjected to the influence of surcharge loading within a horizontal distance equal to or less than the height of the wall, the walls should be designed for the additional horizontal pressure. For uniform surcharge pressures, a uniformly distributed lateral pressure of 0.3 times the surcharge pressure should be added. Traffic surcharges may be estimated using an additional vertical load of 250 psf (2 feet of additional fill), in accordance with local practice.

The recommended equivalent fluid densities assume a free-draining condition behind the walls so that hydrostatic pressures do not build-up. This can be accomplished by placing a 12 to 18-inch wide zone of sand and gravel containing less than 5 percent passing the No. 200 sieve against the walls. A 3-inch minimum diameter perforated, plastic drain pipe should be installed at the base of the walls and connected to a suitable discharge point to remove water in this zone of sand and gravel. The drain pipe should be wrapped in filter fabric (Mirafi 140N or other as approved by the geotechnical engineer) to minimize clogging.

Wall drains are recommended to prevent detrimental effects of surface water runoff on foundations – not to dewater groundwater. Drains should not be expected to eliminate all potential sources of water entering a basement or beneath a slab-on-grade. An adequate grade to a low point outlet drain in the crawlspace is required by code. Underslab drains are sometimes added beneath the slab when placed over soils of low permeability and shallow, perched groundwater.

Water collected from the wall drains should be directed into the local storm drain system or other suitable outlet. A minimum 0.5 percent fall should be maintained throughout the drain and non-perforated pipe outlet. Down spouts and roof drains should not be connected to the wall drains in order to reduce the potential for clogging. The drains should include clean-outs to allow periodic maintenance and inspection. Grades around the proposed structure should be sloped such that surface water drains away from the building.

GeoPacific should be contacted during construction to verify subgrade strength in wall keyway excavations, to verify that backslope soils are in accordance with our assumptions, and to take density tests on the wall backfill materials.

Structures should be located a horizontal distance of at least  $1.5H$  away from the back of the retaining wall, where  $H$  is the total height of the wall. GeoPacific should be contacted for additional foundation recommendations where structures are located closer than  $1.5H$  to the top of any wall.



### 6.10 Pavement Design

For design purposes, we used an estimated resilient modulus of 9,000 for compacted native soil. Table 2 presents our recommended minimum pavement section for dry weather construction.

**Table 2. Recommended Minimum Dry-Weather Pavement Section**

Material Layer	Light-duty Public Streets	Compaction Standard
Asphaltic Concrete (AC)	3 in.	92% of Rice Density AASHTO T-209
Crushed Aggregate Base ¾"-0 (leveling course)	2 in.	95% of Modified Proctor AASHTO T-180
Crushed Aggregate Base 1½"-0	8 in.	95% of Modified Proctor AASHTO T-180
Subgrade	12 in.	95% of Standard Proctor AASHTO T-99

Any pockets of organic debris or loose fill encountered during ripping or tilling should be removed and replaced with engineered fill (see *Site Preparation* Section). In order to verify subgrade strength, we recommend proof-rolling directly on subgrade with a loaded dump truck during dry weather and on top of base course in wet weather. Soft areas that pump, rut, or weave should be stabilized prior to paving. If pavement areas are to be constructed during wet weather, the subgrade and construction plan should be reviewed by the project geotechnical engineer at the time of construction so that condition specific recommendations can be provided. The moisture sensitive subgrade soils make the site a difficult wet weather construction project.

During placement of pavement section materials, density testing should be performed to verify compliance with project specifications. Generally, one subgrade, one base course, and one asphalt compaction test is performed for every 100 to 200 linear feet of paving.

### 7.0 SEISMIC DESIGN

The Oregon Department of Geology and Mineral Industries (DOGAMI), Oregon HazVu: 2019 Statewide GeoHazards Viewer indicates that the site is in an area where *very strong* ground shaking is anticipated during an earthquake. Structures should be designed to resist earthquake loading in accordance with the methodology described in the 2015 International Building Code (IBC) with applicable Oregon Structural Specialty Code (OSSC) revisions (current 2014). We recommend Site Class D be used for design per the OSSC, Table 1613.5.2 and as defined in ASCE 7, Chapter 20, Table 20.3-1. Design values determined for the site using the Applied Technology Council (ATC) 2019 Hazards by Location Online Tool are summarized in Table 3, and are based upon existing soil conditions.

**Table 3. Recommended Earthquake Ground Motion Parameters (ATC, 2019)**

Parameter	Value
Location (Lat, Long), degrees	45.388, -122.277
Probabilistic Ground Motion Values, 2% Probability of Exceedance in 50 yrs	
Peak Ground Acceleration $PGA_M$	0.383 g
Short Period, $S_s$	0.772 g
1.0 Sec Period, $S_1$	0.337 g
Soil Factors for Site Class D:	
$F_a$	1.191
$F_v$	1.726
$SD_s = 2/3 \times F_a \times S_s$	0.613 g
$SD_1 = 2/3 \times F_v \times S_1$	0.388 g
Seismic Design Category	D

The Oregon Department of Geology and Mineral Industries (DOGAMI), Oregon HazVu: 2019 Statewide GeoHazards Viewer indicates that the site is in an area not considered to be at risk for soil liquefaction during an earthquake. Soil liquefaction is a phenomenon wherein saturated soil deposits temporarily lose strength and behave as a liquid in response to ground shaking caused by strong earthquakes. Soil liquefaction is generally limited to loose, sands and granular soils located below the water table, and fine-grained soils with a plasticity index less than 15. The upper 12 feet of the site was observed to be underlain by very stiff, fine-grained soils with moderate plasticity. Groundwater was not encountered within our subsurface explorations. Regional geologic mapping indicates static groundwater is between 60 and 80 feet below ground surface (Snyder, 2008). Based upon the results of our study, it is our opinion that the risk of soil liquefaction in the upper 12 feet of the ground surface during a seismic event at the subject site should be considered to be low.

If deemed necessary, quantitative liquefaction assessment, beyond the scope of this study, may be conducted at the subject site to determine whether or not liquefiable soil layers are present underneath the subject site beyond the depths explored. Cone penetrometer testing (CPT) would be conducted at a selected location within the site boundaries to explore deeper subsurface soil layers, and the data would be used to estimate anticipated dynamic settlement at the subject site during a seismic ground shaking event.

### 8.0 UNCERTAINTIES AND LIMITATIONS

We have prepared this report for the owner and their consultants for use in design of this project only. This report should be provided in its entirety to prospective contractors for bidding and estimating purposes; however, the conclusions and interpretations presented in this report should not be construed as a warranty of the subsurface conditions. Experience has shown that soil and groundwater conditions can vary significantly over small distances. Inconsistent conditions can occur between explorations that may not be detected by a geotechnical study. If, during future site operations, subsurface conditions are encountered which vary appreciably from those described herein, GeoPacific should be notified for review of the recommendations of this report, and revision of such if necessary.

Sufficient geotechnical monitoring, testing and consultation should be provided during construction to confirm that the conditions encountered are consistent with those indicated by explorations. The checklist attached to this report outlines recommended geotechnical observations and testing for the project. Recommendations for design changes will be provided should conditions revealed during construction differ from those anticipated, and to verify that the geotechnical aspects of construction comply with the contract plans and specifications.

Within the limitations of scope, schedule and budget, GeoPacific attempted to execute these services in accordance with generally accepted professional principles and practices in the fields of geotechnical engineering and engineering geology at the time the report was prepared. No warranty, expressed or implied, is made. The scope of our work did not include environmental assessments or evaluations regarding the presence or absence of wetlands or hazardous or toxic substances in the soil, surface water, or groundwater at this site.

We appreciate this opportunity to be of service.

Sincerely,

GEOPACIFIC ENGINEERING, INC.



Beth K. Rapp, C.E.G.  
Senior Engineering Geologist



James D. Imbrie, G.E., C.E.G.  
Geotechnical Engineer

## REFERENCES

- Applied Technology Council (ATC), 2019, Hazards by Location Online Tool, <https://hazards.atcouncil.org/#/seismic>
- Atwater, B.F., 1992, Geologic evidence for earthquakes during the past 2,000 years along the Copalis River, southern coastal Washington: *Journal of Geophysical Research*, v. 97, p. 1901-1919.
- Carver, G.A., 1992, Late Cenozoic tectonics of coastal northern California: American Association of Petroleum Geologists-SEPM Field Trip Guidebook, May, 1992.
- CH2M Hill and Tola, Beeson and Associates, 1991, Phase I geologic studies at Grant Butte Reservoir: Report prepared for the city of Gresham, Oregon.
- Cornforth and Geomatrix Consultants, 1992, Seismic hazard evaluation, Bull run dam sites near Sandy, Oregon: unpublished report to City of Portland Bureau of Water Works.
- Geomatrix Consultants, 1995, Seismic Design Mapping, State of Oregon: unpublished report prepared for Oregon Department of Transportation, Personal Services Contract 11688, January 1995.
- Goldfinger, C., Kulm, L.D., Yeats, R.S., Appelgate, B, MacKay, M.E., and Cochrane, G.R., 1996, Active strike-slip faulting and folding of the Cascadia Subduction-Zone plate boundary and forearc in central and northern Oregon: in *Assessing earthquake hazards and reducing risk in the Pacific Northwest*, v. 1: U.S. Geological Survey Professional Paper 1560, P. 223-256.
- Lite, K.E., Jr., 1992, Deformation in the southeast part of the Portland Basin (abs): *Geological Society of America Abstracts with Programs*, v. 24, no. 5, p. 64.
- Madin, I.P., 1990, Earthquake hazard geology maps of the Portland metropolitan area, Oregon: Oregon Department of Geology and Mineral Industries Open-File Report 0-90-2, scale 1:24,000, 22 p.
- Madin, I.P., 1992, Quaternary deformation in the Portland Basin, Damascus Quadrangle (abs): *Geological Society of America Abstracts with Programs*, v. 24, no. 5, p.67.
- Oregon Department of Geology and Mineral Industries, 2019, Oregon HazVu: Statewide Geohazards Viewer (HazVu): <http://www.oregongeology.org/hazvu/>
- Peterson, C.D., Darioenzo, M.E., Burns, S.F., and Burris, W.K., 1993, Field trip guide to Cascadia paleoseismic evidence along the northern California coast: evidence of subduction zone seismicity in the central Cascadia margin: *Oregon Geology*, v. 55, p. 99-144.
- Schlicker, H.G. and Finlayson, C.T., 1979, *Geology and Geologic Hazards of northwestern Clackamas County, Oregon*: Oregon Department of Geology and Mineral Industries, Bulletin No. 99, 79 p., scale 1:24,000.
- Snyder, D.T., 2008, Estimated Depth to Ground Water and Configuration of the Water Table in the Portland, Oregon Area: U.S. Geological Survey Scientific Investigations Report 2008-5059, 41 p., 3 plates.
- Wong, I. Silva, W., Bott, J., Wright, D., Thomas, P., Gregor, N., Li, S., Mabey, M., Sojourner, A., and Wang, Y., 2000, Earthquake Scenario and Probabilistic Ground Shaking Maps for the Portland, Oregon, Metropolitan Area; State of Oregon Department of Geology and Mineral Industries; Interpretative Map Series IMS-16.
- Yeats, R.S., Graven, E.P., Werner, K.S., Goldfinger, C., and Popowski, T., 1996, Tectonics of the Willamette Valley, Oregon: in *Assessing earthquake hazards and reducing risk in the Pacific Northwest*, v. 1: U.S. Geological Survey Professional Paper 1560, P. 183-222, 5 plates, scale 1:100,000.
- Yelin, T.S., 1992, An earthquake swarm in the north Portland Hills (Oregon): More speculations on the seismotectonics of the Portland Basin: *Geological Society of America, Programs with Abstracts*, v. 24, no. 5, p. 92



**CHECKLIST OF RECOMMENDED GEOTECHNICAL TESTING AND OBSERVATION**

Item No.	Procedure	Timing	By Whom	Done
1	Preconstruction meeting	Prior to beginning site work	Contractor, Developer, Civil and Geotechnical Engineers	
2	Fill removal from site or sorting and stockpiling	Prior to mass stripping	Soil Technician/ Geotechnical Engineer	
3	Stripping, aeration, and root-picking operations	During stripping	Soil Technician	
4	Compaction testing of engineered fill (95% of Standard Proctor)	During filling, tested every 2 vertical feet	Soil Technician	
5	Retaining Wall Keyway and Subbase	During Excavation	Soil Technician/ Geotechnical Engineer	
6	Retaining Wall Backfill and Geogrid Placement	During Construction	Soil Technician/ Geotechnical Engineer	
7	Compaction testing of trench backfill (95% of Standard Proctor)	During backfilling, tested every 4 vertical feet for every 200 linear feet	Soil Technician	
8	Street Subgrade Inspection (95% of Standard Proctor)	Prior to placing base course	Soil Technician	
9	Base course compaction (95% of Modified Proctor)	Prior to paving, tested every 200 linear feet	Soil Technician	
10	Asphalt Compaction (92% Rice Value)	During paving, tested every 100 linear feet	Soil Technician	
11	Final Geotechnical Engineer's Report	Completion of project	Geotechnical Engineer	





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## **FIGURES**

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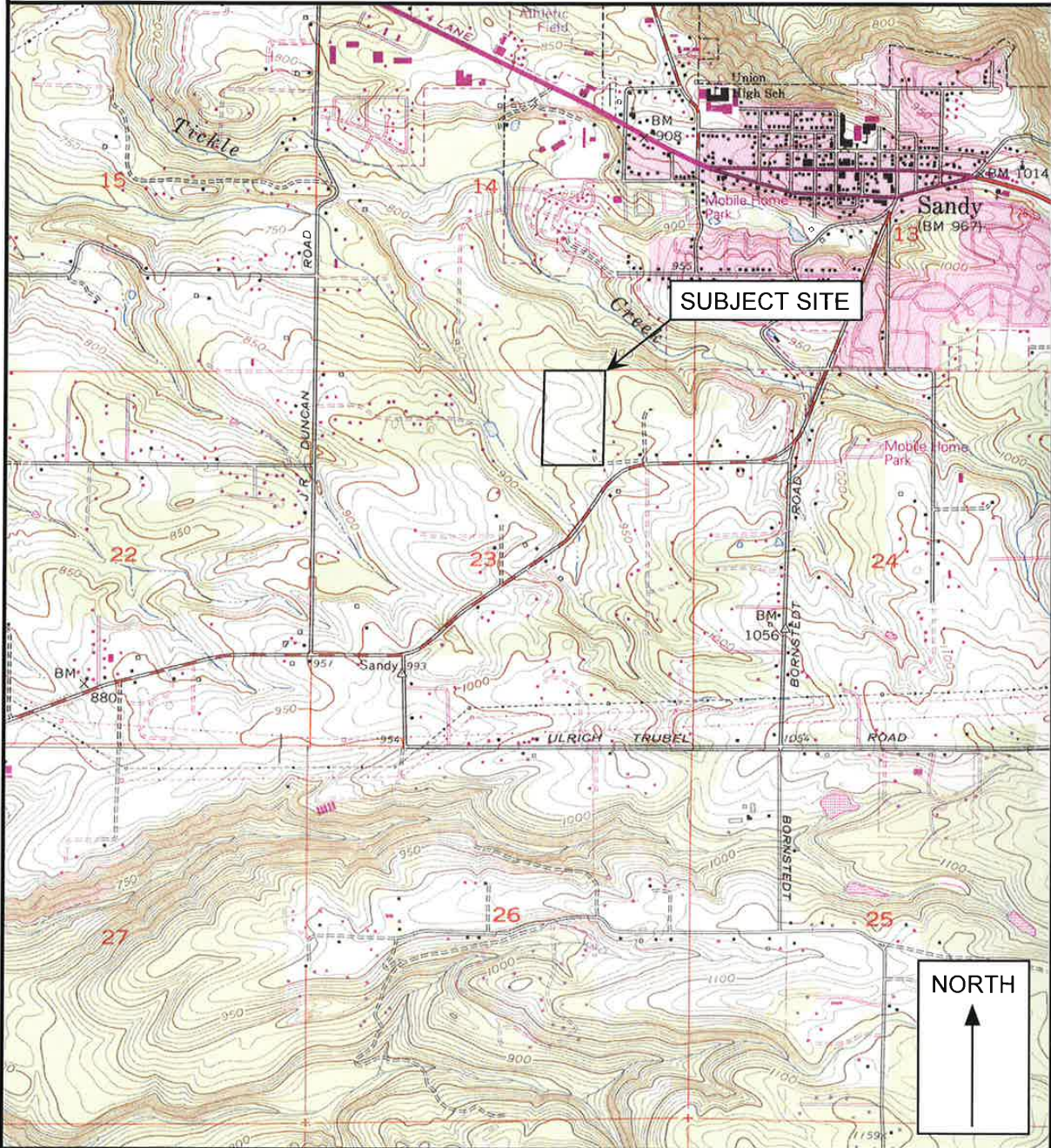
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**Portland, Oregon 97224**

**Tel (503) 598-8445**  
**Fax (503) 941-9281**



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### VICINITY MAP



#### Legend

Approximate Scale 1 in = 2,000 ft

Date: 6/18/2019

Drawn by: EKR

Base maps: U.S. Geological Survey 7.5 minute Topographic Map Series, Estacada, Oregon Quadrangle, 1961 (Photorevised in 1985) and Sandy, Oregon Quadrangle, 1961 (Photorevised in 1985).

Project: Bailey Meadows  
Sandy, Oregon

Project No. 19-5205

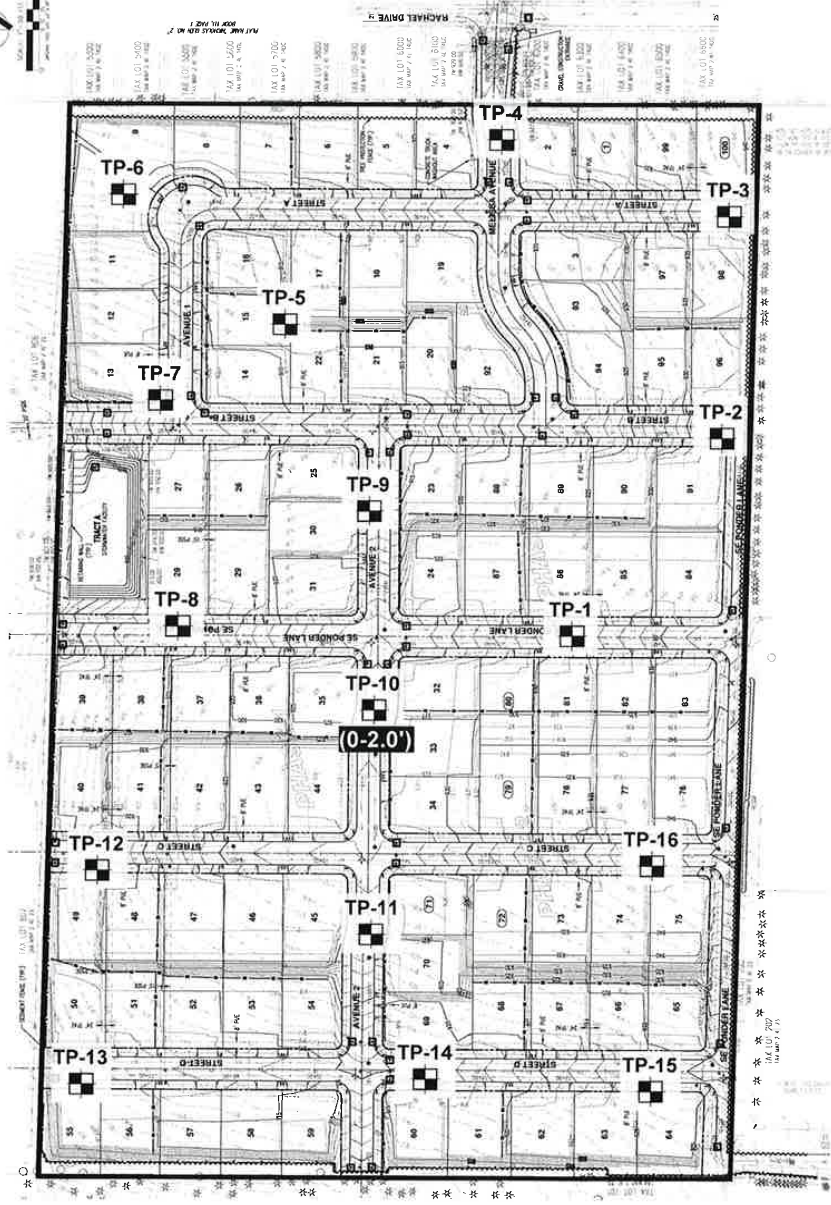
FIGURE 1





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# SITE PLAN AND EXPLORATION LOCATIONS



### Legend

**TP-1** Test Pit Designation and  
 Approximate Location

**(0-2.0')** Depth of Fill  
 Encountered

0 200'  
 APPROXIMATE SCALE 1"=200'

Date: 6/18/2019  
 Drawn by: EKR

Project: Bailey Meadows  
 Sandy, Oregon

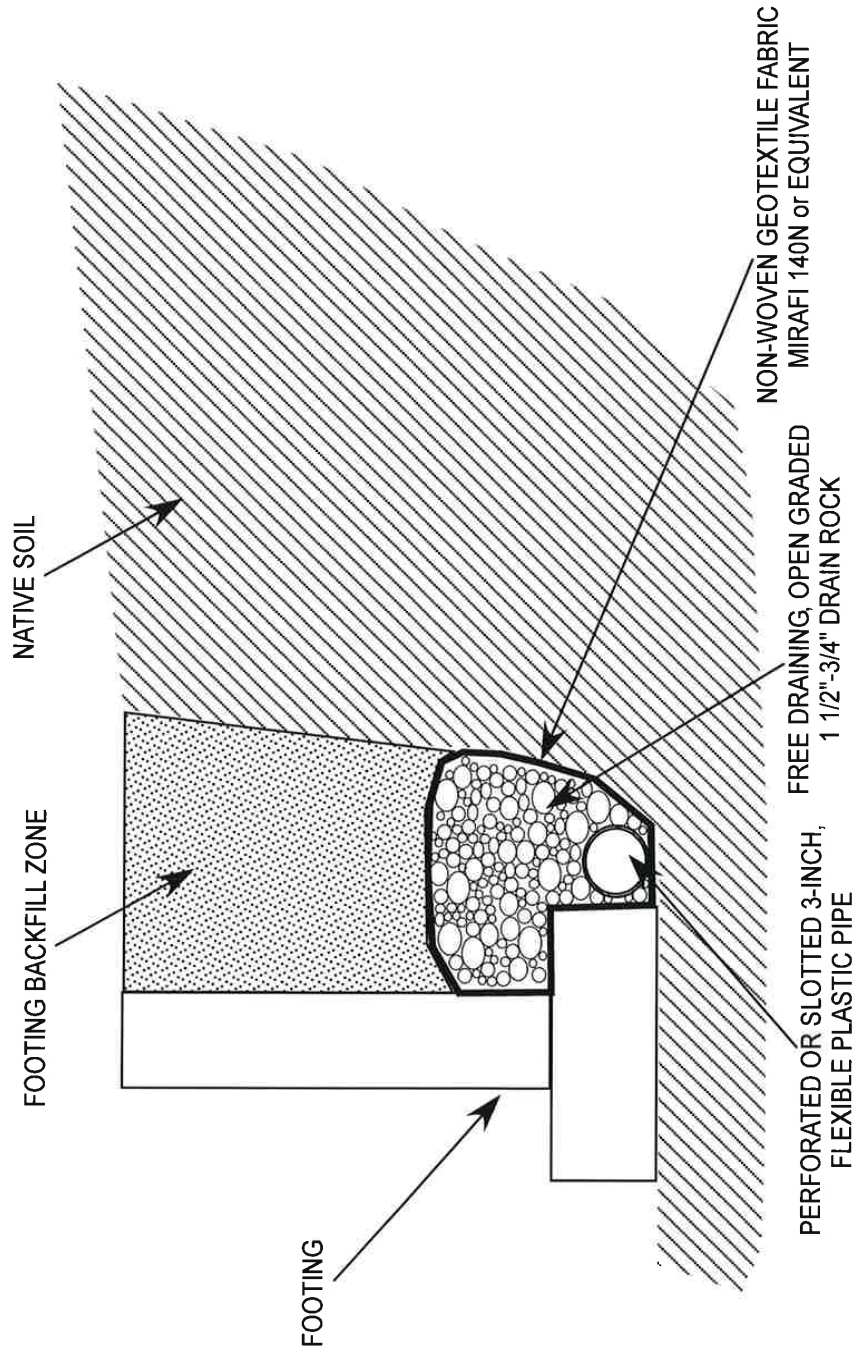
Project No. 19-5205

FIGURE 2



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### TYPICAL PERIMETER FOOTING DRAIN DETAIL



**Notes:**

- 1) Drain rock should contain no more than 5 percent fines passing the U.S. No. 200 Sieve.
- 2) Trench bottom and drain pipe should be sloped to drain to approved discharge location.

Date: 6/18/2019  
Drawn by: BLC

Project: Bailey Meadows  
Sandy, Oregon

Project No. 19-5205

FIGURE 3



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## **EXPLORATION LOGS**

---

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# TEST PIT LOG

Project: Bailey Meadows  
 Sandy, Oregon

Project No. 10-5205

Test Pit No. TP-1

Depth (ft)	Pocket Penetrometer (tons/ft <sup>2</sup> )	Sample Type	In-Situ Dry Density (lb/ft <sup>3</sup> )	Moisture Content (%)	Water Bearing Zone	Material Description
1	2.0					Low organic SILT (OL-ML), light brown, fine roots throughout, loose, trace charcoal, damp to moist (Topsoil Horizon)
2	2.0					Stiff to very stiff, clayey SILT (ML) to silty CLAY (CL), light reddish brown, subtle orange and gray mottling, trace fine roots to 4 feet, trace black staining, moist (Residual Soil)
3	3.0					
4	3.5					
5						
6						
7						
8						
9						
10						Test Pit Terminated at 10 Feet.
11						Note: No seepage or groundwater encountered.
12						

LEGEND



100 to 1,000 g  
Bag Sample



5 Gal Bucket  
Bucket Sample



Shelby Tube Sample



Seepage



Water Bearing Zone



Water Level at Abandonment

Date Excavated: 5/7/2019

Logged By: B. Rapp

Surface Elevation:





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# TEST PIT LOG

Project: Bailey Meadows  
 Sandy, Oregon

Project No. 10-5205

Test Pit No. **TP-2**

Depth (ft)	Pocket Penetrometer (tons/ft <sup>2</sup> )	Sample Type	In-Situ Dry Density (lb/ft <sup>3</sup> )	Moisture Content (%)	Water Bearing Zone	Material Description
1	4.5					Low to moderately organic, SILT (OL-ML), brown, fine roots throughout, loose, tilled, with charcoal fragments, damp to moist (Topsoil Horizon)
2	2.0					Stiff to very stiff, clayey SILT (ML) to silty CLAY (CL), light reddish brown, subtle orange and gray mottling, trace black staining, moist (Residual Soil)
3	3.5					
4	3.0					
5						
6						Stiff to very stiff, clayey SILT (ML) to silty CLAY (CL) with gravel to dense, silty GRAVEL (GM), light reddish brown to gray, subtle orange and gray mottling, trace black staining, rock is subrounded, moist (Pliocene-Pleistocene Gravels)
7						
8						
9						
10						Test Pit Terminated at 11 Feet.
11						
12						Note: No seepage or groundwater encountered.

**LEGEND**



100 to 1,000 g  
Bag Sample



5 Gal Bucket Sample



Shelby Tube Sample



Seepage



Water Bearing Zone



Water Level at Abandonment

Date Excavated: 5/7/2019

Logged By: B. Rapp

Surface Elevation:



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# TEST PIT LOG

Project: Bailey Meadows  
 Sandy, Oregon

Project No. 10-5205

Test Pit No. **TP-3**

Depth (ft)	Pocket Penetrometer (tons/ft <sup>2</sup> )	Sample Type	In-Situ Dry Density (lb/ft <sup>3</sup> )	Moisture Content (%)	Water Bearing Zone	Material Description
1	3.0					Low to moderately organic, SILT (OL-ML), brown, fine roots throughout, loose, tilled, damp to moist (Topsoil Horizon)
2	2.0					Stiff to very stiff, clayey SILT (ML) to silty CLAY (CL), light reddish brown, subtle orange and gray mottling, trace black staining, moist (Residual Soil)
3	3.0					
4	2.5					
5						
6						
7						
8						
9						
10						
11						Test Pit Terminated at 11 Feet.
12						Note: No seepage or groundwater encountered.

**LEGEND**



100 to 1,000 g  
Bag Sample



5 Gal Bucket Sample



Shelby Tube Sample



Seepage



Water Bearing Zone



Water Level at Abandonment

Date Excavated: 5/7/2019

Logged By: B. Rapp

Surface Elevation:




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# TEST PIT LOG

Project: Bailey Meadows  
 Sandy, Oregon

Project No. 10-5205

Test Pit No. **TP-4**

Depth (ft)	Pocket Penetrometer (tons/ft <sup>2</sup> )	Sample Type	In-Situ Dry Density (lb/ft <sup>3</sup> )	Moisture Content (%)	Water Bearing Zone	Material Description
1	2.5					Moderately organic, clayey SILT (OL-ML), dark brown, fine roots throughout, loose, damp to moist (Topsoil Horizon)
2	2.5					Stiff to very stiff, clayey SILT (ML) to silty CLAY (CL), light reddish brown, trace large roots, subtle to strong orange and gray mottling, trace black staining, moist (Residual Soil)
3	3.0					
4	3.0					
5						
6						
7						
8						
9						
10						
11						Test Pit Terminated at 10.5 Feet.
12						Note: Groundwater seepage encountered at 5 feet. Discharge visually estimated at 1/2 gallon per minute.

**LEGEND**



Bag Sample



Bucket Sample



Shelby Tube Sample



Seepage



Water Bearing Zone



Water Level at Abandonment

Date Excavated: 5/7/2019

Logged By: B. Rapp

Surface Elevation:



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# TEST PIT LOG

Project: Bailey Meadows  
 Sandy, Oregon

Project No. 10-5205

Test Pit No. **TP-5**

Depth (ft)	Pocket Penetrometer (tons/ft <sup>2</sup> )	Sample Type	In-Situ Dry Density (lb/ft <sup>3</sup> )	Moisture Content (%)	Water Bearing Zone	Material Description
1	3.0					Moderately organic, clayey SILT (OL-ML), brown, fine roots throughout, loose, tilled, trace charcoal fragments, moist (Topsoil Horizon)
2	2.5					Stiff to very stiff, clayey SILT (ML) to silty CLAY (CL), trace weathered gravel, light reddish brown, subtle orange and gray mottling, trace black staining, moist (Residual Soil)
3	2.5					
4	3.5					
5						
6						Dense, GRAVEL (GM), with clayey silt to silty clay matrix, light reddish brown, subtle orange and gray mottling, trace black staining, rock is subrounded, moist (Pliocene-Pleistocene Gravels)
7						
8						
9						
10						Test Pit Terminated at 12 Feet. Note: No seepage or groundwater encountered.
11						
12						

**LEGEND**



100 to 1,000 g  
Bag Sample



5 Gal Bucket Sample



Shelby Tube Sample



Seepage



Water Bearing Zone



Water Level at Abandonment

Date Excavated: 5/7/2019

Logged By: B. Rapp

Surface Elevation:









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# TEST PIT LOG

Project: Bailey Meadows Sandy, Oregon      Project No. 10-5205      Test Pit No. **TP-6**

Depth (ft)	Pocket Penetrometer (tons/ft <sup>2</sup> )	Sample Type	In-Situ Dry Density (lb/ft <sup>3</sup> )	Moisture Content (%)	Water Bearing Zone	Material Description
1	3.5					Moderately organic, clayey SILT (OL-ML), dark brown, fine roots throughout, loose, damp to moist (Topsoil Horizon)
2	3.5					Stiff to very stiff, silty CLAY (CL), light reddish brown, subtle orange and gray mottling, trace black staining, trace large roots to 4 feet, moist (Residual Soil)
3	3.5					
4	3.0					
5						
6						
7						
8						
9						
10						
11						Test Pit Terminated at 11 Feet.
12						Note: No seepage or groundwater encountered.

**LEGEND**

 Bag Sample	 Bucket Sample	 Shelby Tube Sample	 Seepage	 Water Bearing Zone	 Water Level at Abandonment
--	---	--	---	--	--

Date Excavated: 5/7/2019  
 Logged By: B. Rapp  
 Surface Elevation:



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# TEST PIT LOG

Project: Bailey Meadows  
 Sandy, Oregon

Project No. 10-5205

Test Pit No. **TP-7**

Depth (ft)	Pocket Penetrometer (tons/ft <sup>2</sup> )	Sample Type	In-Situ Dry Density (lb/ft <sup>3</sup> )	Moisture Content (%)	Water Bearing Zone	Material Description
1	2.0					Moderately organic, clayey SILT (OL-ML), dark brown, fine roots throughout, 5 inch thick root mat, tilled, loose, damp to moist (Topsoil Horizon)
2	2.5					Stiff to very stiff, clayey SILT (ML) to silty CLAY (CL), light reddish brown, subtle orange and gray mottling, trace black staining, moist (Residual Soil)
3	3.0					
4	3.0					
5						
6						
7						
8						
9						
10						
11						Test Pit Terminated at 10.5 Feet.
12						Note: No seepage or groundwater encountered.

**LEGEND**



100 to 1,000 g  
Bag Sample



5 Gal. Bucket Sample



Shelby Tube Sample



Seepage



Water Bearing Zone



Water Level at Abandonment

Date Excavated: 5/7/2019

Logged By: B. Rapp

Surface Elevation:





14835 SW 72nd Avenue  
 Portland, Oregon 97224  
 Tel: (503) 598-8445 Fax: (503) 941-9281

# TEST PIT LOG

Project: Bailey Meadows  
 Sandy, Oregon

Project No. 10-5205

Test Pit No. **TP-8**

Depth (ft)	Pocket Penetrometer (tons/ft <sup>2</sup> )	Sample Type	In-Situ Dry Density (lb/ft <sup>3</sup> )	Moisture Content (%)	Water Bearing Zone	Material Description
1	3.0					Moderately organic, clayey SILT (OL-ML), dark brown, fine roots throughout, loose, damp to moist (Topsoil Horizon)
2	3.0					Stiff to very stiff, clayey SILT (ML) to silty CLAY (CL), light reddish brown, subtle orange and gray mottling, trace black staining, moist (Residual Soil)
3	3.0					
4	2.5					
5						
6						
7						
8						
9						
10						Test Pit Terminated at 10 Feet.
11						Note: No seepage or groundwater encountered.
12						

**LEGEND**

100 to 1,000 g	5 Gal. Bucket	Shelby Tube Sample	Seepage	Water Bearing Zone	Water Level at Abandonment
----------------	---------------	--------------------	---------	--------------------	----------------------------

Date Excavated: 5/7/2019  
 Logged By: B. Rapp  
 Surface Elevation:



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# TEST PIT LOG

Project: Bailey Meadows  
 Sandy, Oregon

Project No. 10-5205

Test Pit No. **TP-9**

Depth (ft)	Pocket Penetrometer (tons/ft <sup>2</sup> )	Sample Type	In-Situ Dry Density (lb/ft <sup>3</sup> )	Moisture Content (%)	Water Bearing Zone	Material Description
1	2.5					Low to moderately organic, SILT (OL-ML), brown, fine roots throughout, 4-5 inch root mat, loose, tilled, damp to moist (Topsoil Horizon)
2	3.0					Stiff to very stiff, clayey SILT (ML) to silty CLAY (CL), light reddish brown, subtle orange and gray mottling, trace black staining, damp to moist (Residual Soil)
3	3.0					
4	3.0					
5						
6						
7						
8						
9						
10						
11						Dense, highly weathered GRAVEL (GM), with clayey silt to silty clay matrix, light reddish brown, subtle orange and gray mottling, trace black staining, rock is rounded, moist (Pliocene-Pleistocene Gravels)
12						Test Pit Terminated at 11.5 Feet.

Note: No seepage or groundwater encountered.

**LEGEND**



100 to 1,000 g



5 Gal. Bucket



Shelby Tube Sample



Seepage



Water Bearing Zone



Water Level at Abandonment

Date Excavated: 5/7/2019

Logged By: B. Rapp

Surface Elevation:



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# TEST PIT LOG

Project: Bailey Meadows  
 Sandy, Oregon

Project No. 10-5205

Test Pit No. **TP-10**

Depth (ft)	Pocket Penetrometer (tons/ft <sup>2</sup> )	Sample Type	In-Situ Dry Density (lb/ft <sup>3</sup> )	Moisture Content (%)	Water Bearing Zone	Material Description
1	2.5					Moderately to highly organic, gravelly SILT (OL-ML), brown, with wood chips, trace fine roots, damp (Undocumented Fill)
2	2.5					Moderately organic, SILT (OL-ML), brown, moist (Buried Topsoil Horizon)
3	3.5					Stiff to very stiff, clayey SILT (ML) to silty CLAY (CL), light reddish brown, subtle orange and gray mottling, trace black staining, trace roots to 4 feet, moist (Residual Soil)
4	3.5					
5						
6						
7						
8						
9						
10						
11						Test Pit Terminated at 10.5 Feet.
12						Note: No seepage or groundwater encountered.

**LEGEND**



100 to 1,000 g  
Bag Sample



5 Gal Bucket Sample



Shelby Tube Sample



Seepage



Water Bearing Zone



Water Level at Abandonment

Date Excavated: 5/7/2019

Logged By: B. Rapp

Surface Elevation:



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# TEST PIT LOG

Project: Bailey Meadows  
 Sandy, Oregon

Project No. 10-5205

Test Pit No. **TP-11**

Depth (ft)	Pocket Penetrometer (tons/ft <sup>2</sup> )	Sample Type	In-Situ Dry Density (lb/ft <sup>3</sup> )	Moisture Content (%)	Water Bearing Zone	Material Description
1	2.0					Moderately organic, SILT (OL-ML), brown, fine roots throughout, loose, tilled, damp to moist (Topsoil Horizon)
2	1.0					Medium stiff to very stiff, clayey SILT (ML) to silty CLAY (CL), light reddish brown, subtle orange and gray mottling, trace black staining, damp to moist (Residual Soil)
3	2.5					
4	3.5					
5						
6						Dense, highly weathered GRAVEL (GM), with clayey silt to silty clay matrix, light reddish brown, subtle orange and gray mottling, trace black staining, moist (Pliocene-Pleistocene Gravels)
7						
8						
9						
10						Test Pit Terminated at 12.5 Feet.
11						
12						

Note: No seepage or groundwater encountered.

LEGEND



Bag Sample



Bucket Sample



Shelby Tube Sample



Seepage



Water Bearing Zone



Water Level at Abandonment

Date Excavated: 5/7/2019

Logged By: B. Rapp

Surface Elevation:



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# TEST PIT LOG

Project: Bailey Meadows  
 Sandy, Oregon

Project No. 10-5205

Test Pit No. **TP-12**

Depth (ft)	Pocket Penetrometer (tons/ft <sup>2</sup> )	Sample Type	In-Situ Dry Density (lb/ft <sup>3</sup> )	Moisture Content (%)	Water Bearing Zone	Material Description
1	3.0					Low to moderately organic, SILT (OL-ML), brown, fine roots throughout, loose, tilled, with charcoal fragments, damp to moist (Topsoil Horizon)
2	3.0					Stiff to very stiff, clayey SILT (ML) to silty CLAY (CL), light reddish brown, subtle orange and gray mottling, trace black staining, moist (Residual Soil)
3	3.0					
4	3.5					
5						
6						Stiff to very stiff, clayey SILT (ML) to silty CLAY (CL) with gravel, light reddish brown to gray, subtle orange and gray mottling, trace black staining, rock is subrounded and up to 6 inches diameter, moist (Pliocene-Pleistocene Gravels)
7						
8						
9						Test Pit Terminated at 9 Feet.
10						Note: No seepage or groundwater encountered.
11						
12						

LEGEND



Bag Sample



5 Gal. Bucket Sample



Shelby Tube Sample



Seepage



Water Bearing Zone



Water Level at Abandonment

Date Excavated: 5/7/2019

Logged By: B. Rapp

Surface Elevation:



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# TEST PIT LOG

Project: Bailey Meadows  
 Sandy, Oregon

Project No. 10-5205

Test Pit No. **TP-13**

Depth (ft)	Pocket Penetrometer (tons/ft <sup>2</sup> )	Sample Type	In-Situ Dry Density (lb/ft <sup>3</sup> )	Moisture Content (%)	Water Bearing Zone	Material Description
1	2.0					Low to moderately organic, SILT (OL-ML), brown, fine roots throughout, 4 inch thick root mat, loose, tilled, damp to moist (Topsoil Horizon)
2	3.5					Stiff to very stiff, clayey SILT (ML) to silty CLAY (CL), trace subrounded gravel, light reddish brown, subtle orange and gray mottling, trace black staining, damp to moist (Residual Soil)
3	3.0					
4	3.0					
5						
6						Dense, highly weathered GRAVEL (GM), with clayey silt to silty clay matrix, light reddish brown, subtle orange and gray mottling, trace black staining, rock is rounded and up to 6" diameter, moist (Pliocene-Pleistocene Gravels)
7						
8						
9						Test Pit Terminated at 9 Feet.
10						Note: No seepage or groundwater encountered.
11						
12						

**LEGEND**



Bag Sample



Bucket Sample



Shelby Tube Sample



Seepage



Water Bearing Zone



Water Level at Abandonment

Date Excavated: 5/7/2019

Logged By: B. Rapp

Surface Elevation:





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# TEST PIT LOG







Project: Bailey Meadows  
 Sandy, Oregon

Project No. 10-5205

Test Pit No. **TP-14**

Depth (ft)	Pocket Penetrometer (tons/ft <sup>2</sup> )	Sample Type	In-Situ Dry Density (lb/ft <sup>3</sup> )	Moisture Content (%)	Water Bearing Zone	Material Description
1	3.0					Moderately organic, SILT (OL-ML), brown, fine roots throughout, loose, tilled, damp to moist (Topsoil Horizon)
2	2.0					Stiff to very stiff, clayey SILT (ML) to silty CLAY (CL), light reddish brown, subtle orange and gray mottling, trace black staining, moist (Residual Soil)
3	3.5					
4	4.0					
5						
6						Stiff to very stiff, clayey SILT (ML) to silty CLAY (CL) with weathered gravel, light reddish brown to gray, subtle orange and gray mottling, trace black staining, rock is subrounded, moist (Pliocene-Pleistocene Gravels)
7						
8						
9						
10						Test Pit Terminated at 10.5 Feet.
11						
12						Note: No seepage or groundwater encountered.

**LEGEND**

 Bag Sample	 5 Gal Bucket	 Shelby Tube Sample	 Seepage	 Water Bearing Zone	 Water Level at Abandonment
--	--	--	---	--	--

Date Excavated: 5/7/2019  
 Logged By: B. Rapp  
 Surface Elevation:



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# TEST PIT LOG

Project: Bailey Meadows  
 Sandy, Oregon

Project No. 10-5205

Test Pit No. **TP-15**

Depth (ft)	Pocket Penetrometer (tons/ft <sup>2</sup> )	Sample Type	In-Situ Dry Density (lb/ft <sup>3</sup> )	Moisture Content (%)	Water Bearing Zone	Material Description
1	2.0					Moderately organic, SILT (OL-ML), brown, fine roots throughout, 6 inch thick root mat, loose, tilled, damp to moist (Topsoil Horizon)
2	4.5					Stiff to very stiff, clayey SILT (ML) to silty CLAY (CL), light reddish brown, subtle orange and gray mottling, trace black staining, damp to moist (Residual Soil)
3	3.5					
4	4.5					
5						Dense, highly weathered GRAVEL (GM), with clayey silt to silty clay matrix, light reddish brown, subtle orange and gray mottling, trace black staining, rock is rounded and up to 9 inches diameter, moist (Pliocene-Pleistocene Gravels)
6						
7						
8						
9						
10						Test Pit Terminated at 10.5 Feet.
11						
12						Note: No seepage or groundwater encountered.

**LEGEND**

 Bag Sample    
  5 Gal. Bucket Sample    
  Shelby Tube Sample    
  Seepage    
  Water Bearing Zone    
  Water Level at Abandonment

Date Excavated: 5/7/2019  
 Logged By: B. Rapp  
 Surface Elevation:



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# TEST PIT LOG

Project: Bailey Meadows  
 Sandy, Oregon

Project No. 10-5205

Test Pit No. **TP-16**

Depth (ft)	Pocket Penetrometer (tons/ft <sup>2</sup> )	Sample Type	In-Situ Dry Density (lb/ft <sup>3</sup> )	Moisture Content (%)	Water Bearing Zone	Material Description
1	3.5					Moderately organic, SILT (OL-ML), brown, fine roots throughout, loose, tilled, damp to moist (Topsoil Horizon)
2	2.5					Stiff to very stiff, clayey SILT (ML) to silty CLAY (CL), light reddish brown, subtle orange and gray mottling, trace black staining, moist (Residual Soil)
3	2.5					
4	2.0					
5						Stiff to very stiff, clayey SILT (ML) to silty CLAY (CL) with gravel, light reddish brown, subtle orange and gray mottling, trace black staining, rock is subrounded and up to 6 inches diameter, moist (Pliocene-Pleistocene Gravels)
6						
7						
8						Test Pit Terminated at 10 Feet.
9						
10						
11						Note: No seepage or groundwater encountered.
12						

**LEGEND**



100 to 1,000 g  
Bag Sample



5 Gal. Bucket  
Bucket Sample



Shelby Tube Sample



Seepage



Water Bearing Zone



Water Level at Abandonment

Date Excavated: 5/7/2019

Logged By: B. Rapp

Surface Elevation:



July 2, 2019

**Michael C. Robinson**  
Admitted in Oregon  
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Kelly O'Neill, Jr., Director  
City of Sandy Planning & Building Department  
Sandy City Hall  
39250 Pioneer Boulevard  
Sandy, OR 97055

RE: Application by Allied Homes & Development for Approval of the 100-Lot Bailey Meadows Preliminary Plat Subdivision Application

Dear Mr. O'Neill:

This office represents the Applicant. On behalf of the Applicant, please find enclosed the required materials for submission of a tentative subdivision plat application pursuant to Sandy Municipal Code ("SMC") Chapter 17.100. The Application includes the information required by SMC Chapter 17.100, a check for the applicable application fee, a City of Sandy Land Use application form signed by the property owner and other materials required for a complete application.

AKS Engineering & Forestry and I are the Applicant's representatives. Please provide us with copies of the City's determination of application completeness, notices of public hearings, staff reports and any correspondence to or from the City concerning this Application.

Additionally, I want to discuss four issues raised at the pre-application conference held on November 20, 2018 and at the Applicant's second meeting with City staff on January 29, 2019. Those four issues and the Applicant's responses to each are shown below.

City staff raised the following issues at the pre-application for this Application.

A. The City believes that the subdivision application should comply with the Oregon Transportation Planning Rule (the "TPR"), OAR 660-012-0060(1)-(3);

B. The City of Sandy Parks and Trail Advisory Board (the "Parks Board") has recommended that the Applicant dedicate land for a public park in the subdivision rather than accept a fee-in-lieu payment for park improvements elsewhere in the city;

C. The City believes that the vehicle trips from the proposed 100-lot subdivision cannot use Melissa Avenue because doing so would cause Melissa Avenue to exceed the number of vehicle trips permitted for a Local Street under the City's Transportation System Plan (the "TSP"); and



Kelly O'Neill, Jr., Director  
July 2, 2019  
Page 2

D. The City proposes that the Application include an extension of Gunderson Road outside of the City's acknowledged Urban Growth Boundary (the "UGB") in order to provide a street connection to Oregon Highway 211 so that vehicle trips would have an alternative to Melissa Avenue.

**2. Response to each issue.**

**A. The Transportation Planning Rule (the "TPR") is not applicable to a subdivision application.**

The TPR is an administrative rule adopted by the Oregon Land Conservation and Development Commission (the "LCDC") that implements Statewide Planning Goal (the "Goals") 12, "Transportation." As explained below, the TPR does not apply to a subdivision application such as this. The City annexed the subject property and properly zoned it following annexation but did not apply the TPR when it zoned the property for urban uses. It is too late to ask the applicant to address the TPR in a subdivision application where the zoning map designation is already final.

OAR 660-012-0060(1)-(3) should have been applied no later than the zoning of this property. OAR 660-012-0060(1) does not apply to land division applications; it applies only to "an amendment to a functional plan, an acknowledged comprehensive plan, or a land use regulation (including a zoning map)." A subdivision is none of these things. A subdivision is a "limited land use decision" as defined in ORS 197.015(12) that is subject to acknowledged land use regulations. *See* ORS 197.175(2)(d). Therefore, the TPR cannot be an approval standard or criterion for this subdivision application.

**B. An exception to the Goals in order for Gunderson Road to be extended outside of the City's acknowledged UGB is not possible nor can it be required of the Applicant.**

Because Gunderson Road is outside of the City's UGB and the extension of Gunderson Road would not be within an existing right-of-way, the Applicant would have to apply for and receive approval from Clackamas County (the "County") for an "exception" to Goals 3, 12 and 14 to allow the extension of Gunderson Road to Oregon Highway 211 outside of the City's UGB.

The Applicant told the City that it would talk with the County about whether an exception to Goals 3, 12, and 14 to allow the extension of Gunderson Road outside of the City's UGB would be possible. The Applicant met with County Planning Department staff on April 3, 2019 and explained its request. After reviewing the Applicant's information, the County Planning Department staff told the Applicant it would not support the required exception to the Goals and that it would be unlikely that the required exceptions would be approved by the Clackamas County Board of Commissioners. The Applicant has exhausted its good-faith efforts to determine whether an exception is possible to allow the extension of Gunderson Road outside of the City's UGB and has concluded that it is not.

Kelly O'Neill, Jr., Director  
July 2, 2019  
Page 3

Additionally, there is no evidentiary reason that Gunderson Road should be extended since adequate transportation facilities are available for the subdivision trips inside the UGB as demonstrated by the Applicant's June 3, 2019 Traffic Impact Analysis prepared by Lancaster Engineering. Finally, there is no legal basis for the City to require the Applicant to make an exception application to extend a transportation facility outside of the acknowledged UGB where there is no evidentiary reason to do so and where existing transportation facilities inside the UGB are adequate.

**C. Park land dedication.**

The Sandy Municipal Code allows the City to either require park dedication or to accept a fee-in-lieu payment. This Application is predicated on development of 100 lots without a park. The Applicant will make the fee-in-lieu payment.

There are at least two legal issues that preclude the City from requiring a park land dedication. First, a park land dedication is subject to the *Dolan* and *Nollan* analysis for exactions of real property, as well as the recent Oregon Court of Appeals decision in *Hill v. City of Portland*. These cases collectively impose on the City the legal burden of proof to demonstrate that the Application requires the dedication. The City has not demonstrated that the required "nexus" exists to require the Applicant to dedicate the park land. The City Attorney's February 27, 2019 memorandum contains a thorough analysis of this issue.

Second, the Sandy Municipal Code approval criterion in SMC 17.100.060.E.4. and the standard regarding the choice of park land dedication or fee-in-lieu payments are subjective and because this Application is a "Needed Housing" application pursuant to ORS 197.303(1) and 197.307(4), the City may not apply subjective standards to the Application. The choice between the dedication of land and the payment of cash is a subjective process without standards for making the decision in SMC Chapter 17.86. SMC 17.86.40 provides that the choice is "at the City's discretion only." ORS 197.307(4) prohibits such a subjective procedure and standard.

**D. The City's Comprehensive Plan (the "Plan"), the 1997 Parks Master Plan (the "Park Plan") and the Transportation System Plan (the "TSP") are inapplicable to this Application.**

The Plan, the Park Plan and the TSP are all elements of the City's Comprehensive Plan. Because this Application is a limited land use decision application as defined in ORS 197.015(12), it is subject to ORS 197.195(1). ORS 197.195(1) provides that limited land use decisions may not be subject to Plan standards as approval criteria unless those Plan standards are expressly incorporated in whole or in part into a City's acknowledged land use regulations. The City's acknowledged land use regulations for approval of a tentative subdivision are found in SMC 17.100.060.E.1.-6. The Plan, the Park Plan and the TSP standards are not expressly incorporated into the approval criteria with sufficient detail to satisfy the requirement of ORS 197.195(1). Therefore, those Plan standards cannot be approval criteria for this limited land use decision application.

Kelly O'Neil, Jr., Director  
July 2, 2019  
Page 4

SMC 17.100.110 refers to the TSP but does not expressly incorporate specific TSP standards. Even if SMC 17.100.110 did so, the "Function Classification Management Objectives" in TSP Chapter 3, Page 17, are subjective and may not be applied under ORS 197.307(4). TSP Chapter 3, Page 17 describes local streets such as Melissa Street as having a "typical capacity." This standard is not specifically incorporated into the SMC and may not be applied as an approval standard under SMC 17.100.060.E.3, 4, or 5.

The Applicant wishes it could agree with everything the City asked it to do but for the above legal and practical reasons, it cannot do so. However, the Applicant and its team will work with City staff as much as is possible to address issues so that the City staff can recommend approval and the Sandy Planning Commission can approve the Application.

Very truly yours,



Michael C. Robinson

MCR:jmhi  
Enclosures

cc: Mr. Cody Bjugan (*via email*) (*w/o enclosures*)  
Mr. Monty Hurley (*via email*) (*w/o enclosures*)  
Mr. Chris Goodell (*via email*) (*w/o enclosures*)  
Mr. Todd Mobley (*via email*) (*w/o enclosures*)

PDX\133569\245146\MCR\25711778.1

## EXHIBIT K

24E14C 03800  
Jack Richard Gilbert  
Po Box 637  
Sandy, OR 97055

24E23 00200  
Leslie Geren  
37721 SE Ponder Ln  
Sandy, OR 97055

24E23 00201  
Paul Roger Klahn  
Po Box 671  
Sandy, OR 97055

24E23 00202  
Melvin Leroy Fiscus  
37777 SE Ponder Ln  
Sandy, OR 97055

24E23 00502  
Broek Boaz  
244 Plant Ln  
Salem, OR 97301

24E23 00700  
Calvin & Teresa McKinnis II  
37551 SE Highway 211  
Sandy, OR 97055

24E23 00800  
Myrtle Sturm  
647 E Historic Col River Hwy  
Troutdale, OR 97060

24E23 00801  
Grant Sturm  
647 E Historic Col River Hwy  
Troutdale, OR 97060

24E23 00802  
Myrtle Sturm  
647 E Historic Col River Hwy  
Troutdale, OR 97060

24E23 00803  
Grant Sturm  
647 E Historic Col River Hwy  
Troutdale, OR 97060

24E23 00804  
Grant Sturm  
647 E Historic Col River Hwy  
Troutdale, OR 97060

24E23 00805  
Sherrene Eyck  
37020 Deming Rd  
Sandy, OR 97055

24E23 00806  
Sherrene Eyck  
37020 Deming Rd  
Sandy, OR 97055

24E23 00807  
Sherrene Eyck  
37020 Deming Rd  
Sandy, OR 97055

24E23 00901  
Sherrene Eyck  
37020 Deming Rd  
Sandy, OR 97055

24E23 01800  
Joanne Rohweder  
39285 Cascadia Village Dr  
Sandy, OR 97055

24E23 00518  
Garrett & Meri Lang  
37730 SE Highway 211  
Sandy, OR 97055

24E23 00701  
Eyck Mark Ten  
36940 Deming Rd  
Sandy, OR 97055

24E14DC01500  
Lynn & Eric Boldt  
18181 Grey Ave  
Sandy, OR 97055

24E14DC01600  
William Schlaht Sr.  
18203 Grey Ave  
Sandy, OR 97055

24E14DC01700  
L Darlene McKinney  
18227 Grey Ave  
Sandy, OR 97055

24E14DC01800  
Carol Sue Dick  
18255 Grey Ave  
Sandy, OR 97055

24E14DC01900  
Matthew Dillingham  
18273 Grey Ave  
Sandy, OR 97055

24E14DC02000  
David & Steven Snyder  
18299 Grey Ave  
Sandy, OR 97055

24E14DC02100  
Clyde Volesky  
18317 Grey Ave  
Sandy, OR 97055

24E14DC02200  
Anthony & Regina Profitt  
18306 Grey Ave  
Sandy, OR 97055

24E14DC02300  
Jose Escareno Garcia  
18288 Grey Ave  
Sandy, OR 97055

24E14DC02400  
Alexander Keeth  
18260 Grey Ave  
Sandy, OR 97055

24E14DC02500  
Edith Newton  
18246 Grey Ave  
Sandy, OR 97055

24E14DC02600  
Esther Naomi Quick  
18214 Grey Ave  
Sandy, OR 97055



24E14DC02700  
David & Sharon Meeker  
18198 Grey Ave  
Sandy, OR 97055

24E14DC02800  
Clark John Moore  
18172 Grey Ave  
Sandy, OR 97055

24E14DC03500  
Jack Putnam  
37488 Solso Dr  
Sandy, OR 97055

24E14DC03600  
Robert Durst  
1873 Bullevarid  
Philomath, OR 97370

24E14DC03700  
Ronald & Sarah Bettey  
18195 Melissa Ave  
Sandy, OR 97055

24E14DC03800  
Andy & Sarah Hill  
18211 Melissa Ave  
Sandy, OR 97055

24E14DC03900  
Robert Maya  
18243 Melissa Ave  
Sandy, OR 97055

24E14DC04000  
Lucas & Rachel Eibensteiner  
18285 Melissa Ave  
Sandy, OR 97055

24E14DC04100  
Christina Ness  
18377 Melissa Ave  
Sandy, OR 97055

24E14DC04200  
Karen Higgins  
37487 Rachael Dr  
Sandy, OR 97055

24E14DC04300  
James Brady  
41391 SE Clausen Rd  
Estacada, OR 97023

24E14DC04400  
Oliver Paul Mullan  
18254 Myra Ct  
Sandy, OR 97055

24E14DC04500  
Edward Burgess  
18222 Myra Ct  
Sandy, OR 97055

24E14DC04600  
Terrance Leland Myers  
18205 Myra Ct  
Sandy, OR 97055

24E14DC04700  
Carl Jr & Rebecca Robinson  
18237 Myra Ct  
Sandy, OR 97055

24E14DC04800  
Rhonda & Brad Norton  
18269 Myra Ct  
Sandy, OR 97055

24E14DC04900  
Robert & Sandra Ludi  
18275 Myra Ct  
Sandy, OR 97055

24E14DC05000  
Marguerite Wadkins  
Po Box 1273  
Sandy, OR 97055

24E14DC05100  
Evan & Alisha Gilges  
18331 Myra Ct  
Sandy, OR 97055

24E14DC05200  
Ileen Ellison  
6809 E Tudor Rd  
Anchorage, AK 99507

24E14DC05300  
Robert & Lori Graham  
37322 Rachael Dr  
Sandy, OR 97055

24E14DC05400  
Christopher & Ashley Parrish  
37356 Rachael Dr  
Sandy, OR 97055

24E14DC05500  
Tracy Drog  
37374 Rachael Dr  
Sandy, OR 97055

24E14DC05600  
Bradley Robison  
37412 Rachael Dr  
Sandy, OR 97055

24E14DC05700  
Paul Kvamme  
37438 Rachael Dr  
Sandy, OR 97055

24E14DC05800  
Ryan Tatlock  
37466 Rachael Dr  
Sandy, OR 97055

24E14DC05900  
Marilyn Siewell  
37484 Rachael Dr  
Sandy, OR 97055

24E14DC06000  
Colin Hatfield  
37490 Rachael Dr  
Sandy, OR 97055

24E14DC06100  
Paul Savage  
37506 Rachael Dr  
Sandy, OR 97055

24E14DC06200  
Corri Baldwin  
37524 Rachael Dr  
Sandy, OR 97055

24E14DC06300  
Richard & Emily Sheldon  
37552 Rachael Dr  
Sandy, OR 97055

24E14DC06400  
Mitchell John Gray  
37578 Rachael Dr  
Sandy, OR 97055

24E14DC06500  
Jason & Erin Findlay  
37616 Rachael Dr  
Sandy, OR 97055

24E14DC06600  
James Na Raymond  
Po Box 14407  
Saint Petersburg, FL 33733

24E14DC06700  
Andrew Hart  
37647 Rachael Dr  
Sandy, OR 97055

24E14DC06800  
Danielle Lee Tkacik  
37603 Rachael Dr  
Sandy, OR 97055

24E14DC06900  
Bryan Weisz  
37565 Rachael Dr  
Sandy, OR 97055

24E14DC07000  
Carol Cohen  
37537 Rachael Dr  
Sandy, OR 97055

24E14DC07100  
Brian Crosswhite  
18298 Melissa Ave  
Sandy, OR 97055

24E14DC07200  
Timothy Sellin  
18256 Melissa Ave  
Sandy, OR 97055

24E14DC07300  
Troy Michael Kalhar  
13841 SE Bluff Rd  
Sandy, OR 97055

24E14DC07400  
Warren Nelson  
18206 Melissa Ave  
Sandy, OR 97055

24E14DC07500  
Todd Cooper  
18190 Melissa Ave  
Sandy, OR 97055

24E14DC07600  
William Rolfe  
37626 Solso Ct  
Sandy, OR 97055

24E14DC07700  
Lonnie McVey  
37640 Solso Ct  
Sandy, OR 97055

24E14DC07800  
Brendan & Merlinda Turner  
37668 Solso Ct  
Sandy, OR 97055

24E14DC07900  
Nathan & Norma House  
Po Box 815  
Sandy, OR 97055

24E14DC08000  
Brian Wilder  
37637 Solso Ct  
Sandy, OR 97055

24E14DC08100  
Norvin & Annabelle Vernon  
37615 Solso Ct  
Sandy, OR 97055

24E14DC08700  
Ralph Ortman  
37648 Dubarko Rd  
Sandy, OR 97055

24E14DC10200  
Michelle Bartle  
18186 Wewer Ave  
Sandy, OR 97055

24E14DC10300  
Stefan & Tamera Grabinski  
721 Main St  
Oregon City, OR 97045

24E14DC10400  
George & Kathryn Culp  
47235 SE Coalman Rd  
Sandy, OR 97055

24E14DC10500  
Alissa Felix  
18248 Wewer Ave  
Sandy, OR 97055

24E14DC10600  
Rene Huurman  
18262 Wewer Ave  
Sandy, OR 97055

24E14DC10700  
Delores & Stephen Joslin  
18294 Wewer Ave  
Sandy, OR 97055

24E14DC10800  
Alexander Doja  
18302 Wewer Ave  
Sandy, OR 97055

24E14DC10900  
Cornelius & Christina Seulean  
37253 Rachael Dr  
Sandy, OR 97055

24E14DC11000  
Barbara Henley  
18287 Wewer Ave  
Sandy, OR 97055

24E14DC11100  
Randy & Lynette Fridlund  
18253 Wewer Ave  
Sandy, OR 97055

24E14DC11200  
Andray & Marina Shcherban  
18235 Wewer Ave  
Sandy, OR 97055

24E14DC11300  
Shannon Muse  
38085 SE Trubel Rd  
Sandy, OR 97055

24E14DC12900  
Christopher Flowers  
18208 Rachael Dr  
Sandy, OR 97055

24E14DC13000  
Matthew & Kimberly Wallace  
18234 Rachael Dr  
Sandy, OR 97055

24E14DC13100  
Daniel Ortega Alvarado  
18250 Rachael Dr  
Sandy, OR 97055

24E14DC13200  
Jonathan & Angela Allinger  
18288 Rachael Dr  
Sandy, OR 97055

24E14DC13300  
Paul & Jollette Owen  
Po Box 1676  
Sandy, OR 97055

24E14DC13400  
Amanda Sievertsen  
Po Box 101  
Gresham, OR 97030

24E14DC13500  
Travis Fegel  
37274 Rachael Dr  
Sandy, OR 97055

24E14DC13600  
John & Jennifer Leckie  
Po Box 1024  
Welches, OR 97067

24E14DC13700  
Roy Jack & Doris Rooney  
37214 Rachael Dr  
Sandy, OR 97055

24E14DC13800  
Shawn Fleming  
37198 Rachael Dr  
Sandy, OR 97055

24E14DC13900  
James & Marie Debatty  
18347 Rachael Dr  
Sandy, OR 97055

24E14DC14000  
Cheri Berglund  
12818 SE Winston Rd  
Damascus, OR 97089

24E14DC14100  
Jerry Hopkins  
13056 SE Division St  
Portland, OR 97236

24E14DC14200  
Steven & Michelle Snyder  
18299 Rachael Dr  
Sandy, OR 97055

24E14DC14300  
Gigi Duncan  
18275 Rachael Dr  
Sandy, OR 97055

24E14DD01200  
City Of Sandy  
39250 Pioneer Blvd  
Sandy, OR 97055

24E14DD08100  
Ernie Peterson  
37642 Rachael Dr  
Sandy, OR 97055

24E14DD08200  
Faith Egli  
Po Box 1761  
Sandy, OR 97055

24E14DD08300  
Ruslan & Galina Motyko  
37714 Rachael Dr  
Sandy, OR 97055

24E14DD08400  
Christian & Macey McDonald  
37720 Rachael Dr  
Sandy, OR 97055

24E14DD08500  
Patrick & Jennifer Robichaud  
37726 Rachael Dr  
Sandy, OR 97055

24E14DD08600  
Jack & Raelene Anderson  
37732 Rachael Dr  
Sandy, OR 97055

24E14DD08700  
Juan Diaz  
37810 Rachael Dr  
Sandy, OR 97055

24E14DD08800  
Patrick Owen  
Po Box 8583  
Portland, OR 97207

24E14DD08900  
Anthony & Stephanie Galleran  
37822 Rachael Dr  
Sandy, OR 97055

24E14DD09000  
Dena Williams  
37828 Rachael Dr  
Sandy, OR 97055

24E14DD09100  
Shelley Bolfik  
37835 Rachael Dr  
Sandy, OR 97055

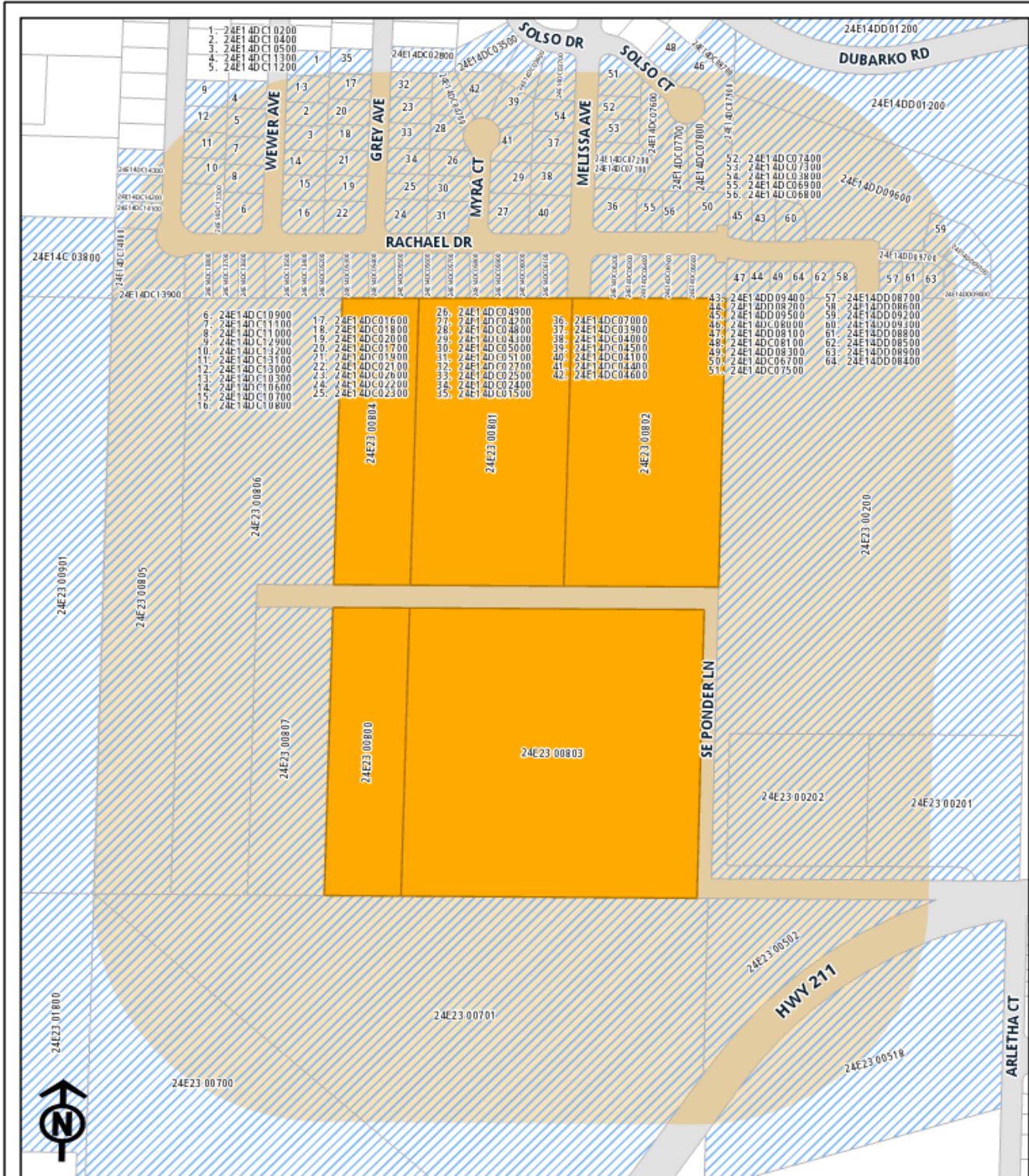
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Jesse Brown  
37839 Rachael Dr  
Sandy, OR 97055

24E14DD09300  
Craig & Sarah Barnes  
37715 Rachael Dr  
Sandy, OR 97055

24E14DD09400  
Geoffrey & Kjersti Sanders  
37703 Rachael Dr  
Sandy, OR 97055

24E14DD09500  
Kristofer J A & Skyler Oneill  
37651 Rachael Dr  
Sandy, OR 97055

24E14DD09600  
City Of Sandy  
39250 Pioneer Blvd  
Sandy, OR 97055



- Taxlots
- Notification Parcels
- Subject

500  
Feet

Prepared by: Fidelity National Title  
 Data: CoreLogic, Metro RLIS  
 Date: 5/22/2019  
 This information is reliable, but not  
 guaranteed. It is not a survey.





## TYPE III SUBDIVISION SUBMISSION REQUIREMENTS

A subdivision is required for a land division of four (4) or more parcels in a calendar year. A Type III subdivision procedure is applicable if unsatisfactory street conditions exist or the resulting lots do not comply with the standards of the zoning district and Chapter 17.100. All of the following materials must be submitted with your application. All plans should be drawn to engineering scale (1" = 10' or 1" = 20' preferred). Prior to submitting application materials, a pre-application conference with City staff is required to discuss procedures for approval, applicable state and local requirements, and the availability of services.

**A. One (1) copy of:**

1. Land Use Application Form

**3 copies provided for initial submittal, information included as applicable**

**B. Twenty (20) copies** of the tentative plan for the subdivision and project narrative documenting compliance with applicable code criteria. The tentative plan shall be a minimum of 8-1/2" x 11" in size and shall include the following information:

1. Scale of drawing, north arrow, and date.
2. Location of the subdivision by section, township and range, and a legal description sufficient to define the location and boundaries of the proposed tract.
3. A vicinity map, showing adjacent property boundaries and how proposed streets may be extended to connect to existing streets.
4. Names, addresses, and telephone numbers of the owner(s) of the property, the engineer or surveyor, and the date of the survey.
5. Streets: location, names, paved widths, alleys, and right-of-way (existing and proposed) on and within 400 feet of the boundaries of the subdivision tract.
6. Easements: location, widths, purpose of all easements (existing and proposed) on or serving the tract.
7. Utilities: location of storm drainage, sanitary sewers and water lines (existing and proposed) on and abutting the tract. If utilities are not on or abutting the tract, indicate the direction and distance to the nearest locations.
8. Ground elevations shown by contour lines at two-foot vertical intervals for ground slopes of less than 10 percent and at ten-foot vertical intervals for ground slopes exceeding 10 percent. Ground elevation shall be related to an established benchmark or other datum approved by the Director.
- N/A 9. Natural features such as marshes, rock outcroppings, watercourses on and abutting the property, location of wooded areas.
- N/A 10. Approximate location of areas subject to periodic inundation or storm sewer overflow, location of any floodplain or flood hazard district.
- N/A 11. Location, width, and direction of flow of all water courses.
- N/A 12. Identification of the top of bank and boundary of mandatory setback for any stream or water course.
- N/A 13. Identification of any associated wetland and boundary of mandatory setback.
- N/A 14. Identification of any wetland and boundary of mandatory setback.
15. Location of at least one temporary bench mark within the tract boundaries.
16. Existing uses of the property, including location and present use of all existing structures to remain on

the property after platting.

17. Lots and Blocks: approximate dimensions of all lots, minimum lot sizes, and proposed lot and block numbers.
18. Existing zoning and proposed land use.
19. Designation of land intended to be dedicated or reserved for public use, with the purpose, conditions, or limitations of such reservations clearly indicated.
20. Proposed development phases, if applicable.
21. Any other information determined necessary by the Director at the pre-application conference, such as a soil report or other engineering study, traffic analysis, floodplain or wetland delineation, etc.

C. **List of affected property owners** within 300 feet of the boundaries of the subject site and **mailing labels** for property owners within 300 feet of the site, excluding rights-of-way.

labels within 500 feet included per SDC 17.22.20.B

D. **Filing Fee** per Fees and Charges Resolution

E. **Required Plan Submittals:**

1. Vicinity Map
2. Preliminary Site Plan
3. Tentative Plat
4. Existing Features Plan
5. Utility Plan
6. Grading Plan
7. Tree Plan (Per Chapter 17.102)
8. Residential Parking Analysis

F. **Other Submissions That May Be Required:**

- Arborist's Report
- Flood, Slope and Hazard Analysis (FSH)
- FSH Reports (Hydrology and Soils, Native Vegetation)
- Composite Site Plan and FSH Overlay Analysis
- Traffic Impact Letter or Report
- Geotechnical Report
- Future Street Plan showing connectivity within 400 feet of the boundaries of the site
- Other \_\_\_\_\_

G. **Unsatisfactory Street Conditions**

1. The land division does not link streets that are stubbed to the boundaries of the property.
2. An existing street or a new proposed street will be extended beyond the boundaries of the land division to complete a street system or provide access to adjacent property.
3. The proposed street layout is inconsistent with a street pattern adopted as part of the Comprehensive Plan or officially adopted City street plan.

- H. **Approval Criteria.** The Director shall review the tentative plan for a minor partition, subdivision or minor replat based on the following approval criteria:
1. The proposed partition is consistent with the density, setback and dimensional standards of the base-zoning district.
  2. The proposed partition is consistent with applicable design standards.
  3. The proposed street pattern is connected and consistent with the Transportation System Plan.
  4. Adequate public facilities are available or can be provided to serve the proposed partition.
  5. All proposed improvements meet City standards.
  6. The plan preserves the potential for future redivision of the parcels (if applicable).
- I. The application must also be in conformance with street design standards included in the City of Sandy Transportation System Plan and standards and construction specifications for public improvements as set forth in adopted Public Facilities Plans and the Sandy Municipal Code.

**EXHIBIT M**

Clackamas County Official Records	<b>2016-026546</b>
Sherry Hall, County Clerk	04/26/2016 08:44:06 AM
D-D	Cnt=1 Stn=2 LESLIE
\$20.00 \$16.00 \$10.00 \$22.00	<b>\$68.00</b>

After Recording Return to:  
Kevin J. Tillson  
Tillson Law P.C.  
39075 Proctor Blvd., Suite C  
Sandy, OR 97055

Send All Tax Statements To:  
Grant E. Sturm & Myrtle J. Sturm, Trustees  
Sturm Family Trust dated April 20, 2016  
647 E. Hist. Columbia River Hwy  
Troutdale, OR 97060

**WARRANTY DEED – STATUTORY FORM**

Grant E. Sturm, Trustee of the Grant Sturm Trust, (Grantor) conveys and warrants to Grant E. Sturm & Myrtle J. Sturm, Trustees of the Sturm Family Trust dated April 20, 2016, and any amendments thereto (Grantee), Grantor's interest in the following described real property situated in Clackamas County, State of Oregon, free of encumbrances except as specifically set forth herein, to-wit:

See Exhibit A attached hereto and incorporated herein

Parcel Nos.: 00675941, 00675923, 00675932, 00675950, and  
00675969

This property is free from encumbrances, EXCEPT for all those items of record, if any, as of the date of this deed, including any real property taxes due, but not yet payable, or the rights of the public in and to that said portion of the above property lying within the limits of roads and highways.

The true and actual consideration for this conveyance is \$ 0.00 (transfer to trust) .

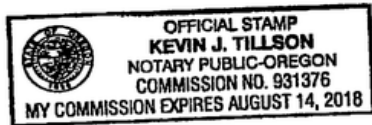
BEFORE SIGNING OR ACCEPTING THIS INSTRUMENT, THE PERSON TRANSFERRING FEE TITLE SHOULD INQUIRE ABOUT THE PERSON'S RIGHTS, IF ANY, UNDER ORS 195.300, 195.301 AND 195.305 TO 195.336 AND SECTIONS 5 TO 11, CHAPTER 424, OREGON LAWS 2007, AND SECTIONS 2 TO 9 AND 17, CHAPTER 855, OREGON LAWS 2009. THIS INSTRUMENT DOES NOT ALLOW USE OF THE PROPERTY DESCRIBED IN THIS INSTRUMENT IN VIOLATION OF APPLICABLE LAND USE LAWS AND REGULATIONS. BEFORE SIGNING OR ACCEPTING THIS INSTRUMENT, THE PERSON ACQUIRING FEE TITLE TO THE PROPERTY SHOULD CHECK WITH THE APPROPRIATE CITY OR COUNTY PLANNING DEPARTMENT TO VERIFY THAT THE UNIT OF LAND BEING TRANSFERRED IS A LAWFULLY ESTABLISHED LOT OR PARCEL, AS DEFINED IN ORS.92.010 OR 215.010, TO VERIFY THE APPROVED USES OF THE LOT OR PARCEL, TO DETERMINE ANY LIMITS ON LAWSUITS AGAINST FARMING OR FOREST PRACTICES, AS DEFINED IN ORS 30.930 AND TO INQUIRE ABOUT THE RIGHTS OF NEIGHBORING PROPERTY OWNERS, IF ANY, UNDER ORS 195.300, 195.301 AND 195.305 TO 195.336 AND SECTIONS 5 TO 11, CHAPTER 424, OREGON LAWS 2007, AND SECTIONS 2 TO 9 AND 17, CHAPTER 855, OREGON LAWS 2009, AND SECTIONS 2 to 7, CHAPTER 8, OREGON LAWS 2010.

IN WITNESS WHEREOF, the grantor has executed this instrument on April 20, 2016.

  
Grant E. Sturm, Trustee

STATE OF OREGON, County of Clackamas) ss.

This instrument was acknowledged before me on April 20, 2016, by Grant E. Sturm in his capacity as Trustee of the Grant Sturm Trust.



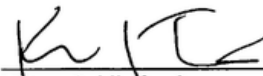
  
Notary Public for Oregon  
My Commission Expires: 08/14/2018



Exhibit A

Real property situated in Clackamas County, Oregon, described as follows:

PARCEL I:

A part of the Northwest one-quarter of the Northeast one-quarter of Section 23, Township 2 South, Range 4 East, of the Willamette Meridian, in the County of Clackamas as State of Oregon, described as follows:

Beginning at a point on the North line of the Northwest one-quarter of the Northeast one-quarter of Section 23, Township 2 South, Range 4 East, of the Willamette Meridian, that is 330.00 feet West of the Northeast corner of said Northwest one-quarter; from said point of beginning thence South parallel with the East line thereof, 660.00 feet to a point; thence West parallel with the North line of the said Northwest one-quarter, a distance of 330.00 feet to a point; thence North parallel with the East line thereof, 660.00 feet to a point on the North line of said Northwest one-quarter; thence East along said North line, a distance of 330.00 feet to the point of beginning.

PARCEL II:

A portion of the Northwest quarter of the Northeast quarter of Section 23, Township 2 South, Range 4 East, of the Willamette Meridian, in the County of Clackamas and State of Oregon, described as follows:

Beginning at the Northeast corner of the Northwest quarter of the Northeast quarter of said Section 23; thence West along the North line of the Northwest quarter of the Northeast quarter of said Section 23, a distance of 330.00 feet to a point; thence South parallel with the East line of the Northwest quarter of the Northeast quarter of said Section 23, a distance of 660.00 feet to a point in the center of a public road; thence East parallel with the North line of said Section 23, a distance of 330.00 feet to the East line of the Northwest quarter of the Northeast quarter of said Section 23; thence North, along said East line, a distance of 660.00 feet to the point of beginning.

PARCEL III:

A tract of land in the Northwest quarter of the Northeast quarter of Section 23, Township 2 South, Range 4 East, of the Willamette Meridian, in the County of Clackamas and State of Oregon, described as follows:

Beginning at a point on the South line of the Northwest quarter of the Northeast quarter of said Section which is 660.00 feet West of the Southeast corner thereof; thence continuing West along said South line, a distance of 165.00 feet; thence North parallel with the East line of said legal subdivision, a distance of 1,312.00 feet, more or less, to the North line of said legal subdivision; thence East along said North line, a distance of 165.00 feet to a point 660.00 feet West of the

Northeast corner of said legal subdivision; thence South parallel with the East line thereof, 1,320.00 feet, more or less, to the point of beginning.

PARCEL IV:

A part of the Northwest one-quarter of the Northeast one-quarter of Section 23, Township 2 South, Range 4 East, of the Willamette Meridian, in the County of Clackamas and State of Oregon, described as follows:

Beginning at the Southeast corner of the Northwest one-quarter of the Northeast one-quarter of Section 23, Township 2 South, Range 4 East, of the Willamette Meridian; thence West along the South line of the said Northwest one-quarter, a distance of 660.00 feet to a point; thence North parallel with the East line thereof, a distance of 660.00 feet to a point; thence East parallel with the South line of said Northwest one-quarter, a distance of 660.00 feet to a point on the East line thereof; thence South along said East line, a distance of 660.00 feet to the point of beginning.

EXHIBIT N

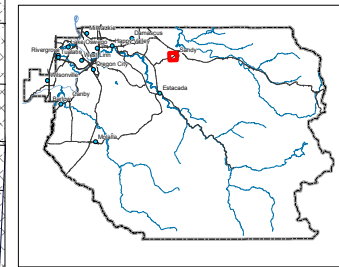
2 4 E 23

SECTION 23 T.2S. R.4E. W.M.  
CLACKAMAS COUNTY  
1" = 400'

Cancelled Taxlots

- 2801
- 1900
- 2819
- 2300A.1
- 1201
- 2701
- 503E1
- 503
- 1902
- 1802
- 517

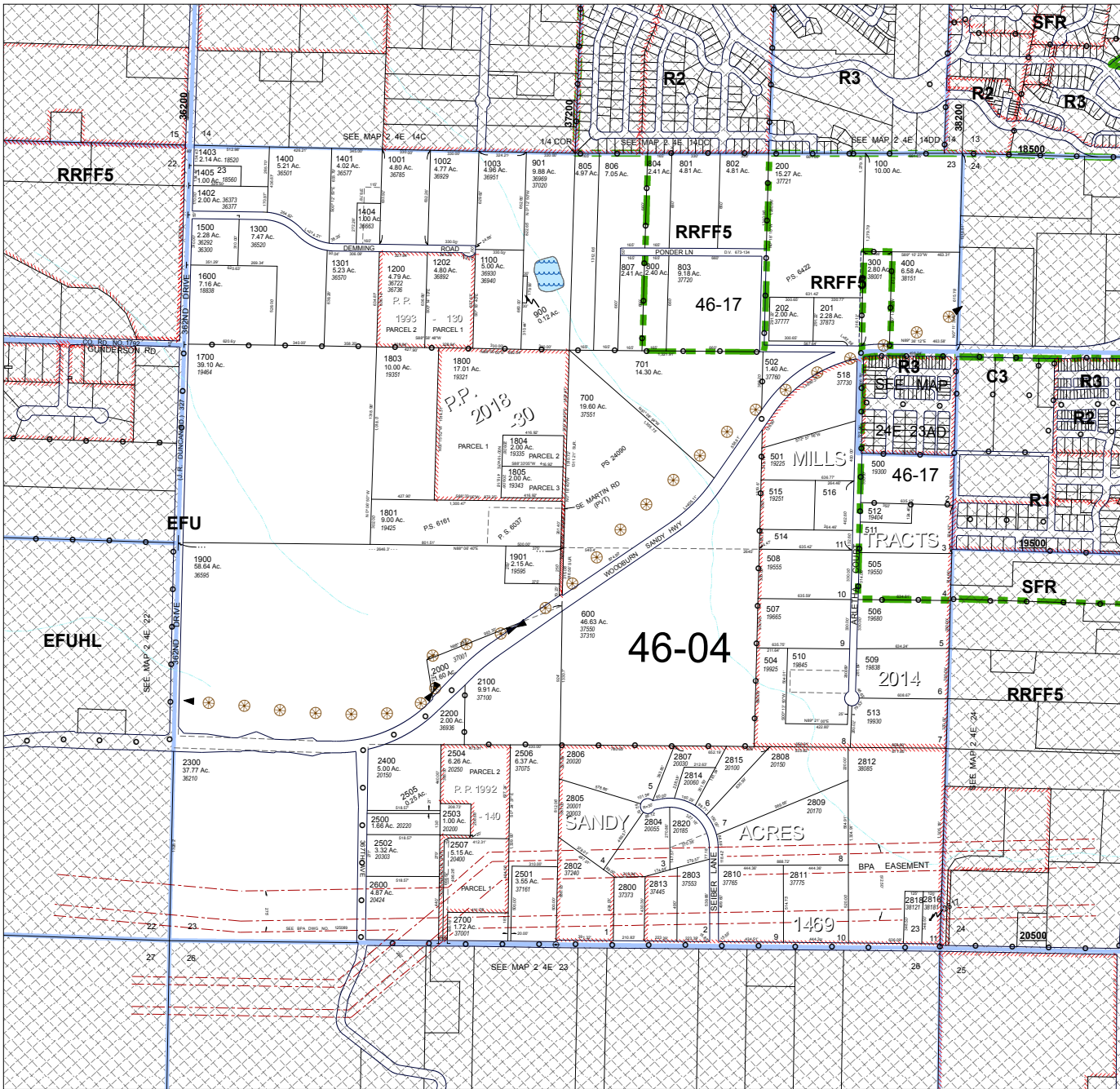
- Parcel Boundary
- Private Road ROW
- Historical Boundary
- Railroad Centerline
- TaxCodeLines
- Map Index
- WaterLines
- Land Use Zoning
- Plats
- Water
- Corner
- Section Corner
- 1/16th Line
- Govt Lot Line
- DLC Line
- Meander Line
- PLSS Section Line
- Historic Corridor 40'
- Historic Corridor 20'



THIS MAP IS FOR ASSESSMENT PURPOSES ONLY

5/17/2018

2 4 E 23



**EXHIBIT O**

**From:** [Gonzales, Renee](#)  
**To:** [Marie Holladay](#); [Surveyor](#)  
**Subject:** RE: Plat name reservation  
**Date:** Wednesday, June 5, 2019 10:18:23 AM

**EXTERNAL EMAIL:** This email originated from outside of AKS Engineering & Forestry. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hi Marie,

Your request to reserve the plat name of “Bailey Meadows” is approved.

Thank you.

*Renee Gonzales*  
Administrative Specialist  
Clackamas County Surveyor’s Office  
Phone: (503) 742-4475  
Direct: (503) 742-4478

---

**From:** Marie Holladay [mailto:holladaym@aks-eng.com]  
**Sent:** Tuesday, June 4, 2019 8:11 AM  
**To:** Surveyor <Surveyor@co.clackamas.or.us>  
**Subject:** Plat name reservation

Good Morning,

We’ve had a slight change in plat name which was reserved on 5/30. The subdivision should be called Bailey Meadows with an “s.”

Thank you,

**Marie Holladay**



**AKS ENGINEERING & FORESTRY, LLC**

12965 SW Herman Road, Suite 100 | Tualatin, OR 97062  
P: 503.563.6151 Ext. 270 | [www.aks-eng.com](http://www.aks-eng.com) | [holladaym@aks-eng.com](mailto:holladaym@aks-eng.com)  
Offices in: Bend, OR | Keizer, OR | Tualatin, OR | Vancouver, WA

*NOTICE: This communication may contain privileged or other confidential information. If you have received it in error, please advise the sender by reply e-mail and immediately delete the message and any attachments without copying or disclosing the contents. AKS Engineering and Forestry shall not be liable for any changes made to the electronic data transferred. Distribution of electronic data to others is prohibited without the express written consent of AKS Engineering and Forestry.*

---

**NOTE:** This message was trained as non-spam. If this is wrong, please correct the training as soon as possible.

**REQUEST TO RESERVE SUBDIVISION / CONDOMINIUM NAME**

Clackamas County Surveyor's Office  
150 Beaver Creek Road, #325  
Oregon City, OR 97045  
(503) 742-4475  
E-mail address: [surveyor@clackamas.us](mailto:surveyor@clackamas.us)

**PLAT NAME REQUESTED:**

Bailey Meadows

	<b>TWP/RANGE:</b>	<b>SECTION#:</b>	<b>TAX LOT#(s):</b>
<b>Location of Plat:</b>	T: 2S, R:4E	23	800, 801, 802, 803, & 804

I understand that if the above name plat is not pending or recorded within two years, the name will be removed from the reserved list.

**RESERVED BY:** AKS Engineering & Forestry, LLC

<b>DATE:</b> 05/28/2019	<b>TELEPHONE:</b> 503)563 - 6151	<b>FAX:</b> 503)563 - 6152
<b>EMAIL ADDRESS:</b> holladaym@aks-eng.com		
<b>PLAT SURVEYOR: #</b> Rob Rettig		
<b>NAME OF DEVELOPER:</b> Allied Homes & Development		
<b>ADDRESS:</b> 12965 SW Herman Rd., Suite 100 Tualatin, OR 97062		
<b>TELEPHONE:</b> 503)563 - 6151		<b>FAX:</b> 503)563 - 6152
<b>EMAIL ADDRESS:</b> holladaym@aks-eng.com		

<b>APPROVED BY:</b>	<b>APPROVAL DATE:</b>
---------------------	-----------------------





August 20, 2019

Michael C. Robinson  
Admitted in Oregon  
T: 503-796-3756  
C: 503-407-2578  
mrobinson@schwabe.com

**VIA OVERNIGHT MAIL FOR AUGUST 21, 2019 DELIVERY**

Ms. Emily Meharg, Associate Planner  
City of Sandy Planning Department  
Sandy City Hall  
39250 Pioneer Boulevard  
Sandy, OR 97055

RE: City of Sandy File No. 19-023, SUB/VAR; Application by Allied Homes & Development for Preliminary Plat Approval for Bailey Meadows Subdivision

Dear Ms. Meharg:

This office represents the Applicant, Allied Homes & Development.

This letter responds to the City’s August 1, 2019 determination that the Application submitted on July 5, 2019 is incomplete (**Exhibit 1**).

**1. Introduction.**

The Applicant submitted the Application on July 5, 2019. ORS 227.178(3)(a) requires that an applicant make an application complete within 180 days of the date the application was first submitted.

This letter and its enclosures provide some or all of the missing information identified by the City in the August 1, 2019 incompleteness determination. ORS 227.178(2)(b). Therefore, the Application has been made complete within the required 180-day period.

The Application is deemed complete for on the date the City receives some or all of the missing information. ORS 227.178(2). Because the City has received some or all of the missing information and written notice from the Applicant that no other information will be provided on August 21, 2019, the 120-day period starts on August 21, 2019 and ends on December 29, 2019, unless waived or extended by the Applicant 2019. ORS 277.178(1).

**2. Response to determination of incompleteness items by provision of some or all of the missing information.**

A. “Define how [the Applicant] satisfy[ies] Appendix D, Section D.107 of the Oregon Fire Code. Include a letter from the fire department.”



Ms. Emily Meharg, Associate Planner  
August 20, 2019  
Page 2

**RESPONSE:** Appendix D, Section D107 of the Oregon Fire Code addresses one- and two-family residential developments. Where the number of dwelling units exceeds thirty, two separate and approved fire apparatus access roads shall be provided. Application Sheet P1-26 shows two preliminary emergency vehicle access routes, utilizing both Melissa Avenue and SE Ponder Lane. As detailed on Application Sheet P1-25 of the Preliminary Plans, four temporary fire access road gates are planned to be located on the west side of SE Ponder Lane. Correspondence from the Fire Marshall stating the requirements are satisfied is included. The fire department's August 14, 2019 email to the Applicant is attached (**Exhibit 2**). Mr. Patty's email states that he talked to the City and that the City and the fire department will not approve Ponder Lane for access to the proposed subdivision.

The Applicant has provided all of the missing information.

The Applicant will address this issue in the following ways. First, it will seek to meet with Mr. Patty to understand the basis for his email. His email does not specifically address the use of Ponder Lane for fire access. Second, the City's August 1, 2019 letter did not identify a relevant approval criterion in Sandy Development Code 17.100.60.A-G that requires compliance with the Fire Code. Moreover, SDC 17.100.60.E.4, requiring that adequate public facilities are available or can be provided, does not include fire access roads. SDC 17.10 defines "Public Facility" as including both Major Public Facilities and Minor Public Facilities but neither includes fire access roads. Third, Ponder Lane is an existing public right-of-way. The Applicant believes that Ponder Lane is adequate for temporary emergency access only, or can be made so by the Applicant through a clear and objective condition of approval.

The Applicant has provided all of the missing information.

**B. "Explain phasing plan rationale."**

**RESPONSE:** The phasing plan for Bailey Meadows Subdivision is intended to allow for appropriate market absorption into the City of Sandy. The configuration of Phase 1, the largest of the three phases, is a result of various points of infrastructure connection, detailed as follows. Phase 1 begins at the north property boundary to allow the extension of underground utilities from Melissa Avenue into the subdivision. The phase moves west to the low point of the site to construct the stormwater facility and is then directed to the southeast property boundary to implement the second required emergency vehicle access on SE Ponder Lane. The design of Phases 2 and 3 are a result of planned utility installation sequencing. The phasing plan is designed to be carried out in a manner that provides necessary public improvements for each phase as it moves forward.

The Applicant has provided all of the missing information.

**C. "Confirm the maximum lot width for Lot 92."**

**RESPONSE:** The minimum average lot width for single detached dwellings in the Single-Family Residential district is 60 feet per SDC 17.34.30(B). According to SDC 17.10.30, Lot

Ms. Emily Meharg, Associate Planner  
August 20, 2019  
Page 3

Width is defined as the horizontal distance between the midpoints of the side lot lines. Please see Exhibit 3, included, which illustrates and confirms the criteria are met.

The Applicant has provided all of the missing information.

**D. “Have you fully exhausted your options for extending Gunderson Road? Can you provide a formal decision from the Clackamas County Planning Commission or Clackamas County Board of Directors? Can Gunderson be extended within the [Urban Growth Boundary] via the property to the east as depicted in the [Transportation System Plan]? Regardless, a minimum half-street of Gunderson will need to be detailed on the Site Plan.”**

**RESPONSE:** a. The Applicant has fully exhausted its options for extending Gunderson Road outside of the UGB. Exhibit 4 to this letter are two emails from Clackamas County Principal Planner Martha Fritzie that followed the Applicant’s meeting with Ms. Fritzie.

Ms. Fritzie explained in the email that the Clackamas County Planning Department staff would not support an exception to Statewide Planning Goals (the “Goals”) 3, “Agriculture,” 12, “Transportation,” and 14, “Urbanization.” Exceptions to all three Goals are required to extend an urban road outside of the Sandy Urban Growth Boundary (the “UGB”) on land zoned Exclusive Farm Use (“EFU”). In response to the City of Sandy Planning Director’s request that we further discuss this matter, the Applicant discussed the exception application to allow Gunderson Road to be extended outside of the UGB. Ms. Fritzie consulted with Ms. Jennifer Hughes, Clackamas County Planning Director. Ms. Hughes confirmed Ms. Fritzie’s position.

The Applicant has exhausted its options for extending Gunderson Road outside of the UGB. Aside from the fact that there is no legal requirement for the Applicant to seek an exception to one or more of the Goals in order to extend Gunderson Road to Oregon Highway 211 outside of the UGB, there is similarly no requirement that the Applicant make a fruitless application to Clackamas County. An exception application is an amendment to the County’s acknowledged Comprehensive Plan (the “Plan”). An exception application demonstrates compliance with the exception criteria found in Goal 2, “Planning,” and applicable polices from the Plan and the Clackamas County Zoning and Ordinance, the County’s acknowledged land use regulations. An exception application is initially heard by the Clackamas County Planning Commission, which makes a recommendation to the Clackamas County Board of Commissioners. Notwithstanding the inherent complexity and difficulty of submitting a successful exception application, such an application is made even more difficult where County staff has said, as in this case, that it will not support the exception application.

Additionally, the Applicant would expect the Oregon Department of Land Conservation and Development (“DLCD”) and 1000 Friends of Oregon to oppose the exception application. Both the DLCD and 1000 Friends of Oregon take an active role in applications that seek to allow

Ms. Emily Meharg, Associate Planner  
August 20, 2019  
Page 4

urban uses outside of urban growth boundaries, especially those located on Exclusive Farm Use lands.

For these reasons, the Applicant believes that it has, in good faith, exhausted its efforts to seek an exception to allow Gunderson Road to be extended outside of the UGB to connect with Oregon Highway 211.

b. The Applicant cannot provide a recommendation from the Clackamas County Planning Commission nor a final land use decision from the Clackamas County Board of County Commissioners because it has not submitted an exception application. As explained in “A.” above, the Applicant believes that submitting such an application would be a fruitless endeavor which would take at least six months to prosecute and cost at least \$50,000.00 to prepare. For these reasons, the Applicant did not submit a formal application to the County.

c. The Applicant cannot extend Gunderson Road within the UGB over the properties to the east as depicted in the Transportation System Plan (the “TSP”) for several reasons. First, the Applicant’s planning and engineering consultant, AKS Engineering & Forestry, has identified an area that would be required for this extension of Gunderson Road which is not within the UGB; in other words, to accomplish this extension would still require an exception (**Exhibit 5**). Second, the Applicant has contacted the property owners to the east and none of them are interested in selling a fee interest in their property or granting an easement for Gunderson Road. The Applicant does not have the power of eminent domain and could not proceed with extending Gunderson Road without the consent of those property owners. Finally, even if the Applicant could obtain an exception for that portion of Gunderson Road outside the UGB and if the property owners consented to either sell a fee interest in their property or grant an exception for the Gunderson Road exception, its connection with Oregon Highway 211 would not be within the Oregon Department of Transportation’s (“ODOT”) sight distance requirements.

d. The Applicant will not “detail” on the plan a half-street extension of Gunderson Road on its property for several reasons. First, as explained in the Application, the Applicant does not have the legal burden of proof to provide a right-of-way to the City for Gunderson Road since it is unrelated to the impacts of the subdivision. Even in the event the Applicant detailed (or dedicated) its property for a half-street extension of Gunderson Road, that portion of Gunderson Road will not go anywhere. This means that vehicles from the proposed subdivision would not be able to use Gunderson Road. Second, as explained in the Application, the City has the burden of proof under relevant state and federal law to demonstrate that the impacts of the Application require dedication of real property by the Applicant. Additionally, this Application is a “Needed Housing” application under ORS 197.303(1), 197.307(4) and 197.522. A proposed condition of approval requiring the detailing or dedication of a half-street for Gunderson Road may not be imposed because it is not based on clear and objective standards since the City has the burden of proof to demonstrate that the Application’s impacts require the dedication. Finally, because the Application is also a Limited Land Use Decision, no applicable policy of the acknowledged TSP or Comprehensive Plan expressly requires a half-street detailing or dedication for Gunderson Road.

Ms. Emily Meharg, Associate Planner  
August 20, 2019  
Page 5

e. Additionally, Mr. Todd Mobley of Lancaster Engineering, the Applicant's traffic engineer, states:

**“With access to the subdivision via Melissa Avenue, all of the study area intersections will operate with acceptable delay and level of service during both peak hours, even with the subdivision at full build-out. This includes the intersection of Melissa Avenue and Dubarko Road. Left turn lanes are not needed on Melissa Avenue or on Dubarko Road at the intersection. These findings include the worst-case assumption that Bailey Meadows will be fully built out and occupied before other street connections are available. In fact, access solely via Melissa Avenue is a temporary condition and additional development in the area will provide additional access and connectivity.**

**The project team spent a considerable amount of time investigating a potential connection of Gunderson Road to Highway 211. This investigation began by exploring the Gunderson Road alignment that is shown in the TSP. It is noted that future street alignments in the TSP are planning-level representations of a general alignment and are not precisely shown. While the intersection location shown in the TSP is within the existing UGB, an engineering analysis found problems with an intersection in that location due to the potential skew angle of the intersection, poor sight distance, and challenging turning movements to and from the highway due to severe superelevation (banking of the roadway). The intersection location would need to be shifted to the southwest to avoid these issues. Alternatively, a future street connection serving the area north of Highway 211 could be established to the east, in the location of Arletha Court or Village Boulevard.”**

The Applicant has provided all of the missing information.

**E. “Provide a narrative to Section 17.84.50(B) regarding Gunderson Road, which is a minor arterial and is detailed in the TSP along the southern property boundary.”**

**RESPONSE:** The Applicant's response incorporates the response to Item 4, above. The City has not specified how the minor arterial is “detailed in the TSP.” The Application addressed Sandy Municipal Code (“SMC”) 17.84.50(B) (Application Page 16).



Ms. Emily Meharg, Associate Planner  
August 20, 2019  
Page 6

SMC 17.84.50(B) provides that “location of new arterial streets shall conform to the Transportation System Plan in accordance with the following: . . .” However, the City has not identified a provision in the TSP that complies with ORS 197.195(1). ORS 197.195(1) provides:

**“Within two years of September 29, 1991, cities and counties shall incorporate all comprehensive plan standards applicable to limited land use decisions into their land use regulations. . . If a city or county does not incorporate its comprehensive plan provisions into its land use regulations, the comprehensive plan provisions may not be used as a basis for a decision by the city or county or an appeal from that decision.”**

The generalized reference to the “TSP” is insufficient to comply with the Oregon Court of Appeals holding in *Paterson v. City of Bend*, 201 Or App 344, 351, 352, 118 P3d 842 (2005), holding that the City’s failure to incorporate “any specific standards set out in the general plan” precluded the City from applying its Comprehensive Plan to the limited land use application. *See also Holland v. City of Cannon Beach*, 142 Or App 5, 920 P2d 562, *rev. den.* 324 Or 229, 925 P2d 907 (1996) (when considering an application for a subdivision, City was precluded from applying “Comprehensive Plan provisions that had not been incorporated into the City’s land use regulations pursuant to ORS 197.195(1)”).

The Applicant has provided all of the missing information.

**F. “Address connections to existing and planned streets outside the development in your narrative response to Section 17.100.100(F).”**

**RESPONSE:** The Preliminary Plans show local street and pedestrian walkway (sidewalk) connections internal to the subdivision and stubbed street sections on the south, west, and east boundaries of the site to undeveloped properties which have no future street plan. A planned and existing street stub north of the property, Melissa Avenue, is extended into the subdivision. West and south of the site, local streets terminate at stubs which abut the City Limits, the UGB, and an undeveloped property. To the east, the street stubs abut SE Ponder Lane, an existing driveway, and the City Limits. The local streets within Bailey Meadows do not cross any collector or arterial roads and there are no exemptions necessary for the intended street network. **Exhibit 5** illustrates connections past the 400-foot radius to show the Conceptual Future Streets Plan as has been requested.

The Applicant has provided all of the missing information.

**G. “Update the plan set to extend Street A to the west property boundary and apply for a Type III Variance to block lengths to the north side of Street A between Melissa Ave and the west property boundary. Staff will support this variance request due to the existing block length on Rachel Drive.”**

Ms. Emily Meharg, Associate Planner  
August 20, 2019  
Page 7

**RESPONSE:** The Applicant appreciates the staff's offer to support the block length variance. As explained above, the variance is unnecessary to meet the applicable approval criteria (which were not specifically identified by the City in Item 7) and the Sandy Planning Commission or the Sandy City Council might find the variance approval criteria not to be satisfied, thus meaning that the Application can be denied.

Street A currently meets City block length standards to the south without necessity for a variance. Although City staff stated support of the variance request, the Planning Commission is the final decision-making body. The extension of Street A would be the fifth stubbed street section to the west property boundary. The project includes four additional street stubs to the property to the west, one on average every 330 feet.

The Applicant has provided some but not all of the missing information.

**H. "Update the future street plan to detail how the proposed future street network ties into the Bornstedt Village Illustrated Street Plan in the Bornstedt Specific Area Plan Report labeled Gunderson Road and show connection to Cascadia Village Drive as shown in the TSP. Eliminate the cul-de-sac on the property to the west and extend Street A to the west property boundary."**

**RESPONSE:** SDC 17.100.100 provides that a Future Street Plan shall provide proposed connections to abutting properties, and extension of streets to adjacent parcels within a 400-foot radius of the project area. The Bornstedt Village Illustrative Street Plan is not within 400 feet of the project site; however, the intended Bailey Meadows street network could align with the proposed streets of the Bornstedt Village Illustrative Street Plan as shown in Exhibit 7. Exhibit 7 is updated to show the conceptual Gunderson Road connection to Cascadia Village Drive and the elimination of the cul-de-sac on the property to the west by way of a north-south oriented local street.

The Applicant has provided all of the missing information.

**I. "Provide clarification on the twenty-foot PSDE extending to the west of Street B. Where is the stormwater proposed to go? Does the easement end approximately 400 feet to the west, and, if so, is this sufficient area to accommodate stormwater flow from the site?"**

**RESPONSE:** Application Exhibit Sheet E107 shows this information. The stormwater is planned to be routed to an existing ditch to the west of the project site. The easement extends to the outfall approximately 160 feet west of the subject site. The area is sufficient to accommodate stormwater flow from the site.

The Applicant has provided all of the missing information.

**J. "Submit an explanation of how the proposal meets subdivision criteria 17.100.60(E)(3)-(4)."**

Ms. Emily Meharg, Associate Planner  
August 20, 2019  
Page 8

**RESPONSE:** As shown on the original preliminary plans, the intended local street pattern within the subdivision is interconnected. Access from the existing street stub, Melissa Avenue, provides a continuous street network through and to the boundaries of the subdivision. Internal local streets are stubbed at the property boundaries, which are the UGB and the City limits to the south and west, and the City limits to the east. To the extent possible, the street pattern internal to the subdivision is consistent with the official street plan for the City. Various constraints prevent the implementation of the arterial road to the south of the site and there is no applicable requirement in the City's acknowledged land use regulations that the Applicant make this connection. Additionally, this standard may not be applied under ORS 197.307(4) because the phrase "connected and consistent" is subjective and because the phrase "City standards" is subjective and because the words "objective" and "necessary" are subjective.

The configuration of the phasing plan is designed to provide adequate public facilities to serve the subdivision. Public facilities to be provided include but are not limited to stormwater management, sanitary sewer, municipal water, and franchise utilities.

The Applicant has provided all of the missing information.

**K. "Update the parking plan (sheet P-24) to detail which parking space is for which lot so we can confirm that there's parking spot within 200 feet of each lot."**

**RESPONSE:** The updated Parking Detail Plan, **Exhibit 6**, is numbered to illustrate correspondence with each associated lot. Additionally, the furthest distances from associated on-street parking spaces are to Tax Lots 42, 47, 52, and 57 and are measured as shown to ensure the requirement is satisfied.

The Applicant has provided all of the missing information.

**L. "Provide clarification on which, if any, of the following variances you are requesting and payment of the associated fee, or an updated plan set reflecting that you are not requesting any variances/deviations:**

- **Special Variance Section 17.100.120(A) for single tiered lot configuration for lots 55-59.**
- **Special Variance Section 17.82.20(A) for houses on lots 55-59 to not have primary entrances oriented toward Gunderson Road."**

**RESPONSE:** The Applicant does not intend to request variances or deviations because Gunderson Road is not to be extended.

The Applicant has provided all of the missing information.

**M. "Submit additional fees totaling \$3,477.00 as outlined below. This is Type III review per 17.100.20(E) and also due to the variances and special variances."**

Ms. Emily Meharg, Associate Planner  
August 20, 2019  
Page 9

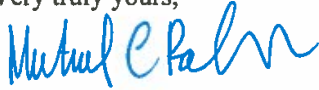
**RESPONSE:** A check in the amount of \$180 for the additional fee is enclosed. The additional fees are for the Type III Subdivision fee and the Tree Removal fee.

The Applicant has provided all of the missing information because it is not requesting additional variance applications, so additional fees are not required.

**3. Conclusion.**

The Applicant respectfully requests that the City select a date for the initial evidentiary hearing before the Sandy Planning Commission. On behalf of the Applicant, we appreciate your time and effort and look forward to working with you further on this Application.

Very truly yours,



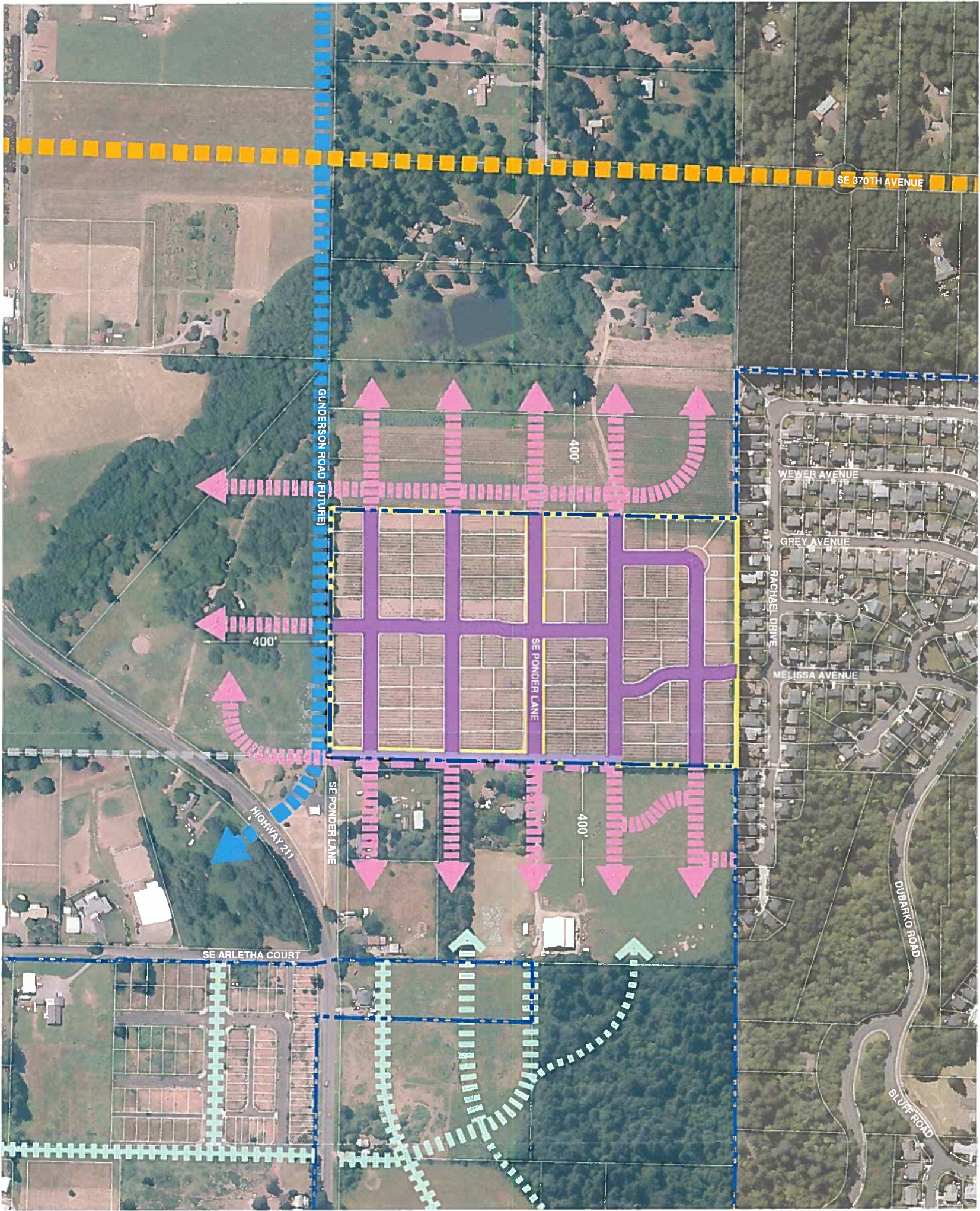
Michael C. Robinson

MCR:jmhi  
Enclosures

cc: Mr. Cody Bjugan (*via email*) (*w/enclosures*)  
Mr. Monty Hurley (*via email*) (*w/enclosures*)  
Mr. Chris Goodell (*via email*) (*w/enclosures*)  
Mr. Todd Mobley (*via email*) (*w/enclosures*)  
Mr. Rand Waltz (*via email*) (*w/enclosures*)

PDX\133569\245146\MCR\25960053.1

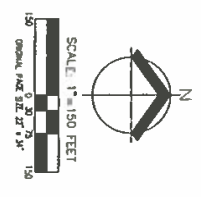




**LEGEND**

CITY LIMITS	Blue dashed line
URBAN GROWTH BOUNDARY	Grey dashed line
PROJECT SITE BOUNDARY	Yellow dashed line
PLANNED LOCAL STREET	Purple solid line
PLANNED LOCAL STREET (1/2 STREET APPROXIMATIONS)	Blue solid line
FUTURE LOCAL STREET (1/2 STREET APPROXIMATIONS)	Yellow solid line
FUTURE LOCAL STREET	Pink dashed line with arrows
FUTURE LOCAL STREET (1/2 STREET APPROXIMATIONS)	Green dashed line with arrows
FUTURE LOCAL STREET	Light green dashed line with arrows

- NOTES**
- THIS PLAN IS INCLUDED TO MEET THE SUBMITTAL REQUIREMENTS APPLICATION.
  - CONCEPTUAL FUTURE STREET LOCATIONS ARE SHOWN FOR ALL OTHER THE PROPOSED LOTS. THE SUBMITTAL ONLY SHOWING ON ANY OTHER PROPERTIES.



BAILEY MEADOWS  
 CONCEPTUAL CONNECTIVITY PLAN  
 DATE: 08/09/2018  
 SHEET: C  
 AKS  
 503.563.6151  
 WWW.AKS-INC.COM



August 1, 2019

Allied Homes & Development  
12042 SE Sunnyside Rd. Ste. 706  
Clackamas, OR 97015

Grant E. & Myrtle J. Sturm  
647 E Historic Columbia River Hwy  
Troutdale, OR 97060

Chris Goodell  
AKS Engineering & Forestry, LLC  
12965 SW Herman Rd., Suite 100  
Tualatin, OR 97062

RE: NOTICE REGARDING COMPLETION OF SUBMISSION  
FILE NUMBER: 19-023 SUB/VAR  
PROJECT NAME: Bailey Meadows

Application accepted as complete on: \_\_\_\_\_

Application incomplete. The additional information necessary to consider your application is listed below. The application will be deemed complete upon submission of one of the following options:

1. All of the missing information;
2. Some of the missing information and written notice that no other information will be provided; or
3. Written notice that none of the missing information will be provided.

If one of the above listed options is not received by the city by the 180<sup>th</sup> day following submittal of your application, the application will be void per state law (ORS 227.178 (4)).

Requested additional information filed on: \_\_\_\_\_

Following submission of your land use application (received on 07/05/19), staff finds the application incomplete. Please submit the following as soon as possible so that City staff can move your application review forward for staff review and analysis in preparation of a City of Sandy Planning Commission public hearing:

- Define how you satisfy Appendix D, Section D107 of the Oregon fire code; include a letter from the fire department.
- Explain phasing plan rationale.
- Confirm the minimum average lot width for Lot 92.
- Have you fully exhausted your options for extending Gunderson Road? Can you provide a formal decision from the Clackamas County Planning Commission or Clackamas County Board of Directors? Can Gunderson be extended within the UGB via the property to the east as depicted in the TSP? Regardless, a minimum half-street of Gunderson Road will need to be depicted on the site plan.

W City Hall\Planning Correspondence\2019 19-023 SUB VAR Bailey Meadows Incompleteness doc

RECEIVED  
NOV 26 2019  
CITY OF SANDY

Exhibit 1  
Page 1 of 3



- Provide a narrative to Section 17.84.50(B) regarding Gunderson Road, which is a minor arterial and is detailed in the TSP along the southern property boundary.
- Address connections to existing and planned streets outside the development in your narrative response to Section 17.100.100(F).
- Update the plan set to extend Street A to the west property boundary and apply for a Type III Variance to block length for the north side of Street A between Melissa Ave and the west property boundary. Staff will support this variance request due to the existing block length on Rachael Drive.
- Update the future street plan to detail how the proposed future street network ties into the Bornstedt Village Illustrative Street Plan in the Bornstedt Village Specific Area Plan Report. Label Gunderson Road and show connection to Cascadia Village Drive as shown in the TSP. Eliminate the cul-de-sac on the property to the west and extend Street A to the west property boundary.
- Provide clarification on the 20 foot PSDE extending to the west of Street B. Where is the stormwater proposed to go? Does the easement end approximately 400 feet to the west, and, if so, is this sufficient area to accommodate stormwater flow from the site?
- Submit an explanation of how the proposal meets subdivision criteria 17.100.60(E.3-4).
- Update the parking plan (sheet P1-24) to detail which parking space is for which lot so we can confirm that there's a parking spot within 200 feet of each lot.
- Provide clarification on which, if any, of the following variances you are requesting and payment of the associated fee, or an updated plan set reflecting that you are not requesting any variances/deviations:
  - Special Variance to Section 17.100.120(A) for single tiered lot configuration for Lots 55-59.
  - Special Variance to Section 17.82.20(A) for houses on Lots 55-59 to not have primary entrances oriented towards Gunderson Road.
- Submit additional fees totaling \$3,477 as outlined below. This is a Type III review per 17.100.20(E.3), and also due to the variance and special variances.

Fee	Amount paid	Balance
Traffic review fee: \$1,500	\$1,500	\$0
Type III Subdivision: \$3,297 + \$86/lot = \$11,897	\$11,810	\$87
Unidentified	\$10	-\$10
Special Variance for single tiered lot configuration: \$1,099	\$0	\$1,099
Special Variance for houses to not face Gunderson Road: \$1,099	\$0	\$1,099
Type III Variance for block length of Street A between Melissa Ave and west property boundary: \$1,099	\$0	\$1,099
Tree removal: \$103	\$0	\$103
<b>Total</b>	<b>\$13,320</b>	<b>\$3,477</b>

**Citizen involvement is Goal #1 in the Oregon Statewide Planning Goals. Please keep in mind that this project with 100 lots is proposing its sole street connection through an existing neighborhood on an existing local street. Regardless of the letter dated July 2, 2019 from Mr. Robinson, this**

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**project will be heavily scrutinized by the residents that live in the Nicholas Glen subdivision and therefore we respectfully request more robust analysis on why Gunderson Road cannot be extended and how the applicant finds they meet the Local Street Plan in the TSP.**

Once the application is ready to be deemed complete, we will request additional hard copies and a digital copy of all items.

Please call me at (503) 783-2585 or email [emeharg@ci.sandy.or.us](mailto:emeharg@ci.sandy.or.us) if you have any questions.

Sincerely,

  
Emily Meharg  
Associate Planner

**From:** Don Patty <[d.patty3710@gmail.com](mailto:d.patty3710@gmail.com)>  
**Sent:** Wednesday, August 14, 2019 8:53 AM  
**To:** Rand Waltz <[rand@aks-eng.com](mailto:rand@aks-eng.com)>  
**Subject:** Re: FW: Bailey Meadows - Fire Department Letter

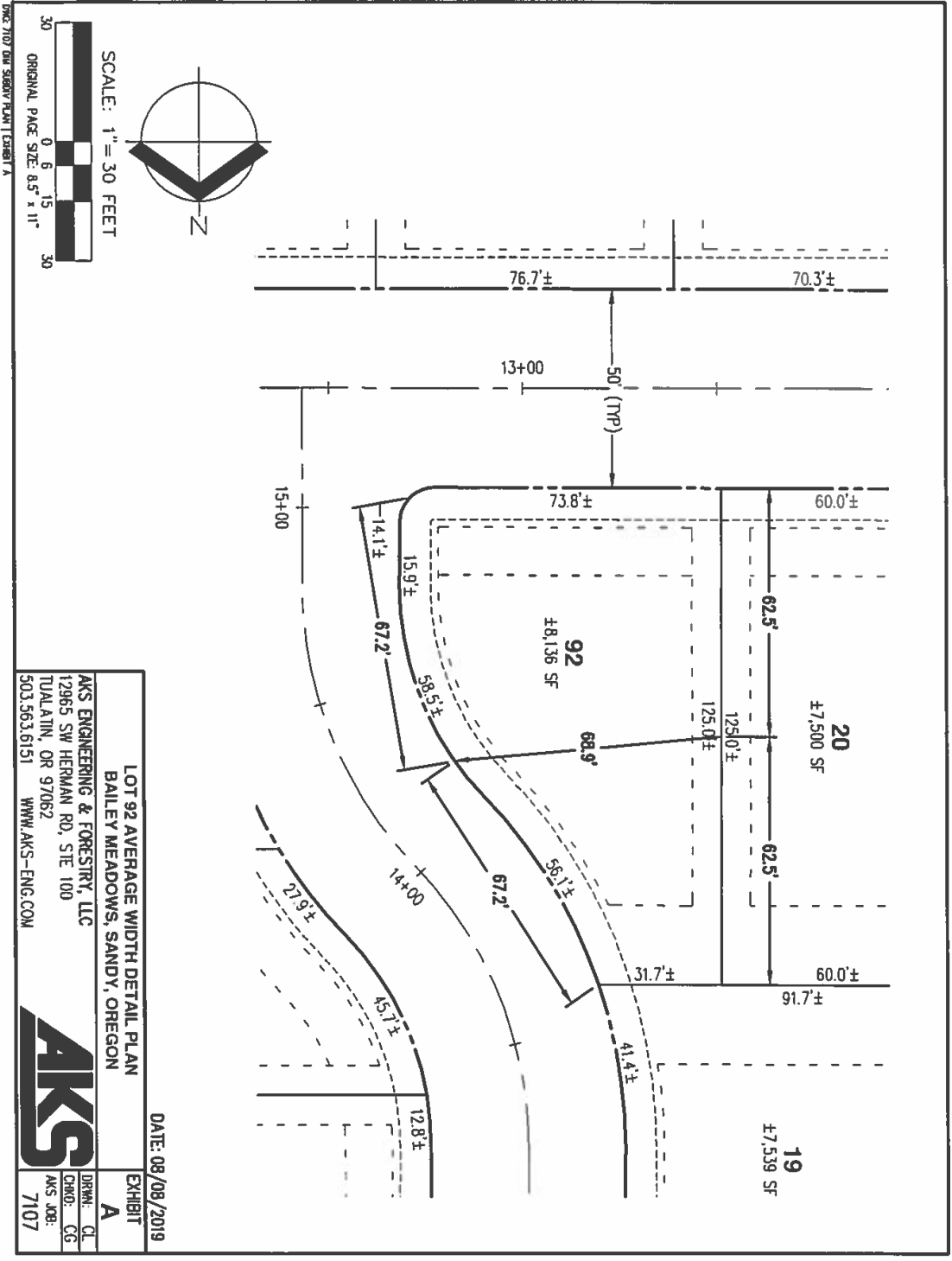
**EXTERNAL EMAIL:** This email originated from outside of AKS Engineering & Forestry. Do not click links or open attachments unless you recognize the sender and know the content is safe.

HI RANDY TALKED TO THE CITY ABOUT PONDER LANE AND THEY AND SANDY FIRE WILL NOT APPROVE PONDER LANE FOR ACCESS TO YOUR SUBDIVISION .THANK YOU DON PATTY FIRE MARSHAL SANDY FIRE .

On Tue, Aug 13, 2019 at 3:23 PM Rand Waltz <[rand@aks-eng.com](mailto:rand@aks-eng.com)> wrote:

1

Exhibit 2



SCALE: 1" = 30 FEET  
 ORIGINAL PAGE SIZE: 8.5" x 11"



DATE: 08/08/2019

LOT 92 AVERAGE WIDTH DETAIL PLAN		EXHIBIT
BAILEY MEADOWS, SANDY, OREGON		A
AKS ENGINEERING & FORESTRY, LLC	DRAWN: CL	
12965 SW HERMAN RD, STE 100	CHECKED: CG	
TUALATIN, OR 97062	AKS JOB:	
503.563.6151	WWW.AKS-ENG.COM	7107

Exhibit 3  
 Page 1 of 1

**Robinson, Michael C.**

---

**From:** Fritzie, Martha <MFritzie@clackamas.us>  
**Sent:** Thursday, May 2, 2019 4:13 PM  
**To:** Chris Goodell  
**Cc:** Robinson, Michael C.; Cody Bjugan; Todd Mobley (todd@lancasterengineering.com); Kelly O'Neill; Hughes, Jennifer  
**Subject:** RE: Sandy Development

Chris – I did speak to our Planning Director, Jennifer Hughes, and she concurs.

Martha

\*\*\*\*\*

Martha Fritzie, Senior Planner  
Clackamas County DTD | Planning & Zoning Division  
150 Beaver Creek Road | Oregon City, OR 97045  
(503) 742-4529  
Office hours 8:00am to 6:00pm | Monday - Thursday

The Clackamas County Department of Transportation and Development is dedicated to providing excellent customer service. Please help us to serve you better by giving us your feedback. We appreciate your comments and will use them to evaluate and improve the quality of our public service.

**From:** Chris Goodell [mailto:chrsg@aks-eng.com]  
**Sent:** Monday, April 22, 2019 7:56 AM  
**To:** Fritzie, Martha <MFritzie@clackamas.us>  
**Cc:** Robinson, Michael C. <MRobinson@SCHWABE.com>; Cody Bjugan <cody@investpdx.com>; Todd Mobley (todd@lancasterengineering.com) <todd@lancasterengineering.com>; Kelly O'Neill <koneill@ci.sandy.or.us>  
**Subject:** RE: Sandy Development

Martha:

We met with City of Sandy staff on Friday and they asked us if we could confirm that the sentiment below is shared by the Planning Director also. They were concerned that it might not be. Can you please confirm that this is the case?

Thanks.

**Chris Goodell, AICP, LEED<sup>AP</sup> - Associate**  
**AKS ENGINEERING & FORESTRY, LLC**  
P: 503.563.6151 | F: 503.563.6152 | [www.aks-eng.com](http://www.aks-eng.com) | [chrsg@aks-eng.com](mailto:chrsg@aks-eng.com)

**From:** Fritzie, Martha <MFritzie@clackamas.us>  
**Sent:** Friday, April 5, 2019 10:50 AM  
**To:** Chris Goodell <chrsg@aks-eng.com>  
**Cc:** Robinson, Michael C. <MRobinson@SCHWABE.com>; Cody Bjugan <cody@investpdx.com>; Todd Mobley (todd@lancasterengineering.com) <todd@lancasterengineering.com>  
**Subject:** RE: Sandy Development



Chris - My general reaction is that Goal Exceptions in general are a very difficult processes and this one, in particular, would be a very heavy lift. In all honesty, I think the likelihood of approval is fairly low.

To start, there would need to be a very strong argument built for the need for an urban road outside a UGB being built for the sole purpose of serving the urban subdivision. I understand that this road segment is identified on the city's TSP as a long-term need, but there would need to be a demonstration that there is an immediate need for the road, and for the road in this exact location (the TSP identifies conceptual alignments for future roadways).

There would also need to be an alternatives analysis completed that demonstrates that there is no reasonable alternative location for this road (or way to accommodate the need) inside the UGB; keeping in mind that the "reasonable" standard is pretty high - it is not simply a preference, but the analysis would need to demonstrate that is essentially not possible - even if it is more expensive, or would require a redesign of the subdivision, etc- to locate the road in the UGB.

The other two main criteria for the Goal Exception include an ESEE (economic, social, environmental and energy consequences) analysis of the proposed alignment with other possible alignments that also would require a Goal Exception and an analysis of potential adverse effects on surrounding rural lands. I do not have a real good sense for how difficult or not these analyses would be, but the fact that the proposed road crosses the historic Barlow Rd Corridor (a Goal 5 resource in the county) would definitely need to be factored into the ESEE analysis.

Per the request at the meeting, I have attached a file to this email containing the findings and some of the analysis for a Goal Exception that was taken for a portion of Arndt Rd; this is the most recent example that I am aware of for a Goal Exception for a new roadway through agricultural-zoned land.

Please let me know if you have any more questions,  
Martha

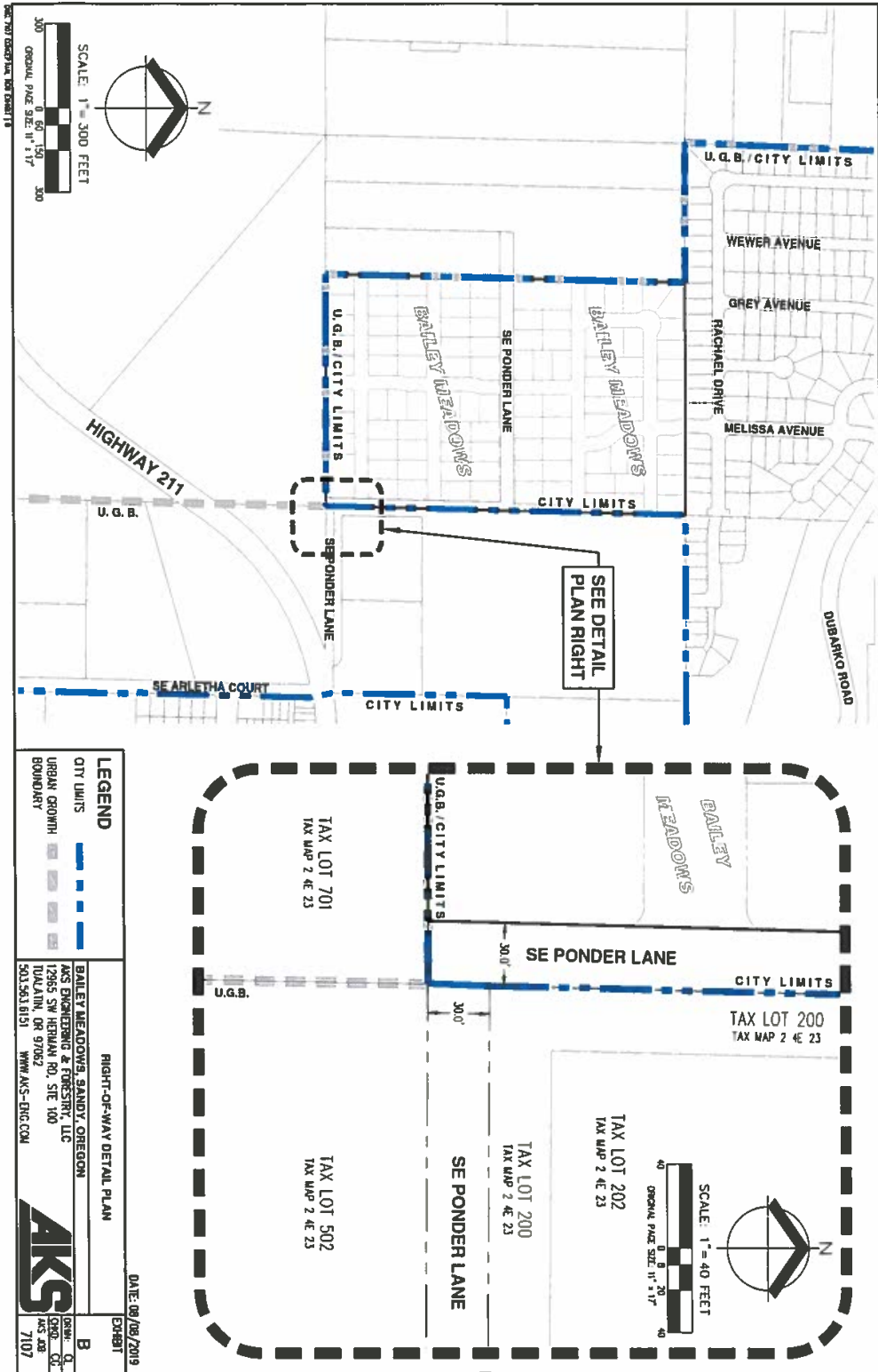


Exhibit 5  
 Page 1 of 1

October 15, 2019

**Michael C. Robinson**  
Admitted in Oregon  
T: 503-796-3756  
C: 503-407-2578  
mrobinson@schwabe.com

**VIA E-MAIL**

Mr. Kelly O'Neill, Jr., Director  
Development Services Department  
Sandy City Hall  
39250 Pioneer Blvd.  
Sandy, OR 97055

RE: City of Sandy File No. 19-023 SUB/VAR/TREE

Dear Mr. O'Neill:

This office represents the Applicant.

The Applicant requests that the City cancel the scheduled October 28, 2019 Sandy Planning Commission initial evidentiary hearing on this Application by providing mailed notice to all property owners entitled to such notice. The Applicant also requests that the City reschedule the Sandy Planning Commission initial evidentiary hearing for December 17, 2019 at 7:00 p.m. The Applicant will extend the 120-day period in ORS 227.178(1) by fifty (50) days, the period of the continuance.

Please let me know if you have any questions.

Very truly yours,



Michael C. Robinson

MCR/jmhi

Cc Ms. Emily Meharg (via email)  
Mr. Cody Bjugan (via email)  
Mr. Monty Hurley (via email)  
Mr. Chris Goodell (via email)  
Mr. David Doughman (via email)

PDX\133569\245146\MCR\26358881.1

**EXHIBIT R**



November 21, 2019

**Michael C. Robinson**

Admitted in Oregon  
T: 503-796-3756  
C: 503-407-2578  
mrobinson@schwabe.com

Ms. Kelly O'Neill, Director  
City of Sandy Planning & Building Department  
Sandy City Hall  
39250 Pioneer Boulevard  
Sandy, OR 97055

RE: City of Sandy File No. 19-23 SUB/VAR; Application by Allied Homes & Development for Approval of the 100-Lot Bailey Meadows Preliminary Plat Subdivision Application; Revised Application Narrative and Exhibits for December 17, 2019 Planning Commission Hearing

Dear Ms. O'Neill:

This office represents the Applicant. Attached to this letter is the Applicant's revised Application narrative and exhibits demonstrating compliance with applicable approval criteria. Please place this letter and its enclosures in the official Planning Department file for this Application and before the City of Sandy Planning Commission at its initial evidentiary hearing on December 17, 2019.

Very truly yours,

A handwritten signature in blue ink that reads "Michael C. Robinson".

Michael C. Robinson

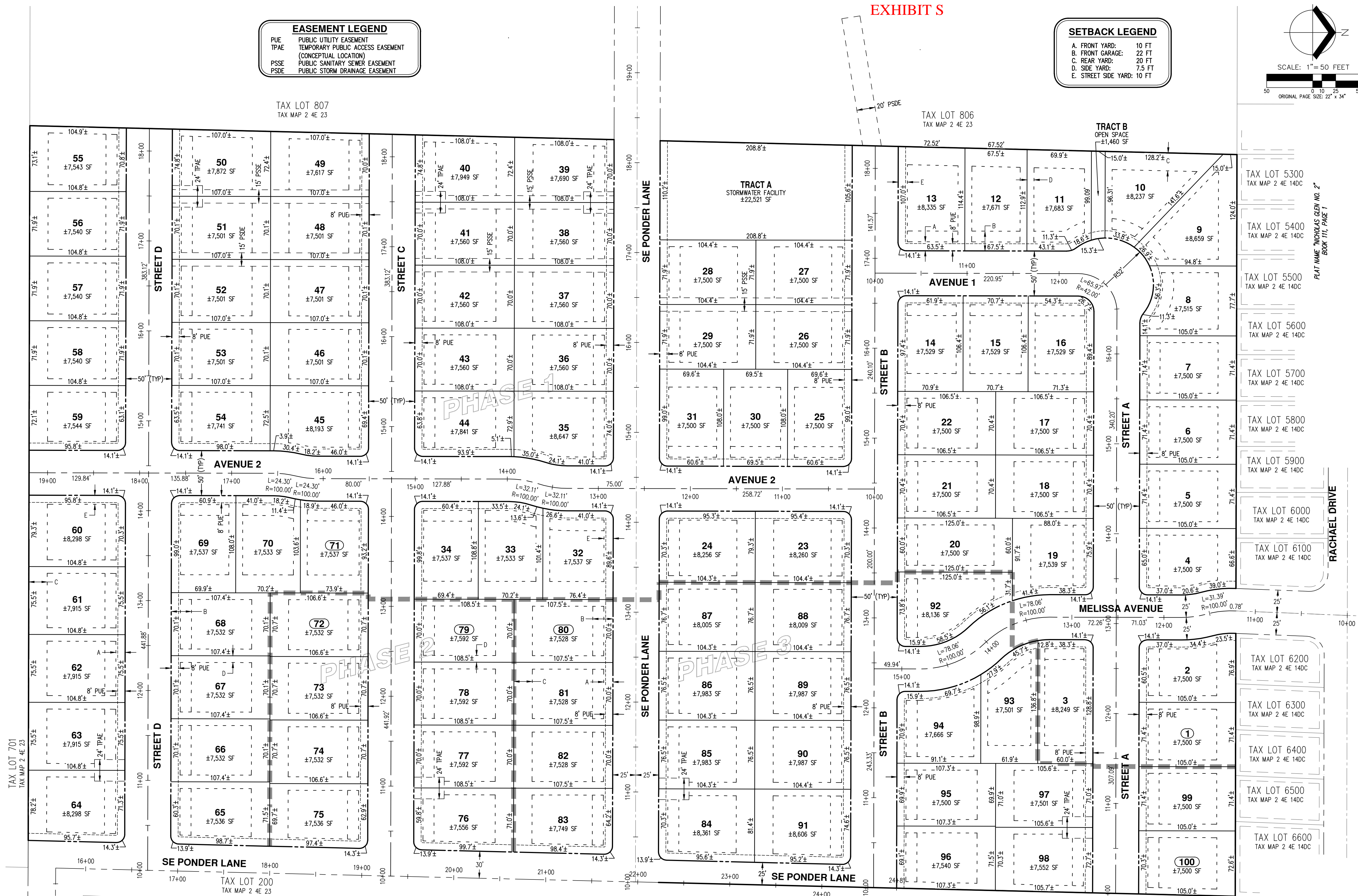
MCR:jmhi  
Enclosures

cc: Mr. Cody Bjugan (*via email*) (*w/enclosures*)  
Mr. Monty Hurley (*via email*) (*w/enclosures*)  
Mr. Chris Goodell (*via email*) (*w/enclosures*)  
Mr. Todd Mobley (*via email*) (*w/enclosures*)  
Ms. Emily Meharg (*via email*) (*w/enclosures*)  
Mr. David Doughman (*via email*) (*w/enclosures*)

PDX\133569\245146\MCR\26637016.1



AKS DRAWING FILE: 7107 DDM SUBDIV PLANNING | LAYOUT | P1-04

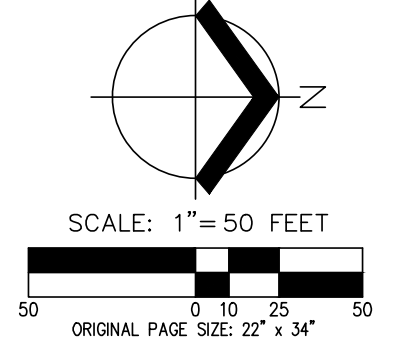


**EASEMENT LEGEND**

PUE	PUBLIC UTILITY EASEMENT
TPAE	TEMPORARY PUBLIC ACCESS EASEMENT (CONCEPTUAL LOCATION)
PSSE	PUBLIC SANITARY SEWER EASEMENT
PSDE	PUBLIC STORM DRAINAGE EASEMENT

**SETBACK LEGEND**

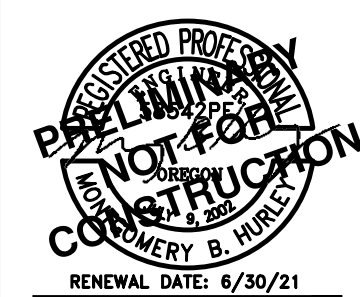
A.	FRONT YARD:	10 FT
B.	FRONT GARAGE:	22 FT
C.	REAR YARD:	20 FT
D.	SIDE YARD:	7.5 FT
E.	STREET SIDE YARD:	10 FT



**AKS**  
AKS ENGINEERING & FORESTRY, LLC  
12905 SW HERMAN RD., STE. 100  
TUALATIN, OR 97062  
503.563.6151  
WWW.AKS-ENG.COM

ENGINEERING - SURVEYING - NATURAL RESOURCES  
FORESTRY - PLANNING - LANDSCAPE ARCHITECTURE

**PRELIMINARY SUBDIVISION PLAT  
WITH FUTURE BUILDING SETBACKS  
BAILEY MEADOWS  
SANDY, OREGON**



RENEWAL DATE: 6/30/21  
JOB NUMBER: 7107  
DATE: 11/15/2019  
DESIGNED BY: WN  
DRAWN BY: CL  
CHECKED BY: RSW

**P1-04**

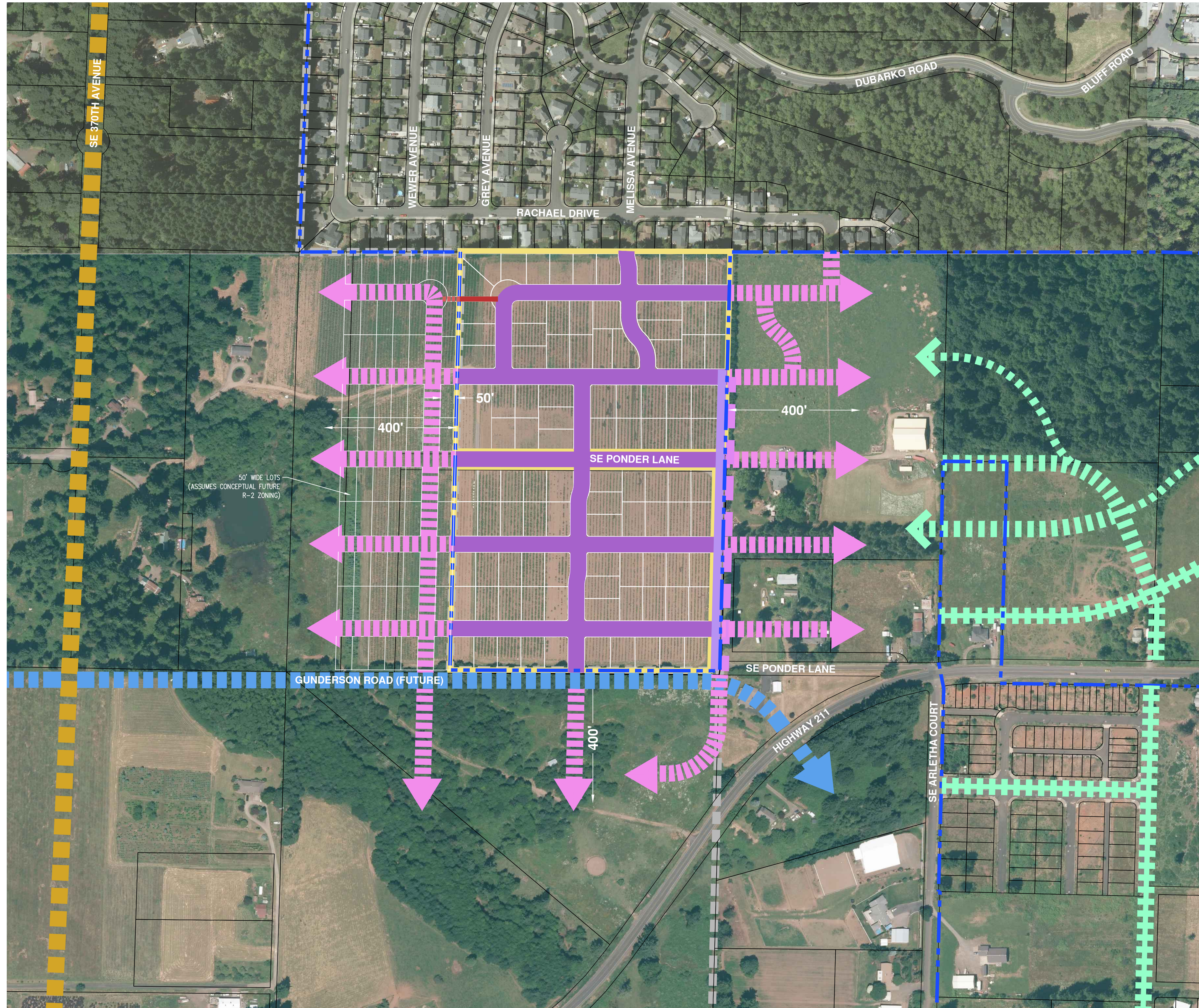
PLAT NAME: NICHOLAS GLEN NO. 2  
BOOK 111, PAGE 1

RACHAEL DRIVE

EXHIBIT S



AKS DRAWING FILE: 7107 CIRCULATION PLANNING | LAYOUT: P1-15



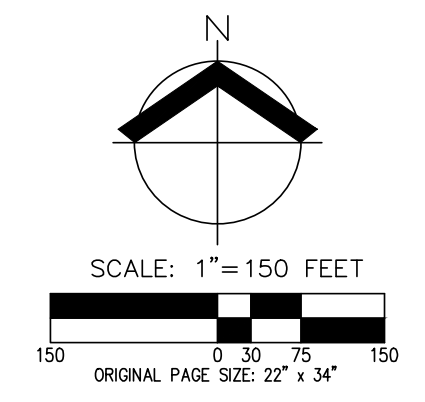
**EXHIBIT T**

**LEGEND**

CITY LIMITS	
URBAN GROWTH BOUNDARY	
PROJECT SITE BOUNDARY	
PLANNED LOCAL STREET	
PLANNED LOCAL STREET (FEE-IN-LIEU FOR 1/2 STREET IMPROVEMENTS)	
CONCEPTUAL FUTURE MINOR ARTERIAL (ON TSP)	
CONCEPTUAL FUTURE COLLECTOR (ON TSP)	
CONCEPTUAL FUTURE LOCAL STREET	
CONCEPTUAL FUTURE LOCAL STREET (1/2 STREET IMPROVEMENTS)	
CONCEPTUAL STREET FROM BORNSTEDT VILLAGE SPECIFIC AREA PLAN ILLUSTRATIVE STREET PLAN DATED 8/18/2003	
PLANNED PEDESTRIAN PATH	
CONCEPTUAL FUTURE PEDESTRIAN PATH	

**NOTES**

1. THIS PLAN IS INCLUDED TO MEET THE SUBMITTAL REQUIREMENTS FOR THE CITY OF SANDY FOR THE BAILEY MEADOWS SUBDIVISION APPLICATION.
2. CONCEPTUAL FUTURE STREET LOCATIONS ARE SHOWN FOR ILLUSTRATIVE PURPOSES FOR THE LAND USE APPLICATION ONLY AND ARE NOT PROPOSED WITH THIS SUBDIVISION AND ARE NOT BINDING ON ANY OFFSITE PROPERTIES.



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 FORESTRY - PLANNING - LANDSCAPE ARCHITECTURE

**CONCEPTUAL FUTURE  
 STREET PLAN  
 BAILEY MEADOWS  
 SANDY, OREGON**

**REGISTERED PROFESSIONAL  
 PLANNING  
 NOT FOR  
 CONSTRUCTION**  
 GARDNER B. WILSON  
 RENEWAL DATE: 6/30/21  
 JOB NUMBER: 7107  
 DATE: 11/21/2019  
 DESIGNED BY: VN  
 DRAWN BY: CL  
 CHECKED BY: RSW

**P1-15**



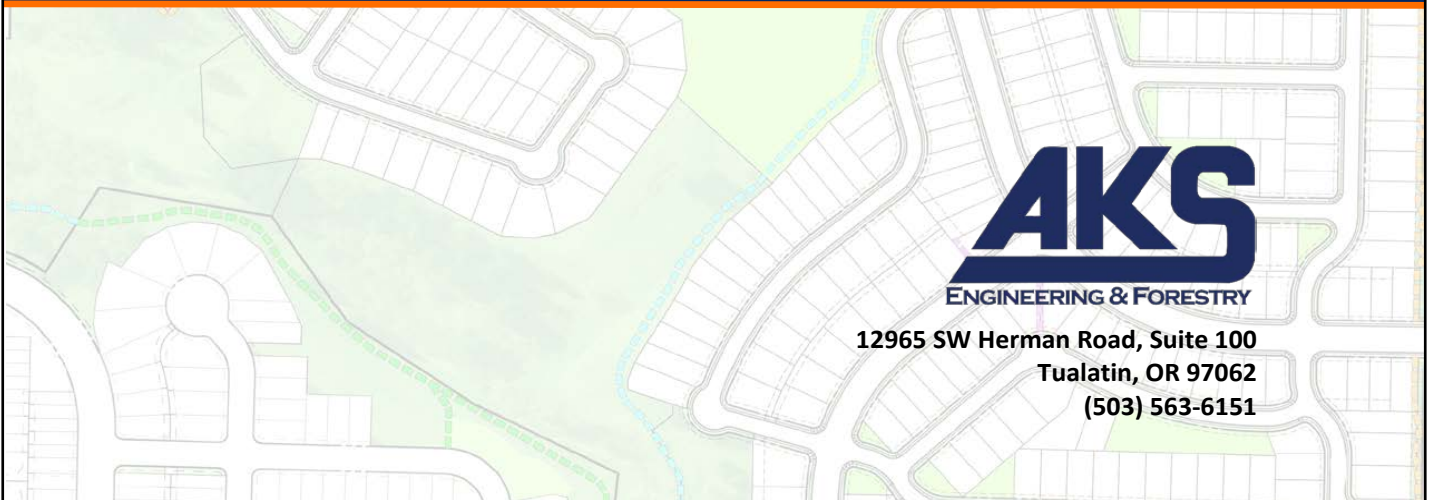
## Bailey Meadows Subdivision

---

**Date:** July 2019  
Updated November 2019

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

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



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## Table of Contents

<b>I. Executive Summary .....</b>	<b>3</b>
<b>II. Site Description and Setting .....</b>	<b>3</b>
<u>Surrounding Land Uses .....</u>	<u>4</u>
<b>III. Applicable Review Criteria .....</b>	<b>4</b>
<u>CITY OF SANDY MUNICIPAL CODE .....</u>	<u>4</u>
Title 17 – DEVELOPMENT CODE.....	4
CHAPTER 17.18 - PROCESSING APPLICATIONS.....	4
CHAPTER 17.30 - ZONING DISTRICTS .....	6
CHAPTER 17.34 - SINGLE-FAMILY RESIDENTIAL (SFR) .....	8
CHAPTER 17.60 - FLOOD & SLOPE HAZARD (FSH) OVERLAY DISTRICT .....	9
CHAPTER 17.84 - IMPROVEMENTS REQUIRED WITH DEVELOPMENT .....	12
CHAPTER 17.86 - PARKLAND & OPEN SPACE .....	25
CHAPTER 17.90 - DESIGN STANDARDS.....	28
CHAPTER 17.92 - LANDSCAPING & SCREENING GENERAL STANDARDS - ALL ZONES .....	28
CHAPTER 17.100 - LAND DIVISION .....	31
CHAPTER 17.102 - URBAN FORESTRY.....	45
<b>IV. Conclusion.....</b>	<b>46</b>

### Exhibits

- Exhibit A:** Preliminary Plans
- Exhibit B:** City of Sandy Land Use Application Forms and Checklists
- Exhibit C:** Property Ownership Information
- Exhibit D:** Clackamas County Assessor’s Map
- Exhibit E:** Public Notification
- Exhibit F:** Traffic Impact Analysis
- Exhibit G:** Preliminary Stormwater Report
- Exhibit H:** Flood & Slope Hazard (FSH) Analysis
- Exhibit I:** Documentation of Plat Name Reservation
- Exhibit J:** Geotechnical Engineering Report

### Also Included with This Application

- Cover Letter from Applicant’s Legal Counsel (November 2019)
  - Cover Letter from Applicant’s Legal Counsel (July 2019)
-

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## Bailey Meadows Subdivision

<b>Submitted to:</b>	City of Sandy Planning Department 39250 Pioneer Boulevard Sandy, OR 97055
<b>Applicant:</b>	Allied Homes and Development 12402 SE Sunnyside Road, Suite 706 Clackamas, OR 97015
<b>Property Owner:</b>	Myrtle J. Sturm and Grant E. Sturm, Trustees of the Sturm Family Trust 647 E Historic Columbia River Highway Troutdale, OR 97060
<b>Applicant's Consultant:</b>	AKS Engineering & Forestry, LLC 12965 SW Herman Road, Suite 100 Tualatin, OR 97062 Contact(s): Chris Goodell, AICP, LEED <sup>AP</sup> Email: chrisg@aks-eng.com Phone: (503) 563-6151
<b>Applicant's Legal Counsel:</b>	Schwabe, Williamson & Wyatt Pacwest Center 1211 SW 5th Avenue, Suite 190 Portland, OR 97204 Contact(s): Michael Robinson Email: mrobinson@schwabe.com Phone: (503) 796-3756
<b>Applicant's Transportation Engineer:</b>	Lancaster Engineering 321 SW 4 <sup>th</sup> Avenue, Suite 400 Portland, OR 97204 Contact(s): Todd Mobley Email: todd@lancasterengineering.com Phone: (503) 248-0313
<b>Applicant's Geotechnical Engineer:</b>	GeoPacific Engineering, Inc. 14835 SW 72 <sup>nd</sup> Avenue Tigard, OR 97224 Contact(s): Jim Imbrie Email: jimbrie@geopacificeng.com Phone: (503) 598-8445
<b>Clackamas County Assessor's Map:</b>	24E 23 Tax Lots 800, 801, 802, 803, and 804



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**Site Size:**

One subdivision affecting five lots at ±23.42 total acres:

±2.40 acres (Lot 800)

±4.74 acres (Lot 801)

±4.74 acres (Lot 802)

±9.17 acres (Lot 803)

±2.37 acres (Lot 804)

**Land Use District:**

Single-Family Residential (SFR)





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## I. Executive Summary

To address the City of Sandy's identified need for urban land for housing under statewide planning goal 10, "housing," the City of Sandy (City) in 2017 expanded its Urban Growth Boundary (UGB) south to include the subject site. In June 2017, the property was annexed to the City of Sandy. The UGB expansion is final and acknowledged by the state.

This application for the Bailey Meadows Subdivision (the "Subdivision") is part of the planned progression of land use planning for the area and involves the creation of "Needed Housing" under ORS 197-303(1) and 197.307(4) on residential land properly zoned for the proposed use within the incorporated limits of the City of Sandy. The Applicant is submitting this application to the City of Sandy for a Single-Family Residential Subdivision on the ±23.42-acre site, designated with Single Family Residential (SFR) zoning. Planned project site features include:

- 100 lots for single-family detached housing
- Interconnected system of sidewalks and local public streets
- On-street parking
- Three planned phases with concurrent infrastructure improvements
- Full range of underground utilities including sanitary sewer, water, and franchise utilities
- Fee-in-lieu payment for parkland dedication
- Fee-in-lieu payment for improvements to SE Ponder Lane

This application package includes the City of Sandy application forms, written materials, and Preliminary Plans necessary for City staff to review and determine compliance with the applicable approval criteria. The evidence is substantial and supports the City's approval of this Subdivision.

This application is a "Needed Housing" application under ORS 197.303(1)(a) as it provides housing within an acknowledged urban growth boundary. ORS 197.307(4) states that a local government may apply only clear and objective standards, conditions, and procedures regulating the creation of Needed Housing, and such standards, conditions, and procedures cannot have the effect, either in themselves or cumulatively, of discouraging Needed Housing through unreasonable cost or delay.

Oregon Courts and the Land Use Board of Appeals (LUBA) have held that an approval standard is not clear and objective if it imposes on an applicant "subjective, value-laden analyses that are designed to balance or mitigate impacts of the development." *Rogue Valley Association of Realtors v. City of Ashland*, 35 Or LUBA 139, 158 (1998) *aff'd*, 158 Or App 1 (1999). ORS 197.831 places the burden on local governments to demonstrate that the standards and conditions placed on Needed Housing applications can be imposed only in a clear and objective manner. While this application addresses all standards and conditions, the Applicant reserves the right to object to the application of standards or conditions that are not clear and objective and does not waive its right to assert that the Needed Housing statutes apply to this application. The exceptions in ORS 197.307(4)(a) and 197.307(5) do not apply to this application. ORS 197.307(7)(a) is controlled by ORS 197.307(4). The City has not taken an exception for Needed Housing under 197.303(3).

## II. Site Description and Setting

The subject property is approximately ±23.42 acres and is comprised of five separate tax lots generally located directly south of the Nicolas Glen No. 2 Subdivision. The site is designated "SFR" with no existing structures on the site. The site is primarily used for agricultural purposes with a few trees along the southern border of Tax Lots 800 and 803.

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### Surrounding Land Uses

**North:** The site abuts 14 residential lots within the southern portion of the Nicolas Glen No. 2 Subdivision. These properties have a general lot size of ±0.12 acres and are zoned Medium Density Residential (MDR) and are in the City. The planned access for Bailey Meadows Subdivision is via the existing right-of-way street stub terminus at Melissa Avenue, directly north of the project boundary.

**East:** The property to the east is within both the City's UGB and unincorporated Clackamas County and is zoned Rural Residential Farm Forest 5-Acre (RRFF-5). It is currently improved with a single-family dwelling which accesses off Ponder Lane.

**South/West:** The properties south and west of the site are undeveloped and located outside of the City's UGB and are zoned Exclusive Farm Use District (EFU) by Clackamas County.

### III. Applicable Review Criteria

#### CITY OF SANDY MUNICIPAL CODE

#### Title 17 – DEVELOPMENT CODE

#### CHAPTER 17.18 - PROCESSING APPLICATIONS

#### 17.18.00 PROCEDURES FOR PROCESSING LAND USE APPLICATIONS

An application shall be processed under a Type I, II, III or IV procedure. The differences between the procedures are generally associated with the different nature of the decisions as described in Chapter 17.12.

When an application and proposed development is submitted, the Director shall determine the type of procedure the Code specifies for its processing and the potentially affected agencies.

If a development proposal requires an applicant to file a land use application with the city (e.g. a design review application) and if there is a question as to the appropriate procedure to guide review of the application (e.g. a Type II versus a Type III design review process), the question will be resolved in favor of the lower type number.

If a development proposal requires an applicant to file more than one land use application with the city (e.g. a design review application and a variance) and if the development code provides that the applications are to be reviewed under separate types of procedures (e.g. a Type II design review and a Type III variance):

- the Director will generally elevate all of the required applications to the highest number procedure for review (e.g. the Type II design review application would be reviewed by the Planning Commission along with the Type III variance).

In situations where an applicant has attended a pre-application conference and has reviewed the application with the Director prior to submitting the applications, the Director may exercise his/her discretion to review the Type II application(s) at the staff level and only schedule a public hearing for the Type III portion(s) of the development proposal.

**Response:** The application requires a Type III Review Procedure, following conclusions of the November 20, 2018 pre-application conference (see response below).

---

#### 17.18.20 PRE-APPLICATION CONFERENCE

A pre-application conference is required for all Type II, III, and IV applications unless the Director determines a conference is not needed. A request for a pre-application conference shall be made on the form provided by the city and will be scheduled following submittal of required materials and payment of fees. The purpose of the conference is to acquaint the applicant with the substantive and procedural requirements of the Code, provide for an exchange of information regarding applicable elements of the Comprehensive Plan and development requirements, arrange such technical and design assistance which will aid the applicant, and to otherwise identify policies and regulations that create opportunities or pose significant constraints for the proposed development. The Director will provide the applicant with notes from the conference within 10 days of the conference. These notes may include confirmation of the procedures to be used to process the application, a list of materials to be submitted, and the applicable code sections and criteria that may apply to the application. Any opinion expressed by the Director or City staff during a pre-application conference regarding substantive provisions of the City's code is advisory and is subject to change upon official review of the application.

**Response:** A pre-application conference was held with the City of Sandy on November 20, 2018. An additional meeting with City staff was held on January 29, 2019. This requirement is met.

#### 17.18.30 LAND USE APPLICATION MATERIALS

Unless otherwise specified in this code, an application shall consist of the materials specified in this section, plus any other materials required by this Code.

- A. A completed application form and payment of fees.
- B. List and mailing labels of Affected Property Owners.
- C. An explanation of intent, stating the nature of the proposed development, reasons for the request, pertinent background information, information required by the Development Code and other material that may have a bearing in determining the action to be taken.
- D. Proof that the property affected by the application is in the exclusive ownership of the applicant, that the applicant has the consent of all parties in ownership of the affected property, or the applicant is the contractual owner.
- E. Legal description of the property affected by the application.
- F. Written narrative addressing applicable code chapters and approval criteria.
- G. Vicinity Map showing site in relation to local and collector streets, plus any other significant features in the nearby area.
- F. Site plan of proposed development
- G. Number of Copies to be Submitted:
  - 1. One copy of items A through D listed above;
  - (...)



- 
4. Type III: 15 copies of site plan and other materials required by the Code

The Director may vary the quantity of materials to be submitted as deemed necessary.

**Response:** The application submittal materials include the items listed above. The list and mailing labels are applicable to property owners within 500 feet of the subject properties. The remainder of the Code Section discusses the processing requirements to be completed by the City. For purposes of brevity, those Sections are not included in this narrative. This requirement is met.

#### CHAPTER 17.20 - PUBLIC HEARINGS

##### 17.20.40 APPLICANT'S RESPONSIBILITY

(...)

- C. Neighborhood Meetings. Applicants intending to develop a major project within the City are strongly urged to conduct their own informational meetings in the neighborhood affected prior to submitting their application to the City.

**Response:** On September 18, 2019, the Applicant conducted a neighborhood meeting at the Sandy Public Library. The above City recommendation has been satisfied.

#### CHAPTER 17.30 - ZONING DISTRICTS

##### 17.30.20 RESIDENTIAL DENSITY CALCULATION PROCEDURE

The number of dwelling units permitted on a parcel of land is calculated after the determination of the net site area and the acreage of any restricted development areas (as defined by Chapter 17.60). Limited density transfers are permitted from restricted development areas to unrestricted areas consistent with the provisions of the Flood and Slope Hazard Area Overlay District, Chapter 17.60.

Calculation of Net Site Area (NSA): Net site area should be calculated in acres based upon a survey of the property boundaries excluding areas dedicated for public use.

- A. Minimum and Maximum Dwelling Units for Sites with No Restricted Areas. The allowable range of housing units on a piece of property is calculated by multiplying the net site area (NSA) in acres by the minimum and maximum number of dwelling units allowed in that zone.

For example: A site (NSA) containing 10 acres in the Single-Family Residential Zoning District requires a minimum of 30 units and allows a maximum of 58 units. (NSA x 3 units/acre = 30 units minimum) (NSA x 5.8 units/acre = 58 units maximum)

**Response:** The subject site is zoned Single Family Residential (SFR). The planned subdivision includes a total of 100 units on a total net site area of ±18.21 acres resulting in a net residential density of ±5.49 units per acre. This planned density falls within the minimum number of dwelling units required of 3 and the maximum of 5.8 units per acre. The tables below provide the details of the density calculations. Note that the gross site area excludes existing SE Ponder Lane right-of-way. The criteria are met.



Gross Area (AC)	ROW (AC)	NSA (AC)= GROSS-ROW
23.42	5.21	18.21

	Units Per Acre	Density	Total Density
<b>MIN</b>	3	54.63	55
<b>MAX</b>	5.8	105.62	106

**B. Minimum and Maximum Dwelling Units for Sites with Restricted Areas**

1. **Unrestricted Site Area:** To calculate unrestricted site area (USA): subtract all restricted development areas (RDA) as defined by Section 17.60.20(A) from the net site area (NSA), if applicable.

$$\text{NSA} - \text{RDA} = \text{USA}$$

2. **Minimum Required Dwelling Units:** The minimum number of dwelling units required for the site is calculated using the following formula:

$$\text{USA (in acres)} \times \text{Minimum Density (Units per Acre) of Zoning District} = \text{Minimum Number of Dwelling Units Required.}$$

3. **Maximum Allowed Dwelling Units:** The maximum number of dwelling units allowed on a site is the lesser of the results of these two formulas:

- a.  $\text{NSA (in acres)} \times \text{Maximum Density of Zoning District (units/acre)}$

- b.  $\text{USA (in acres)} \times \text{Maximum Density of Zoning District (units/acre)} \times 1.5$  (maximum allowable density transfer based on Chapter 17.60)

For example: suppose a site in a zone with a maximum density of eight (8) units per acre has 6 acres of unrestricted site area (USA= 6) and two acres of restricted development area (RDA=2), for a total net site area of 8 acres (NSA= 8). Then NSA (8) x 8 units/acre = 64 and USA (6) x 8 units/acre x 1.5 = 72, so the maximum permitted number of dwelling units is 64 (the lesser of the two results).

**Response:** The project site does not contain any restricted areas. See Exhibit H for Flood and Slope Hazard Analysis. The criteria do not apply.

- C. **Lot Sizes:** Lot sizes shall comply with any minimum lot size standards of the underlying zoning district.

- D. **Rounding:** A dwelling unit figure is rounded down to the nearest whole number for all total maximum or minimum figures less than four dwelling units. For dwelling unit figures greater than four dwellings units, a partial figure of one-half or greater is rounded up to the next whole number.

For example: A calculation of 3.7 units is rounded down to 3 units. A calculation of 4.2 units is rounded down to 4 units and a calculation of 4.5 units is rounded up to 5 units.





**Response:** The application involves subdividing the subject site into 100 lots suitable for future single-family detached dwellings, all complying with the minimum lot size of 7,500 square feet. The subdivision also includes one tract for stormwater management infrastructure. Rounding as stated above is demonstrated in the density calculation. The criterion is met.

**CHAPTER 17.34 - SINGLE-FAMILY RESIDENTIAL (SFR)**

**17.34.10 PERMITTED USES**

**A. Primary Uses Permitted Outright:**

1. Single detached dwelling subject to design standards in Chapter 17.90;

**Response:** The Applicant plans on building model homes with this subdivision. To the extent this cannot be done, the Applicant will work with the City and build a new single-family home on each of the lots of record prior to plat recordation, similar to a model home scenario.

2. Single detached manufactured dwelling subject to design standards in Chapter 17.90;

**17.34.30 DEVELOPMENT STANDARDS**

Type	Standard
A. Minimum Lot Area – Single detached dwelling	7,500 square ft.
B. Minimum Average Lot Width – Single detached dwelling	60 ft.
C. Minimum Lot Frontage	20 ft, except as allowed by Section 17.100.160
D. Minimum Average Lot Depth	No minimum
E. Setbacks (Main Building) Front Yard Rear Yard Side Yard (interior) Corner Lot	10 ft. minimum 20 ft. minimum 7.5 ft. minimum 10 ft. minimum on side abutting the street <sup>1</sup>
F. Setbacks (Garage/Carport)	22 ft. minimum for front vehicle access 15 ft. minimum if entrance is perpendicular to street (subject to Section 17.90.220) 5 ft. minimum for alley or rear access

**Response:** This application proposes lots for the permitted use of “single detached dwelling” listed above. The minimum standards for newly created lots in the SFR district are included in the table above. As planned, each of the lots meets the 20-foot minimum lot frontage to the street and the 60-foot average lot width for a single detached dwelling. The Preliminary Subdivision Plat, included in Exhibit A, demonstrates that future homes can meet the minimum setback requirements at the time of future building permit submittal. As shown, each lot meets the 7,500 square-foot minimum lot size requirement. The criteria are met.

**17.34.40 MINIMUM REQUIREMENTS**

- A. Must connect to municipal water.
- B. Must connect to municipal sewer if service is currently within 200 feet of the site. Sites more than 200 feet from municipal sewer, may be

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approved to connect to an alternative disposal system provided all of the following are satisfied:

1. A county septic permit is secured and a copy is provided to the city;
  2. The property owner executes a waiver of remonstrance to a local improvement district and/or signs a deed restriction agreeing to complete improvements, including but not limited, to curbs, sidewalks, sanitary sewer, water, storm sewer or other improvements which directly benefit the property;
  3. The minimum size of the property is one acre or is a pre-existing buildable lot, as determined by the city;
  4. Site consists of a buildable parcel(s) created through dividing property in the city, which is less than five acres in size.
- C. The location of any real improvements to the property must provide for a future street network to be developed.
- D. Must have frontage or approved access to public streets.

**Response:** The Preliminary plans include information illustrating how the subdivision is planned to be serviced with municipal water, sanitary sewer, planned street network and improvements, and frontage on public streets. These criteria will be met.

#### 17.34.50 ADDITIONAL REQUIREMENTS

- A. Design review as specified in Chapter 17.90 is required for all uses.

**Response:** This application involves a subdivision; design review for specific uses will be reviewed at the time of future permit submittal, if necessary. The standard is understood.

- B. Lots with 40 feet or less of street frontage shall be accessed by a rear alley or a shared private driveway.

**Response:** As illustrated by the Preliminary Plans, each lot is planned with at least 40 feet of street frontage. This criterion does not apply.

- C. Lots with alley access may be up to 10 percent smaller than the minimum lot size of the zone.

**Response:** Alleys are not included in this project. The criterion does not apply.

- D. Zero Lot Line Dwellings: Prior to building permit approval, the applicant shall submit a recorded easement between the subject property and the abutting lot next to the yard having the zero setback. This easement shall be sufficient to guarantee rights for maintenance purposes of structures and yard, but in no case shall it be less than 5 ft. in width.

**Response:** Building setback requirements will be reviewed at the time of future building permit submittal. This criterion is understood.

#### CHAPTER 17.60 - FLOOD & SLOPE HAZARD (FSH) OVERLAY DISTRICT



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#### 17.60.10 INTERPRETATION AND MAPPING

The Director has the ultimate responsibility for maintaining the FSH Overlay District on the City of Sandy Zoning Map, determining on-site measuring methods, and otherwise interpreting the provisions of this chapter. Technical terms used in this chapter are defined in Chapter 17.10, Definitions. This chapter does not regulate development on lots or parcels entirely outside the FSH Overlay District.

A. FSH Overlay District. The only areas subject to the restrictions and prohibitions of the FSH overlay district are those indicated on the City of Sandy Zoning Map on file in the Planning Department and areas of special flood hazard identified by the Federal Insurance Administration in a scientific and engineering report entitled, "Flood Insurance Study (FIS) for Clackamas County, Oregon and Incorporated Areas," dated January 18, 2019, with accompanying Flood Insurance Rate Maps (FIRMs). This chapter does not regulate lots or parcels entirely outside the FSH Overlay District.

1. The FIS and FIRMs are hereby adopted by reference and declared to be a part of Section 17.60 and are on file at the City of Sandy.

**Response:** According to the current Zoning Map, the site is located inside the City limits, within the UGB and is unaffected by the FSH Overlay. However, the project site was not included on the City's Goal 5 Inventory to determine whether wetlands, streams, or the FSH Overlay applies to the site because that inventory was created prior to the site's inclusion within the UGB and annexation to the City. A FSH Analysis (Exhibit H) is included in the application materials demonstrating that the FSH Overlay District does not apply to the project site.

B. Development Approval Required. No development shall occur within the FSH overlay district without first obtaining City approval under the provisions of this chapter. The Director shall notify the Oregon Division of State Lands whenever any inventoried wetland is proposed for development, in accordance with ORS 227.350. In riverine situations, the Director shall notify adjacent communities and the State Coordinating Office prior to any alteration or relocation of a watercourse, and submit copies of such notification to the administrator.

C. Interpretation

All provisions of the FSH overlay code shall be:

1. Considered as minimum requirements;
2. Liberally construed in favor of the governing body; and
3. Deemed neither to limit nor repeal any other powers granted under state statutes.

D. Applicant Responsibilities. The applicant for alteration or development within the FSH overlay district shall be responsible for preparing a survey of the entire site, based on site-specific field surveys or Corps of Engineers data that precisely maps and delineates the following areas:

1. The name, location and dimensions of affected streams or rivers, and the tops of their respective banks.

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2. Area of Special Flood Hazard boundaries and elevations as determined by the January 18, 2019 FIS for Clackamas County and Incorporated Areas.

**Response:** According to Federal Emergency Management Area (FEMA) mapping, Special Flood Hazard Areas are not mapped within the project site.

3. The City of Sandy FSH overlay district boundary as depicted on the City of Sandy FSH Map.

**Response:** The subject site is not located within the City's FSH Overlay District.

4. The water quality and slope setback area(s) as defined in Section 17.60.30.

5. The size and location of locally significant wetlands shall be determined based on the City of Sandy Locally Significant Wetland Inventory (2002) unless modified by a wetland delineation approved by the Oregon Division of State Lands and submitted to the City. Wetland delineations that have formal concurrence from the Division of State Lands shall be valid for the period specified in that agency's administrative rules.

**Response:** The project site is located outside of the City of Sandy's Local Wetland Inventory.

6. Steep slope areas where the slope of the land is 25% or greater within the FSH overlay district boundary.

7. The area enclosed by a continuous line, measured 25 feet horizontally, parallel to and upland from the top of a steep slope area, where the top of the steep slope is within the FSH overlay district boundary.

**Response:** The FSH Analysis (Exhibit H) concludes that wetlands, waters, or slopes greater than 25% are not located on the subject site.

8. Existing public rights-of-way, structures, roads and utilities.

9. Natural vegetation, including trees or tree clusters and understory within the FSH Overlay District boundary.

10. Existing and proposed contours at 2-foot intervals.

**Response:** The FSH Analysis (Exhibit H) contains the applicable information as listed above. The criteria are met.

#### 17.60.20 PERMITTED USES AND ACTIVITIES

This chapter lists permitted uses, or uses allowed under prescribed conditions, within the FSH overlay district. Where there are conflicts, this chapter supersedes the use provisions of the underlying district.

**Response:** The FSH Analysis (Exhibit H) documents that wetlands, waters, or slopes greater than 25% are not located on the subject site. Therefore, the FSH Overlay District does not apply to the project site and thus the criteria of Chapter 17.60 do not apply and have been omitted for brevity.



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CHAPTER 17.84 - IMPROVEMENTS REQUIRED WITH DEVELOPMENT

17.84.20 TIMING OF IMPROVEMENTS

- A. All improvements required by the standards in this chapter shall be installed concurrently with development, as follows:
1. Where a land division is proposed, each proposed lot shall have required public and franchise utility improvements installed or financially guaranteed in accordance with the provisions of Chapter 17 prior to approval of the final plat.
  2. Where a land division is not proposed, the site shall have required public and franchise utility improvements installed or financially guaranteed in accordance with the provisions of Chapter 17 prior to temporary or final occupancy of structures.

**Response:** As shown in the Preliminary Plans in Exhibit A, each lot is to be provided with utility, sanitary sewer, water, and stormwater infrastructure. The criterion is met.

- B. Where specific approval for a phasing plan has been granted for a planned development and/or subdivision, improvements may similarly be phased in accordance with that plan.

**Response:** As depicted in the Preliminary Plans, improvements are planned to be phased with the approved plans. See Exhibit A for detailed phasing logistics.

17.84.30 PEDESTRIAN AND BICYCLIST REQUIREMENTS

- A. Sidewalks shall be required along both sides of all arterial, collector, and local streets, as follows:

**Response:** As shown on the Preliminary Plans, sidewalks are planned to be provided on the streets within the subdivision and along the unimproved street stub section of Melissa Avenue.

1. Sidewalks shall be a minimum of 5 ft. wide on local streets. The sidewalks shall be separated from curbs by a tree planting area that provides separation between sidewalk and curb, unless modified in accordance with Subsection 3 below.

**Response:** As shown on the Preliminary Plans, sidewalks will be a minimum of 5 feet wide on the local street sections interior to the subdivision. See Exhibit A for detailed landscaping plans. The criterion is met.

2. Sidewalks along arterial and collector streets shall be separated from curbs with a planting area, except as necessary to continue an existing curb-tight sidewalk. The planting area shall be landscaped with trees and plant materials approved by the City. The sidewalks shall be a minimum of 6 ft. wide.

**Response:** The project site does not include proposed arterial or collector streets. The criterion does not apply.



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3. Sidewalk improvements shall be made according to city standards, unless the city determines that the public benefit in the particular case does not warrant imposing a severe adverse impact to a natural or other significant feature such as requiring removal of a mature tree, requiring undue grading, or requiring modification to an existing building. Any exceptions to the standards shall generally be in the following order.
    - a) Narrow landscape strips
    - b) Narrow sidewalk or portion of sidewalk to no less than 4 feet in width
    - c) Eliminate landscape strips
    - d) Narrow on-street improvements by eliminating on-street parking
    - e) Eliminate sidewalks

**Response:** As shown on the Preliminary Plans, sidewalks are planned adjacent to the new streets within the subdivision. The criteria do not apply.

4. The timing of the installation of sidewalks shall be as follows:
  - a) Sidewalks and planted areas along arterial and collector streets shall be installed with street improvements, or with development of the site if street improvements are deferred.

**Response:** The project site does not include proposed arterial or collector streets. The criterion does not apply.

- b) Sidewalks along local streets shall be installed in conjunction with development of the site, generally with building permits, except as noted in (c) below.

**Response:** Sidewalks are planned to be completed in conjunction with frontage improvements as phased with the approved plans. The criterion is met.

- c) Where sidewalks on local streets abut common areas, drainageways, or other publicly owned or semi-publicly owned areas, the sidewalks and planted areas shall be installed with street improvements.

**Response:** The project site does not abut drainageways, publicly owned areas, or common areas. The criterion does not apply.

- B. Safe and convenient pedestrian and bicyclist facilities that strive to minimize travel distance to the extent practicable shall be provided in conjunction with new development within and between new subdivisions, planned developments, commercial developments, industrial areas, residential areas, public transit stops, school transit stops, and neighborhood activity centers such as schools and parks, as follows:

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1. For the purposes of this section, “safe and convenient” means pedestrian and bicyclist facilities that: are reasonably free from hazards which would interfere with or discourage travel for short trips; provide a direct route of travel between destinations; and meet the travel needs of pedestrians and bicyclists considering destination and length of trip.

**Response:** As shown on the Updated Preliminary Plan Sheets, a pedestrian path is planned in the northwest portion of the project site to provide a potential connection for a future development to the west. Pedestrian routes as planned are safe, direct, and convenient and don’t deviate unnecessarily from a straight line, involve a significant amount of out-of-direction travel for likely users, or contain hazards. The criteria are met.

2. To meet the intent of “B” above, right-of-ways connecting cul-de-sacs or passing through unusually long or oddly shaped blocks shall be a minimum of 15 ft. wide with 8 feet of pavement.

**Response:** The application does not include cul-de-sac improvements or unusual blocks; the criterion is met.

3. 12 feet wide pathways shall be provided in areas with high bicycle volumes or multiple use by bicyclists, pedestrians, and joggers.

**Response:** The application does not involve high volume pedestrian travel. The criterion does not apply.

4. Pathways and sidewalks shall be encouraged in new developments by clustering buildings or constructing convenient pedestrian ways. Pedestrian walkways shall be provided in accordance with the following standards:
  - a) The pedestrian circulation system shall be at least five feet in width and shall connect the sidewalk on each abutting street to the main entrance of the primary structure on the site to minimize out of direction pedestrian travel.
  - b) Walkways at least five feet in width shall be provided to connect the pedestrian circulation system with existing or planned pedestrian facilities which abut the site but are not adjacent to the streets abutting the site.
  - c) Walkways shall be as direct as possible and avoid unnecessary meandering.
  - d) Walkway/driveway crossings shall be minimized. Internal parking lot design shall maintain ease of access for pedestrians from abutting streets, pedestrian facilities, and transit stops.

**Response:** As shown on the Preliminary Plans, pedestrian walkways are intended to connect to the existing and planned pedestrian circulation system and future building entrances. Therefore, the applicable standards above are met.

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- e) With the exception of walkway/driveway crossings, walkways shall be separated from vehicle parking or vehicle maneuvering areas by grade, different paving material, painted crosshatching or landscaping. They shall be constructed in accordance with the sidewalk standards adopted by the City. (This provision does not require a separated walkway system to collect drivers and passengers from cars that have parked on site unless an unusual parking lot hazard exists).

**Response:** The application does not involve common space walkways of this nature. Therefore, the criteria are not applicable.

- f) Pedestrians amenities such as covered walk-ways, awnings, visual corridors and benches will be encouraged. For every two benches provided, the minimum parking requirements will be reduced by one, up to a maximum of four benches per site. Benches shall have direct access to the circulation system.

**Response:** The application does not include pedestrian amenities as described above. The criterion is not applicable.

- C. Where a development site is traversed by or adjacent to a future trail linkage identified within the Transportation System Plan, improvement of the trail linkage shall occur concurrent with development. Dedication of the trail to the City shall be provided in accordance with 17.84.80.

**Response:** According to the City of Sandy's Transportation System Plan (the "TSP"), there are no existing or planned trails adjacent to the project site which warrant a linkage. Therefore, the standard does not apply. However, this application is not subject to the TSP as explained above.

- D. To provide for orderly development of an effective pedestrian network, pedestrian facilities installed concurrent with development of a site shall be extended through the site to the edge of adjacent property(ies).

**Response:** As illustrated by the Updated Preliminary Plan Sheets, continuous pedestrian facilities extending from the Nicolas Glen No. 2 Subdivision throughout the site are planned concurrently with each individual project phase. In addition, a pedestrian pathway is planned to provide a potential connection for a future development west of the project site. Sidewalks are planned to be completed prior to occupancy of the adjoining home, as indicated on the Preliminary Plans. Therefore, the standard is met.

- E. To ensure improved access between a development site and an existing developed facility such as a commercial center, school, park, or trail system, the Planning Commission or Director may require off-site pedestrian facility improvements concurrent with development.

**Response:** Existing adjacent trails, future phases, or public parks that warrant a connection are not included in the project. Therefore, the standard does not apply.



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#### 17.84.40 TRANSIT AND SCHOOL BUS TRANSIT REQUIREMENTS

- A. Development sites located along existing or planned transit routes shall, where appropriate, incorporate bus pull-outs and/or shelters into the site design. These improvements shall be installed in accordance with the guidelines and standards of the transit agency. School bus pull-outs and/or shelters may also be required, where appropriate, as a condition of approval for a residential development of greater than 50 dwelling units where a school bus pick-up point is anticipated to serve a large number of children.
- B. New developments at or near existing or planned transit or school bus transit stops shall design development sites to provide safe, convenient access to the transit system, as follows:
  - 1. Commercial and civic use developments shall provide a prominent entrance oriented towards arterial and collector streets, with front setbacks reduced as much as possible to provide access for pedestrians, bicycles, and transit.
  - 2. All developments shall provide safe, convenient pedestrian walkways between the buildings and the transit stop, in accordance with the provisions of 17.84.30 B.

**Response:** The project site is not located along any existing or planned transit or school bus transit stops. The criteria do not apply.

#### 17.84.50 STREET REQUIREMENTS

- A. Traffic evaluations may be required of all development proposals in accordance with the following:
  - 1. A proposal establishing the scope of the traffic evaluation shall be submitted for review to the City Engineer. The evaluation requirements shall reflect the magnitude of the project in accordance with accepted traffic engineering practices. Large projects should assess all nearby key intersections. Once the scope of the traffic evaluation has been approved, the applicant shall present the results with and an overall site development proposal. If required by the City Engineer, such evaluations shall be signed by a Licensed Professional Civil Engineer or Licensed Professional Traffic Engineer licensed in the State of Oregon.

**Response:** The Traffic Impact Analysis (Exhibit F) assesses the traffic in accordance with planned site improvements and accepted traffic engineering practices. The standard is met.

- 2. If the traffic evaluation identifies level-of-service conditions less than the minimum standard established in the Transportation System Plan, improvements and funding strategies mitigating the problem shall be considered concurrent with a development proposal.

**Response:** The Traffic Impact Analysis (Exhibit F) reports conditions which meet the minimum standard established in the Transportation System Plan. The criterion does not apply.



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B. Location of new arterial streets shall conform to the Transportation System Plan in accordance with the following:

1. Arterial streets should generally be spaced in one-mile intervals.
2. Traffic signals should generally not be spaced closer than 1500 ft. for reasonable traffic progression.

**Response:** This application does not include construction of new arterial streets. The criteria do not apply.

C. Local streets shall be designed to discourage through traffic. NOTE: for the purposes of this section, "through traffic" means the traffic traveling through an area that does not have a local origination or destination. To discourage through traffic and excessive vehicle speeds the following street design characteristics shall be considered, as well as other designs intended to discourage traffic:

1. Straight segments of local streets should be kept to less than a quarter mile in length. As practical, local streets should include traffic calming features, and design features such as curves and "T" intersections while maintaining pedestrian connectivity.
2. Local streets should typically intersect in "T" configurations rather than 4-way intersections to minimize conflicts and discourage through traffic. Adjacent "T" intersections shall maintain a minimum of 150 ft. between the nearest edges of the 2 rights-of-way.

**Response:** The Preliminary Plans include information on the local street pattern and intersections internal to the subdivision. The design incorporates curves, "T" intersections, straight segments less than a quarter mile in length, and maintains pedestrian connectivity. The traffic traveling through the area will be of local origin. The criteria are met.

3. Cul-de-sacs should generally not exceed 400 ft. in length nor serve more than 20 dwelling units, except in cases where existing topography, wetlands, or drainage systems or other existing features necessitate a longer cul-de-sac in order to provide adequate access to an area. Cul-de-sacs longer than 400 feet or developments with only one access point may be required to provide an alternative access for emergency vehicle use only, install fire prevention sprinklers, or provide other mitigating measures, determined by the City.

**Response:** The project site does not include cul-de-sacs as defined in SDC 17.10.30: *a local street with only one outlet and having a bulb at the opposite end*. Additionally, as shown on the Updated Preliminary Plans Sheets, the project site is planned to be served with two accesses. The standard does not apply.

D. Development sites shall be provided with access from a public street improved to City standards in accordance with the following:

1. Where a development site abuts an existing public street not improved to City standards, the abutting street shall be improved to City standards along the full frontage of the property concurrent with development.





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2. Half-street improvements are considered the minimum required improvement. Three-quarter-street or full-street improvements shall be required where traffic volumes generated by the development are such that a half-street improvement would cause safety and/or capacity problems. Such a determination shall be made by the City Engineer.
  3. To ensure improved access to a development site consistent with policies on orderly urbanization and extension of public facilities the Planning Commission or Director may require off-site improvements concurrent with development. Off-site improvement requirements upon the site developer shall be reasonably related to the anticipated impacts of the development.
  4. Reimbursement agreements for  $\frac{3}{4}$  street improvements (i.e., curb face to curb face) may be requested by the developer per Chapter 12 of the SMC.
  5. A  $\frac{1}{2}$  street improvement includes curb and pavement 2 feet beyond the center line of the right-of-way. A  $\frac{3}{4}$  street improvement includes curbs on both sides of the side and full pavement between curb faces.

**Response:** The Preliminary Plans show the project site is provided with access extending from Melissa Avenue, an existing public street right-of-way stubbed to the property. Per the Preliminary Plans, a fee-in-lieu of half-street improvements is planned on east SE Ponder Lane. Required frontage improvements on streets applicable to the project site will be completed as necessary. The criterion is met.

- E. As necessary to provide for orderly development of adjacent properties, public streets installed concurrent with development of a site shall be extended through the site to the edge of the adjacent property(ies) in accordance with the following:
  1. Temporary dead-ends created by this requirement to extend street improvements to the edge of adjacent properties may be installed without turn-arounds, subject to the approval of the Fire Marshal.
  2. In order to assure the eventual continuation or completion of the street, reserve strips may be required.

**Response:** The Preliminary Plans illustrate local street sections extending through the site to the edge of the property boundaries. Temporary dead-ends, as necessary, can be provided in the phase it is associated with, as indicated on the Preliminary Plans. The criteria can be met.

Appendix D, Section D107 of the Oregon Fire Code addresses standards regarding fire apparatus access roads for one or two-family residential developments. Developments which exceed 30 dwelling units shall be provided with two separate and approved fire apparatus access roads and shall meet the requirements of Section D104.3.

- F. Where required by the Planning Commission or Director, public street improvements may be required through a development site to provide for the logical extension of an existing street network or to connect a site with a nearby neighborhood activity center, such as a

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school or park. Where this creates a land division incidental to the development, a land partition shall be completed concurrent with the development.

**Response:** This application does not include an incidental land division as stated above. The standard does not apply.

G. Except for extensions of existing streets, no street names shall be used that will duplicate or be confused with names of existing streets. Street names and numbers shall conform to the established pattern in the surrounding area and be subject to approval of the Director.

**Response:** Street names which conform to the surrounding area will be subjected to the approval of the Director. The criterion is met.

H. Location, grades, alignment, and widths for all public streets shall be considered in relation to existing and planned streets, topographical conditions, public convenience and safety, and proposed land use. Where topographical conditions present special circumstances, exceptions to these standards may be granted by the City Engineer provided the safety and capacity of the street network is not adversely affected. The following standards shall apply:

1. Location of streets in a development shall not preclude development of adjacent properties. Streets shall conform to planned street extensions identified in the Transportation Plan and/or provide for continuation of the existing street network in the surrounding area.
2. Grades shall not exceed 6 percent on arterial streets, 10 percent on collector streets, and 15 percent on local streets.

**Response:** The planned locations of streets internal to the subdivision provide continuation of the existing street network stemming from the stub at Melissa Avenue, as identified in the Transportation Plan. Location of streets internal to the subdivision do not preclude development of adjacent properties. The grades on the planned local streets are not intended to exceed 15 percent; the project does not include arterial or collector streets. It is understood that if any special circumstances are identified, the standards of this Section will apply and be reviewed for compliance by the City Engineer. The criterion is met.

3. As far as practical, arterial streets and collector streets shall be extended in alignment with existing streets by continuation of the street centerline. When staggered street alignments resulting in "T" intersections are unavoidable, they shall leave a minimum of 150 ft. between the nearest edges of the two rights-of-way.

**Response:** The project site does not include the extension of arterial or collector streets. The standard does not apply.

4. Centerline radii of curves shall not be less than 500 ft. on arterial streets, 300 ft. on collector streets, and 100 ft. on local streets.

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**Response:** The Preliminary Plans show the centerline radii of curves are not less than 100-foot on internal local streets. The standard is met.

5. Streets shall be designed to intersect at angles as near as practicable to right angles and shall comply with the following:

a) The intersection of an arterial or collector street with another arterial or collector street shall have a minimum of 100 ft. of straight (tangent) alignment perpendicular to the intersection.

**Response:** The project site does not include arterial or collector streets. The criterion does not apply.

b) The intersection of a local street with another street shall have a minimum of 50 ft. of straight (tangent) alignment perpendicular to the intersection.

c) Where right angle intersections are not possible, exceptions can be granted by the City Engineer provided that intersections not at right angles have a minimum corner radius of 20 ft. along the right-of-way lines of the acute angle.

d) Intersections with arterial streets shall have a minimum curb corner radius of 20 ft. All other intersections shall have a minimum curb corner radius of 10 ft.

**Response:** The project site does not intersect with existing arterial streets. The criteria do not apply.

6. Right-of-way and improvement widths shall be as specified by the Transportation System Plan. Exceptions to those specifications may be approved by the City Engineer to deal with specific unique physical constraints of the site.

**Response:** As shown on the Preliminary Plans, right-of-way and improvement widths for streets within Bailey Meadows are being designed in accordance with City standards. The criterion is met.

J. Private streets may be considered within a development site provided all the following conditions are met:

**Response:** This application includes public, local street infrastructure and thus the criteria for private streets do not apply and has been deleted for brevity.

#### 17.84.50 STREET REQUIREMENTS

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B. Location of new arterial streets shall conform to the Transportation System Plan in accordance with the following:

1. Arterial streets should generally be spaced in one-mile intervals.

2. Traffic signals should generally not be spaced closer than 1500 ft. for reasonable traffic progression.



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**Response:** This application does not involve the completion of arterial street infrastructure. The TSP details Gunderson Road as a minor arterial street section along the southern property boundary. Due to circumstances outside of the Applicant’s control, Gunderson Road cannot be extended within the UGB via the property to the east as depicted in the TSP.

**17.84.60 PUBLIC FACILITY EXTENSIONS**

- A. All development sites shall be provided with public water, sanitary sewer, broadband (fiber), and storm drainage.
- B. Where necessary to serve property as specified in “A” above, required public facility installations shall be constructed concurrent with development.
- C. Off-site public facility extensions necessary to fully serve a development site and adjacent properties shall be constructed concurrent with development.
- D. As necessary to provide for orderly development of adjacent properties, public facilities installed concurrent with development of a site shall be extended through the site to the edge of adjacent property(ies).
- E. All public facility installations required with development shall conform to the City’s facilities master plans.

**Response:** The Preliminary Plans include information detailing the nature of public facility extensions to each lot, and to the edge of properties adjacent to the subdivision, where applicable. Installations are planned to be completed concurrent with the approved phasing of the subdivision and conform to the City’s facilities master plans. The criteria are met.

- F. Private on-site sanitary sewer and storm drainage facilities may be considered provided all the following conditions exist:
  - 1. Extension of a public facility through the site is not necessary for the future orderly development of adjacent properties;
  - 2. The development site remains in one ownership and land division does not occur (with the exception of land divisions that may occur under the provisions of 17.84.50 F above);
  - 3. The facilities are designed and constructed in accordance with the Uniform Plumbing Code and other applicable codes, and permits and/or authorization to proceed with construction is issued prior to commencement of work.

**Response:** The application does not include private facilities as described above. The criterion does not apply.

**17.84.70 PUBLIC IMPROVEMENT PROCEDURES**

It is in the best interests of the community to ensure public improvements installed in conjunction with development are constructed in accordance with all applicable City policies, standards, procedures, and ordinances. Therefore, prior to commencement of installation of public water, sanitary sewer, storm drainage, broadband (fiber), street, bicycle, or pedestrian improvements for any development site, developers shall contact the City Engineer to receive information regarding adopted procedures governing plan submittal, plan

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review and approval, permit requirements, inspection and testing requirements, progress of the work, and provision of easements, dedications, and as-built drawings for installation of public improvements. All work shall proceed in accordance with those adopted procedures, and all applicable City policies, standards, and ordinances.

Whenever any work is being done contrary to the provisions of this Code, the Director may order the work stopped by notice in writing served on the persons engaged in performing the work or causing the work to be performed. The work shall stop until authorized by the Director to proceed with the work or with corrective action to remedy substandard work already completed.

**Response:** Site work is planned to be completed in accordance with the public improvement procedures described above.

#### 17.84.80 FRANCHISE UTILITY INSTALLATIONS

These standards are intended to supplement, not replace or supersede, requirements contained within individual franchise agreements the City has with providers of electrical power, telephone, cable television, and natural gas services (hereinafter referred to as "franchise utilities").

- A. Where a land division is proposed, the developer shall provide franchise utilities to the development site. Each lot created within a subdivision shall have an individual service available or financially guaranteed prior to approval of the final plat.
- B. Where necessary, in the judgment of the Director, to provide for orderly development of adjacent properties, franchise utilities shall be extended through the site to the edge of adjacent property(ies), whether or not the development involves a land division.
- C. The developer shall have the option of choosing whether or not to provide natural gas or cable television service to the development site, providing all of the following conditions exist:
  - 1. Extension of franchise utilities through the site is not necessary for the future orderly development of adjacent property(ies);
  - 2. The development site remains in one ownership and land division does not occur (with the exception of land divisions that may occur under the provisions of 17.84.50 F above); and
  - 3. The development is non-residential.
- D. Where a land division is not proposed, the site shall have franchise utilities required by this section provided in accordance with the provisions of 17.84.70 prior to occupancy of structures.
- E. All franchise utility distribution facilities installed to serve new development shall be placed underground except as provided below. The following facilities may be installed above-ground:
  - 1. Poles for street lights and traffic signals, pedestals for police and fire system communications and alarms, pad mounted transformers, pedestals, pedestal mounted terminal boxes and meter cabinets, concealed ducts, substations, or facilities used to carry voltage higher than 35,000 volts;





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2. Overhead utility distribution lines may be permitted upon approval of the City Engineer when unusual terrain, soil, or other conditions make underground installation impracticable. Location of such overhead utilities shall follow rear or side lot lines wherever feasible.

**Response:** The Preliminary Plans include information for franchise utility installations. The installation of franchise utilities will be in accordance with the provisions of this Section and arranged with franchise utility providers. The criteria are met.

- F. The developer shall be responsible for making necessary arrangements with franchise utility providers for provision of plans, timing of installation, and payment for services installed. Plans for franchise utility installations shall be submitted concurrent with plan submittal for public improvements to facilitate review by the City Engineer.

**Response:** The Preliminary Plans include information for franchise utility installations. The standard is met.

- G. The developer shall be responsible for installation of underground conduit for street lighting along all public streets improved in conjunction with the development in accordance with the following:
  1. The developer shall coordinate with the City Engineer to determine the location of future street light poles. The street light plan shall be designed to provide illumination meeting standards set by the City Engineer.
  2. The developer shall make arrangements with the serving electric utility for trenching prior to installation of underground conduit for street lighting.

**Response:** The installation of franchise utilities will be in accordance with the provisions of this Section and arranged with franchise utility providers. The criteria are met.

#### 17.84.90 LAND FOR PUBLIC PURPOSES

- A. Easements for public sanitary sewer, water, storm drain, pedestrian and bicycle facilities shall be provided whenever these facilities are located outside a public right-of-way in accordance with the following:
  1. When located between adjacent lots, easements shall be provided on one side of a lot line.
  2. The minimum easement width for a single utility is 15 ft. The minimum easement width for two adjacent utilities is 20 ft. The easement width shall be centered on the utility to the greatest extent practicable. Wider easements may be required for unusually deep facilities.
- B. Public utility easements with a minimum width of 5 feet shall be provided adjacent to all street rights-of-way for franchise utility installations.

**Response:** The Preliminary Subdivision Plat in the Preliminary Plans depicts required dedications and easements. The criteria are met.



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C. Where a development site is traversed by a drainageway or water course, a drainage way dedication shall be provided to the City.

**Response:** The project site does not include water course or drainageway, as reported in the FSH Analysis (Exhibit H). This criterion does not apply.

D. Where a development is traversed by, or adjacent to, a future trail linkage identified within the Transportation System Plan, dedications of suitable width to accommodate the trail linkage shall be provided. This width shall be determined by the City Engineer, considering the type of trail facility involved.

**Response:** The project site does not contain adjacent or future trails within the Transportation System Plan. This criterion does not apply.

E. Where existing rights-of-way and/or easements within or adjacent to development sites are nonexistent or of insufficient width, dedications may be required. The need for and widths of those dedications shall be determined by the City Engineer.

**Response:** As shown on the Preliminary Plans, right-of-way and improvement widths for streets within Bailey Meadows are being designed in accordance with City standards. Dedications related to existing right-of-way on SE Ponder Lane, east adjacent to the subdivision, are detailed for review by the City Engineer. The criterion is met.

F. Where easement or dedications are required in conjunction with land divisions, they shall be recorded on the plat. Where a development does not include a land division, easements and/or dedications shall be recorded on standard document forms provided by the City Engineer.

**Response:** The Preliminary Subdivision Plat in Exhibit A includes details of necessary easements and dedications to be recorded on the plat as required. The criteria are met.

G. If the City has an interest in acquiring any portion of a proposed subdivision or planned development site for a public purpose, other than for those purposes listed above, or if the City has been advised of such interest by a school district or other public agency, and there is a reasonable assurance that steps will be taken to acquire the land, the Planning Commission may require those portions of the land be reserved for public acquisition for a period not to exceed 1 year.

**Response:** Other than for necessary supporting public infrastructure, this application does not include land designated for a public purpose. The criteria do not apply.

H. Environmental assessments for all lands to be dedicated to the public or City may be required to be provided by the developer. An environmental assessment shall include information necessary for the City to evaluate potential liability for environmental hazards, contamination, or required waste cleanups related to the dedicated land. An environmental assessment shall be completed prior to the acceptance of dedicated lands in accordance with the following:

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1. The initial environmental assessment shall detail the history of ownership and general use of the land by past owners. Upon review of the information provided by the grantor, as well as any site investigation by the City, the Director will determine if the risks of potential contamination warrant further investigation. When further site investigation is warranted, a Level I Environmental Assessment shall be provided by the grantor.

**Response:** Other than for necessary supporting public infrastructure, this application does not include land designated for a public purpose. The criteria do not apply.

17.84.100 MAIL DELIVERY FACILITIES

- A. In establishing placement of mail delivery facilities, locations of sidewalks, bikeways, intersections, existing or future driveways, existing or future utilities, right-of-way and street width, and vehicle, bicycle and pedestrian movements shall be considered. The final location of these facilities shall meet the approval of the City Engineer and the Post Office. Where mail delivery facilities are being installed in conjunction with a land division, placement shall be indicated on the plat and meet the approval of the City Engineer and the Post Office prior to final plat approval.
- B. Where mail delivery facilities are proposed to be installed in areas with an existing or future curb-tight sidewalk, a sidewalk transition shall be provided that maintains the required design width of the sidewalk around the mail delivery facility. If the right-of-way width will not accommodate the sidewalk transition, a sidewalk easement shall be provided adjacent to the right-of-way.
- C. Mail delivery facilities and the associated sidewalk transition (if necessary) around these facilities shall conform with the City's standard construction specifications. Actual mailbox units shall conform with the Post Office standards for mail delivery facilities.
- D. Installation of mail delivery facilities is the obligation of the developer. These facilities shall be installed concurrently with the public improvements. Where development of a site does not require public improvements, mail delivery facilities shall be installed concurrently with private site improvements.

**Response:** In conjunction with the final construction plans, locations for mail delivery facilities will be coordinated and established with the U.S. Post Office.

CHAPTER 17.86 - PARKLAND & OPEN SPACE

Parkland Dedication: New residential subdivisions, planned developments, multi-family or manufactured home park developments shall be required to provide parkland to serve existing and future residents of those developments. Multi-family developments which provide some "congregate" services and/or facilities, such as group transportation, dining halls, emergency monitoring systems, etc., but which have individual dwelling units rather than sleeping quarters only, are considered to be multi-family developments for the purpose of parkland dedication. Licensed adult congregate living facilities, nursing homes, and all other similar facilities which provide their clients with individual beds and sleeping quarters, but in which all other care and services are communal and provided by facility employees, are specifically exempt from parkland dedication and system development fee requirements.



1. The required parkland shall be dedicated as a condition of approval for the following:
  - a. Tentative plat for a subdivision or partition;
2. Calculation of Required Dedication: The required parkland acreage to be dedicated is based on a calculation of the following formula rounded to the nearest 1/100 (0.00) of an acre:
 

Required parkland dedication (acres) = (proposed units) x (persons/unit) x 0.0043 (per person park land dedication factor)

  - a. Population Formula: The following table shall be used to determine the number of persons per unit to be used in calculating required parkland dedication:

Type of Unit	Total Persons Per Unit
Single-family residential	3.0

Persons per unit, age distribution, and local conditions change with time. The specific formula for the dedication of land will, therefore, be subject to periodic review and amendment.

- b. Per Person Parkland Dedication Factor: The total parkland dedication requirement shall be 0.0043 of an acre per person based on the adopted standard of 4.3 acres of land per one thousand of ultimate population per the Parks Master Plan
  1. This standard represents the citywide land-to-population ratio for city parks, and may be adjusted periodically through amendments to the Parks Master Plan.

**Response:** The criteria above are satisfied by means of a fee in lieu of parkland dedication per the City standard 17.86.40. The remainder of Chapter 17 Section 86, which does not apply to the project, has been omitted for brevity.

**17.86.40 CASH IN LIEU OF DEDICATION**

At the city’s discretion only, the city may accept payment of a fee in lieu of land dedication. The city may require payment in lieu of land when the park land to be dedicated is less than 3 acres. A payment in lieu of land dedication is separate from Park Systems Development Charges, and is not eligible for a credit of Park Systems Development Charges. The amount of the fee in lieu of land dedication (in dollars per acre) shall be set by City Council Resolution, and it shall be based on the typical market value of developed property (finished lots) in Sandy net of related development costs.

1. The following factors shall be used in the choice of whether to accept land or cash in lieu:

**Response:** This application is a “Needed Housing” application pursuant to ORS 197.303(1) and ORS 197.307(4), therefore, only objective standards and procedures apply to the application

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review. The choice between dedication and payment is subjective, as is the procedure to make the recommendation on the choice.

- a. The topography, geology, access to, parcel size, and location of land in the development available for dedication;

**Response:** This criterion is subjective and cannot be applied to a “Needed Housing” application under ORS 197.307(4).

- b. Potential adverse/beneficial effects on environmentally sensitive areas;

**Response:** This application does not include any environmentally sensitive areas as reported in the FSH Analysis (Exhibit H). The criterion does not apply.

- c. Compatibility with the Parks Master Plan, Public Facilities element of the Comprehensive Plan, and the City of Sandy Capital Improvements Program in effect at the time of dedication;

**Response:** This application is a “Limited Land Use Decision” pursuant to ORS 197.195(1) and Plans may be approval criteria only if specific policies are incorporated into the City’s land use regulations. The City’s land use regulation’s approval criteria in SDC 17.100.60 do not incorporate the 1997 Parks Master Plan, nor the above Plans with the specificity required by ORS 197.195(1), so they are not mandatory approval criteria and do not apply to this application.

- d. Availability of previously acquired property; and
- e. The feasibility of dedication.

**Response:** The above criteria are subjective and cannot be applied to a “Needed Housing” application per ORS 197.307(4).

- 2. Cash in lieu of parkland dedication shall be paid prior to approval of the final plat or as specified below:
  - a. 50 percent of the payment shall be paid prior to final plat approval, and
  - b. The remaining 50 percent of the payment pro-rated equally among the lots, plus an administrative surcharge as determined by the City Council through a resolution, will constitute a lien against the property payable at the time of sale.

**Response:** Cash in lieu of parkland dedication will be paid as determined and recorded in the resolution. The table below provides a preliminary cost estimate calculation. The criteria can be met.

CASH IN LIEU OF DEDICATION	
Proposed Units	100
Persons Per Unit	3



<b>Per Person Parkland Dedication Factor</b>	0.0043
<b>Required Parkland (Acres)</b>	1.29
<b>Cash in Lieu Cost Estimate</b>	\$310,890

**CHAPTER 17.90 - DESIGN STANDARDS**

**17.90.10 APPLICABILITY**

The provisions of this chapter apply to all zones and uses as follows except as specified in Sections 17.90.10(B), (C), (D), (E), and (F) below:

- C. **Residential Dwelling Exception:** Single family dwellings, duplexes, manufactured dwellings on individual lots of record, and manufactured dwellings in parks are exempt from all requirements of this chapter except for Section 17.90.150.

**Response:**

This application involves a planned subdivision of lots suitable for future single-family detached dwellings. The Preliminary Dimensioned Subdivision Plan with Setbacks, included in Exhibit A, demonstrates that future homes can meet the minimum setback requirements of the Single-Family Residential zone. The residential design standards, which apply to the street-facing facades of all new single-family dwellings, will be assessed at time of future building permit submittal. The remainder of Section 17.90.150 has been omitted for brevity.

**CHAPTER 17.92 - LANDSCAPING & SCREENING GENERAL STANDARDS - ALL ZONES**

**17.92.30 REQUIRED TREE PLANTINGS**

Planting of trees is required for all parking lots with 4 or more parking spaces, public street frontages, and along private drives more than 150 feet long. Trees shall be planted outside the street right-of-way except where there is a designated planting strip or City adopted street tree plan.

The City maintains a list of appropriate trees for street tree and parking lot planting situations. Selection of species should be made from the city-approved list. Alternate selections may be approved by the Director following written request. The type of tree used shall determine frequency of trees in planting areas. Trees in parking areas shall be dispersed throughout the lot to provide a canopy for shade and visual relief.

Area/Type of Planting	Canopy	Spacing
Street Tree	Medium	30 ft. on center
Street Tree	Large	50 ft. on center

Trees may not be planted:

- Within 5 ft. of permanent hard surface paving or walkways, unless specific species, special
- planting techniques and specifications approved by the Director are used.
- Unless approved otherwise by the City Engineer:
- Within 10 ft. of fire hydrants and utility poles

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- Within 20 ft. of street light standards
  - Within 5 ft. from an existing curb face
  - Within 10 ft. of a public sanitary sewer, storm drainage or water line
  - Where the Director determines the trees may be a hazard to the public interest or general welfare.
  - Trees shall be pruned to provide a minimum clearance of 8 ft. above sidewalks and 12 ft. above street and roadway surfaces.

**Response:** As shown on the Preliminary Street Tree and Stormwater Screening Planting Plan (included in Exhibit A), required street trees and planting strips are generally planned to be completed prior to occupancy of the adjoining lot. Street trees and planting strips that are located along the stormwater facility and at the site access are planned to be completed with the subdivision infrastructure as shown on the Preliminary Plans. Landscaping will be provided in accordance with the above criteria. Therefore, this standard is met.

#### 17.92.40 IRRIGATION

Landscaping shall be irrigated, either with a manual or automatic system, to sustain viable plant life.

**Response:** This standard is understood. No additional response is necessary.

#### 17.92.60 REVEGETATION IN UNLANDSCAPED OR NATURAL LANDSCAPED AREAS

- A. Areas where natural vegetation has been removed or damaged through grading or construction activity in areas not affected by the landscaping requirements and that are not to be occupied by structures or other improvements shall be replanted.
- B. Plant material shall be watered at intervals sufficient to assure survival and growth.
- C. The use of native plant materials or plants acclimatized to the Pacific Northwest is encouraged to reduce irrigation and maintenance demands.

**Response:** This standard is understood. No additional response is necessary.

#### 17.98.20 OFF-STREET PARKING REQUIREMENTS

- A. Off Street Parking Requirements. Off street parking shall conform to the following standards:
  1. All square footage measurements are gross square feet of total floor area.
  2. 18 lineal inches of bench shall be considered 1 seat.
  3. Except as otherwise specified, parking for employees shall be provided based on 1 space per 2 employees for the largest shift in addition to required parking specified in Sections A6-A9 below.

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4. Where less than 5 parking spaces are required, then only one bicycle space shall be required except as otherwise modified in Sections 5-9 below.
  5. In addition to requirements for residential off street parking, new dwellings shall meet the on-street parking requirements in Section 17.98.200.

6.

Residential Uses	Number of Parking Spaces	Number of Bicycle Spaces
Single Family Detached	2 per dwelling	0

**Response:** This application is for a residential subdivision suitable for single-family detached homes. As shown on the Preliminary Parking Plan in Exhibit A, future driveways provide for two off-street parking spaces per dwelling. Bicycle parking is not required or provided. As applicable, the criteria above are met.

**17.98.200 RESIDENTIAL ON-STREET PARKING REQUIREMENTS**

A. **Residential On-Street Parking Requirements.** Residential on-street parking shall conform to the following standards:

1. In addition to required off-street parking, all new residential planned developments, subdivisions and partitions shall provide one (1) on-street parking space within 200 feet of each dwelling except as provided in Section 17.98.200(A)(6) below.

**Response:** As shown on the Preliminary Parking Plan in Exhibit A, in addition to required off-street parking, the 100-lot subdivision is planned to provide 122 on-street parking spaces. The criterion is met.

2. The location of residential on-street parking shall be reviewed for compliance with this section through submittal of a Residential Parking Analysis Plan as required in Section 17.98.10(M).

**Response:** The Preliminary Plans (Exhibit A) include a Preliminary Parking Plan sheet. The submittal requirements are met.

3. Residential on-street parking shall not obstruct required clear vision areas and shall not violate any local or state laws.
4. Parallel residential on-street parking spaces shall be 22 feet minimum in length.
5. Residential on-street parking shall be measured along the curb from the outside edge of a driveway wing or curb cut. Parking spaces must be set back a minimum of 15 feet from an intersection and may not be located within 10 feet of a fire hydrant.

**Response:** As shown on the Preliminary Parking Plan in Exhibit A, on-street parking is planned to not obstruct clear vision areas. Parallel on-street parking spaces meet the minimum length and setback requirements as detailed above. The criteria are met.

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6. Portions of residential on-street parking required by this section may be provided in parking courts that are interspersed throughout a development when the following standards are met:
- a. No more than eight (8) parking spaces shall be provided in a parking court;
  - b. Parking spaces within a parking court shall be nine (9) feet wide and 18 feet in depth;
  - c. Notwithstanding Section 17.98.70, vehicles parked in a parking court are permitted to back onto the public right-of-way from the parking court;
  - d. A parking court shall be located within 200 feet of the dwellings requiring parking in accordance with the requirements of Section 17.98.10(M);
  - e. No more than two (2) parking courts shall be provided within a block, with only one (1) parking court provided along a block face;
  - f. A parking court shall be paved in compliance with the standards of this chapter and the latest adopted grading and drainage standards; 17.98 - 13 Revised by Ordinance No. 2013-04 (effective 07/03/13)
  - g. If a parking court is adjacent to a public right-of-way, it shall be publicly owned and maintained;
  - h. If a parking court is adjacent to a private drive, it shall be privately owned and maintained. For each parking court there shall be a legal recorded document which includes:
    - i. A legal description of the parking court;
    - ii. Ownership of the parking court;
    - iii. Use rights; and
    - iv. A maintenance agreement and the allocation and/or method of determining liability for maintenance of the parking court;
  - i. A parking court shall be used solely for the parking of operable passenger vehicles.

**Response:** This application does not include parking courts. The criteria listed above are not applicable.

CHAPTER 17.100 - LAND DIVISION

17.100.20 LAND DIVISION CLASSIFICATION - TYPE I, II OR III PROCEDURES

- E. Type III Land Division (Major Partition or Subdivision). A major partition or subdivision shall be a Type III procedure if unsatisfactory street conditions exist or the resulting parcels/lots do not comply with the standards of the zoning district and this chapter. The Director shall determine if unsatisfactory street conditions exist based on one of the following criteria:



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1. The land division does not link streets that are stubbed to the boundaries of the property.

**Response:** This application links to and includes the continuation of the existing Melissa Avenue right-of-way street stub, north of the project site as shown on the Preliminary Plans in Exhibit A. Therefore, this criterion does not apply, and future street conditions will be satisfactory.

2. An existing street or a new proposed street will be extended beyond the boundaries of the land division to complete a street system or provide access to adjacent property.

**Response:** As shown on the Preliminary Plans, planned streets are not extended beyond the boundaries of the subdivision. Therefore, this criterion does not apply, and future street conditions will be satisfactory.

3. The proposed street layout is inconsistent with a street pattern adopted as part of the Comprehensive Plan or officially adopted City street plan.

**Response:** The Preliminary Plans include information illustrating how the infrastructure is planned to be consistent with City standards. Therefore, the criterion will be met, and future street conditions will be satisfactory.

#### 17.100.60 SUBDIVISIONS

Approval of a subdivision is required for a land division of 4 or more parcels in a calendar year.

A two-step procedure is required for subdivision approval: (1) tentative plat review and approval; and (2) final plat review and approval.

A. Preapplication Conference. The applicant for a subdivision shall participate in a preapplication conference with city staff to discuss procedures for approval, applicable state and local requirements, objectives and policies of the Sandy Comprehensive Plan, and the availability of services. The preapplication conference provides the opportunity to discuss the conceptual development of the property in advance of formal submission of the tentative plan in order to save the applicant unnecessary delay and cost.

**Response:** A pre-application conference was held on November 20, 2018.

B. Application Requirements for a Tentative Plat. Subdivision applications shall be made on forms provided by the planning department and shall be accompanied by:

1. 20 copies of the tentative plat;
2. Required fee and technical service deposit;
3. 20 copies of all other supplementary material as may be required to indicate the general program and objectives of the subdivision;
4. Preliminary title search;
5. List of affected property owners.



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**Response:** Exhibit B contains the documents listed above. These submittal requirements are met.

- B. Format. The Tentative Plat shall be drawn on a sheet 18 x 24 inches in size and at a scale of one inch equals one hundred feet unless an alternative format is approved by the Director at the preapplication conference. The application shall include one copy of a scaled drawing of the proposed subdivision, on a sheet 8 1/2 x 11, suitable for reproduction.

**Response:** Exhibit A contains the Preliminary Subdivision Plat. This submittal requirement is met.

D. Data Requirements for Tentative Plat.

1. Scale of drawing, north arrow, and date.
2. Location of the subdivision by section, township and range, and a legal description sufficient to define the location and boundaries of the proposed tract.
3. A vicinity map, showing adjacent property boundaries and how proposed streets may be extended to connect to existing streets.
4. Names, addresses, and telephone numbers of the owner(s) of the property, the engineer or surveyor, and the date of the survey.
5. Streets: location, names, paved widths, alleys, and right-of-way (existing and proposed) on and within 400 feet of the boundaries of the subdivision tract.
6. Easements: location, widths, purpose of all easements (existing and proposed) on or serving the tract.
7. Utilities: location of storm drainage, sanitary sewers and water lines (existing and proposed) on and abutting the tract. If utilities are not on or abutting the tract, indicate the direction and distance to the nearest locations.
8. Ground elevations shown by contour lines at two-foot vertical intervals for ground slopes of less than 10 percent and at ten-foot vertical intervals for ground slopes exceeding 10 percent. Ground elevation shall be related to an established benchmark or other datum approved by the Director.
9. Natural features such as marshes, rock outcroppings, watercourses on and abutting the property, location of wooded areas.
10. Approximate location of areas subject to periodic inundation or storm sewer overflow, location of any floodplain or flood hazard district.
11. Location, width, and direction of flow of all water courses.
12. Identification of the top of bank and boundary of mandatory setback for any stream or water course.
13. Identification of any associated wetland and boundary of mandatory setback.



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14. Identification of any wetland and boundary of mandatory setback.
  15. Location of at least one temporary bench mark within the tract boundaries.
  16. Existing uses of the property, including location and present use of all existing structures to remain on the property after platting.
  17. Lots and Blocks: approximate dimensions of all lots, minimum lot sizes, and proposed lot and block numbers.
  18. Existing zoning and proposed land use.
  19. Designation of land intended to be dedicated or reserved for public use, with the purpose, conditions, or limitations of such reservations clearly indicated.
  20. Proposed development phases, if applicable.
  21. Any other information determined necessary by the Director at the preapplication conference, such as a soil report or other engineering study, traffic analysis, floodplain or wetland delineation, etc.

**Response:** The Preliminary Plans and other documentation include the information listed above, as applicable. Therefore, these submittal requirements are met.

E. **Approval Criteria.** The Director or Planning Commission shall review the tentative plat for the subdivision based on the classification procedure (Type II or III) set forth in Section 17.12 and the following approval criteria:

1. The proposed subdivision is consistent with the density, setback and dimensional standards of the base zoning district, unless modified by a Planned Development approval.

**Response:** As shown on the Preliminary Subdivision Plat in Exhibit A and findings provided in the written document, the planned subdivision is consistent with the density, setback, and dimensional standards of the SFR zoning district. The project is not modified by Planned Development standards of approval. The criterion is met.

3. The proposed subdivision is consistent with the design standards set forth in this chapter.

**Response:** This subdivision application is consistent with the design standards set forth in SD 17.100.70 and in conformance with the applicable SFR zoning district. Therefore, the criterion is met.

4. The proposed street pattern is connected and consistent with the Comprehensive Plan or official street plan for the City of Sandy.

**Response:** As shown on the Preliminary Plans, the intended local street pattern internal to the subdivision is connected and consistent with the Comprehensive Plan. Access from the existing street stub, Melissa Avenue, provides a continuous network through and to the boundaries of the subdivision. Additionally, this standard may not be applied under ORS

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197.307(4) because the phrase “connected and consistent” is subjective. Additionally, this standard may not be applied under ORS 197.307(4) because the phrase “City standards” is subjective. Additionally, this standard may not be applied under ORS 197.307(4) because the words “objective” and “necessary” are subjective.

5. Adequate public facilities are available or can be provided to serve the proposed subdivision.

**Response:** As shown in the Preliminary Plans, public facilities as available will be provided to serve the subdivision, including but not limited to stormwater management, sanitary sewer, municipal water, and franchise utilities. Infrastructure is planned to be completed concurrent with the build out of the associated phase. The criterion is met.

6. All proposed improvements meet City standards.

**Response:** Sandy Development Code requirements have been reviewed with the intent that all planned improvements meet applicable City standards.

6. The phasing plan, if requested, can be carried out in a manner that meets the objectives of the above criteria and provides necessary public improvements for each phase as it develops.

**Response:** As shown on the Preliminary Subdivision Plat in the Preliminary Plans, the subdivision is planned to be completed in three phases and provide necessary public improvements concurrently with each phase. The above requirements are satisfied and support the City’s approval of this Subdivision.

- F. Conditions. The Director or Planning Commission may require dedication of land and easements and may specify such conditions or modifications of the tentative plat as deemed necessary.

**Response:** It is understood the Preliminary Subdivision Plat may have conditions or modifications required as necessary. The Applicant reserves the right to object to the application of standards or conditions other than those that are clear and objective and does not waive its right to assert that the needed housing statutes apply to this application.

- G. Improvements. A detailed list of required improvements for the subdivisions shall be set forth in the approval and conditions for the tentative plat.

**Response:** This criterion is understood. No additional response is necessary.

- H. Tentative Plat Expiration Date. The final plat shall be delivered to the Director for approval within one year following approval of the tentative plat, and shall incorporate any modification or condition required by approval of the tentative plat. The Director may, upon written request of the subdivider, grant an extension of the tentative plat approval for up to one additional year.

**Response:** This criterion is understood. No additional response is necessary.

17.100.70 LAND DIVISION DESIGN STANDARDS

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All land divisions shall be in conformance with the requirements of the applicable base zoning district and this chapter, as well as with other applicable provisions of this Code. Modifications to these requirements may be accomplished through a Planned Development. The design standards in this section shall be used in conjunction with street design standards included in the City of Sandy Transportation System Plan and standards and construction specifications for public improvements as set forth in adopted Public Facilities Plans and the Sandy Municipal Code.

**Response:** This application contains the Preliminary Plans, reports, analysis, calculations, and applicable narrative information to validate conformance with the requirements of the Sandy Development Code. The land division design standards of City Code are satisfied.

#### 17.100.80 CHARACTER OF THE LAND

Land which the Director or the Planning Commission finds to be unsuitable for development due to flooding, improper drainage, steep slopes, rock formations, adverse earth formations or topography, utility easements, or other features which will reasonably be harmful to the safety, health, and general welfare of the present or future inhabitants of the partition or subdivision and the surrounding areas, shall not be developed unless adequate methods are formulated by the subdivider and approved by the Director or the Planning Commission to solve the problems created by the unsuitable land conditions.

**Response:** As detailed in the Flood and Slope Hazard Analysis (Exhibit H) the project site does not exhibit or contain unsuitable land conditions. This criterion does not apply.

#### 17.100.90 ACCESS CONTROL GUIDELINES AND COORDINATION

- A. Notice and coordination with ODOT required. The city will coordinate and notify ODOT regarding all proposals for new or modified public and private accesses on to Highways 26 and 211.
- B. It is the city policy to, over time, reduce noncompliance with the Oregon Highway Plan Access Management Policy guidelines.
- C. Reduction of compliance with the cited State standards means that all reasonable alternatives to reduce the number of accesses and avoid new non-complying accesses will be explored during the development review. The methods to be explored include, but are not limited to: closure, relocation, and consolidation of access; right-in/right-out driveways; crossover easements; and use of local streets, alleys, and frontage roads.

**Response:** The above criterion applies to City processes for noticing and coordinating with ODOT, as applicable. This standard is not applicable as the project does not access Highway 26 or 211 and does not require direct action of the Applicant. The criteria do not apply.

#### 17.100.100 STREETS GENERALLY

No subdivision or partition shall be approved unless the development has frontage or approved access to an existing public street. In addition, all streets shall be graded and improved in conformance with the City's construction standards, approved by the City Engineer, in accordance with the construction plans.



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- A. **Street Connectivity Principle.** The pattern of streets established through land divisions should be connected 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 many streets so that key streets (particularly U.S. 26) are not overburdened.

**Response:** The Preliminary Plans illustrate the street network internal to the subdivision and establish safe, logical circulation throughout the site. The Street Connectivity Principle is met.

- B. **Transportation Impact Studies.** Transportation impact studies may be required by the city engineer to assist the city to evaluate the impact of development proposals, determine reasonable and prudent transportation facility improvements and justify modifications to the design standards. Such studies will be prepared in accordance with the following:

1. A proposal established with the scope of the transportation impact study shall be coordinated with, and agreed to, by the city engineer. The study requirements shall reflect the magnitude of the project in accordance with accepted transportation planning and engineering practices. A professional civil or traffic engineer registered in the State of Oregon shall prepare such studies.
2. If the study identifies level-of-service conditions less than the minimum standards established in the Sandy Transportation System Plan, improvements and funding strategies mitigating the problem shall be considered as part of the land use decision for the proposal.

**Response:** The Traffic Impact Analysis prepared by a registered professional traffic engineer (Exhibit F) is included in the application materials. The scope of the analysis was confirmed with the City's traffic engineer consultant. The requirements are met.

- C. **Topography and Arrangement.** All streets shall be properly related to special traffic generators such as industries, business districts, schools, and shopping centers and to the pattern of existing and proposed land uses.

- D. **Street Spacing.** Street layout shall generally use a rectangular grid pattern with modifications as appropriate to adapt to topography or natural conditions.

**Response:** The Preliminary Plans (Exhibit A) include information which meets the criteria above. The streets are arranged in accordance with existing residential activity and a rectangular grid pattern is generally used. The criteria are met.

- E. **Future Street Plan.** Future street plans are conceptual plans, street extensions and connections on acreage adjacent to land divisions. They assure access for future development and promote a logical, connected pattern of streets. It is in the interest of the city to promote a logical, connected pattern of streets. All applications for land divisions shall provide a future street plan that shows the pattern of existing and proposed future streets within the boundaries of the proposed land divisions, proposed connections to abutting



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properties, and extension of streets to adjacent parcels within a 400 foot radius of the study area where development may practically occur.

**Response:** The Preliminary Plans (Exhibit A) include a Conceptual Future Street Plan which meets the criteria above.

- F. Connections. Except as permitted under Exemptions, all streets, alleys and pedestrian walkways shall connect to other streets within the development and to existing and planned streets outside the development and to undeveloped properties which have no future street plan. Streets shall terminate at other streets or at parks, schools or other public land within a neighborhood.

Where practicable, local roads shall align and connect with other roads when crossing collectors and arterials.

Proposed streets or street extensions shall be located to provide direct access to existing or planned transit stops, and existing or planned neighborhood activity centers, such as schools, shopping areas and parks.

**Response:** The Preliminary Plans show local street and pedestrian walkway (sidewalk) connections internal to the subdivision. The local streets do not cross any collector or arterial roads and there are no exemptions necessary for the intended street network.

G. Exemptions.

1. A future street plan is not required for partitions of residentially zoned land when none of the parcels may be redivided under existing minimum density standards.
2. Standards for street connections do not apply to freeways and other highways with full access control.
3. When street connection standards are inconsistent with an adopted street spacing standard for arterials or collectors, a right turn in/right turn out only design including median control may be approved. Where compliance with the standards would result in unacceptable sight distances, an accessway may be approved in place of a street connection.

**Response:** This application does not seek street design exemptions. The criteria do not apply.

#### 17.100.110 STREET STANDARDS AND CLASSIFICATION

Street standards are illustrated in the figures included at the end of this chapter. Functional definitions of each street type are described in the Transportation System Plan as summarized below.

- A. Major arterials are designed to carry high volumes of through traffic, mixed with some unavoidable local traffic, through or around the city. Major arterials should generally be spaced at 1-mile intervals.
- B. Minor arterials are designed to collect and distribute traffic from major and minor arterials to neighborhood collectors and local streets, or directly to traffic destinations. Minor arterials should generally be spaced at 1-mile intervals.



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- C. Residential minor arterials are a hybrid between minor arterial and collector type streets that allow for moderate to high traffic volumes on streets where over 90% of the fronting lots are residential.
  - D. Collector streets are designed to collect and distribute traffic from higher type arterial streets to local streets or directly to traffic destinations. Collector streets should generally be spaced at 1/2-mile intervals.

**Response:** The project site does not include major or minor arterials, residential minor arterials, or collector streets. These standards do not apply.

- E. Local streets are designed to provide direct access to abutting property and connect to collector streets. A general spacing of 8-10 local streets per mile is recommended.

**Response:** The subdivision is accessed via Melissa Avenue, a local street section to the north of the property boundary, and a continuous network of local streets allow transportation throughout the site.

- F. Cul-de-sacs and dead end streets are discouraged. If deemed necessary, cul-de-sacs shall be as short as possible and shall not exceed 400 feet in length.
- G. Public access lanes are designed to provide primary access to a limited number of dwellings when the construction of a local street is unnecessary.
- H. Alleys are designed to provide access to multiple dwellings in areas where lot frontages are narrow and driveway spacing requirements cannot be met.

**Response:** The project site does not include cul-de-sacs, public access lanes, or alleys. These standards do not apply.

#### 17.100.120 BLOCKS AND ACCESSWAYS

- A. Blocks. Blocks shall have sufficient width to provide for two tiers of lots at appropriate depths. However, exceptions to the block width shall be allowed for blocks that are adjacent to arterial streets or natural features.
- B. Residential Blocks. Blocks fronting local streets shall not exceed 400 feet in length, unless topographic, natural resource, or other similar physical conditions justify longer blocks. Blocks may exceed 400 feet if approved as part of a Planned Development, Specific Area Plan, adjustment or variance.

**Response:** As shown on the Preliminary Plans, the residential blocks provide two tiers of lots. Blocks front local streets and do not exceed 400 feet in length, except for one instance. The block for Street A along the north property line boundary west of Melissa Avenue is ±475 feet. This block length cannot be reduced due to the existing adjacent residential block length to the north. There is a pedestrian path planned in this northwestern portion of the site to enhance mobility in this area. The standards are met.

- C. Commercial Blocks. Blocks located in commercial districts shall not exceed 400 feet in length.

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**Response:** This application does not involve commercial districts; the criteria does not apply.

- D. **Pedestrian and Bicycle Access Way Requirements.** In any block in a residential or commercial district over 600 feet in length, a pedestrian and bicycle accessway with a minimum improved surface of 10 feet within a 15-foot right-of-way or tract shall be provided through the middle of the block. To enhance public convenience and mobility, such accessways may be required to connect to cul-de-sacs, or between streets and other public or semipublic lands or through greenway systems.

**Response:** As shown on the Preliminary Plans, this application does not include any blocks greater than 600 feet in length. The standard does not apply.

#### 17.100.130 EASEMENTS

A minimum eight (8) foot public utility easement shall be required along property lines abutting a right-of-way for all lots within a partition or subdivision. Where a partition or subdivision is traversed by a watercourse, drainage way, channel or stream, the land division shall provide a stormwater easement or drainage right-of-way conforming substantially with the lines of such watercourse, and such further width as determined needed for water quality and quantity protection.

**Response:** As shown on the Preliminary Subdivision Plat, easements and dedications required along property lines abutting a right-of-way will be provided as required. The criterion is met.

#### 17.100.140 PUBLIC ALLEYS

- A. Public alleys shall have a minimum width of 20 feet. Structural section and surfacing shall conform to standards set by the City Engineer.
- B. Existing alleys may remain unimproved until redevelopment occurs. When development occurs, each abutting lot shall be responsible for completion of improvements to that portion of the alley abutting the property.
- C. Parking within the alley right-of-way is prohibited except as provided in Section 17.100.140(D) below.
- D. An alley with a minimum width of 28 feet may permit parallel parking on one side of the alley only.

**Response:** The application does not include public alleys. The criteria do not apply.

#### 17.100.180 INTERSECTIONS

- A. **Intersections.** Streets shall be laid out so as to intersect as nearly as possible at right angles. A proposed intersection of two new streets at an angle of less than 75 degrees shall not be acceptable. No more than two streets shall intersect at any one point unless specifically approved by the City Engineer. The city engineer may require left turn lanes, signals, special crosswalks, curb extensions and other intersection design elements justified by a traffic study or necessary to comply with the Development Code.
- B. **Curve Radius.** All local and neighborhood collector streets shall have a minimum curve radius (at intersections of rights-of-way) of 20 feet,



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unless otherwise approved by the City Engineer. When a local or neighborhood collector enters on to a collector or arterial street, the curve radius shall be a minimum of 30 feet, unless otherwise approved by the City Engineer

**Response:** The Preliminary Plans include information illustrating how the local street system internal to the subdivision meets the design requirements. No more than two streets intersect at any one point and internal streets meet the minimum curve radius at intersections of rights-of-way, as applicable. The criteria are met.

#### 17.100.190 STREET SIGNS

The subdivider shall pay the cost of street signs prior to the issuance of a Certificate of Substantial Completion. The City shall install all street signs and upon completion will bill the developer for costs associated with installation. In addition, the subdivider may be required to pay for any traffic safety devices related to the development. The City Engineer shall specify the type and location of the street signs and/or traffic safety devices.

**Response:** This statement is understood. No additional response is necessary.

#### 17.100.200 STREET SURFACING

Public streets, including alleys, within the development shall be improved in accordance with the requirements of the City or the standards of the Oregon State Highway Department. An overlay of asphalt concrete, or material approved by the City Engineer, shall be placed on all streets within the development. Where required, speed humps shall be constructed in conformance with the City's standards and specifications.

**Response:** The statement is understood. No additional response is necessary.

#### 17.100.210 STREET LIGHTING

A complete lighting system (including, but not limited to: conduits, wiring, bases, poles, arms, and fixtures) shall be the financial responsibility of the subdivider on all cul-de-sacs, local streets, and neighborhood collector streets. The subdivider will be responsible for providing the arterial street lighting system in those cases where the subdivider is required to improve an arterial street. Standards and specifications for street lighting shall be coordinated with the utility and any lighting district, as appropriate.

**Response:** Conceptual locations for street lighting are indicated in the Preliminary Plans. PGE will be contacted, and final lighting design elements will be confirmed during the final design process, as appropriate. The criterion is met.

#### 17.100.220 LOT DESIGN

A. The lot arrangement shall be such that there will be no foreseeable difficulties, for reason of topography or other conditions, in securing building permits to build on all lots in compliance with the Development Code.

**Response:** The Preliminary Subdivision Plat with Setbacks, included in Exhibit A, demonstrates that all lots in the subdivision can accommodate future homes which meet the minimum setback requirements at the time of future building permit submittal. As shown, each lot meets the 7,500 square-foot minimum lot size requirement. The criteria are met.



- 
- B. The lot dimensions shall comply with the minimum standards of the Development Code. When lots are more than double the minimum lot size required for the zoning district, the subdivider may be required to arrange such lots to allow further subdivision and the opening of future streets to serve such potential lots.

**Response:** As shown on the Preliminary Plans, lot dimensions comply with the minimum dimensions and standards of the Development Code. Lots are not larger than twice the minimum lot size. The criterion is met.

- C. The lot or parcel width at the front building line shall meet the requirements of the Development Code and shall abut a public street other than an alley for a width of at least 20 feet. A street frontage of not less than 15 feet is acceptable in the case of a flag lot division resulting from the division of an unusually deep land parcel which is of a size to warrant division into not more than two parcels.

**Response:** As shown on the Preliminary Plans, each lot complies with the minimum dimensions and standards of the Development Code and have proper frontage on a public street. The criterion is met.

- D. Double frontage lots shall be avoided except where necessary to provide separation of residential developments from arterial streets or to overcome specific disadvantages of topography or orientation.

**Response:** As shown on the Preliminary Plans, the subdivision does not include double-frontage lots. The criteria do not apply.

- E. Lots shall avoid deriving access from major or minor arterials. When driveway access from major or minor arterials may be necessary for several adjoining lots, the Director or the Planning Commission may require that such lots be served by a common access drive in order to limit possible traffic hazards on such streets. Where possible, driveways should be designed and arranged to avoid requiring vehicles to back into traffic on minor or major arterials.

**Response:** As shown on the Preliminary Plans, the lot arrangement demonstrates compliance with the requirements of the Development Code. The project site does not contain or connect to major or minor arterial streets. The above criterion is met.

#### 17.100.230 WATER FACILITIES

Water lines and fire hydrants serving the subdivision or partition, and connecting the development to City mains, shall be installed to provide adequate water pressure to serve present and future consumer demand. The materials, sizes, and locations of water mains, valves, service laterals, meter boxes and other required appurtenances shall be in accordance with the standards of the Fire District, the City, and the State.

If the city requires the subdivider to install water lines in excess of eight inches, the city may participate in the oversizing costs. Any oversizing agreements shall be approved by the city manager based upon council policy and dependent on budget constraints. If required water mains will directly serve property outside the subdivision, the city may enter into an agreement



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with the subdivider setting forth methods for reimbursement for the proportionate share of the cost.

**Response:** As shown on the Preliminary Plans, water infrastructure including conveyance mains, lines, and fire hydrants are designed in accordance with applicable standards. This criterion is met.

#### 17.100.240 SANITARY SEWERS

Sanitary sewers shall be installed to serve the subdivision and to connect the subdivision to existing mains. Design of sanitary sewers shall take into account the capacity and grade to allow for desirable extension beyond the subdivision.

If required sewer facilities will directly serve property outside the subdivision, the city may enter into an agreement with the subdivider setting forth methods for reimbursement by nonparticipating landowners for the proportionate share of the cost of construction.

**Response:** The Preliminary Plans include information illustrating how the project is planned to be serviced with sanitary sewer. This infrastructure is planned in accordance with the standards of the applicable jurisdictions; therefore, the criterion is met.

#### 17.100.250 SURFACE DRAINAGE AND STORM SEWER SYSTEM

A. Drainage facilities shall be provided within the subdivision and to connect with off-site drainage ways or storm sewers. Capacity, grade and materials shall be by a design approved by the city engineer. Design of drainage within the subdivision shall take into account the location, capacity and grade necessary to maintain unrestricted flow from areas draining through the subdivision and to allow extension of the system to serve such areas.

B. In addition to normal drainage design and construction, provisions shall be taken to handle any drainage from preexisting subsurface drain tile. It shall be the design engineer's duty to investigate the location of drain tile and its relation to public improvements and building construction.

C. The roof and site drainage from each lot shall be discharged to either curb face outlets (if minor quantity), to a public storm drain or to a natural acceptable drainage way if adjacent to the lot.

**Response:** The Preliminary Plans (Exhibit A) and Preliminary Stormwater Report (Exhibit G) include information illustrating how stormwater runoff is planned to be managed. The criteria are met.

#### 17.100.260 UNDERGROUND UTILITIES

All subdivisions or major partitions shall be required to install underground utilities (including, but not limited to, electrical and telephone wiring). The utilities shall be installed pursuant to the requirements of the utility company.

**Response:** The Preliminary Plans include information illustrating how the project is planned to be provided with underground utilities. This infrastructure is planned in accordance with the standards of the applicable jurisdictions; therefore, the criterion is met.

#### 17.100.270 SIDEWALKS



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Sidewalks shall be installed on both sides of a public street and in any special pedestrian way within the subdivision.

**Response:** The Preliminary Plans show compliance with the local street typical sections in City Code. The standard is met.

#### 17.100.280 BICYCLE ROUTES

If appropriate to the extension of a system of bicycle routes, existing or planned, the Director or the Planning Commission may require the installation of bicycle lanes within streets. Separate bicycle access ways may be required to reduce walking or cycling distance when no feasible street connection is available.

**Response:** The project site does not include any existing or planned bicycle routes. The criterion does not apply.

#### 17.100.290 STREET TREES

Where planting strips are provided in the public right-of-way, a master street tree plan shall be submitted and approved by the Director. The street tree plan shall provide street trees approximately every 30' on center for all lots.

**Response:** As shown in the Preliminary Plans in Exhibit A, the appropriate number of trees are provided on the Street Tree Plan. The criterion is satisfied.

#### 17.100.300 EROSION CONTROL

Grass seed planting shall take place prior to September 30th on all lots upon which a dwelling has not been started but the ground cover has been disturbed. The seeds shall be of an annual rye grass variety and shall be sown at not less than four pounds to each 1000 square feet of land area.

**Response:** The requirement is understood. No additional response is necessary.

#### 17.100.310 REQUIRED IMPROVEMENTS

The following improvements shall be installed at no expense to the city, consistent with the design standards of Chapter 17.84, except as otherwise provided in relation to oversizing.

- A. Drainage facilities
- B. Lot, street and perimeter monumentation
- C. Mailbox delivery units
- D. Sanitary sewers
- E. Sidewalks
- F. Street lights
- G. Street name signs
- H. Street trees
- I. Streets
- J. Traffic signs



- 
- K. Underground communication lines, including broadband (fiber), telephone, and cable. Franchise agreements will dictate whether telephone and cable lines are required.
  - L. Underground power lines
  - M. Water distribution lines and fire hydrants

**Response:** The above listed improvements are planned to be included in the project design as required. The criteria are met.

**CHAPTER 17.102 - URBAN FORESTRY**

**17.102.20 APPLICABILITY**

This chapter applies only to properties within the Sandy Urban Growth Boundary that are greater than one acre including contiguous parcels under the same ownership.

- A. General: No person shall cut, harvest, or remove trees 11 inches DBH or greater without first obtaining a permit and demonstrating compliance with this chapter.
  - 1. As a condition of permit issuance, the applicant shall agree to implement required provisions of this chapter and to allow all inspections to be conducted.
  - 2. Tree removal is subject to the provisions of Chapter 15.44, Erosion Control, Chapter 17.56, Hillside Development, and Chapter 17.60 Flood and Slope Hazard.

**Response:** As detailed in the Preliminary Plans, the application includes tree removal subject to the exception criteria below. Thus, the application is demonstrating compliance with this chapter. Tree removal is planned to comply with erosion control provisions of Chapter 15.44. As documented in the FSH Analysis (Exhibit H), the provisions of Chapters 17.56 and 17.60 are not relevant to the site and do not apply. The applicable criteria are understood.

- B. Exceptions: The following tree removals are exempt from the requirements of this chapter.
  - 1. Tree removal as required by the city or public utility for the installation or maintenance or repair of roads, utilities, or other structures.

**Response:** As detailed in the Preliminary Plans, the application includes tree removal for the installation of roads and utilities, including four off-site trees located in the existing public right-of-way for Melissa Avenue. Such tree removal is exempt from the requirements of this chapter as stated above. As shown on the Preliminary Plans, a tree in the existing public right-of-way could potentially be retained upon acceptance of fee-in-lieu for improvements to east SE Ponder Lane.

- 2. Tree removal to prevent an imminent threat to public health or safety, or prevent imminent threat to public or private property, or prevent an imminent threat of serious environmental degradation. In these circumstances, a Type I tree removal permit shall be applied for within seven days following the date of tree removal.

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**Response:** The application does not involve tree removal subject to the exception criteria above.

#### **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 City of Sandy Development Code. The evidence in the record is substantial and supports approval of the application.



### SE Ponder Lane/Future SE Gunderson Road Extension



- 1. Existing Intersection Location
- 2. TSP-Identified 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

## 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.



November 25, 2019

**Michael C. Robinson**  
Admitted in Oregon  
T: 503-796-3756  
C: 503-407-2578  
mrobinson@schwabe.com

Mr. Kelly O'Neill, Director  
City of Sandy Planning & Building Department  
Sandy City Hall  
39250 Pioneer Boulevard  
Sandy, OR 97055

RE: City of Sandy File No. 19-203 SUB/VAR/TREE; Application by Allied Homes and Development, LLC for Approval of Bailey Meadows Tentative Subdivision Plan Application

Dear Mr. O'Neill:

This office represents the Applicant. I am sending this letter following my discussion with City Attorney David Doughman on Friday, November 22, 2019.

The purpose of this letter is to confirm the Applicant's intention, if the Sandy Planning Commission, or the Sandy City Council on appeal, approves the Bailey Meadows Tentative Subdivision Plan Application with the condition of approval discussed below, to apply for an amendment to the City of Sandy Urban Growth Boundary (the "UGB") in order to extend Gunderson Road, an Arterial Street shown on the City's Transportation System Plan (the "TSP"), from the termination of Melissa Avenue on the proposed Tentative Subdivision Plan to Oregon Highway 211 in order to provide a second way in and out of the Bailey Meadows Subdivision. While the Applicant's offer is contingent on several occurrences, this letter is intended to demonstrate the Applicant's intention to carry out this plan should the contingencies be fulfilled.

The purpose of these efforts by the City and the Applicant is to provide a second way in and out of the Bailey Meadows Subdivision. While the Applicant's opinion is that a second way in and out is not legally required for approval of the Bailey Meadows Tentative Subdivision Plan Application, the Applicant also recognizes that providing a second way in and out of the Subdivision is a benefit to the public and the community to the north of the proposed subdivision. Further, the Applicant appreciates the City's willingness to attempt to resolve the disagreement over the second way in and out of the Subdivision by cooperatively working with the Applicant on the Gunderson Road extension.

1. **Exhibit 1** is a drawing showing the possible extension of Gunderson Road from the terminus of Melissa Avenue to Oregon Highway 211. **Exhibit 2** is the City's TSP map showing Gunderson Road. In the event the Applicant is able to extend Gunderson Road as explained below, the City will eventually extend Gunderson Road from its connection with the Bailey Meadows Subdivision west as shown on the TSP.

Mr. Kelly O'Neill, Director  
November 25, 2019  
Page 2

The TSP shows Gunderson Road connecting to Oregon Highway 211. However, the Applicant's traffic engineer Todd Mobley of Lancaster Engineering has prepared a memorandum explaining why the location of the connection between Gunderson Road and Oregon Highway 211 as shown on the TSP is not feasible. This is not only Mr. Mobley's conclusion but also the conclusion of the Oregon Department of Transportation ("ODOT") Region 1.

2. The Applicant and the City Attorney will jointly draft a proposed condition of approval to be adopted with the approval of the Bailey Meadows Tentative Subdivision Plan Application providing that the approval is subject to approval of the UGB expansion under certain circumstances allowing the Applicant to construct the Gunderson Road extension. As you know, the Gunderson Road extension is outside of the UGB and requires a UGB amendment for the extension.

3. The Applicant has previously examined whether an exception to Statewide Planning Goals (the "Goals") 3, 12 and 14 to allow the Gunderson Road extension is feasible. It concluded that it is not for several reasons, most importantly, that a Goal exception begins with an application with Clackamas County ("County") rather than the City. However, in consultation with the City Attorney and City staff, the Applicant believes that it is feasible to have approved a UGB expansion because it begins with the City's approval even though the Joint Management Agreement (the "UGMA") requires the Board of County Commissioners to approve the City's UGB approval. Based on my discussions with the City Attorney, we believe that this is feasible.

4. The City and the Applicant have met with ODOT, the Oregon Department of Land Conservation and Development ("DLCD") and Clackamas County. DLCD is not opposed to the UGB expansion application and believes that it is feasible to be achieved, subject to demonstration of compliance with the applicable approval criteria. ODOT had no substantive comments on the UGB expansion but reminded the City and the Applicant of the necessity to obtain ODOT approval for the Gunderson Road connection with Oregon Highway 211. This is why the Applicant believes that the Gunderson Road extension is possible only in the event the City takes jurisdiction of Oregon Highway 211. Finally, the County noted several procedural issues that need to be addressed but did not indicate that the UGB expansion was infeasible.

I hope this information is helpful to you in demonstrating the Applicant's good faith intent to proceed with the UGB expansion assuming that the conditions precedent can be satisfied. As you know, the City and the Applicant have expended considerable time and effort to come this far.

Thank you again for your efforts to work with the Applicant on this matter. Please place this letter in the official Planning Department file for this Application and before the Sandy Planning Commission at the initial evidentiary hearing on December 17, 2019.

schwabe.com

Mr. Kelly O'Neill, Director  
November 25, 2019  
Page 3

Very truly yours,



Michael C. Robinson

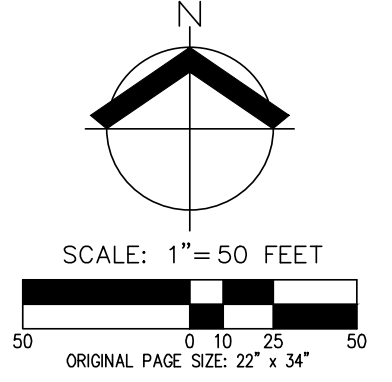
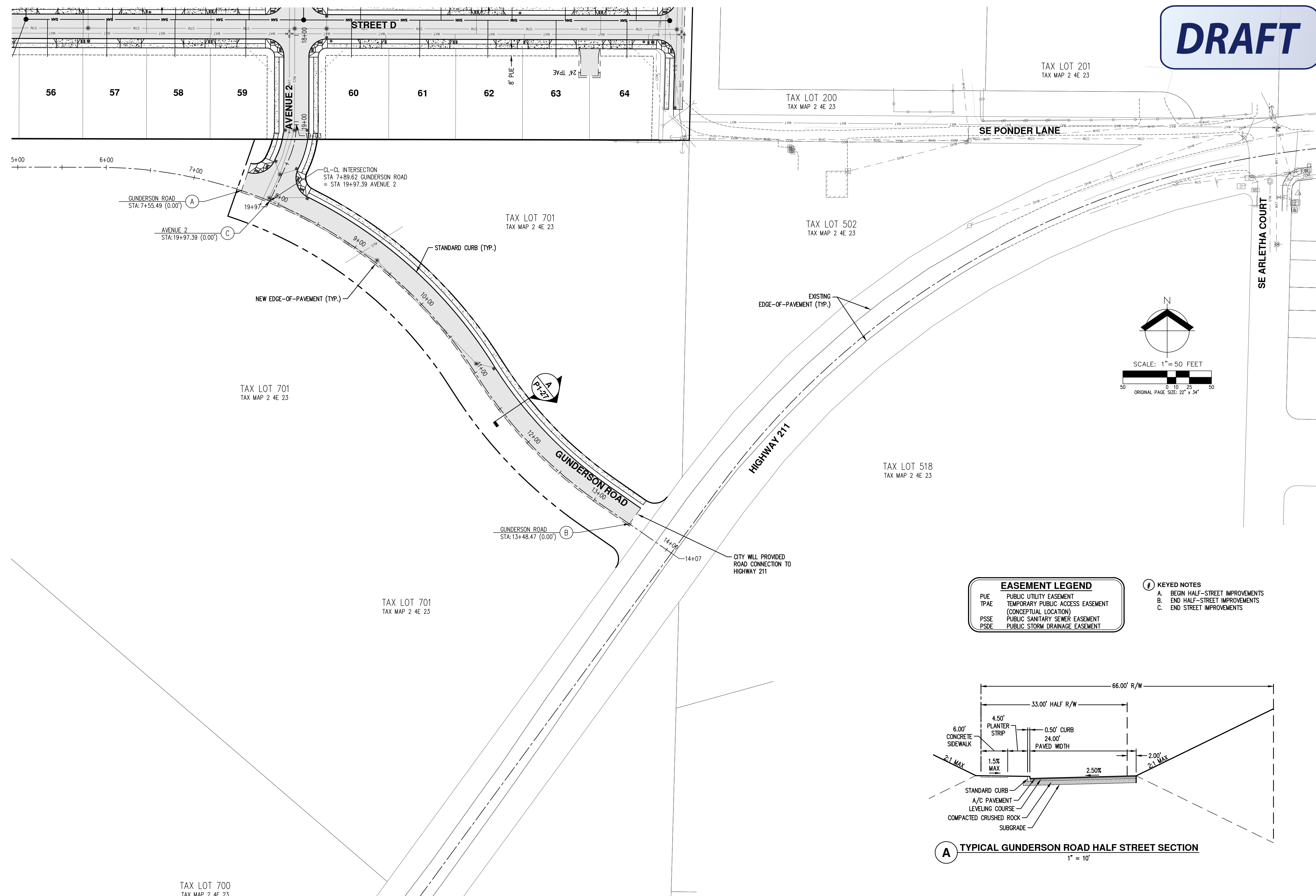
MCR:jmhi  
Enclosures

cc: Ms. Emily Meharg (*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*)  
Mr. Todd Mobley (*via email*) (*w/enclosures*)  
Mr. David Doughman (*via email*) (*w/enclosures*)

PDX\133569\245146\MCR\26652984.1

**DRAFT**

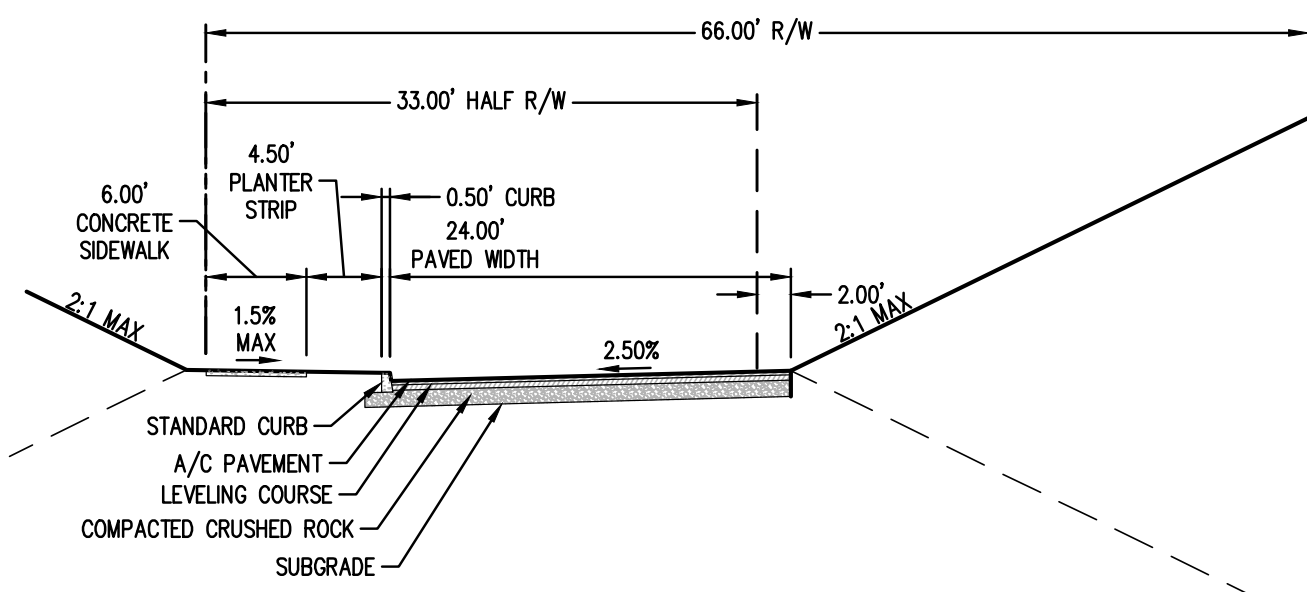
**AKS**  
AKS ENGINEERING & FORESTRY, LLC  
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WWW.AKS-ENG.COM  
ENGINEERING - SURVEYING - NATURAL RESOURCES  
FORESTRY - PLANNING - LANDSCAPE ARCHITECTURE



**EASEMENT LEGEND**

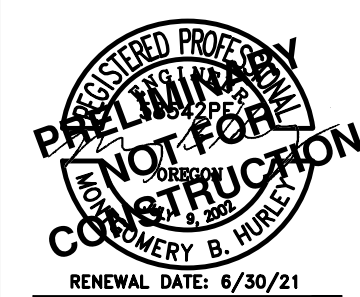
PUE	PUBLIC UTILITY EASEMENT
TPAE	TEMPORARY PUBLIC ACCESS EASEMENT (CONCEPTUAL LOCATION)
PSSE	PUBLIC SANITARY SEWER EASEMENT
PSDE	PUBLIC STORM DRAINAGE EASEMENT

- KEYED NOTES**
- A. BEGIN HALF-STREET IMPROVEMENTS
  - B. END HALF-STREET IMPROVEMENTS
  - C. END STREET IMPROVEMENTS



**A TYPICAL GUNDERSON ROAD HALF STREET SECTION**  
1" = 10'

**PRELIMINARY OFFSITE STREET IMPROVEMENTS BAILEY MEADOWS SANDY, OREGON**



RENEWAL DATE: 6/30/21  
JOB NUMBER: 7107  
DATE: 10/15/2019  
DESIGNED BY: VN  
DRAWN BY: CL  
CHECKED BY: RSW

**P1-27**

Exhibit 1  
Page 1 of 1

AKS DRAWING FILE: 7107 STREET OFFSITELING | LAYOUT: P1-27



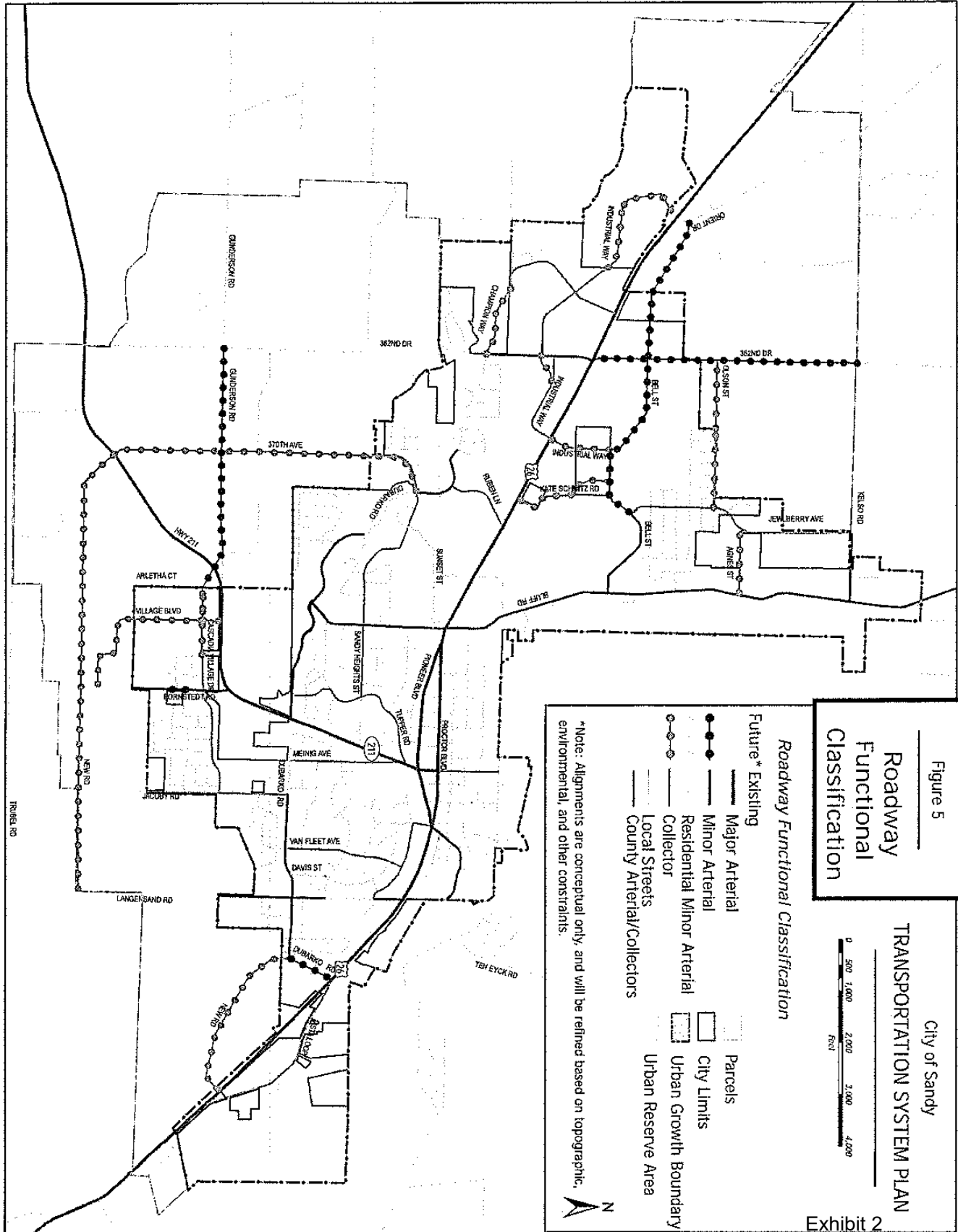


Figure 5  
**Roadway Functional Classification**

City of Sandy  
**TRANSPORTATION SYSTEM PLAN**  
 Exhibit 2



**Roadway Functional Classification**

**Future\* Existing**

- Major Arterial
- Minor Arterial
- Residential Minor Arterial
- Collector
- Local Streets
- County Arterial/Collectors

- Parcels
- City Limits
- Urban Growth Boundary
- Urban Reserve Area

\*Note: Alignments are conceptual only, and will be refined based on topographic, environmental, and other constraints.

EXHIBIT X



Todd Mobley <todd@lancastermoble.com>

Bailey Meadows - Trip Distribution w/ Gunderson Connection

Todd Mobley <todd@lancastermoble.com>

Thu, Dec 5, 2019 at 10:10 AM

To: "Robinson, Michael C." <MRobinson@schwabe.com>

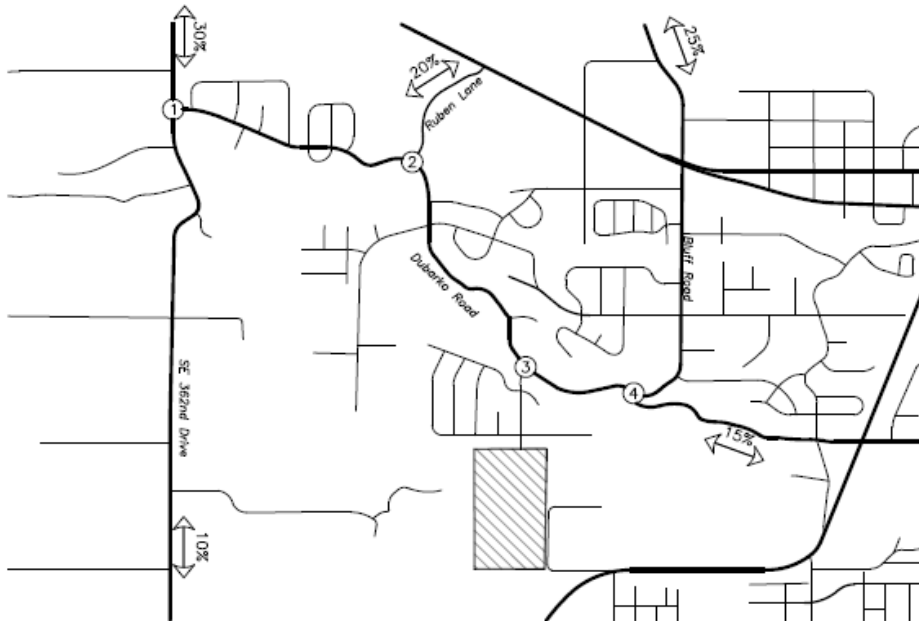
Cc: Cody Bjugan <cody@investpdx.com>, Monty Hurley <monty@aks-eng.com>, Chris Goodell <chrisg@aks-eng.com>, Marie Holladay <holladaym@aks-eng.com>

Mike,

This email is to explain the changes in trip distribution that we expect to see as a result of the Gunderson connection. A full TIS addendum is currently being prepared and will be submitted as part of the UGB expansion application.

The Gunderson connection to Highway 211 is expected to serve trips to and from the east, south, and west. Trips to and from the north are not likely to use the new connection. In addition, some of the existing neighborhood traffic from Melissa will divert to the south, through the Bailey Meadows site, to Highway 211.

Below is an excerpt from Figure 2 of the TIS, which is already in the record for the subdivision application. It shows the overall trip overall distribution pattern and is referenced in the sections below:



To & From the East

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

Contribution: 15% via Gunderson

To & From the South

A total of 10% of the trips are expected to be to and from the south, and all of these trips will use the Gunderson 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, 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% is split evenly via Melissa to the north and Gunderson to the south.

*Contribution: 15% via Gunderson*

Total percentage of site trips using Gunderson = 40%, or 378 of the site's 944 trips per day

Rerouted Existing Trips

Since 40% of the Bailey Meadows trips are expected to use the Gunderson 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% to approximately 30%.

30% of the existing 1160 ADT on Melissa would reroute via Gunderson, 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 new street connection in place.

	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>

*It should also be noted that we know from traffic count data, that the existing neighborhood served by Melissa Avenue generates 27% fewer trips than the standard ITE trip rates. It is expected that Bailey Meadows will have similar trip characteristics, but for a worst-case analysis, it was assumed that Bailey Meadows trips would be generated at the higher ITE rate.*

-Todd

Todd E. Mobley, PE

Principal



We have a new name and a new look, but we are still the most *effective* consulting team you've ever worked with.

321 SW 4th Avenue, Suite 400 | Portland, OR 97204

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Offices: Portland, OR | Bend, OR

**EXHIBIT Y**

**CURRAN-McLEOD, INC.  
CONSULTING ENGINEERS**

6655 S.W. HAMPTON STREET, SUITE 210  
PORTLAND, OREGON 97223

September 27, 2019

Ms. Emily Meharg  
City of Sandy  
39250 Pioneer Blvd.  
Sandy, OR 97055

**RE: CITY OF SANDY  
BAILEY MEADOWS SUBDIVISION (FILE NO. 19-023 SUB/VAR/TREE)  
PRELIMINARY REVIEW**

Dear Emily:

We have reviewed the submittal preliminary plans and supporting documents for the above noted development and have the following comments:

1. We have briefly reviewed the "Geotechnical Engineering Report" prepared by Geopacific Engineering, Inc., dated June 18, 2019 and recommend that the developer retains appropriate professional geotechnical services for observation of construction of earthwork and grading activities. The grading setbacks, drainage and terracing should comply with the Oregon Structural Specialty Code (OSSC) requirements and the geotechnical report recommendations and conclusions as indicated in the report. When the grading is completed, a final report should be submitted to the City by the Geotechnical Engineer stating that adequate inspections and testing have been performed on the lots and all of the work is in compliance with the above noted report and the OSSC.
2. We have reviewed the preliminary stormwater calculations that was provided with this submittal. The calculations are found to meet the water quality/quantity criteria as stated in the City of Sandy Development Code (SDC) 13.18 Standards and the City of Portland Stormwater Management Manual (SWMM) Standards, that were adopted by reference into the Sandy Development Code. However, a detailed final report stamped by a licensed professional shall be submitted for review with the final construction plans.
3. We have reviewed the "Traffic Impact Analysis" prepared by Lancaster Engineering dated June 20, 2019. The study doesn't identify any concerns as a result of this development.

PHONE: (503) 684-3478

E-MAIL: [cmi@curran-mcleod.com](mailto:cmi@curran-mcleod.com)

FAX: (503) 624-8247

Mr. Emily Meharg  
September 27, 2019  
Page 2

4. 3/4 Improvements should be required on Ponder Street north-south between Gunderson Road and the most northerly east-west street to include 28-foot wide paved surface, curbs on both sides, 5-foot planter strip with street trees, street lighting and 5-foot wide sidewalks on the west side of the roadway.
5. All interior streets to include the east-west Ponder lane should be constructed to local street standards (28-foot wide paved surface, curbs on both sides, 5-foot planter strips and 5-foot wide sidewalks) in compliance with the City of Sandy Transportation System Plan (TSP), figure 12. The proposed 50-foot right of way is adequate.
6. Gunderson Road is classified in the City of Sandy Transportation System Plan (TSP), figure 5 as a minor arterial street. A minimum of 34 feet of right of way dedication will be required along the entire site frontage as per City of Sandy Development Code, chapter 17.84. This roadway will be extended in the future as the surrounding properties develop around this site.

A half Improvements would be required on Gunderson Road to include 22-foot wide paved surface, curbs on one side, 5-foot planter strips and 6-foot wide sidewalks along the south plat boundary line as per the TSP. At the request of the City, we have developed a layout of this site and came up with 98 lots including a 34-foot of right of way dedication along Gunderson Road.

7. Melissa Avenue is classified in the City of Sandy Transportation System Plan (TSP), figure 5 as a local street and is proposed to be the only access to this development. Currently, the street surface is in bad condition. This site is generating an additional 944 trips while the combined AADT generated from this site and the existing Nicholas Glen No. 2 is 2,490 trips. The traffic volumes increase is deemed to deteriorate the existing street cross section further and potentially cause a complete failure. The TSP alludes to a traffic capacity on local streets between 800 and 1,000 ADT. The projected capacity exceeds the preferred capacity limitations.

We are also concerned that the increase in traffic volumes through one access is detrimental to the overall life and safety in case an evacuation is needed. A review by the Fire Department is needed to confirm whether an additional emergency access is needed or not. However, we recommend as a minimum a temporary/ emergency access to Hwy 211.

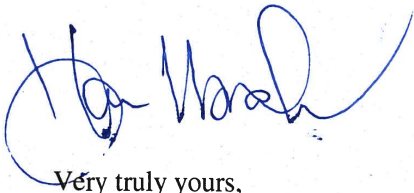
8. The developer's engineer should provide a profile design for a minimum of 200 feet for all future street extensions stubbed streets past the project boundary to ensure future grades can be met.



Mr. Emily Meharg  
September 27, 2019  
Page 3

9. All ADA ramps shall be designed, inspected by the design engineer and constructed by the contractor to meet the most current PROWAG requirements.
10. All public sanitary sewer, waterline mains to be a minimum of 8-inches in diameter and a minimum of 12-inches in diameter for storm drains and be extended to the plat boundaries where practical to provide future connections to adjoining properties. All utilities are extended to the plat boundary for future connections.
11. The new site layout eliminated the detention pond and a detention tank can be used in lieu of a pond meeting the requirements of the 2016 City of Portland StormWater Management Manual (SWWM).

We have no concerns about the proceedings with this project subject to the above stated comments.

A handwritten signature in blue ink, appearing to read "Hassan Ibrahim", with a large circular flourish on the left side.

Very truly yours,

**CURRAN-McLEOD, INC.**

Hassan A. Ibrahim, PE

cc: Mr. Mike Walker, City of Sandy



EXHIBIT Z

Emily Meharg <emeharg@ci.sandy.or.us>

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**Re: Bailey Meadows Subdivision (File No. 19-023 Sub/Var/Tree)**

1 message

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**Kristine Hendrix** <Kristine.Hendrix@pgn.com>  
To: "emeharg@ci.sandy.or.us" <emeharg@ci.sandy.or.us>

Wed, Sep 18, 2019 at 7:43 AM

Dear Emily,

We haven't found any conflicts related to your project. There is a PGE project located on SE Ponder Ln. When the developer is ready to start the project please have them call PGE Service Coordinators at 503.323.6700.

Thank you,

**Kristine Hendrix** | Sr. Design Coordinator


Work Hours 6:30 am to 4:00 pm M – TH & 6:30 am to 10:30 am Fri

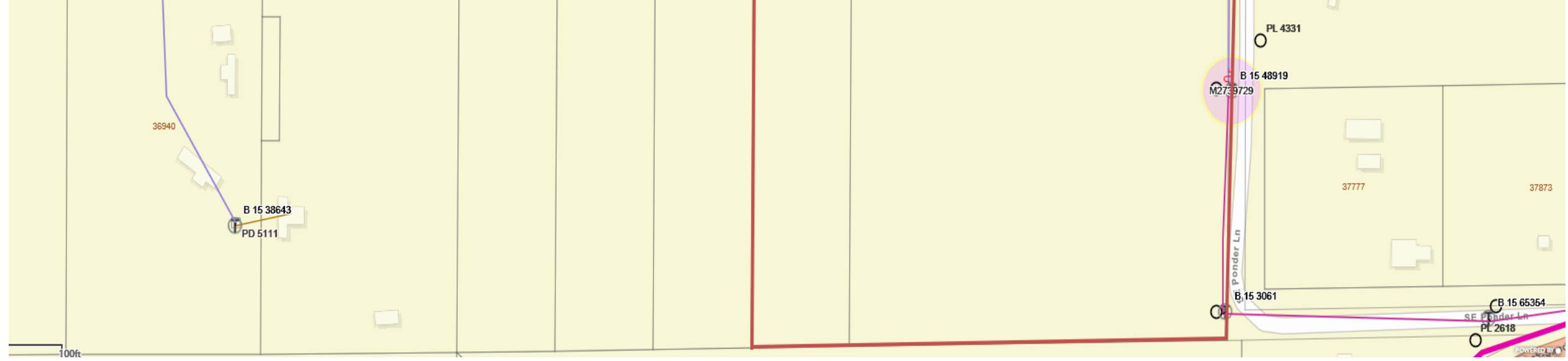
Portland General Electric

1705 NE Burnside, Gresham, OR 97030

| 📞: (503) 669-5214 | 📠: (503) 669-5229 | ✉️ [kristine.hendrix@pgn.com](mailto:kristine.hendrix@pgn.com)

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 **Bailey Meadows Subdivision (File No 19-023 Sub-Var-Tree - City of Sandy).pdf**  
356K





# Oregon

Kate Brown, Governor

## EXHIBIT AA

### Department of Transportation

Region 1 Headquarters  
123 NW Flanders Street  
Portland, Oregon 97209  
(503) 731.8200  
FAX (503) 731.8259

October 4<sup>th</sup>, 2019

ODOT #8702

## ODOT Response

<b>Project Name:</b> Bailey Meadows Subdivision - Ponder Lane	<b>Applicant:</b> Allied Homes & Development
<b>Jurisdiction:</b> City of Sandy	<b>Jurisdiction Case #:</b> 19-023 SUB/VAR/TREE
<b>Site Address:</b> No situs SE Ponder Lane, Hwy 211, Sandy, OR	<b>Legal Description:</b> 02S 04E 23 <b>Tax Lot(s):</b> 00800
<b>State Highway:</b> OR 211 and US 26	

The site of this proposed land use action is in the vicinity of OR 211 and US 26. ODOT has permitting authority for these facilities and an interest in ensuring that this proposed land use is compatible with their safe and efficient operation.

### COMMENTS/FINDINGS

The application is for a 100 lot subdivision just west of the Ponder Ln intersection with OR 211. The applicant proposes to gain emergency access to Ponder Ln with gates located at the access points. ODOT recommends that the city require emergency vehicle turning templates for the Ponder Ln/OR 211 intersection. Based on ODOT review of the turning templates, there may need to be modifications to the intersection to accommodate emergency vehicles.

ODOT anticipates that traffic from the development may have an impact on the following intersections: OR 211/Dubarko Rd, US 26/Rueben Ln and US 26/362<sup>nd</sup> Ave. The traffic analysis for the subdivision did not include these intersections, so ODOT is unable to evaluate the impact the development would have on the state highway system. In order to determine if state highway facilities are adequate to serve the proposed development, ODOT recommends the city require the applicant to update the traffic analysis to include the above referenced intersections.

### ODOT RECOMMENDED LOCAL CONDITIONS OF APPROVAL

- The applicant shall submit a traffic impact analysis to assess the impacts of the proposed use on the State highway system. The analysis must be conducted by a Professional Engineer registered in Oregon. **Contact the ODOT Traffic representative identified below for scoping.**
- The applicant shall provide emergency vehicle turning templates for the OR 211/Ponder Ln intersection. Improvements to the intersection will be required if necessary as determined by ODOT.

**Please send a copy of the Notice of Decision including conditions of approval to:**

[ODOT\\_R1\\_DevRev@odot.state.or.us](mailto:ODOT_R1_DevRev@odot.state.or.us)

Development Review Planner: Marah Danielson	503.731.8258, marah.b.danielson@odot.state.or.us
Traffic Contact: Avi Tayar, P.E.	503.731.8221 Abraham.tayar@odot.state.or.us

## EXHIBIT BB

### CITY OF SANDY PARKS AND TRAILS BOARD MEETING MINUTES OCTOBER 9, 2019

**Present:** Susan Drew, Don Robertson, Michael Weinberg, Kathleen Walker. Makoto Lane – park board member - to be.

Staff: Sarah Richardson, James Cramer

#### **No public comment**

#### **Review of Meeting Minutes:**

Correction: Don Robertson's comment regarding "national" parks should be "Ashland" Parks.

Noxious "weed" instead of "week".

Mike moved to approve the minutes as corrected and Don seconded. Minutes approved unanimously.

#### **Bailey Meadows Presentation – James Cramer**

Need a recommendation from Parks Board on park land dedication verses fee-in-lieu of land dedication. This plan is being presented to Planning Commission November 14<sup>th</sup>. We reviewed this development preliminarily last year and recommended that they incorporate the park land that was identified in the 1997 Master Plan. The development proposes to construct 100 single family homes. If we were to accept the in-lieu fee, it would be \$310,000. Land dedication would be 1.29 acres.

The board discussed the existence of community park in the area in the 1997 Parks Master Plan. A community park land is intended to have things like ball fields and this parcel has relatively flat ground that would meet this need. A walk to the closest park for most of the development property is over ½ mile (Knollwood) which does not meet our Master Plan intent of providing a park within ¼ to ½ mile of developments. Access to Bornstedt requires crossing a highway and is about ½ mile away. There is also concern that we do not have a nearby willing seller to acquire park land for this development. In addition, land acquisition is generally a 10 year undertaking, assuming we can find a willing seller.

Don moved to remain with the Board's original position of land dedication of 1.29 acres because we are deficient in parkland in this area. 100 houses would put undue strain on existing facilities and create unsafe routes to Bornstedt Park. We don't have a willing seller to use the fee in lieu of, to buy land for the park. Mike seconded the motion. Unanimous vote yes.

Discussion about the proposed development on existing trees. Most of the trees on the north and south side would remain except for Melissa access and some R/W for Gunderson where trees would have to be taken.

Park SDC fees are \$3,717 per house. \$2500 per apartment unit.

This development has no immediate connections to Tickle Creek – those would come off of end of Rachael and off of Solso.

**Sandy Crest Presentation:** This is a preliminary proposal stage for a Planned Unit Development (PUD). A PUD requires 25% open space. James explained that the land is zoned for single family (7500 ft<sup>2</sup> lots) and instead they are proposing much smaller lots. One option is for them to provide inlieu fee rather than dedicate the land. Criteria for park or open space land dedication like slope exist. Developers can do an HOA that maintains the park property, dedicate the park and open space to the City, or the developer can take care of it or deed restricted private easement for the homeowner. Lots of discussion about PUDs as it related to parks and open space. Discussed concerns about HOA's folding after awhile



and the City having to acquire the property. Also concerned that private easements for homeowners can get fenced off, or get developed with outdoor facilities, gardens, sheds, gazebos, etc. instead of being public open space.

- Propose they give us developable park property.
- Need to have trail development and trail access to the Tickle Creek Area.
- Consider giving land on east end adjacent to undevelopable open space along Tickle Creek.

Motion made by Don to move the three points forward to planning in pre-app process. Susan seconded motion. Motion carried unanimous.

**Proposed Jewelberry Meadows**

Proposed 20 units along Jewelberry east of Penny Avenue. The development would have access from Agnes. Park would be at Sandy Bluff which is less than ½ mile away. This would give us \$62,600 of fee in lieu of or 0.26 acres parkland dedication. Conceptual future park location is further north. Don motioned to accept fee in lieu of and Michael seconded it. Motion carried unanimous.

**Old Business:** No old business.

**Staff Updates:** Parks Master Plan was signed by both parties and next stage is gathering documents. There will be a technical advisory board formed. The Parks Board will be involved as stakeholders. Nancy is asking for two park board members to be part of the Technical Advisory Committee. Mike moved that Kathleen and Don be the two members. Susan seconded it. Motion carried unanimous.

**Shade Structure Update:** Bids for shade structures came in. Bid for two covered shade structures at Bornstedt Park is \$60,591. Need input on stain colors, roof color and stone type. Propose using similar materials to the Meinig Park project same rock and same wood stain – if they used forest green roof, instead use hunter green.

Bids for dog park \$25,000 for larger and \$23,000 for smaller one. Still need engineering costs. Sarah will meet with contractor for next meeting. We have about \$21,000 in the donation account. Suggest we consider using interest funds from Parks SDC and fee in-lieu of accounts. Sarah will check with Kelly, Jordan and Tyler on that. If we cannot do both, the consensus was to do the larger one where we already have seating.

**To Do:** Sarah will ensure Makota's assignment is on the Council agenda.

We need to clarify that planning proposals are going directly to Sarah (in addition to Tanya) to ensure timely communication.

**9 pm end of meeting.**



Exhibit CC

Emily Meharg <emeharg@ci.sandy.or.us>

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## Bailey's Meadows Possible Gunderson Rd Connection to OR 211

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DANIELSON Marah B <Marah.B.DANIELSON@odot.state.or.us>

Tue, Nov 19, 2019 at 11:13 AM

To: "Emily Meharg (emeharg@ci.sandy.or.us)" <emeharg@ci.sandy.or.us>, "Kelly O'Neill Jr." <koneill@ci.sandy.or.us>, "monty@aks-eng.com" <monty@aks-eng.com>

Cc: TAYAR Abraham \* Avi <Abraham.TAYAR@odot.state.or.us>, BOLEN Glen A <Glen.A.BOLEN@odot.state.or.us>, RODRIGUEZ Myriam \* Marcela <Marcela.RODRIGUEZ@odot.state.or.us>, LAM Canh T <Canh.T.LAM@odot.state.or.us>, ODOT\_R1\_DevRev <ODOT\_R1\_DevRev@odot.state.or.us>

Hi Emily, Kelly and Monte,

I wanted to follow up on our meeting last month regarding to possible Gunderson Rd connection to OR 211 for the proposed Bailey's subdivision. After following up with the ODOT R1 Technical Center, ODOT has determined that the applicant can use 50mph as the design speed. At our meeting, ODOT may have given the impression that we would be willing to process design exceptions prior to the land use application being submitted to provide the city with some confidence that the highway improvements would be able to be permitted by ODOT. Given the amount of effort and time the design exception will take for the applicant as well as ODOT staff, ODOT will not be able to process the design exceptions before a land use application has been submitted to the city. Instead, the applicant can work with ODOT staff to obtain "design concept acceptance" for the proposed highway improvements. As Avi and I will be on vacation from November 20<sup>th</sup> to December 5<sup>th</sup>, please contact Marcela Rodriguez if you have any technical questions for ODOT staff. I don't anticipate that the land use application will be submitted during this time, but if it does as part of our regular land use review process the land use application should be sent to [odot\\_r1\\_devrev@odot.state.or.us](mailto:odot_r1_devrev@odot.state.or.us).

Thank you,

Marah Danielson, Senior Planner  
ODOT R1 Development Review Program  
(503) 731-8258  
[marah.b.danielson@odot.state.or.us](mailto:marah.b.danielson@odot.state.or.us)



EXHIBIT DD

Emily Meharg <emeharg@ci.sandy.or.us>

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**File Number - 19-023 SUB/VAR/TREE**

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Paul Owen <paul.owen@vanport-intl.com>

Sat, Sep 14, 2019 at 7:16 PM

To: "planning@ci.sandy.or.us" <planning@ci.sandy.or.us>

Cc: "jandpowen@yahoo.com" <jandpowen@yahoo.com>, "pauldownen65@outlook.com" <pauldownen65@outlook.com>

Comments on File Number – 19-023 SUB/VAR/TREE

Comments:

1. Pleased with the lot size of 7500' or larger.
2. Pleased with road size of 50' and set backs.

Concerns:

1. Only 1 access point on Melissa Avenue.
  - a. Melissa is already a busy street, steep, and limited sightlines at Dubarko due to trees and parked cars.
  - b. Melissa should be considered a secondary access.
  - c. A primary access to Hwy 211 is needed, for emergency vehicles and access during imclement weather.
  - d. Melissa is steep with limited sightlines and dangerous during bad weather. Adding 1000 cars per day is asking for multiple accidents per day.
  - e. If the city is to approve this without concern for our comments we suggest connecting Solso drive to add another access point, and put a 3 way stop at the bottom of Melissa and Dubarko. Otherwise you will see car and pedestrian accidents increase.
2. With the addition of 100 homes plus the existing Nicholas Glen homes, where are the community parks.
  - a. The city has required Sandy Bluff, Idleman, and other developments to add parks. I see nothing here.
  - b. Highly recommend a park be added in some form.

Without a secondary access road and additional park land we are not in agreement of this development.

If the solution is to reduce lot size, we against this as well.

Sandy has to much high density housing at this time.

Cordially,

Paul and Jolette Owen

37189 Rachael Drive

## EXHIBIT EE

City of Sandy  
Planning Division  
Sandy, OR

Re: Proposed Bailey Meadows Subdivision

City of Sandy,

I own the home located at 37506 Rachael Drive (re: tax lot 6100). I purchased the home in early 2018 knowing full well someday there would be homes built on the property behind my home. The proposed Bailey Meadows appears to be an ill-conceived subdivision created with no regard to the impact of the surrounding existing homes or community. I did attend the AKS meeting held on September 18, 2018. I have the following concerns.

### **Melissa Avenue the only access in or out of the development**

As proposed the development is an island of approximately 100 homes to be built with only a single existing residential street (Melissa Ave) to access the subdivision. This means approximately 200 automobiles enter/leave the subdivision using an existing residential street not designed for additional traffic. With automobiles parked in front of the homes on Melissa Ave, the street is not wide enough to safely allow 2 way traffic. When two opposite direction automobiles meet one moves over to allow the other auto to proceed. The street is marginally designed to accommodate the traffic of the current homes it was built to support, again it is the only access in or out of our neighborhood.

A major additional safety concern is all construction vehicles will only have access the subdivision using Melissa Ave.

Sandy is a bedroom community with a large percentage of its working population commuting out of the town to work. Not only will Melissa Ave be impacted with the additional traffic, Dubarko will be significantly impacted by the additional traffic. Melissa or Dubarko are not designed to accommodate more than the current traffic they support.

### **Plans to extend the Melissa Avenue into the subdivision**

This impacts me personally. My property is at the corner of Melissa Ave and Rachael Dr. The person I talked to at the AKS meeting, could not provide me with a concept plan of how Mellissa Ave will be "punched" through into the development. He said the construction and plans would be by the City of Sandy.

My home/property (and the home across from me on Mellissa) is on a hill as is where Mellissa Ave will go into the subdivision. The subdivision property is substantially drops lower just at my home's property line, hence when Melissa Ave goes into the subdivision it will be considerably lower than my property. I would like to see a concept plan of the extension of Melissa into the subdivision to understand its impact to my property. This includes where my property line actually is on Melissa Ave as it appears this was not a concern of AKS.

Thank you,  
Paul Savage

EXHIBIT FF

September 25, 2019

City of Sandy Planning Division  
ATTN: Emily Meharg  
39250 Pioneer Blvd  
Sandy OR 97055

RECEIVED  
SEP 26 2019  
CITY OF SANDY

RE: File Number 19-023 SUB/VAR/TREE

My name is Sarah Bettey and my husband and I are homeowners in the Nicholas Glen neighborhood off Melissa Ave and Dubarko Rd. As a member of the community, I am writing to you to express my apprehension about the potential planned project for the Bailey Meadows subdivision. We hope you will keep our concerns in mind when it comes time for you to review the proposal.

As a life long resident in this area, I oppose the building of the subdivision without serious changes to the developer's plans. In particular, I was stunned by the proposal that the new subdivision would only have access through our existing Nicholas Glen neighborhood via Melissa Ave. This suggestion would have a severely negative and likely dangerous impact upon this area. The traffic on Melissa and Dubarko are already a safety concern. Cars speed up and down the hill on Melissa Ave too fast for a residential street. Dubarko has become a fairly heavily traveled bypass and the number of cars going through our area has increased over the years due to the major traffic problems in the downtown portion of Sandy.

If the new subdivision is given access to enter and exit only using Melissa Ave, this will increase traffic flow significantly. The addition of 90+ homes will add nearly 1000 car trips per weekday on our quiet neighborhood streets. Increased traffic flow coming from this development causes a higher risk for safety of drivers and pedestrians as well as delays and backups along the surrounding residential streets (i.e. Bluff, Sandy Heights, Ruben). This inevitable increase of traffic by at least a third also brings forward the obvious concern with the value of the residential property surrounding the development and affected streets dropping dramatically.

I feel a reasonable and safer alternative would be to also require direct access to Hwy 211 via Ponder Road to the south. That the applicant has rejected this suggestion from the city staff as part of their planning just goes to show how they do not have the existing neighborhood's best interest at heart. This would decrease the need for cars in Bailey Meadows to head through Nicholas Glen at all. It also will give both Bailey Meadows and Nicholas Glen a 2nd access point, which is safer in case of emergencies and inclement winter weather. I would also highly recommend speed bumps be installed on the Melissa Ave hill to help keep speed down and discourage drivers from cutting through the neighborhoods from Hwy 211 to Dubarko.

In addition, according to information given during the September meeting, if this proposal is approved Melissa Ave will be torn apart to run additional sewer, electricity, etc. instead of accessing these and other utilities via Hwy 211. Melissa Ave is currently the only access point for the entire existing Nicholas Glen neighborhood. Also taking into consideration the burden that months or years of large trucks and other machinery needed to complete the building project driving through to access the property location, the disregard for the current residents of the area is totally unacceptable.

Myself and my family have a vested interest in our community and hope that its quiet character and charm will remain intact. I am sure I do not need to mention in this letter the need for a bypass around town and concerns about overcrowded schools as the city is well aware that these problems continue to grow with the addition of more residents to our city population. My husband and I chose to raise our young son here in my hometown of Sandy and selected the Nicholas Glen neighborhood specifically because of its beauty, its quiet, its safety, and its proximity to the woods and the mountain. Sandy residents like us want the community to grow and thrive; we just want it to be done in a way that protects the small town feel and our quality of life. This project as it stands does not have the best interests of the adjoining neighborhoods in mind. It threatens to bring a slew of negative side effects to Nicholas Glen and our Tickle Creek area/Dubarko Road neighbors.

I hope you will hear my concerns and take them into consideration as you make decisions on this matter in the future.

Thank you for your time,

Sarah Bettey  
18195 Melissa Ave  
Sandy OR 97055  
[Sarahbettey2978@hotmail.com](mailto:Sarahbettey2978@hotmail.com)  
971-246-2974





**EXHIBIT GG**

Emily Meharg <emeharg@ci.sandy.or.us>

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**Bailey meadows**

1 message

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**Tiffany Harris** <tiffyann18@gmail.com>  
To: emeharg@cityofsandy.com

Fri, Sep 27, 2019 at 8:43 AM

Good morning. I just wanted to reach out and be heard like a lot of my neighbors. I live off of Melissa road, on Rachael drive. I have a major concern with all the traffic coming up Melissa road. My family and I love to go for walks and bike rides almost daily. With all that extra traffic on Melissa, I won't feel safe having my kids and myself doing these walks anymore. This project is a safety issue for my family. On another note my kids play out front of our home. If the entrance to your project is blocking one way out of Rachael, the cars will have to go the other way on Rachael. More traffic on my road. Still putting my kids at risk of getting hit, by unhappy neighbors, angry, late to work. Anger makes people speed more. So please reconsider this project or find a different route. The safety of children is truly the most important thing.  
THANK YOU FOR LISTENING  
HAVE A GREAT DAY.



EXHIBIT HH

Emily Meharg <emeharg@ci.sandy.or.us>

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## MELISSA AVENUE

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Todd Cooper <OREGONTCS@live.com>  
To: "emeharg@cityofsandy.com" <emeharg@cityofsandy.com>

Fri, Sep 27, 2019 at 1:36 PM

Dear Ms. Meharg,

I am writing to you as a concerned home owner located at [18190 Melissa Avenue](#), in Sandy Oregon. I am extremely concerned for what will certainly be a public traffic safety issue on the road here.

Currently there are many speeding vehicles that fly up and down the road here....as there is a steep hill.

I have been employed in the business of Traffic Control for what is now 23 years. Melissa Avenue is a very steeply inclined roadway, and sadly many current residents put their feet to the floor and speed UP the hill to get to their homes---and they are in violation of posted speeds as it is. I have seen and experienced this since residing here about ten years now. There are currently several young families with children and pets residing on Melissa Avenue currently. Many drivers race down the hill as well....and the cross street of Solso exists as well.

I am hoping that the proposal to make Melissa Avenue the ONLY access point to a new subdivision will be reconsidered and summarily dismissed. Perhaps other access points to this new subdivision could be more safely utilized? I will suggest either a "LOOP" onto and off of 211, or on out to 362<sup>nd</sup>; thereby maintaining public safety.

Has anyone used any traffic engineering volume studies onto Dubarko? There might well be a need to install a traffic light on Dubarko if the current proposal is allowed to go through. I'm sure there is a better solution to use other than Melissa Avenue. Adding 1,000 vehicles daily on Melissa Avenue is simply a very bad idea.

Thank you for your time and attention in this matter.

Sincerely,

Todd Cooper

[oregontcs@live.com](mailto:oregontcs@live.com)

[18190 Melissa Avenue](#)

[Sandy, Oregon 97055](#)

Sent from [Mail](#) for Windows 10



**EXHIBIT II**

Emily Meharg <emeharg@ci.sandy.or.us>

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**Bailey Meadows Subdivision**

1 message

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**Tom Newell** <tom.newell@live.com>

Fri, Sep 27, 2019 at 4:17 PM

To: "emeharg@cityofsandy.com" <emeharg@cityofsandy.com>

Hi Emily.....

I would like to add my concern regarding the above proposed project.

WOW, I had no idea that Melissa Avenue would be the main arterial street used by these (? 100 ?) homes. I thought for sure Ponder would be developed for that load.

Also, is it correct that Solso Drive will also be 'punched' through to provide emergency services access ? And would it then become a through-street ?

I could not attend the 9/18 meeting, but hope to be at the 10/28<sup>th</sup>.

Is there a way for me to formally file my objections to this proposed subdivision ?

Thank You,

Tom Newell

[18007 Rachael Dr](#)

[Sandy](#)

503-477-2911

[tom.newell@live.com](mailto:tom.newell@live.com)

Sent from [Mail](#) for Windows 10



EXHIBIT JJ

Emily Meharg <emeharg@ci.sandy.or.us>

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## Proposed "Bailey Meadows" development

1 message

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**Cary Mallon** <cary.mallon@gmail.com>  
To: emeharg@cityofsandy.com

Sat, Sep 28, 2019 at 10:06 AM

Hello Emily,

My name is Cary Mallon and am writing in opposition to the proposal of the Bailey Meadows development. I have lived at the corner of Melissa and Rachael since 2007. While we have recognized that the future might mean development to the south of us, we have never imagined the specifics proposed in this project.

Mainly, my objection is adding 100 homes to be served by a road system that is already (by city standards) overloaded. The plans here basically call for the world's biggest cul de sac, which is a design now disdained by many planners because of it's dead end nature. The only conduit to reach this area for cars, school buses, emergency vehicles, and construction equipment is Melissa Ave. Melissa Ave, which I know the city would say is wide enough for two way traffic, really functions like a one lane logging road with turnouts. Drivers do not feel comfortable passing each other there when there are cars parked on both sides of the road. We routinely wait for each other to pass through the spots with cars on both sides.

It is my opinion that the property in question should be denied development approval without access to Hwy 211. Really, the 'emergency' access should be Melissa ave, and the main access should be Hwy 211. I understand that there are complications making that access difficult, but the project should not be approved until that way is cleared. AND, then it is on. the city to improve access to other residential areas along 211 for travelers who are not in cars!

A secondary objection is allowing the project to go forward without park space included. The city should not allow any project to 'buy off' the park requirement.

To conclude, I am vehemently opposed to Bailey Meadows.

Thanks for reading,

Cary



**EXHIBIT KK**

Emily Meharg <emeharg@ci.sandy.or.us>

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**extension of melissa ave to proposed subdivision**

1 message

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**Lonnie McVey** <lonniemcvey@gmail.com>  
To: emeharg@cityofsandy.com

Sat, Sep 28, 2019 at 10:48 AM

This is unacceptable for many reasons. As a resident of this neighborhood for over 15 yrs I believe this is not safe. Melissa is closed due to weather occasionally. Should we add more homes and traffic that would be impacted by this. No police or fire access during slick conditions? Does this sound like proper planning. The safety of kids walking up, down and across our streets with 900 more car trips per day to deal with. Picture dump trucks, equipment, paving contractors etc using Melissa to access this development causing congestion, road damage [etc.as](#) well as safety problems. Please access this site from the hiway only. An extension of Melissa will be used as a bypass as well as access to the site.  
thanks Lonnie Mcvey





EXHIBIT LL

Emily Meharg <emeharg@ci.sandy.or.us>

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**RE: New proposed Bailey Meadows Subdivision**

1 message

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**john.caroldick** <john.caroldick@gmail.com>  
To: emeharg@cityofsandy.com

Sun, Sep 29, 2019 at 5:45 PM

Hello Emily ,

We are among many neighbors in the Nicholas Glen Subdivision that are very concerned about the new proposed subdivision Bailey Meadows. Nicholas Glen has only one access in and out of the area, which is Melissa ave. If this new subdivision goes in, the developers plan to use Melissa for entering and exiting. This will add approximately 944 additional car trips a day . We feel that adding any traffic to Melissa ave will be too much. It will need to handle cars from 170 homes in Nicholas Glen and 100 homes in Bailey Meadows. This arrangement would be very unsafe for children living on Melissa and impossible for all residences to leave the area in an emergency. We are very upset that Nicholas Glen has only had one access in and out of our area as long as we have lived here (12years). This may be a good time to look into this problem also.

John and Carol Dick

[18255 Grey Ave](#)

[Sandy or 97055](#)

503-449-0927

Email- [john.caroldick@yahoo.com](mailto:john.caroldick@yahoo.com)

Sent from my Verizon, Samsung Galaxy smartphone



EXHIBIT MM

Emily Meharg <emeharg@ci.sandy.or.us>

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**Use of Melissa Street in Nicholas Glen neighborhood.**

1 message

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**Marilyn Siewell** <oreborn36@gmail.com>  
To: emeharg@cityofsandy.com

Tue, Oct 1, 2019 at 1:53 AM

Dear Emily Meharg:

I am very concerned as is my daughter, who recently moved in with me, on go do not want this to happen. Our neighbors are a mixture of young children who ride their bikes , parents with baby strollers and elderly who go for walks each day, feeling safe when doing so. This lifestyle would be gone for us, who are home owners and love our space, peace, and quiet and safety factors. If used for your proposal, the street would only go to Debarko and then you would have to turn West or East , through two more neighborhoods before getting to town. Please rethink this plan. There must be a better solution suich as via 211.

Thankyou,

Marilyn Siewell  
Treena Siewell

COMMENT SHEET for File No. 19-023 SUB/VAR/TREE:

Our City is big enough  
 We DO NOT need  
 any more homes!  
 The traffic is B&D enough!!  
 We do not need more  
 cars going through our  
 Beautiful City!!

Marguerite Wadkins 503-668-6763  
 Your Name Phone Number  
 18291 Myra Ct - Sandy, OR 97055  
 Address

**APPLICABLE CRITERIA:** Sandy Municipal Code: 17.12 Procedures for Decision Making; 17.18 Processing Applications; 17.22 Notices; 17.30 Zoning Districts; 17.34 Single Family Residential (SFR); 17.66 Adjustments and Variances; 17.80 Additional Setbacks on Collector and Arterial Streets; 17.82 Special Setbacks on Transit Streets; 17.84 Improvements Required with Development; 17.86 Parkland and Open Space; 17.92 Landscaping and Screening; 17.98 Parking, Loading, and Access; 17.100 Land Division; 17.102 Urban Forestry; and 15.30 Dark Sky Ordinance.

EXHIBIT OO

COMMENT SHEET for File No. 19-023 SUB/VAR/TREE:

"To Whom it may Concern"  
I live up off of Melissa Ave.  
Rachael Dr.

With 944 vehicle's going on  
Melissa ave. It will be too much,  
for this new home development.

When the cold weather comes with  
all that snow, it will be bad.

The buses and parents meet  
down below Melissa hill. Just not  
safe for the kids.

Definitely should be another  
way out of this development.

It will be a mess for  
Bailey Meadows and Nicholas Glen.

Doris E Rooney                      503 804 4542  
Your Name                                      Phone Number  
37214 Rachael Dr Sandy, OR 97055  
Address

APPLICABLE CRITERIA: Sandy Municipal Code: 17.12 Procedures for Decision Making; 17.18 Processing Applications; 17.22 Notices; 17.30 Zoning Districts; 17.34 Single Family Residential (SFR); 17.66 Adjustments and Variances; 17.80 Additional Setbacks on Collector and Arterial Streets; 17.82 Special Setbacks on Transit Streets; 17.84 Improvements Required with Development; 17.86 Parkland and Open Space; 17.92 Landscaping and Screening; 17.98 Parking, Loading, and Access; 17.100 Land Division; 17.102 Urban Forestry; and 15.30 Dark Sky Ordinance.

RECEIVED  
OCT 01 2019  
CITY OF SANDY



## EXHIBIT PP

Emily Meharg <emeharg@ci.sandy.or.us>

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### New Subdivision Concerns

1 message

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**Susan Hebb** <susan.hebb@yahoo.com>  
To: emeharg@cityofsandy.com

Tue, Oct 1, 2019 at 7:27 PM

Hello - my name is Susan Hebb and I am a homeowner on Reich Ct., off Dubarko in Sandy. I recently became aware of the proposed new subdivision of 100 homes being built nearby. I wanted to share some concerns that I have in regards to this new development.

While the development itself is probably not up for approval or debate with the public, I want to share my concerns about the size of a new subdivision being built. Sandy is a wonderful small city and I'd like to keep it that way. There has already been a tremendous amount of growth and change that has occurred with housing as well as businesses over the last few years in Sandy. While I realize it's not in the best interest of cities to remain stagnant, it's critical to look at the growth carefully so the City of Sandy does not lose it's special small town feel. I specifically do not live in Gresham because it's become way to big. In addition, I'm concerned about the impact this development will have on our already stretched infrastructure of water and sewer services, schools, and fire and police departments.

It's my understanding that the entrance and exit to this subdivision has been proposed to be solely through Melissa Avenue. This is not a safe or satisfactory consideration. It's been estimated that an additional 944 car trips per day will be created from this new subdivision. Dubarko is already a busy street. Many Sandy citizens walk, run, bike, hike and enjoy the quiet beauty of this neighborhood. I'm very concerned about the safety of individuals, families, pets, and wildlife with the proposed amount of additional cars going by every day. Additionally, that amount of traffic would create pollution and health concerns for those walking and enjoying the Tickle Creek Trail.

It makes much more sense for cars to enter this new subdivision off Highway 211. Using Highway 211 would allow cars to get to the subdivision quickly since the speed limit is higher than it would be using Dubarko and Melissa. If Melissa Avenue is the main access, I'm concerned about individuals being frustrated with how long it takes to get to the new subdivision and the low speed limit. This may cause some to speed on Dubarko and up Melissa. In addition, having cars use Highway 211 would create less pollution for those enjoying walking and The Tickle Creek Trail. Also citizens would feel safer continuing to walk and exercise along Dubarko and off Melissa with the cars using Highway 211 instead of Melissa as the entry point.

I plan to attend the planning meeting on October 28th to continue to share my concerns over the proposal of using Melissa Avenue as the access point for this new subdivision. Please consider using Highway 211 as the entry for this new development.

Thank you for your consideration.





**EXHIBIT QQ**

Emily Meharg <emeharg@ci.sandy.or.us>

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**Proposed Subdivision off Melissa Ave**

1 message

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**Dawn Allen** <wunderwuman1022@gmail.com>  
To: emeharg@cityofsandy.com

Tue, Oct 1, 2019 at 8:06 PM

To Whom it May Concern:

We currently live on Melissa Ave and have concerns with the addition of the new homes while only having Melissa Ave as the only access point into both the current neighborhood as well as the proposed additional neighborhood. With the current neighborhood population, each day we hear and witness multiple vehicles driving at high speeds both up and down Melissa Ave and an increase of homes and drivers would only make this worse. We have witnessed multiple near collisions at Melissa Ave and the stop sign at Solso Dr. Additionally, our house has already been hit several times by out of control drivers. We are also concerned about an increase of traffic noise that would be caused by an increased number of vehicles driving up and down Melissa Ave each day and by the decrease in home value, for those of us that live on Melissa Ave, that is likely to follow the building of the new neighborhood.

We are also concerned about the neighborhood children. When it snows or is icy and school buses are on Snow Routes they do not drive up the hill on Melissa Ave, which means children would be required to walk up/down Melissa Ave to the snow route bus stop on Dubarko or their parents would have to risk the drive. This is dangerous for the children as well as the drivers that are already on a treacherous hill. Another dangerous issue is each year when it snows or is icy we witness many abandoned cars at the bottom of the hill being left on Dubarko. With more traffic means the likelihood of more cars being abandoned and risk being hit.

In the last decade in the City of Sandy we have seen the congestion increase exponentially as our roads have become overwhelmed with traffic. An increase of homes and no new additional roads is only going to compound this issue.

If this new development does go forward we would suggest a minimum of one more road in to and out of the neighborhood be added to account for the increase in traffic. In addition to this, installing speed bumps on Melissa Ave to slow down speeding traffic.

Thank you for your time and consideration.

Dawn and Jordan Allen



EXHIBIT RR

Emily Meharg <emeharg@ci.sandy.or.us>

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**Baily Meadows Subdivision concern**

1 message

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**Dave Meeker** <meekerd1@hotmail.com>

Tue, Oct 1, 2019 at 8:35 PM

To: "emeharg@cityofsandy.com" <emeharg@cityofsandy.com>

As a 20 year resident in Nicolas Glen neighbor hood I think this new subdivision on Ponder lane should in no way come through Melissa Ave. I think all traffic for this new 100 home subdivision should only inter and exit on Highway 211. I also think if they had both Melissa and 211 access that most people in the new subdivision would use Melissa as the shortest way to highway 26. This would overload our neighbor hood. I could not imagine the construction trucks (Cement trucks as worst case) going up and down Melissa (Very steep road) to begin with, then the traffic would double the capacity that the local neighbor hood roads they were designed for. Is that developer going to come back in 10-15 years and maintain our overloaded streets.....I don't think they care! What about the traffic on Dubarko Rd, going right past the play ground every day, with the kids playing there. Our neighbor hood is fairly quiet and the Tickle creek trail system extremely pleasant to walk our dog and for others to walk, jog, kids ride bikes on the trail. I don't want to lose the small town feel that we have in our neighbor hood. All the extra traffic will ruin our neighbor hood. I strongly say NO Melissa Ave access.

Dave Meeker  
18198 Grey Ave  
Sandy OR

Sent from [Outlook](#)



EXHIBIT SS

Emily Meharg <emeharg@ci.sandy.or.us>

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## Bailey Meadows subdivision

1 message

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Carol Hassebroek <kingfritz1@live.com>

Tue, Oct 1, 2019 at 10:53 PM

To: "emeharg@cityofsandy.com" <emeharg@cityofsandy.com>

Letter of concern,

Please dont let this subdivision go forward.

The traffic impact will make this side of Sandy miserable. I live further south on Trubel rd, & traffic is already terrible. 211 has backups almost to Dubarko now at peak times, holiday weekends etc.. It is not uncommon to wait thru 3 or 4 light cycles at 26 & 211 from the south.

Many people bypass the 211 hill into town,& drive thru 25 mph neighborhoods on Dubarko. Tupper, Sandy Heights, Bluff. Your making my hometown dangerous, & unattractive to spend time in. I'm only 2 miles from Town,& prefer to drive 10 to Estacada , for dining, shopping, & entertainment . It's a much nicer drive, not sitting at backups.

There needs to be a bypass installed or 4 lane roads with turn lanes, to keep drivers from using neighborhoods as detours around 211, 26, Bluff, Kelso, Trubel, etc..

Come up with a solution BEFORE anymore homes, townhouses, apts,are built . Fix the infrastructure , widen 211.

I went to high school in Sandy in the 70s. Same roads as now. The population has more then doubled. Recreational traffic is heavy from Thurs. - Sunday. Fix the flow, stop the backups, then add more developments. If developers had to fix the current problem before 1 more dwelling is built, the city would be better off.

Sincerely,

Carol Hassebroek  
39400 SE TRUBEL RD  
Sandy,Or.

Sent via the Samsung Galaxy S8+, an AT&T 5G Evolution capable smartphone



EXHIBIT TT

Emily Meharg <emeharg@ci.sandy.or.us>

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**Objection to proposed residential subdivision plans-Ponder Lane and Melissa Ave.**

1 message

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karen higgins <khiggins.chwb@hotmail.com>  
To: "emeharg@cityofsandy.com" <emeharg@cityofsandy.com>

Wed, Oct 2, 2019 at 10:16 AM

Dear City of Sandy Planners,

I am writing to voice my objections to the proposed plans for the residential subdivision and the developers proposition to use only Melissa Ave as a mean of entrance and exit for the additional 100 households with the estimate of 944 car trips per day.

My house is located one house off Melissa Ave and I have lived here for 15years. The traffic both on Melissa Ave. and on Debarko streets have increased dramatically. These streets are not designed for mass amounts of traffic, nor the effects on the safety of children, school bus stops and parking. Having lived here through many winters, the icy roads , especially the steep Melissa Ave. would cause ridiculous traffic jams and possible accidents. This is an absurd plan! In the case of snow or emergency,these households would be unable to exit!

The plans for stormwater detention tract are ridiculous without any thought given for the rights of the Nicholas Glen residents and their safety, ability to exit their neighborhood, along with the accomodation for construction vehicles rights-of-way!

Along with many of my neighbors, we plan on attending the meeting Oct 28th to adamantly voice our opposition to this plan. Realizing the fact, that Sandy is a growing community with need for expansion, I believe the Planning Commission needs to take the present homeowner's concern for safety, for the ongoing natural beauty of living in a rural community, and the honest look at the effects of corporate greed into account in making the correct decisions regarding this proposition.

Sincerely,

Karen Higgins  
37487 Rachael Dr.  
Sandy, Or.



EXHIBIT UU

Emily Meharg <emeharg@ci.sandy.or.us>

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**Nicholas Glen/Letter of Concern**

1 message

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**Brian molcany** <bmolcany@gmail.com>  
To: emeharg@cityofsandy.com

Wed, Oct 2, 2019 at 10:37 AM

Ms. Meharg,

My wife and I would like to voice our concerns regarding the proposed residential subdivision, and Melissa Ave. being the sole point of access.

First off, we find it odd that the letter regarding the proposed project did not go out to all residents of the neighborhood, and that, from what I understand, the letter eluded to this project already being approved.

Doubling the amount of traffic on Melissa will have a negative impact on the entire neighborhood, especially in the winter as Melissa is very steep. We also have deep concerns in the event of an emergency or disaster that exiting the neighborhood will be a safety hazard.

Additionally, the construction process will effect everyone as the needed utilities upgrades will presumably make travel on Melissa a challenge during the construction process.

We also have concerns over what this will do to home values and property taxes. Also, it is our understanding that this project will affect property lines on Rachel Dr., which would be unfair to the current residents.

The general consensus is that, if approved, this subdivision will have a negative impact on the residents of Nicholas Glenn and we ask the city to stand by it's residents and not allow the developer to proceed.

Sincerely,

The Molcany Family  
Wewer Ave



COMMENT SHEET for File No. 19-023 SUB/VAR/TREE:

9/29/2018

This is my response + concern re. the Bailey Meadows proposed development. My main concern is that Melissa Ave is the only access planned for the new development as well as <sup>the</sup> Nicholas Glen neighborhood. In addition, it came to our attention that some of the residents of the Nicholas Glen neighborhood had not been notified of the proposed Bailey Meadows development. While notifying residents within 500 ft. of a possible new development may meet the minimum "requirements" of notification, it ~~does~~ does not meet the requirement that all residents of Nicholas Glen need to use Melissa as the only access to their homes & should have notification also.

Esther Naomi Quick

Your Name

503-482-0255

Phone Number

18214 Grey Ave, Sandy, OR 97055

Address

**APPLICABLE CRITERIA:** Sandy Municipal Code: 17.12 Procedures for Decision Making; 17.18 Processing Applications; 17.22 Notices; 17.30 Zoning Districts; 17.34 Single Family Residential (SFR); 17.66 Adjustments and Variances; 17.80 Additional Setbacks on Collector and Arterial Streets; 17.82 Special Setbacks on Transit Streets; 17.84 Improvements Required with Development; 17.86 Parkland and Open Space; 17.92 Landscaping and Screening; 17.98 Parking, Loading, and Access; 17.100 Land Division; 17.102 Urban Forestry; and 15.30 Dark Sky Ordinance.

RECEIVED

OCT 02 2019

CITY OF SANDY

I hope you read what we send you.

EXHIBIT WW

COMMENT SHEET for File No. 19-023 SUB/VAR/TREE:

I am disappointed with the City of Sandy! First the apartments at Bluff Rd and Dubarke. I think it was unfair to the people already living there with the apartments so close and so high.

Now adding a 100 home subdivision behind our neighborhood, Nicholas Glen, with only one way in and out of them. If there was some kind of catastrophe and we need to get out or help was needed in but Melissa wasn't usable, what then??

I am amazed that this has progressed as far as it has. Why didn't you say "NO" until there is another road in and out??

It seems to me those of you making these decisions care nothing for People, only for money!

RECEIVED

OCT 02 2019

CITY OF SANDY

Edith Newton

503-668-3429

Your Name

Phone Number

18246 Grey Ave. Sandy, OR 97055

Address

APPLICABLE CRITERIA: Sandy Municipal Code: 17.12 Procedures for Decision Making; 17.18 Processing Applications; 17.22 Notices; 17.30 Zoning Districts; 17.34 Single Family Residential (SFR); 17.66 Adjustments and Variances; 17.80 Additional Setbacks on Collector and Arterial Streets; 17.82 Special Setbacks on Transit Streets; 17.84 Improvements Required with Development; 17.86 Parkland and Open Space; 17.92 Landscaping and Screening; 17.98 Parking, Loading, and Access; 17.100 Land Division; 17.102 Urban Forestry; and 15.30 Dark Sky Ordinance.

EXHIBIT XX

COMMENT SHEET for File No. 19-023 SUB/VAR/TREE:

For the new residents to use Melissa as their only access ~~to~~ would be hazardous to the Children of the Nicholas Glen neighborhood.

The traffic would be horrible for this neighborhood & also on Dubanko. If ~~were~~ we were to have an emergency + in need of evacuation, it would be impossible to get everyone out of here. The narrow streets as of now are hard to travel during adverse weather conditions.

At the meeting ~~our~~ it was mentioned about our sewer system and how it is lacking. This needs a new system before anymore homes are added. Some neighbors have complained of low water pressure what will another 100 homes do to our pressure? I also believe that in addition to the homes there should be a park.

Lori Graham

Your Name

503 819-5202

Phone Number

31322 Rachael Dr

Address

APPLICABLE CRITERIA: Sandy Municipal Code: 17.12 Procedures for Decision Making; 17.18 Processing Applications; 17.22 Notices; 17.30 Zoning Districts; 17.34 Single Family Residential (SFR); 17.66 Adjustments and Variances; 17.80 Additional Setbacks on Collector and Arterial Streets; 17.82 Special Setbacks on Transit Streets; 17.84 Improvements Required with Development; 17.86 Parkland and Open Space; 17.92 Landscaping and Screening; 17.98 Parking, Loading, and Access; 17.100 Land Division; 17.102 Urban Forestry; and 15.30 Dark Sky Ordinance.

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OCT 03 2019

CITY OF SANDY



EXHIBIT YY

Emily Meharg <emeharg@ci.sandy.or.us>

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## Proposed Bailey Meadows Subdivision Concerns

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Jeff Conder <conder100@gmail.com>  
To: emeharg@cityofsandy.com

Thu, Oct 3, 2019 at 9:15 AM

Hi Emily,

I've lived in Sandy since 2002. We've seen Fred Meyers come to our community and watched as Dubarko has become a major thoroughfare. We live near 362nd on Dubarko and now see that Dubarko is used by a large number of people to avoid hwy 26.

I can get from Bluff to 362nd with only one stop sign in between. This makes Dubarko a better choice over hwy 26 to get through town for many residents.

It's dangerous to cross 26 from side roads without a stop light. I could go on about 26 but my focus here is about having an additional ~1000 cars on Dubarko. A high percentage of those will use Dubarko to reach 362nd ave.

I recall many years ago after Dubarko opened up between Bluff and 362nd that the city stated it was capable of handling ~10,000 cars a day. I call BS on that capability, but the point is that another ~10% increase in traffic is going to have a significant impact on the safety of residents.

This could be alleviated by 1) not adding a new subdivision or 2) make west bound Dubarko exit to hwy 26 at Ruben Lane.

It's not in my best interest to add the subdivision without additional actions to lower the traffic impact in our neighborhood. Let's come up with a win-win proposal.

Best Regards,

Jeff Conder  
36345 Dubarko Rd.



EXHIBIT ZZ

Emily Meharg <emeharg@ci.sandy.or.us>

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## Bailey Meadows Subdivision

1 message

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**Bj Schonek** <bjschonek@yahoo.com>

Thu, Oct 3, 2019 at 6:27 PM

To: "emeharg@cityofsandy.com" <emeharg@cityofsandy.com>

RE: Bailey Meadows Subdivision

We believe the proposed entrance being only Melissa Ave would create too much traffic for the one steep entrance.

The proposed Bailey Meadows Subdivision we believe should have its own ingress and egress. As does the Nicolas Glen Subdivision.

Concerned Neighbors,

Belus and Juanita Schonek  
18102 Wewer Ave  
Sandy OR 97055  
[bjschonek@yahoo.com](mailto:bjschonek@yahoo.com)





EXHIBIT AAA

Emily Meharg <emeharg@ci.sandy.or.us>

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**Proposed residential subdivision Bailey meadows**

1 message

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**Danielle Raines** <drainesrun@yahoo.com>  
To: emeharg@cityofsandy.com

Thu, Oct 3, 2019 at 6:49 PM

Comment sheet for File no. 19-023 sub/var/tree

Hello Emily Meharg,

I am writing you to let you know my thoughts on the new proposed subdivision. My family and I live off Myra ct, so when we heard about this new subdivision, we didn't mind. However, when we found out more information on this subdivision, we quickly changed our minds and now DO NOT WANT IT TO GET BUILT! I am not one of those people from sandy who just don't want people moving in, I want sandy to expand. With more people means more opportunities for local businesses and more groups or activities for families. I just hope sandy is thinking long term and planning on changing the roads and adding more schools.

First of all, Melissa being the only entrance is going to change traffic. And not for the good, it is going to be absolutely horrible. Melissa cannot be the only entrance to this neighborhood. When it's icy, one car goes up and one car goes down. Having 800-1000 more cars driving up and down that street is going to be a disaster. It also changes the whole feel of our perfect little neighborhood. I worry for the safety of our kids in our neighborhood because of all these hundred of cars going up and down that huge hill (Melissa st.).

-Find a way to create a main entrance off 211!

Second, with every new subdivision that moves in, they build an awesome new park. So me being a mom of 2 kids under 4, I was really excited for a park that's within walkable distance, that's not on a huge hill or busy road like Dubarko. Something with some play equipment, or a pump track. However, I was informed that there will not be a park and that the contractor will instead give money to the city of sandy to build a park elsewhere. This really upsets me, we have no walkable parks, the one on Dubarko is terrible and you constantly have to hawk eye your children so they don't run into the road. With all these new houses being built (most people buying them will be families with young children) WE NEED A PARK OR OUTDOOR AREA FOR THE KIDS TO PLAY. We don't need it somewhere else in sandy we need it in our area.

-So the contractor needs to incorporate a park into this new subdivision.

And last, the city of sandy needs to think about all this growth and new traffic and start building new schools. The schools we have are already starting to get crowded. I want my children to actually get a good education with smaller numbers per classroom. I just don't think the city of sandy is thinking long term here.

We bought our house almost 3 years ago, and have put so much time, love and money remodeling it ourselves, while raising our sons and if this proposed subdivision gets approved. You can definitely expect us to be putting our house on the market and moving. So please, figure out another way to make a main entrance off of 211, think long term about schooling for our children and please put in a walkable, decent park (preferably with a pump track) in.

Thank you

-Danielle Mullan  
Off of Myra ct.



Emily Meharg <emeharg@ci.sandy.or.us>

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## neighborhood expansion

1 message

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**Oliver Mullan** <chipsandsalsa1416@gmail.com>  
To: emeharg@cityofsandy.com

Thu, Oct 3, 2019 at 6:57 PM

Hello Emily Meharg,

I am writing you to let you know my thoughts on the new proposed subdivision. My family and I live off Myra ct, so when we heard about this new subdivision, we didn't mind. However, when we found out more information on this subdivision, we quickly changed our minds and now DO NOT WANT IT TO GET BUILT! I am not one of those people from sandy who just don't want people moving in, I want sandy to expand. With more people means more opportunities for local businesses and more groups or activities for families. I just hope sandy is thinking long term and planning on changing the roads and adding more schools.

First of all, Melissa being the only entrance is going to change traffic. And not for the good, it is going to be absolutely horrible. Melissa cannot be the only entrance to this neighborhood. When it's icy, one car goes up and one car goes down. Having 800-1000 more cars driving up and down that street is going to be a disaster. It also changes the whole feel of our perfect little neighborhood. I worry for the safety of our kids in our neighborhood because of all these hundred of cars going up and down that huge hill (Melissa st.).

-Find a way to create a main entrance off 211!

Second, with every new subdivision that moves in, they build an awesome new park. So me being a mom of 2 kids under 4, I was really excited for a park that's within walkable distance, that's not on a huge hill or busy road like Dubarko. Something with some play equipment, or a pump track. However, I was informed that there will not be a park and that the contractor will instead give money to the city of sandy to build a park elsewhere. This really upsets me, we have no walkable parks, the one on Dubarko is terrible and you constantly have to hawk eye your children so they don't run into the road. With all these new houses being built (most people buying them will be families with young children) WE NEED A PARK OR OUTDOOR AREA FOR THE KIDS TO PLAY. We don't need it somewhere else in sandy we need it in our area.

-So the contractor needs to incorporate a park into this new subdivision.

And last, the city of sandy needs to think about all this growth and new traffic and start building new schools. The schools we have are already starting to get crowded. I want my children to actually get a good education with smaller numbers per classroom. I just don't think the city of sandy is thinking long term here.

We bought our house almost 3 years ago, and have put so much time, love and money remodeling it ourselves, while raising our sons and if this proposed subdivision gets approved. You can definitely expect us to be putting our house on the market and moving. So please, figure out another way to make a main entrance off of 211, think long term about schooling for our children and please put in a walkable, decent park (preferably with a pump track) in.

Thank you

-Oliver Mullan



EXHIBIT BBB

Emily Meharg <emeharg@ci.sandy.or.us>

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**Concerns regarding Nicholas Glen neighborhood and proposed new development**

1 message

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**Corri Baldwin** <corri.baldwin@gmail.com>  
To: emeharg@cityofsandy.com

Thu, Oct 3, 2019 at 7:06 PM

Corri Baldwin  
37524 Rachael Drive  
Sandy, OR 97055  
503-860-9398  
[corri.baldwin@gmail.com](mailto:corri.baldwin@gmail.com)  
10/3/2019

Emily Meharg  
Associate Planner  
City of Sandy  
[emeharg@cityofsandy.com](mailto:emeharg@cityofsandy.com)

Dear Emily Meharg:

I am a resident of the Nicholas Glen Neighborhood and have some concerns regarding the potential new development that would be located off ponder lane north of 211.

My first concern with the proposal is that Melissa Ave would be the only road that would be connected to the new subdivision. I live on top of Melissa and see the traffic that is already there, it is concerning that the residents of a hundred more houses will be using this street as well. There is only one stop sign currently for a three way, to be four way intersection. There was no plan to make any traffic changes when I attended the meeting with the developers. I do not see how that would be a safe intersection with the addition of 944 car trips a day.

My second concern regarding Melissa Ave being the only road is weather conditions. Winters in Sandy can be icy/snowy. Melissa Ave is a good size hill, which is already a concern with the amount of traffic that is present now, adding more car trips during hazardous driving conditions is a major safety concern. I am also concerned that the road is not wide enough to accommodate the additional 944 car trips. Residents of Melissa park on the side of the street and depending on vehicle size, a car going up the hill the same time as one going down the hill cannot pass each other. Adding more traffic on Melissa would be a nightmare for all residents.

Another concern that I have is the fact that in case of an emergency, or natural disaster, it would be unsafe to evacuate or have emergency personnel safely get to where they need to go.

Another concern that I have is that there have been inconsistencies with property line surveys. The two that were marked are varied in where it says our property line is behind our house. We are Also worried that the sewer system in place would not be able to handle to new development as well, without an upgrade.

Sincerely,

Corri Baldwin



EXHIBIT CCC

Emily Meharg <emeharg@ci.sandy.or.us>

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## Safety Concerns about possible new housing development

1 message

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**Michael S.** <mschell78@hotmail.com>  
To: "emeharg@cityofsandy.com" <emeharg@cityofsandy.com>

Thu, Oct 3, 2019 at 7:31 PM

Mike Schell  
37524 Rachael Drive  
Sandy, OR 97055  
503-200-9230  
[mschell78@hotmail.com](mailto:mschell78@hotmail.com)  
10/3/2019

Emily Meharg  
Associate Planner  
City of Sandy  
[emeharg@cityofsandy.com](mailto:emeharg@cityofsandy.com)

Dear Emily Meharg:

I am a resident of the Nicholas Glen Neighborhood and have some concerns regarding the potential new development that would be located off ponder lane north of 211.

My first concern with the proposal is that Melissa Ave would be the only road that would be connected to the new subdivision. I live on top of Melissa and see the traffic that is already there, it is concerning that the residents of a hundred more houses will be using this street as well. There is only one stop sign currently for a three way, to be four way intersection. There was no plan to make any traffic changes when I attended the meeting with the developers. I do not see how that would be a safe intersection with the addition of 944 car trips a day.

My second concern regarding Melissa Ave being the only road is weather conditions. Winters in Sandy can be icy/snowy. Melissa Ave is a good size hill, which is already a concern with the amount of traffic that is present now, adding more car trips during hazardous driving conditions is a major safety concern. I am also concerned that the road is not wide enough to accommodate the additional 944 car trips. Residents of Melissa park on the side of the street and depending on vehicle size, a car going up the hill the same time as one going down the hill cannot pass each other. Adding more traffic on Melissa would be a nightmare for all residents.

Another concern that I have is the fact that in case of an emergency, or natural disaster, it would be unsafe to evacuate or have emergency personnel safely get to where they need to go.

Another concern that I have is that there have been inconsistencies with property line surveys. The two that were marked are varied in where it says our property line is behind our house. We are Also worried that the sewer system in place would not be able to handle to new development as well, without an upgrade.

Last but not least there was no mention of trees being cut down at the meeting, but yet the developer had people come out to do "a tree health inspection" of all the trees that border our property. In the event the other trees are cut to make room for a new walk way and road. We have one giant tree in our back yard that even if left would be affected by this action, and pose a very large safety hazard for our selves and neighbors if the other trees are taken near it.

Sincerely,

Mike Schell



## EXHIBIT DDD

Ashley Parrish  
37356 Rachael Drive  
Sandy, Or 97055  
503-440-5496  
[Ashleyparrish22@gmail.com](mailto:Ashleyparrish22@gmail.com)

October 3, 2019

Emily Meharg (via email: [emeharg@cityofsandy.com](mailto:emeharg@cityofsandy.com))  
City of Sandy, Planning Division  
39250 Pioneer Blvd. Sandy, OR 97055

To Ms. Meharg,

I am writing you to express my concern about the proposed Bailey Meadows development behind my neighborhood, Nicholas Glen. I have been receiving information about the Bailey Meadows subdivision, and I do not think it is safe or appropriate to have access to the new development solely through Melissa Ave.

We moved to this neighborhood in 2018, and although we fell in love with our house because of the beautiful view from the back yard, we knew it would someday be developed. I am not opposed to the new development behind my home. It is only a matter of time before the city keeps expanding and new developments are built, but to have all the new homes accessed only through a steep hill that is already overcrowded is poor planning and unsafe. Cars already go one at a time in the ice and snow, and I can't imagine what it would be like if the traffic is doubled.

My son is in Kindergarten at Kelso Elementary school, where I would assume the students of the new subdivision would attend as well. The classrooms and school are already at capacity, which is another reason I cannot support a new subdivision knowing it would cause our current students' experience to suffer. Until the city can support new growth, Sandy should not allow more developments to happen.

Sandy is an incredible city. It has so much to offer, and if we fight for proper growth, it will continue to thrive. More people will want to move here for the right reasons, not just because it is "cheaper" to live. That will create a positive community culture, with residents proud and desiring to take care of Sandy.

I know there are many concerned neighbors, and I hope that the city and its current residents can partner together to keep our neighborhood safe and make the inevitable future growth of Sandy reasonable and appropriate.

Thank you,  
Ashley Parrish



**EXHIBIT EEE**

Emily Meharg <emeharg@ci.sandy.or.us>

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**Proposed neighborhood**

1 message

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**Guimar D.D.** <gddevaere@gmail.com>  
To: emeharg@cityofsandy.com

Thu, Oct 3, 2019 at 11:38 PM

City of Sandy Planning Commission,

Hello

I live in the Nicholas Glen neighborhood next to the proposed development off of Ponder lane and Hwy 211. I am concerned for my family my home and my neighborhood with this proposal. This development would drastically change our quiet close knit neighborhood.

Right now we have minimal traffic because we only have one road in and out. Our kids are able to play outside without having to worry about the traffic racing down our streets. The new neighborhood would add another 100+homes with all that traffic coming through our neighborhood. The developers want to use Melissa Ave as the only road in and out of the new development. This would also add extra traffic to Dubarko Rd. Since the only road Connecting through our neighborhood to the proposed neighborhood will be Melissa Ave  
Our Children will no longer be safe playing outside with all the extra traffic.

Our home values will go down. We would be connected to this large development by just one access road. The developers have stated that they will not be adding a park to this subdivision. Instead they want to pay a fee to the city of Sandy. This will be adding to the decline of our property values. When buying our home we were told that we had farm land behind our neighborhood so there would be no developments.

We are opposed to the building of this new development.

Thank you,

Guimar and James DeVaere  
18176 Rachael Drive  
P.O. Box 331  
Sandy, OR 97033.

EXHIBIT FFF

---

**Erin Findlay**

37616 Rachael Drive  
Sandy, OR 97055  
(503) 312-2608  
stewstac@hotmail.com

October 3rd, 2019

**Emily Meharg (via email: emeharg@cityofsandy.com)**

City of Sandy, Planning Division  
39250 Pioneer Blvd.  
Sandy, OR 97055

Dear Ms. Meharg,

I am writing this letter as a concerned resident of the Nicholas Glen Neighborhood in Sandy, Oregon.

When we chose our home in Sandy, we very much expected growth and development. It was one of the reasons we chose Sandy. We knew that we could enjoy a rural landscape within a city that was guaranteed to grow and thrive -- rather than grow stagnant. Our downtown is truly thriving. Our infrastructure, however, can not keep up.

Having researched information about our current mayor (at that time), we felt certain that any new growth would be supported with careful planning for city infrastructure. Linda Malone understood "sprawl" on a personal level. She was born and raised in that environment. She knew what to look for in advance of problems developing. When cities outgrow their infrastructure and fall victim to private development, "city planning" becomes an obsolete term.

I believe that this proposed development provides us with an excellent opportunity. We can stand as neighbors and as a city, to bring the term "city planning" back to its true intent. I ask that until necessary infrastructure is in place, we as a city adamantly oppose new construction.

Bailey Meadows gives us an opportunity to set a precedent in our city.

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Of greatest concern and specific to Bailey Meadows:

- We are ignoring the spirit and intent of our existing motor vehicle system plan if we allow Melissa Avenue to be the only vehicle access for this new development. 944 additional car trips per day is not acceptable.
- We are disregarding the safety of Nicholas Glen residents and future residents of Bailey Meadows if we allow this development be built with only one access point through Melissa. This shows complete disregard for public safety as it pertains to emergency response and evacuation. In consulting with our local fire and police entities, we know that they share this concern.

Of course, there are so many concerns to list -- both in regards to this specific subdivision and our general approach to new development in Sandy, OR.

When we met with the developers and their lawyer, I was enlightened. It occurred to me that the residents of Sandy are not being properly represented in this situation. Developers have a great deal of money, the ability to “lawyer up”, and for lack of a better term, they will typically “steamroll” your average voter/tax-payer. The lawyer representing this developer is well-known in land use. His ability to pick apart the intent of our city codes and change the purpose in which they were written -- is simply appalling.

We can not stand for this.

Our family is consulting with a land use lawyer who specializes in opposition work. We will be writing additional letters under his advisement. You can expect those letters to arrive after October 4th. We understand that it is our right to continue opposition in the form of writing and in person through October 28th, 2019.

We intend to do so.

Sincerely,

**Erin Findlay**

## EXHIBIT GGG

Krista and Gabriel Stone  
18111 Rachael Dr.  
Sandy, OR 97055  
503-312-0669/ 503-970-3037  
mumbuns@yahoo.com/gpstone@acm.org  
10/4/2019

Emily Meharg  
City of Sandy, Planning Division  
City of Sandy  
39250 Pioneer Blvd.  
Sandy, OR 97055  
emeharg@cityofsandy.com

Dear Emily Meharg:

This letter is to show my concern for the proposal of a new subdivision Bailey Meadows. I have read the proposal and the intent of where the subdivision is proposed to be located, as well as the entrance to the subdivision. My husband and I own and reside in the house 18111 Rachael Dr. which is in the subdivision Nicholas Glen.

The concerns I am about to address, concern not only my family, but all the families who reside in our neighborhood. I first would like to explain why 4 years ago, to this month, my husband and I decided to purchase our house in this neighborhood. We were a newlywed couple, and a blended family. I grew up in Brightwood, and after 12 years of being away from Oregon due to the military and previous marriage, myself and my two children moved back to Sandy, to be close to family and have a fresh start in the safe small town that I knew well. When I met my husband, I told him that in order to be with me and my kids, he would need to realize that I will not move out of Sandy. I felt that is the best for my kids and the best way for them to grow up surrounded by family and friends, safety of a small town, and good up bringing by being raised in such town. He agreed right away, which started our relationship off well, and ended up getting married at Timberline Lodge. As you can see, I have an extensive history and love of our area. We search and search for the right neighborhood that all of us could feel safe in. I at the time lived in the Cascadia Village subdivision, which did not have the safe feeling to it, as when I first moved into that area. So we were really looking for a quiet neighborhood with kids and low traffic. When we found the house, it was perfect. Low traffic, so much that most don't realize we have a whole subdivision there. Since my cousin also lived in the same neighborhood, I already knew what traffic was like and also was Melissa was like during the winter months. Being a born and raised Oregonian and resident of the area since birth, I felt I could handle Melissa just fine, and we have. For four years, we have enjoyed our neighbors, the children, and the feeling of letting our kids go to their friend's house, playing in the



Emily Meharg  
10/4/2019  
Page 2

streets with their trikes, scooters, and more. We have neighborhood block parties where our children can run and play in safety. Cars drive slowly and everyone knows to watch out for our littles ones. We now have 4 children, one of which is a 3 year old. He loves playing with his friends on the street and riding bikes. Only traffic really we have, is those who live in our neighborhood. There is no through street, and this is one of the main reasons, why we purchased the home we did. Now, the uneasy feeling of thinking of Melissa becoming a through street, adding almost another thousand vehicles of just people who live there, plus visitors, more mail trucks, construction, and more, is just too much to handle. It is taking away the way of life we who live in our neighborhood have come to love and embrace. Below, I would like to take a few specifics of my concerns, and talk about them more in detail. These are in no particular order, but safety for our families is always the main priority.

1. Way of life:

- a. Our way of life is calm, comfortable, and untouched by passing traffic and strangers. I do not have to worry about someone breaking into my car if I left something in it, packages being stolen off of my porch, my dog being struck by a fast moving car because she ran out the front door, kids riding bikes and always having to get off the street because of so many cars or that those cars are driving so fast, that they can no longer play on the street, or random people checking to see if my front door is unlocked and wanting to break in. Our way of life is what we are trying to preserve. By introducing a new subdivision so close to our own, and having the main/only access through our ONLY access in and out of our own subdivision, will drastically change our way of life. I also live on a street at the very side of our neighborhood which people might think that it won't affect us over there. That's where they'd be wrong. More traffic, means more people. It draws attention to where it doesn't need to be drawn too. Strangers who have no business in either places, will now know about it and will turn our quiet safe neighborhood into a new crime streak. Fast moving cars who want to cause havoc because they can, people trying to go around Melissa when it is icy, and more. That would be the end of the way of life as we know it, thus our quality of life. It will become more stressful, neighbors will not know each as well if at all, because everyone will have to remain in their homes or backyards, because of the traffic, they cannot hear nor feel safe to venture out, and so on. Noise levels decrease value to our homes, because the quality of life for that much noise pollution, is not attractive to buyers. Not to mention to the residents there. Just because I'm on Rachael drive, doesn't mean I will not hear it. I hear the traffic now, even on Dubarko, which is at a minimal. I cannot imagine what Dubarko will be like with such an increase of traffic, and how those residents feel about it.

2. Melissa Ave.

- a. Winter Months are not easy for our single street in and out of our neighborhood. It becomes icy, no matter the attempts of the city to help it. It can be quite dangerous, so much that most neighbors do not attempt to go up or down this road until it starts to melt, unless they have 4x4, AWD, or studs on their vehicles. Those who are moving to Sandy, most likely from the PDX area, or out of state, will not understand how to drive on it, and they will be definitely starting on the top of Melissa. If they then figure out that other streets are less steep, then we will now increase dangerous traffic on smaller side streets where kids are playing in the snow. Stationary vehicle damage will increase, safety for family will decrease, and once again, our quality of life, things that we treasure in our neighborhood will cease to exist.
- b. There is a grassy hill towards the bottom of Melissa, off of Solso. This hill has traditionally been the "sledding hill" for kids of all ages, even adults. It has always been a fun family activity that is safe and brings our entire neighborhood together. It is such joy watching my children sled down the hill laughing and cheering on their siblings and neighbors. Not only will the uneasy feeling of an additional 900 cars trying to get up and down this icy road of Melissa, the accidents it will cause, and the pure fact that our kids will not feel safe either, destroys our tradition and brings sadness to our community. The amount of added children to this hill, will make it so that the current resident children may no longer to enjoy the hill they've come to love and is such an integral part of their childhood. Forced to leave the hill by hundreds of other children. They will just have to go back home and remember the days that they go have fun on their "sledding hill".
- c. My children and I have a tradition of walking in the snow when the first snow starts to stick. We walk down the street and enjoy the quiet and falling snow. We have done this for years before even moving to our area, and continue to do so. That tradition will not exist anymore will the increase of traffic and people. We won't feel safe being able to walk and enjoy the falling snow. Another quality of destroyed because Sandy no longer wants to be a small town.
- d. The residents on Melissa deal with minimal traffic as is. Most traffic is on Solso to reach the other streets to their home. Most residents who drive up Melissa either live on Melissa, or are doing to the homes up the street. I can't imagine how unsafe these families feel knowing that 900+ vehicles will be traveling up their street, where their children, pets, and families are. Especially during the winter. That must be very scary for them. If they want to sell their home, they will have more difficulty because they will now be on a primary busy street. When I was looking for our home, I refused to look at any on a main street, like what Melissa will be. They prices for their homes will drastically decrease and will be harder to sell. All because of the quality of life will decrease and noise pollution will increase.

- e. Vehicle pollution. Why is this an issue you may ask? Because tires are made of rubber and oil, they end of up the streets, which is why it is always the most slippery with the first rain after summer. We add 900+ vehicles through our neighborhood, you are adding more pollution that will end up in the beloved Trickle Creek. This will also cause it to be slippery which will make it hard for vehicles to stop at the bottom of the hill, which could cause cars to slide across Dubarko and if not hit or hitting another car, end up on Tickle Creek Trail on the other side of the road. More accidents with more vehicles in inedible. Making to be nearly 2000 cars combined, on a single street, connected two neighborhoods, is not only just a bad idea, it is a safety issue and irresponsible idea by not only the developers, but also the City of Sandy if they grant this subdivision. The solution other than denying a development in its entirety, is to have the road connect with highway 211. It is already set up for more traffic and will also decrease the traffic coming into town. Residents of the new subdivision have multiple options to reach their homes via Hwy 211, which has connecting roads to it. Bringing that many vehicles into side roads, like the way I typically go home, Hwy 26, Ruben Ln, Dubarko, then to Melissa, is all side roads. Connecting the new subdivision, does not use side roads that are neighborhoods in itself, but uses only one highway which is equipped to take on the increase of traffic. Thus creating a new safe entrance and exit for the new subdivision. Families who purchase those home will thank the City of Sandy to ensure their children's safety by not having them travel down a steep hill onto more side neighborhood roads. They also will have a sense of being close to town, without having the town traffic.
3. Hwy 211 and a site distance issue. This is absolutely ridiculous. There are so many ways to solve this tiny issue. On Melissa, I have an issue seeing around parked cars on Dubarko. The City didn't seem to have a problem with that when approving to have our subdivision there. The issue so much that I have had to stop in the middle of the road because I could not see an oncoming car. To think that this is safer then adjusting where the road will connect to Hwy 211, is extremely irresponsible. There will be an added almost 1000 vehicles blocking Dubarko because they will not be able to see around the parked cars, causing more accidents. Developers can design a way to where the road connects Hwy 211 at an appropriate angle to solve this issue. The City can slow the speed limit there to allow more time for distance with cars, so those can turn safely. There are other Subdivisions that are along 211 that have had the same issue and has successfully solved them.
- a. If the purchase of property to the south is purchased and granted an access from the City to create a road, that allows the developers multiple options for the Hwy entrance and exit. If they push through Melissa Ave now, and wait for the allowance to be granted to Hwy 211, the City has now accepted that Melissa will be turned into a new through street from Hwy 211, down to Melissa Ave, and dumping on to Dubarko. Thus increasing traffic into the thousands, on to a single road, through a neighborhood that

was quiet and peaceful. Increasing the accidents, safety concerns, crimes, and more. At the expense of the residents. The entire neighborhoods home values will drop. Quality of life, will be horrible. The feeling of being forced to move, is greater than ever.

4. Schools. Where would the increase of children go? Our children, who live within the City of Sandy limits, are having to go to Boring Schools. They are over capacity as is, and the proposal of this subdivision will overrun those school. If the zones are re drawn, will those children be in the Sandy area schools along with our own? So then we overrun the schools in Sandy? This again would be an irresponsible decision on the City of Sandy if they were to consider this, and push the subdivision anyway. What confidence will the residents of Sandy have in its leaders? What about the new developments already that have yet to sell those homes? Those children will be over running the schools, and the City is proposing yet another development without building new schools to support the influx of children, fixing up the old ones, or even the traffic of parents driving their children to school. This will decrease the good scores that our OTSD has been receiving recently. We would not be able to provide that amount of classrooms and teachers to facilitate the amount of children in them.
5. Where is the parks? Our city was known at the "Gateway to Mt. Hood". Since the Mayor or City itself, has changed our town into "Where innovation meets elevation". What a stupid thing to say about our town. We are not that at all. The City changed this without discussing it with over half the population. I come home one day to find the sign changed to that. It broke my heart. Everything our town stood for, for so long, has changed into yet, another Portland mindset. Tree City, we were known for our trees. Well, we are quickly cutting them down for row housing, and housing that you can touch your neighbor's house while touching your own. Change can be good, but not at a growth that not only our roads and neighborhoods cannot handle, but the city itself cannot handle. The amount of fatal accidents on Hwy 26, is astounding. To propose 250 more homes, that fatality rate will increase considerably. Their deaths will not be on my hands, but on the hands of those we appointed to run our small City, who desperately want to become a large city.
  - a. Wildlife will decrease, but welcome more dangerous wildlife. They will be pushed out of their habitats and moved into the neighborhoods. Domestic animals will be hunted as the wildlife try to survive. Farms and ranches will be threatened by the influx of wildlife as well. Our ecosystem will not be as good as it was, it already has effected the town.
6. I feel the need to sell my house and move out of the town I grew up with. I grew up 15 minutes east, but my family and church was in this town. Sandy High School is where we all came to go to school. I played Volleyball for Sandy when I was kid, many of my cousins, and even my aunt went to Sandy. I have roughly 30 family members in this community, friends I grew up with still live here. Sandy was my second home and it is a shame where it has evolved. I would like to take a piece out of page 19 of the Sandy, OR BrandPrint Creative Report and Implementation Plan and quote it for you at this time. "... Staying small is a big deal to our community." With all these new developments, why is the City of Sandy ignoring their own quote? Staying small IS a

huge deal to our community. I absolutely love going to the Oregon Coast. I however, am not moving there nor would I expect their residents wanting me to build a whole subdivision so that "others may enjoy the same beauty as they do". As I've heard so many tell me. In order to keep our town the small down we all love. We have to stop developing. I work in transportation in the City of Portland. The main public transportation resource Portland has. Portland is growing at a rate that we cannot keep up. It is causing a break down in our system and our own growth system. It is an uncontrolled grows and increasing violence that is not controlled. Portland has brought in homeless from all over the country. That is uncontrolled. When things are out of control, chaos exists. I live in Sandy for the peace of mind that my family is safe. I desire the small town feeling. I dream of walking down the main streets and knowing the business owners and residents. Sandy is not that anymore. Not like when I was a kid. Growth was bound to happen yes, but the rate it is happening and the uncontrolled ways the City is allowing, what comes next is crime. I see it every day. The time is now to take control. To lead our "small town" into the future of still being a "small town" that is loved and desired. People are moving out of Sandy all the time. Those who want to live here, can buy those homes. Thus, keeping our town, the desirable town we all love.

7. Small businesses. I am also a small business owner here in Sandy. I own BarcStone Photography. I have found out that I am running out of outdoor locations to take photos. Our downtown area is small and has not changed much which is great. But these neighborhoods are taking away our forests and fields. I am now competing with more "photographers" moving into the area. I am finding that I am having to find my clients elsewhere than in the same town I reside in. This is taking revenue out of Sandy. I am having to rent studios in Portland so that I can have a studio near where my clients are. I am spending money out of our town, so that I can keep my small business going. The new residents here are not spending money in Sandy either. They are going back to Portland to get what they need because that is closer to their work and what they are familiar with. Why spend money with small business that have to increase their prices due to the fact that residents do not spend money in town, when they can purchase their products and services elsewhere and bring it to our town. My son plays football for Sandy High School. When he played youth football, I learned a lot of sandy residents have their children playing for other areas instead of our own. If our own residents are not spending money in our own town, why would we think that new subdivisions will create more work and more revenue for the City and the business owners here? The City allowed a new chain of farm equipment into the town, Tractor Supply Co. which is taking revenue from Garens Feed, Dolly's Pet Shoppe, even the local chain of Bi-Mart. The new residents are not farmers, and most likely not want to purchase clothing from this store, so they will take their money into Gresham and Portland and purchase their items there. A short term influx of income from development does not secure long term revenue.



Emily Meharg  
10/4/2019  
Page 7

In conclusion, the proposed subdivision has so many negatives to it, that this proposal should never have gone as far as it has. The City of Sandy should care more about its current residents and put more restrictions to keep such developments from our small town. The urban growth in our town, is substantial, so much that our town cannot handle it. The traffic during the tourist months is extreme and unpleasant. In non-tourist months, the traffic is still way to high for our town to handle. My teenage kids walk around town and visit the small shops. They cannot even cross the street without feeling scares because our own police do not have enough resources to keep vehicles from speeding, running red lights, or driving unsafely. Even with our traffic lights, they are unsafe. Our community first responders are not large enough to handle the size of the town as is, let alone increasing the size. I have talked with the Supervisor of the Police Department, and he said they are extremely understaffed and they cannot respond to every call. When I had an emergency, an officer had to call me on the phone, instead of coming to their citizen's home to respond to it, they called me. This is not how a city is ran. I pay high property tax, and pay City taxes, and I am considering leaving my own town, because I feel that the City of Sandy would rather make money from development and could care less about our historical town. That is not a City I want to live in. It is a horrible feeling and to uproot my children from their friends and school is not a good thing. But I need to preserve our quality of life and have to take it into my own hands, since our leaders of our town, do not care about preserving it.

I ask that the City of Sandy carefully reads each and every letter it receives from not only out subdivision, but those that are presented from any current resident in Sandy. If any Council member grew up in Sandy and remembers what it used to be, please remember it. Please don't let the temptation of money skew your beliefs of what our town should be. It should be a small town, and not a City. It should be a town where people recognize each other and say hi. A town where we love to call home and feel safe. A town where neighborhoods are kept and not destroyed and made unsafe. A town that is loved by its leaders who control the growth and understand why the citizens live here, and preserve that. I ask that you consider keeping our town a family town and consider our children, and our children's, children.

Sincerely,

Krista and Gabriel Stone  
10/04/2019

## EXHIBIT HHH

October 4, 2019

Emily Meharg

City of Sandy

Planning Division

39250 Pioneer Boulevard

Sandy, OR 97055

RE: 19-023 SUB/V AR/TREE (Bailey Meadows)

Dear Emily Meharg,

I live at 37708 Rachael DR. I attended the Nicolas Glen Neighborhood meeting on September 18, 2019 regarding the new subdivision, (hereinafter) Bailey Meadows. It was informative and upsetting. I understand the Sandy area is going to continue to grow as people want to move out of the "City" life and into the "country", that's just the reality of our growing world. I feel like the City of Sandy should properly prepare for this growth, by expanding our water/sewer treatment, our grade schools, and our traffic control prior to allowing/approval of the multiple subdivisions being added to our city. I understand we need to have the growth to have our city continue to be a thriving community but, the city planning division is already aware of what constraints and over capacity our utilities, grade schools, and roads have as of this moment without adding in any other developments or finishing uncompleted developments.

My concern for the approval/development of Bailey Meadows is safety for the Nicolas Glen Neighborhood. I have many other concerns for Bailey Meadows development but, I am only going to focus on my main concern. Our neighborhood has one main entrance, Melissa AVE, and the amount of traffic traveling through our neighborhood at its current state is over the projected safe amount of traffic. Bailey Meadows is projected to add 100 homes. If approved its going to add more cars to travel up/down Melissa. That is if the developer projects households having 1 car per household. Most household have multiple cars and that does not include visitors. Melissa at its current state is narrow. If the residents who live on Melissa have parked on the street or parked on both sides of the street, you need to wait and let one car down/up at a time. Melissa in inclement weather is not safe traveling up or down with more than one car at a time, many people park along Debrako in inclement weather to avoid traveling up/down the hill of Melissa. The developer plans to add more cars to this road in inclement weather.

What if there was a disaster or emergency and the Nicolas Glen neighborhood and Bailey Meadows needed to be evacuated, Melissa being our only exit, how will all the residents get out safely? I know Ponder Lane is available for "emergency" use per the developer, but Ponder Lane has not been properly

maintained by the county or city to handle the potential “emergency” traffic. This is very poor emergency planning for both residents and first responders.

I understand development is going to happen as our community continues to grow. I have lived in the Sandy community for 40 years and watched it grow at an exponential rate that has been too fast, unsafe, and ill prepared by the city. Please consider not allowing this development to continue until there has been better planning on safety. I feel like the developer is rushing to make this happen at the cost of both current and future residents’ safety. As I have stated above, I have many other concerns with Bailey Meadows, but I feel safety is of the utmost importances.

Thank You

Faith Egli

503-804-9214

[Faihy30@hotmail.com](mailto:Faihy30@hotmail.com)



EXHIBIT III

Emily Meharg <emeharg@ci.sandy.or.us>

**Bailey Meadows Subdivision File No. 19-023 SUB/VAR/TREE - Letter of Concern**

1 message

Tim Sellin <tim.sellin@gmail.com>  
To: emeharg@cityofsandy.com

Fri, Oct 4, 2019 at 4:57 PM

**Dear Mrs. Meharg,**

I'm a resident at [18256 Melissa Ave, Sandy, OR 97055](#)... on the 'main feeder' street into the proposed Bailey Meadows Subdivision. My wife Nicole, has spent numerous hours organizing our neighborhood and researching the project, herself. I echo each and every one of her written concerns. We've done our best to not 'stoke the fire', but instead... organize and inform those in our neighborhood that cannot attend the information meeting or haven't received the information we've been provided.

Though neither of us is inherently against the growth of the City of Sandy, in this case... it seems the 'cart is before the horse' on three key features of infrastructure build-out [schools, streets and safety].

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**Schools** - in this expected development of 100 homes, I believe it's fair to assume that the vast majority of the homes will be purchased by young families. I'm certainly no census-worker, but if 100 more children were to join the community... that would equate to between three or five classrooms-worth of attendance at local schools. I know that ages will vary, but the fact is... at Kelso Elementary and Boring Middle, classes are already at capacity. It seems prudent to staff and have classroom space for the growth versus packing in more children to already taxed facilities.

On top of 'weather-related' street and safety concerns mentioned herein... on 'snow route' days for school buses... are the new families' children of Bailey Meadows supposed to congregate at the base of Melissa and Dubarko as is standard now? Channeling future home-owning parents' minds, "No thank you".

**Streets** - possibly our greatest concern is how new residents would enter/exit the neighborhood. Again, I'm no transportation researcher, but I see the speed and rate of vehicular egress on a daily basis. Honestly, it's not horrendous right now, but I can only imagine another 800-1000 trips a day. It will become a highway. The three-way intersection at the top of the hill will become a four-way and likely require a light. I'd imagine a light at the bottom of Melissa and Dubarko would be required. All that to be said, I can't imagine the developer or the City is going to put in a light at either spot.

The fact that no other access into the development is being proposed and/or explored seems a bit ludicrous to me. Or maybe it is, but it is being presented as an impossibility to us a residents. I know there are future transportation projects that may remedy this... but to my above point in 'Schools', maybe we wait... get the new vehicular infrastructure in place... THEN build the development.

Another curiosity of ours is how we're expected to access our property when/if development were to commence? As we understand it, a 22 foot [deep or wide, I'm not sure] trench will be dug down the middle of Melissa Avenue for sewer connection, power, water, etc. Are the 35 homes that either dwell on Melissa, or use Melissa exclusively for access to their homes [the dead-end of Rachel Drive to the East] supposed to park at the bottom of the hill and walk home? No.

**Safety** - Off the top of my head, since we moved into our residence in the Summer of 2011... we've had a handful of snow/ice events that affected our neighborhood. Knowing that the Public Works Department at the City is limited, I've personally shoveled the hill myself, a multiple occasions. Though it seems to be in vain a bit... as cars still slide through the stop at the bottom of the hill on a regular basis. A former neighbor actually snapped their axle of their Subaru on the curb at the bottom of the hill, not being able to stop. When roads are plowed in such weather events, Melissa Avenue is significantly 'narrowed' by the plowed snow. I cannot fathom how another 100 homes [800-1000 trips per day] would be able to get into and out of the neighborhood as such.

I also worry for the safety of the children of the neighborhood. Currently, they congregate at any 'level section' and ride their bikes, throw a ball, etc. The most popular of sections seems to be the top of Melissa Ave. where Rachel Drive bisects.

There are also about 1/3 of the homes in the current Nicolas Glen neighborhood that collect their mail at the same Melissa/Rachel intersection. I'm sure tensions will rise when the 'dead end' area where the proposed road would be punched through to Bailey Meadows... as it's a fantastic temporary parking area for neighbors looking to retrieve their mail on a rainy day.

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Though my individual concerns are not exhaustive... again, I echo my wife, Nicole Sellin, and her much-better-written letter. There are code compliance concerns, common-sense red flags and the like that beg the question, "Why not wait, address the infrastructure [schools, streets, safety] issues first... THEN build?"

Thank you for taking the time in reading my email,

**Tim Sellin**

503.799.7195

[tim.sellin@gmail.com](mailto:tim.sellin@gmail.com)

[Facebook](#) | [Twitter](#) | [LinkedIn](#)

**EXHIBIT JJJ**

Nicole Sellin  
18256 Melissa Ave  
Sandy, Oregon 97055  
503.887.6284  
[nicole.sellin@gmail.com](mailto:nicole.sellin@gmail.com)  
October 4th, 2019

Emily Meharg  
City of Sandy, Planning Division  
39250 Pioneer Blvd.  
Sandy, OR 97055  
[emeharg@cityofsandy.com](mailto:emeharg@cityofsandy.com)

Re: Bailey Meadows Subdivision File No. 19-023 SUB/VAR/TREE

Dear Mrs. Meharg,

I am writing this letter in regards to the newly proposed subdivision, Bailey Meadows, and its possible impact on our Nicholas Glen community, as well as the city of Sandy. As a resident of Nicholas Glen, and specifically a resident on Melissa Avenue, I am quite concerned with the proposal.

Nicholas Glen has been my home for over 8 years and it is truly a great place to live. My husband and I carefully chose Sandy to raise our family because of the small town atmosphere where neighbors are like family and community is important. We picked our home in Nicholas Glen because it is a small, quiet neighborhood that is nestled on the outskirts of several other neighborhoods, rural farm land, and natural areas (Tickle Creek.) My husband and I knew that growth would happen, especially when looking at neighboring communities like Happy Valley, where growth is exploding. However, we are concerned with the growth in the city of Sandy and its lack of infrastructure to not only accommodate such growth, but to thrive with the growth. We are concerned with the city's lack of ability to meet the needs of its residents in terms of safety and education with the increase in population. We are concerned with the city losing its unique, coveted, small town atmosphere as a place where neighbors are like family because of the idea that growth is the way to progress (i.e. the branding "where innovation meets elevation.").

When I first received a letter from the City of Sandy Planning Department about the proposal, I was in shock. How could another 100 homes (with 944 additional car trips per day) use Melissa Avenue as the only access in and out? Fortunately, I was able to attend the Neighborhood Meeting with AKS, the developer, and his lawyer on September 18th, 2019. I went into the meeting with the purpose to hear and understand what their plan is, then relay the information to neighbors who could not make it. The meeting was an eye-opening experience, to say the least. I knew our neighborhood would be upset about the proposal, but I did not expect the amount of people and the level of frustration that I saw; there was standing room only. I knew that the developer and his crew are interested in this neighborhood for one purpose, to make money, but I was appalled by the lack of care and concern they had. Even when asked, there was no regard to what impact this new subdivision will have on our neighborhood, our schools, or our city. I left that meeting more concerned than before it started.



These are my specific concerns with regard to the proposal of the Bailey Meadows subdivision:

- Traffic: One way in and one way out, using only Melissa Avenue, is going to cause a huge increase in traffic for our neighborhood, the surrounding neighborhoods, and the entire city.
  - According to the City of Sandy's Transportation plan, local streets have the typical capacity of 800-1000 average daily car trips. The new development of 100 proposed homes would add approximately 944 additional car trips on Melissa Avenue. Since the current Nicholas Glen neighborhood has over 100 homes already, it is safe to say that the traffic on Melissa Avenue will be double the typical capacity of a local street. Double the traffic is not conducive to a safe, enjoyable neighborhood. City Code 17.100.100 states the pattern of streets should be connected in such a way will spread traffic over many streets so that key streets are not overburdened. With only one access point Melissa Avenue will be overburdened and this overburden will sprawl onto Dubarko and the other arterial streets with major connections to US 26.
  - An additional 944 car trips per day will increase drive time not only on Melissa Avenue, but also on Dubarko, Bluff, Ruben, and 362nd. The intersections of Dubarko/OR 211, Dubarko/362nd, 362nd/US 26, Ruben/US 26, and Bluff/US 26 are currently rated as a C or D for their level of service according to our transportation plan mobility standard. With added development that has no other alternative route, those intersections will become much more overwhelmed and their level of service will decrease, most likely reaching the point of failing mobility according to the city standard. More drive time means wasted time and wasted fuel while stuck in congestion.
  - More cars brings the possibility of more accidents. Cars already drive with excessive speed up and down the hill of Melissa Avenue. Children will no longer be safe enough to walk, ride their bikes, and play in the streets of our community, as there is a possibility of more pedestrian-involved accidents with increased car traffic. Increased traffic leads to frustrated drivers, who take more risks and drive faster. According to the city's traffic plan, there was a study that stated two accidents happened on Melissa Avenue between 2005 to 2007, one occurring at the intersection of Melissa/Rachael and the second occurring at the intersection of Melissa/Solso. The same study also mentioned that the intersection of Dubarko and OR 211 had a crash rate of 1.08 MEV, which is a relatively high crash rating, and it said that the intersection is in the top 10% of hazardous ODOT SPIS locations. The new development proposal's traffic study did not include the intersection Dubarko and OR 211 in their study, which raises the concern on how the new development would affect that already questionable area.
  - More traffic will cause an increased noise level in our quiet neighborhood. Increased noise will change the quality of life in our neighborhood because it affects the ability to sleep, causes anxiety, and decreases overall health.
  - As traffic volume increases, air quality will diminish and more pollution could enter Tickle Creek, contaminating it.
  - Extra noise and traffic will lower property value, especially to those homes on Melissa.
  - Developers were requested to have a second access connecting the new neighborhood to OR 211. However, they fully intend to continue their proposal of only one access. This shows a disregard for our city's planning division in terms of the transportation system. It shows a disregard for the quality of life for the residents of both Bailey Meadows and Nicholas Glen. It shows a disregard for the congestion for the entire city of Sandy including its residents and tourism traffic. The reasoning behind not having a second access point, in my opinion, is mediocre at best and shows a lack of care for the immediate future in our city.

- Developers claim there are site distance problems and the existing road, Ponder, hits OR 211 at an oblique angle. This seems to be illogical, considering that at the exact same spot where Ponder meets OR 211, on the eastern side of OR 211, there is already a new development with access using Arletha Court. If site distance and the oblique angle are an issue for the Bailey Meadows development, why would another development, using that exact same spot of intersection, be allowed a point of access?
  - Developers mentioned that they have an agreement with the landowner to the south of the newly proposed development to purchase their property, with the purpose of future access to OR 211. However, that property is outside the Urban Growth Boundary currently. Because of this, even if that property were to be entered into the Urban Growth Boundary (which takes time), it will be years down the road that their idea of accessing OR 211 will even be feasible. According to these developers, they would need to an exception from the county to put a road through rural property to access OR 211 and from their talks with county planning, the staff would most likely not support that needed exception.
  - Kelly O'Neill mentioned in the September meeting that Gunderson Road connects to 362nd and is a possible second access point to the neighborhood. It is also a part of the future city transportation plan. According to Kelly, the developer's application did not touch on this. In the meeting, developers said that it is not a possibility because Gunderson would have to cut through rural land.
- Safety: A cluster of 250+ homes in a small area, with one way in and one way out, will decrease the safety and security of our neighborhood.
  - Police, Fire, and Ambulance response time will be prolonged with only one main, well kept access street. The second access off Ponder will be available, but it is not ideal and probably not as safe for a quick response.
  - In the event of a natural disaster, Melissa Avenue would be an evacuation nightmare because it is the only way out for over 250 families.
  - Crime rates may increase with more people; even if the rate does not change, the amount of incidents will increase because of the population increase, which puts us more at risk for being the victim of a crime. Also, according the website (<https://www.neighborhoodscout.com/or/sandy/crime>), Sandy is only safer than 27% of U.S. cities; meaning 73% of US cities are safer than we are. It also mentions that our city already has a high rate of crimes per square mile (80.) Comparatively, we are higher than the State of Oregon (60) and the National Median (31.1). When compared with cities the same size, Sandy's crime rate is quite a bit higher. Increased development could increase this rate even higher.
- Education: Adding more homes in the city of Sandy would cause a decrease in educational effectiveness within our school district.
  - Kelso Elementary, Boring Middle, and Sandy High School are the three schools affected by this proposed new development, as the new neighborhood would be in their school boundaries as it is currently drawn. Kelso Elementary and Boring Middle are already over 100% capacity. In a meeting with school parent groups, the Superintendent of Oregon Trail School District stated that Kelso is at 134% capacity. Even if boundaries change, Sandy Grade and Naas are over 100% capacity, and Firwood is at 98%. Our children will suffer.

- There are currently new homes already being built within the boundary of these schools and several others that are tentative. If we add yet another development, it would cause a catastrophe as far as classroom size, space for classrooms, effectiveness in the classroom, mental health of students, safety of students and staff, and teacher burnout due to increased capacity and lack of resources.
- Parks: Developers, as I understand the city code 17.86, should have a parkland dedication of 1.29 acres (using the formula given  $100 \times 3 \times 0.0043$ .) In the meeting, they made it perfectly clear that they will not dedicate any land for parks; it is not negotiable for them. They will simply just pay a fee instead. To me, this again shows the lack of care and regard for our city planning and for the future of the area.
- Wildlife: With the development of rural land, wildlife will be threatened. They will be pushed out of their homes. Vehicle collisions with wildlife might increase as these animals venture through neighborhoods as they move south. Increased amounts of pollution could harm remaining wildlife.
- Construction: A new development will cause a long-term disturbance on our neighborhood community, though the plan for construction has yet to be discussed.
  - When asked at the September meeting, developers would not explain their plan for construction because “it was not part of this step in the process.” As a resident of the adjoining neighborhood, and a resident on Melissa Avenue, the plan for construction is a major concern and something that should be shared at this step because it will impact our quality of living as the developer completes each phase.
  - One part of the construction mentioned was that the new development would tie into our neighborhood wastewater system. To do this, the developer would have to tear up Melissa Avenue, putting in a 20+ foot trench down the middle of Melissa Avenue. Since Melissa is the only access into the neighborhood, and part of the neighborhood can only access their homes at the top of Melissa Avenue, this trench is a major concern. Of course, no plan was shared on how access will be given to residents on Melissa Avenue, nor to the residents on Rachael, east of Melissa.
  - Sandy’s wastewater system capability is another concern. Despite improvements to the 20 year old system, it is consistently failing to meet permit requirements. According to the city’s website (<https://www.ci.sandy.or.us/wastewater-system-improvements>), our wastewater treatment system does not have the capacity to service our current population. Increasing the population will further tax this system until it can be remedied, which will take time and money. Of course, the cost is being passed on to current residents by raising our bills almost \$23 a month, which is a significant amount for families. Even though the plan is almost finished, it will still take time and it sounds like this development may start as early as next fall, which is probably much sooner than we can fix our wastewater system.

Our city has the opportunity to show its residents and the state of Oregon where our priorities are with the decision on this proposed development. Our city branding is, “Where Innovation Meets Elevation.” How does this new development show innovation? The answer is, IT DOES NOT. There is nothing innovative about creating more traffic within a limited infrastructure that is already taxed. There is nothing innovative with increasing class sizes in our schools, decreasing classroom effectiveness, risking the safety and health of our students and staff, and putting more classrooms in portable buildings because we cannot afford to fix our current schools, let alone build another. There is nothing innovative with taking away the safety of our

families by only having one main road in and out for over 250 homes, a road that is dangerous in ice and snow because of the slope and would have poor access for police, fire, and ambulance. Is our priority growth above all else, no matter the cost it has on our safety, our city infrastructure, our schools, our Sandy way of Life? Is another new development good for Sandy right now, as our city currently exists? Do we have the infrastructure, the schools, the first responders to effectively serve more people at the current moment, or even in the near future? Myself, and many others, do not believe we are ready for this new development in our city right now. You can simply look on Facebook, in the Sandy Neighborhood Watch and Sandy Community Information groups, where you will see several posts and hundreds of comments not in favor of more development.

I love Sandy and the Nicholas Glen neighborhood. Our community is like no other that I have lived in. People actually care about each other. On page 19 of the Sandy, Or BrandPrint Creative Report and Implementation Plan, it states,

“...an intuitive few made Sandy their home. They heard the call of the mountain. They wanted to build their town, their way. More than a century later, people with that same vision and grit come in search of The Sandy Way. They see a forward-thinking infrastructure to support their life and business. They see that majestic, snow-capped mountain in the distance. They want to be where innovation meets elevation. Innovation. Elevation. Location. Sandy is perfectly positioned between two Oregon icons. Right next door, Mt. Hood National Forest puts 50-foot trees in our backyard and postcard views of the region's tallest mountain at every turn. Just 25 miles to the west is Portland, a city close enough to share its culture and conveniences —restaurants, shopping and higher education —and far enough away to keep the sprawl at bay. Staying small is a big deal to our community. We make the most of our notable neighbors, but have an identity all our own. I guess you could say that in Sandy, we're worth more than a peak.”

Some key points that we are failing at, if we were to approve this proposal, are “They see a forward-thinking infrastructure to support their life and business” and “Staying small is a big deal to our community.” We have a transportation plan to update and build infrastructure for growth, but no time frame for that plan to start. We are facing limits due to the Urban Growth Boundary and rural land. Our school district is working on a plan to meet the growth, but time and money are factors. By allowing yet another new development, we will just overburden our current transportation system and educational systems. Sandy is simply not ready for the proposed new Bailey Meadows development yet. It may be feasible years down the road, once we fix the current issues, but it just does not make sense in the present time, with the present conditions, for the current residents of our city.

I ask you to carefully consider my concerns, and the many others that will be presented to you. I ask you to think about our city brand and if this new development will be innovative, or destructive. I ask you to imagine that you lived on Melissa Avenue and how it would affect your way of life, others, and the city.

Thank you for your consideration.

Sincerely,

Nicole Sellin



EXHIBIT KKK

Emily Meharg <emeharg@ci.sandy.or.us>

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**Concern regarding over use of Melissa Ave.**

1 message

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**Barbara Coutts** <lostdimond@aol.com>  
To: emeharg@cityofsandy.com

Fri, Oct 4, 2019 at 5:19 PM

~ Hope this letter of concern isn't too late....I thought the deadline was today, not before today...my mistake. □  
~ So, briefly, not only the estimated 944 ADDITIONAL vehicles traveling through our family oriented streets, but the COLLATERAL vehicles ( friends, relatives, FEDEX, UPS, Maintenance workers, buses, etc....) MUST also be taken into account.... !!  
~ Please take these concerns into account; there is no reason, another one or two solution roads cannot be built . Safety and sensibility must rule.

Thank you ~~~~  
barb coutts.....37265 Solso Drive.

Sent from my iPad



EXHIBIT LLL

Emily Meharg <emeharg@ci.sandy.or.us>

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## Letter of Concern

1 message

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**Shelly Evett** <shelly.evett@gmail.com>  
To: emeharg@cityofsandy.com

Fri, Oct 4, 2019 at 8:05 PM

Emily,

I was out of town, so I was unable to attend the meeting on the 18th of October about the new development going in behind my neighborhood, and just saw the flyer on our mail box the other day about voicing my concerns related to the increase in traffic related to the new neighborhood, so I am hoping this email will be included with others. I have lived in the Nicholas Glen neighborhood for 17 years and am the original owner of my home. This neighborhood is a quiet neighborhood, has block parties, everyone watches out for each other, and has the right amount of traffic in the neighborhood to keep it safe for all. I am concerned about the proposal of using Melissa as the only access point in and out for the new community. Melissa is a neighborhood road that was not built to be a main thoroughfare for traffic. There are families that live on Melissa, kids play in the street, and families also park cars on that street. Adding more cars will increase the risk for accidents because cars often have to pull to the side to let cars pass before continuing on, and as we know when a road becomes a thoroughfare drivers often drive faster than the posted speed limit and I feel this will put kids playing at risk.

One of my main concerns is the fact that there is only one way in and out of the neighborhood. If there is an emergency how would all these people get out safely and in a timely manner, in addition how would emergency people get in. Another concern is that the increase in traffic will hinder getting on to Melissa from the side streets Rachel and Solso.

I am not apposed to developers wanting to develop a new neighborhood, that is how our neighborhood was started, I just feel that the new neighborhood should have it's own access roads to maintain livability for both neighborhoods.

Thank you,  
Roberta (Shelly) Evett  
18192 Rachel Dr.





EXHIBIT MMM

Emily Meharg <emeharg@ci.sandy.or.us>

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**Letter of concern about the proposed new development on Ponder**

1 message

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**Laura Kvamme** <notellk@yahoo.com>

Fri, Oct 11, 2019 at 12:39 PM

Reply-To: "notellk@yahoo.com" <notellk@yahoo.com>

To: "emeharg@cityofsandy.com" <emeharg@cityofsandy.com>

I Have deep concerns about the proposed development on Ponder Lane North of 211.

Chief among those concerns are the desire by the developer to use Melissa Avenue as the only entrance or exit to that development. I also have concern about the construction vehicles that will be going up through Melissa during the process of development and the closure or partial closure of Melissa to increase the water and sewer capacity going to that development.

I want to know when the next city meeting will be held.

Thank you for your attention,

Laura Kvamme

37438 Rachael Dr

Sandy Or

[Sent from Yahoo Mail on Android](#)

























EXHIBIT NNN

Emily Meharg <emeharg@ci.sandy.or.us>

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## Bailey Meadows Subdivision

1 message

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**Kelli Acord** <kacord@ridesta.com>  
To: "emeharg@ci.sandy.or.us" <emeharg@ci.sandy.or.us>  
Cc: Kevin Moody <kmoody@ci.sandy.or.us>

Fri, Oct 18, 2019 at 9:26 AM

Good morning Emily,

I just received notice about the proposed subdivision addition for 100 potential homes in the Baily Meadows Subdivision. I wanted to reach out and give you feed back from the bus transportation side, in hopes that you can take this into consideration.

We currently pickup nearly 20-30 students for elementary and then another 20-30 for high school and middle school. By adding an additional 100 homes, that adds the possibility of 200 students. That would mean that a bus need would be greater and would need to be able to go down the proposed 25 foot road (Melissa Ave). Our buses are 11 ft wide plus 1 ft on each side for mirrors (13 ft), that's more than half the street width. Melissa Ave wouldn't be connected without having a jog in the road and that space is only 24 ft wide on one side and 26 ft wide on the other side of the intersection. Another concern would be that the city typically allows cars to park on both sides of the road and at the stop signs. If this is the case, a bus (small or large) would not be able to safely maneuver through the neighborhood. If the buses cannot maneuver, a firetruck or ambulance would have the same concern.

Approving this neighborhood as it is currently platted would be absurd for the safety of everyone.

If you have any further questions, please do not hesitate to contact me.

*Kelli Acord*

Operations Manager

36366 Industrial Way Ste B

Sandy, OR 97055

503-668-8855

503-662-7290 (Fax)

EXHIBIT OOO

Elizabeth A. (Libby) Burke  
37412 Rachael Drive  
Sandy, OR 97055  
503-668-8553 (home)  
808-756-3066 (mobile)  
Email: [libby@briodzn.com](mailto:libby@briodzn.com)

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City of Sandy  
Development Services  
39250 Pioneer Blvd  
Sandy, OR 97055-8001  
Attn: Kelly O'Neil, Planning and Building Director

October 20, 2019

Dear Kelly,

I am a homeowner on Rachael Drive in the Nicolas Glen subdivision along the boundary of the proposed Bailey Meadows subdivision inside the new UGB. Having attended the public meeting held by the developers at the Sandy Library in September (which you also attended), I would like to voice my concerns about the proposed opening of Melissa Avenue to the new subdivision, and state some impacts I see in this matter.

There are several reasons I feel this is a very bad solution to the 90+ home development, starting with the use of Melissa Avenue, our subdivision's only egress, for land-moving heavy equipment and construction materials coming up that steep hill where we have many children playing, waiting for the school buses, riding their bikes, and where our community members walk their dogs and stroll with their babies. The traffic that would ensue for this use would greatly disturb the quiet neighborhood and endanger our community members, pets and others. And the later impact is just as bad.

Melissa Avenue is only two blocks long and ends at the bottom of the hill where the other road, Dubarko, runs along the bottom of our hill. Dubarko has traffic-routing curved sidewalks to encourage slow driving. I am concerned that if that road has a lot of large trucks bringing in equipment and materials as stated above, this would endanger not only our quiet road's sidewalks but also those living there who walk, run and play safely on Dubarko now. We have a children's playground on that street as well as many entrances to Tickle Creek Trail.

Another concern is that this hill is very slippery in cold weather; we all have to drive out of our roads and on to Melissa Avenue to get down the hill. When I drive down the hill during icy conditions, I wait until the car in front of me has cleared the intersection of Dubarko and Melissa, before continuing down myself, with concern for slipping. Adding the cars from the 90+ new homes will greatly impact the ability for everyone in both subdivisions to drive safely.

I would like Development Services and the Planning Commission to review the plan for this subdivision and consider the impact these new homes will have on our small, quiet, middle-income community. Also, I understand that the new sewer lines that will have to be laid will be also going down Melissa, which obviously will be dug up for that project. Again I would like to remind you that tearing up the one road that is the egress for Nicolas Glen would greatly



inconvenience those of us who have lived here for many years. I have lived here for 9 years and have come to love our quiet neighborhood. With all these new proposed vehicle trips daily both in the construction and residential phases, our quality of life will be damaged beyond what we can do anything about. We have lived here and paid our taxes all these years, and although I know that the subdivision itself will likely go ahead, I would really like you to consider creating egress to Highway 211.

Other subdivisions have been built recently across from where this one is planned: Arletha Court, the Cascadia Village Annex and before that the larger Cascadia Village. Bornstedt Road had to be routed on to the highway. Those others also enter and exit by the highway. I would like to have the egress for Bailey Meadows considered as Highway 211, with perhaps a gated emergency access down Melissa if need be. The impact to the highway would be much less than Melissa Drive. The highway can be slowed down a bit at that point, and it wouldn't hurt to have it slowed down right before it gets to the slowdown past Bornstedt anyway. I know that you are the City of Sandy and not ODOT, but all the agencies have to work together to make sure that our Oregon, Clackamas and Sandy citizens are safe and that this very large subdivision does not negatively impact our community in Nicolas Glen. Am I wrong?

I was very surprised to learn that the residents of Nicolas Glen did not all receive invitations to attend that Library meeting, but only those on Rachael Drive who are directly on the property line and whose properties had been surveyed. The whole subdivision would be impacted if the egress on Melissa were allowed to go through, so everyone should have been notified and informed, not just Rachael Drive residents. I feel like the Bailey Meadows developers are acting inconsiderately, only doing the minimum rather than taking our subdivision's community into consideration. These people do not live in Sandy; they just want to make money here. The water system is already under duress and rates will soon double, the school system is already impacted by the growth that has taken place in the last two years including our new high school already out of room and elementary classes having to be combined, and it doesn't seem like planning is really being done to consider all these impacts that new subdivisions will create in our once live-able city. To go from under 10,000 to over 12,000 in such a short time is a lot of growth, and this new 90+ houses will only serve to increase the stress on all our systems.

Also I want to put in a word for the trees and wildlife living in the trees (owls and many other birds) that will be impacted by disturbance of their habitat. No one can speak for them, but they are part of our community too and they may be driven out or their habitats damaged.

I will be attending the next Planning meeting on Oct. 28<sup>th</sup> in hopes that you will be discussing the Bailey Meadows/Nicolas Glen situation then. Please keep me informed, and thank you for your attention and consideration in all these matters of concern to the tax-paying resident citizens of Sandy.

Sincerely,

/s//Libby Burke

Elizabeth A. Burke

## EXHIBIT PPP

October 20, 2019

Brad Robison  
37412 Rachael Drive  
Sandy, OR 97055  
808.756.3444 (mobile)

Kelly O'Neill, Jr.  
Planning & Building Director  
City of Sandy

Regarding: BAILEY MEADOWS SUBDIVISION  
TAX MAP/LOTS T2S R4E SECTION 23 TAX LOTS 800, 801, 802, 803, 804  
aka: STURM ANNEXATION - ORDINANCE NO. 2017-11  
17.78.60 ANNEXATION CRITERIA

Comment:

The proposed development plan for the BAILEY MEADOWS SUBDIVISION fails to take into consideration several issues that will have a detrimental impacts on the existing NICHOLAS GLEN SUBDIVISION.

- The current AKS Engineering & Forestry plan states that all residential traffic will be routed through the Melissa Avenue and will, by estimate, be nearly 1000 trips per day.
- To connect the new subdivision to the existing sewer system will require that a trench over 20 feet deep by cut into Melissa Avenue to reach the proper elevation for sewage flow. This will have an impact on over half of the population of the existing Nicholas Glen subdivision. School busses will need to be re-routed, and the trench work will need to be covered every day at the end of work for safety. Vehicle access to residents with homes on Melissa will be restricted. Emergency vehicle access will be hampered as well.
- Melissa Avenue is a steep hill and during winter months can become very slippery. An additional 1000 trips per day during icy conditions will only increase the probability of severe accidents and possible blockage of Debarko Road as cars or truck slide through the intersection unable to stop.
- Traffic impact studies were limited to what was required by law. This did not take into account traffic impacts to exit the residential community to Highway 26. Ruben Lane access to Highway 26 currently allows 5-6 vehicles (max) for the duration of the green signal light. Additional traffic will increase the wait at this light to 2 or 3 signal changes. This will also impact traffic at 362<sup>nd</sup> and Highway 26.

In a previous letter submitted by myself and Libby Burke (attached), the problem of construction traffic and general traffic control for safety through the Nicholas Glen subdivision was addressed. The original STURM ANNEXATION documents stated that he proposed



subdivision would also connect to Highway 211. The current AKS Engineering & Forestry plan stated that all access would be via Melissa Avenue only with emergency access only gates to be provided at for access to Highway 211. There issue of construction traffic routing via any route other than Melissa Avenue as not addressed.

The general impression to most of the attendees of the September 18, 2019 AKS Engineering & Forestry “meeting” was that this was a presentation of subdivision plan that was already decided and that any changes to that plan, as explained by their lawyer, would not be possible. In short, they knew what they were doing within the letter of the law, and as far as they were concerned there would be no changes. Traffic studies were limited to what was required by law.

Development is inevitable, population keeps growing and the City of Sandy needs to grow to remain a vital community. However, growth without consideration of impact on the greater community as a whole is short sighted. The additional population will impact not only basic infrastructures such as water and sewage, but schools (already overcrowded), roads, and the general quality of life.

The ordinances that allow for the developer to pay into a “park fund” as opposed to developing community parks is the construction industry’s version of NIMBY.

The city of Sandy needs to weigh carefully the need for growth versus the impact on existing communities. Furthermore, recognizing that growth without quality is essentially cancer and will eventually decrease the quality of life for all residents.



EXHIBIT QQQ

Emily Meharg <emeharg@ci.sandy.or.us>

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**19-023 SUB/VAR/TREE BAILEY MEADOWS SUBDIVISION HEARING INPUT**

1 message

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**Laurie Gilbert** <g.lauriegilbert@gmail.com>  
To: emeharg@ci.sandy.or.us  
Cc: Laurie Gilbert <g.lauriegilbert@gmail.com>

Mon, Nov 4, 2019 at 4:00 PM

CITY OF SANDY  
PLANNING COMMISSION

EMILY MEHARG  
[emeharg@ci.sandy.or.us](mailto:emeharg@ci.sandy.or.us)

RE: 19-023 SUB/VAR/TREE BAILEY MEADOWS SUBDIVISION

I'm writing to ask The Planning Commission to intercede on behalf of the current and future residence of Sandy regarding the decrease in safety and livability that will result from the current plans for Bailey Meadows. Though I realize change and growth is inevitable, the lack of an emergency evacuation route other than Melissa Avenue from the proposed Bailey Meadows subdivision is a disaster waiting to happen. With the ever increasing fire danger there needs to be a second exit from this new subdivision directly to Hwy 211 via Ponder Lane. Anything else is an unacceptable risk to our community.

After visiting the developers website I learned that they have shown much greater care and respect to the communities of Happy Valley and Hillsboro in their developments of Pleasant Valley and Butternut Creek respectively. Not only did they provide more than one entry and exit road, but included parks and green spaces(images below). We are all counting on our Planning Commission to protect us from those who want only short-term profit at the expense of our communities' safety and livability.





Pleasant Valley Villages is a 13-phase, 1,155-unit residential development on 187 acres in Happy Valley, Oregon. Over the next 10 years, single-family homes, multifamily buildings, 35 acres of parks and open space, trails, and amenities will be built. AKS has addressed zoning challenges, land use approvals, transportation connectivity, wetlands and natural resources, and utilities, and is working on the final design of infrastructure, including streets, utilities, and parks.

**OWNER**  
The Holt Group, Inc.

**LOCATION**  
Happy Valley, OR

**SERVICES PROVIDED**  
Civil Engineering  
Surveying  
Planning  
Landscape Architecture  
Natural Resources  
Consulting Arborist



AKS' design of this 576-lot Hillsboro community incorporated 40 acres of open space; a central mixed-use village; a community center; a transportation network to connect existing and planned features; and a community park, all tied to trails and sidewalks that link the community to a regional trail system. One project challenge was adding the Bonneville Power Administration corridor, located next to the park, into the village and residential layout. AKS successfully met this challenge and played a key role in obtaining land use approvals and zone changes, all of which helped to make this project a success.

**OWNER**  
Hagg Lane LLC  
Lennar Corporation  
Pahliah Homes  
Quadrant Homes

**LOCATION**  
Hillsboro, OR

**SERVICES PROVIDED**  
Civil Engineering  
Planning  
Landscape Architecture  
Natural Resources  
Consulting Arborist

Thank you very much.

G. Laurie Gilbert

18392 SE 370TH Ave.

Sandy, OR 97055

[g.lauriegilbert@gmail.com](mailto:g.lauriegilbert@gmail.com)





# Oregon

Kate Brown, Governor

## Department of Transportation

Region 1 Headquarters  
123 NW Flanders Street  
Portland, Oregon 97209  
(503) 731.8200  
FAX (503) 731.8259

## Exhibit RRR

December 17, 2019

ODOT Case No: 8702

To: Emily Meharg, City of Sandy Planner  
From: Marah Danielson, ODOT Planner  
Subject: 19-023 SUB/VAR/TREE: Bailey Meadows Subdivision - Ponder Lane

We have reviewed the applicant's proposal to subdivide 23.42 acres into a 100-lot residential subdivision with a new proposed public road connection to OR 211 at Gunderson Rd. At this time, OR 211 through the City of Sandy is under ODOT jurisdiction. As such, the connection of Gunderson Rd to OR 211 requires approval from ODOT. ODOT requests that the City add a condition of approval stating that the applicant be required to obtain all ODOT permits prior to issuance of a building permit.

In a letter dated November 25<sup>th</sup>, 2019, from the applicant's attorney, it is stated that "the Applicant believes that the Gunderson Road extension is possible only in the event the City takes jurisdiction of Oregon Highway 211."

ODOT and the City of Sandy have discussed the potential jurisdictional transfer of OR 211 in the past. There is a meeting scheduled in January between the two jurisdictions to discuss the possibility of a jurisdictional transfer. While ODOT is committed to working with the City as it strives to reach its community goals, we also want to share that in past experience with other jurisdictional transfers, this legal process requires substantial effort and time. If the subdivision is conditioned to make the Gunderson Rd connection to OR 211 via a jurisdictional transfer, it may create uncertainty relating to the timing of the proposed subdivision.

The original land use submittal did not have a Gunderson Rd connection to OR 211 and the Traffic Impact Analysis (TIA) does not reflect the new street connection. It is our understanding that the applicant is preparing an updated TIA with the Gunderson Rd connection. ODOT has not received an updated analysis for review. Additionally, in previous comments submitted on October 4<sup>th</sup>, 2019, ODOT requested that the following intersections be included in the analysis: OR 211/Dubarko Rd, US 26/Rueben Ln and US 26/362<sup>nd</sup> Ave.

ODOT requests the Planning Commission refrain from making a decision at the December 17<sup>th</sup>, 2019 hearing, providing time for ODOT and City staff to evaluate the requested Traffic Impact Analysis and craft conditions of approval to be included with the decision relating to the Gunderson Rd connection to OR 211.

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# Oregon

Kate Brown, Governor

## Department of Transportation

Region 1 Headquarters  
123 NW Flanders Street  
Portland, Oregon 97209  
(503) 731.8200  
FAX (503) 731.8259

## Exhibit SSS

January 15<sup>th</sup>, 2020

ODOT Case No: 8702

To: Emily Meharg, City of Sandy Planner

From: Marah Danielson, ODOT Planner

Subject: 19-023 SUB/VAR/TREE: Bailey Meadows Subdivision - Ponder Lane

Since the first Planning Commission hearing last month on the land use application for the Bailey Meadows Subvision, ODOT and the City of Sandy have met to discuss the jurisdictional transfer of OR 211. ODOT supports the jurisdictional transfer and is working with the city to transfer the highway. It is our understanding that as part of the subdivision approval, the Gunderson Rd connection to OR 211 will only occur under the circumstance that the highway has been transferred to the city. In our December 17<sup>th</sup>, 2019 comment letter, ODOT had requested a condition of approval that the applicant be required to obtain all ODOT permits prior to issuance of a building permit for the Gunderson Rd connection. This request is no longer applicable since the applicant will only be constructing the Gunderson Rd connect to OR 211 if the highway is transferred to the city.

We appreciate the city's efforts to work towards the jurisdictional transfer of OR 211 and implementing the transportation network improvements identified in the Sandy Transportation System Plan.



December 11, 2019

## Exhibit VVV

City of Sandy Planning Division  
ATTN: Emily Meharg  
39250 Pioneer Blvd  
Sandy OR 97055

RE: File # 19-023 SUB/VAR/TREE

My name is Sarah Bettey and my husband and I are homeowners in the Nicholas Glen neighborhood off Melissa Ave and Dubarko Rd. As a member of the community, I am writing to you to express my apprehension about the potential planned project for the Bailey Meadows subdivision. We hope you will keep our concerns in mind when it comes time for you to review the updated proposal.

I appreciate the developer has modified their plan to include a 2<sup>nd</sup> point of entry into the new subdivision via Hwy 211. It would give both Bailey Meadows and Nicholas Glen a 2nd access point, which is safer in case of emergencies and inclement winter weather. However, I have deep concerns that the new road will expand the urban growth boundary, making even more development possible than what is currently proposed. Also, if the road is punched through, it is likely that this new route will become a thoroughfare for traffic coming to and from the busy highway to Dubarko. In approving the road, I would highly recommend speed bumps be installed on the Melissa Ave hill to help keep speed down. I would also hope that it is required that stop signs be installed at most intersections throughout Bailey Meadows and Nicholas Glen to decrease speed and discourage drivers from cutting through the neighborhoods.

In addition, if this proposal is approved Melissa Ave will be torn apart to run additional sewer, electricity, etc. instead of accessing these and other utilities via Hwy 211. Melissa Ave is currently the only access point for the entire existing Nicholas Glen neighborhood and will remain so until an additional road off Hwy 211 is finished. Recently we had slurry seal applied the streets of Nicholas Glen and it was just a taste of what it will be like having construction on the only way in and out of the neighborhood. Taking into consideration the burden that months or years of large trucks and other machinery needed to complete the building project driving through to access the property location, the plan to dig a deep utility trench down the entirety of Melissa Ave is totally unacceptable. I do hope that the majority of the construction traffic and utilities can be run off the highway instead of interrupting our quiet neighborhood and making Melissa Ave unpassable.

The Nicholas Glen children primarily attend Kelso Elementary and Boring Middle School. Both schools are grossly in need of upgrades. They are outdated and already above capacity. This year alone Kelso School had to add teachers and take away classrooms from secondary classes such as music and other arts programs. My child is currently in the 2nd grade at Kelso. His classroom is in an unattached modular unit located out back near the sports fields due to lack of classrooms in the actual school building. The addition of 90+ homes worth of children – likely hundreds of additional students - to schools that are already overwhelmed is not in the best interests of our children's future. The overcrowding and expansion of our district schools needs to be addressed before another development of new homes are added to the community or the UGB is expanded further.

Sandy has been talking about the pre-planning stages of a bypass around town for many years now. This bypass plan needs to be approved prior to continuing to add more residences within the city limits or expanding the UGB further to allow this growth. Traffic backs up at nearly every intersection through the center of town, impacting safety, local business and small town feel negatively every single day. This is even more prevalent with travelers heading to and from the mountain and Central Oregon on weekends. There have been no significant improvements to the road system despite the huge increase in our city population. It is irresponsible and dangerous to continue to approve large scale development and expanding the UGB without making drastic advances in our road systems.

Myself and my family have a vested interest in our community and hope that its quiet character and charm will remain intact. My husband and I chose to raise our young son here in my hometown of Sandy and selected the Nicholas Glen neighborhood specifically because of its beauty, its quiet, its safety, and its proximity to the woods and the mountain. Sandy residents like us want the community to grow and thrive; we just want it to be done in a way that protects the small town feel and our quality of life. This project as it stands does not have the best interests of the adjoining neighborhoods in mind. It threatens to bring a slew of negative side effects to Nicholas Glen and our Tickle Creek area/Dubarko Road neighbors, as well as the entire Sandy community as a whole.

I hope you will hear my concerns and take them into consideration as you make decisions on this matter in the future.

Thank you for your time,

Sarah Bettey  
18195 Melissa Ave  
Sandy OR 97055  
[Sarahbettey2978@hotmail.com](mailto:Sarahbettey2978@hotmail.com)  
971-246-2974

## Exhibit WWW

To Whom it may Concern,

We wanted to share some of our concerns with the proposed development west of Ponder Lane. We are including some pictures to help show how it is used.

We own the adjacent property at 37721 SE Ponder Lane, and have a 100x100 barn that we access weekly for our business, Geren's Farm Supply. In one of the pictures with the flatbed truck you can see the barn in the background. We have trucks and semi's and some are doubles, deliver straw, local hay, eastern oregon hay, grass/alfalfa mix and alfalfa, which we store. Weekly, our employees access the barn to retrieve what we need to keep the business in supply. We are concerned about maintaining truck access to our barn and continuing our business.

Additional questions are if you are planning on using bolsters like they have on Arletha for emergency access. And if so, how are you going to keep people from using Ponder Lane and from parking along side of the development and walking to their homes? This what we see currently on Arletha.

We bought our property in 1974 and our driveway which is called Ponder Lane is where it was then. Because of our business which we bought in 1981, we hired Jim Turin and Sons in 2006 to pave it. They recommended we pave it 4" deep and have the wide corners because of the semis. We paid for 2" from Hwy 211 to the first corner and our neighbors paid for the other 2". We paid from the corner up to our home for the 4" the rest of the way.

Thank you for taking our concerns into consideration.

Les and Kathy Geren























## Exhibit XXX

Emily Meharg <emeharg@ci.sandy.or.us>

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### RE: Bailey Meadows Subdivision file # 19-023 SUB/VAR/TREE

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Gigi Duncan <gigiduncanhome@gmail.com>  
To: emeharg@cityofsandy.com

Sat, Dec 14, 2019 at 8:09 AM

Hi City of Sandy,

I want to express my concerns about the proposed subdivision that will effect our neighborhood and the areas around us. After hearing the developer speak and after asking some questions, I came away with a pretty overwhelming sense that these people are just looking to make their quick buck and move on, leaving us with the consequences of their short vision. I feel that the way the subdivision is proposed is unsafe and unnecessarily taxing on our resources at the moment.

These are my specific concerns with regard to the proposal of the Bailey Meadows subdivision:

- Traffic: One way in and one way out, using only Melissa Avenue, is going to cause a huge

increase in traffic for our neighborhood, the surrounding neighborhoods, and the entire city.

- According to the City of Sandy's Transportation plan, local streets have the typical

capacity of 800-1000 average daily car trips. The new development of 100 proposed homes would add approximately 944 additional car trips on Melissa Avenue. Since the current Nicholas Glen neighborhood has over 100 homes already, it is safe to say that the traffic on Melissa Avenue will be double the typical capacity of a local street. Double the traffic is not conducive to a safe, enjoyable neighborhood. City Code 17.100.100 states the pattern of streets should be connected in such a way will spread traffic over many streets so that key streets are not overburdened. With only one access point Melissa Avenue will be overburdened and this overburden will sprawl into Dubarko and the other arterial streets with major connections to US 26.

- An additional 944 car trips per day will increase drive time not only on Melissa Avenue, but also on Dubarko, Bluff, Ruben, and 362nd. The intersections of Dubarko/OR 211, Dubarko/362nd, 362nd/US 26, Ruben/US 26, and Bluff/US 26 are currently rated as a C or D for their level of service according to our transportation plan mobility standard. With added development that has no other alternative route, those intersections will become much more overwhelmed and their level of service will decrease, most likely reaching the point of failing mobility according to the city standard. More drive time means wasted time and wasted fuel while stuck in congestion.

- More cars brings the possibility of more accidents. Cars already drive with excessive speed up and down the hill of Melissa Avenue. Children will no longer be safe enough to walk, ride their bikes, and play in the streets of our community, as there is a possibility of more pedestrian-involved accidents with increased car traffic. Increased traffic leads to frustrated drivers, who take more risks and drive faster. According to the city's traffic plan, there was a study that stated two accidents happened on Melissa Avenue between 2005 to 2007, one occurring at the intersection of Melissa/Rachael and the second occurring at the intersection of Melissa/Solso. The same study also mentioned that the intersection of Dubarko and OR 211 had a crash rate of 1.08 MEV, which is a relatively high crash rating, and it said that the intersection is in the top 10% of hazardous ODOT SPIS locations. The new development proposal's traffic study did not include the intersection Dubarko and OR 211 in their study, which raises the concern on how the new development would affect that already questionable area.

- More traffic will cause an increased noise level in our quiet neighborhood. Increased noise will change the quality of life in our neighborhood because it affects the ability to sleep, causes anxiety, and decreases overall health.

- As traffic volume increases, air quality will diminish and more pollution could enter Tickle Creek, contaminating it.

- Extra noise and traffic will lower property value, especially to those homes on Melissa.
- Developers were requested to have a second access connecting the new neighborhood to

OR 211. However, they fully intend to continue their proposal of only one access. This shows a disregard for our city's planning division in terms of the transportation system. It shows a disregard for the quality of life for the residents of both Bailey Meadows and Nicholas Glen. It shows a disregard for the congestion for the entire city of Sandy

including its residents and tourism traffic. The reasoning behind not having a second access point, in my opinion, is mediocre at best and shows a lack of care for the immediate future in our city.

- Developers claim there are site distance problems and the existing road, Ponder, hits OR 211 at an oblique angle. This seems to be illogical, considering that at the exact same spot where Ponder meets OR 211, on the eastern side of OR 211, there is already a new development with access using Arletha Court. If site distance and the oblique angle are an issue for the Bailey Meadows development, why would another development, using that exact same spot of intersection, be allowed a point of access?
- Developers mentioned that they have an agreement with the landowner to the south of the newly proposed development to purchase their property, with the purpose of future access to OR 211. However, that property is outside the Urban Growth Boundary currently. Because of this, even if that property were to be entered into the Urban Growth Boundary (which takes time), it will be years down the road that their idea of accessing OR 211 will even be feasible. According to these developers, they would need to an exception from the county to put a road through rural property to access OR 211 and from their talks with county planning, the staff would most likely not support that needed exception.
  - Safety: A cluster of 250+ homes in a small area, with one way in and one way out, will decrease the safety and security of our neighborhood.
    - Police, Fire, and Ambulance response time will be prolonged with only one main, well kept access street. The second access off Ponder will be available, but it is not ideal and probably not as safe for a quick response.
    - In the event of a natural disaster, Melissa Avenue would be an evacuation nightmare because it is the only way out for over 250 families.
  - Education: Adding more homes in the city of Sandy would cause a decrease in educational effectiveness within our school district.
    - Kelso Elementary, Boring Middle, and Sandy High School are the three schools affected by this proposed new development, as the new neighborhood would be in their school boundaries as it is currently drawn. Kelso Elementary and Boring Middle are already over 100% capacity. In a meeting with school parent groups, the Superintendent of Oregon Trail School District stated that Kelso is at 134% capacity. Even if boundaries are changed, Sandy Grade and Naas are over 100% capacity, and Firwood is at 98%. Our children will suffer.
    - There are currently new homes already being built within the boundary of these schools and several others that are tentative. If we add yet another development, it would cause a catastrophe as far as classroom size, space for classrooms, effectiveness in the classroom, mental health of students, safety of students and staff, and teacher burnout due to increased capacity and lack of resources.
  - Parks: Developers, as I understand the 17.86, should have a parkland dedication of 1.29 acres (using the formula given  $100 \times 3 \times 0.0043$ .) In the meeting, they made it perfectly clear that they will not dedicate any land for parks; it is not negotiable for them. They will simply just pay a fee

instead. To me, this again shows the lack of care and regard for our city planning and for the future of the area.

- Wildlife: With the development of rural land, wildlife will be threatened. They will be pushed out of their homes. Vehicle collisions with wildlife might increase. Increased amounts of pollution could harm remaining wildlife.



Thank you for your time,

Gigi Duncan  
18275 Rachael Drive  
Sandy OR

--

*Gigi Duncan, Broker  
Team Manager*

*Excellence is in the Details...*

*The Horizon Home Team at  
Premiere Property Group, LLC*

*503-201-3369 Cell*  
**[GigiDuncanHome@gmail.com](mailto:GigiDuncanHome@gmail.com)**

**<https://www.premierepropertygroup.com/agent-profile/gigi-duncan-9675941>**  
**<https://www.zillow.com/profile/Gigi-Duncan/>**

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Property Buyer/Seller Advisories**



## Exhibit YYY

Emily Meharg <emeharg@ci.sandy.or.us>

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### Bailey Meadows Subdivision

1 message

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Tom Newell <tom.newell@live.com>  
To: "emeharg@cityofsandy.com" <emeharg@cityofsandy.com>

Tue, Dec 17, 2019 at 8:26 AM

File number 19-023 SUBVAR/TREE

Good Morning Emily....

Wow, Bailey Meadows has created a firestorm.

I cannot attend the meeting tonight, so just wanted to voice my opposition to the project as it seems to be currently presented (this is my second email).

How can a 100 home development be put in without providing it's own primary street access? The burden on Melissa as a primary entry will certainly be too much and then the traffic will pour out onto Dubarko. Also, emergency exiting in a catastrophic event would not provide adequate egress. The development should provide primary access from the Hwy 211 side to ease traffic into town.

Then the school crowding situation and bus access should be included in decision making. And, I understand the developer won't build a park....even though it is actually a city requirement for these type developments. How about the current capacity of the wastewater facility, is it really able to accommodate this before the site is upgraded/rebuilt?

Sandy is growing and we can't stop that, but let's do it in a practical way. Thank you for considering all input.

Tom Newell

[18007 Rachael Dr](#)

[Sandy, Oregon](#)

503-477-2911

Sent from [Mail](#) for Windows 10



## Exhibit ZZZ

12-17-19

City of Sandy Planning Division,

Greetings, our family lives on Rachael Dr and we believe creating a second entrance to the proposed development at Bailey Meadows Subdivision is more problematic than creating only one. By doing so, it would essentially create a vehicle pipeline allowing a shortcut from 211, bypassing Dubarko Rd via Melissa. If the original proposal estimates an extra 900+ vehicles per day on Melissa, with the new subdivision it is mind blowing to think how many additional vehicles would use this artery that do not even live in the neighborhood's...Thousands? Therefore, we propose the Gunderson Rd extension be the only public vehicle access to Bailey Meadows Subdivision. This would keep all traffic from 211, Dubarko, 362<sup>nd</sup> and Bailey Meadows off Melissa.

As an alternative to a public vehicle access, Melissa could be gated and used for service vehicle access only. Public sidewalks could still connect the two neighborhoods allowing pedestrian use to and from Tickle Creek Trail.

If the city does decide to keep proposal as is, we strongly suggest; enhanced police patrols, speed-bumps, stop signs and traffic circles for public safety. We would also like to see a focus group look into the traffic impact to our neighborhood with the newly proposed Thorofare.

Thank you for your consideration.

The Barnes Family

# Exhibit AAAA

Kathleen Walker  
15920 SE Bluff Rd.  
Sandy, Oregon 97055

December 16, 2019

Dear Planning Commission and City Council:

As some of you know, I understand and can support responsible growth in Sandy. I have testified before on previous developments to ensure that applicable City codes and requirements are applied to ensure successful, profitable development that minimizes impacts to existing residents. I would like to make the following points and requests in reference to the Bailey Meadows Subdivision. In summary:

- 1) Keep the public comment period open as part of the continuance.
- 2) The development proposal does not meet the criteria for “Needed Housing”.
- 3) The City should require park land dedication, instead of accepting an in-lieu of fee.
- 4) Parkland dedication policies are incorporated into the City’s Land Use Regulations.
- 5) Parkland dedication is the City’s discretion only, and is not “subjective”.
- 6) Additional road access is necessary for this development.

**1. Public Comment Period:** It appears you intend to extend the hearing. The public comment period (both oral and written comments) should be extended because Sandy Development Code Section 17.80.60 and Section 17.20.50 (F) states that the Planning Director will prepare and present a Staff Report that evaluates whether the proposal complies with the review criteria. In an effort to provide public input to this proposal, we must have a clear understanding of the compliance with applicable City code and not have to rely on our own interpretation, or the developer’s, which may be biased. No staff report covering these points are online for public review. Please maintain the public comment period both oral and written, until the Staff Report is completed and the public has an opportunity to review that and compile public comments enlightened by professional staff findings.

**2. Development Does Not Meet the Criteria for “Needed Housing”:**

## **2017 ORS 197.303<sup>1</sup> - “Needed housing” defined**

(1) As used in ORS 197.307 (Effect of need for certain housing in urban growth areas), “needed housing” means all housing on land zoned for residential use or mixed residential and commercial use that is determined to meet the need shown for housing within an urban growth boundary at price ranges and rent levels that are affordable to households within the county with a variety of incomes, **including but not limited to households with low incomes, very low incomes and extremely low incomes**, as those terms are defined by the United States Department of Housing and Urban Development under 42 U.S.C. 1437a. “Needed housing” includes the following housing types:

All of the proposed lots are in excess of 7500 square feet, with homes costing in excess of \$400,000. That means that there are no homes **INCLUDED** that would be affordable to low, very low or extremely low incomes. Thus Bailey Meadows development does not meet the definition of “Needed Housing”. It appears tate statute intended to encourage low income



housing is being used by a developer who plans to build large relatively costly homes, no low income people can afford with the intention to skirt the City's Development Code requirements that they deem "subjective" or have in their opinion, "unreasonable costs". As we know, these code requirements are intended to maintain our quality of life for existing and future residents and ensure that new development provides services like parks, roads, and utilities that should be paid by the development and not be put on the existing residents to pay.

### **3. Require park land dedication:**

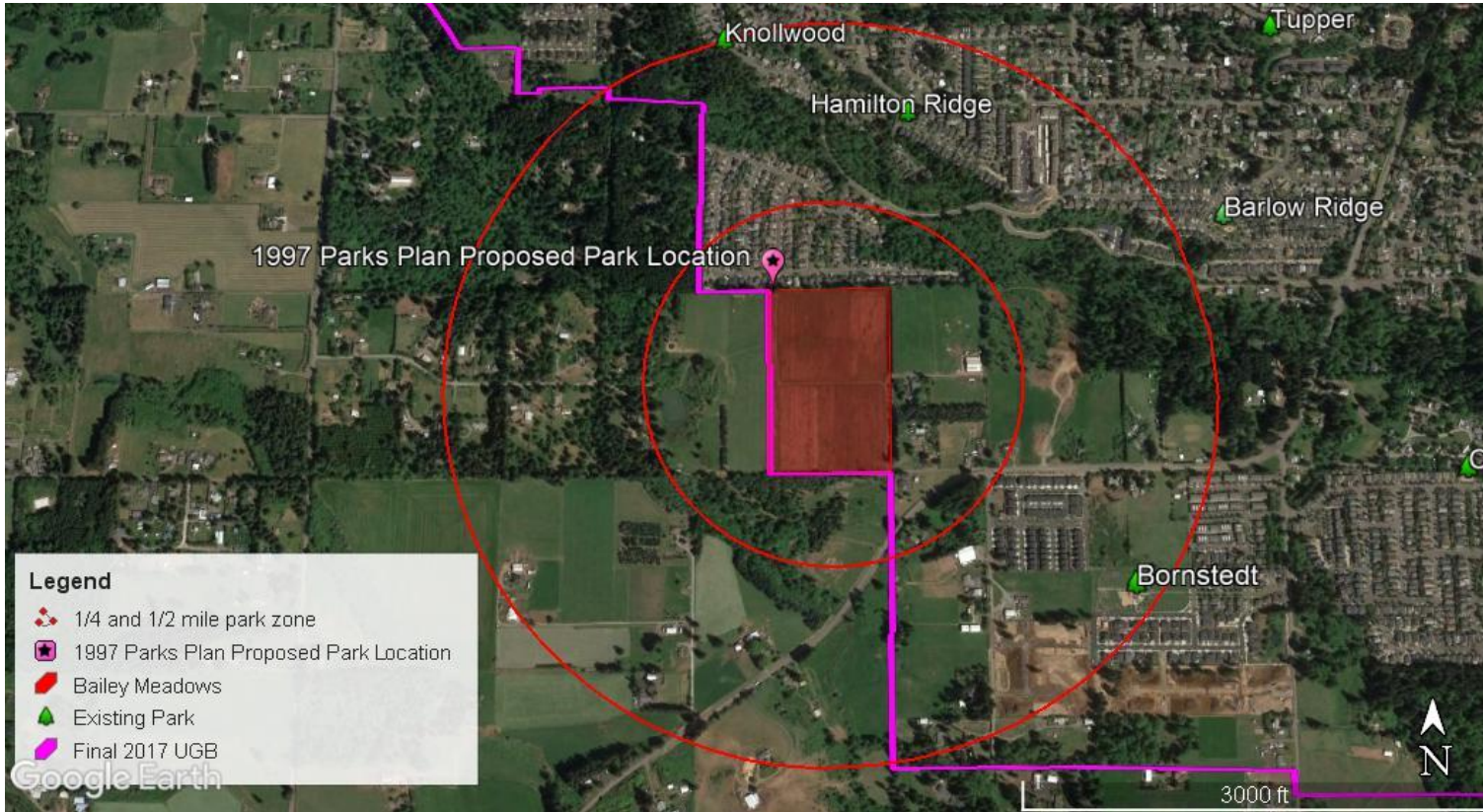
The City's Parks and Trails Board recommended that the Bailey Meadows development be required to dedicate park land because there was a park identified in this area in the 1997 Parks Master Plan. Section 17.86 of the City's code says "*New residential subdivisions, planned developments, multi-family or manufactured home park developments shall be required to provide parkland to serve existing and future residents of those developments.*" Most of our existing park system was developed by requiring park land dedication in developments where the 1997 Parks Master Plan identified a park. In proposed development areas where there was not a park identified in the Plan, the City chose to accept in-lieu of fees.

The 1997 City of Sandy Parks Master Plan (adopted in its entirety in City Development Code) called for "*80% of all dwellings be located within one quarter mile of a neighborhood park*" (Chapter 3) and without crossing major streets and highways, streams, etc. As identified in the 1997 City of Sandy Parks Master Plan, there is a need for a park in the area of Bailey Meadows. New residents in this area should not be expected to cross a busy highway to access Bornstedt Park a half mile away. Knollwood, the nearest park to Bailey Meadows, is over one half mile away and offers only a small playground. Hamilton Ridge is a 0.67 mile walk and crosses busy Dubarko Road.

The following page shows a map of the area with the 1997 Park Master Plan proposed park, a one quarter and one half mile zone around the development, and existing parks in the area. The one quarter mile objective is by walking and not as the crow flies. The existing subdivision to the north (Rachel Drive and Melissa Avenue) was approved in 1997, before the 1997 Parks Master Plan was adopted. Construction of the subdivision did not begin until 1998.

Bailey Meadows has suitable ground to provide a park, complete with flatter topography suitable for a multi-use ball field, and play structures. Now picture 100 new homes and hundreds of new Sandy residents in Bailey Meadows, with no neighborhood park within reasonable walking distance. Bailey Meadows has the UGB boundary to the west and the south. The potential complications of developing a neighborhood park in outside the UGB along with the roads and utilities needed at the park are more costly and complicated and would require Clackamas County approval or expansion of the UGB.

# MAP OF PARK NEED





#### 4. Park Dedication Policies are Incorporated into the City's Land Use Regulations:

The developer implies that the park land dedication policies are not applicable. Sandy Development Code Section 17.86 states:

*"This chapter implements policies of Goal 8 of the Comprehensive Plan and the Parks Master Plan by outlining provisions for parks and open space in the City of Sandy."*

Sandy's 1997 Parks Master Plan is incorporated into the City's Comprehensive Plan and has served as the guiding document for the last 22 years. Sandy's development code language and direction contained in Section 17.86 have also served to implement the need for public recreational space as new neighborhoods are built, so it comes as a dubious surprise that the direction in these documents are implied by the developer as "Not Applicable".

#### 5. Parkland dedication is the City's discretion only, and is not "subjective"—

Sandy Development Code Section 17.86.40 says that:

***"At the city's discretion only, the city may accept payment of a fee in lieu of land dedication."***

The developer states that this requirement is "subjective" under the terms of the "Needed Housing" language. See Section 2 above on why the "Needed Housing" designation should not even apply to this large home and lot subdivision. But more importantly, the 1997 Parks Master Plan and development code language in section 17.86 objectively lays out proposed park needs and required policies to provide "quality of life" and serve "active and passive recreational needs" for future growth in Sandy.

Section 17.86.20 states that:

*"The parkland must be able to accommodate play structures, play fields, picnic areas, or other active park use facilities. The average slope of the active use parkland shall not exceed 15%."*

Section 17.86.40 states: *"The following factors shall be used in the choice of whether to accept land or cash in lieu:*

- a) *The topography, geology, access to, parcel size, and location of land in the development available for dedication;"*

**Response:** The Bailey Meadows subdivision contains relatively flat ground, suitable for play structures and play fields.

- b) *Potential adverse/beneficial effects on environmentally sensitive areas;*

**Response:** The Bailey Meadows subdivision contains no environmentally sensitive areas and is suitable for park land development.

- c) *Compatibility with the Parks Master Plan, Public Facilities element of the Comprehensive Plan"*

**Response:** The Parks Master Plan identifies a needed park in this area and is incorporated into the Comprehensive Plan in Section 17.86 and in other sections of City code.

- d) *Availability of previously acquired property;*

**Response:** There is no previously acquired property in this area to meet the need for park land. Similarly the City has not identified any other future parkland acquisition options. Understaffed and overworked City staff have not investigated or identified willing sellers of potential park property in the area of the Bailey Meadows subdivision. The price would need to be affordable and the time and expenses of finding a seller, land appraisal, surveys, purchase, and deed transfers would be additional costs. This has taken

the City years for Bornstedt and Tickle Creek. Park acquisition options outside the boundary adjacent UGB provide more challenges.

e) *The feasibility of dedication.*

**Response:** Park land dedication for Bailey Meadows is completely feasible and a far easier and cheaper option for the City to acquire park land property to meet the needs of the hundreds of new Bailey Meadows residents than trying to collect funds, find and buy nearby parkland. If a willing seller is not found for the Bailey Meadows neighborhood, these folks will have no neighborhood park. They will likely be legitimately complaining about this missing asset for decades to come. Accepting park land dedication eliminates this risk, additional effort and expenses while providing the new residents a reasonable, desirable and required City amenity.

Park land dedication is the fiscally prudent choice for the City over collecting fees and trying to acquire parkland near Bailey Meadows. Development code section 17.86.30 – *“The developer shall clear, fill, and/or grade all land to the satisfaction of the City, install sidewalks on the park land adjacent to any street, and seed the park land.”* These costs for the needed park should be paid by the developer building the neighborhood and not taken out of Sandy’s limited parkland acquisition and park development funds.

**6. Additional road access is needed for this subdivision.**

Existing traffic studies and staff recommendations indicate a need for secondary access to Bailey Meadows. As we learned in the Sandy Bluff phases, it is not good policy to allow developers to avoid or postpone developing the road access needed for these large subdivisions, at the expense and impact of existing residents. City code requires developers construct necessary roads and utilities to accommodate their development and this should be no exception. There should be no horse trading or concessions to other code requirements including parks, because of increased road access costs.

**Conclusion:**

As stated before, the 1997 Parks Master Plan identified a needed park in this area. The Sandy’s Parks and Trails Board recommended that the developer be required to dedicate land to provide a park for the 100 new homes. There are no existing parks that will serve the objective need for the hundreds of new residences added by this subdivision. There is no existing “willing seller” that will provide park land to serve this subdivision. There may never be one, or the cost may be out of reach for the City to pursue. For the last 22 years, developers in Sandy have dedicated park land based on the Parks Master Plan. In fact, a couple of developers built additional parks for their subdivisions because they knew it helped sell homes (as well as providing an excellent amenity to the new residents). Please disregard the spurious arguments in the developer’s response to City Code requirements and require they dedicate park land to meet the needs of the hundreds of new residents we will be welcoming to Sandy.

Please keep the public comment period open so that we can understand and provide comment on the staff’s formal assessment of how this proposed development meets Sandy Development Code requirements. Please require secondary access to the subdivision beyond Melissa Avenue based on traffic studies, staff and fire district recommendations, and existing City code.

Kindest Regards,

Kathleen Walker



## Exhibit BBBB



December 16, 2019

### Re: City of Sandy Parks Board recommendation and rationale on Bailey Meadows

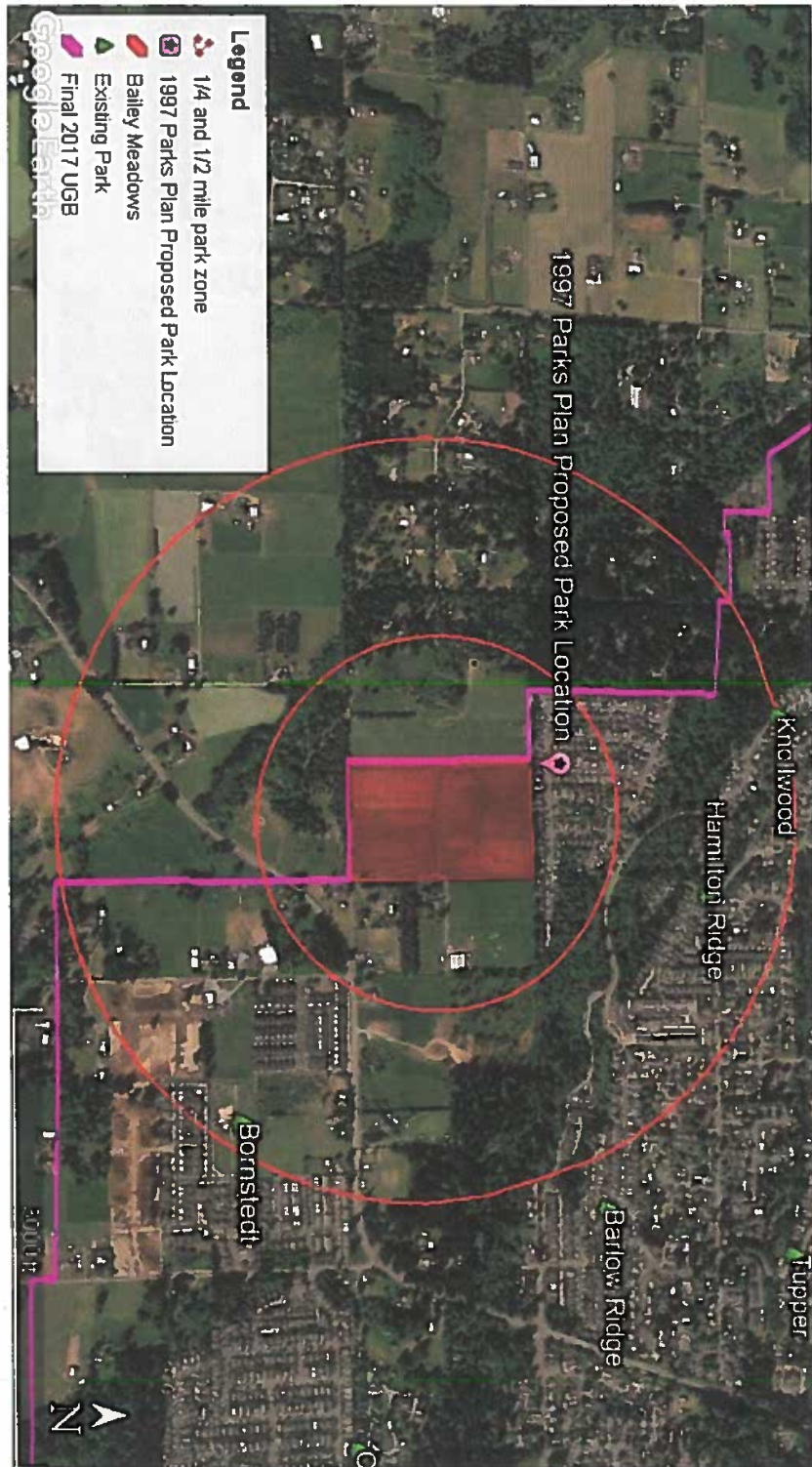
Dear Planning Commission, City staff and City Council:

As the members of the Sandy Parks and Trails Board, we wanted to take the opportunity to further explain our recommendation on park land dedication in Bailey Meadows. Our Parks Board meeting notes in the planning packet summarize the rationale in our recommendation, but we have had the opportunity to review the developer's response to our recommendation on pages 38-40 of your planning packet. We were unable to review the staff recommendation regarding park land dedication as the staff report is not completed yet. **We would recommend keeping the public comment period open until the staff report is completed.**

We recommend the City require park land dedication for this proposed development with the following rationale:

1. Section 17.86.10 of the City's code says "*New residential subdivisions, planned developments, multi-family or manufactured home park developments shall be required to provide parkland to serve existing and future residents of those developments.*"
2. There is a park referenced for the Bailey Meadows area in the 1997 Parks Master Plan incorporated under Section 17.86.00 and 17.86.10. The land is generally flat and therefore suitable for park facilities including a multi-use ball field.
3. The 1997 City of Sandy Parks Master Plan (adopted in its entirety in City Development Code) called for "*80% of all dwellings be located within one quarter mile of a neighborhood park*" (Chapter 3). National Recreation and Park Association (NRPA) identifies the goal of having a park within a ten minute walk and further defines accessibility to avoid crossing major streets and highways, streams or other topographic impediments. There is no other existing park land in the area to meet this development's need. See Figure 1 below. A walk to the closest park for most of the development property is over ½ mile (Knollwood) which does not meet our Master Plan intent of providing a park within ¼ to ½ mile of developments. Access to Bornstedt requires crossing a highway and is about ½ mile away.
4. As mentioned in Section 17.86.40: the choice to require park land dedication or accept an in-lieu of fee, "is the City's only". The City has developed most of its existing park system based on the layout of proposed parks in the 1997 Parks Master Plan. If the 1997 Plan identified a proposed park in the area of the development, the City required park land dedication. If the 1997 Plan did not identify a proposed park in the area, the City chose to accept in-lieu-of fees.

Figure 1 – Map of Park Need for Bailey Meadows





Section 17.86.40 states: “*The following factors shall be used in the choice of whether to accept land or cash in lieu.* Our responses are included.

- a) *The topography, geology, access to, parcel size, and location of land in the development available for dedication;* **Response:** The Bailey Meadows subdivision contains relatively flat ground, suitable for park play structures and play fields.
- b) *Potential adverse/beneficial effects on environmentally sensitive areas;* **Response:** The Bailey Meadows subdivision contains no environmentally sensitive areas and is suitable for park land development.
- c) *Compatibility with the Parks Master Plan, Public Facilities element of the Comprehensive Plan*” **Response:** The Parks Master Plan identifies a needed park in this area and is incorporated into the Comprehensive Plan in Section 17.86 and in other sections of City code. The City’s in-lieu-of fee for park land acquisition is intended to apply where there are already parks that serve a proposed development, or the Parks Master Plan identifies no proposed park in the area of development.
- d) *Availability of previously acquired property;* **Response:** There is no previously acquired property in this area to meet the need for park land. Similarly the City has not identified any other future parkland acquisition options. Understaffed and overworked City staff have not investigated or identified willing sellers of potential park property in the area of the Bailey Meadows subdivision. The price would need to be affordable and the time and expenses of finding a seller, land appraisal, surveys, purchase, and deed transfers would be additional costs. This has taken the City years for Bornstedt and Tickle Creek.
- e) *The feasibility of dedication.* **Response:** Park land dedication for Bailey Meadows is completely feasible and a far easier and cheaper option for the City to acquire park land property to meet the needs of the hundreds of new Bailey Meadows residents than trying to collect funds, find and buy nearby parkland. If a willing seller is not found for the Bailey Meadows neighborhood, these folks will have no neighborhood park. They will likely be legitimately complaining about this missing asset for decades to come. Accepting park land dedication eliminates this risk, additional effort and expenses while providing the new residents a reasonable, desirable and required City amenity.

Yet another consideration in favor of park land dedication over in-lieu-of fees for Bailey Meadows is development code section 17.86.30 – “*The developer shall clear, fill, and/or grade all land to the satisfaction of the City, install sidewalks on the park land adjacent to any street, and seed the park land.*” These costs for the needed park should be paid by the developer building the neighborhood and not taken out of Sandy’s limited parkland acquisition and park development funds.

Bailey Meadows is surrounded on the west and the south by the Urban Growth Boundary (UGB) – see Figure 1 - which may limit the potential for the City to acquire and develop a neighborhood park. For the same reasons that the secondary access road development

outside the City limits is potentially costly and time consuming, developing a neighborhood park to the west or south would require going through Clackamas County.

While the Parks Board is no expert in land use laws, it appears that the intent of the Needed Housing is for “low, very low, and extremely low income housing”. Therefore, it is questionable how 7500 ft<sup>2</sup> lots with \$400,000 homes proposed would fall under this definition of “Needed Housing” in ORS 195.303. Further, the 1997 Parks Master Plan adopted into Sandy’s Comprehensive Plan and incorporated into the applicable Development Code language in Section 17.86 is clear and objective. In fact, it has served the City for the last 22 years to ensure that developers successfully and profitably build subdivisions, provide for Sandy’s growth, while meeting Section 17.86.10’s requirement that developers “shall be required to provide parkland to serve existing and future residents of those developments”.

We encourage and recommend that the Planning Commission, City staff, and City Council exercise the City’s discretion, and require park land dedication as part of the Bailey Meadows development to provide the desired and required amenities for these new residents.

Sincerely,

Sandy Parks Board Members:

Don Robertson

Susan Drew

Michael Weinberg

Kathleen Walker

Makoto Lane



October 15, 2019

**Michael C. Robinson**  
Admitted in Oregon  
T: 503-796-3756  
C: 503-407-2578  
mrobinson@schwabe.com

**VIA E-MAIL**

Mr. Kelly O'Neill, Jr., Director  
Development Services Department  
Sandy City Hall  
39250 Pioneer Blvd.  
Sandy, OR 97055

RE: City of Sandy File No. 19-023 SUB/VAR/TREE

Dear Mr. O'Neill:

This office represents the Applicant.

The Applicant requests that the City cancel the scheduled October 28, 2019 Sandy Planning Commission initial evidentiary hearing on this Application by providing mailed notice to all property owners entitled to such notice. The Applicant also requests that the City reschedule the Sandy Planning Commission initial evidentiary hearing for December 17, 2019 at 7:00 p.m. The Applicant will extend the 120-day period in ORS 227.178(1) by fifty (50) days, the period of the continuance.

Please let me know if you have any questions.

Very truly yours,



Michael C. Robinson

MCR/jmhi

Cc Ms. Emily Meharg (via email)  
Mr. Cody Bjugan (via email)  
Mr. Monty Hurley (via email)  
Mr. Chris Goodell (via email)  
Mr. David Doughman (via email)

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# Exhibit DDDD

## 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



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.

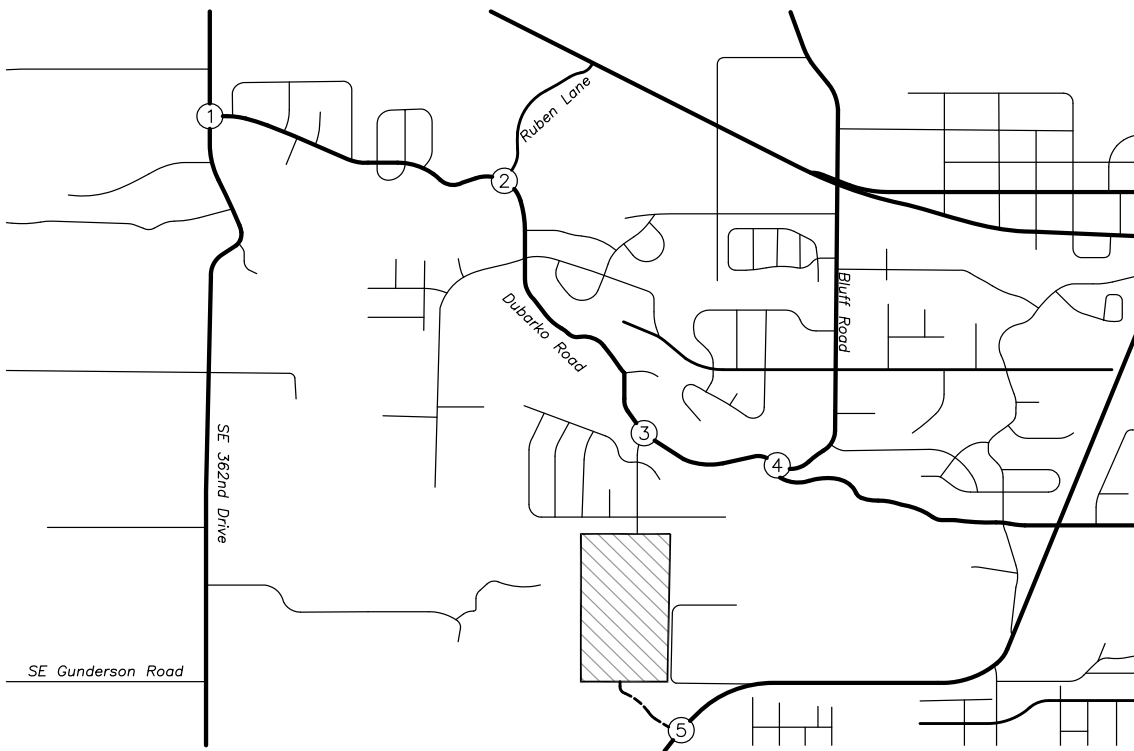
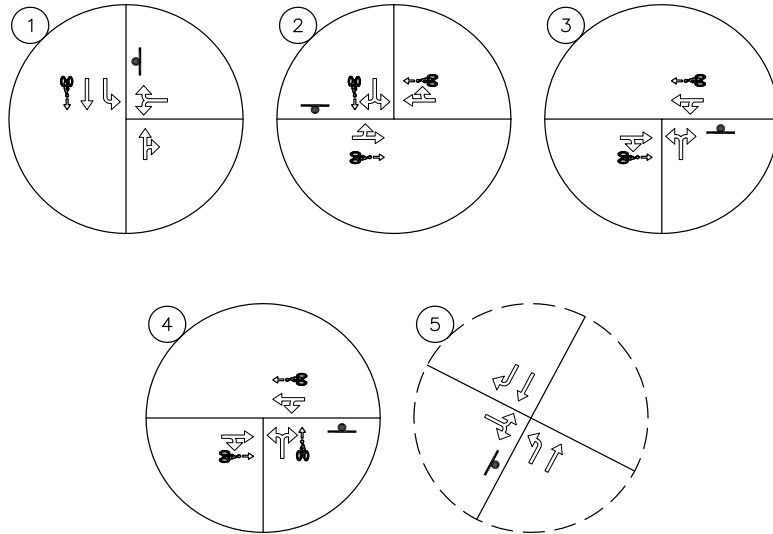
**Table 1: Vicinity Roadway Characteristics**

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 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 362<sup>nd</sup> 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 362<sup>nd</sup> Avenue is identical in time to the route using Highway 211 to 362<sup>nd</sup> 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>

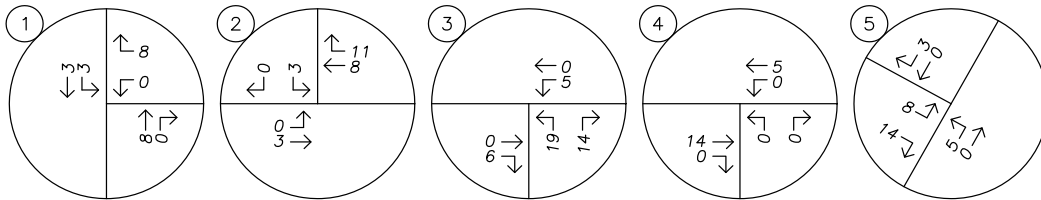
The updated trip distribution and assignment during the morning and evening peak hours are shown in Figure 2 on page five.

LEGEND

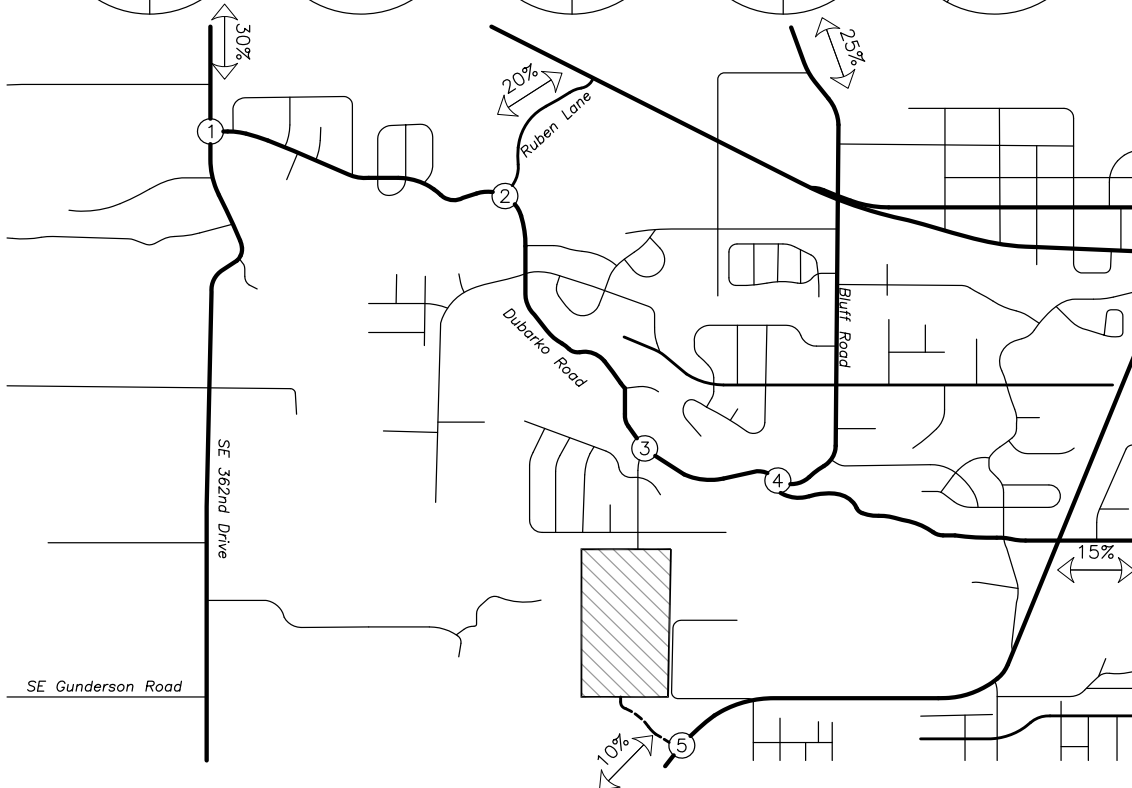
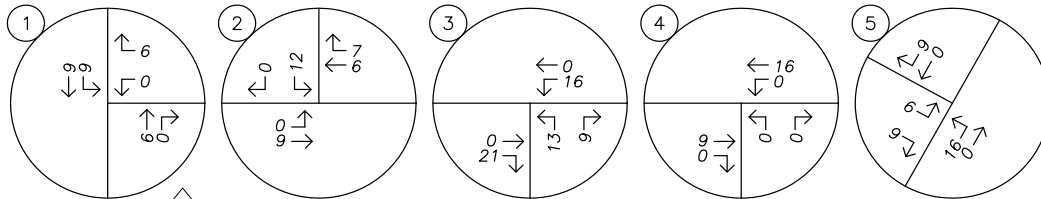
XX% PERCENT OF PROJECT TRIPS

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



**FIGURE**  
**2**  
**PAGE**  
**5**



## ***Traffic Volumes***

### ***Existing Conditions***

Twenty-four-hour speed data was collected on Highway 211 near the intersection with Ponder Lane on December 4<sup>th</sup>, 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 30<sup>th</sup> 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***

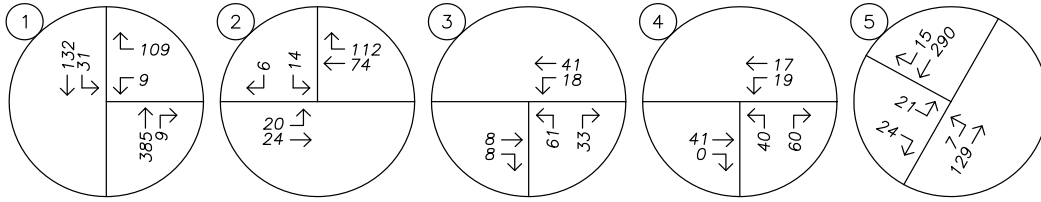
A compounded growth rate of two percent per year was used to estimate growth on all streets under the City of Sandy jurisdiction as described within the TIS. Growth rates for traffic volumes on Highway 211 were derived using ODOT's 2037 Future Volume Tables in accordance with the APM. Using data corresponding 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.

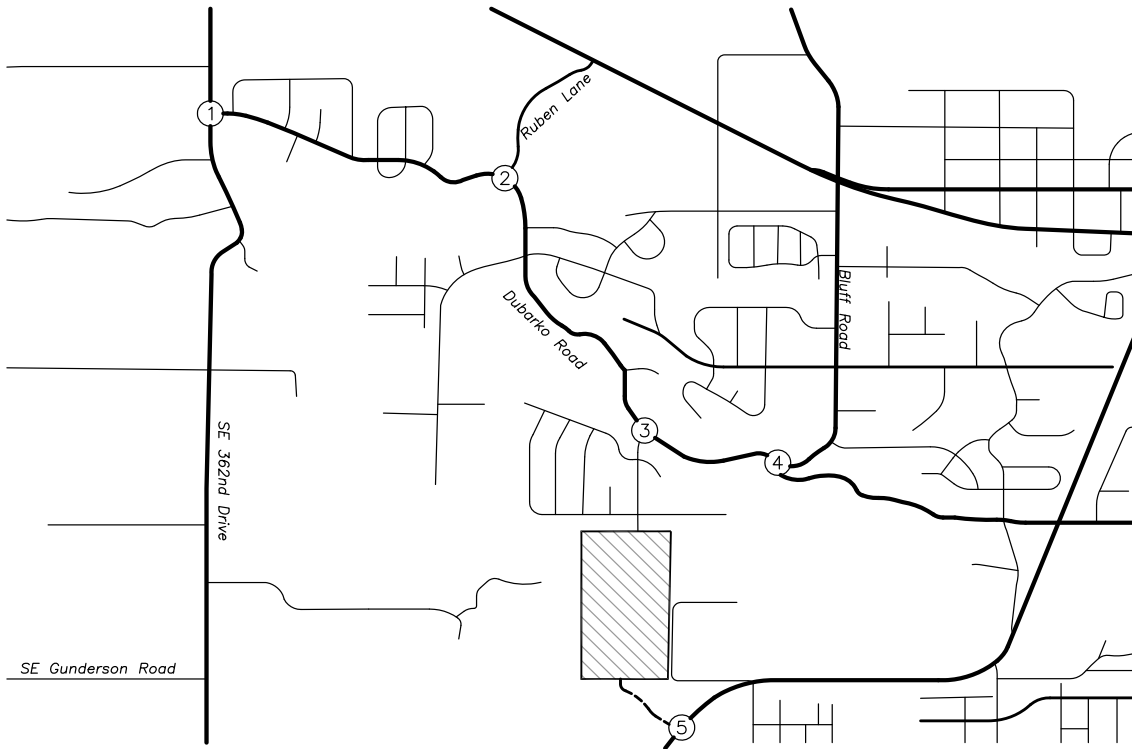
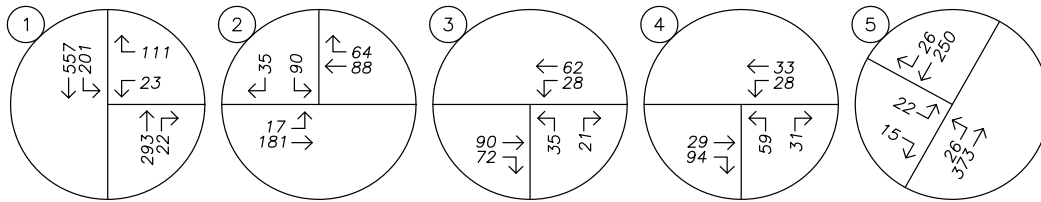
The year 2022 buildout traffic volumes are shown in Figure 3 on page seven.



AM PEAK HOUR



PM PEAK HOUR



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



**FIGURE 3**  
**PAGE 7**



January 6, 2020  
Page 8 of 14

### ***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*<sup>1</sup> (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.

---

<sup>1</sup> 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*<sup>2</sup> (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
<b>SE 362<sup>nd</sup> Drive at Dubarko Road</b>						
Year 2022 Buildout Conditions	13	B	0.24	19	C	0.36
<b>Ruben Lane at Dubarko Road</b>						
Year 2022 Buildout Conditions	10	A	0.03	12	B	0.21
<b>Dubarko Road at Melissa Avenue</b>						
Year 2022 Buildout Conditions	9	A	0.13	10	B	0.09
<b>Dubarko Road at Bluff Road</b>						
Year 2022 Buildout Conditions	8	A	0.16	8	A	0.15
<b>Highway 211 at SE Gunderson Road</b>						
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.

<sup>2</sup> Transportation Research Board, *Highway Capacity Manual, 6<sup>th</sup> 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**

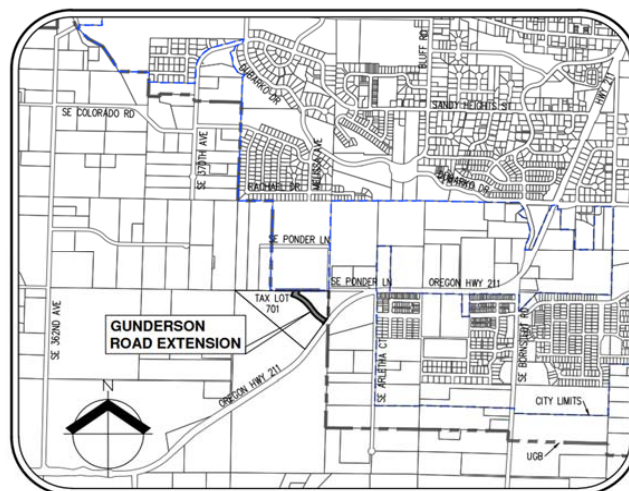
However, upon closer investigation and engineering analysis, it was determined that the alignment shown on the TSP was not feasible for construction of an intersection with Highway 211, primarily due to poor sight distance, the need for a perpendicular intersection, and a very steep superelevated roadway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



January 6, 2020  
Page 11 of 14

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.

### ***OAD 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.*





January 6, 2020  
Page 13 of 14

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  
Page 14 of 14

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

\* 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**

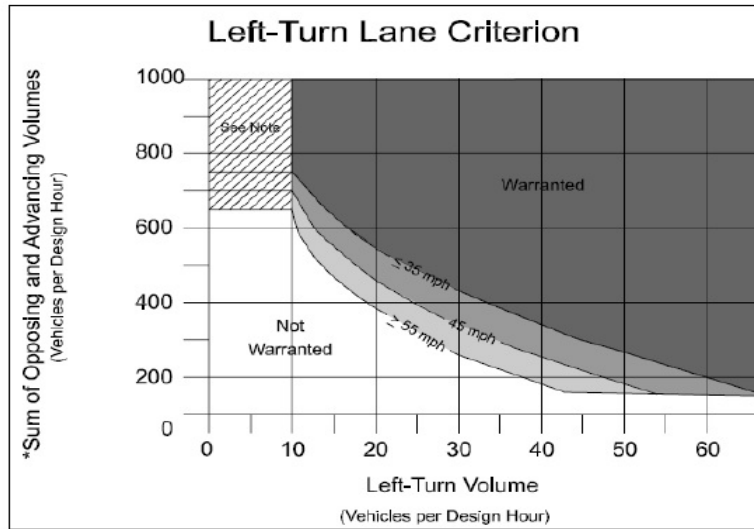
Left-Turn Volume 26

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

**\* (Advancing Vol/ # of Advancing Through Lanes) + (Opposing Vol/ # 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	
<b>Intersection Summary</b>						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	39.7%			ICU Level of Service A		
Analysis Period (min)	15					

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

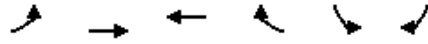
12/13/2019

Intersection						
Int Delay, s/veh	2.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		Y		Y	Y
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
Fr t			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	
<b>Intersection Summary</b>						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	27.4%			ICU Level of Service A		
Analysis Period (min)	15					

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
Fr't	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	
Sign Control	Free		Free		Stop	
<b>Intersection Summary</b>						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	21.9%			ICU Level of Service A		
Analysis Period (min)	15					



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

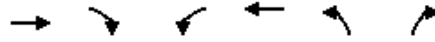
Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	20	0	113
Stage 1	-	-	-	-	15
Stage 2	-	-	-	-	98
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1596	-	884
Stage 1	-	-	-	-	1008
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	
Flt Protected				0.974	0.980	
Satd. Flow (prot)	1696	0	0	1698	1645	0
Flt 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	
<b>Intersection Summary</b>						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	21.2%			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	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%
Analysis Period (min)	15
	ICU Level of Service A

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 (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	0.888		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
<b>Intersection Summary</b>						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	46.0%			ICU Level of Service A		
Analysis Period (min)	15					



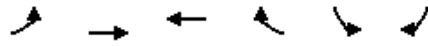
HCM 6th TWSC  
1: SE 362nd Drive & Dubarko Road

12/13/2019

Intersection						
Int Delay, s/veh	3.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		Y		Y	Y
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
Fr't			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	
<b>Intersection Summary</b>						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	36.1%			ICU Level of Service A		
Analysis Period (min)	15					

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	135
Stage 1	-	-	-	-	135	-
Stage 2	-	-	-	-	241	-
Critical Hdwy	4.11	-	-	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	2.209	-	-	-	3.509	3.309
Pot Cap-1 Maneuver	1412	-	-	-	627	917
Stage 1	-	-	-	-	894	-
Stage 2	-	-	-	-	801	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	1412	-	-	-	618	917
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		9	
Sign Control	Free		Free		Stop	
<b>Intersection Summary</b>						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	27.3%			ICU Level of Service A		
Analysis Period (min)	15					

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	149
Stage 1	-	-	-	-	149	-
Stage 2	-	-	-	-	139	-
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	-	-	1395	-	707	903
Stage 1	-	-	-	-	884	-
Stage 2	-	-	-	-	893	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1395	-	689	903
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	
Sign Control	Stop		Stop		Stop	
<b>Intersection Summary</b>						
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%
Analysis Period (min)	15
	ICU Level of Service A

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	Y		Y	↑	↑	Y
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	-	-	



# Exhibit EEEE

## City of Sandy Urban Growth Boundary Amendment

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**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



**AKS**  
ENGINEERING & FORESTRY  
12965 SW Herman Road, Suite 100  
Tualatin, OR 97062  
(503) 563-6151

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## Table of Contents

<b>I. Executive Summary.....</b>	<b>3</b>
<b>II. Site Description/Setting .....</b>	<b>3</b>
<b>III. Applicable Review Criteria .....</b>	<b>3</b>
OREGON STATEWIDE PLANNING GOALS AND GUIDELINES (The Goals) .....	4
Goal 1 (Citizen Involvement) .....	4
Goal 2 (Land Use Planning) .....	5
Goal 6 (Air, Water and Land Resources Quality).....	5
Goal 8 (Recreational Needs).....	5
Goal 11 (Public Facilities and Services) .....	6
Goal 12 (Transportation).....	6
Goal 14 (Urbanization) .....	6
FINDINGS FOR TRANSPORTATION PLANNING RULE COMPLIANCE .....	7
OREGON ADMINISTRATIVE RULES .....	7
Chapter 660 Division 12 TRANSPORTATION PLANNING .....	7
Chapter 660 Division 14 APPLICATION OF THE STATEWIDE PLANNING GOALS TO NEWLY INCORPORATED CITIES, ANNEXATION, AND URBAN DEVELOPMENT ON RURAL LANDS.....	12
Chapter 660 Division 24 URBAN GROWTH BOUNDARIES.....	12
SANDY COMPREHENSIVE PLAN GOALS AND POLICIES.....	18
Goal 1 – Citizen Involvement .....	18
Goal 2 – Land Use Planning.....	18
Goal 8 – Recreational Needs .....	20
Goal 11 – Public Facilities and Services.....	21
Goal 12 – Transportation .....	21
Goal 14 – Urbanization.....	22
CLACKAMAS COUNTY COMPREHENSIVE PLAN GOALS AND POLICIES.....	25
GOALS.....	25
Chapter 4: LAND USE.....	25
URBAN GROWTH MANAGEMENT AGREEMENT BETWEEN CITY OF SANDY AND CLACKAMAS COUNTY.....	27
IV. Boundaries .....	27
V. Coordination and Planning.....	28
VI. Zoning and Development Proposals in Unincorporated UGA and URA .....	28
<b>IV. Conclusion .....</b>	<b>29</b>

## 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
-

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# 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<sup>AP</sup>  
Email: chrisg@aks-eng.com  
Phone: (503) 563-6151

**Applicant's Legal Counsel:** Schwabe, Williamson & Wyatt  
Pacwest Center 1211 SW 5<sup>th</sup> 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





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**Clackamas County  
Assessor's Map:**

2 4E 23, Tax Lot 701

**Site Size:**

±14.24 acres

**Land Use District:**

Exclusive Farm Use (EFU)



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## **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.



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## 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





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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



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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.



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## 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





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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



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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.

- (c) 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





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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



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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.

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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;



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(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.

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(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





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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



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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:



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- (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.



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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.



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**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



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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 functionable 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.



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**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



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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





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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.



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**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.,



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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





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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.



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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**

...





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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 A: City of Sandy Land Use Application Form**



## 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) <b>Allied Homes &amp; Development</b>	Owner <b>Richard L Pullen, Lawrence Pullen, Sherrene Teneyck</b>
Address <b>12404 SE Sunnyside Road, Suite 706</b>	Address <b>37020 SE Deming Road</b>
City/State/Zip <b>Clackamas, OR 97015</b>	City/State/Zip <b>Sandy, OR 97055</b>
Phone <b>Please contact Applicant's consultant</b>	Phone <b>Please contact Applicant's consultant</b>
Email <b>Please contact Applicant's consultant</b>	Email <b>Please contact Applicant's consultant</b>
Signature <small>DocuSigned by:</small> <i>Cody Bugan</i>	Signature <small>DocuSigned by:</small> <i>Richard L Pullen</i> <small>DocuSigned by:</small> <i>Lawrence Pullen</i> <small>DocuSigned by:</small> <i>Sherrene Teneyck</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			

W:\City Hall\Planning\Planning Forms\Forms Updated 2018\General Land Use Application - updated 2019.doc

**Fees Included: \$3,184 UGB Expansion Request**  
**\$1,500 Traffic Review Fee**





**Exhibit B:**  
**Clackamas County Land Use Application Form**



**CLACKAMAS COUNTY PLANNING AND ZONING DIVISION**  
**DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT**  
**DEVELOPMENT SERVICES BUILDING**  
**150 BEAVERCREEK ROAD | OREGON CITY, OR 97045**  
**503-742-4500 | [ZONINGINFO@CLACKAMAS.US](mailto:ZONINGINFO@CLACKAMAS.US)**

**Land Use Application**

For Staff Use Only	
Date received:	Staff initials:
Application type:	File number:
Zone:	Fee:
Violation #:	CPO/Hamlet:
Applicant Information:	

What is proposed? This application involves the expansion of the City of Sandy Urban Growth Boundary to accommodate a public transportation facility (e.g. Gunderson Road).

Name of applicant: Allied Homes & Development  
 Mailing address: 12404 SE Sunnyside Road, Suite 706  
 City Clackamas State OR Zip 97015  
 Applicant is (select one):  Property owner  Contract purchaser  Agent of the property owner or contract purchaser  
 Name of contact person (if other than applicant): Chris Goodell; AKS Engineering & Forestry, LLC  
 Mailing address of contact person: 12965 SW Herman Road, Suite 100  
Tualatin, OR 97062

Applicant #'s: Wk: \_\_\_\_\_ Contact Applicant's Consultant Cell: \_\_\_\_\_ Contact Applicant's Consultant Email: \_\_\_\_\_ Contact Applicant's Consultant  
 Contact person #'s: Wk: (503) 563-6151 Cell: N/A Email: chrisg@aks-eng.com

Other persons (if any) to be mailed notices regarding this application:  
 Richard L Pullen, Lawrence Pullen, Sherrene Teneyck 37020 SE Deming Road, Sandy OR 97055 Property Owner  
 Name Address Zip Relationship  
Michael Robinson Pacwest Center 1211 SW 5th Avenue, Suite 190 Portland, OR 97024 Legal Counsel  
 Name Address Zip Relationship

SITE ADDRESS: No situs, Tax Lot 701  
 TAX LOT #: T 25 R 4E Section 23 Tax Lot(s) 701  
 Adjacent properties under same ownership: Total land area: ±14.30 acres  
 T N/A R N/A Section N/A Tax lot(s) \_\_\_\_\_  
 T \_\_\_\_\_ R \_\_\_\_\_ Section \_\_\_\_\_ Tax lot(s) \_\_\_\_\_  
 T \_\_\_\_\_ R \_\_\_\_\_ Section \_\_\_\_\_ Tax lot(s) \_\_\_\_\_

*I hereby certify that the statements contained herein, along with the evidence submitted, are in all respects true and correct to the best of my knowledge.* 12/20/2019

Richard L Pullen, Lawrence Pullen, Sherrene Lanette TenEyck 12/27/2019 12/21/2019  
 Property owner or contract purchaser's name Date  
 (print) Owner or contract purchaser's signature  
 DocuSigned by: DocuSigned by: DocuSigned by:  
 Cody Ejugan 12/30/2019  
 Applicant's name Date Applicant's signature

**Fee Included: \$4,000 UGB Expansion Request (Comprehensive Plan Amendment)**

## Exhibit C: Property Ownership Information

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JB

WARRANTY DEED - STATUTORY FORM  
(Individual or Corporation)

JOE B. PHILLIPS

Grantor, conveys and warrants to:

LAWRENCE L. PULLEN and RICHARD L. PULLEN and MARK D. TEN EYCK

Grantee, the following described real property free of encumbrances except as specifically set forth herein:

PLEASE SEE ATTACHED DESCRIPTION SHEET

This instrument will not allow use of the property described in this instrument in violation of applicable land use laws and regulations. Before signing or accepting this instrument, the person acquiring fee title to the property should check with the appropriate city or county planning department to verify approved uses.

ENCUMBRANCES:  
NONE

The true consideration for this conveyance is \$40,000.00.

Dated this 21st day of April, 1993; if a corporate grantor, it has caused its name to be signed by order of its board of directors.

CHICAGO TITLE INSURANCE COMPANY  
C-108/08

Joe B. Phillips  
JOE B. PHILLIPS

STATE OF OREGON, )  
County of Clackamas )ss.  
April 21, 1993. )

Personally appeared the above named JOE B. PHILLIPS and acknowledged the foregoing instrument to be his/her/their voluntary act and deed.

Before me:

Luella J. Taylor  
Notary Public for Oregon  
My commission expires: 3-2-94



After recording return and send tax statements to:  
LAWRENCE L. PULLEN  
36940 SE Deming  
Sandy, OR 97055

Escrow No. 2300-00570-LF - Order No. 108108

93 28438

A portion of the Southwest one-quarter of the Northeast one-quarter of Section 23, Township 2 South, Range 4 East of the Willamette Meridian, in the County of Clackamas and State of Oregon, being more particularly described as follows:

Beginning at a stone marking the Northwest corner of said legal subdivision; thence N.88°26'40"E., along the North line thereof, a distance of 1321.91 feet to the Northeast corner of said legal subdivision; thence S.0°18'10"E., along the East line thereof, a distance of 388.20 feet to a point in the Northwesterly right-of-way line of Oregon State Highway No. 211; thence S.33°18'01"W., along said right-of-way line, a distance of 558.61 feet to an iron rod; thence N.51°08'54"W., leaving said right-of-way line, a distance of 1305.73 feet to the point of beginning.

2

STATE OF OREGON }  
County of Clackamas } ss.  
I, John Kaufman, County Clerk, for the County of Clackamas, do hereby certify that the instrument of writing was received for recording in the records of said county at

93 APR 29 PM 2:00



Witness my hand and seal this 29th day of April 1993  
*John Kaufman*  
JOHN KAUFMAN  
County Clerk  
Recording Certificate  
CCP-81 (Rev. 8/91)

93 28438



**Exhibit D: Clackamas County Assessor's Map**

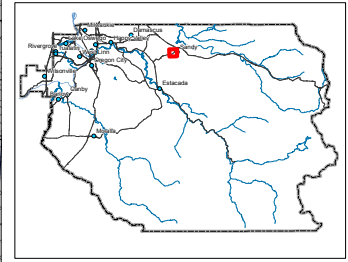


SECTION 23 T.2S. R.4E. W.M.  
CLACKAMUS COUNTY  
1" = 400'

Cancelled Taxlots

- 2801
- 1000
- 2319
- 2300A1
- 1301
- 2701
- 503E1
- 503
- 1902
- 1802
- 517

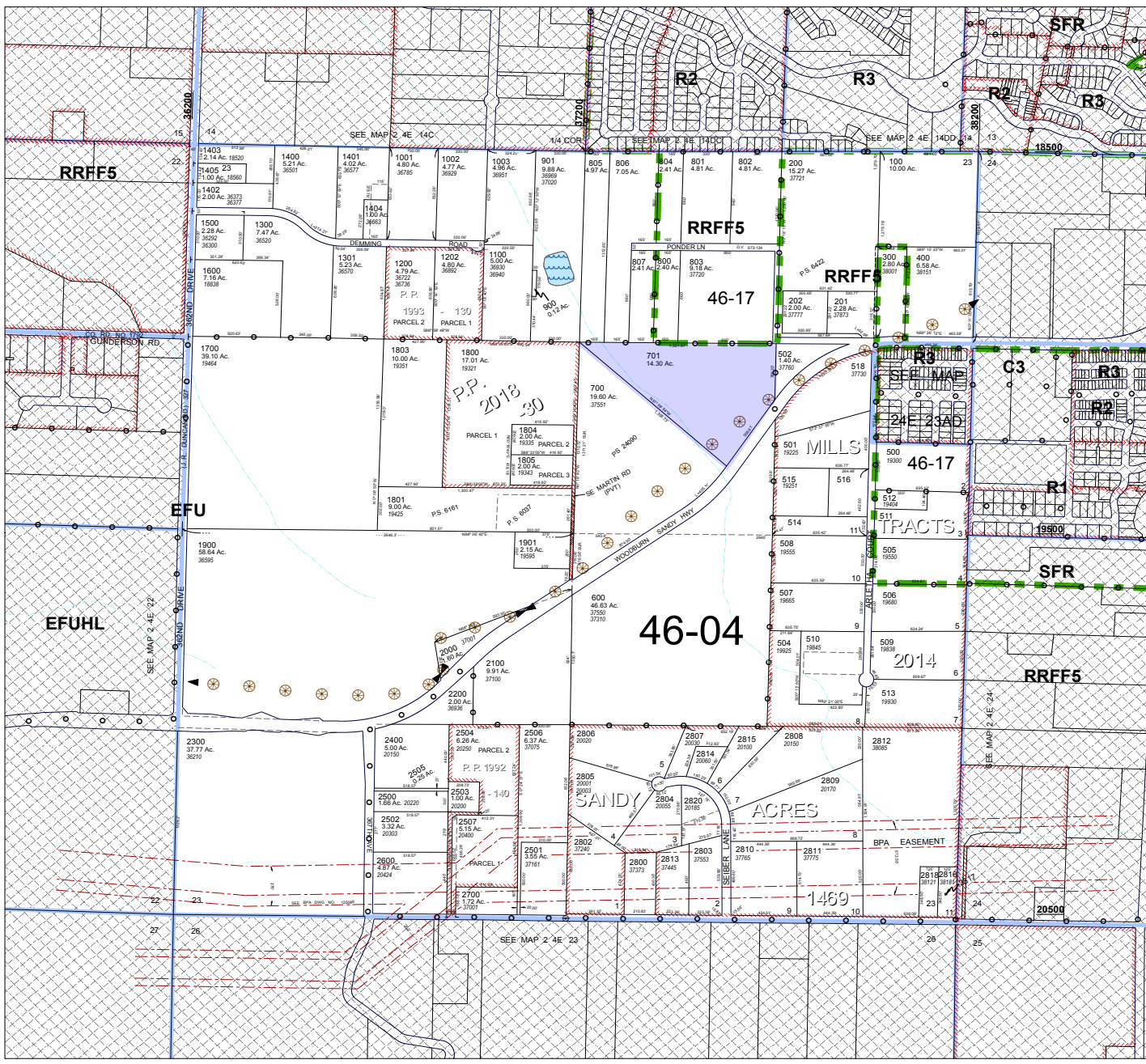
- Parcel Boundary
- - - Private Road ROW
- - - Historical Boundary
- Railroad Centerline
- TaxCodeLines
- Map Index
- WaterLines
- Land Use Zoning
- Plats
- Water
- Corner
- Section Corner
- 1/16th Line
- Govt Lot Line
- - - DLC Line
- Meander Line
- PLS Section Line
- Historic Corridor 40'
- Historic Corridor 20'



THIS MAP IS FOR ASSESSMENT  
PURPOSES ONLY



517/2018



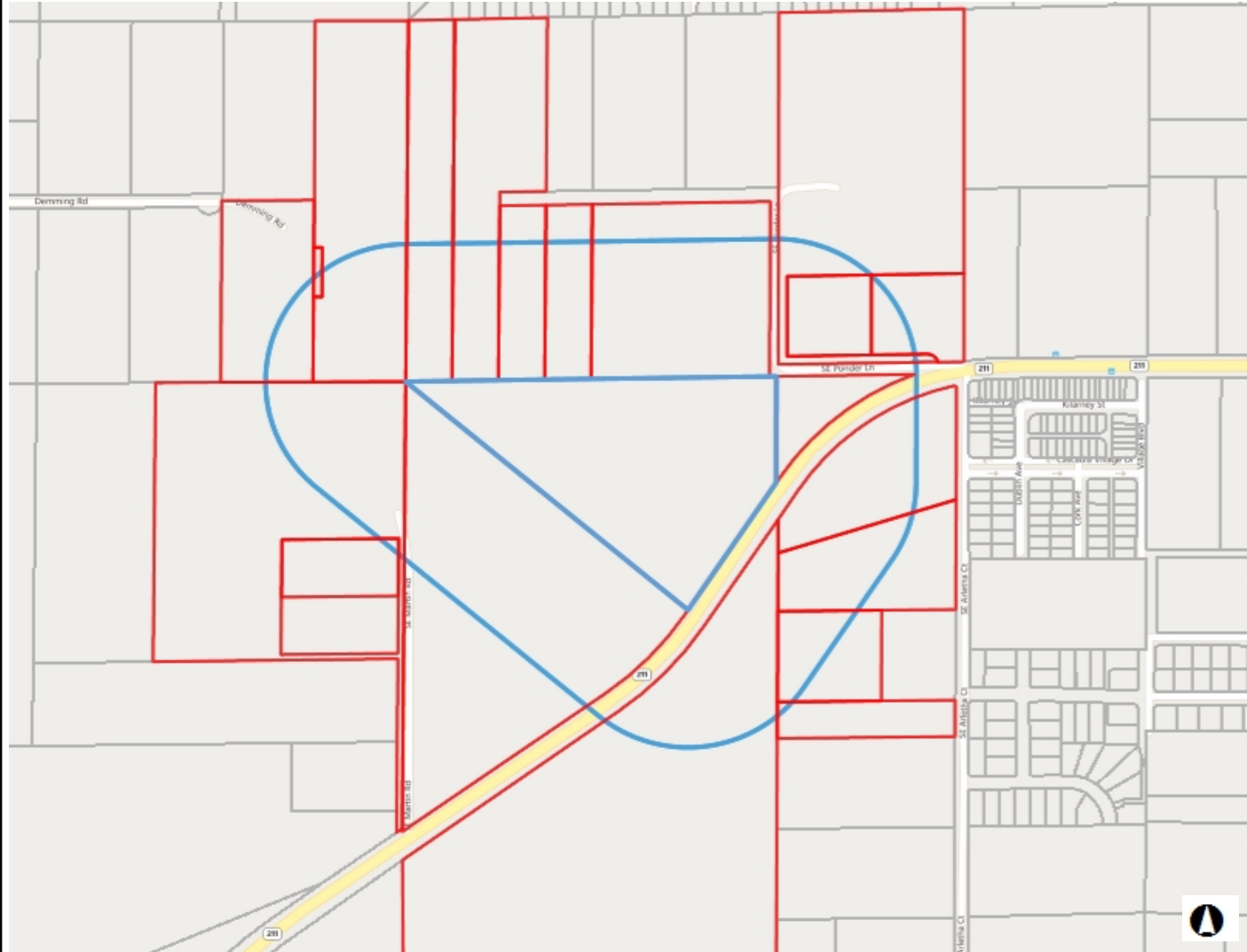


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## **Exhibit E: City of Sandy Noticing Materials**

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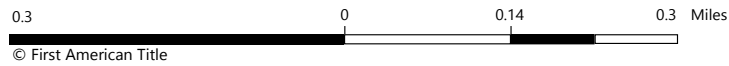
# 24E23 00701 - 500' Radius



- Subject
- Radius
- Radius Properties

1/2/2020

Notes



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24E23 00200  
Leslie Geren  
37721 SE Ponder Ln  
Sandy, OR 97055

24E23 00201  
Paul Klahn  
Po Box 671  
Sandy, OR 97055

24E23 00202  
Lucille Tiscus  
37777 SE Ponder Ln  
Sandy, OR 97055

24E23 00501  
Nancy Bennett  
19225 SE Arletha Ct  
Sandy, OR 97055

24E23 00502  
Broek Boaz & Brian Galovin  
244 Plant Ln SE  
Salem, OR 97317

24E23 00514  
Robert & Barbara Johnson  
19555 SE Arletha Ct  
Sandy, OR 97055

24E23 00515  
William Fisher  
19251 SE Arletha Ct  
Sandy, OR 97055

24E23 00518  
Garrett & Meri Lang  
37730 SE Highway 211  
Sandy, OR 97055

24E23 00600  
Robert & Shana Foster  
21442 S Parkview Ln  
Estacada, OR 97023

24E23 00700  
Calvin & Teresa Mckinnis  
37551 SE Highway 211  
Sandy, OR 97055

24E23 00701  
Lawrence Pullen  
36940 Deming Rd  
Sandy, OR 97055

24E23 00800  
Grant Sturm  
647 E Historic Columbia River Hwy  
Troutdale, OR 97060

24E23 00803  
Grant Sturm  
647 E Historic Columbia River Hwy  
Troutdale, OR 97060

24E23 00805  
Sherrene Teneyck  
37020 Deming Rd  
Sandy, OR 97055

24E23 00806  
Sherrene Teneyck  
37020 Deming Rd  
Sandy, OR 97055

24E23 00807  
Sherrene Teneyck  
37020 Deming Rd  
Sandy, OR 97055

24E23 00900  
Eyck Ten & Richard Pullen  
37020 Deming Rd  
Sandy, OR 97055

24E23 00901  
Sherrene Teneyck  
37020 Deming Rd  
Sandy, OR 97055

24E23 01100  
Richard Pullen  
36940 Deming Rd  
Sandy, OR 97055

24E23 01800  
University Developments Llc  
17150 University Ave STE 200  
Sandy, OR 97055

24E23 01804  
Sixth Generation Properties Llc  
Po Box 1750  
Oregon City, OR 97045



**Exhibit F: Lancaster Mobley Engineering  
Traffic Documentation**

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## 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



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.

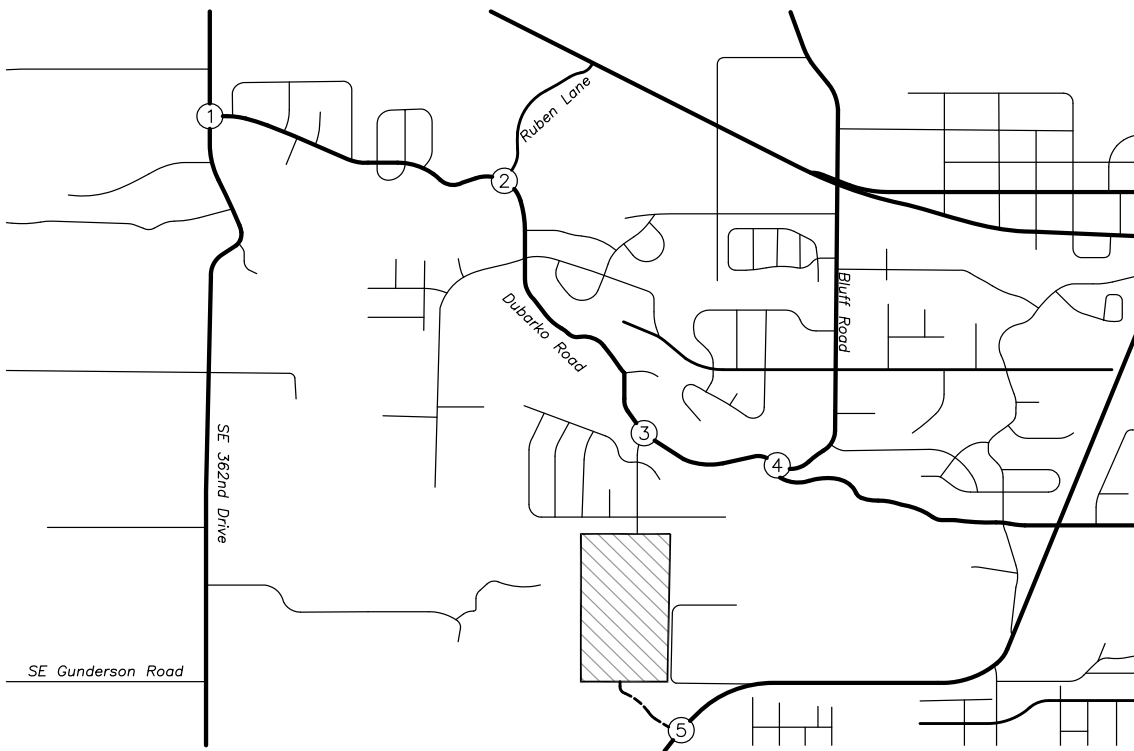
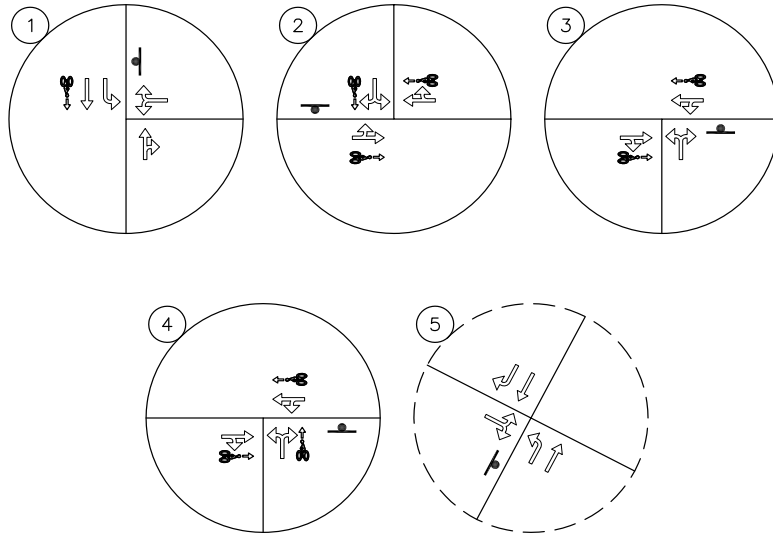
**Table 1: Vicinity Roadway Characteristics**

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 362<sup>nd</sup> 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 362<sup>nd</sup> Avenue is identical in time to the route using Highway 211 to 362<sup>nd</sup> 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.

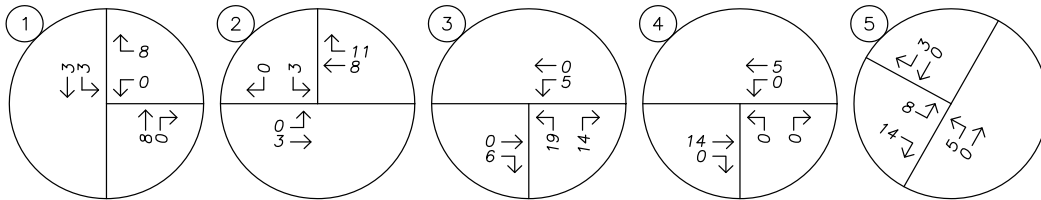


LEGEND

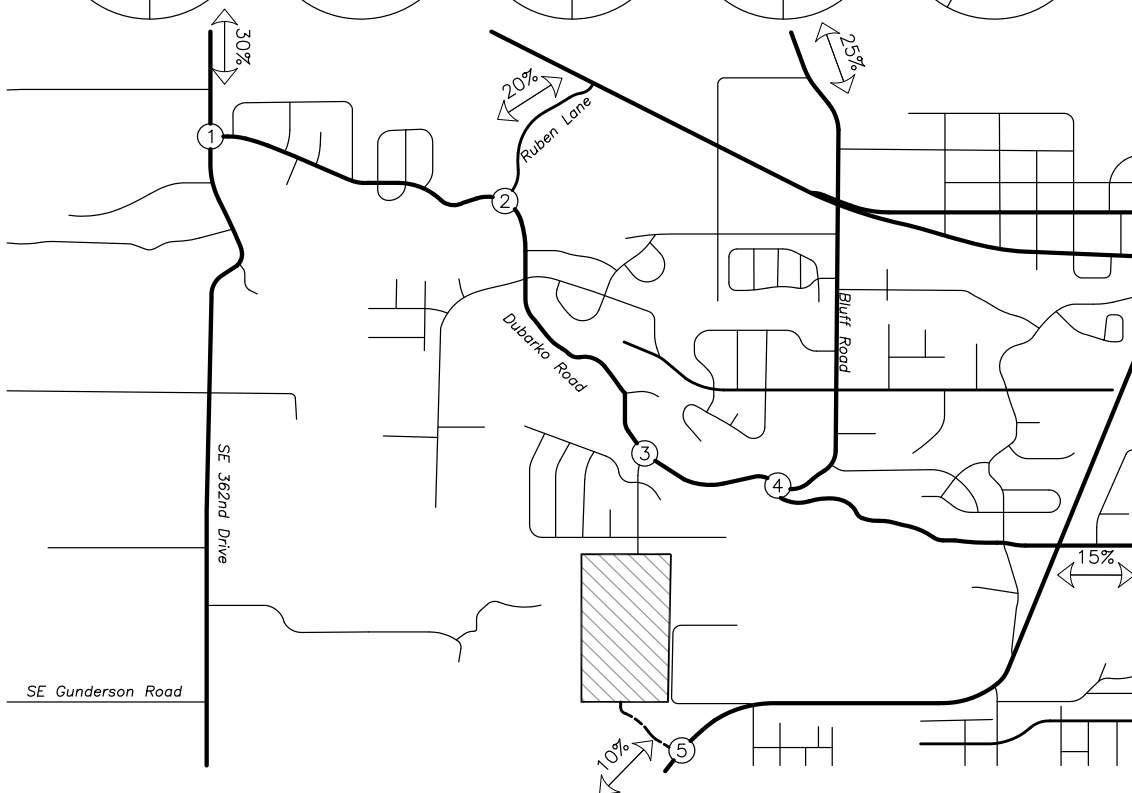
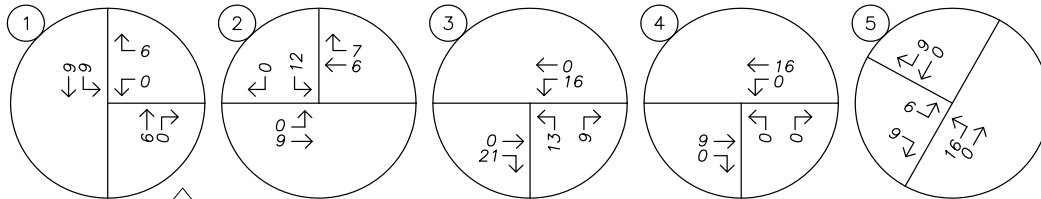
XX% PERCENT OF PROJECT TRIPS

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



**FIGURE**  
 2  
**PAGE**  
 5



## ***Traffic Volumes***

### ***Existing Conditions***

Twenty-four-hour speed data was collected on Highway 211 near the intersection with Ponder Lane on December 4<sup>th</sup>, 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 30<sup>th</sup> 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.

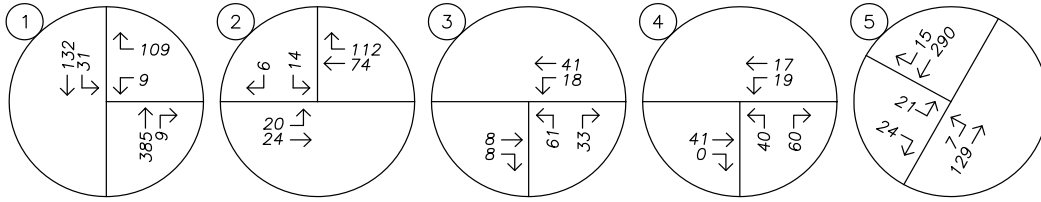
### ***Buildout Conditions***

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).

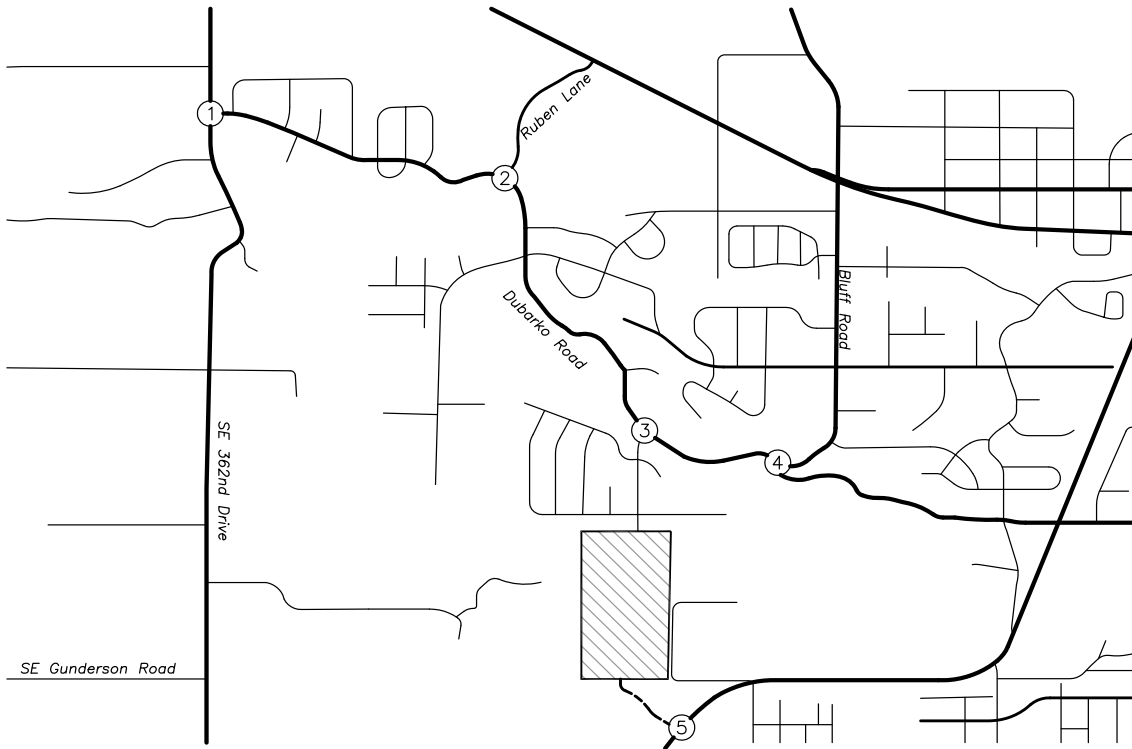
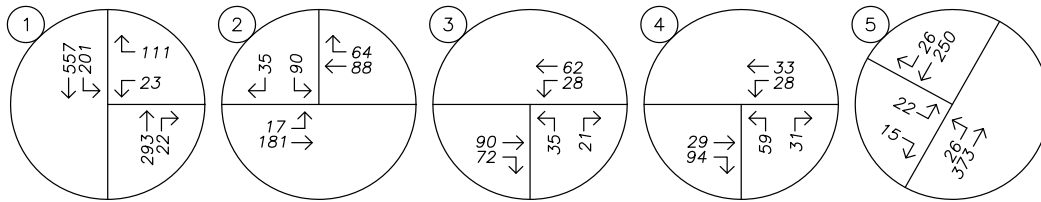
The year 2022 buildout scenario was updated to include a redistribution of existing trips that are likely to use the new Highway 211 roadway connection. Finally, site trips generated by the Bailey Meadows subdivision, discussed previously within the Trip Distribution section, were added to the projected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





January 6, 2020  
Page 8 of 14

### ***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*<sup>1</sup> (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.

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<sup>1</sup> 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*<sup>2</sup> (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
<b>SE 362<sup>nd</sup> Drive at Dubarko Road</b>						
Year 2022 Buildout Conditions	13	B	0.24	19	C	0.36
<b>Ruben Lane at Dubarko Road</b>						
Year 2022 Buildout Conditions	10	A	0.03	12	B	0.21
<b>Dubarko Road at Melissa Avenue</b>						
Year 2022 Buildout Conditions	9	A	0.13	10	B	0.09
<b>Dubarko Road at Bluff Road</b>						
Year 2022 Buildout Conditions	8	A	0.16	8	A	0.15
<b>Highway 211 at SE Gunderson Road</b>						
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.

<sup>2</sup> Transportation Research Board, *Highway Capacity Manual, 6<sup>th</sup> 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

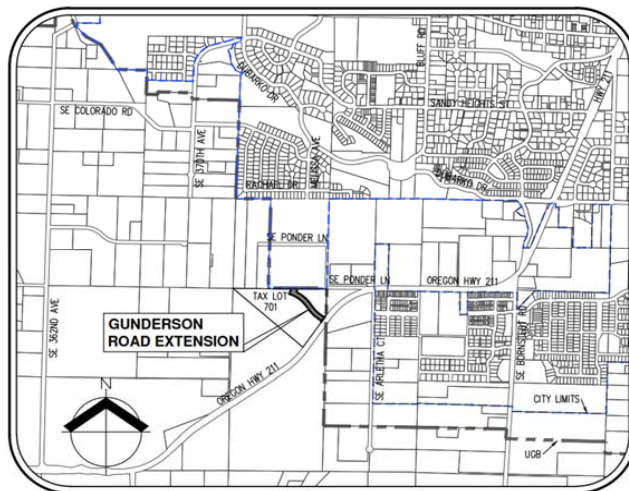


Figure 5: Planned Alignment





January 6, 2020  
Page 11 of 14

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.*



January 6, 2020  
Page 13 of 14

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  
Page 14 of 14

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

\* 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**

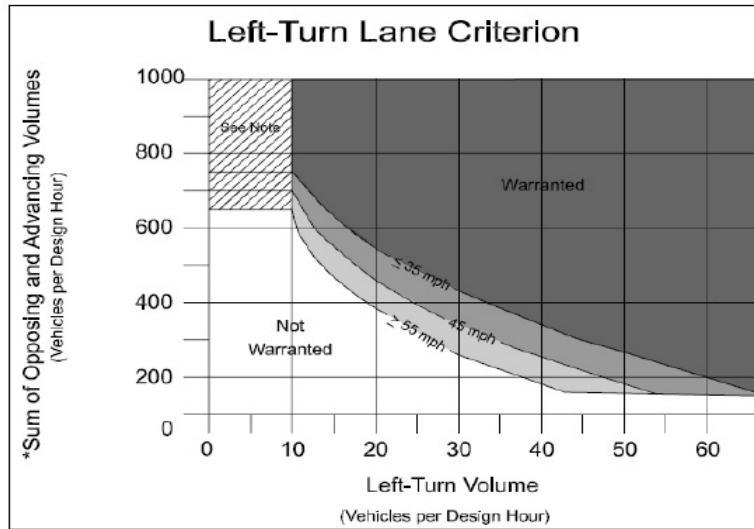
Left-Turn Volume 26

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

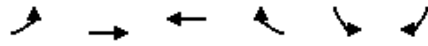
HCM 6th TWSC  
1: SE 362nd Drive & Dubarko Road

12/13/2019

Intersection						
Int Delay, s/veh	2.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		Y		Y	Y
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 (vphp)	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		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	
<b>Intersection Summary</b>						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	27.4%			ICU Level of Service A		
Analysis Period (min)	15					



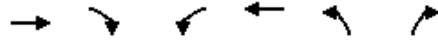
HCM 6th TWSC  
2: Dubarko Road & Ruben Lane

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
Fr't	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	
Sign Control	Free		Free		Stop	
<b>Intersection Summary</b>						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	21.9%			ICU Level of Service A		
Analysis Period (min)	15					

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	Minor2	Minor3
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	
Flt Protected				0.974	0.980	
Satd. Flow (prot)	1696	0	0	1698	1645	0
Flt 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	
<b>Intersection Summary</b>						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	21.2%			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	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%
Analysis Period (min)	15
	ICU Level of Service A



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 (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	0.888		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
<b>Intersection Summary</b>						
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

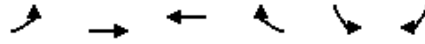
12/13/2019

Intersection						
Int Delay, s/veh	3.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		Y		Y	Y
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	0
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
Fr't			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	
<b>Intersection Summary</b>						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	36.1%			ICU Level of Service A		
Analysis Period (min)	15					

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	135
Stage 1	-	-	-	-	135	-
Stage 2	-	-	-	-	241	-
Critical Hdwy	4.11	-	-	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	2.209	-	-	-	3.509	3.309
Pot Cap-1 Maneuver	1412	-	-	-	627	917
Stage 1	-	-	-	-	894	-
Stage 2	-	-	-	-	801	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	1412	-	-	-	618	917
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	
Sign Control	Free		Free		Stop	
<b>Intersection Summary</b>						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	27.3%			ICU Level of Service A		
Analysis Period (min)	15					



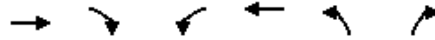
HCM 6th TWSC  
3: Melissa Avenue & Dubarko Road

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	149
Stage 1	-	-	-	-	149	-
Stage 2	-	-	-	-	139	-
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	-	-	1395	-	707	903
Stage 1	-	-	-	-	884	-
Stage 2	-	-	-	-	893	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1395	-	689	903
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
Fr't	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	
Sign Control	Stop		Stop		Stop	
<b>Intersection Summary</b>						
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	Y		Y	↑	↑	Y
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



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## Table of Contents

Executive Summary .....	1
Project Description.....	2
Introduction .....	2
Location Description.....	2
Site Trips .....	5
Trip Generation.....	5
Trip Distribution.....	6
Traffic Volumes .....	8
Existing Conditions .....	8
Background Conditions .....	8
Buildout Conditions.....	8
Safety Analysis .....	11
Crash History Review.....	11
Warrant Analysis .....	11
Operational Analysis.....	13
Delay & Capacity Analysis.....	13
Conclusions.....	14
Appendix .....	15



**Table of Figures**

Figure 1: Study Intersection Configurations..... 4  
Figure 2: Site Trip Distribution & Assignment..... 7  
Figure 3: Morning Peak Hour Traffic Volumes – All Analysis Scenarios ..... 9  
Figure 4: Evening Peak Hour Traffic Volumes - All Analysis Scenarios..... 10

**Table of Tables**

Table 1: Vicinity Roadway Descriptions ..... 3  
Table 2: Vicinity Intersection Descriptions ..... 3  
Table 3: Trip Generation Summary ..... 5  
Table 4: Trip Rate Comparison ..... 5  
Table 5: Crash Analysis Summary ..... 11  
Table 6: Intersection Capacity Analysis Summary..... 13



### ***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 362<sup>nd</sup> 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 <sup>nd</sup> 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.

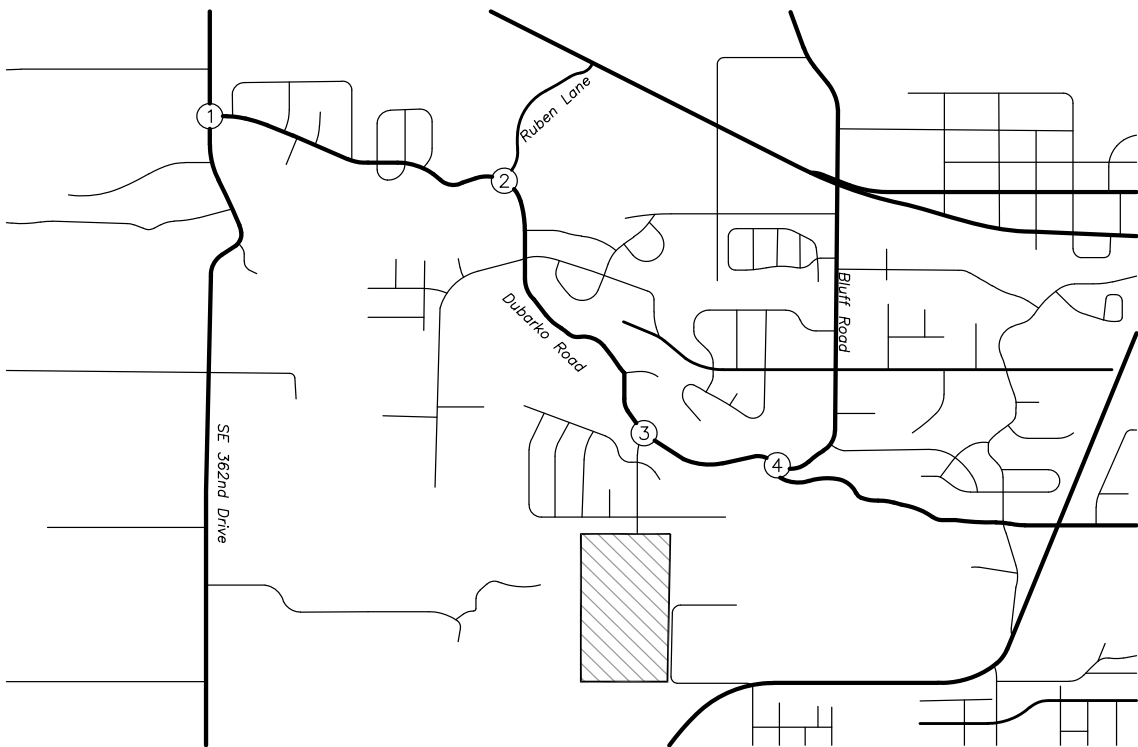
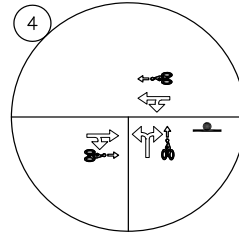
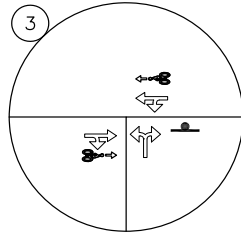
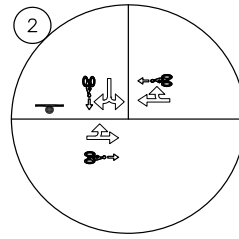
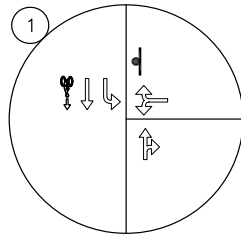
**Table 2: Vicinity Intersection Descriptions**

Number	Intersection	Geometry	Traffic Control	Stopped Approaches
1	SE 362 <sup>nd</sup> 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	Dubakro 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*<sup>1</sup> 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.

<sup>1</sup> Institute of Transportation Engineers (ITE), *Trip Generation Manual*, 10<sup>th</sup> 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:

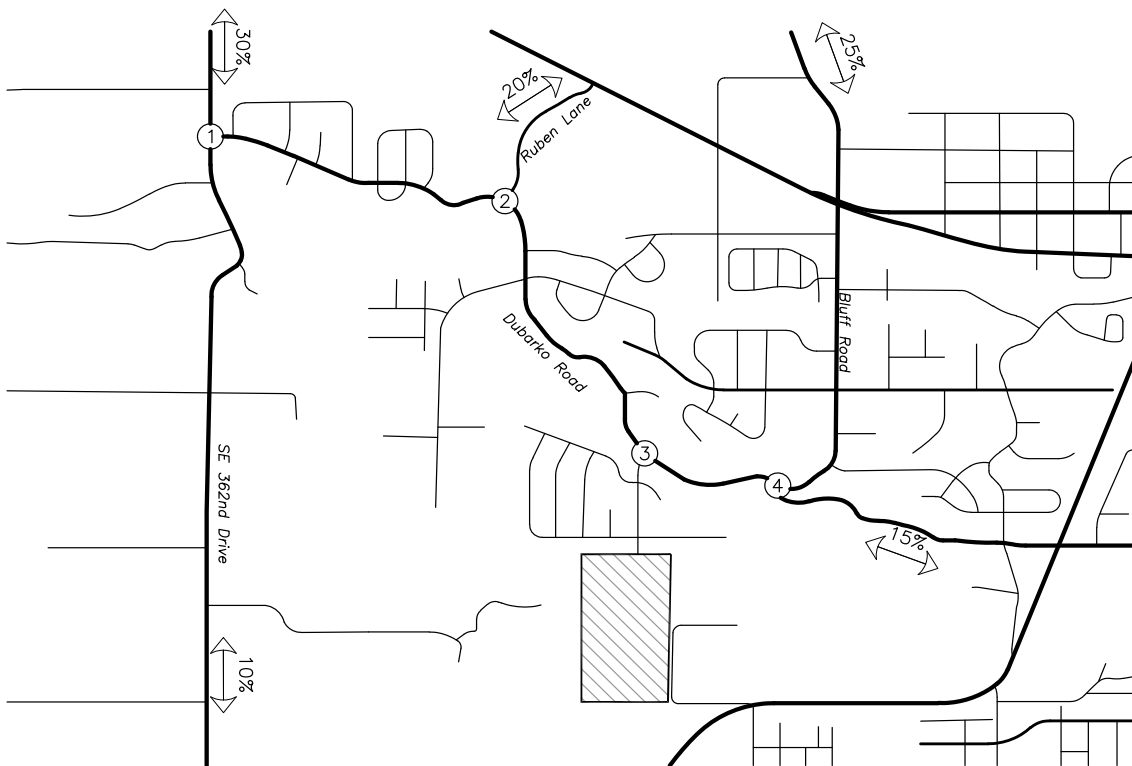
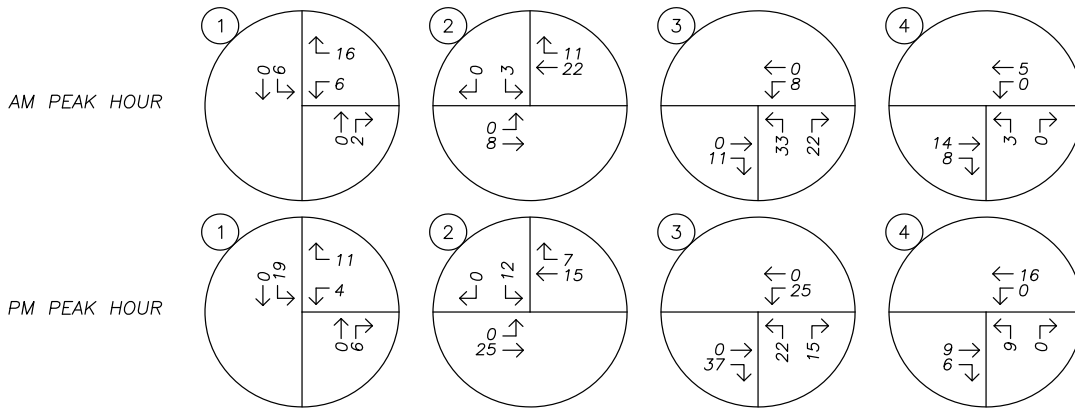
- Approximately 30 percent of site trips will travel to/from the north along SE 362<sup>nd</sup> Drive;
- Approximately 25 percent of site trips will travel to/from the north along Bluff Road;
- Approximately 20 percent of site trips will travel to/from the north on Ruben Lane;
- Approximately 15 percent 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 362<sup>nd</sup> 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 25<sup>th</sup>, 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 22<sup>nd</sup>, 2019 from 4:00 PM to 6:00 PM, and on Thursday, May 23<sup>rd</sup>, 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***

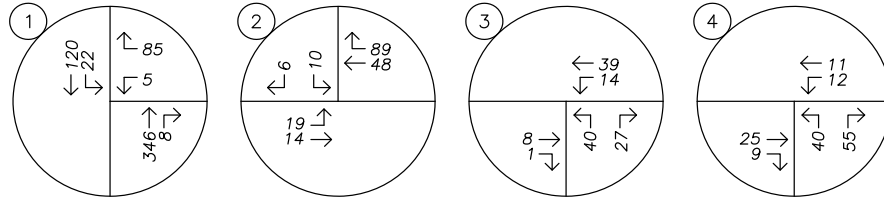
In-process trips associated with previously approved developments were added to the background volumes in order to represent future traffic volumes at the study intersections prior to the approval of the subject development. Trips associated with the approved 138-unit Sandy Heights Apartments were added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

### ***Buildout Conditions***

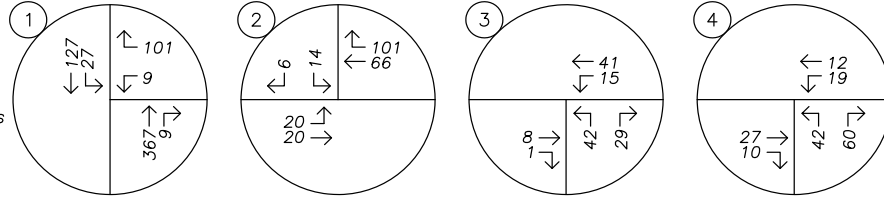
Trips to be generated by the proposed development, as described earlier within the *Site Trips* section, were added to the projected year 2022 background traffic volumes to obtain the expected year 2022 buildout volumes.

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.

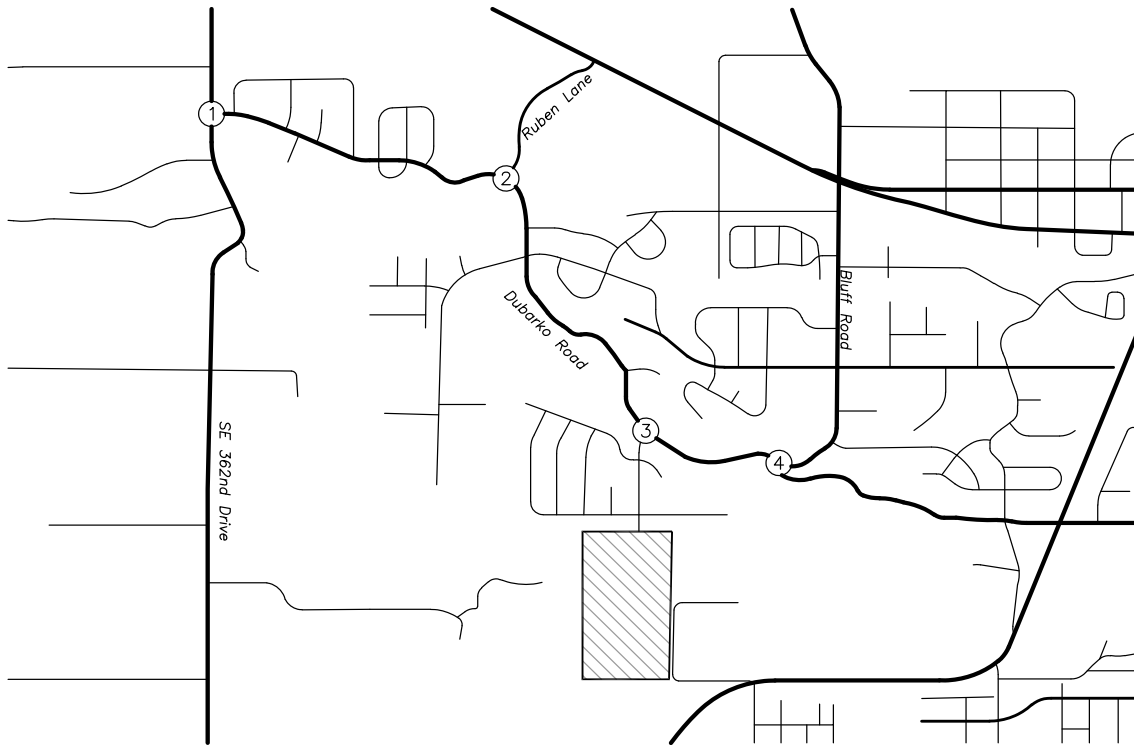
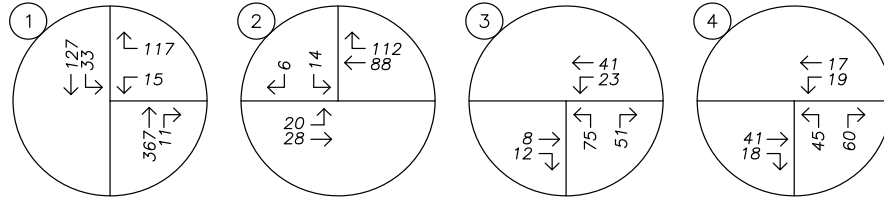
Year 2019  
Existing Conditions



Year 2022  
Background Conditions



Year 2022  
Buildout Conditions



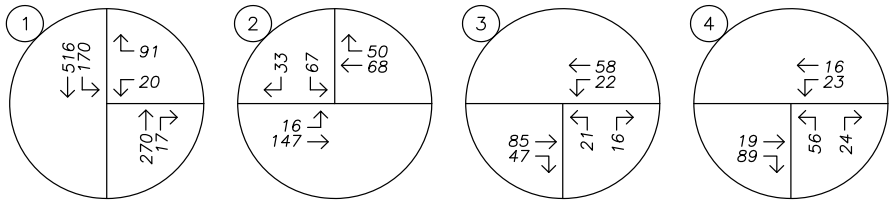
**TRAFFIC VOLUMES**  
All Analysis Scenarios  
AM Peak Hour



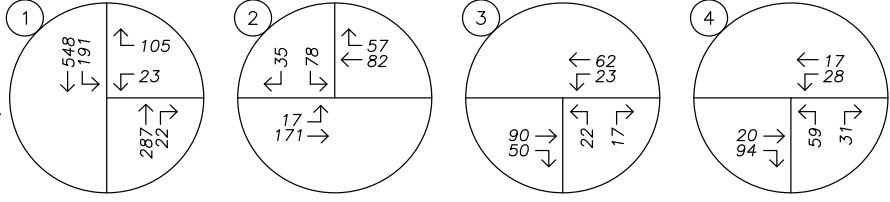
**FIGURE**  
**3**

**PAGE**  
**9**

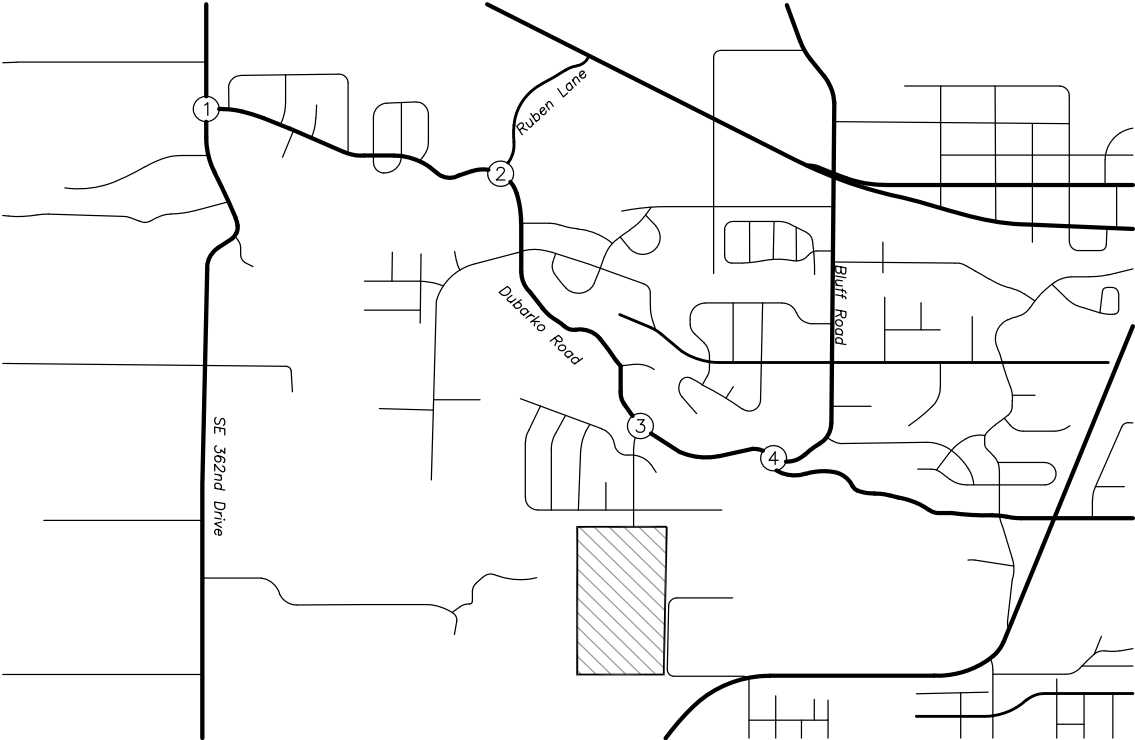
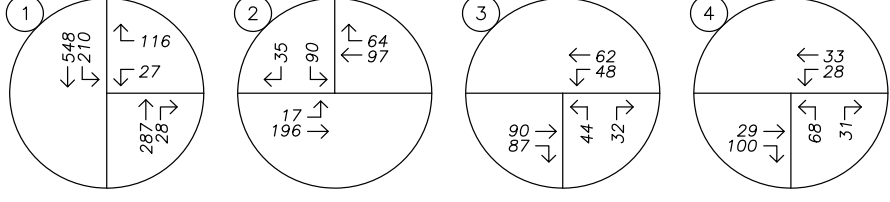
Year 2019  
Existing Conditions



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 <sup>nd</sup> 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 362<sup>nd</sup> 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*<sup>2</sup> (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

---

<sup>2</sup> 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 457<sup>3</sup>. 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.

---

<sup>3</sup> 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*<sup>4</sup> (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
<b>SE 362<sup>nd</sup> Drive at Dubarko Road</b>						
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
<b>Ruben Lane at Dubarko Road</b>						
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
<b>Dubarko Road at Melissa Avenue</b>						
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
<b>Dubarko Road at Bluff Road</b>						
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

<sup>4</sup> Transportation Research Board, *Highway Capacity Manual, 6<sup>th</sup> 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.



1e

*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	<b>19</b>	<b>55</b>	<b>74</b>

### PM PEAK HOUR

*Trip Rate:* 0.99

	Enter	Exit	Total
Directional Distribution	63%	37%	
Trip Ends	<b>62</b>	<b>37</b>	<b>99</b>

### WEEKDAY

*Trip Rate:* 9.44

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	<b>472</b>	<b>472</b>	<b>944</b>

### SATURDAY

*Trip Rate:* 9.54

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	<b>477</b>	<b>477</b>	<b>954</b>

Source: Trip Generation Manual, Tenth Edition

**All Traffic Data Services, Inc.**  
**alltrafficdata.net**

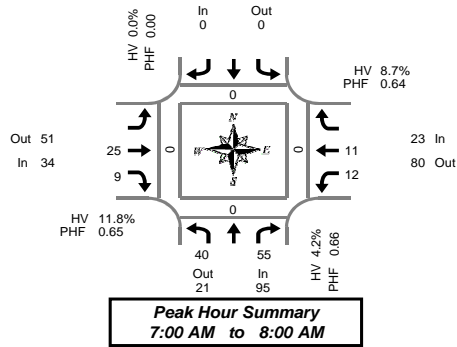
Melissa Ave S-O Dubarko Rd

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		<b>67</b>	15	<b>82</b>					
08:00		37	17	54					
09:00		30	17	47					
10:00		25	18	43					
11:00		23	<b>22</b>	45					
12:00 PM		35	25	60					
01:00		16	24	40					
02:00		29	46	75					
03:00		35	58	93					
04:00		<b>44</b>	64	<b>108</b>					
05:00		30	54	84					
06:00		32	<b>74</b>	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	11	0	0	0	0
7:05 AM	1	8	0			0	2	0	0	1	0	0	12	0	0	0	0
7:10 AM	3	7	0			0	5	1	0	2	1	0	19	0	0	0	0
7:15 AM	8	6	0			0	4	0	0	0	1	0	19	0	0	0	0
7:20 AM	2	7	0			0	0	0	0	1	1	0	11	0	0	0	0
7:25 AM	6	7	0			0	3	2	0	4	2	0	24	0	0	0	0
7:30 AM	3	2	0			0	6	1	0	1	0	0	13	0	0	0	0
7:35 AM	1	3	0			0	1	0	0	1	1	0	7	0	0	0	0
7:40 AM	3	1	0			0	1	1	0	1	1	0	8	0	0	0	0
7:45 AM	1	2	0			0	0	2	0	1	0	0	6	0	0	0	0
7:50 AM	5	6	0			0	1	0	0	0	3	0	15	0	0	0	0
7:55 AM	4	2	0			0	0	1	0	0	0	0	7	0	0	0	0
8:00 AM	2	1	0			0	1	2	0	2	0	0	8	0	0	0	0
8:05 AM	2	1	0			0	0	1	0	0	0	0	4	0	0	0	0
8:10 AM	1	5	0			0	2	0	0	1	2	0	11	0	0	0	0
8:15 AM	2	7	0			0	0	0	0	2	1	0	12	0	0	0	0
8:20 AM	3	2	0			0	3	0	0	1	0	0	9	0	0	0	0
8:25 AM	3	5	0			0	1	3	0	1	0	0	13	0	0	0	0
8:30 AM	0	5	0			0	0	2	0	1	0	0	8	0	0	0	0
8:35 AM	3	0	0			0	0	2	0	0	0	0	5	0	0	0	0
8:40 AM	3	2	0			0	0	2	0	0	1	0	8	0	0	0	0
8:45 AM	1	1	0			0	1	1	0	3	1	0	8	0	0	0	0
8:50 AM	0	1	0			0	0	1	0	1	0	0	3	0	0	0	0
8:55 AM	1	0	0			0	0	2	0	0	0	0	3	0	0	0	0
Total Survey	61	85	0			0	33	25	0	24	16	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	42	0	0	0	0
7:15 AM	16	20	0			0	7	2	0	5	4	0	54	0	0	0	0
7:30 AM	7	6	0			0	8	2	0	3	2	0	28	0	0	0	0
7:45 AM	10	10	0			0	1	3	0	1	3	0	28	0	0	0	0
8:00 AM	5	7	0			0	3	3	0	3	2	0	23	0	0	0	0
8:15 AM	8	14	0			0	4	3	0	4	1	0	34	0	0	0	0
8:30 AM	6	7	0			0	0	6	0	1	1	0	21	0	0	0	0
8:45 AM	2	2	0			0	1	4	0	4	1	0	14	0	0	0	0
Total Survey	61	85	0			0	33	25	0	24	16	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	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	0	0	0	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	Bikes			Total	Bikes	T	R	Total	Bikes	L	T	Total	Bikes	
Volume	40	55	95	0	NA	NA	NA	0.0%	NA	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				0.00		0.57	0.75	0.65		0.50	0.69	0.64	0.70	

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

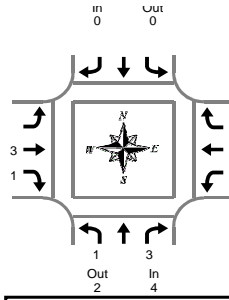
Interval Start Time	Northbound Dubarko Rd			Southbound Dubarko Rd			Eastbound Bluff Rd			Westbound Bluff Rd			Interval Total	Pedestrians Crosswalk			
	L	R	Bikes			Bikes	T	R	Bikes	L	T	Bikes		North	South	East	West
7:00 AM	40	55	0			0	25	9	0	12	11	0	152	0	0	0	0
7:15 AM	38	43	0			0	19	10	0	12	11	0	133	0	0	0	0
7:30 AM	30	37	0			0	16	11	0	11	8	0	113	0	0	0	0
7:45 AM	29	38	0			0	8	15	0	9	7	0	106	0	0	0	0
8:00 AM	21	30	0			0	8	16	0	12	5	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	0	0	1	0	1
7:05 AM	0	1	1			0	0	0	0	1	0	0	1
7:10 AM	0	0	0			0	1	0	1	0	0	0	0
7:15 AM	1	0	1			0	1	0	1	0	0	0	2
7:20 AM	0	0	0			0	0	0	0	0	0	0	0
7:25 AM	0	0	0			0	0	0	0	0	0	0	0
7:30 AM	0	0	0			0	1	0	1	0	0	0	1
7:35 AM	0	1	1			0	0	0	0	0	0	0	1
7:40 AM	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
7:50 AM	0	1	1			0	0	0	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	0	0	0	0	0	0	0
8:05 AM	0	0	0			0	0	0	0	0	0	0	0
8:10 AM	0	1	1			0	0	0	0	0	0	0	1
8:15 AM	1	0	1			0	0	0	0	0	0	0	1
8:20 AM	0	0	0			0	1	0	1	0	0	0	1
8:25 AM	0	1	1			0	0	0	0	0	0	0	1
8:30 AM	0	1	1			0	0	0	0	0	0	0	1
8:35 AM	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
8:45 AM	0	0	0			0	0	0	0	0	0	0	0
8:50 AM	0	0	0			0	0	0	0	0	0	0	0
8:55 AM	0	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 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	0	2
7:15 AM	1	0	1			0	1	0	1	0	0	0	2
7:30 AM	0	1	1			0	1	1	2	0	0	0	3
7:45 AM	0	1	1			0	0	0	0	0	0	0	1
8:00 AM	0	1	1			0	0	0	0	0	0	0	1
8:15 AM	1	1	2			0	1	0	1	0	0	0	3
8:30 AM	0	1	1			0	0	0	0	0	0	0	1
8:45 AM	0	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**

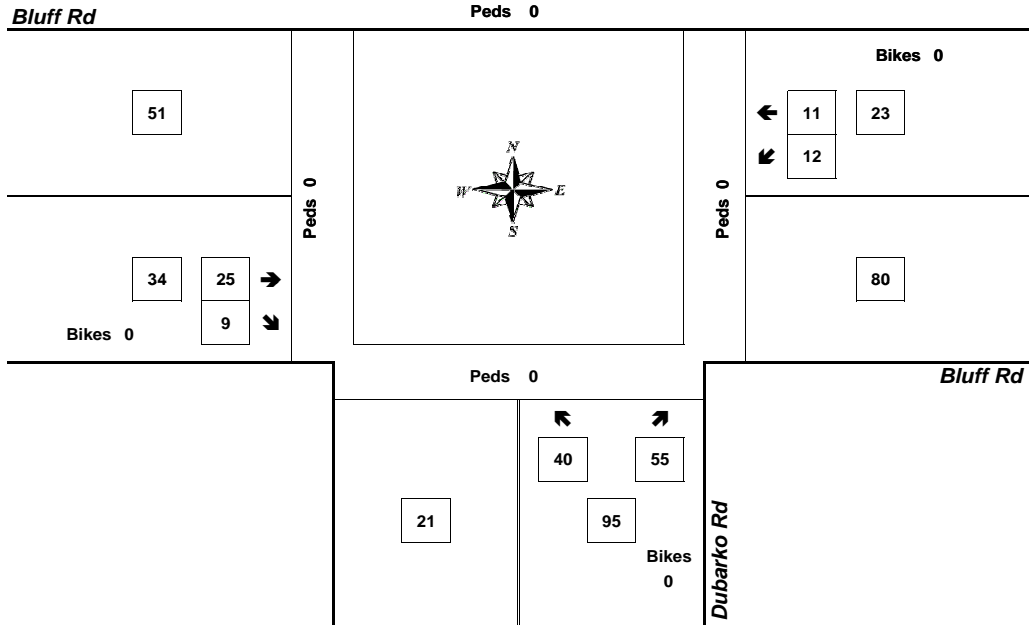


Clay Carney  
(503) 833-2740

**Dubarko Rd & Bluff Rd**

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

Bikes  
0



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
<b>Intersection</b>	<b>0.70</b>	<b>6.6%</b>	<b>152</b>

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

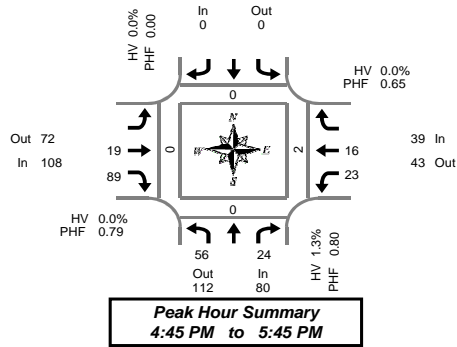
**Total Vehicle Summary**



Clay Carney  
(603) 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			0	4	7	0	5	0	0	0	0
4:05 PM	2	0	0			0			0	1	4	0	3	3	0	0	0
4:10 PM	7	1	0			0			0	1	4	0	2	0	0	0	0
4:15 PM	5	1	0			0			0	2	7	0	1	1	0	0	0
4:20 PM	3	0	0			0			0	0	5	0	2	3	0	0	0
4:25 PM	7	2	0			0			0	3	8	0	3	0	0	0	0
4:30 PM	6	2	0			0			0	0	6	0	1	0	0	0	0
4:35 PM	2	2	0			0			0	3	9	0	1	0	0	0	0
4:40 PM	7	3	0			0			0	2	7	0	1	0	0	0	0
4:45 PM	7	0	0			0			0	0	10	0	3	0	0	0	0
4:50 PM	8	4	0			0			0	2	5	0	1	0	0	0	0
4:55 PM	3	1	0			0			0	0	6	0	0	1	0	0	0
5:00 PM	4	3	0			0			0	1	5	0	3	2	0	0	0
5:05 PM	6	1	1			0			0	3	8	0	1	2	0	0	1
5:10 PM	1	0	0			0			0	4	9	0	1	0	0	0	0
5:15 PM	3	0	0			0			0	1	9	0	1	2	0	0	0
5:20 PM	7	4	0			0			0	3	6	0	1	3	0	0	0
5:25 PM	1	2	0			0			0	0	8	0	3	1	0	0	0
5:30 PM	5	2	0			0			0	1	6	0	5	1	0	0	0
5:35 PM	3	0	0			0			0	2	9	0	2	3	0	0	0
5:40 PM	8	7	0			0			0	2	8	0	2	1	0	0	1
5:45 PM	7	1	0			0			0	0	3	0	0	1	0	0	0
5:50 PM	6	2	0			0			0	1	6	0	1	0	0	0	0
5:55 PM	3	0	0			0			0	1	2	0	1	2	0	0	0
Total Survey	115	38	1			0			0	37	157	0	44	26	0	0	2

**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			0	6	15	0	10	3	0	0	0
4:15 PM	15	3	0			0			0	5	20	0	6	4	0	0	0
4:30 PM	15	7	0			0			0	5	22	0	3	0	0	0	0
4:45 PM	18	5	0			0			0	2	21	0	4	1	0	0	0
5:00 PM	11	4	1			0			0	8	22	0	5	4	0	0	1
5:15 PM	11	6	0			0			0	4	23	0	5	6	0	0	0
5:30 PM	16	9	0			0			0	5	23	0	9	5	0	0	1
5:45 PM	16	3	0			0			0	2	11	0	2	3	0	0	0
Total Survey	115	38	1			0			0	37	157	0	44	26	0	0	2

**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%			0.0%			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	0.0%	NA	0.0%	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

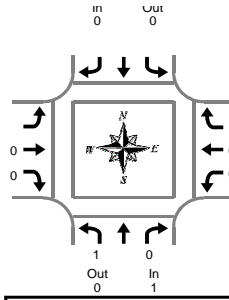
**Rolling Hour Summary**  
4:00 PM to 6:00 PM

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			0	18	78	0	23	8	0	0	0
4:15 PM	59	19	1			0			0	20	85	0	18	9	0	0	1
4:30 PM	55	22	1			0			0	19	88	0	17	11	0	0	0
4:45 PM	56	24	1			0			0	19	89	0	23	16	0	0	2
5:00 PM	54	22	1			0			0	19	79	0	21	18	0	0	2

# Heavy Vehicle Summary



Clay Carney  
(503) 833-2740



## Dubarko Rd & Bluff Rd

Wednesday, May 22, 2019  
4:00 PM to 6:00 PM

**Peak Hour Summary**  
4:45 PM to 5:45 PM

### Heavy Vehicle 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
	L	R	Total		Total	T	R	Total	L	T	Total	
4:00 PM	0	0	0		0	2	0	2	0	0	0	2
4:05 PM	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
4:15 PM	0	0	0		0	0	0	0	1	0	1	1
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	1	0	1	1
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	0	0	0	0	0	0	0
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	1	0	1		0	0	0	0	0	0	0	1
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	2	0	2	2	0	2	5

### Heavy Vehicle 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
	L	R	Total		Total	T	R	Total	L	T	Total	
4:00 PM	0	0	0		0	2	0	2	0	0	0	2
4:15 PM	0	0	0		0	0	0	0	1	0	1	1
4:30 PM	0	0	0		0	0	0	0	1	0	1	1
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	0	0	0	0	0	0	0
5:30 PM	1	0	1		0	0	0	0	0	0	0	1
5:45 PM	0	0	0		0	0	0	0	0	0	0	0
Total Survey	1	0	1		0	2	0	2	2	0	2	5

### Heavy Vehicle 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
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	1	0	1	0	0	0	0	1	1	0	0	0	1
PHF	0.25			0.00			0.00			0.00			0.25

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		1		0	0	0	0	0	0	0	1
PHF	0.25		0.25		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25

### Heavy Vehicle 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
	L	R	Total		Total	T	R	Total	L	T	Total	
4:00 PM	0	0	0		0	2	0	2	2	0	2	4
4:15 PM	0	0	0		0	0	0	0	2	0	2	2
4:30 PM	0	0	0		0	0	0	0	1	0	1	1
4:45 PM	1	0	1		0	0	0	0	0	0	0	1
5:00 PM	1	0	1		0	0	0	0	0	0	0	1



**Peak Hour Summary**



Clay Carney  
(503) 833-2740

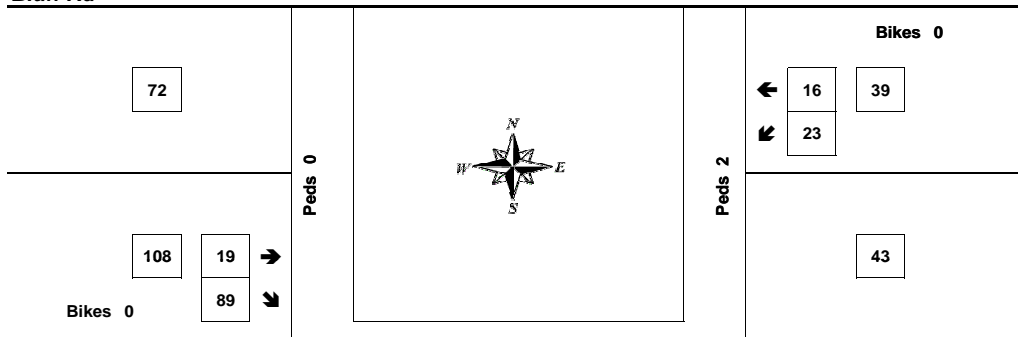
**Dubarko Rd & Bluff Rd**

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

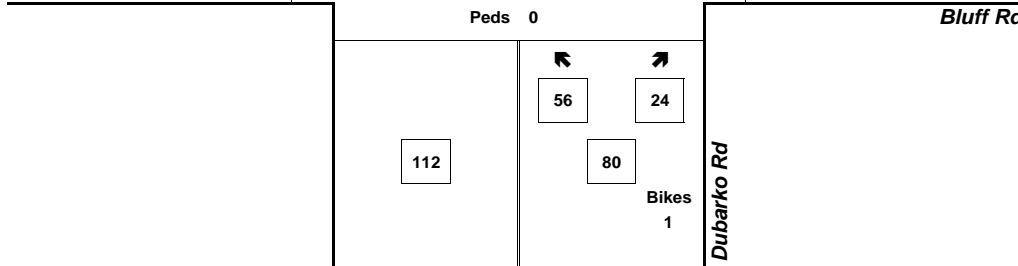
Bikes  
0

**Bluff Rd**

Peds 0



Peds 0



**Bluff Rd**

**Dubarko Rd**

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
<b>Intersection</b>	<b>0.85</b>	<b>0.4%</b>	<b>227</b>

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

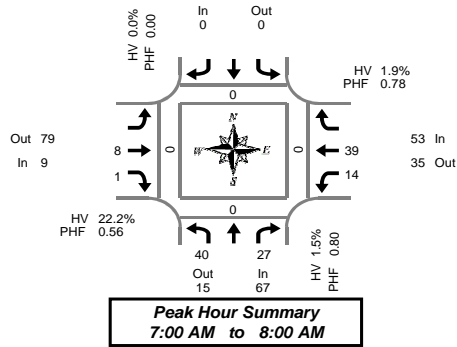
# Total Vehicle Summary



Clay Carney  
(603) 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	2	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	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West	
Volume	67	15	82	0	0	0	0	0	9	79	88	0	53	35	88	0	129	
%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

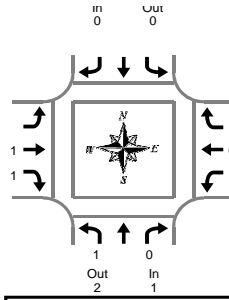
7:00 AM to 9:00 AM

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

**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 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	0	1	0	1	2
7:05 AM	0	0	0		0	0	0	0	0	0	0	0
7:10 AM	0	0	0		0	0	0	0	0	0	0	0
7:15 AM	0	0	0		0	0	0	0	0	0	0	0
7:20 AM	0	0	0		0	0	0	0	0	0	0	0
7:25 AM	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
7:35 AM	0	0	0		0	0	0	0	0	0	0	0
7:40 AM	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
7:50 AM	0	0	0		0	0	0	0	0	0	0	0
7:55 AM	0	0	0		0	1	0	1	0	0	0	1
8:00 AM	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
8:10 AM	1	0	1		0	0	0	0	0	0	0	1
8:15 AM	1	0	1		0	0	0	0	1	0	1	2
8:20 AM	0	1	1		0	0	0	0	0	0	0	1
8:25 AM	0	0	0		0	0	0	0	0	0	0	0
8:30 AM	0	1	1		0	0	0	0	0	0	0	1
8:35 AM	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
8:45 AM	0	0	0		0	0	0	0	0	0	0	0
8:50 AM	0	0	0		0	0	0	0	0	0	0	0
8:55 AM	0	0	0		0	0	0	0	0	0	0	0
Total Survey	3	2	5		0	1	1	2	2	0	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	0	1	0	1	2
7:15 AM	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
7:45 AM	0	0	0		0	1	0	1	0	0	0	1
8:00 AM	1	0	1		0	0	0	0	0	0	0	1
8:15 AM	1	1	2		0	0	0	0	1	0	1	3
8:30 AM	0	1	1		0	0	0	0	0	0	0	1
8:45 AM	0	0	0		0	0	0	0	0	0	0	0
Total Survey	3	2	5		0	1	1	2	2	0	2	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		1		0	1	1	2	1	0	1	4
PHF	0.25		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	1	4
7:15 AM	1	0	1		0	1	1	2	0	0	0	3
7:30 AM	2	1	3		0	1	0	1	1	0	1	5
7:45 AM	2	2	4		0	1	0	1	1	0	1	6
8:00 AM	2	2	4		0	0	0	0	1	0	1	5

**Peak Hour Summary**



Clay Carney  
(503) 833-2740

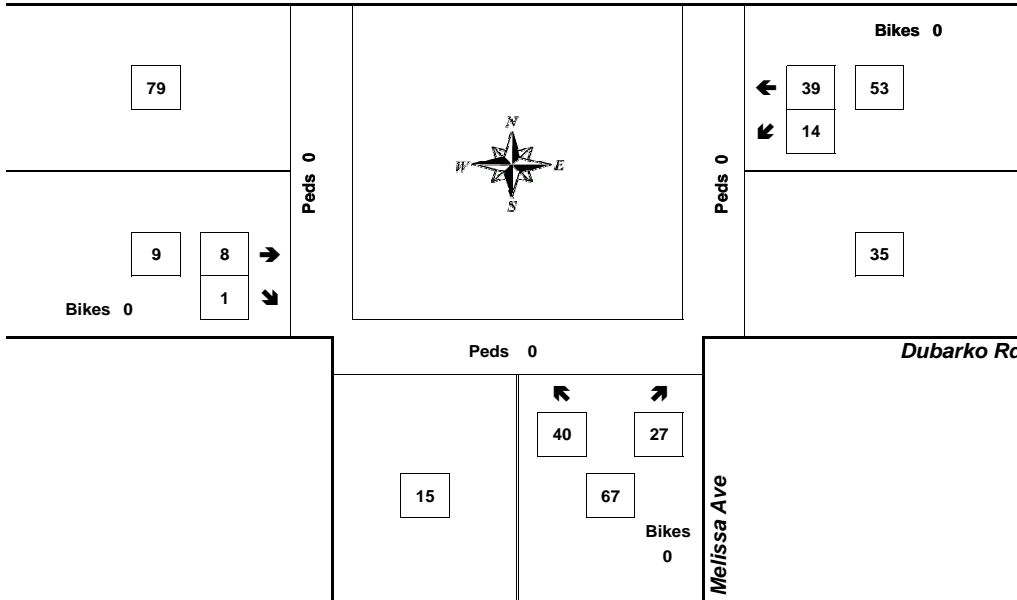
**Melissa Ave & Dubarko Rd**

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
<b>Intersection</b>	<b>0.79</b>	<b>3.1%</b>	<b>129</b>

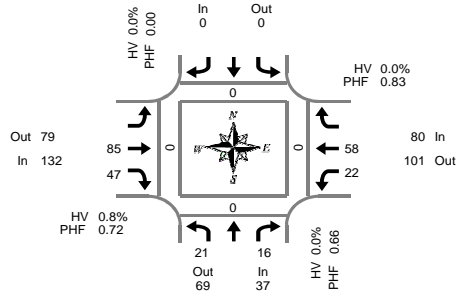
Count Period: 7:00 AM to 9:00 AM



**Total Vehicle Summary**



Clay Carney  
(603) 833-2740



**Melissa Ave & Dubarko Rd**

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

**Peak Hour Summary**  
4:40 PM to 5:40 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	0
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	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	37	69	106	0	0	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	Bikes			Total	Bikes	T	R	Total	Bikes	L	T	Total	Bikes	
Volume	21	16	37	0			0	0	85	47	132	0	22	58	80	0	249
%HV	0.0%	NA	0.0%	0.0%	NA	NA	0.0%	0.0%	1.2%	0.0%	0.8%	0.0%	0.0%	0.0%	NA	0.0%	0.4%
PHF	0.58		0.80	0.66			0.00	0.00	0.71	0.59	0.72	0.69	0.69	0.85	0.83	0.85	0.85

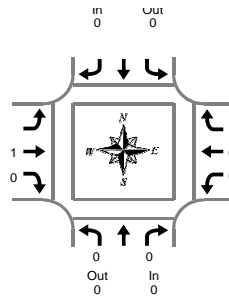
**Rolling Hour Summary**  
4:00 PM to 6:00 PM

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

**Peak Hour Summary**  
4:40 PM to 5:40 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	1	2
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

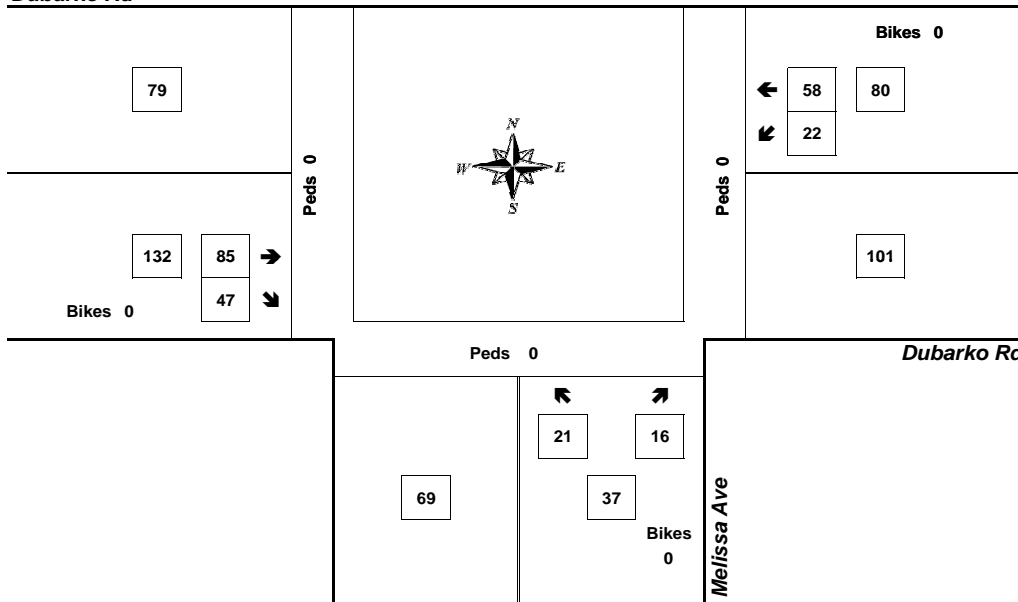
**Melissa Ave & Dubarko Rd**

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

Bikes  
0

**Dubarko Rd**

Peds 0



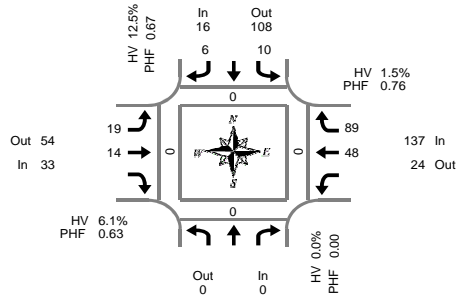
Approach	PHF	HV%	Volume
EB	0.72	0.8%	132
WB	0.83	0.0%	80
NB	0.66	0.0%	37
SB	0.00	0.0%	0
<b>Intersection</b>	<b>0.85</b>	<b>0.4%</b>	<b>249</b>

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

# Total Vehicle Summary



Clay Carney  
(503) 833-2740



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

## 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	In	Out	Total	Bikes	L	T	Total	Bikes	T	R	Total	Bikes		North	South	East	West
7:00 AM																					
7:05 AM																					
7:10 AM																					
7:15 AM																					
7:20 AM																					
7:25 AM																					
7:30 AM																					
7:35 AM																					
7:40 AM																					
7:45 AM																					
7:50 AM																					
7:55 AM																					
8:00 AM																					
8:05 AM																					
8:10 AM																					
8:15 AM																					
8:20 AM																					
8:25 AM																					
8:30 AM																					
8:35 AM																					
8:40 AM																					
8:45 AM																					
8:50 AM																					
8:55 AM																					
Total Survey																					

### 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	In	Out	Total	Bikes	L	T	Total	Bikes	T	R	Total	Bikes		North	South	East	West
7:00 AM																					
7:15 AM																					
7:30 AM																					
7:45 AM																					
8:00 AM																					
8:15 AM																					
8:30 AM																					
8:45 AM																					
Total Survey																					

### 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	Bikes		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							12.5%														
PHF							0.67														

By Movement	Northbound Ruben Ln				Southbound Ruben Ln				Eastbound Dubarko Rd				Westbound Dubarko Rd				Total				
	Total	L	R	Total	L	T	Total	Bikes	Total	T	R	Total	Bikes								
Volume	0	10	6	16	19	14	33	0	33	48	89	137	0								
%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									

### Rolling Hour Summary

7:00 AM to 9:00 AM

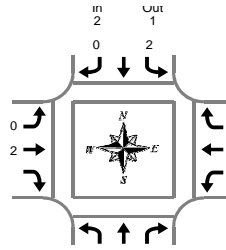
Interval Start Time	Northbound Ruben Ln				Southbound Ruben Ln				Eastbound Dubarko Rd				Westbound Dubarko Rd				Interval Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	L	T	Total	Bikes	T	R	Total	Bikes		North	South	East	West
7:00 AM																					
7:15 AM																					
7:30 AM																					
7:45 AM																					
8:00 AM																					



# Heavy Vehicle Summary



Clay Carney  
(503) 833-2740



Out 1  
In 2

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

## 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	1	1	1
7:05 AM	0	0	0	0	0	0	0	0	0	0	1	1	1
7:10 AM	0	1	0	0	1	0	0	0	0	0	0	0	1
7:15 AM	0	0	0	0	0	0	0	0	0	1	0	1	1
7:20 AM	0	1	0	0	1	0	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	1	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	1	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	0	2	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	0	0	1	0	0	0	0	0	2	2	3
7:15 AM	0	1	0	0	1	0	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	0	2	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	0	2	2	1	1	2	6
PHF	0.00	0.25		0.00	0.25		0.00	0.25	0.25	0.25	0.25	0.25	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	0	2	0	2	0	2	2	1	2	3	7
7:15 AM	0	1	0	0	1	0	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

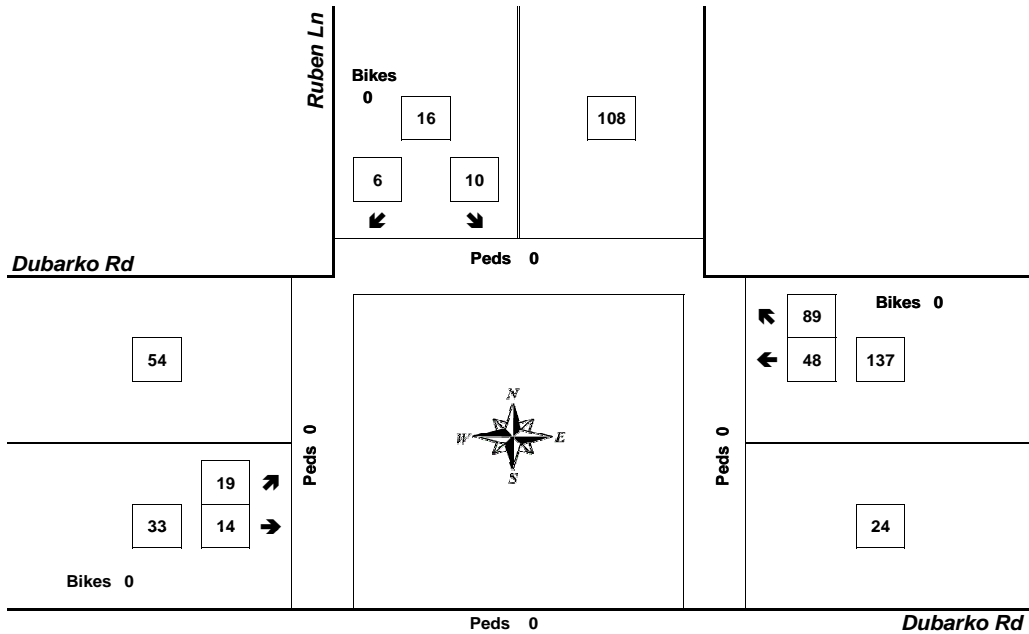
**Peak Hour Summary**



Clay Carney  
(503) 833-2740

**Ruben Ln & Dubarko Rd**

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



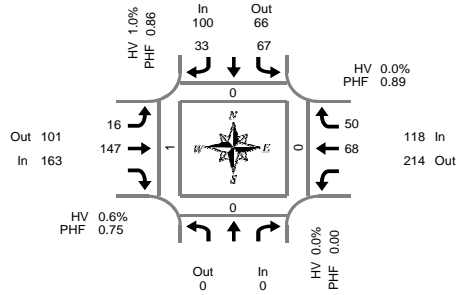
Approach	PHF	HV%	Volume
EB	0.63	6.1%	33
WB	0.76	1.5%	137
NB	0.00	0.0%	0
SB	0.67	12.5%	16
<b>Intersection</b>	<b>0.89</b>	<b>3.2%</b>	<b>186</b>

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

# Total Vehicle Summary



Clay Carney  
(503) 833-2740



**Peak Hour Summary**  
4:25 PM to 5:25 PM

## 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	In	Out	Total	Bikes	L	T	Total	Bikes	T	R	Total	Bikes		North	South	East	West
4:00 PM																					
4:05 PM																					
4:10 PM																					
4:15 PM																					
4:20 PM																					
4:25 PM																					
4:30 PM																					
4:35 PM																					
4:40 PM																					
4:45 PM																					
4:50 PM																					
4:55 PM																					
5:00 PM																					
5:05 PM																					
5:10 PM																					
5:15 PM																					
5:20 PM																					
5:25 PM																					
5:30 PM																					
5:35 PM																					
5:40 PM																					
5:45 PM																					
5:50 PM																					
5:55 PM																					
Total Survey																					

### 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	In	Out	Total	Bikes	L	T	Total	Bikes	T	R	Total	Bikes		North	South	East	West
4:00 PM																					
4:15 PM																					
4:30 PM																					
4:45 PM																					
5:00 PM																					
5:15 PM																					
5:30 PM																					
5:45 PM																					
Total Survey																					

### 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	Bikes		North	South	East	West
Volume	0	0	0	0	100	66	166	0	163	101	264	0	118	214	332	0	381	0	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
	In	Out	Total	Bikes	In	Out	Total	Bikes	L	T	Total	Bikes	T	R	Total		
Volume	0	67	33	100	16	147	163	0	68	50	118	0	68	50	118		
%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	0.75	0.89	0.83	0.89	0.89	0.89			

### Rolling Hour Summary

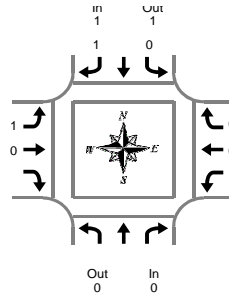
4:00 PM to 6:00 PM

Interval Start Time	Northbound Ruben Ln				Southbound Ruben Ln				Eastbound Dubarko Rd				Westbound Dubarko Rd				Interval Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	L	T	Total	Bikes	T	R	Total	Bikes		North	South	East	West
4:00 PM																					
4:15 PM																					
4:30 PM																					
4:45 PM																					
5:00 PM																					

# Heavy Vehicle Summary



Clay Carney  
(503) 833-2740



Out 1  
In 1

**Peak Hour Summary**  
4:25 PM to 5:25 PM

## 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	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	0
4:10 PM	0	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	0	1
4:20 PM	0	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	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:35 PM	0	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	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:50 PM	0	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	0
5:00 PM	0	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	0
5:10 PM	0	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	0
5:20 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:25 PM	0	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	0
5:35 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:40 PM	0	0	0	0	0	0	0	0	0	0	1	1	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:50 PM	0	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	0
Total Survey	0	1	1	2	3	1	3	4	0	1	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	0	1	1	0	0	0	0	0	0	0	1
4:15 PM	0	1	0	1	1	0	0	0	0	0	0	0	1
4:30 PM	0	0	0	1	1	0	0	0	0	0	0	0	1
4:45 PM	0	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	0
5:15 PM	0	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	1	1	1
5:45 PM	0	0	0	0	0	0	2	2	0	0	0	0	2
Total Survey	0	1	1	2	3	1	3	4	0	1	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	0	1	1	2	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	0.50

### 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	0	0	1	1	0	0	0	0	0	0	0	1
4:15 PM	0	1	0	1	1	0	0	0	0	0	0	0	1
4:30 PM	0	0	0	1	1	0	0	0	0	0	0	0	1
4:45 PM	0	0	0	0	0	1	1	2	0	0	0	0	2
5:00 PM	0	0	0	0	0	0	3	3	0	0	0	0	3



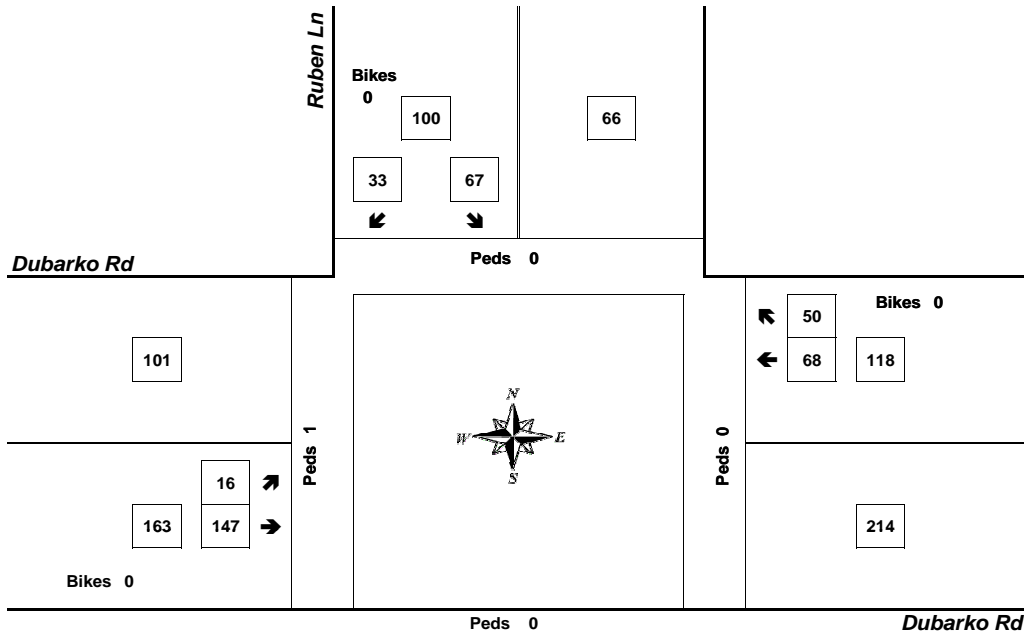
**Peak Hour Summary**



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
<b>Intersection</b>	<b>0.89</b>	<b>0.5%</b>	<b>381</b>

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

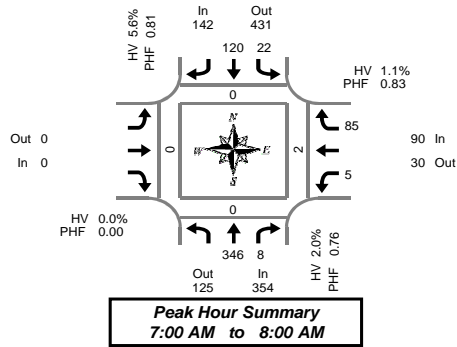
# Total Vehicle Summary



Clay Carney  
(603) 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	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	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		North	South	East	West			
Volume	354	125	479	0	142	431	573	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	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

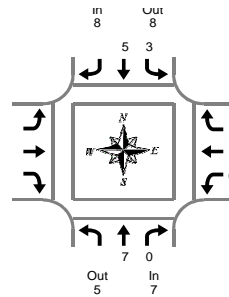
7:00 AM to 9:00 AM

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



Out 0  
In 0

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

## SE 362nd Ave & 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 SE 362nd Ave			Southbound SE 362nd Ave			Eastbound Dubarko Rd			Westbound Dubarko Rd			Interval Total
	T	R	Total	L	T	Total	Total	Total	L	R	Total		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	
7:05 AM	2	0	2	0	0	0	0	0	0	0	0	2	
7:10 AM	1	0	1	0	0	0	0	0	0	0	0	1	
7:15 AM	1	0	1	0	0	0	0	0	0	0	0	1	
7:20 AM	1	0	1	1	0	1	1	0	0	1	1	3	
7:25 AM	0	0	0	0	0	0	0	0	0	0	0	0	
7:30 AM	0	0	0	1	2	3	0	0	0	0	0	3	
7:35 AM	1	0	1	1	0	1	0	0	0	0	0	2	
7:40 AM	0	0	0	0	0	0	0	0	0	0	0	0	
7:45 AM	1	0	1	0	2	2	0	0	0	0	0	3	
7:50 AM	0	0	0	0	1	1	0	0	0	0	0	1	
7:55 AM	0	0	0	0	0	0	0	0	0	0	0	0	
8:00 AM	0	0	0	0	1	1	0	0	0	0	0	1	
8:05 AM	1	0	1	0	0	0	0	0	0	0	0	1	
8:10 AM	0	0	0	0	0	0	0	0	0	0	0	0	
8:15 AM	3	1	4	0	1	1	0	0	0	0	0	5	
8:20 AM	0	0	0	0	0	0	0	0	0	0	0	0	
8:25 AM	0	0	0	0	2	2	0	0	1	1	1	3	
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	
8:35 AM	0	0	0	0	2	2	0	0	0	0	0	2	
8:40 AM	1	0	1	0	0	0	0	0	0	0	0	1	
8:45 AM	1	0	1	0	0	0	0	0	0	0	0	1	
8:50 AM	1	0	1	0	1	1	0	0	0	0	0	2	
8:55 AM	6	0	6	0	1	1	0	0	1	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	Total	L	R	Total		
7:00 AM	3	0	3	0	0	0	0	0	0	0	0	3	
7:15 AM	2	0	2	1	0	1	0	0	1	1	1	4	
7:30 AM	1	0	1	2	2	4	0	0	0	0	0	5	
7:45 AM	1	0	1	0	3	3	0	0	0	0	0	4	
8:00 AM	1	0	1	0	1	1	0	0	0	0	0	2	
8:15 AM	3	1	4	0	3	3	0	0	1	1	1	8	
8:30 AM	1	0	1	0	2	2	0	0	0	0	0	3	
8:45 AM	8	0	8	0	2	2	0	0	1	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	Total	L	R	Total		
Volume	7	0	7	3	5	8	0	0	0	1	1	16	
PHF	0.44	0.00	0.44	0.38	0.42	0.50	0.00	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	Total	L	R	Total		
7:00 AM	7	0	7	3	5	8	0	0	0	1	1	16	
7:15 AM	5	0	5	3	6	9	0	0	0	1	1	15	
7:30 AM	6	1	7	2	9	11	0	0	0	1	1	19	
7:45 AM	6	1	7	0	9	9	0	0	0	1	1	17	
8:00 AM	13	1	14	0	8	8	0	0	0	2	2	24	

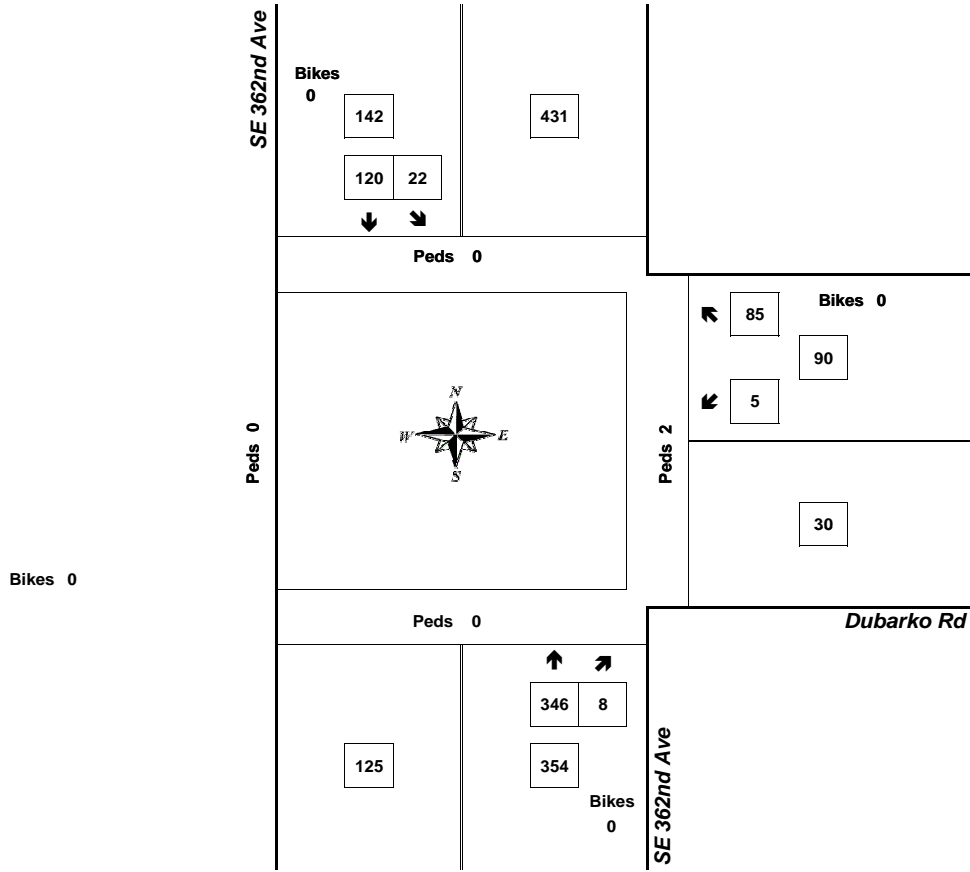
**Peak Hour Summary**



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
<b>Intersection</b>	<b>0.85</b>	<b>2.7%</b>	<b>586</b>

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



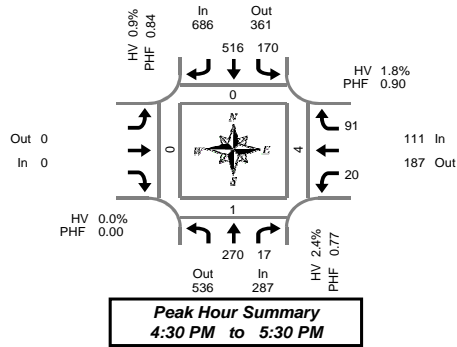
# Total Vehicle Summary



Clay Carney  
(603) 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	1	6	0	78	1	0	3	0		
4:05 PM	21	2	0	7	36	0	0	1	5	0	72	0	0	0	0		
4:10 PM	19	2	0	8	36	0	0	1	6	0	72	0	0	0	0		
4:15 PM	26	3	0	8	32	0	0	0	4	0	73	0	0	1	0		
4:20 PM	22	1	0	14	45	0	0	3	4	0	89	0	0	0	0		
4:25 PM	21	2	0	15	34	0	0	0	5	0	77	0	0	0	0		
4:30 PM	19	2	0	18	30	0	0	1	8	0	78	0	0	2	0		
4:35 PM	27	0	0	9	42	0	0	0	9	0	87	0	0	0	0		
4:40 PM	17	3	0	12	33	0	0	2	9	0	76	0	0	0	0		
4:45 PM	28	0	0	7	46	0	0	1	6	0	88	0	0	0	0		
4:50 PM	28	2	0	14	33	0	0	3	7	0	87	0	0	0	0		
4:55 PM	30	2	0	10	51	0	0	4	3	0	100	0	0	0	0		
5:00 PM	30	1	0	15	42	0	0	3	11	0	102	0	0	0	0		
5:05 PM	21	4	0	16	45	0	0	0	7	0	93	0	0	0	0		
5:10 PM	21	1	0	20	49	0	0	2	6	0	99	0	0	0	0		
5:15 PM	16	1	0	14	60	0	0	1	7	0	99	0	0	0	0		
5:20 PM	17	1	0	19	42	0	0	2	12	0	93	0	1	0	0		
5:25 PM	16	0	0	16	43	0	0	1	6	0	82	0	0	2	0		
5:30 PM	19	0	0	16	24	0	0	2	4	0	65	0	0	0	0		
5:35 PM	16	1	0	12	33	0	0	2	7	0	71	0	0	0	0		
5:40 PM	26	0	0	9	39	0	0	1	6	0	81	0	0	0	0		
5:45 PM	18	2	0	13	36	0	0	2	5	0	76	0	0	0	0		
5:50 PM	19	2	0	17	43	0	0	1	7	0	89	0	0	0	0		
5:55 PM	17	3	0	17	29	0	0	1	7	0	74	0	0	0	0		
Total Survey	519	35	0	317	938	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	3	17	0	222	1	0	3	0		
4:15 PM	69	6	0	37	111	0	0	3	13	0	239	0	0	1	0		
4:30 PM	63	5	0	39	105	0	0	3	26	0	241	0	0	2	0		
4:45 PM	86	4	0	31	130	0	0	8	16	0	275	0	0	0	0		
5:00 PM	72	6	0	51	136	0	0	5	24	0	294	0	0	0	0		
5:15 PM	49	2	0	49	145	0	0	4	25	0	274	0	1	2	0		
5:30 PM	61	1	0	37	96	0	0	5	17	0	217	0	0	0	0		
5:45 PM	54	7	0	47	108	0	0	4	19	0	239	0	0	0	0		
Total Survey	519	35	0	317	938	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	1.4%		
PHF	0.77	0.61	0.77	0.80	0.84	0.84	NA	0.00	0.50	0.88	0.90		

### Rolling Hour Summary

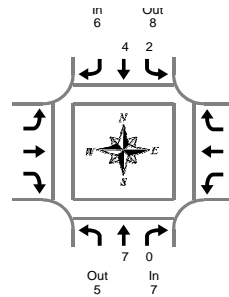
4:00 PM to 6:00 PM

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	17	72	0	977	1	0	6	0		
4:15 PM	290	21	0	158	482	0	0	19	79	0	1,049	1	0	3	0		
4:30 PM	270	17	0	170	516	0	0	20	91	0	1,084	0	1	4	0		
4:45 PM	268	13	0	168	507	0	0	22	82	0	1,060	0	1	2	0		
5:00 PM	236	16	0	184	485	0	0	18	85	0	1,024	0	1	2	0		

# Heavy Vehicle Summary



Clay Carney  
(503) 833-2740



Out 0  
In 0

**Peak Hour Summary**  
4:30 PM to 5:30 PM

## 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	3	
4:05 PM	0	0	0	0	0	0			0	0	1	1	
4:10 PM	2	0	2	0	1	1			0	0	0	3	
4:15 PM	1	0	1	0	1	1			0	0	0	2	
4:20 PM	0	0	0	0	1	1			0	0	0	1	
4:25 PM	0	0	0	0	0	0			0	0	0	0	
4:30 PM	0	0	0	0	3	3			0	0	0	3	
4:35 PM	1	0	1	0	0	0			0	0	0	1	
4:40 PM	0	0	0	1	0	1			0	1	0	2	
4:45 PM	0	0	0	0	0	0			0	0	0	0	
4:50 PM	0	0	0	0	0	0			0	0	0	0	
4:55 PM	0	0	0	0	1	1			0	0	0	1	
5:00 PM	0	0	0	0	0	0			0	0	0	0	
5:05 PM	2	0	2	0	0	0			0	0	0	2	
5:10 PM	0	0	0	0	0	0			0	0	0	0	
5:15 PM	1	0	1	0	0	0			0	0	0	1	
5:20 PM	1	0	1	0	0	0			0	0	1	2	
5:25 PM	2	0	2	1	0	1			0	0	0	3	
5:30 PM	1	0	1	0	1	1			0	0	0	2	
5:35 PM	0	0	0	0	0	0			0	0	0	0	
5:40 PM	0	0	0	0	0	0			0	0	0	0	
5:45 PM	0	0	0	0	0	0			0	0	0	0	
5:50 PM	0	0	0	1	0	1			0	0	0	1	
5:55 PM	1	0	1	0	1	1			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				
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

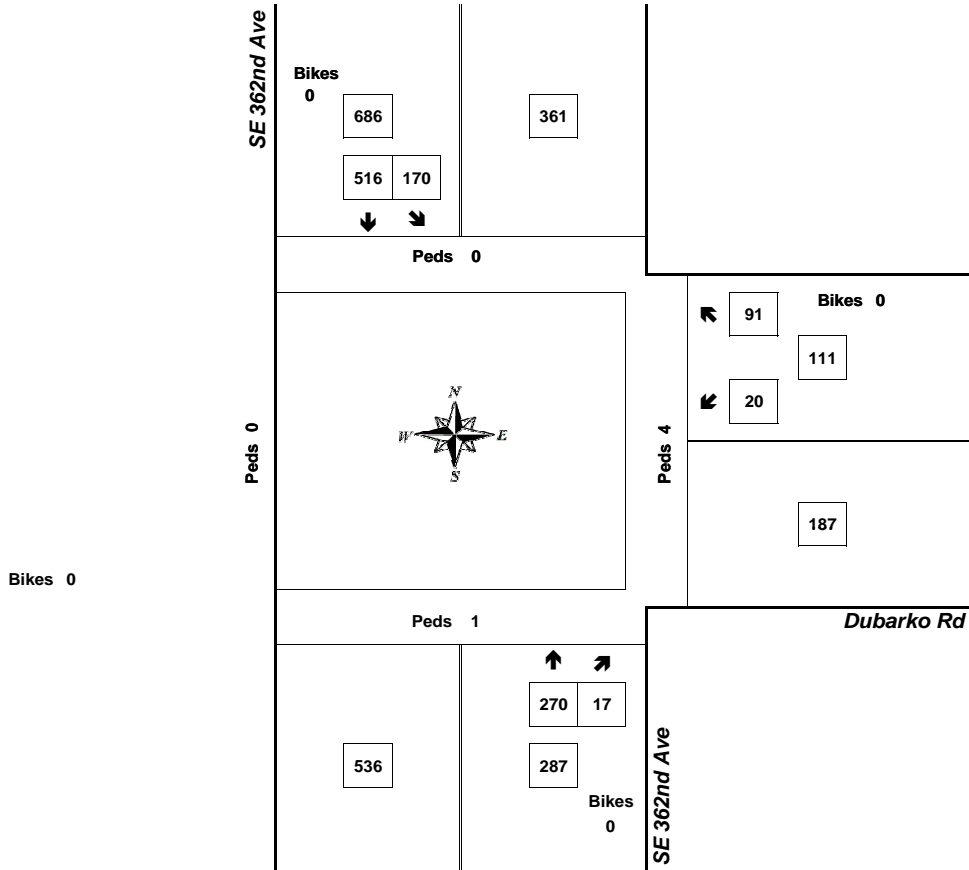
**Peak Hour Summary**



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
<b>Intersection</b>	<b>0.92</b>	<b>1.4%</b>	<b>1,084</b>

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





CDS380  
05/17/2019

CITY OF SANDY, CLACKAMAS COUNTY

OREGON.. DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION  
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT  
URBAN NON-SYSTEM CRASH LISTING  
362ND DR at DUBARKO RD, City of Sandy, Clackamas County, 01/01/2012 to 12/31/2016

Page: 2

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CDS380  
05/12/2019

OREGON.. DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION  
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT  
URBAN NON-SYSTEM CRASH LISTING  
DUBARKO RD at BLUFF RD, City of Sandy, Clackamas County, 01/01/2012 to 12/31/2016

CITY OF SANDY, CLACKAMAS COUNTY

SER#	P	R	J	S	W	DATE	CLASS	CITY STREET	RD CHAR	INT-TYPE	OFFRD	WTHR	CRASH	SPCL USE	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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CDS380  
05/12/2019

CITY OF SANDY, CLACKAMAS COUNTY

OREGON.. DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION  
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT  
URBAN NON-SYSTEM CRASH LISTING  
DUBARKO RD at BLUFF RD, City of Sandy, Clackamas County, 01/01/2012 to 12/31/2016

Page: 2

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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

1 - 2 of 2 Crash records shown.

SER#	S	D	M	P	R	J	S	W	DATE	CLASS	CITY STREET	RD CHAR	INT-TYPE	OFFRD	WTHR	CRASH	SPCL USE	MOVE	A	S	ACT	EVENT	CAUSE							
INVEST	E	A	U	I	C	O	DAY	DIST	FIRST STREET	RD CHAR	(MEDIAN)	INT-REL	OFFRD	WTHR	CRASH	TRLR QTY	MOVE	PRTC	INJ	G	E	LICNS	PED							
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					
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		
NONE							FR	0	MELISSA AVE	S		STOP SIGN	N	ICE	TURN		PRVTE	SE-S								000	124	00		
N							3P			06	0		N	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								000	000	00		
																	PSNGR CAR		01	DRVR	NONE	57	F	OR-Y	000	000	00			
01045	N	N	N				03/26/2015	16	DUBARKO RD	INTER	3-LEG	N	N	CLR	ANGL-OTH	01	NONE	0	STRGHT									02		
NONE							TH	0	MELISSA AVE	CN		STOP SIGN	N	DRY	TURN		PRVTE	NW-SE								000	00			
N							8A			04	0		N	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								000	000	02		
																	PSNGR CAR		01	DRVR	NONE	00	F	UNK	028	000	02			

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05/12/2019

CITY OF SANDY, CLACKAMAS COUNTY

OREGON.. DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION  
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT  
URBAN NON-SYSTEM CRASH LISTING  
DUBARKO RD at MELISSA AVE, City of Sandy, Clackamas County, 01/01/2012 to 12/31/2016

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CDS380  
05/12/2019

OREGON.. DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION  
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT  
URBAN NON-SYSTEM CRASH LISTING  
DUBARKO RD at RUBEN LN, City of Sandy, Clackamas County, 01/01/2012 to 12/31/2016

CITY OF SANDY, CLACKAMAS COUNTY

SER#	S	D	M	P	R	J	S	W	DATE	CLASS	CITY STREET	RD CHAR	INT-TYPE	OFFRD	WTHR	CRASH	SPCL USE	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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CDS380  
05/12/2019

CITY OF SANDY, CLACKAMAS COUNTY

OREGON.. DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION  
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT  
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DUBARKO RD at RUBEN LN, City of Sandy, Clackamas County, 01/01/2012 to 12/31/2016

Page: 2

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

\* 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:  
 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
<b>WARRANT 1, CONDITION A</b>					
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
<b>WARRANT 1, CONDITION B</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	<b>No</b>
<i>Condition B: Interruption of Continuous Traffic</i>			
Major Street	2,480	13,300	
Minor Street*	190	1,350	<b>No</b>
<i>Combination Warrant</i>			
Major Street	2,480	10,640	
Minor Street*	190	2,120	<b>No</b>

\* 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)	
Major St.	Minor St.	100% Warrants	70% Warrants	100% Warrants	70% Warrants
<b>WARRANT 1, CONDITION A</b>					
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
<b>WARRANT 1, CONDITION B</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	840	8,850	
Minor Street*	1,130	2,650	<b>No</b>
<i>Condition B: Interruption of Continuous Traffic</i>			
Major Street	840	13,300	
Minor Street*	1,130	1,350	<b>No</b>
<i>Combination Warrant</i>			
Major Street	840	10,640	
Minor Street*	1,130	2,120	<b>No</b>

\* 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:  
 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
<b>WARRANT 1, CONDITION A</b>					
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
<b>WARRANT 1, CONDITION B</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	1,640	8,850	
Minor Street*	360	2,650	<b>No</b>
<i>Condition B: Interruption of Continuous Traffic</i>			
Major Street	1,640	13,300	
Minor Street*	360	1,350	<b>No</b>
<i>Combination Warrant</i>			
Major Street	1,640	10,640	
Minor Street*	360	2,120	<b>No</b>

## 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:  
 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
<b>WARRANT 1, CONDITION A</b>					
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
<b>WARRANT 1, CONDITION B</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	10,730	8,850	
Minor Street*	1,140	2,650	<b>No</b>
<i>Condition B: Interruption of Continuous Traffic</i>			
Major Street	10,730	13,300	
Minor Street*	1,140	1,350	<b>No</b>
<i>Combination Warrant</i>			
Major Street	10,730	10,640	
Minor Street*	1,140	2,120	<b>No</b>

\* 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)	
Major St.	Minor St.	100% Warrants	70% Warrants	100% Warrants	70% Warrants
<b>WARRANT 1, CONDITION A</b>					
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
<b>WARRANT 1, CONDITION B</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?
<b>Warrant 1</b>			
<i>Condition A: Minimum Vehicular Volume</i>			
Major Street	3,740	8,850	
Minor Street*	1,160	2,650	<b>No</b>
<i>Condition B: Interruption of Continuous Traffic</i>			
Major Street	3,740	13,300	
Minor Street*	1,160	1,350	<b>No</b>
<i>Combination Warrant</i>			
Major Street	3,740	10,640	
Minor Street*	1,160	2,120	<b>No</b>

\* 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:  
 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
<b>WARRANT 1, CONDITION A</b>					
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
<b>WARRANT 1, CONDITION B</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	<b>No</b>
<i>Condition B: Interruption of Continuous Traffic</i>			
Major Street	2,870	13,300	
Minor Street*	680	1,350	<b>No</b>
<i>Combination Warrant</i>			
Major Street	2,870	10,640	
Minor Street*	680	2,120	<b>No</b>

\* 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:  
 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
<b>WARRANT 1, CONDITION A</b>					
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
<b>WARRANT 1, CONDITION B</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	<b>No</b>
<i>Condition B: Interruption of Continuous Traffic</i>			
Major Street	2,200	13,300	
Minor Street*	610	1,350	<b>No</b>
<i>Combination Warrant</i>			
Major Street	2,200	10,640	
Minor Street*	610	2,120	<b>No</b>

\* 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

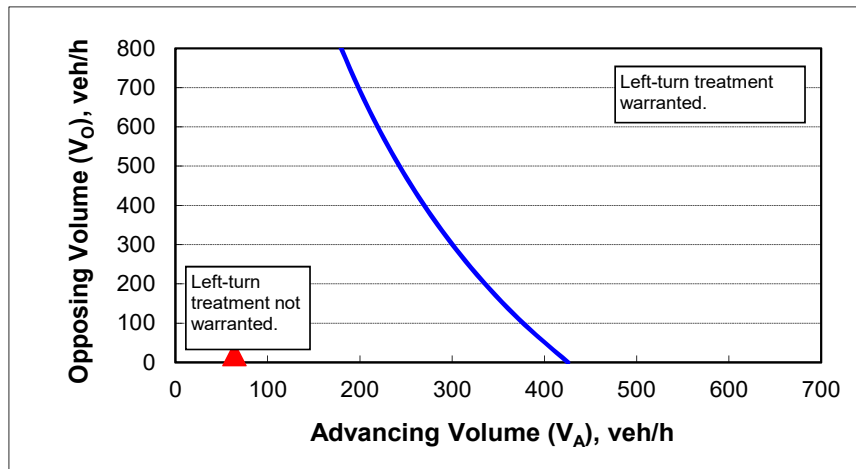
### 2-lane roadway (English)

#### INPUT

Variable	Value
85 <sup>th</sup> 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
<b>Guidance for determining the need for a major-road left-turn bay:</b>	
<b>Left-turn treatment NOT warranted.</b>	



#### 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

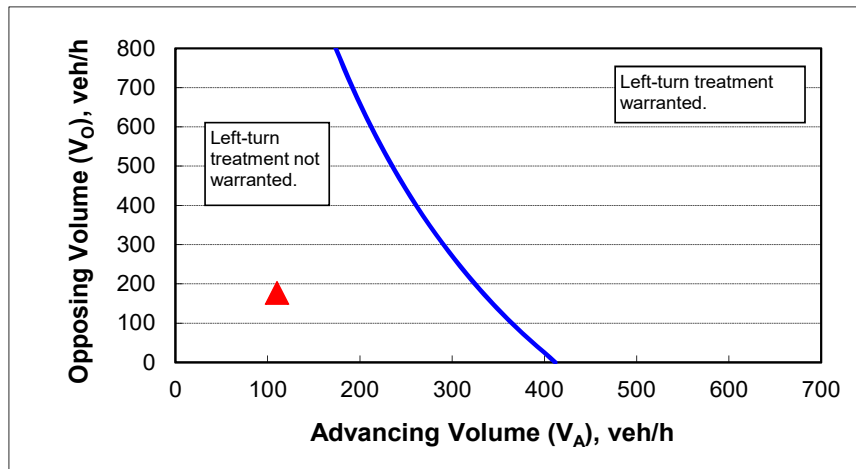
### 2-lane roadway (English)

#### INPUT

Variable	Value
85 <sup>th</sup> 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
<b>Guidance for determining the need for a major-road left-turn bay:</b>	
<b>Left-turn treatment NOT warranted.</b>	



#### 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					
<b>Movement</b>	<b>WBL</b>	<b>WBR</b>	<b>NBT</b>	<b>NBR</b>	<b>SBL</b>	<b>SBT</b>
Lane Configurations	Y		Y		Y	Y
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**

	<b>Minor1</b>	<b>Major1</b>		<b>Major2</b>	
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**

	<b>WB</b>	<b>NB</b>	<b>SB</b>
HCM Control Delay, s	11.9	0	1.3
HCM LOS	B		

**Minor Lane/Major Mvmt**

	<b>NBT</b>	<b>NBRWBLn1</b>	<b>SBL</b>	<b>SBT</b>
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

HCM 2010 TWSC  
2: Dubarko Road & Ruben Lane

05/28/2019

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

HCM 2010 TWSC  
 3: Melissa Avenue & Dubarko Road

05/28/2019

**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	-



HCM 2010 AWSC  
4: Dubarko Road & Bluff Road

05/28/2019

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	Y		Y		Y	Y
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

HCM 2010 TWSC  
2: Dubarko Road & Ruben Lane

05/28/2019

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	-	0	305	104
Stage 1	-	-	-	-	104	-
Stage 2	-	-	-	-	201	-
Critical Hdwy	4.11	-	-	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	2.209	-	-	-	3.509	3.309
Pot Cap-1 Maneuver	1458	-	-	-	689	953
Stage 1	-	-	-	-	923	-
Stage 2	-	-	-	-	835	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	1458	-	-	-	679	953
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	

HCM 2010 TWSC  
 3: Melissa Avenue & Dubarko Road

05/28/2019

**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	-



HCM 2010 AWSC  
4: Dubarko Road & Bluff Road

05/28/2019

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

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

06/06/2019

**Intersection**

Int Delay, s/veh	2.5					
<b>Movement</b>	<b>WBL</b>	<b>WBR</b>	<b>NBT</b>	<b>NBR</b>	<b>SBL</b>	<b>SBT</b>
Lane Configurations	Y		Y		Y	Y
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**

	<b>Minor1</b>	<b>Major1</b>	<b>Major2</b>		
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**

	<b>WB</b>	<b>NB</b>	<b>SB</b>
HCM Control Delay, s	12.7	0	1.5
HCM LOS	B		

**Minor Lane/Major Mvmt**

	<b>NBT</b>	<b>NBRWBLn1</b>	<b>SBL</b>	<b>SBT</b>
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

HCM 2010 TWSC  
2: Dubarko Road & Ruben Lane

06/06/2019

**Intersection**

Int Delay, s/veh	1.5					
<b>Movement</b>	<b>EBL</b>	<b>EBT</b>	<b>WBT</b>	<b>WBR</b>	<b>SBL</b>	<b>SBR</b>
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

HCM 2010 TWSC  
 3: Melissa Avenue & Dubarko Road

06/06/2019

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	Minor2	Minor3
Conflicting Flow All	0	0	11	0	101
Stage 1	-	-	-	-	11
Stage 2	-	-	-	-	90
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	-	-	1608	-	898
Stage 1	-	-	-	-	1012
Stage 2	-	-	-	-	934
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1608	-	887
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	-



HCM 2010 AWSC  
4: Dubarko Road & Bluff Road

06/06/2019

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

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

06/06/2019

**Intersection**

Int Delay, s/veh	3.4					
<b>Movement</b>	<b>WBL</b>	<b>WBR</b>	<b>NBT</b>	<b>NBR</b>	<b>SBL</b>	<b>SBT</b>
Lane Configurations	Y		Y		Y	Y
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**

	<b>Minor1</b>	<b>Major1</b>	<b>Major2</b>		
Conflicting Flow All	1335	324	0	0	336
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**

	<b>WB</b>	<b>NB</b>	<b>SB</b>
HCM Control Delay, s	18.1	0	2.2
HCM LOS	C		

**Minor Lane/Major Mvmt**

	<b>NBT</b>	<b>NBRWBLn1</b>	<b>SBL</b>	<b>SBT</b>
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

HCM 2010 TWSC  
2: Dubarko Road & Ruben Lane

06/06/2019

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	124
Stage 1	-	-	-	-	124	-
Stage 2	-	-	-	-	230	-
Critical Hdwy	4.11	-	-	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	2.209	-	-	-	3.509	3.309
Pot Cap-1 Maneuver	1430	-	-	-	646	929
Stage 1	-	-	-	-	904	-
Stage 2	-	-	-	-	811	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	1430	-	-	-	636	929
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

HCM 2010 TWSC  
 3: Melissa Avenue & Dubarko Road

06/06/2019

**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	135
Stage 1	-	-	-	-	135	-
Stage 2	-	-	-	-	127	-
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	-	-	1426	-	731	919
Stage 1	-	-	-	-	896	-
Stage 2	-	-	-	-	904	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1426	-	716	919
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	-



HCM 2010 AWSC  
4: Dubarko Road & Bluff Road

06/06/2019

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

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

06/06/2019

**Intersection**

Int Delay, s/veh	3					
<b>Movement</b>	<b>WBL</b>	<b>WBR</b>	<b>NBT</b>	<b>NBR</b>	<b>SBL</b>	<b>SBT</b>
Lane Configurations	Y		Y		Y	Y
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**

	<b>Minor1</b>	<b>Major1</b>	<b>Major2</b>		
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**

	<b>WB</b>	<b>NB</b>	<b>SB</b>
HCM Control Delay, s	13.3	0	1.7
HCM LOS	B		

**Minor Lane/Major Mvmt**

	<b>NBT</b>	<b>NBRWBLn1</b>	<b>SBL</b>	<b>SBT</b>
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

HCM 2010 TWSC  
2: Dubarko Road & Ruben Lane

06/06/2019

**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	162
Stage 1	-	-	-	-	162	-
Stage 2	-	-	-	-	76	-
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	1320	-	-	-	727	855
Stage 1	-	-	-	-	841	-
Stage 2	-	-	-	-	920	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1320	-	-	-	715	855
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	-



HCM 2010 AWSC  
4: Dubarko Road & Bluff Road

06/06/2019

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	Y		Y		Y	Y
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	0
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	-

HCM 2010 TWSC  
2: Dubarko Road & Ruben Lane

06/06/2019

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	-	0	403	145
Stage 1	-	-	-	-	145	-
Stage 2	-	-	-	-	258	-
Critical Hdwy	4.11	-	-	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	2.209	-	-	-	3.509	3.309
Pot Cap-1 Maneuver	1400	-	-	-	605	905
Stage 1	-	-	-	-	885	-
Stage 2	-	-	-	-	787	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	1400	-	-	-	596	905
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

HCM 2010 TWSC  
3: Melissa Avenue & Dubarko Road

06/06/2019

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	-	



HCM 2010 AWSC  
4: Dubarko Road & Bluff Road

06/06/2019

Intersection	
Intersection Delay, s/veh	7.7
Intersection LOS	A

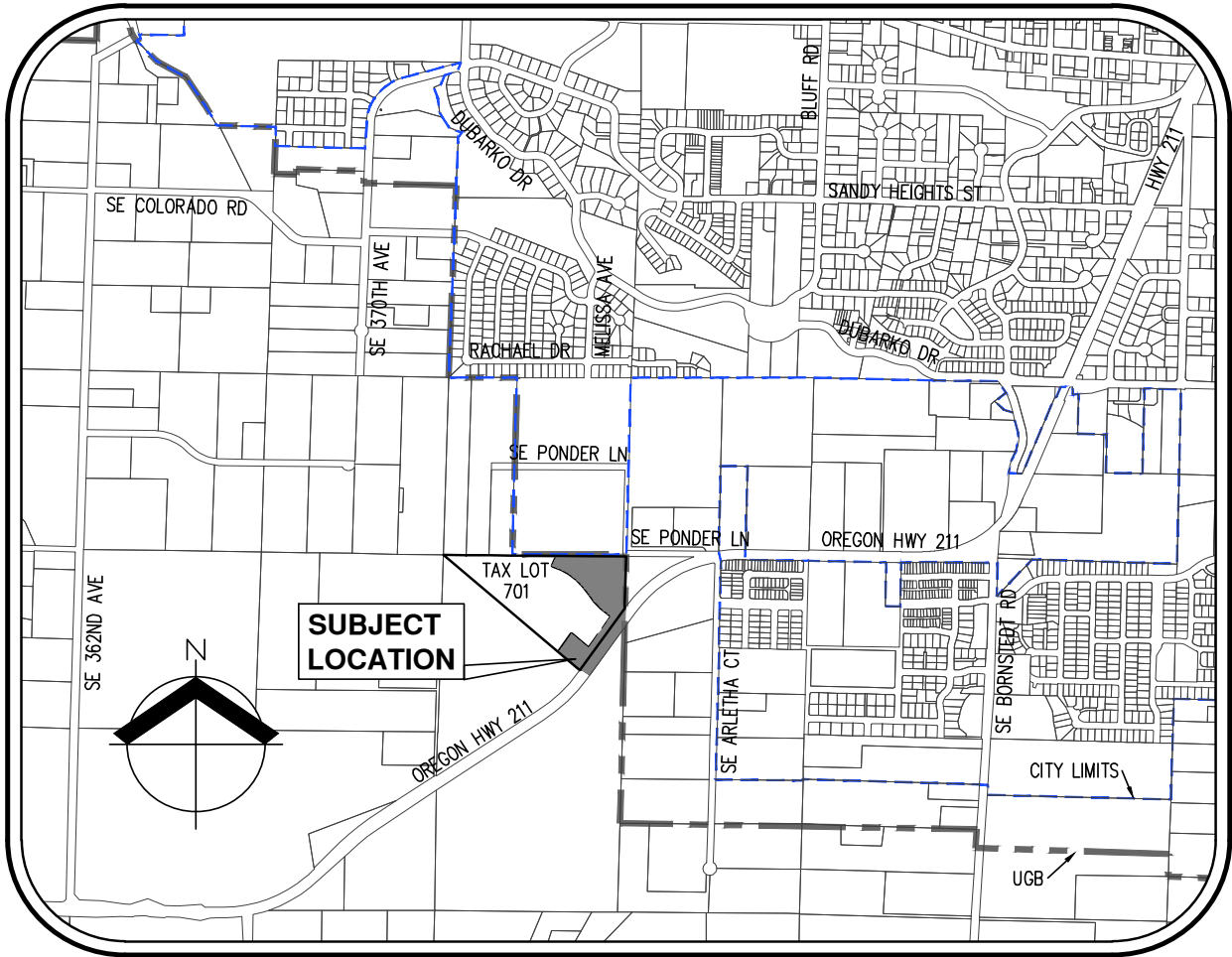
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	29	100	28	33	68	31
Future Vol, veh/h	29	100	28	33	68	31
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	0	0	0	0	1	1
Mvmt Flow	34	118	33	39	80	36
Number of Lanes	1	0	0	1	1	0

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 G: Supplemental Materials

---



**VICINITY MAP**  
NOT TO SCALE



AKS ENGINEERING & FORESTRY, LLC  
12965 SW Herman Road, Suite 100, Tualatin, OR 97062  
P: (503) 563-6151 | www.aks-eng.com

AKS Job #7107

OFFICES IN: BEND, OR - KEIZER, OR - TUALATIN, OR - VANCOUVER, WA

## 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 southwest 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

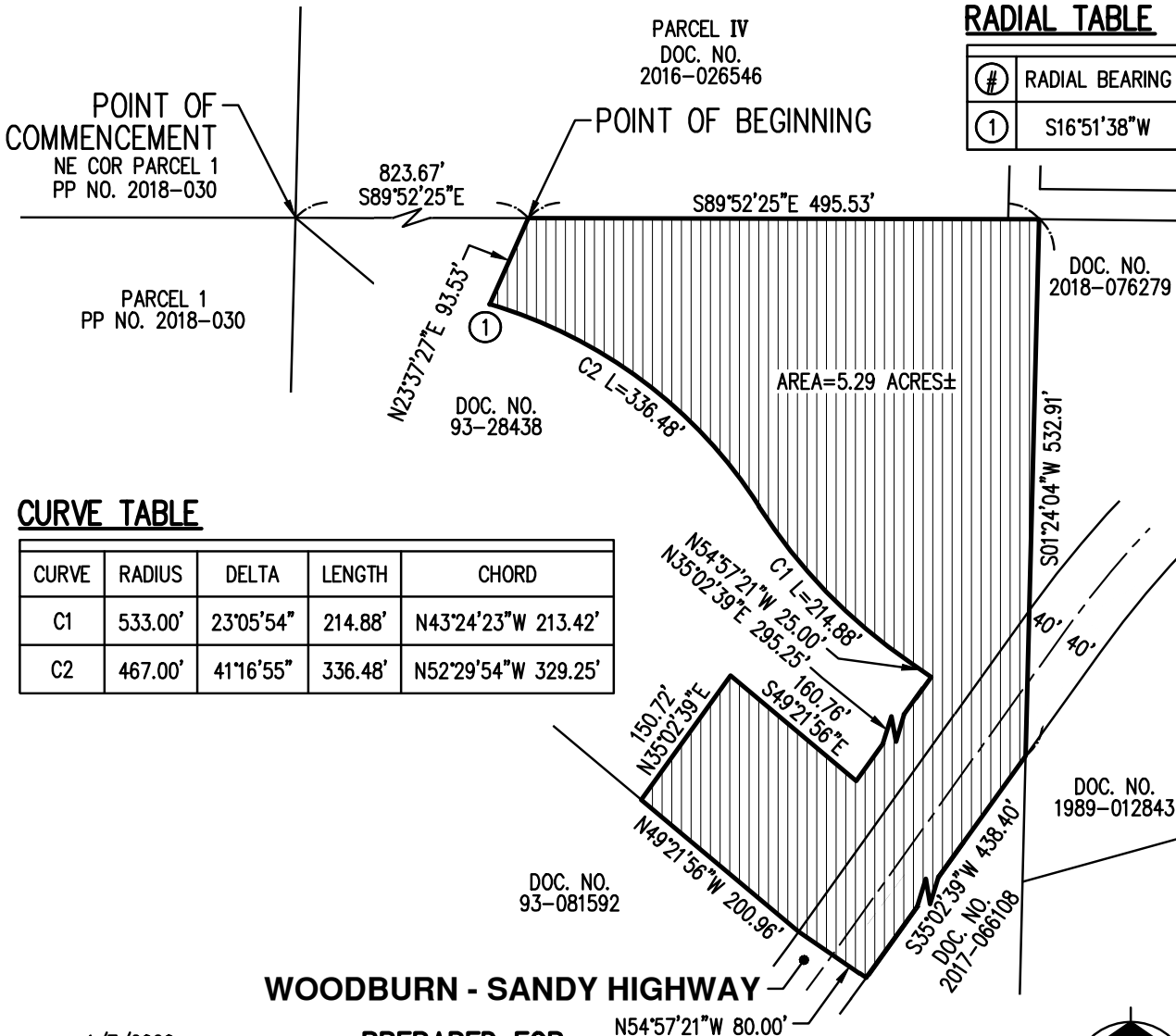
REGISTERED  
PROFESSIONAL  
LAND SURVEYOR

*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

REGISTERED  
 PROFESSIONAL  
 LAND SURVEYOR

*Benjamin R Huff*

OREGON  
 MARCH 14, 2017  
 BENJAMIN R HUFF  
 84738PLS

RENEWS: 6/30/21

### PREPARED FOR

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

SCALE: 1" = 150 FEET

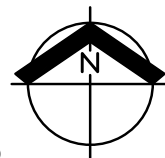


EXHIBIT MAP		EXHIBIT <b>B</b>
AKS ENGINEERING & FORESTRY, LLC 12965 SW HERMAN RD, STE 100 TUALATIN, OR 97062 503.563.6151 WWW.AKS-ENG.COM		DRWN: WCB CHKD: BRH AKS JOB: 7107



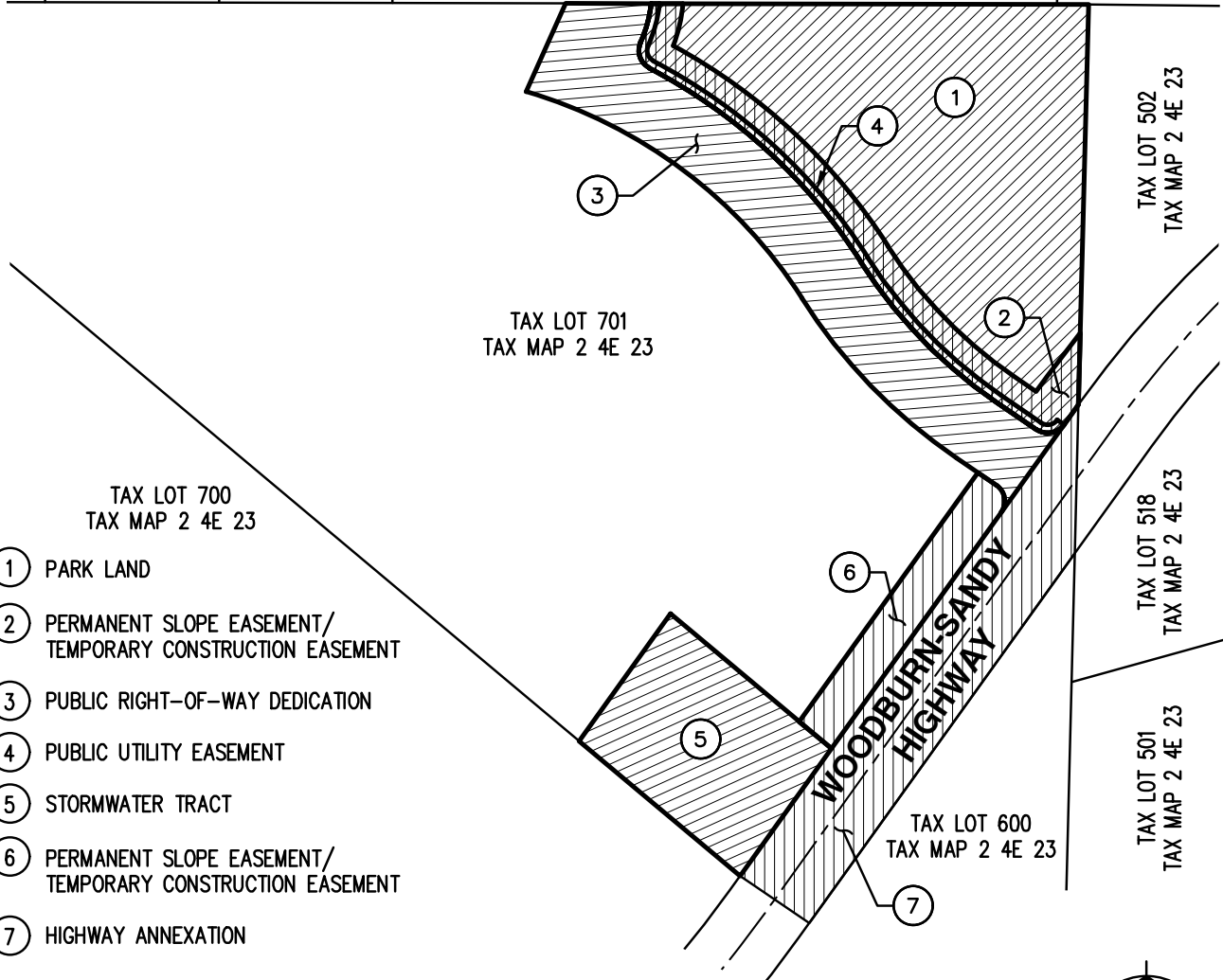
# EXHIBIT KEY MAP

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



- 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

TAX LOT 700  
TAX MAP 2 4E 23

TAX LOT 701  
TAX MAP 2 4E 23

TAX LOT 502  
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

1/7/2020

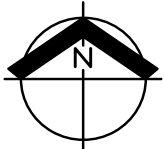
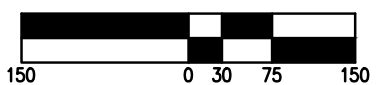
**REGISTERED  
PROFESSIONAL  
LAND SURVEYOR**

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

**PREPARED FOR**

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

SCALE: 1" = 150 FEET



<b>SE PONDER LANE - SANDY</b>		<b>EXHIBIT KEY</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









### 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 South



Looking North

- 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 FFFF

# City of Sandy Annexation, Comprehensive Plan, and Zone Map Amendment

---

**Date:** January 2020

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

**Applicant:** Allied Homes & Development  
12402 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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## Table of Contents

<b>I.</b>	<b>Executive Summary</b> .....	<b>3</b>
<b>II.</b>	<b>Site Description/Setting</b> .....	<b>3</b>
<b>III.</b>	<b>Applicable Review Criteria</b> .....	<b>3</b>
	SANDY COMPREHENSIVE PLAN GOALS AND POLICIES .....	3
	Goal 1 – Citizen Involvement .....	3
	Goal 2 – Land Use Planning.....	4
	Goal 8 – Recreational Needs .....	5
	Goal 11 – Public Facilities and Services.....	6
	Goal 12 – Transportation .....	6
	Goal 14 – Urbanization .....	7
	SANDY DEVELOPMENT CODE – REVISED ORDINANCE 2019-01 .....	10
	CHAPTER 17.24 - COMPREHENSIVE PLAN AMENDMENT PROCEDURES .....	10
	CHAPTER 17.26 - ZONING DISTRICT AMENDMENTS.....	12
	CHAPTER 17.78 - ANNEXATION.....	15
<b>IV.</b>	<b>Conclusion</b> .....	<b>21</b>

## Exhibits

- Exhibit A:** City Application Forms and Checklists
  - Exhibit B:** Annexation Written Consent Form
  - Exhibit C:** Site Maps and Legal Description
  - Exhibit D:** Lancaster Mobley Engineering Traffic Documentation
  - Exhibit E:** Property Ownership Information
  - Exhibit F:** Clackamas County Assessor’s Map
  - Exhibit G:** Noticing Materials
-

---

# Land Use Application for Annexation, Comprehensive Plan, and Zone Map Amendment

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

**Applicant:** Allied Homes & Development  
12402 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<sup>AP</sup>  
Email: chrisg@aks-eng.com  
Phone: (503) 563-6151

**Applicant's Legal Counsel:** Schwabe, Williamson & Wyatt  
Pacwest Center 1211 SW 5<sup>th</sup> 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



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**Clackamas County  
Assessor's Map:**

2 4E 23, Tax Lot 701

**Site Size:**

±14.30 acres

**Land Use District:**

Exclusive Farm Use (EFU)





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## **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) and the amendment of the Sandy Urban Growth Boundary (UGB) to accommodate a future public transportation facility (i.e., Gunderson Road) and parkland dedication on Tax Lot 701 that is currently outside the City limits and UGB. The alignment for the Gunderson Road extension falls within property 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 area for parkland dedication.

Allied Homes & Development (Applicant) is submitting this application for an Annexation, Comprehensive Plan Map Amendment, and Zone Map Amendment for the subject portion of Tax Lot 701 to allow for the public facilities. This consolidated application involves updating the City's comprehensive plan map designation for the subject portion of the property from existing Clackamas County Exclusive Farm Use (EFU) designation to Low Density Residential (LDR) and Single Family Residential (SFR) zoning designation.

The City of Sandy Land Development Code (LDC) requires this application be considered through a Quasi-Judicial Type IV procedure, which applies to an individual property, involving hearings before the Planning Commission and the City Council. The City should also comply with the Type III noticing requirements outlined in LDC Chapter 17.12. This application includes the City application forms and written materials necessary for the City of Sandy staff to review and determine compliance with the applicable approval criteria. The evidence is substantial and supports the approval of the application.

## **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 vegetated 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**

### **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.



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**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. 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 is 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 functionable location through site analysis and development review. The location shown in Exhibit C 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 C 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



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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:

- 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 and provide local parkland, 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



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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. The City's Comprehensive Plan with respect to 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 parkland improvements 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. Additionally, providing parkland on the northeast portion of Tax Lot 701 will enhance quality of life for the residents in the area. The parkland dedication 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





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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.



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**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)



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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 and parkland facilities.

**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 and parkland facilities. 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



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- 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 a public parkland facility). 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.

#### **SANDY DEVELOPMENT CODE – REVISED ORDINANCE 2019-01**

##### **CHAPTER 17.24 - COMPREHENSIVE PLAN AMENDMENT PROCEDURES**

###### **17.24.00 BACKGROUND**

The adopted Comprehensive Plan is the official statement of the City that sets forth major policies concerning desired future development of the community. The Comprehensive Plan is the controlling land use planning instrument for the City, and as such land development regulations and related actions are required to conform to the plan.

This chapter pertains to lands within the City limits. Those portions of the Comprehensive Plan that apply to areas outside the City limits but within the urban growth boundary shall be amended in accordance with the provisions of Clackamas County and the Sandy Urban Growth Management Agreement.

**Response:** Tax Lot 701 is currently located outside of the City limits and within the City of Sandy's Urban Reserve Area (URA). This application involves amending the Urban Growth Boundary in accordance with the provisions of Clackamas County and the Sandy Urban Growth Management Agreement (UGMA). This chapter is relevant to the project.

###### **17.24.10 INTENT**

This chapter sets forth review criteria and procedural requirements in order to:

- A. Respond to changing conditions and community attitudes;
- B. Ensure flexibility while at the same time maintain the integrity of the Comprehensive Plan; and
- C. Establish procedures by which the Plan text and map may be amended.

###### **17.24.20 INITIATION**

Comprehensive Plan amendments may be initiated by one of the following:

- A. An application submitted by a property's owners or their authorized agents for a specific property; or
- B. A majority vote of the City Council.

**Response:** This application is submitted on behalf of the property owners of Tax Lot 701. The criteria are met.





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#### 17.24.30 FREQUENCY OF PLAN AMENDMENTS

Applications for Comprehensive Plan amendments initiated by property owners shall be reviewed semi-annually in March and September unless otherwise authorized by the City Council. The City Council may initiate amendments to the Comprehensive Plan at any time. Comprehensive Plan Amendments filed in conjunction with an annexation application shall be reviewed concurrently. Comprehensive Plan amendments are exempt from the time limits established in State law for development review processes and shall be exempt from time restrictions set in this Code.

**Response:** This application involves a Type C Annexation; therefore, the Comprehensive and Zone Map Amendments should be reviewed concurrently.

#### 17.24.40 APPLICATION REQUIREMENTS

An application may be filed jointly by any or all of the property owners of record or their authorized agents within the area of the proposed Comprehensive Plan amendment. Applications shall be on forms provided by the Director and include a description and map of the area to be affected by the proposed change, a statement of the reasons for the change, and other information as may be necessary for an adequate review of the application. Notice shall be provided to the Land Conservation and Development Commission (LCDC) of any proposed amendment or new regulation as provided by State law. In addition, notice of any proposed amendment that may affect private access to state roads, or that may impact a state transportation facility, shall be provided to the Oregon Department of Transportation (ODOT).

**Response:** The application requirements are understood. Tax Lot 701 fronts on OR 211. It is understood that notice will be provided by the City to the Land Conservation and Development Commission (LCDC) and Oregon Department of Transportation (ODOT).

#### 17.24.50 ACCEPTANCE OF APPLICATION

- A. The Director shall review the application in accordance with Chapter 17.20-Public Hearings;
- B. After accepting a complete application, the Director shall schedule a public hearing to be held by the Planning Commission. Notice of the hearing shall be provided in accordance with Chapter 17.22 Public Notices.

#### 17.24.60 STAFF EVALUATION

The Director shall prepare a report that evaluates whether the proposal complies with the review criteria in Chapter 17.24.70. The report should include a recommendation for approval or denial.

#### 17.24.70 REVIEW CRITERIA

Comprehensive Plan amendments shall be reviewed to assure consistency with the purposes of this chapter, policies of the Comprehensive Plan, and any other applicable policies and standards adopted by the City Council. Amendments shall be approved only when the following findings are made:

- A. The change being proposed is the best means of meeting the identified public need; and
- B. The change conforms to all applicable Statewide Planning Goals.

**Response:** This written document addresses applicable portions of the City of Sandy Land Development Code (SDC), Comprehensive Plan, and LCDC Statewide Planning Goals. The review criteria have been met.

#### 17.24.80 ACTION BY THE HEARING BODY



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- A. Planning Commission. The Planning Commission shall conduct a public hearing in accordance with Chapter 17.20-Public Hearings. Following the close of the public hearing, the Commission shall make a recommendation to the City Council concerning the proposed Comprehensive Plan map amendment. The Commission's recommendations shall include findings that specify how the proposal has or has not complied with the above review criteria.
  - B. City Council. Upon receipt of the Planning Commission's recommendation the matter shall be set for a de novo public hearing before the City Council. Following the close of the public hearing, the City Council shall either deny the application or adopt an ordinance approving the proposed Comprehensive Plan map amendment or a modification thereof. The City Council's decision shall include findings that specify how the proposal has or has not complied with the above review criteria.
  - C. Notwithstanding any contrary code provision and in the City Council's sole discretion, it may allow an amendment to proceed directly to a public hearing before the City Council without a hearing or recommendation from the Planning Commission.

#### 17.24.90 NOTICE OF DECISION

The Director shall provide the applicant with a notice of decision that includes a written statement of the City Council's decision, a reference to findings leading to it, and appeal period deadline. A notice of the decision shall also be mailed to persons who participated orally or in writing at the public hearing and who in writing requested notice of the decision.

**Response:** This above procedural standards are understood and do not require action by the Applicant.

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#### CHAPTER 17.26 - ZONING DISTRICT AMENDMENTS

##### 17.26.00 INTENT

This chapter sets forth review criteria and procedural requirements for quasi-judicial and legislative zoning map amendments to accomplish the following: A. Maintain sound, stable, and desirable development within the City;

- B. Permit changes in zoning district boundaries where appropriate;
- C. Ensure zoning changes are consistent with the community's land use policies and goals; and
- D. Lessen the influence of private economic interests in the land use decision-making process.

##### 17.26.10 BACKGROUND

The Zoning Map is consistent with the adopted Comprehensive Plan, as amended, and as such it is a reflection of the City's land use planning goals. The Zoning Map has been adopted as part of the Development Code. Frequent and piecemeal amendments to the Zoning Map can threaten the integrity of the Comprehensive Plan and the likelihood of its successful implementation. Nevertheless, it may be necessary to amend the Zoning Map from time to time to correct errors or to respond to changing conditions or unforeseen circumstances.



When a zoning district is amended there often must be a corresponding change to the Comprehensive Plan map. There are, however, instances where more than one zoning district matches the Comprehensive Plan designation. In these situations, the zoning district can be amended without a Plan map change. The table below illustrates the relationship between the Comprehensive Plan and the Zoning Map designations in the City.

Zoning district changes are classified as legislative or quasi-judicial, depending on the number of properties involved. Changes to the Zoning Map are reviewed initially by the Planning

Commission with a recommendation forwarded to the City Council. The City Council conducts a public hearing and considers adoption of changes. A Zoning Map application may be reviewed in conjunction with a Comprehensive Plan map amendment or other land use application.

**17.26.20 COMPREHENSIVE PLAN & CORRESPONDING ZONING MAP DESIGNATIONS**

PLAN MAP DESIGNATION	ZONING MAP DESIGNATION
<b>RESIDENTIAL</b>	<b>RESIDENTIAL</b>
LDR – Low Density Residential	SFR Single Family (3-5.8 units/net acre) R-1 Low Density (5-8 units/net acre)
MDR – Medium Density	R-2 Medium Density (8-14 units/net acre)
HDR – High Density	R-3 High Density (10-20 units/net acre)
<b>COMMERCIAL</b>	<b>C-1 Central Business District</b>
	C-2 General Commercial
	C-3 Village Commercial
<b>INDUSTRIAL</b>	<b>INDUSTRIAL</b>
	I-1 Industrial Park
	I-2 Light Industrial
	I-3 Heavy Industrial

**Response:** It is understood that the portion of the property that is planned to be annexed will be designated Low Density Residential (LDR) and Single Family Residential (SFR).

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**17.26.40 QUASI-JUDICIAL AMENDMENT PROCEDURES**

All zoning district changes not deemed legislative shall be quasi-judicial.

- A. **Initiation-Quasi-Judicial.** Initiation of a zoning district change that is quasi-judicial in nature may be accomplished by one of the following ways:
  1. Filing of an application by the owner(s) of the subject property(ies); or
  2. A majority vote of the City Council or Planning Commission following the same procedures used for legislative amendments discussed above.

Where a motion by either the City Council or Planning Commission involves a Planned Development designation, the motion need not include a conceptual or detailed development plan.

- B. **Review Criteria.** Quasi-judicial zoning district changes shall be reviewed to:
  1. Determine the effects on City facilities and services;



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2. To assure consistency with the purposes of this chapter;
  3. To assure consistency with the policies of the Comprehensive Plan;
  4. To assure consistency with the Statewide Planning Goals as may be necessary, and any other applicable policies and standards adopted by the City Council.

**Response:** This application addresses City facilities and services, consistency with Chapter 17 and the policies of the Comprehensive Plan, and the applicable LCDC Statewide Planning Goals. The review criteria have been addressed and met.

- C. **Application Requirements.** An application for quasi-judicial zoning district change shall be made on forms provided by the Director and shall include the following where applicable:
  1. Description of the land (address, lot, block, or similar description);
  2. Narrative addressing how the application meets the review criteria;
  3. Maps, drawings, and such other information as may be needed for an adequate review of the application;
  4. List of affected property owners, from current Clackamas County Assessor's Office records, within 300 feet of the boundaries of the parcel(s) proposed for a zoning district change; and
  5. If a proposed zoning district change is to include land in more than one ownership, the application must be submitted jointly by all of the owners or authorized agents.

**Response:** The above-listed submittal items have been included within the application materials. The zoning district change involves land in more than one ownership; as such, the application is submitted jointly by the property owners.

#### 17.26.60 ACTION BY THE HEARING BODY

- A. **Planning Commission.** The Planning Commission shall conduct a public hearing in accordance with Chapter 17.20-Public Hearings. Following the close of the public hearing the Commission shall make a recommendation to the City Council concerning the proposed Zoning Map amendment. The Commission's recommendations shall include findings that specify how the proposal has or has not complied with the above review criteria;
- B. **City Council.** Upon receipt of the Planning Commission's recommendation the matter shall be set for a public hearing before the City Council. Following the close of the public hearing the City Council shall either deny the application or adopt an ordinance approving the proposed Zoning Map amendment or a modification thereof. The City Council's decision shall include findings that specify how the proposal has or has not complied with the above review criteria.
- C. Notwithstanding any contrary code provision and in the City Council's sole discretion, it may allow an amendment to the zoning map or to the development code to proceed directly to a public hearing before the City Council without a hearing or recommendation from the Planning Commission.

#### 17.26.70 NOTICE OF DECISION





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The Director shall provide the applicant with a notice of decision that includes a written statement of the City Council's decision, a reference to findings leading to it, and appeal period deadline. A notice of the decision shall also be mailed to persons who participated orally or in writing at the public hearing and, for legislative zone amendments, who in writing requested notice of the decision.

#### 17.26.80 APPEALS

The decision of the hearing authority may be appealed in accordance with Chapter 17.28 Appeals.

#### 17.26.90 EFFECTIVE DATE

The decision of the City Council made in conjunction with a Zoning Map amendment shall become effective 30 days after passage of the ordinance. No zoning district changes will take effect, however, until and unless the necessary Comprehensive Plan amendment has been implemented by the City Council, if needed.

**Response:** The procedural standards listed above are understood.

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### CHAPTER 17.78 - ANNEXATION

#### 17.78.00 INTENT

The procedures and standards established in this chapter are required for review of proposed annexations in order to:

- A. Maximize citizen involvement in the annexation review process by holding a public hearing;
- B. Establish a system for measuring the physical, environmental, fiscal and related social effects of proposed annexations; and,
- C. Where possible and practical, avoid the creation of irregular boundaries or annexations that create "island," "cherry stem" or "shoestring" annexations.

**Response:** The above procedural standards are understood.

#### 17.78.10 PROCEDURAL CONSIDERATIONS

- A. The corporate limits of the City shall include all territory encompassed by its boundaries as they now exist or are modified as provided herein unless mandated by State Law.
- B. The City may annex an island if it is less than 100 acres and has at least 80 percent of its boundary contiguous to the City; or the land is of any size and has at least 80 percent of its boundary contiguous to the City if the area to be annexed existed as an island before October 20, 1997.

**Response:** The subject property is not an island. The standard is not applicable.

- C. The City may annex land for public facilities. Public facilities include but are not limited to schools, senior centers, roads, police and fire stations, parks or open space, and public water, sewer and storm drainage facilities.

**Response:** This application involves annexation of land for the extension of a public transportation facility (i.e., Gunderson Road) as illustrated in the City of Sandy TSP and parkland dedication. The property (Tax Lot 701) has a total area of ±14.30 acres, though only the acreage required for the road right-of-way and associated improvements, and area for parkland dedication are planned to be annexed to the City of Sandy; the total area planned for annexation is approximately 5.40 acres.



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#### 17.78.15 TYPES OF ANNEXATION

- A. Type A: Annexation in conformance with conceptual zoning designation
- B. Type B: Annexation + zone change
- C. Type C: Annexation + plan map change + zone change

**Response:** This application involves a Type C Annexation.

#### 17.78.20 CONDITIONS FOR ANNEXATION

The following conditions must be met prior to beginning an annexation request:

- A. The requirement of Oregon Revised Statutes, Chapters 199 and 222 for initiation of the annexation process are met;
- B. The site must be within the City of Sandy Urban Growth Boundary (UGB);
- C. The site must be contiguous to the city or separated from it only by a public right-of-way or a stream, bay, lake or other body of water.
- D. The site has not violated Section 17.78.25.

**Response:** An application for an amendment of the Sandy UGB to include Tax Lot 701 is being submitted for processing concurrently with this application. The site is contiguous to Tax Lot 803 of Clackamas County Assessor's Map 2 4E 23, which is located within the City limits, and has not violated Section 17.78.25.

#### 17.78.25 TREE RETENTION

The intent of this section is to treat property with annexation potential (in the UGB) as if it had been subject, prior to annexation, to the tree retention provisions of the City's Urban Forestry Ordinance (Chapter 17.102) and Flood and Slope Hazard (FSH) Overlay District (Chapter 17.60), to discourage property owners from removing trees prior to annexation as a way of avoiding Urban Forestry Ordinance provisions, and to prevent unnecessary tree removal for future subdivision layout. In accordance with ORS 527.722, the State Forester shall provide the City with a copy of the notice or written plan when a forest operation is proposed within the UGB. The City shall review and comment on an individual forest operation and inform the landowner or operator of all other regulations that apply but that do not pertain to activities regulated under the Oregon Forest Practices Act.

- A. Properties shall not be considered for annexation for a minimum of five (5) years if any of the following apply:
  - 1. Where any trees six (6) inches or greater diameter at breast height (DBH) have been removed within 25 feet of the high water level along a perennial stream in the five years prior to the annexation application.
  - 2. Where more than two (2) trees (six (6) inches or greater DBH) per 500 linear feet have been removed in the area between 25 feet and 80 feet of the high water level of Tickle Creek in the five years prior to the annexation application.
  - 3. Where more than two (2) trees (six (6) inches or greater DBH) per 500 linear feet have been removed in the area between 25 feet and 50 feet of the high water level along other perennial streams in the five years prior to the annexation application.



- 
4. Where any trees six (6) inches or greater DBH have been removed on 25 percent or greater slopes in the five years prior to the annexation application.
  5. Where more than ten (10) trees (11 inches or greater DBH) per gross acre have been removed in the five years prior to the annexation application, except as provided below:
    - a. Sites under one (1) acre in area shall not remove more than five (5) trees in the five years prior to the annexation application.
    - b. Sites where removal of ten (10) or fewer trees will result in fewer than three (3) trees per gross acre remaining on the site. Tree removal may not result in fewer than three (3) trees per gross acre remaining on the site. At least three (3) healthy, nonnuisance trees 11 inches DBH or greater must be retained for every one-acre of contiguous ownership.
    - c. For properties in or adjacent to the Bornstedt Village Overlay (BVO), tree removal must not result in fewer than six (6) healthy 11 inch DBH or greater trees per acre.

**Response:** The subject property has not violated Section 17.78.25, above, and the property should be considered for annexation.

**B. Exceptions.** The City Council may grant exceptions to this section where:

1. The property owner can demonstrate that Douglas Fir, Western Red Cedar, or other appropriate native trees were planted at a ratio of at least two trees for every one tree removed no less than five years prior to the submission of the annexation application, and at least 50 percent of these trees have remained healthy; or
2. The Council finds that tree removal was necessary due to hazards, or utility easements or access; or
3. The trees were removed because they were dead, dying, or diseased and their condition as such resulted from an accident or non-human cause, as determined by a certified arborist or other qualified professional; or
4. The trees removed were nuisance trees; or
5. The trees were removed as part of a stream restoration and enhancement program approved by the Oregon Department of Fish and Wildlife as improving riparian function; or
6. The trees removed were orchard trees, Christmas trees, or commercial nursery trees grown for commercial purposes; or
7. The application of this section will create an island of unincorporated area.

**Response:** This application does not require an exception to Section 17.78.25.

**17.78.30 ZONING OF ANNEXED AREAS**

- A.** All lands within the urban growth boundary of Sandy have been classified according to the appropriate city land use designation as noted on the comprehensive plan map (as per the city/county urban growth management area agreement). The zoning classification shall reflect the city land use classification as illustrated in Table 17.26.20.



- 
- B. Where only a single city zoning designation corresponds to the comprehensive plan designation (Type A) and the rezoning decision does not require the exercise of legal or policy judgment on the part of the City Council, amendment of the zoning map shall be a ministerial decision of the Director made without notice or any opportunity for a hearing.

**Response:** Tax Lot 701 is located within the Sandy Adopted URA and is currently designated with Clackamas County EFU zoning. This application includes a comprehensive plan amendment to apply City zoning to allow for creation of a public transportation facility and parkland dedication. Consistent with abutting property designations, the Applicant plans to obtain City Low-Density Residential (LDR) Comprehensive Plan and Single-Family Residential (SFR) Zoning designations for the property. The transportation facility/road and parkland are permitted uses under the above designation as minor public facilities.

#### 17.78.40 EXISTING USE, ACTIVITY OR STRUCTURE

- A. As of the effective date of annexation, no use or activity shall be considered non-conforming if the use or activity: (1) violates or conflicts with county zoning regulations and (2) is not classified as non-conforming under county zoning regulations. Any such use or activity shall constitute a violation of this ordinance.
- B. Any use, activity or structure that is existing at the effective date of annexation, under a Clackamas County use permit with a time limit imposed, shall not be a non-conforming use, but may continue for the extent of the time limit. Such use permits may not be extended without City approval.
- C. Any lot or parcel of land duly recorded in the Clackamas County Recorder's Office prior to the effective date of this Ordinance and having an area, width, depth, or street frontage less than that required in the Zoning District regulations in which such lot or parcel is situated, shall be deemed to be a lot and may be used as a building site, provided that all other regulations for the Zoning District shall apply.

**Response:** The subject property is unimproved with vegetated and pastured areas and is not associated with a current use or activity. There are no structures on site. The purpose of this application is to implement an anticipated condition of approval from the City for the Bailey Meadows Subdivision application. Together with an amendment to the City's UGB, this suite of applications (i.e., annexation, comprehensive plan map amendment, and zone map amendment), an offsite transportation facility improvement (e.g. Gunderson Road extension) can be realized. The configuration, area, and geometry of the land to be annexed is reflective of the Gunderson Road extension and not intended for other uses.

#### 17.78.50 ANNEXATION CRITERIA

Requests for annexation shall not have an adverse impact on the citizens of Sandy, either financially or in relation to the livability of the city or any neighborhoods within the annexation area. Generally, it is desirable for the city to annex an area if the annexation meets any of the following criteria:

- A. A necessary control for development form and standards of an area adjacent to the city; or
- B. A needed solution for existing problems, resulting from insufficient sanitation, water service, or other urban service related problems; or





- C. Land for development to meet urban needs and that meets a logical growth pattern of the city and encourages orderly growth; or
- D. Needed routes for utility and transportation networks.

**Response:** This application involves an annexation to the to the Sandy UGB to allow the extension of Gunderson Road (i.e., an urban public transportation facility) pursuant to the Sandy TSP and dedication of parkland. The extension would provide an additional access to the Bailey Meadows Subdivision and distribute traffic in the area and meet needs for an area of planned, logical urban growth.

**17.78.60 APPLICATION SUBMISSION REQUIREMENTS**

Requests for annexation shall be made on forms provided by the city for such purposes and shall be accompanied by the following:

- A. Written consent form to the annexation signed by the owners of all land to be annexed;
- B. A legal description certified by a registered surveyor or engineer;
- C. The application fee established by the city;
- D. A list of property owners within three hundred (300) feet of the subject property on mailing labels;
- E. Vicinity map showing the area to be annexed including adjacent city territory;

**Response:** The written consent form signed by the property owners, a legal description, fee, list of adjacent property owners, and vicinity map are included in the application materials. The submittal requirements have been met.

- F. Site Plan (Type A=15 copies; Type B or C = 25 copies) drawn to scale (not greater than one inch = fifty feet), indicating:
  - 1. The location of existing structures (if any);
  - 2. The location of streets, sewer, water, electric and other utilities, on or adjacent to the property to be annexed;
  - 3. Approximate location of areas subject to regulation under Chapter 17.60, Flood and Slope Hazard (FSH) Overlay District.

**Response:** The above listed information is provided, as applicable. There are no existing structures or areas of mapped Flood and Slope Hazard (FSH) overlay on the property. The submittal criteria are met.

- G. Narrative Statement explaining the proposal and addressing:
  - 1. Availability, capacity and status of existing water, sewer, drainage, transportation, fire, park and school facilities;

**Response:** The project involves annexation for the purpose of providing public facilities (e.g. transportation facility and parkland). Although Bailey Meadows Subdivision provides for and meets Sandy Development Code criteria for on-site needs, in this case the City and Applicant agree to off-site improvements (i.e., Gunderson Road extension and parkland dedication). Annexation will not create a demand for sewer, water, utility fire, or school needs, nor will the project allow residential density. The submittal criteria are met.



- 
2. Additional facilities, if any, required to meet the increased demand and any proposed phasing of such facilities in accordance with projected demand; and,

**Response:** The project involves annexation for the purpose of providing public facilities as described above. Annexation will not create a demand for sewer, water, utility fire, or school needs, nor will the project allow residential density. The project is not planned to be phased. The submittal criteria are met.

3. Method and source of financing required to provide additional facilities, if any.

**Response:** As described above, the purpose of this annexation application is to provide public facilities (e.g. transportation and parkland dedication) that should be located within the City. Annexation does not create the need for additional facilities. Therefore, financing methods are not applicable.

#### 17.78.70 REVIEW PROCEDURE

##### Type A, B & C

1. Pre-application conference;
2. Submission of completed application;
3. Review by Planning Commission with recommendation to City Council;
4. Review by City Council.

**Response:** The pre-application conference requirement was waived by the Sandy Planning Director in an email dated December 9, 2019. The applicable above procedural review items are understood.

#### 17.78.80 EXCEPTIONS

Exceptions may be granted for identified health hazards and for those matters which the City Council determines that the public interest would not be served by undertaking the entire annexation process. The City Council may authorize an exception to any of the requirements of this chapter. An exception shall require a statement of findings that indicates the basis for the exception.

**Response:** This application does not require exceptions. The above criterion is understood and not applicable.

#### 17.78.90 ANNEXATION CONDITIONS

- A. All properties annexed are subject to inclusion within applicable advance financing districts and urban renewal districts.
- B. These conditions apply to all annexed properties regardless of transfers of the ownership of such properties.

**Response:** The subject property may be included within applicable districts, if any apply. The criteria can be met.



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#### **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 City of Sandy Development Code. The evidence in the record supports approval of the application and the City can rely upon it for its approval of the application.





**Exhibit A: City Application Forms and Checklists**





## 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 UGB Annexation, Comp. Plan, and Zone Map Amendments

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 Annexation, Comp Plan, and Zone Map Amendments regarding 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) <b>Allied Homes &amp; Development</b>	Owner <b>Richard L Pullen, Lawrence Pullen, Sherrene Teneyck</b>
Address <b>12404 SE Sunnyside Road, Suite 706</b>	Address <b>37020 SE Deming Road</b>
City/State/Zip <b>Clackamas, OR 97015</b>	City/State/Zip <b>Sandy, OR 97055</b>
Phone <b>Please contact Applicant's consultant</b>	Phone <b>Please contact Applicant's consultant</b>
Email <b>Please contact Applicant's consultant</b>	Email <b>Please contact Applicant's consultant</b>
Signature <small>DocuSigned by:</small> <i>Cody Bugan</i>	Signature <small>DocuSigned by:</small> <small>DocuSigned by:</small> <small>DocuSigned by:</small> <i>[Signatures]</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			

W:\City Hall\Planning\Planning Forms\Forms Updated 2018\General Land Use Application - updated 2019.doc

**Fees Included: \$6,033 (Annexation Type IV, Type C)**



## SUPPLEMENTAL LAND USE APPLICATION FORM (No. 1)

(Please print or type the information below)

**Planning Department**  
 39250 Pioneer Blvd.  
 Sandy OR 97055  
 503-668-4886

ANNEXATION     
  ZONE CHANGE     
  COMPREHENSIVE PLAN AMENDMENT

Property Identification			
Tax Lot Number	Township	Range	Section

Existing and Proposed Land Use Designations				
Tax Lot Number(s)	Comprehensive Plan		Zoning Map	
	Existing	Proposed	Existing	Proposed

**IMPORTANT:** Each section on this application must be fully completed or your application could be deemed incomplete.

Tax Lot Number	Clackamas County Recording Number	Assessed Land Value	Size in Acres or Sq. Ft.

**LEGAL DESCRIPTION:** Attach a separate page with the written metes and bounds legal description. Accuracy of the legal description(s) must be certified by a registered land surveyor for all annexation applications.

A legal description and map is included in Exhibit C.

<b>DESCRIBE EXISTING USES</b>

<b>DESCRIBE EXISTING BUILDINGS</b>
How many buildings are located on the property?
Number of Total Dwelling Units :

<b>DESCRIBE EXISTING TOPOGRAPHY</b>	
Approximate acreage with slopes less than 14.9%	
Approximate acreage with slopes 15% to 24.9%	
Approximately acreage with slope in excess of 25%	
Any creeks, water sources, drainageways or wetlands within the property? <b>Yes</b> <input type="checkbox"/> <b>No</b> <input type="checkbox"/>	
Any steep slopes, ravines, draws or bluffs within or abutting the property? <b>Yes</b> <input type="checkbox"/> <b>No</b> <input type="checkbox"/>	

**DESCRIBE EXISTING ACCESS**

Does the subject property abut a public right-of-way? **Yes**  **No**

Name of public right-of-way:

Does the property abut a private road? **Yes**  **No**

Name of abutting private road(s):

Describe any unusual difficulties in accessing the property:

**DESCRIBE SURROUNDING USES ON ADJACENT PROPERTIES**

**DESCRIBE PROPOSED USE OF THE PROPERTY OR LAND DIVISIONS**

**Include number of lots, densities, etc.**





## SUPPLEMENTAL ANNEXATION LAND USE APPLICATION FORM (No. 2)

### List of all owners of property included in the application

Owner Information	Property Description TL, Section, Township, Range
Owner Sherrene TenEyck Address 37020 SE Deming Road City/State/Zip Sandy, OR 97055 Phone Please contact Applicant's consultant	TL 24E23 00701 Section 23, Township 2S, Range 4E
Owner Richard Pullen Address 36969 Deming Road City/State/Zip Sandy, OR 97055 Phone Please contact Applicant's consultant	TL 24E23 00701 Section 23, Township 2S, Range 4E
Owner Lawrence Pullen Address 36940 Deming Road City/State/Zip Sandy, OR 97055 Phone Please contact Applicant's consultant	TL 24E23 00701 Section 23, Township 2S, Range 4E
Owner Address City/State/Zip Phone	
Owner Address City/State/Zip Phone	



## TYPE A, B or C ANNEXATIONS SUBMISSION REQUIREMENTS

All of the following materials must be submitted with your application. Prior to submitting application materials, a pre-application conference with City staff is required to discuss procedures for approval, applicable state and local requirements, objectives and policies of the Sandy Comprehensive Plan, and the availability of services.

- ✓ A. **One (1) copy of:**
  1. Land Use Application Form
  2. Supplemental Land Use Application Form No. 1
  3. Supplemental Annexation Land Use Application Form No. 2
  4. Narrative specifying the nature of the request and how it relates to the Comprehensive Plan goals and policies, the Development Code requirements in Chapter 17.78, urban services and financing methods, and the Zoning Map change criteria.
  5. Vicinity map showing the area to be annexed including adjacent city territory.
  6. A legal description and map certified by a registered surveyor or engineer.
- ✓ B. **Written consent form** signed by the owners of all land to be annexed.
- ✓ C. **Twenty (20) copies of the Site Plan** drawn to scale (not greater than one inch = fifty feet or as approved by the Director), indicating:
  1. The location of existing structures (if any);
  2. The location of streets, sewer, water, electric and other utilities, on or adjacent to the property to be annexed; and,
  3. Approximate location of areas subject to regulation under Chapter 17.60, Flood and Slope Hazard Overlay District.
- ✓ D. **Twenty (20) copies** of other documents as required by the Planning Director.
- ✓ E. **List of affected property owners** within 300 feet of the boundaries of the subject site and **mailing labels** for property owners within 300 feet of the site, excluding rights-of-way.
- ✓ F. **Filing Fee** per Fees and Charges Resolution  
**FEE INCLUDED: \$6,033 (ANNEXATION TYPE IV, TYPE C)**



## COMPREHENSIVE PLAN MAP AMENDMENTS

### SUBMISSION REQUIREMENTS

All of the following materials must be submitted with your application. All plans should be drawn to engineering scale (1" = 10' or 1" = 20' preferred). Prior to submitting application materials, a pre-application conference with City Staff is required to discuss procedures for approval, applicable state and local requirements, objectives and policies of the Sandy Comprehensive Plan, and the availability of services.

- ✓ A. **One (1) copy of:**
  1. Land Use Application Form
  2. Supplemental Land Use Application Form No. 1
  3. 8-1/2" x 11" reduction of site plan
- ✓ B. **Twenty (20) copies of:**
  1. Site Plan showing the applicant's entire property and the surrounding area to a distance sufficient to determine the relationship between the applicant's property and proposed development, and adjacent property and its developed areas.
  2. Other required documents (traffic study, etc.).
  3. Narrative specifying the nature of the request and how it relates to the Comprehensive Plan goals and policies, the Development Code requirements, and the Comprehensive Plan Amendment Procedure review criteria in Section 17.24.70.
- ✓ C. **List of affected property owners** within 300 feet of the boundaries of the subject site and **mailing labels** for property owners within 300 feet of the site, excluding rights-of-way.
- ✓ D. **Filing Fee** per Fees and Charges Resolution  
**FEE INCLUDED: \$6,033 (ANNEXATION TYPE IV, TYPE C)**



## ZONING MAP AMENDMENTS SUBMISSION REQUIREMENTS

All of the following materials must be submitted with your application. All plans should be drawn to engineering scale (1" = 10' or 1" = 20' preferred). Prior to submitting application materials, a pre-application conference with City Staff is required to discuss procedures for approval, applicable state and local requirements, objectives and policies of the Sandy Comprehensive Plan, and the availability of services.

- ✓ A. **One (1) copy of:**
  1. Land Use Application Form
  2. Supplemental Land Use Application Form No. 1
  3. 8-1/2" x 11" reduction of site plan
- ✓ B. **Twenty (20) copies of (and digital version):**
  1. Site Plan showing the applicant's entire property and the surrounding area to a distance sufficient to determine the relationship between the applicant's property and proposed development and adjacent property and development.
  2. Other required documents (traffic study, etc.).
  3. Narrative specifying the nature of the request and how it relates to the Comprehensive Plan goals and policies, the Development Code requirements, and the Zoning Map change criteria in Section 17.26.40.
- ✓ C. **List of affected property owners** within 300 feet of the boundaries of the subject site and **mailing labels** for property owners within 300 feet of the site, excluding rights-of-way
- ✓ D. **Filing Fee** per Fees and Charges Resolution  
**FEE INCLUDED: \$6,033 (ANNEXATION TYPE IV, TYPE C)**




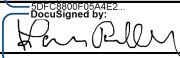
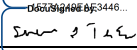


## Exhibit B: Annexation Written Consent Form

Written Consent Form

We, the undersigned property owners of and/or registered voters in the area described below, hereby petition for, and give our consent to, annexation of the area to the City of Sandy.

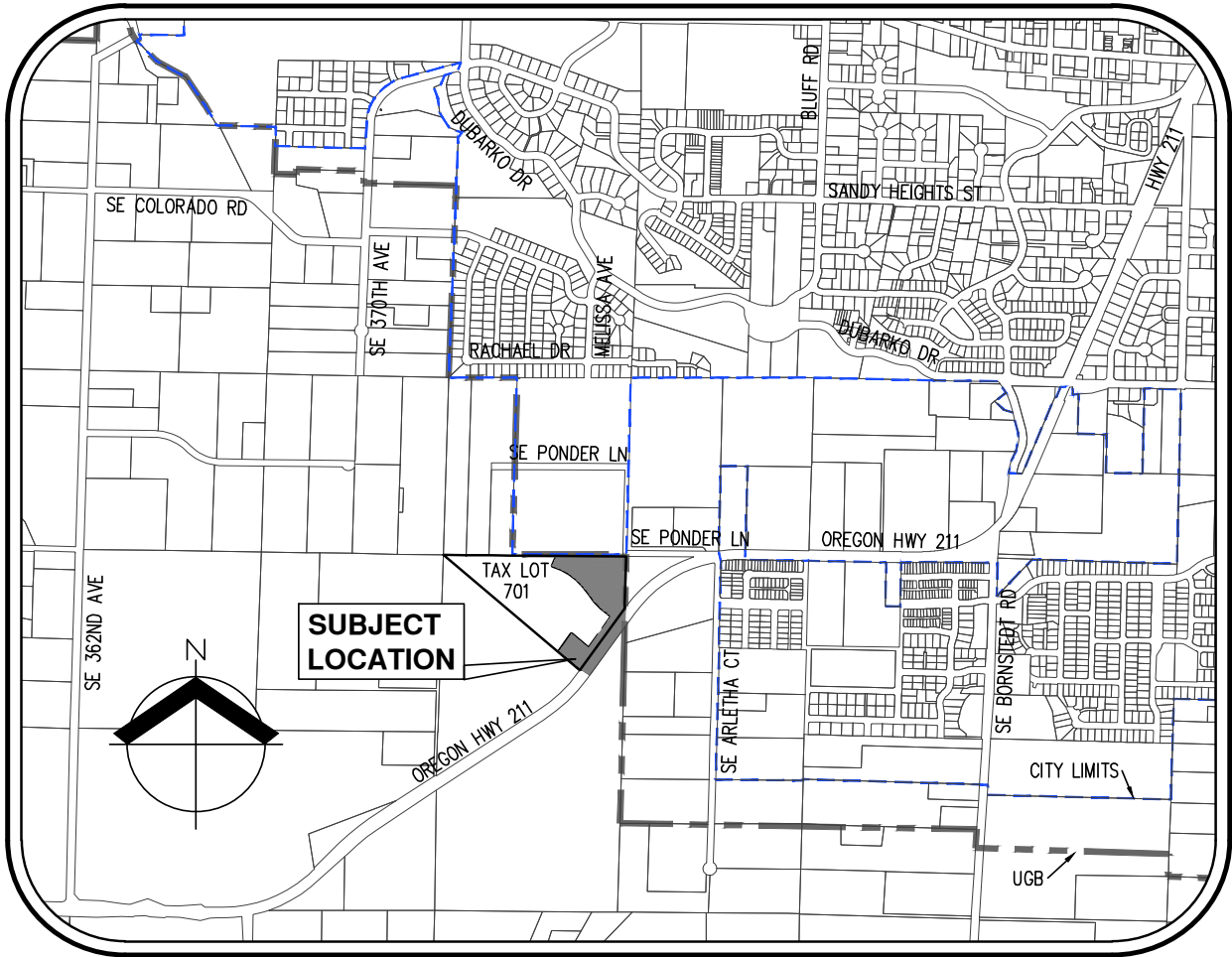
Note: This petition may be signed by qualified persons even though they may not know their property description or precinct number.

Date	Signature	Printed Name	I am a:			Address	Property Description or Parcel ID	Precinct Number
			PO	RV	OV			
12/20/2019		Richard L Pullen	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	36969 Deming Road, Sandy, OR 97055		
12/27/2019		Lawrence Pullen	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	36940 Deming Road, Sandy, OR 97055		
12/21/2019		Sherrene Lanette TenEyck	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	37020 SE Deming Rd, Sandy, OR 97055		

PO- Property Owner  
 RV – Registered Voter  
 OV – Owner and Registered Voter

## Exhibit C: Site Maps and Legal Description

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**VICINITY MAP**  
 NOT TO SCALE





AKS ENGINEERING & FORESTRY, LLC  
12965 SW Herman Road, Suite 100, Tualatin, OR 97062  
P: (503) 563-6151 | www.aks-eng.com

AKS Job #7107

OFFICES IN: BEND, OR - KEIZER, OR - TUALATIN, OR - VANCOUVER, WA

## 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.

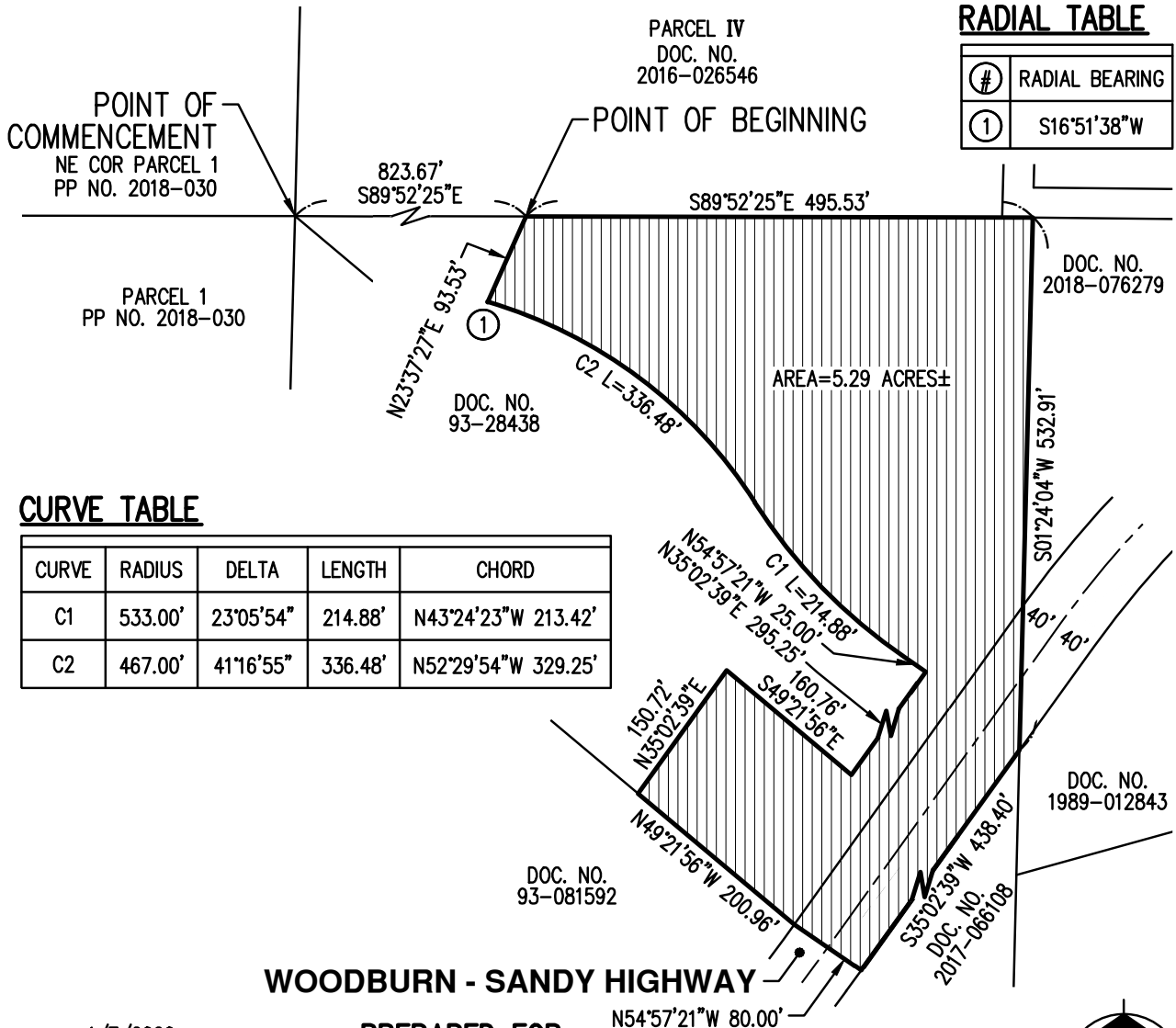
1/7/2020

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

REGISTERED  
 PROFESSIONAL  
 LAND SURVEYOR

*Benjamin R Huff*

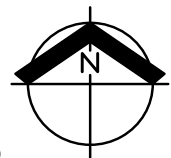
OREGON  
 MARCH 14, 2017  
 BENJAMIN R HUFF  
 84738PLS

RENEWS: 6/30/21

## PREPARED FOR

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

SCALE: 1"=150 FEET



## EXHIBIT MAP

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



EXHIBIT  
**B**

DRWN: WCB  
 CHKD: BRH

AKS JOB:  
 7107

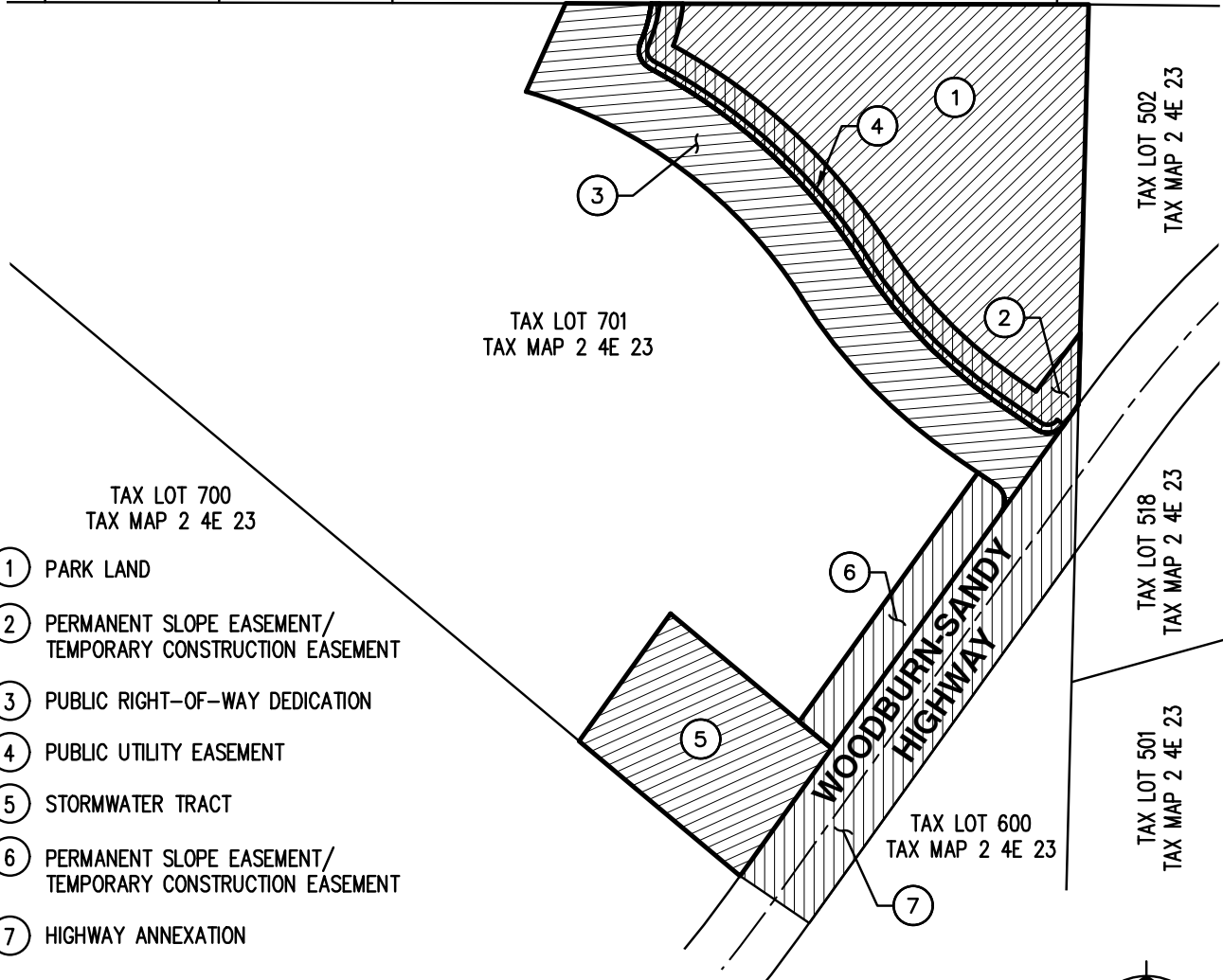
# EXHIBIT KEY MAP

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

WOODBURN SANDY  
HIGHWAY

TAX LOT 501  
TAX MAP 2 4E 23

TAX LOT 600  
TAX MAP 2 4E 23

- 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

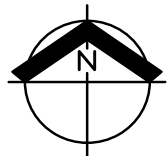
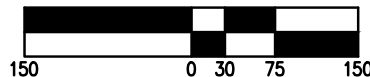
1/7/2020

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



**Exhibit D: Lancaster Mobley Engineering  
Traffic Documentation**

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## 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



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

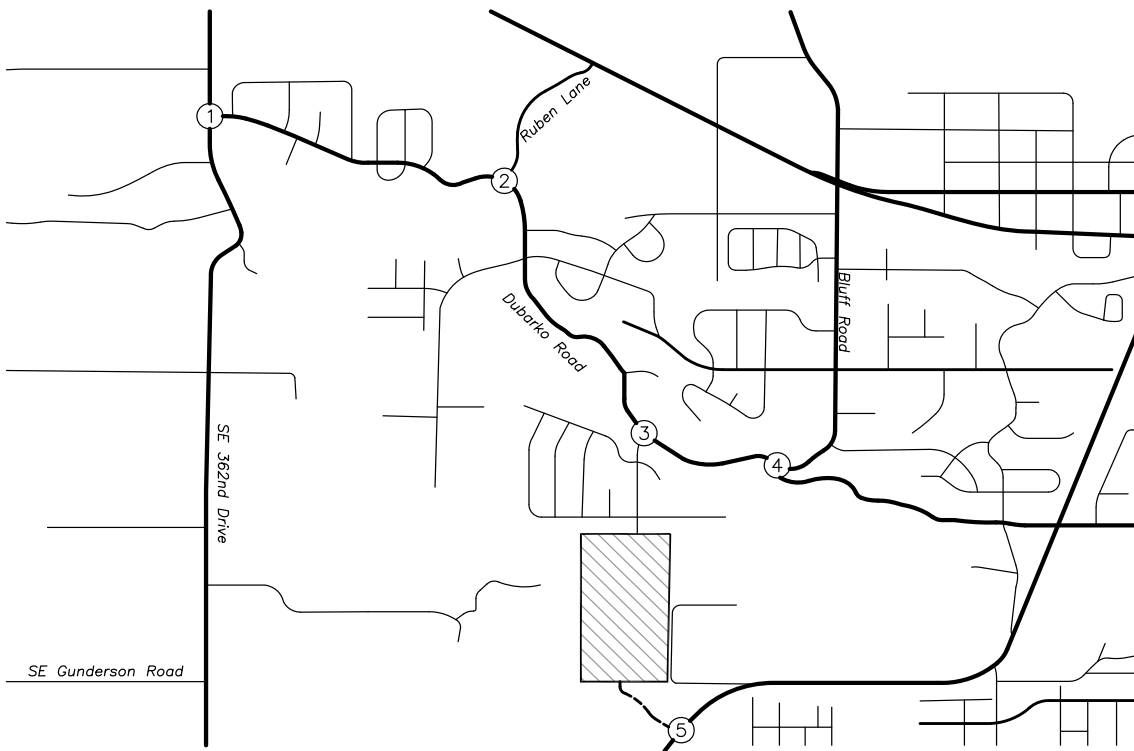
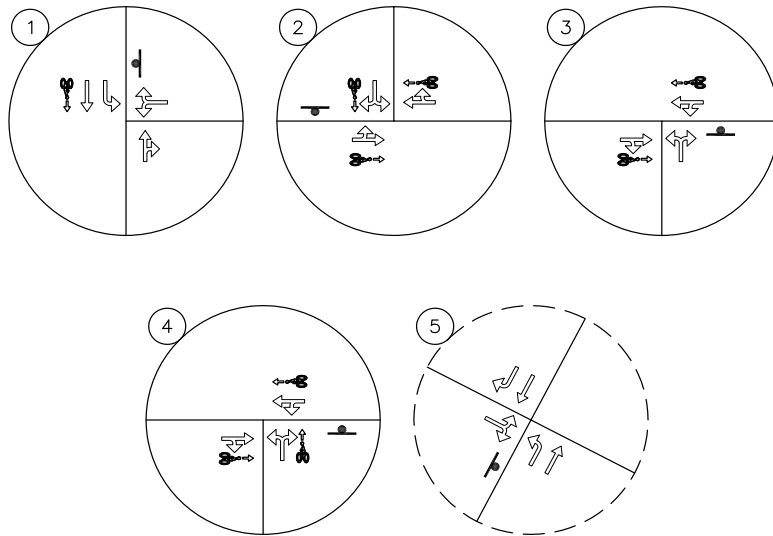
The planned connection of Gunderson Road to Highway 211 will provide an additional route into and out of the Bailey Meadows subdivision as well as the existing neighborhood to the north. This will reduce reliance on Melissa Avenue, which will provide access to the Bailey Meadows subdivision via Dubarko 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 362<sup>nd</sup> 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 362<sup>nd</sup> Avenue is identical in time to the route using Highway 211 to 362<sup>nd</sup> 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.

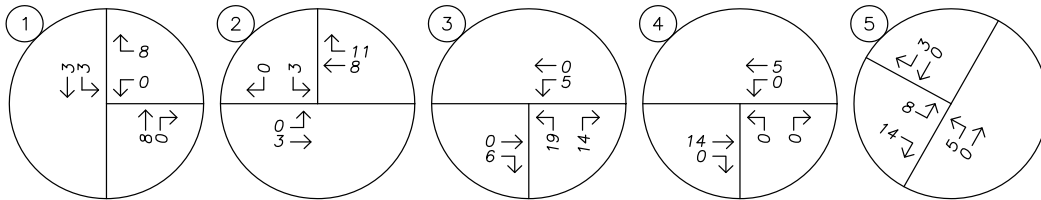


LEGEND

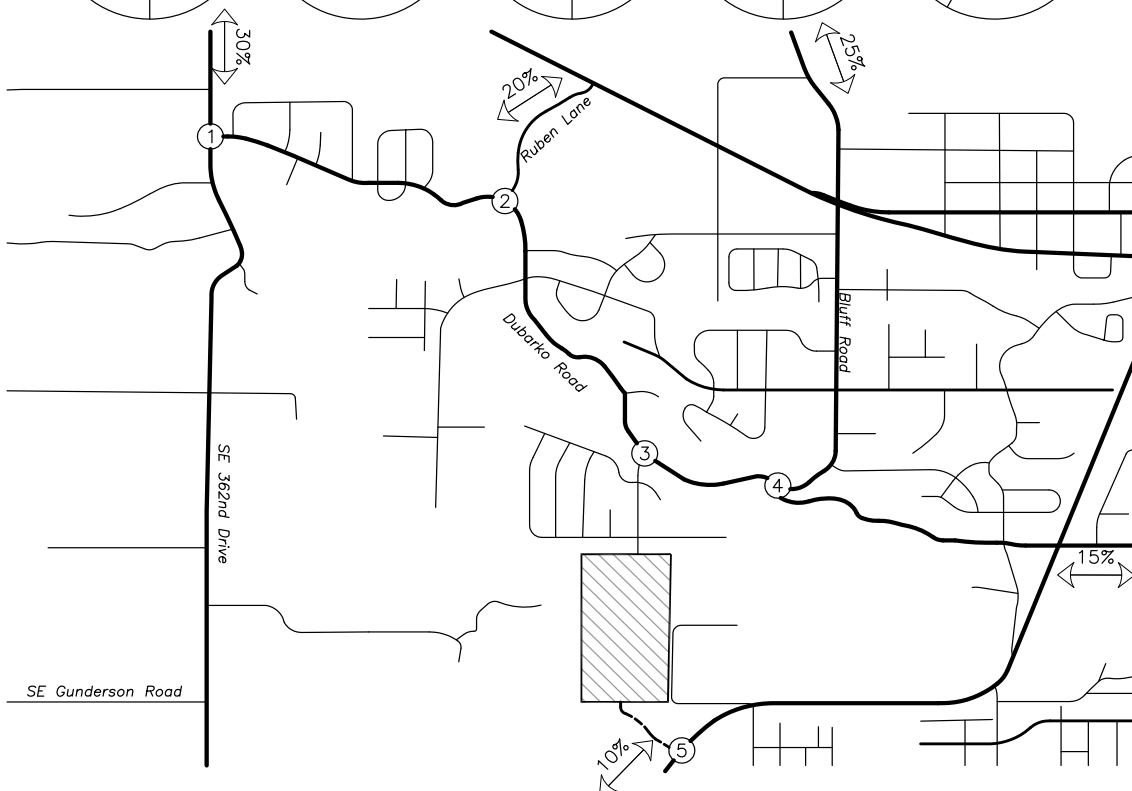
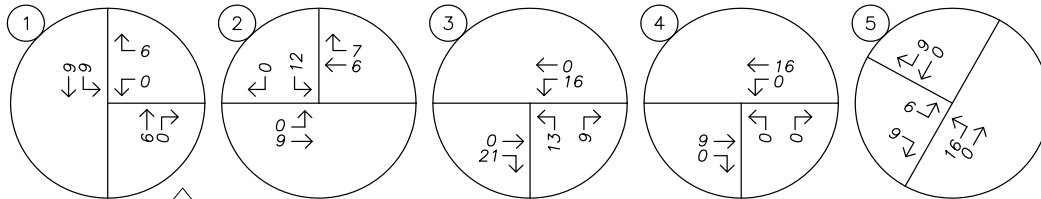
XX% PERCENT OF PROJECT TRIPS

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



no scale

FIGURE 2

PAGE 5



## ***Traffic Volumes***

### ***Existing Conditions***

Twenty-four-hour speed data was collected on Highway 211 near the intersection with Ponder Lane on December 4<sup>th</sup>, 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 30<sup>th</sup> 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.

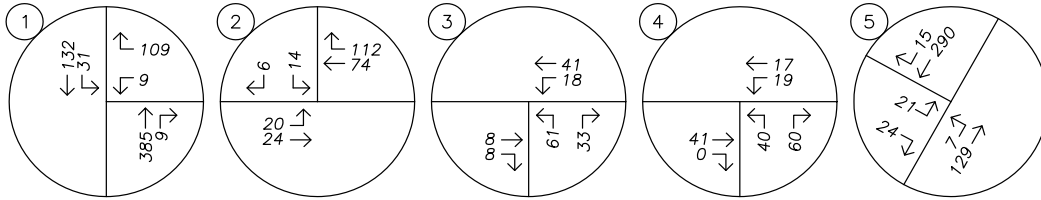
### ***Buildout Conditions***

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).

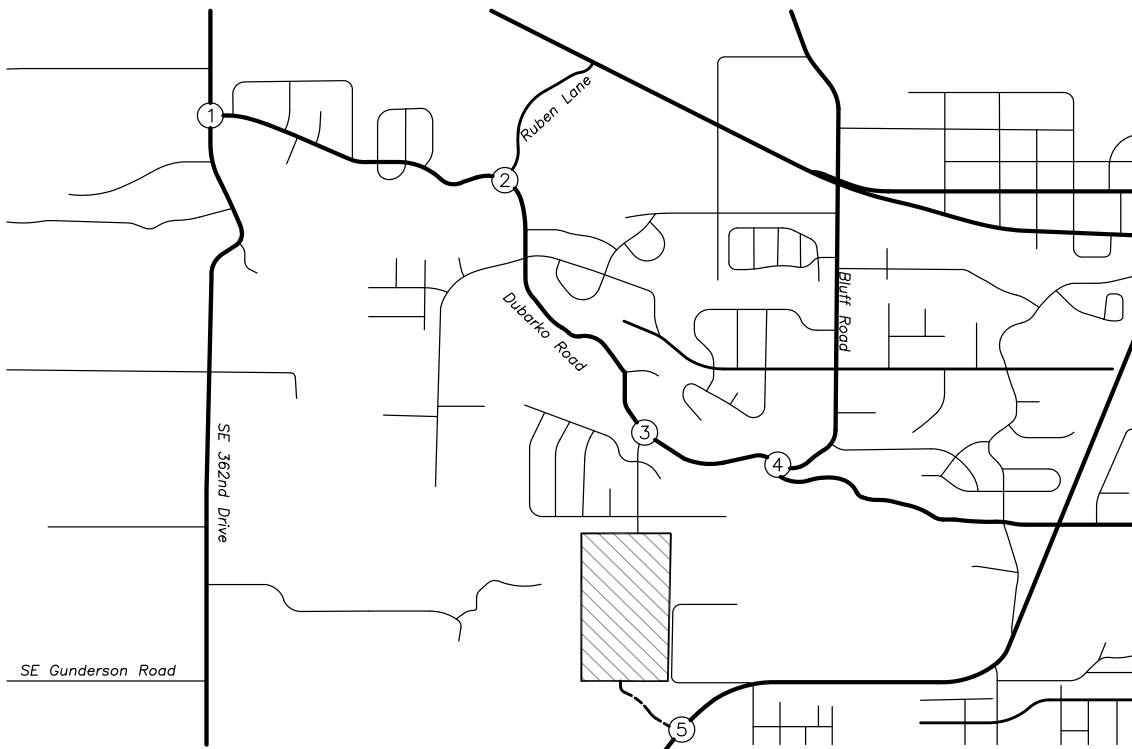
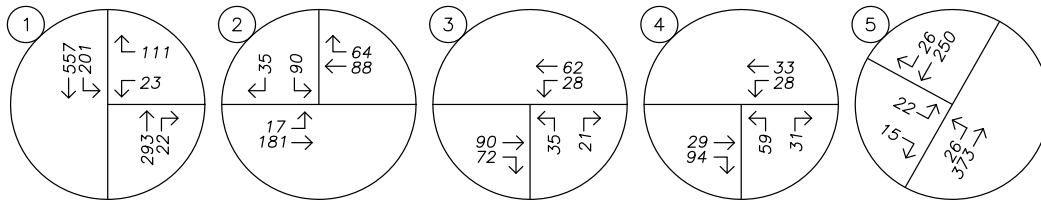
The year 2022 buildout scenario was updated to include a redistribution of existing trips that are likely to use the new Highway 211 roadway connection. Finally, site trips generated by the Bailey Meadows subdivision, discussed previously within the Trip Distribution section, were added to the projected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



January 6, 2020  
Page 8 of 14

### ***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*<sup>1</sup> (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.

---

<sup>1</sup> 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*<sup>2</sup> (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
<b>SE 362<sup>nd</sup> Drive at Dubarko Road</b>						
Year 2022 Buildout Conditions	13	B	0.24	19	C	0.36
<b>Ruben Lane at Dubarko Road</b>						
Year 2022 Buildout Conditions	10	A	0.03	12	B	0.21
<b>Dubarko Road at Melissa Avenue</b>						
Year 2022 Buildout Conditions	9	A	0.13	10	B	0.09
<b>Dubarko Road at Bluff Road</b>						
Year 2022 Buildout Conditions	8	A	0.16	8	A	0.15
<b>Highway 211 at SE Gunderson Road</b>						
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.

<sup>2</sup> Transportation Research Board, *Highway Capacity Manual, 6<sup>th</sup> 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**

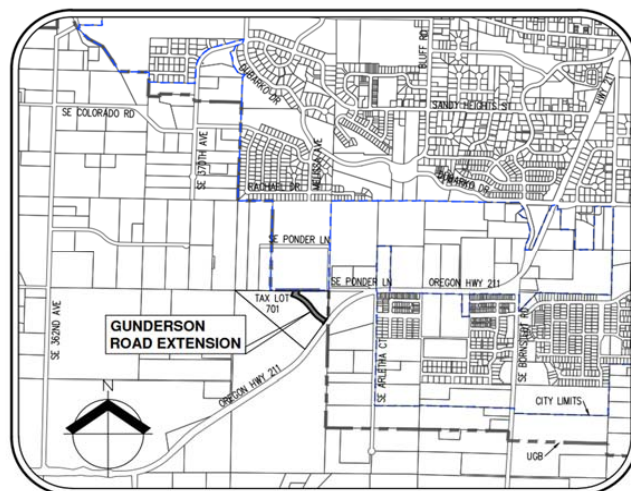
However, upon closer investigation and engineering analysis, it was determined that the alignment shown on the TSP was not feasible for construction of an intersection with Highway 211, primarily due to poor sight distance, the need for a perpendicular intersection, and a very steep superelevated roadway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



January 6, 2020  
Page 11 of 14

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.

### ***OAD 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.*





January 6, 2020  
Page 13 of 14

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  
Page 14 of 14

***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:  
 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
<b>WARRANT 1, CONDITION A</b>					
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
<b>WARRANT 1, CONDITION B</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	6,750	8,850	
Minor Street*	220	2,650	<b>No</b>
<i>Condition B: Interruption of Continuous Traffic</i>			
Major Street	6,750	13,300	
Minor Street*	220	1,350	<b>No</b>
<i>Combination Warrant</i>			
Major Street	6,750	10,640	
Minor Street*	220	2,120	<b>No</b>

\* 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**

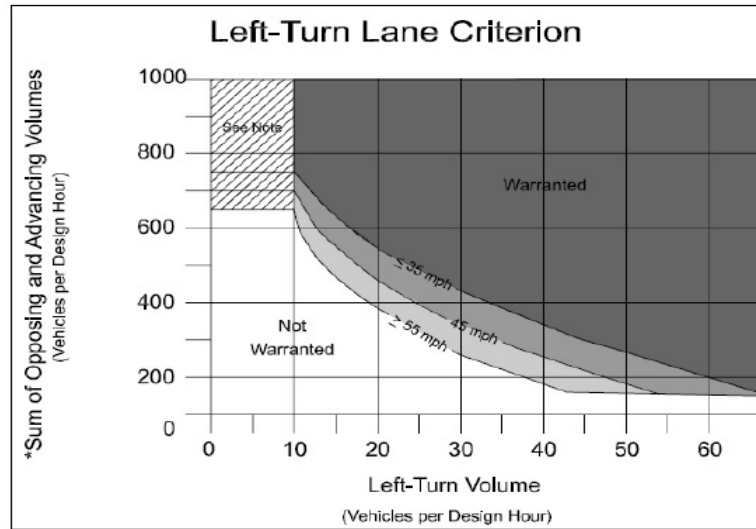
Left-Turn Volume 26

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

**\* (Advancing Vol/ # of Advancing Through Lanes) +  
 (Opposing Vol/ # 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
<b>Intersection Summary</b>						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	39.7%			ICU Level of Service A		
Analysis Period (min)	15					

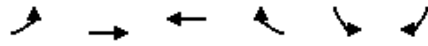
HCM 6th TWSC  
1: SE 362nd Drive & Dubarko Road

12/13/2019

Intersection						
Int Delay, s/veh	2.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		Y		Y	Y
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 (vphp)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr <sub>t</sub>			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	
<b>Intersection Summary</b>						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	27.4%			ICU Level of Service A		
Analysis Period (min)	15					

HCM 6th TWSC  
2: Dubarko Road & Ruben Lane

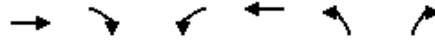
12/13/2019

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
Fr't	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	
Sign Control	Free		Free		Stop	
<b>Intersection Summary</b>						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	21.9%			ICU Level of Service A		
Analysis Period (min)	15					

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	15
Stage 1	-	-	-	-	15	-
Stage 2	-	-	-	-	98	-
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	-	-	1596	-	884	1065
Stage 1	-	-	-	-	1008	-
Stage 2	-	-	-	-	926	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1596	-	871	1065
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	
Flt Protected				0.974	0.980	
Satd. Flow (prot)	1696	0	0	1698	1645	0
Flt 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	
<b>Intersection Summary</b>						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	21.2%			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	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	
<b>Intersection Summary</b>						
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 (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	0.888		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
<b>Intersection Summary</b>						
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

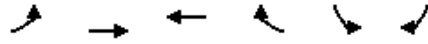
12/13/2019

Intersection						
Int Delay, s/veh	3.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		Y		Y	Y
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
Fr t			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	
<b>Intersection Summary</b>						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	36.1%			ICU Level of Service A		
Analysis Period (min)	15					

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	135
Stage 1	-	-	-	-	135	-
Stage 2	-	-	-	-	241	-
Critical Hdwy	4.11	-	-	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	2.209	-	-	-	3.509	3.309
Pot Cap-1 Maneuver	1412	-	-	-	627	917
Stage 1	-	-	-	-	894	-
Stage 2	-	-	-	-	801	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	1412	-	-	-	618	917
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
Fr't	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	
Sign Control	Free		Free		Stop	
<b>Intersection Summary</b>						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	27.3%			ICU Level of Service A		
Analysis Period (min)	15					

HCM 6th TWSC  
3: Melissa Avenue & Dubarko Road

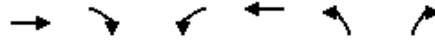
12/13/2019

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	149
Stage 1	-	-	-	-	149	-
Stage 2	-	-	-	-	139	-
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	-	-	1395	-	707	903
Stage 1	-	-	-	-	884	-
Stage 2	-	-	-	-	893	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1395	-	689	903
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
Fr <sub>t</sub>	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	
Sign Control	Stop		Stop		Stop	
<b>Intersection Summary</b>						
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	
<b>Intersection Summary</b>						
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	Y		Y	↑	↑	Y
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:**

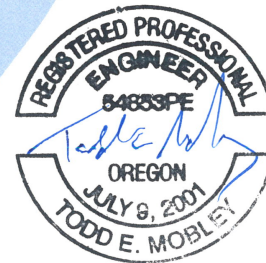
June 20, 2019

**Prepared for:**

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RENEWS: 12/31/2020



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## Table of Contents

Executive Summary .....	1
Project Description.....	2
Introduction .....	2
Location Description.....	2
Site Trips .....	5
Trip Generation.....	5
Trip Distribution.....	6
Traffic Volumes .....	8
Existing Conditions .....	8
Background Conditions .....	8
Buildout Conditions.....	8
Safety Analysis .....	11
Crash History Review.....	11
Warrant Analysis .....	11
Operational Analysis.....	13
Delay & Capacity Analysis.....	13
Conclusions.....	14
Appendix .....	15



**Table of Figures**

Figure 1: Study Intersection Configurations..... 4  
Figure 2: Site Trip Distribution & Assignment..... 7  
Figure 3: Morning Peak Hour Traffic Volumes – All Analysis Scenarios ..... 9  
Figure 4: Evening Peak Hour Traffic Volumes - All Analysis Scenarios..... 10

**Table of Tables**

Table 1: Vicinity Roadway Descriptions ..... 3  
Table 2: Vicinity Intersection Descriptions ..... 3  
Table 3: Trip Generation Summary ..... 5  
Table 4: Trip Rate Comparison ..... 5  
Table 5: Crash Analysis Summary ..... 11  
Table 6: Intersection Capacity Analysis Summary..... 13



### ***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 362<sup>nd</sup> 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 <sup>nd</sup> 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.

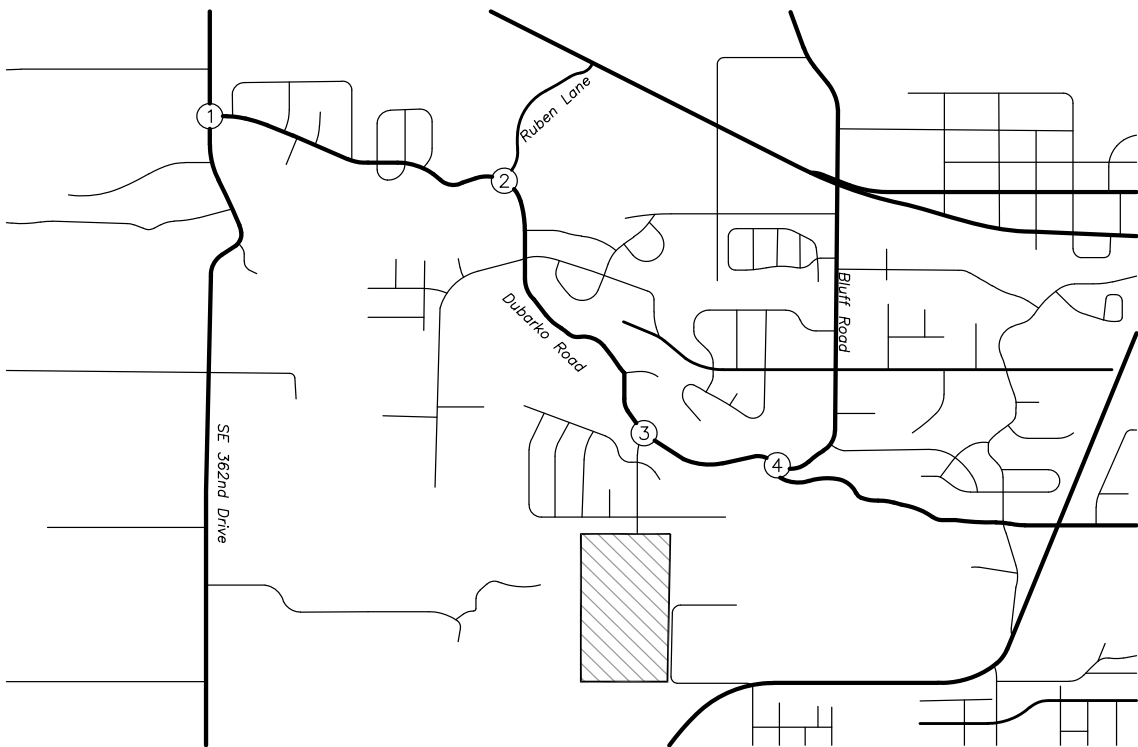
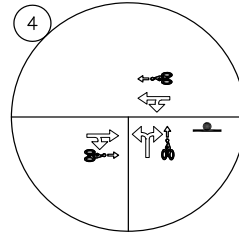
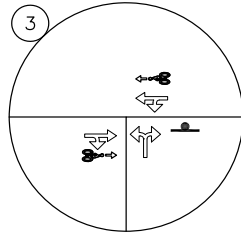
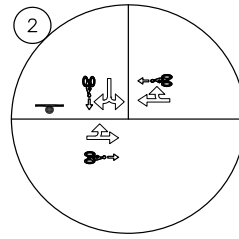
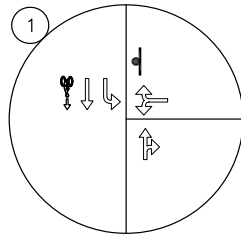
**Table 2: Vicinity Intersection Descriptions**

Number	Intersection	Geometry	Traffic Control	Stopped Approaches
1	SE 362 <sup>nd</sup> 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*<sup>1</sup> 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.

<sup>1</sup> Institute of Transportation Engineers (ITE), *Trip Generation Manual*, 10<sup>th</sup> 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:

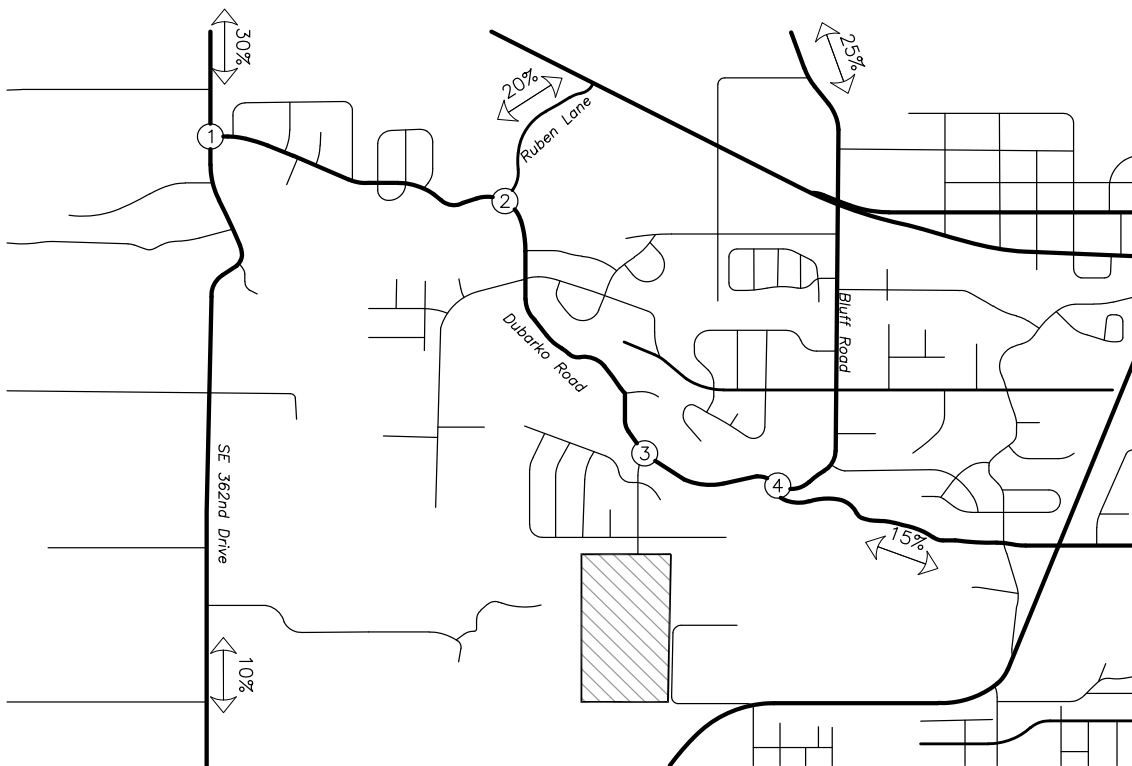
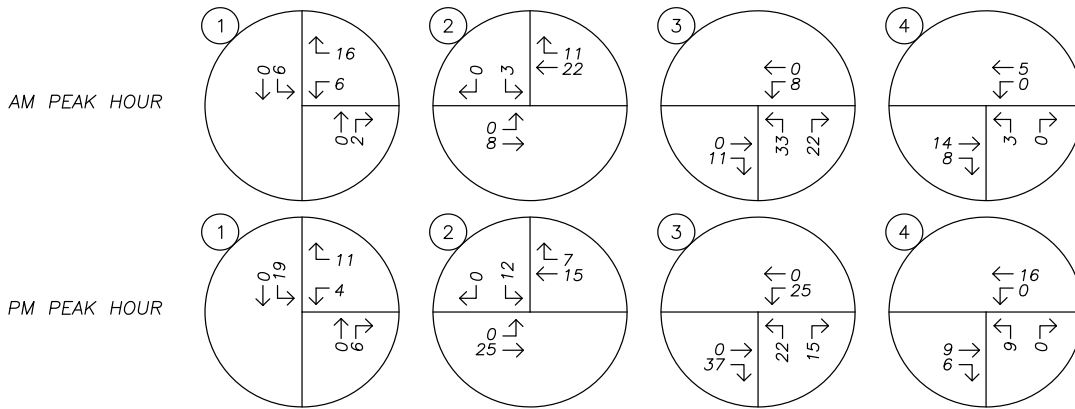
- Approximately 30 percent of site trips will travel to/from the north along SE 362<sup>nd</sup> Drive;
- Approximately 25 percent of site trips will travel to/from the north along Bluff Road;
- Approximately 20 percent of site trips will travel to/from the north on Ruben Lane;
- Approximately 15 percent 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 362<sup>nd</sup> 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



no scale

FIGURE 2

PAGE 7



## ***Traffic Volumes***

### ***Existing Conditions***

Traffic counts were conducted at the intersection of Melissa Avenue at Dubarko Road on Thursday, April 25<sup>th</sup>, 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 22<sup>nd</sup>, 2019 from 4:00 PM to 6:00 PM, and on Thursday, May 23<sup>rd</sup>, 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***

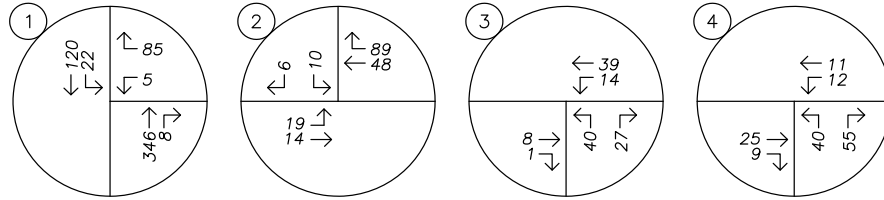
In-process trips associated with previously approved developments were added to the background volumes in order to represent future traffic volumes at the study intersections prior to the approval of the subject development. Trips associated with the approved 138-unit Sandy Heights Apartments were added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

### ***Buildout Conditions***

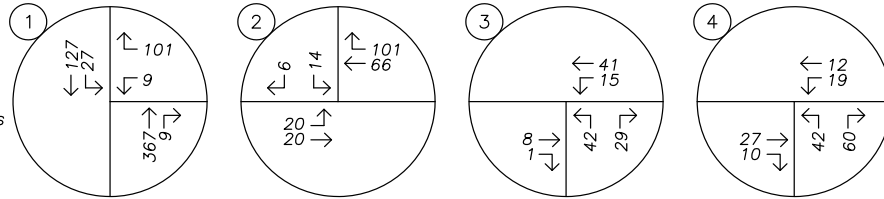
Trips to be generated by the proposed development, as described earlier within the *Site Trips* section, were added to the projected year 2022 background traffic volumes to obtain the expected year 2022 buildout volumes.

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.

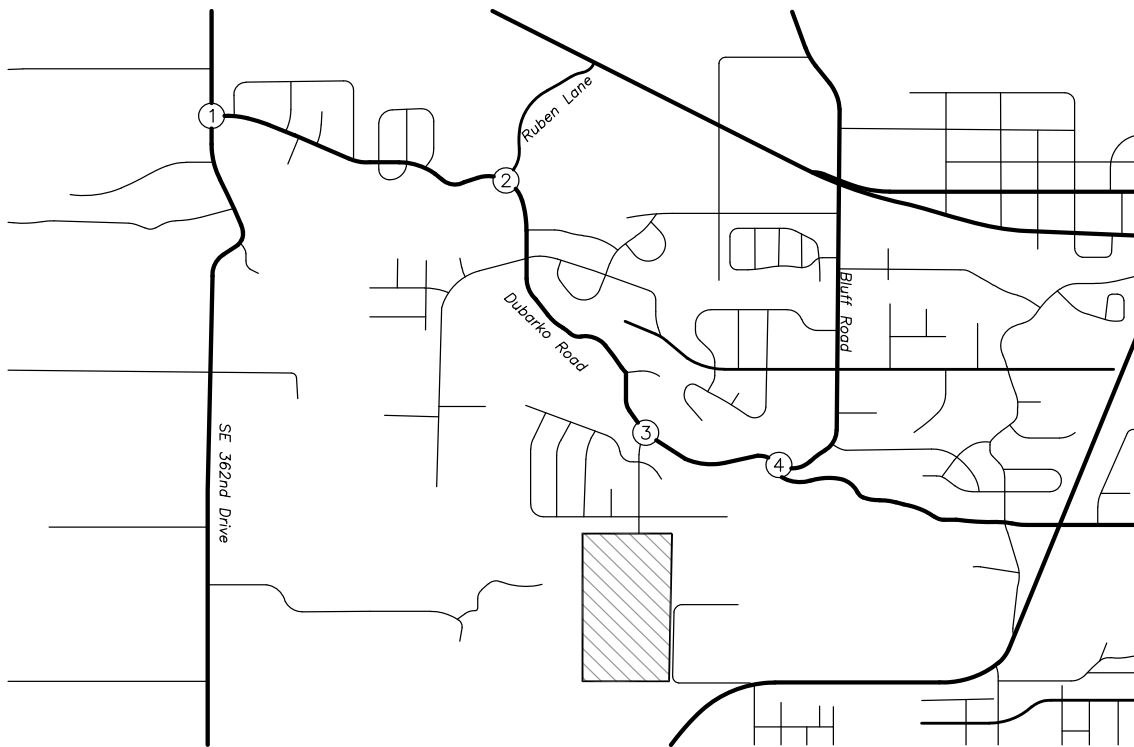
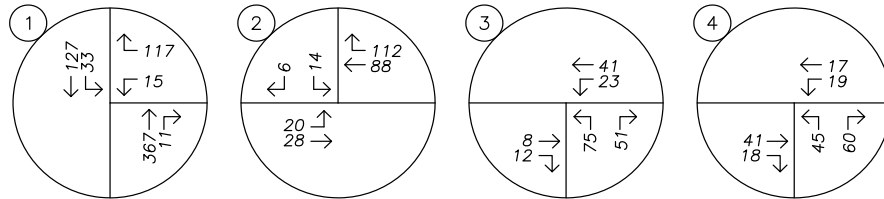
Year 2019  
Existing Conditions



Year 2022  
Background Conditions



Year 2022  
Buildout Conditions



**TRAFFIC VOLUMES**  
All Analysis Scenarios  
AM Peak Hour

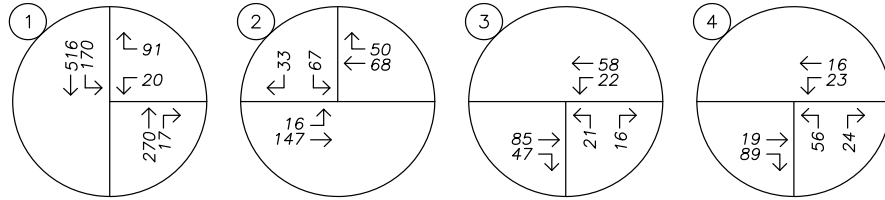


**FIGURE 3**

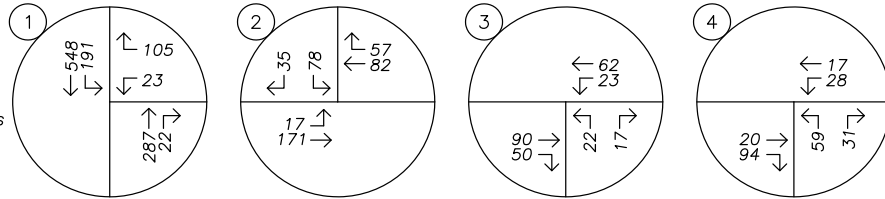
**PAGE 9**



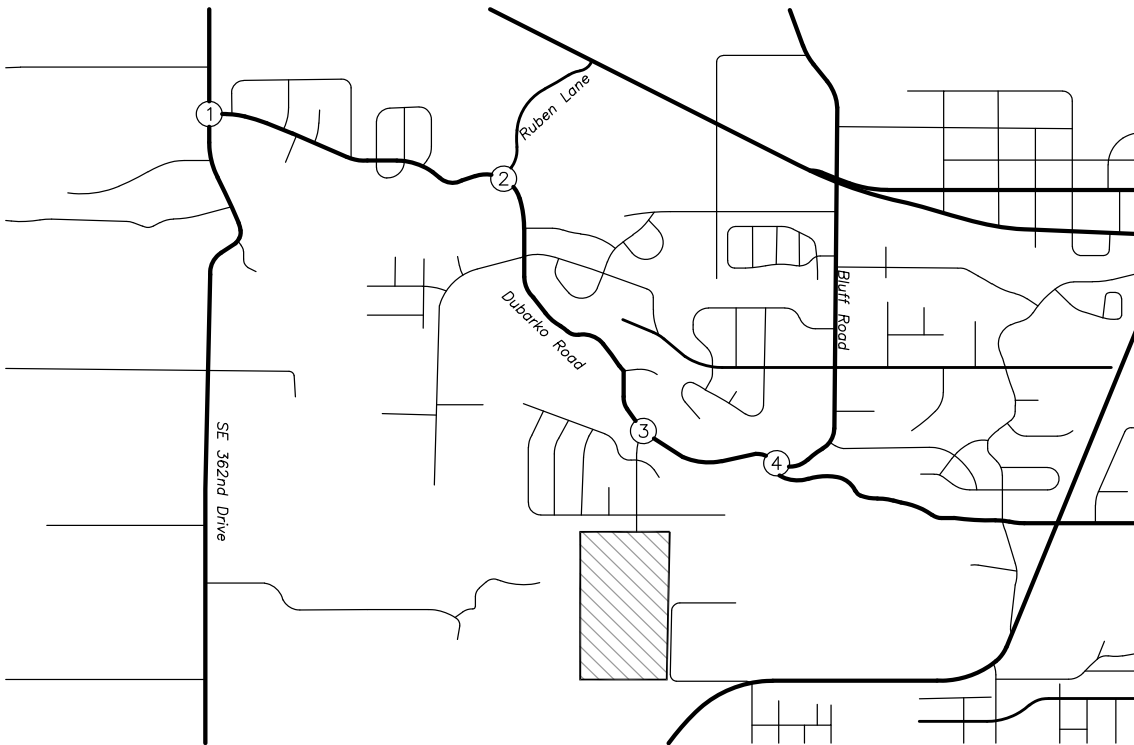
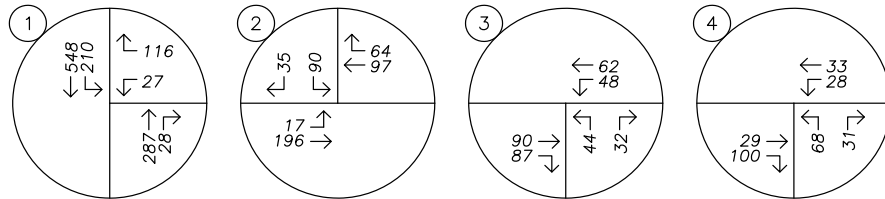
Year 2019  
Existing Conditions



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 <sup>nd</sup> 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 362<sup>nd</sup> 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*<sup>2</sup> (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

<sup>2</sup> 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 457<sup>3</sup>. 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.

---

<sup>3</sup> 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*<sup>4</sup> (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
<b>SE 362<sup>nd</sup> Drive at Dubarko Road</b>						
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
<b>Ruben Lane at Dubarko Road</b>						
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
<b>Dubarko Road at Melissa Avenue</b>						
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
<b>Dubarko Road at Bluff Road</b>						
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

<sup>4</sup> Transportation Research Board, *Highway Capacity Manual, 6<sup>th</sup> 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.



1e

*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	<b>19</b>	<b>55</b>	<b>74</b>

### PM PEAK HOUR

*Trip Rate:* 0.99

	Enter	Exit	Total
Directional Distribution	63%	37%	
Trip Ends	<b>62</b>	<b>37</b>	<b>99</b>

### WEEKDAY

*Trip Rate:* 9.44

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	<b>472</b>	<b>472</b>	<b>944</b>

### SATURDAY

*Trip Rate:* 9.54

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	<b>477</b>	<b>477</b>	<b>954</b>

Source: Trip Generation Manual, Tenth Edition

**All Traffic Data Services, Inc.**  
**alltrafficdata.net**

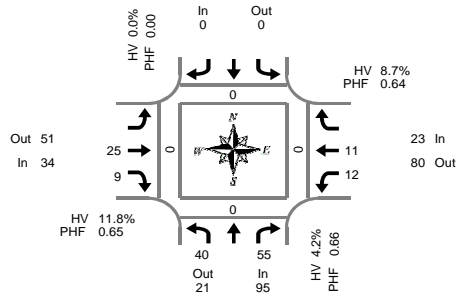
Melissa Ave S-O Dubarko Rd

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		<b>67</b>	15	<b>82</b>					
08:00		37	17	54					
09:00		30	17	47					
10:00		25	18	43					
11:00		23	<b>22</b>	45					
12:00 PM		35	25	60					
01:00		16	24	40					
02:00		29	46	75					
03:00		35	58	93					
04:00		<b>44</b>	64	<b>108</b>					
05:00		30	54	84					
06:00		32	<b>74</b>	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	11	0	0	0	0
7:05 AM	1	8	0			0	2	0	0	1	0	0	12	0	0	0	0
7:10 AM	3	7	0			0	5	1	0	2	1	0	19	0	0	0	0
7:15 AM	8	6	0			0	4	0	0	0	1	0	19	0	0	0	0
7:20 AM	2	7	0			0	0	0	0	1	1	0	11	0	0	0	0
7:25 AM	6	7	0			0	3	2	0	4	2	0	24	0	0	0	0
7:30 AM	3	2	0			0	6	1	0	1	0	0	13	0	0	0	0
7:35 AM	1	3	0			0	1	0	0	1	1	0	7	0	0	0	0
7:40 AM	3	1	0			0	1	1	0	1	1	0	8	0	0	0	0
7:45 AM	1	2	0			0	0	2	0	1	0	0	6	0	0	0	0
7:50 AM	5	6	0			0	1	0	0	0	3	0	15	0	0	0	0
7:55 AM	4	2	0			0	0	1	0	0	0	0	7	0	0	0	0
8:00 AM	2	1	0			0	1	2	0	2	0	0	8	0	0	0	0
8:05 AM	2	1	0			0	0	1	0	0	0	0	4	0	0	0	0
8:10 AM	1	5	0			0	2	0	0	1	2	0	11	0	0	0	0
8:15 AM	2	7	0			0	0	0	0	2	1	0	12	0	0	0	0
8:20 AM	3	2	0			0	3	0	0	1	0	0	9	0	0	0	0
8:25 AM	3	5	0			0	1	3	0	1	0	0	13	0	0	0	0
8:30 AM	0	5	0			0	0	2	0	1	0	0	8	0	0	0	0
8:35 AM	3	0	0			0	0	2	0	0	0	0	5	0	0	0	0
8:40 AM	3	2	0			0	0	2	0	0	1	0	8	0	0	0	0
8:45 AM	1	1	0			0	1	1	0	3	1	0	8	0	0	0	0
8:50 AM	0	1	0			0	0	1	0	1	0	0	3	0	0	0	0
8:55 AM	1	0	0			0	0	2	0	0	0	0	3	0	0	0	0
Total Survey	61	85	0			0	33	25	0	24	16	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	42	0	0	0	0
7:15 AM	16	20	0			0	7	2	0	5	4	0	54	0	0	0	0
7:30 AM	7	6	0			0	8	2	0	3	2	0	28	0	0	0	0
7:45 AM	10	10	0			0	1	3	0	1	3	0	28	0	0	0	0
8:00 AM	5	7	0			0	3	3	0	3	2	0	23	0	0	0	0
8:15 AM	8	14	0			0	4	3	0	4	1	0	34	0	0	0	0
8:30 AM	6	7	0			0	0	6	0	1	1	0	21	0	0	0	0
8:45 AM	2	2	0			0	1	4	0	4	1	0	14	0	0	0	0
Total Survey	61	85	0			0	33	25	0	24	16	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	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	0	0	0	0	
%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	Bikes			Total	Bikes	T	R	Total	Bikes	L	T	Total	Bikes	
Volume	40	55	95	0			0	0	25	9	34	0	12	11	23	0	
%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				0.00		0.57	0.75	0.65		0.50	0.69	0.64	0.70	

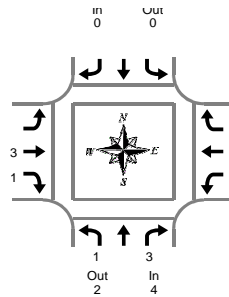
### Rolling Hour Summary 7:00 AM to 9:00 AM

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	152	0	0	0	0
7:15 AM	38	43	0			0	19	10	0	12	11	0	133	0	0	0	0
7:30 AM	30	37	0			0	16	11	0	11	8	0	113	0	0	0	0
7:45 AM	29	38	0			0	8	15	0	9	7	0	106	0	0	0	0
8:00 AM	21	30	0			0	8	16	0	12	5	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	0	0	1	0	1
7:05 AM	0	1	1			0	0	0	0	1	0	1	2
7:10 AM	0	0	0			0	1	0	1	0	0	0	1
7:15 AM	1	0	1			0	1	0	1	0	0	0	2
7:20 AM	0	0	0			0	0	0	0	0	0	0	0
7:25 AM	0	0	0			0	0	0	0	0	0	0	0
7:30 AM	0	0	0			0	1	0	1	0	0	0	1
7:35 AM	0	1	1			0	0	0	0	0	0	0	1
7:40 AM	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
7:50 AM	0	1	1			0	0	0	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	0	0	0	0	0	0	0
8:05 AM	0	0	0			0	0	0	0	0	0	0	0
8:10 AM	0	1	1			0	0	0	0	0	0	0	1
8:15 AM	1	0	1			0	0	0	0	0	0	0	1
8:20 AM	0	0	0			0	1	0	1	0	0	0	1
8:25 AM	0	1	1			0	0	0	0	0	0	0	1
8:30 AM	0	1	1			0	0	0	0	0	0	0	1
8:35 AM	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
8:45 AM	0	0	0			0	0	0	0	0	0	0	0
8:50 AM	0	0	0			0	0	0	0	0	0	0	0
8:55 AM	0	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 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	2	4
7:15 AM	1	0	1			0	1	0	1	0	0	0	2
7:30 AM	0	1	1			0	1	1	2	0	0	0	3
7:45 AM	0	1	1			0	0	0	0	0	0	0	1
8:00 AM	0	1	1			0	0	0	0	0	0	0	1
8:15 AM	1	1	2			0	1	0	1	0	0	0	3
8:30 AM	0	1	1			0	0	0	0	0	0	0	1
8:45 AM	0	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

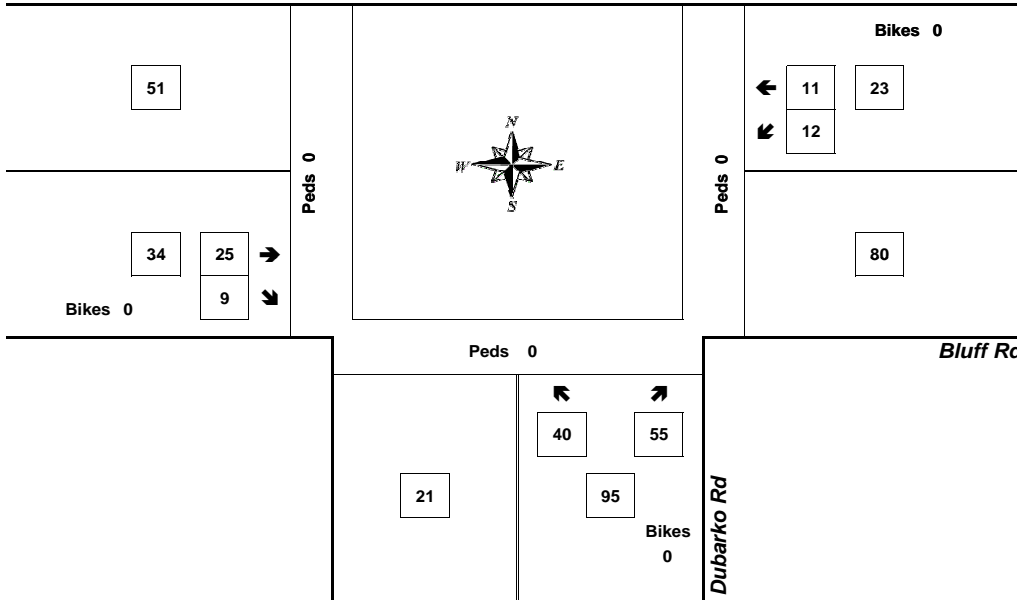
**Dubarko Rd & Bluff Rd**

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
<b>Intersection</b>	<b>0.70</b>	<b>6.6%</b>	<b>152</b>

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

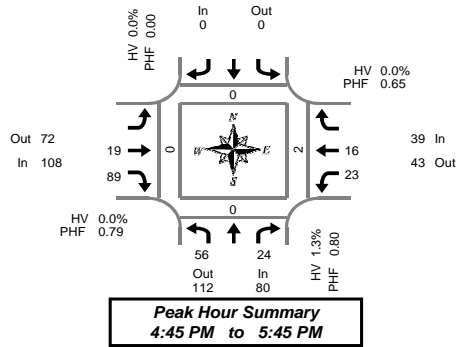
**Total Vehicle Summary**



Clay Carney  
(603) 833-2740

**Dubarko Rd & Bluff Rd**

Wednesday, May 22, 2019  
4:00 PM to 6:00 PM



**Peak Hour Summary**  
4:45 PM to 5:45 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			0	4	7	0	5	0	0	0	0
4:05 PM	2	0	0			0			0	1	4	0	3	3	0	0	0
4:10 PM	7	1	0			0			0	1	4	0	2	0	0	0	0
4:15 PM	5	1	0			0			0	2	7	0	1	1	0	0	0
4:20 PM	3	0	0			0			0	0	5	0	2	3	0	0	0
4:25 PM	7	2	0			0			0	3	8	0	3	0	0	0	0
4:30 PM	6	2	0			0			0	0	6	0	1	0	0	0	0
4:35 PM	2	2	0			0			0	3	9	0	1	0	0	0	0
4:40 PM	7	3	0			0			0	2	7	0	1	0	0	0	0
4:45 PM	7	0	0			0			0	0	10	0	3	0	0	0	0
4:50 PM	8	4	0			0			0	2	5	0	1	0	0	0	0
4:55 PM	3	1	0			0			0	0	6	0	0	1	0	0	0
5:00 PM	4	3	0			0			0	1	5	0	3	2	0	0	0
5:05 PM	6	1	1			0			0	3	8	0	1	2	0	1	0
5:10 PM	1	0	0			0			0	4	9	0	1	0	0	0	0
5:15 PM	3	0	0			0			0	1	9	0	1	2	0	0	0
5:20 PM	7	4	0			0			0	3	6	0	1	3	0	0	0
5:25 PM	1	2	0			0			0	0	8	0	3	1	0	0	0
5:30 PM	5	2	0			0			0	1	6	0	5	1	0	0	0
5:35 PM	3	0	0			0			0	2	9	0	2	3	0	0	0
5:40 PM	8	7	0			0			0	2	8	0	2	1	0	1	0
5:45 PM	7	1	0			0			0	0	3	0	0	1	0	0	0
5:50 PM	6	2	0			0			0	1	6	0	1	0	0	0	0
5:55 PM	3	0	0			0			0	1	2	0	1	2	0	0	0
Total Survey	115	38	1			0			0	37	157	0	44	26	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			0	6	15	0	10	3	0	0	0
4:15 PM	15	3	0			0			0	5	20	0	6	4	0	0	0
4:30 PM	15	7	0			0			0	5	22	0	3	0	0	0	0
4:45 PM	18	5	0			0			0	2	21	0	4	1	0	0	0
5:00 PM	11	4	1			0			0	8	22	0	5	4	0	1	0
5:15 PM	11	6	0			0			0	4	23	0	5	6	0	0	0
5:30 PM	16	9	0			0			0	5	23	0	9	5	0	1	0
5:45 PM	16	3	0			0			0	2	11	0	2	3	0	0	0
Total Survey	115	38	1			0			0	37	157	0	44	26	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%			0.0%			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	0.0%	NA	0.0%	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

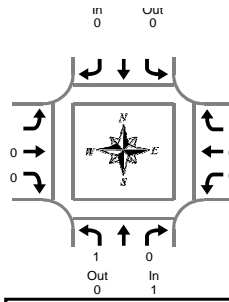
**Rolling Hour Summary**  
4:00 PM to 6:00 PM

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			0	18	78	0	23	8	0	0	0
4:15 PM	59	19	1			0			0	20	85	0	18	9	0	1	0
4:30 PM	55	22	1			0			0	19	88	0	17	11	0	1	0
4:45 PM	56	24	1			0			0	19	89	0	23	16	0	2	0
5:00 PM	54	22	1			0			0	19	79	0	21	18	0	2	0

# Heavy Vehicle Summary



Clay Carney  
(503) 833-2740



## Dubarko Rd & Bluff Rd

Wednesday, May 22, 2019  
4:00 PM to 6:00 PM

**Peak Hour Summary**  
4:45 PM to 5:45 PM

### Heavy Vehicle 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
	L	R	Total			Total	T	R	Total	L	T	Total	
4:00 PM	0	0	0			0	2	0	2	0	0	0	2
4:05 PM	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
4:15 PM	0	0	0			0	0	0	0	1	0	1	1
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	1	0	1	1
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	0	0	0	0	0	0	0
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	1	0	1			0	0	0	0	0	0	0	1
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	2	0	2	2	0	2	5

### Heavy Vehicle 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
	L	R	Total			Total	T	R	Total	L	T	Total	
4:00 PM	0	0	0			0	2	0	2	0	0	0	2
4:15 PM	0	0	0			0	0	0	0	1	0	1	1
4:30 PM	0	0	0			0	0	0	0	1	0	1	1
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	0	0	0	0	0	0	0
5:30 PM	1	0	1			0	0	0	0	0	0	0	1
5:45 PM	0	0	0			0	0	0	0	0	0	0	0
Total Survey	1	0	1			0	2	0	2	2	0	2	5

### Heavy Vehicle 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
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	1	0	1	0	0	0	0	1	1	0	0	0	1
PHF	0.25			0.00			0.00			0.00			0.25

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		1			0	0	0	0	0	0	0	1
PHF	0.25		0.25			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25

### Heavy Vehicle 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
	L	R	Total			Total	T	R	Total	L	T	Total	
4:00 PM	0	0	0			0	2	0	2	2	0	2	4
4:15 PM	0	0	0			0	0	0	0	2	0	2	2
4:30 PM	0	0	0			0	0	0	0	1	0	1	1
4:45 PM	1	0	1			0	0	0	0	0	0	0	1
5:00 PM	1	0	1			0	0	0	0	0	0	0	1

**Peak Hour Summary**

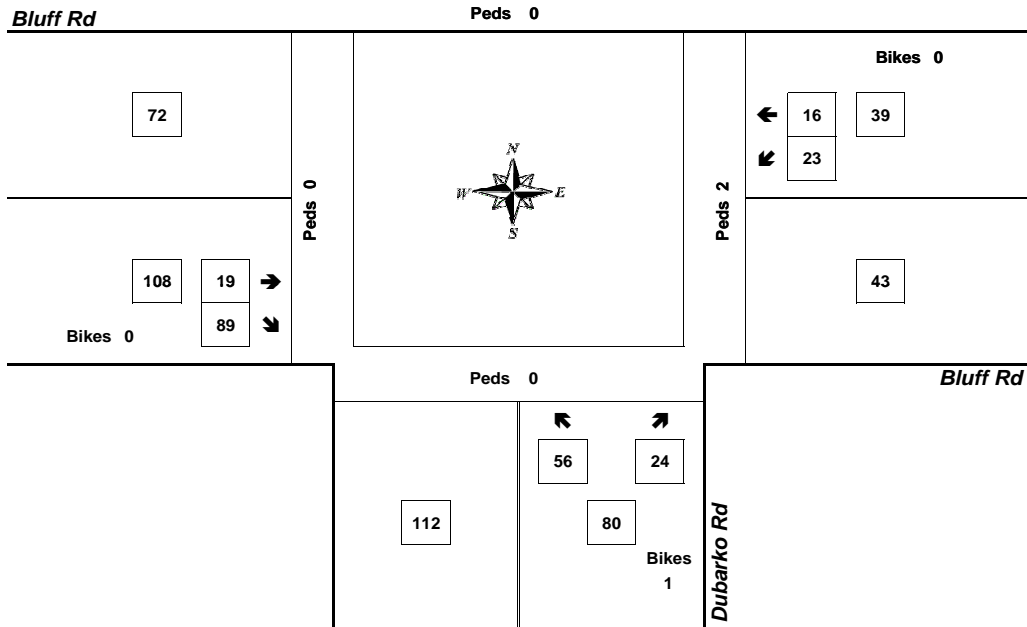


Clay Carney  
(503) 833-2740

**Dubarko Rd & Bluff Rd**

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

Bikes  
0



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
<b>Intersection</b>	<b>0.85</b>	<b>0.4%</b>	<b>227</b>

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

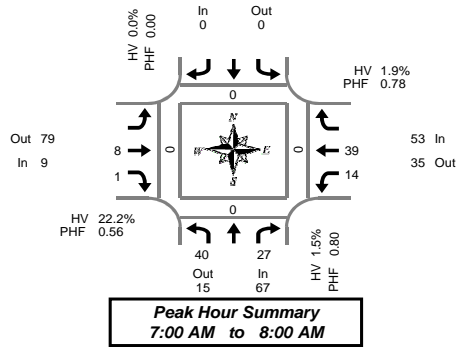
**Total Vehicle Summary**



Clay Carney  
(603) 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	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	67	15	82	0	0	0	0	0	9	79	88	0	53	35	88	0	129
%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

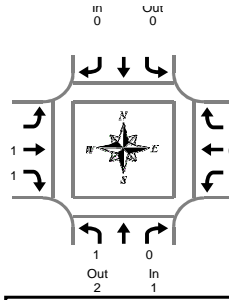
Interval Start Time	Northbound Melissa Ave			Southbound Melissa Ave			Eastbound Dubarko Rd			Westbound Dubarko Rd			Interval Total	Pedestrians Crosswalk			
	L	R	Bikes			Bikes	T	R	Bikes	L	T	Bikes		North	South	East	West
7:00 AM	40	27	0			0	8	1	0	14	39	0	129	0	0	0	0
7:15 AM	39	18	0			0	8	2	0	10	35	0	112	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

**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 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	0	1	0	1	2
7:05 AM	0	0	0		0	0	0	0	0	0	0	0
7:10 AM	0	0	0		0	0	0	0	0	0	0	0
7:15 AM	0	0	0		0	0	0	0	0	0	0	0
7:20 AM	0	0	0		0	0	0	0	0	0	0	0
7:25 AM	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
7:35 AM	0	0	0		0	0	0	0	0	0	0	0
7:40 AM	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
7:50 AM	0	0	0		0	0	0	0	0	0	0	0
7:55 AM	0	0	0		0	1	0	1	0	0	0	1
8:00 AM	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
8:10 AM	1	0	1		0	0	0	0	0	0	0	1
8:15 AM	1	0	1		0	0	0	0	1	0	1	2
8:20 AM	0	1	1		0	0	0	0	0	0	0	1
8:25 AM	0	0	0		0	0	0	0	0	0	0	0
8:30 AM	0	1	1		0	0	0	0	0	0	0	1
8:35 AM	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
8:45 AM	0	0	0		0	0	0	0	0	0	0	0
8:50 AM	0	0	0		0	0	0	0	0	0	0	0
8:55 AM	0	0	0		0	0	0	0	0	0	0	0
Total Survey	3	2	5		0	1	1	2	2	0	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	0	1	0	1	2
7:15 AM	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
7:45 AM	0	0	0		0	1	0	1	0	0	0	1
8:00 AM	1	0	1		0	0	0	0	0	0	0	1
8:15 AM	1	1	2		0	0	0	0	1	0	1	3
8:30 AM	0	1	1		0	0	0	0	0	0	0	1
8:45 AM	0	0	0		0	0	0	0	0	0	0	0
Total Survey	3	2	5		0	1	1	2	2	0	2	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		1		0	1	1	2	1	0	1	4
PHF	0.25		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	1	4
7:15 AM	1	0	1		0	1	1	2	0	0	0	3
7:30 AM	2	1	3		0	1	0	1	1	0	1	5
7:45 AM	2	2	4		0	1	0	1	1	0	1	6
8:00 AM	2	2	4		0	0	0	0	1	0	1	5

**Peak Hour Summary**



Clay Carney  
(503) 833-2740

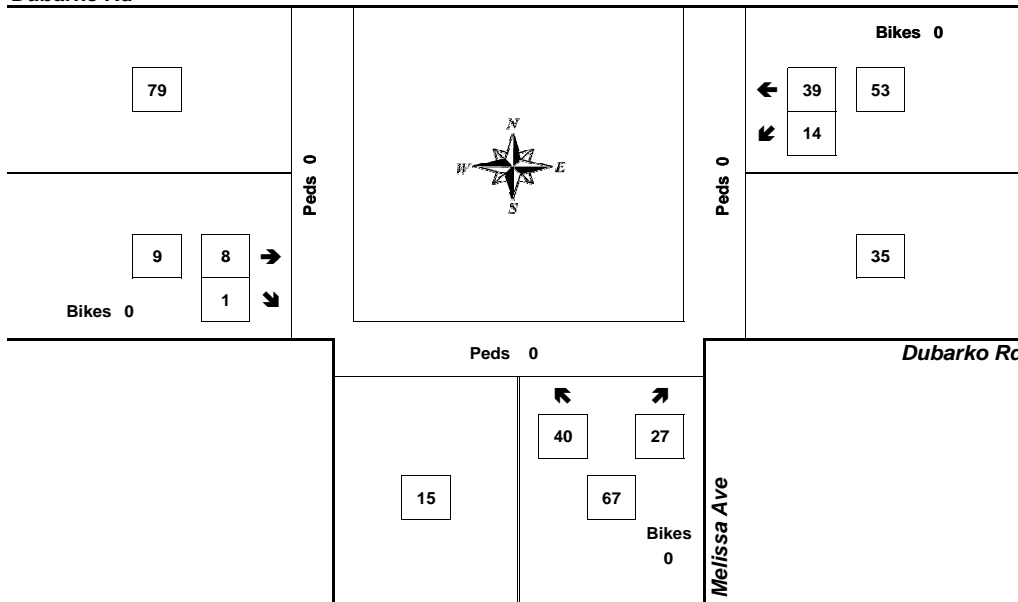
**Melissa Ave & Dubarko Rd**

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

Bikes  
0

**Dubarko Rd**

Peds 0



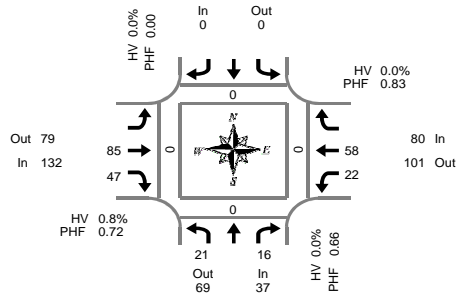
Approach	PHF	HV%	Volume
EB	0.56	22.2%	9
WB	0.78	1.9%	53
NB	0.80	1.5%	67
SB	0.00	0.0%	0
<b>Intersection</b>	<b>0.79</b>	<b>3.1%</b>	<b>129</b>

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

# Total Vehicle Summary



Clay Carney  
(603) 833-2740



**Peak Hour Summary**  
4:40 PM to 5:40 PM

## 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	0	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	0
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	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	37	69	106	0	0	0	0	132	79	211	0	80	101	181	0	249	
%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	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

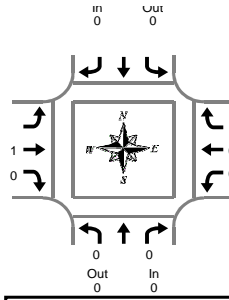
4:00 PM to 6:00 PM

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



**Peak Hour Summary**  
4:40 PM to 5:40 PM

## 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	1	2
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

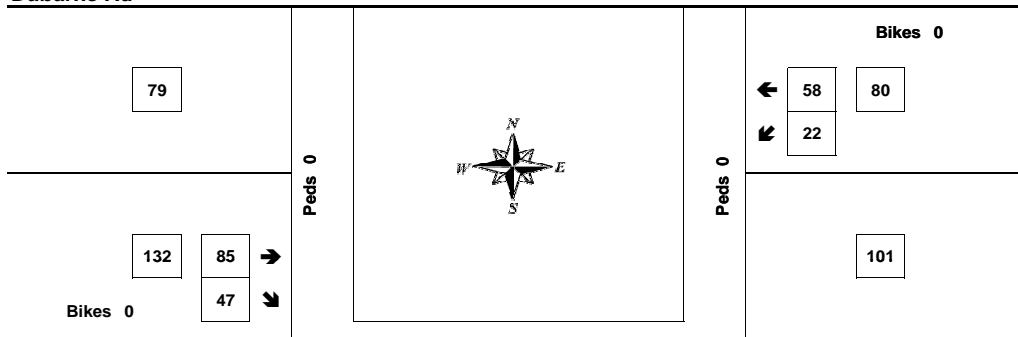
**Melissa Ave & Dubarko Rd**

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

Bikes  
0

**Dubarko Rd**

Peds 0



Bikes 0

Peds 0

Peds 0

Peds 0

**Dubarko Rd**

**Melissa Ave**

Bikes  
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
<b>Intersection</b>	<b>0.85</b>	<b>0.4%</b>	<b>249</b>

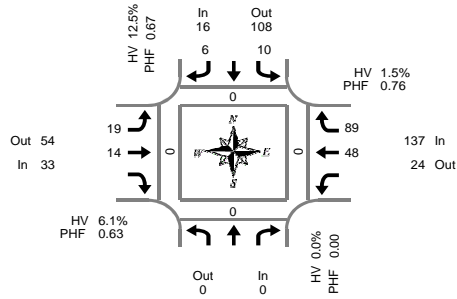
Count Period: 4:00 PM to 6:00 PM



# Total Vehicle Summary



Clay Carney  
(503) 833-2740



## Ruben Ln & Dubarko Rd

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

**Peak Hour Summary**  
7:05 AM to 8:05 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	In	Out	Total	Bikes	L	T	Total	Bikes	T	R	Total	North		South	East	West		
7:00 AM					0	2	0	0	1	0					4	8	0	15	0	0	1	0
7:05 AM					0	0	0	0	0	1					5	9	0	15	0	0	0	0
7:10 AM					0	1	0	0	1	2					4	8	0	16	0	0	0	0
7:15 AM					0	1	0	0	1	0					7	12	0	21	0	0	0	0
7:20 AM					0	3	0	0	2	1					3	6	0	15	0	0	0	0
7:25 AM					0	0	1	0	2	1					4	6	0	14	0	0	0	0
7:30 AM					0	0	0	0	0	1					2	8	0	11	0	0	0	0
7:35 AM					0	1	4	0	3	3					2	5	0	18	0	0	0	0
7:40 AM					0	0	0	0	1	1					3	8	0	13	0	0	0	0
7:45 AM					0	0	0	0	4	1					4	4	0	13	0	0	0	0
7:50 AM					0	1	0	0	2	2					4	9	0	18	0	0	0	0
7:55 AM					0	1	0	0	1	0					4	10	0	16	0	0	0	0
8:00 AM					0	2	1	0	2	1					6	4	0	16	0	0	0	0
8:05 AM					0	2	1	0	1	2					0	5	0	11	0	0	0	0
8:10 AM					0	3	0	0	2	0					1	3	0	9	0	0	0	0
8:15 AM					0	0	0	0	3	4					4	2	0	13	0	0	0	0
8:20 AM					0	0	0	0	0	2					5	8	0	15	0	0	0	0
8:25 AM					0	0	0	0	3	2					2	5	0	12	0	0	0	0
8:30 AM					0	2	0	0	0	4					3	5	0	14	0	0	0	0
8:35 AM					0	1	1	0	2	1					1	4	0	10	0	0	0	0
8:40 AM					0	2	0	0	1	2					3	5	0	13	0	0	0	0
8:45 AM					0	3	2	0	2	2					2	4	0	15	0	0	0	0
8:50 AM					0	1	0	0	4	3					3	5	0	16	0	0	0	0
8:55 AM					0	2	1	0	1	3					2	5	0	14	0	0	0	0
Total Survey					0	28	11	0	39	39					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	In	Out	Total	Bikes	L	T	Total	Bikes	T	R	Total	North		South	East	West		
7:00 AM					0	3	0	0	2	3					13	25	0	46	0	0	1	0
7:15 AM					0	4	1	0	5	2					14	24	0	50	0	0	0	0
7:30 AM					0	1	4	0	4	5					7	21	0	42	0	0	0	0
7:45 AM					0	2	0	0	7	3					12	23	0	47	0	0	0	0
8:00 AM					0	7	2	0	5	3					7	12	0	36	0	0	0	0
8:15 AM					0	0	0	0	6	8					11	15	0	40	0	0	0	0
8:30 AM					0	5	1	0	3	7					7	14	0	37	0	0	0	0
8:45 AM					0	6	3	0	7	8					7	14	0	45	0	0	0	0
Total Survey					0	28	11	0	39	39					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	Bikes		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							12.5%				6.1%				1.5%		3.2%				
PHF							0.67				0.63				0.76		0.89				

By Movement	Northbound Ruben Ln				Southbound Ruben Ln				Eastbound Dubarko Rd				Westbound Dubarko Rd				Total	
					L	R	Total	Bikes	L	T	Total	Bikes	T	R	Total	Bikes		
Volume					0	10	6	16	19	14	33		48	89	137			
%HV	NA	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

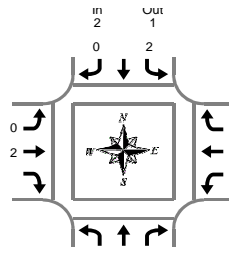
7:00 AM to 9:00 AM

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

**Peak Hour Summary**  
7:05 AM to 8:05 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	1	1	1
7:05 AM	0	0	0	0	0	0	0	0	0	0	1	1	1
7:10 AM	0	1	0	0	1	0	0	0	0	0	0	0	1
7:15 AM	0	0	0	0	0	0	0	0	0	1	0	1	1
7:20 AM	0	1	0	0	1	0	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	1	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	0	2	0	2	2	2	4	6	10	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	0	0	1	0	0	0	0	2	2	2	3
7:15 AM	0	1	0	0	1	0	1	1	1	0	1	1	3
7:30 AM	0	0	0	0	0	0	1	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	0	2	0	2	2	2	4	6	10	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	0	2	2	1	1	2	6
PHF	0.00	0.25		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	0	0	2	0	2	0	2	2	1	2	3
7:15 AM	0	1	0	0	1	0	2	2	2	1	0	1	4
7:30 AM	0	0	0	0	0	0	1	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

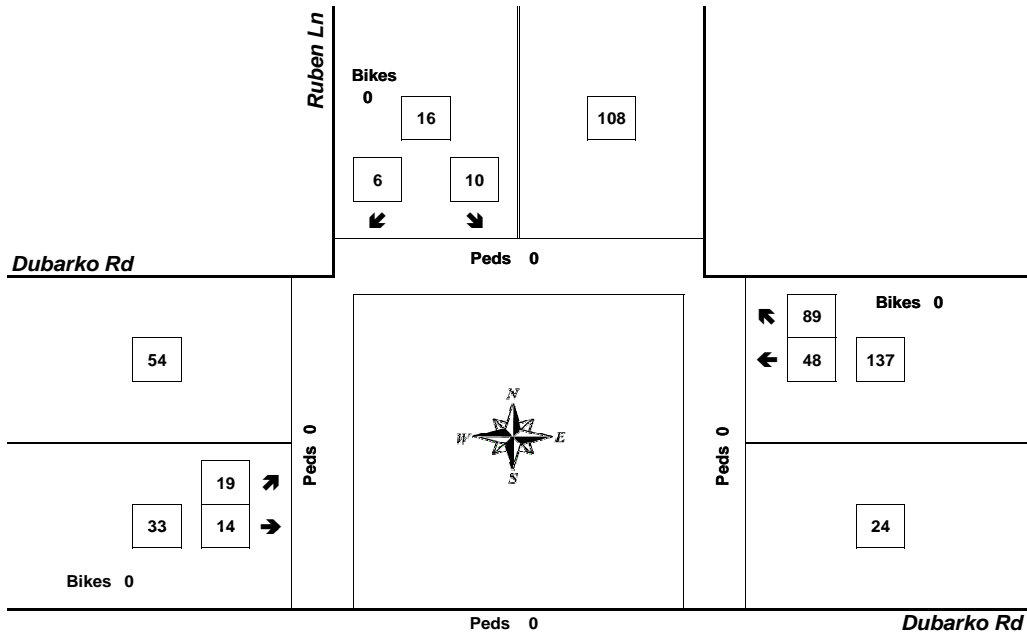
**Peak Hour Summary**



Clay Carney  
(503) 833-2740

**Ruben Ln & Dubarko Rd**

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



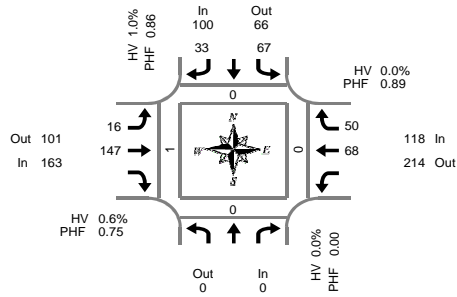
Approach	PHF	HV%	Volume
EB	0.63	6.1%	33
WB	0.76	1.5%	137
NB	0.00	0.0%	0
SB	0.67	12.5%	16
<b>Intersection</b>	<b>0.89</b>	<b>3.2%</b>	<b>186</b>

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

# Total Vehicle Summary



Clay Carney  
(503) 833-2740



**Peak Hour Summary**  
4:25 PM to 5:25 PM

## 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			
	Bikes	L	R	T	Bikes	L	R	T	Bikes	L	T	R	Bikes	L	T	R		North	South	East	West
4:00 PM	0	3	1	0	1	6	0	0	0	6	2	0	0	19	0	0	0	0			
4:05 PM	0	5	0	0	1	7	0	0	0	3	4	0	0	20	0	0	0	0			
4:10 PM	0	8	2	0	1	11	0	0	0	5	4	0	0	31	0	0	0	1			
4:15 PM	0	10	2	0	1	4	0	0	0	4	4	0	0	25	0	0	0	0			
4:20 PM	0	9	0	0	0	13	0	0	0	4	2	0	0	28	0	0	0	0			
4:25 PM	0	5	3	0	1	16	0	0	0	5	5	0	0	35	0	0	0	0			
4:30 PM	0	6	2	0	0	15	0	0	0	7	6	0	0	36	0	0	0	1			
4:35 PM	0	3	2	0	0	5	0	0	0	4	3	0	0	17	0	0	0	0			
4:40 PM	0	5	5	0	2	13	0	0	0	7	6	0	0	38	0	0	0	0			
4:45 PM	0	6	4	0	3	6	0	0	0	2	1	0	0	22	0	0	0	0			
4:50 PM	0	5	1	0	1	7	0	0	0	7	5	0	0	26	0	0	0	0			
4:55 PM	0	5	4	0	0	9	0	0	0	9	3	0	0	30	0	0	0	0			
5:00 PM	0	8	2	0	0	16	0	0	0	3	5	0	0	34	0	0	0	0			
5:05 PM	0	7	3	0	2	17	0	0	0	7	4	0	0	40	0	0	0	0			
5:10 PM	0	6	1	0	3	16	0	0	0	2	3	0	0	31	0	0	0	0			
5:15 PM	0	6	3	0	1	13	0	0	0	8	5	0	0	36	0	0	0	0			
5:20 PM	0	5	3	0	3	14	0	0	0	7	4	0	0	36	0	0	0	0			
5:25 PM	0	4	5	0	1	10	0	0	0	2	1	0	0	23	1	0	0	0			
5:30 PM	0	2	2	0	1	14	0	0	0	7	4	0	0	30	0	0	0	0			
5:35 PM	0	6	1	0	0	6	0	0	0	4	3	0	0	20	0	0	0	0			
5:40 PM	0	3	2	0	0	7	0	0	0	6	11	0	0	29	0	0	0	0			
5:45 PM	0	8	1	0	0	13	0	0	0	7	2	0	0	31	0	0	0	0			
5:50 PM	0	6	3	0	2	12	0	0	0	5	3	0	0	31	0	0	0	0			
5:55 PM	0	5	0	0	2	19	0	0	0	3	2	0	0	31	1	0	0	0			
Total Survey	0	136	52	0	26	269	0	0	0	124	92	0	0	699	2	0	0	2			

### 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			
	Bikes	L	R	T	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R		North	South	East	West
4:00 PM	0	16	3	0	3	24	0	0	0	14	10	0	0	70	0	0	0	0			
4:15 PM	0	24	5	0	2	33	0	0	0	13	11	0	0	88	0	0	0	0			
4:30 PM	0	14	9	0	2	33	0	0	0	18	15	0	0	91	0	0	0	1			
4:45 PM	0	16	9	0	4	22	0	0	0	18	9	0	0	78	0	0	0	0			
5:00 PM	0	21	6	0	5	49	0	0	0	12	12	0	0	105	0	0	0	0			
5:15 PM	0	15	11	0	5	37	0	0	0	17	10	0	0	95	1	0	0	0			
5:30 PM	0	11	5	0	1	27	0	0	0	17	18	0	0	79	0	0	0	0			
5:45 PM	0	19	4	0	4	44	0	0	0	15	7	0	0	93	1	0	0	0			
Total Survey	0	136	52	0	26	269	0	0	0	124	92	0	0	699	2	0	0	2			

### 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	Bikes		North	South	East	West
Volume	0	0	0	0	100	66	166	0	163	101	264	0	118	214	332	0	381	0	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
Volume	0	67	33	100	16	147	163	0	68	50	118	0	0	0	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	0.75	0.89	0.83	0.89	0.89	0.89	0.89		

### Rolling Hour Summary

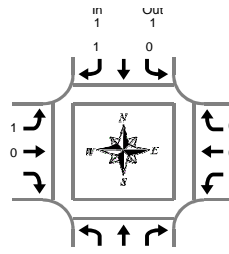
4:00 PM to 6:00 PM

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

# Heavy Vehicle Summary



Clay Carney  
(503) 833-2740



Out 1  
In 1

Out 0  
In 0  
**Peak Hour Summary**  
4:25 PM to 5:25 PM

## 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
	L	R	Total	L	R	Total	L	T	Total	T	R	Total	
4:00 PM	0	0	0	1	1	2	0	0	0	0	0	0	1
4:05 PM	0	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	0
4:15 PM	0	1	1	0	1	1	0	0	0	0	0	0	1
4:20 PM	0	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	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:35 PM	0	0	0	1	1	2	0	0	0	0	0	0	1
4:40 PM	0	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	0
4:50 PM	0	0	0	0	0	0	1	0	1	0	0	0	1
4:55 PM	0	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	0
5:05 PM	0	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	0
5:15 PM	0	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	0
5:25 PM	0	0	0	0	0	0	0	1	1	0	0	0	1
5:30 PM	0	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	0
5:40 PM	0	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	0
5:50 PM	0	0	0	0	0	0	0	2	2	0	0	0	2
5:55 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survey	0	1	1	2	3	5	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
	L	R	Total	L	R	Total	L	T	Total	T	R	Total	
4:00 PM	0	0	0	1	1	2	0	0	0	0	0	0	1
4:15 PM	0	1	1	0	1	1	0	0	0	0	0	0	1
4:30 PM	0	0	0	1	1	2	0	0	0	0	0	0	1
4:45 PM	0	0	0	0	0	0	1	0	1	0	0	0	1
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	1	1	0	0	0	1
5:30 PM	0	0	0	0	0	0	0	0	0	0	1	1	1
5:45 PM	0	0	0	0	0	0	0	2	2	0	0	0	2
Total Survey	0	1	1	2	3	5	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
	L	R	Total	L	R	Total	L	T	Total	T	R	Total	
Volume	0	0	0	1	1	2	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	0.50

### 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
	L	R	Total	L	R	Total	L	T	Total	T	R	Total	
4:00 PM	0	0	0	2	3	5	0	0	0	0	0	0	4
4:15 PM	0	1	1	1	2	3	1	0	1	0	0	0	3
4:30 PM	0	0	0	1	1	2	1	1	2	0	0	0	3
4:45 PM	0	0	0	0	0	0	1	1	2	0	1	1	3
5:00 PM	0	0	0	0	0	0	0	3	3	0	1	1	4



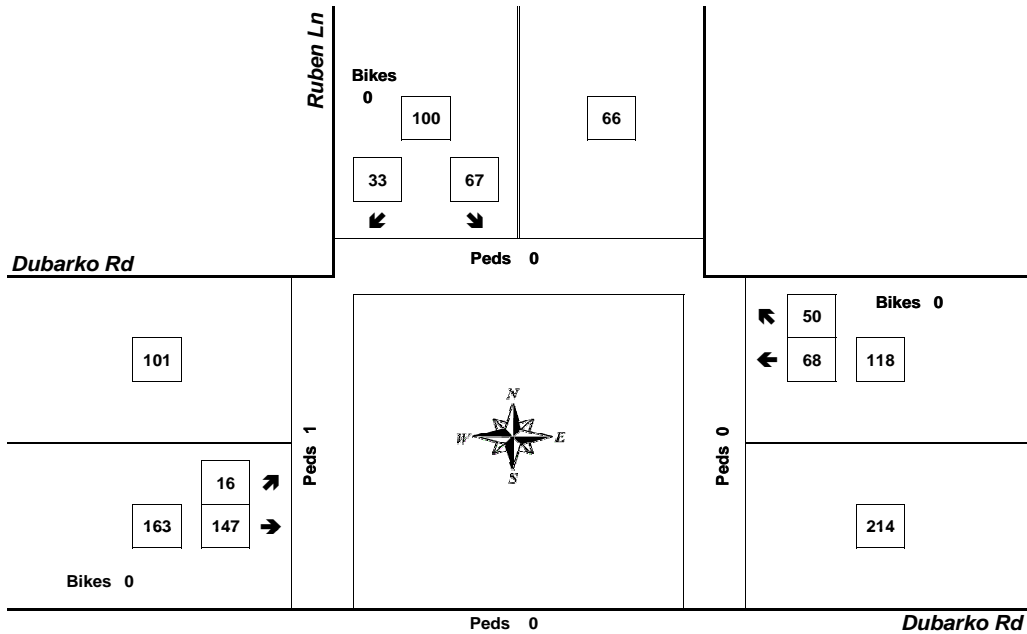
**Peak Hour Summary**



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
<b>Intersection</b>	<b>0.89</b>	<b>0.5%</b>	<b>381</b>

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

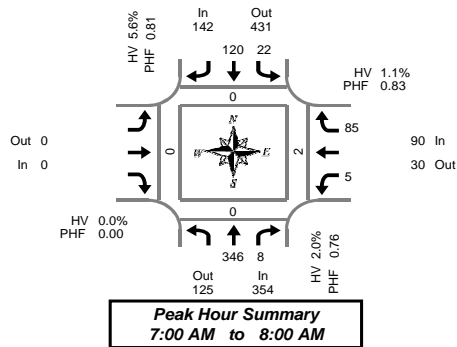
# Total Vehicle Summary



Clay Carney  
(603) 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	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	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	In	Out	Total	In	Out	Total	In	Out	Total		North	South	East	West
Volume	354	125	479	0	142	431	573	0	0	0	0	90	30	120	0	586	
%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	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

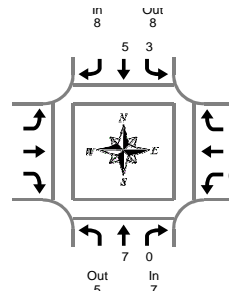
7:00 AM to 9:00 AM

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



Out 0  
In 0

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

## SE 362nd Ave & 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 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	0
7:05 AM	2	0	2	0	0	0	0	0	0	0	0	2
7:10 AM	1	0	1	0	0	0	0	0	0	0	0	1
7:15 AM	1	0	1	0	0	0	0	0	0	0	0	1
7:20 AM	1	0	1	1	0	1	1	0	0	1	1	3
7:25 AM	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	1	2	3	0	0	0	0	0	3
7:35 AM	1	0	1	1	0	1	0	0	0	0	0	2
7:40 AM	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	1	0	1	0	2	2	0	0	0	0	0	3
7:50 AM	0	0	0	0	1	1	0	0	0	0	0	1
7:55 AM	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	1	1	0	0	0	0	0	1
8:05 AM	1	0	1	0	0	0	0	0	0	0	0	1
8:10 AM	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	3	1	4	0	1	1	0	0	0	0	0	5
8:20 AM	0	0	0	0	0	0	0	0	0	0	0	0
8:25 AM	0	0	0	0	2	2	0	0	1	1	1	3
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
8:35 AM	0	0	0	0	2	2	0	0	0	0	0	2
8:40 AM	1	0	1	0	0	0	0	0	0	0	0	1
8:45 AM	1	0	1	0	0	0	0	0	0	0	0	1
8:50 AM	1	0	1	0	1	1	0	0	0	0	0	2
8:55 AM	6	0	6	0	1	1	0	0	1	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	0	3
7:15 AM	2	0	2	1	0	1	0	0	1	1	1	4
7:30 AM	1	0	1	2	2	4	0	0	0	0	0	5
7:45 AM	1	0	1	0	3	3	0	0	0	0	0	4
8:00 AM	1	0	1	0	1	1	0	0	0	0	0	2
8:15 AM	3	1	4	0	3	3	0	0	1	1	1	8
8:30 AM	1	0	1	0	2	2	0	0	0	0	0	3
8:45 AM	8	0	8	0	2	2	0	0	1	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				
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	

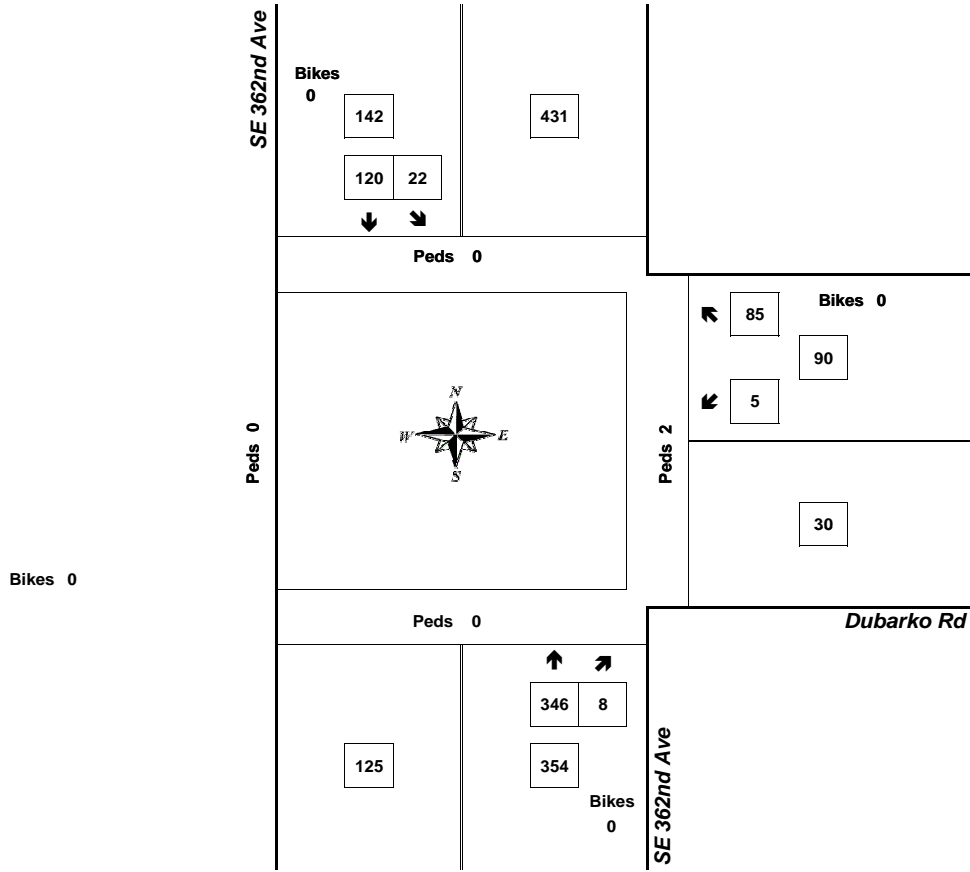
**Peak Hour Summary**



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
<b>Intersection</b>	<b>0.85</b>	<b>2.7%</b>	<b>586</b>

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

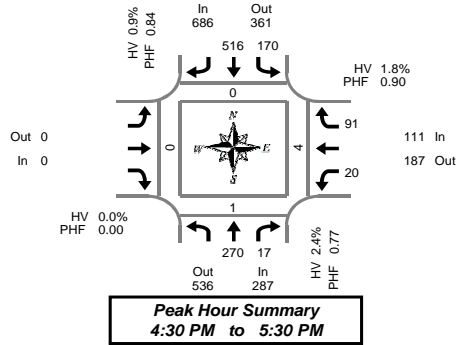
**Total Vehicle Summary**



Clay Carney  
(603) 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	1	6	0	78	1	0	3	0		
4:05 PM	21	2	0	7	36	0	0	1	5	0	72	0	0	0	0		
4:10 PM	19	2	0	8	36	0	0	1	6	0	72	0	0	0	0		
4:15 PM	26	3	0	8	32	0	0	0	4	0	73	0	0	1	0		
4:20 PM	22	1	0	14	45	0	0	3	4	0	89	0	0	0	0		
4:25 PM	21	2	0	15	34	0	0	0	5	0	77	0	0	0	0		
4:30 PM	19	2	0	18	30	0	0	1	8	0	78	0	0	2	0		
4:35 PM	27	0	0	9	42	0	0	0	9	0	87	0	0	0	0		
4:40 PM	17	3	0	12	33	0	0	2	9	0	76	0	0	0	0		
4:45 PM	28	0	0	7	46	0	0	1	6	0	88	0	0	0	0		
4:50 PM	28	2	0	14	33	0	0	3	7	0	87	0	0	0	0		
4:55 PM	30	2	0	10	51	0	0	4	3	0	100	0	0	0	0		
5:00 PM	30	1	0	15	42	0	0	3	11	0	102	0	0	0	0		
5:05 PM	21	4	0	16	45	0	0	0	7	0	93	0	0	0	0		
5:10 PM	21	1	0	20	49	0	0	2	6	0	99	0	0	0	0		
5:15 PM	16	1	0	14	60	0	0	1	7	0	99	0	0	0	0		
5:20 PM	17	1	0	19	42	0	0	2	12	0	93	0	1	0	0		
5:25 PM	16	0	0	16	43	0	0	1	6	0	82	0	0	2	0		
5:30 PM	19	0	0	16	24	0	0	2	4	0	65	0	0	0	0		
5:35 PM	16	1	0	12	33	0	0	2	7	0	71	0	0	0	0		
5:40 PM	26	0	0	9	39	0	0	1	6	0	81	0	0	0	0		
5:45 PM	18	2	0	13	36	0	0	2	5	0	76	0	0	0	0		
5:50 PM	19	2	0	17	43	0	0	1	7	0	89	0	0	0	0		
5:55 PM	17	3	0	17	29	0	0	1	7	0	74	0	0	0	0		
Total Survey	519	35	0	317	938	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	3	17	0	222	1	0	3	0		
4:15 PM	69	6	0	37	111	0	0	3	13	0	239	0	0	1	0		
4:30 PM	63	5	0	39	105	0	0	3	26	0	241	0	0	2	0		
4:45 PM	86	4	0	31	130	0	0	8	16	0	275	0	0	0	0		
5:00 PM	72	6	0	51	136	0	0	5	24	0	294	0	0	0	0		
5:15 PM	49	2	0	49	145	0	0	4	25	0	274	0	1	2	0		
5:30 PM	61	1	0	37	96	0	0	5	17	0	217	0	0	0	0		
5:45 PM	54	7	0	47	108	0	0	4	19	0	239	0	0	0	0		
Total Survey	519	35	0	317	938	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	1.4%		
PHF	0.77	0.61	0.77	0.80	0.84	0.84	NA	0.00	0.50	0.88	0.90		

**Rolling Hour Summary**  
4:00 PM to 6:00 PM

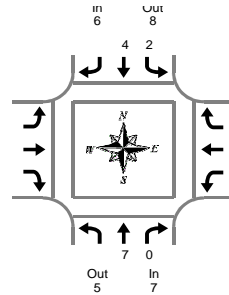
Interval Start Time	Northbound SE 362nd Ave			Southbound SE 362nd Ave			Eastbound Dubarko Rd			Westbound Dubarko Rd			Interval Total	Pedestrians Crosswalk			
	T	R	Bikes	L	T	Bikes	Bikes	L	R	Bikes	North	South		East	West		
4:00 PM	283	19	0	133	453	0	0	17	72	0	977	1	0	6	0		
4:15 PM	290	21	0	158	482	0	0	19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

**Peak Hour Summary**  
4:30 PM to 5:30 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			
Volume	7	5	12	6	8	14	0	0	0	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

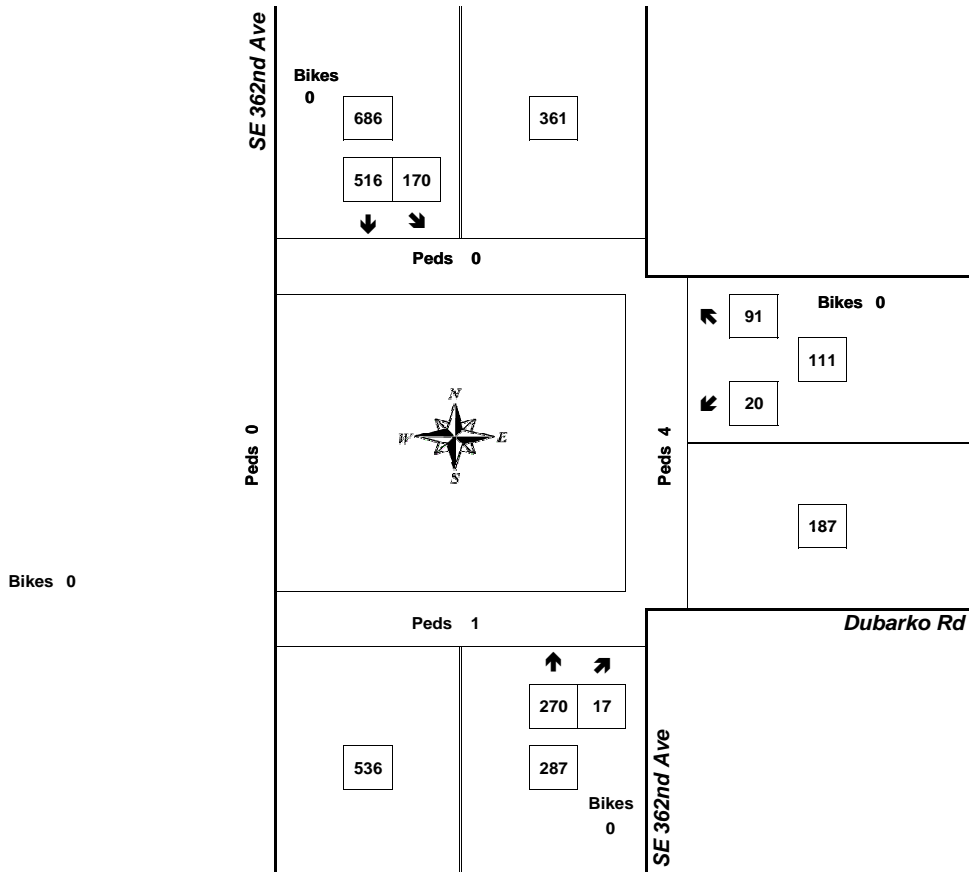
**Peak Hour Summary**



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
<b>Intersection</b>	<b>0.92</b>	<b>1.4%</b>	<b>1,084</b>

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

CDS380  
05/17/2019

OREGON.. DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION  
 TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT  
 URBAN NON-SYSTEM CRASH LISTING  
 362ND DR at DUBARKO RD, City of Sandy, Clackamas County, 01/01/2012 to 12/31/2016  
 1 - 1 of 1 Crash records shown.

CITY OF SANDY, CLACKAMAS COUNTY

SER#	S	D	M	P	R	J	S	W	DATE	CLASS	CITY STREET	RD CHAR	INT-TYPE	OFFRD	WTHR	CRASH	SPCL USE	MOVE	A	S	INJ	G	E	LICNS	PED	ACT	EVENT	CAUSE	
INVEST	E	A	U	I	C	O	DAY	DIST	FIRST STREET	RD CHAR	(MEDIAN)	INT-REL	OFFRD	WTHR	CRASH	TRLR QTY	MOVE	OWNER	FROM	PRTC	INJ	G	E	LICNS	PED	ACT	EVENT	CAUSE	
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	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
00737	N	N	N				02/27/2015	17	DUBARKO RD	INTER	3-LEG	N	N	UNK	S-1STOP	01	NONE	0	STRGHT									29	
NONE							FR	0	362ND DR	E		STOP SIGN	N	WET	SS-O		PRVTE	E -W									000	00	
N							12P			06	0		N	DAY	PDO		PSNGR CAR			01	DRVR	NONE	00	M	UNK		026	000	29
N							45 23 57.42	-122 17 27.9																					
																	02	NONE	0	STOP									
																	PRVTE	E -W									011	00	
																	PSNGR CAR			01	DRVR	NONE	22	M	OR-Y		000	000	00

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.

CDS380  
05/17/2019

CITY OF SANDY, CLACKAMAS COUNTY

OREGON.. DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION  
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT  
URBAN NON-SYSTEM CRASH LISTING  
362ND DR at DUBARKO RD, City of Sandy, Clackamas County, 01/01/2012 to 12/31/2016

Page: 2

*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.*

CDS380  
05/12/2019

OREGON.. DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION  
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT  
URBAN NON-SYSTEM CRASH LISTING  
DUBARKO RD at BLUFF RD, City of Sandy, Clackamas County, 01/01/2012 to 12/31/2016

CITY OF SANDY, CLACKAMAS COUNTY

SER#	P	R	J	S	W	DATE	CLASS	CITY STREET	RD CHAR	INT-TYPE	OFFRD	WTHR	CRASH	SPCL USE	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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CDS380  
05/12/2019

CITY OF SANDY, CLACKAMAS COUNTY

OREGON.. DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION  
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT  
URBAN NON-SYSTEM CRASH LISTING  
DUBARKO RD at BLUFF RD, City of Sandy, Clackamas County, 01/01/2012 to 12/31/2016

Page: 2

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CDS380  
05/12/2019

CITY OF SANDY, CLACKAMAS COUNTY

OREGON.. DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION  
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT  
URBAN NON-SYSTEM CRASH LISTING  
DUBARKO RD at MELISSA AVE, City of Sandy, Clackamas County, 01/01/2012 to 12/31/2016

Page: 2

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CDS380  
05/12/2019

CITY OF SANDY, CLACKAMAS COUNTY

OREGON.. DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION  
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT  
URBAN NON-SYSTEM CRASH LISTING  
DUBARKO RD at RUBEN LN, City of Sandy, Clackamas County, 01/01/2012 to 12/31/2016

Page: 2

*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.*



## 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
<b>WARRANT 1, CONDITION A</b>					
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
<b>WARRANT 1, CONDITION B</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	<b>No</b>
<i>Condition B: Interruption of Continuous Traffic</i>			
Major Street	5,380	13,300	
Minor Street*	1,030	1,350	<b>No</b>
<i>Combination Warrant</i>			
Major Street	5,380	10,640	
Minor Street*	1,030	2,120	<b>No</b>

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

\* 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:  
 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
<b>WARRANT 1, CONDITION A</b>					
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
<b>WARRANT 1, CONDITION B</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	840	8,850	
Minor Street*	1,130	2,650	<b>No</b>
<i>Condition B: Interruption of Continuous Traffic</i>			
Major Street	840	13,300	
Minor Street*	1,130	1,350	<b>No</b>
<i>Combination Warrant</i>			
Major Street	840	10,640	
Minor Street*	1,130	2,120	<b>No</b>

\* 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)	
Major St.	Minor St.	100% Warrants	70% Warrants	100% Warrants	70% Warrants
<b>WARRANT 1, CONDITION A</b>					
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
<b>WARRANT 1, CONDITION B</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	1,640	8,850	
Minor Street*	360	2,650	<b>No</b>
<i>Condition B: Interruption of Continuous Traffic</i>			
Major Street	1,640	13,300	
Minor Street*	360	1,350	<b>No</b>
<i>Combination Warrant</i>			
Major Street	1,640	10,640	
Minor Street*	360	2,120	<b>No</b>

## 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:  
 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
<b>WARRANT 1, CONDITION A</b>					
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
<b>WARRANT 1, CONDITION B</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	10,730	8,850	
Minor Street*	1,140	2,650	<b>No</b>
<i>Condition B: Interruption of Continuous Traffic</i>			
Major Street	10,730	13,300	
Minor Street*	1,140	1,350	<b>No</b>
<i>Combination Warrant</i>			
Major Street	10,730	10,640	
Minor Street*	1,140	2,120	<b>No</b>

\* 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)	
Major St.	Minor St.	100% Warrants	70% Warrants	100% Warrants	70% Warrants
<b>WARRANT 1, CONDITION A</b>					
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
<b>WARRANT 1, CONDITION B</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	<b>No</b>
<i>Condition B: Interruption of Continuous Traffic</i>			
Major Street	3,740	13,300	
Minor Street*	1,160	1,350	<b>No</b>
<i>Combination Warrant</i>			
Major Street	3,740	10,640	
Minor Street*	1,160	2,120	<b>No</b>

\* 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:  
 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
<b>WARRANT 1, CONDITION A</b>					
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
<b>WARRANT 1, CONDITION B</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	<b>No</b>
<i>Condition B: Interruption of Continuous Traffic</i>			
Major Street	2,870	13,300	
Minor Street*	680	1,350	<b>No</b>
<i>Combination Warrant</i>			
Major Street	2,870	10,640	
Minor Street*	680	2,120	<b>No</b>

\* 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:  
 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
<b>WARRANT 1, CONDITION A</b>					
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
<b>WARRANT 1, CONDITION B</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	<b>No</b>
<i>Condition B: Interruption of Continuous Traffic</i>			
Major Street	2,200	13,300	
Minor Street*	610	1,350	<b>No</b>
<i>Combination Warrant</i>			
Major Street	2,200	10,640	
Minor Street*	610	2,120	<b>No</b>

\* 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

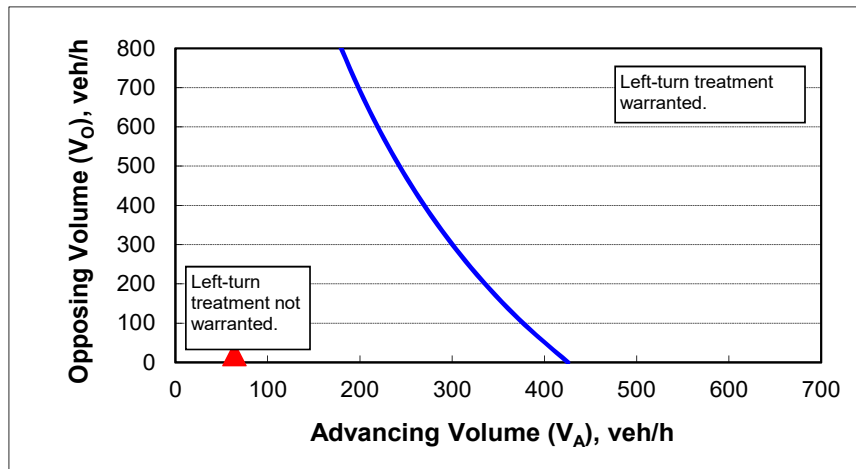
### 2-lane roadway (English)

#### INPUT

Variable	Value
85 <sup>th</sup> 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
<b>Guidance for determining the need for a major-road left-turn bay:</b>	
<b>Left-turn treatment NOT warranted.</b>	



#### 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

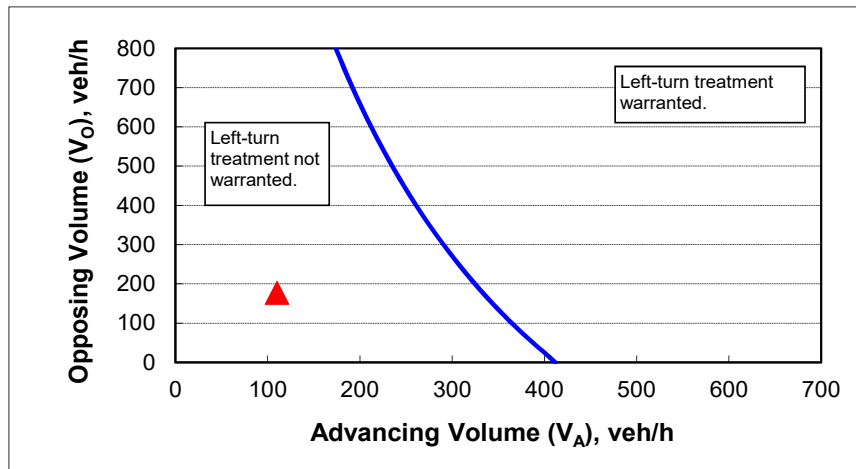
### 2-lane roadway (English)

#### INPUT

Variable	Value
85 <sup>th</sup> 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
<b>Guidance for determining the need for a major-road left-turn bay:</b>	
<b>Left-turn treatment NOT warranted.</b>	



#### 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	Y		Y		Y	Y
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	0
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	-

HCM 2010 TWSC  
2: Dubarko Road & Ruben Lane

05/28/2019

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

HCM 2010 TWSC  
 3: Melissa Avenue & Dubarko Road

05/28/2019

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	Minor2	Minor3
Conflicting Flow All	0	0	11	0	96
Stage 1	-	-	-	-	11
Stage 2	-	-	-	-	85
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	-	-	1608	-	903
Stage 1	-	-	-	-	1012
Stage 2	-	-	-	-	938
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1608	-	892
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	-

HCM 2010 AWSC  
4: Dubarko Road & Bluff Road

05/28/2019

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	Y		Y		Y	Y
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	0
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	-



HCM 2010 TWSC  
2: Dubarko Road & Ruben Lane

05/28/2019

**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	-	0	305	104
Stage 1	-	-	-	-	104	-
Stage 2	-	-	-	-	201	-
Critical Hdwy	4.11	-	-	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	2.209	-	-	-	3.509	3.309
Pot Cap-1 Maneuver	1458	-	-	-	689	953
Stage 1	-	-	-	-	923	-
Stage 2	-	-	-	-	835	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1458	-	-	-	679	953
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

HCM 2010 TWSC  
 3: Melissa Avenue & Dubarko Road

05/28/2019

**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	-

HCM 2010 AWSC  
4: Dubarko Road & Bluff Road

05/28/2019

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

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

06/06/2019

**Intersection**

Int Delay, s/veh	2.5					
<b>Movement</b>	<b>WBL</b>	<b>WBR</b>	<b>NBT</b>	<b>NBR</b>	<b>SBL</b>	<b>SBT</b>
Lane Configurations	Y		Y		Y	Y
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**

	<b>Minor1</b>	<b>Major1</b>	<b>Major2</b>		
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**

	<b>WB</b>	<b>NB</b>	<b>SB</b>
HCM Control Delay, s	12.7	0	1.5
HCM LOS	B		

**Minor Lane/Major Mvmt**

	<b>NBT</b>	<b>NBRWBLn1</b>	<b>SBL</b>	<b>SBT</b>
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

HCM 2010 TWSC  
2: Dubarko Road & Ruben Lane

06/06/2019

**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



HCM 2010 TWSC  
 3: Melissa Avenue & Dubarko Road

06/06/2019

**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	-

HCM 2010 AWSC  
4: Dubarko Road & Bluff Road

06/06/2019

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

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

06/06/2019

**Intersection**

Int Delay, s/veh	3.4					
<b>Movement</b>	<b>WBL</b>	<b>WBR</b>	<b>NBT</b>	<b>NBR</b>	<b>SBL</b>	<b>SBT</b>
Lane Configurations	Y		Y		Y	Y
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**

	<b>Minor1</b>	<b>Major1</b>		<b>Major2</b>	
Conflicting Flow All	1335	324	0	0	336
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**

	<b>WB</b>	<b>NB</b>	<b>SB</b>
HCM Control Delay, s	18.1	0	2.2
HCM LOS	C		

**Minor Lane/Major Mvmt**

	<b>NBT</b>	<b>NBRWBLn1</b>	<b>SBL</b>	<b>SBT</b>
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

HCM 2010 TWSC  
2: Dubarko Road & Ruben Lane

06/06/2019

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	124
Stage 1	-	-	-	-	124	-
Stage 2	-	-	-	-	230	-
Critical Hdwy	4.11	-	-	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	2.209	-	-	-	3.509	3.309
Pot Cap-1 Maneuver	1430	-	-	-	646	929
Stage 1	-	-	-	-	904	-
Stage 2	-	-	-	-	811	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	1430	-	-	-	636	929
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

HCM 2010 TWSC  
 3: Melissa Avenue & Dubarko Road

06/06/2019

**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	135
Stage 1	-	-	-	-	135	-
Stage 2	-	-	-	-	127	-
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	-	-	1426	-	731	919
Stage 1	-	-	-	-	896	-
Stage 2	-	-	-	-	904	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1426	-	716	919
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	-



HCM 2010 AWSC  
4: Dubarko Road & Bluff Road

06/06/2019

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

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

06/06/2019

**Intersection**

Int Delay, s/veh	3					
<b>Movement</b>	<b>WBL</b>	<b>WBR</b>	<b>NBT</b>	<b>NBR</b>	<b>SBL</b>	<b>SBT</b>
Lane Configurations	Y		Y		Y	Y
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**

	<b>Minor1</b>	<b>Major1</b>		<b>Major2</b>	
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**

	<b>WB</b>	<b>NB</b>	<b>SB</b>
HCM Control Delay, s	13.3	0	1.7
HCM LOS	B		

**Minor Lane/Major Mvmt**

	<b>NBT</b>	<b>NBRWBLn1</b>	<b>SBL</b>	<b>SBT</b>
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

HCM 2010 TWSC  
2: Dubarko Road & Ruben Lane

06/06/2019

**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	162
Stage 1	-	-	-	-	162	-
Stage 2	-	-	-	-	76	-
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	1320	-	-	-	727	855
Stage 1	-	-	-	-	841	-
Stage 2	-	-	-	-	920	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1320	-	-	-	715	855
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	-

HCM 2010 AWSC  
4: Dubarko Road & Bluff Road

06/06/2019

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	Y		Y		Y	Y
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	0
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	-

HCM 2010 TWSC  
2: Dubarko Road & Ruben Lane

06/06/2019

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	-	0	403	145
Stage 1	-	-	-	-	145	-
Stage 2	-	-	-	-	258	-
Critical Hdwy	4.11	-	-	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	2.209	-	-	-	3.509	3.309
Pot Cap-1 Maneuver	1400	-	-	-	605	905
Stage 1	-	-	-	-	885	-
Stage 2	-	-	-	-	787	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	1400	-	-	-	596	905
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

HCM 2010 TWSC  
3: Melissa Avenue & Dubarko Road

06/06/2019

**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	-

HCM 2010 AWSC  
4: Dubarko Road & Bluff Road

06/06/2019

Intersection	
Intersection Delay, s/veh	7.7
Intersection LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	29	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 E: Property Ownership Information

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JB

WARRANTY DEED - STATUTORY FORM  
(Individual or Corporation)

JOE B. PHILLIPS

Grantor, conveys and warrants to:

LAWRENCE L. PULLEN and RICHARD L. PULLEN and MARK D. TEN EYCK

Grantee, the following described real property free of encumbrances except as specifically set forth herein:

PLEASE SEE ATTACHED DESCRIPTION SHEET

This instrument will not allow use of the property described in this instrument in violation of applicable land use laws and regulations. Before signing or accepting this instrument, the person acquiring fee title to the property should check with the appropriate city or county planning department to verify approved uses.

ENCUMBRANCES:

NONE

The true consideration for this conveyance is \$40,000.00.

Dated this 21st day of April, 1993; if a corporate grantor, it has caused its name to be signed by order of its board of directors.

CHICAGO TITLE INSURANCE COMPANY  
C-108/08

Joe B. Phillips  
JOE B. PHILLIPS

STATE OF OREGON, )  
County of Clackamas )ss.  
April 21, 1993. )

Personally appeared the above named JOE B. PHILLIPS and acknowledged the foregoing instrument to be his/her/their voluntary act and deed.

Before me:

Luella J. Taylor  
Notary Public for Oregon  
My commission expires: 3-2-94



After recording return and send tax statements to:  
LAWRENCE L. PULLEN  
36940 SE Deming  
Sandy, OR 97055

Escrow No. 2300-00570-LF - Order No. 108108

93 28438

A portion of the Southwest one-quarter of the Northeast one-quarter of Section 23, Township 2 South, Range 4 East of the Willamette Meridian, in the County of Clackamas and State of Oregon, being more particularly described as follows:

Beginning at a stone marking the Northwest corner of said legal subdivision; thence N.88°26'40"E., along the North line thereof, a distance of 1321.91 feet to the Northeast corner of said legal subdivision; thence S.0°18'10"E., along the East line thereof, a distance of 388.20 feet to a point in the Northwesterly right-of-way line of Oregon State Highway No. 211; thence S.33°18'01"W., along said right-of-way line, a distance of 558.61 feet to an iron rod; thence N.51°08'54"W., leaving said right-of-way line, a distance of 1305.73 feet to the point of beginning.

2

STATE OF OREGON }  
County of Clackamas } ss.  
I, John Kaufman, County Clerk, for the County of Clackamas, do hereby certify that the instrument of writing was received for recording in the records of said county at

93 APR 29 PM 2:00



Witness my hand and seal this 29th day of April 1993.  
*John Kaufman*  
JOHN KAUFMAN  
County Clerk  
Recording Certificate  
CCP-814 (Rev. 8/91)

93 28438

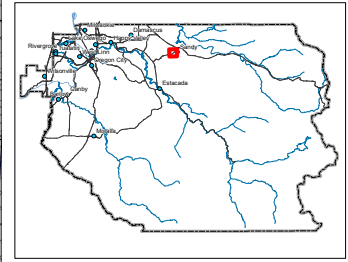
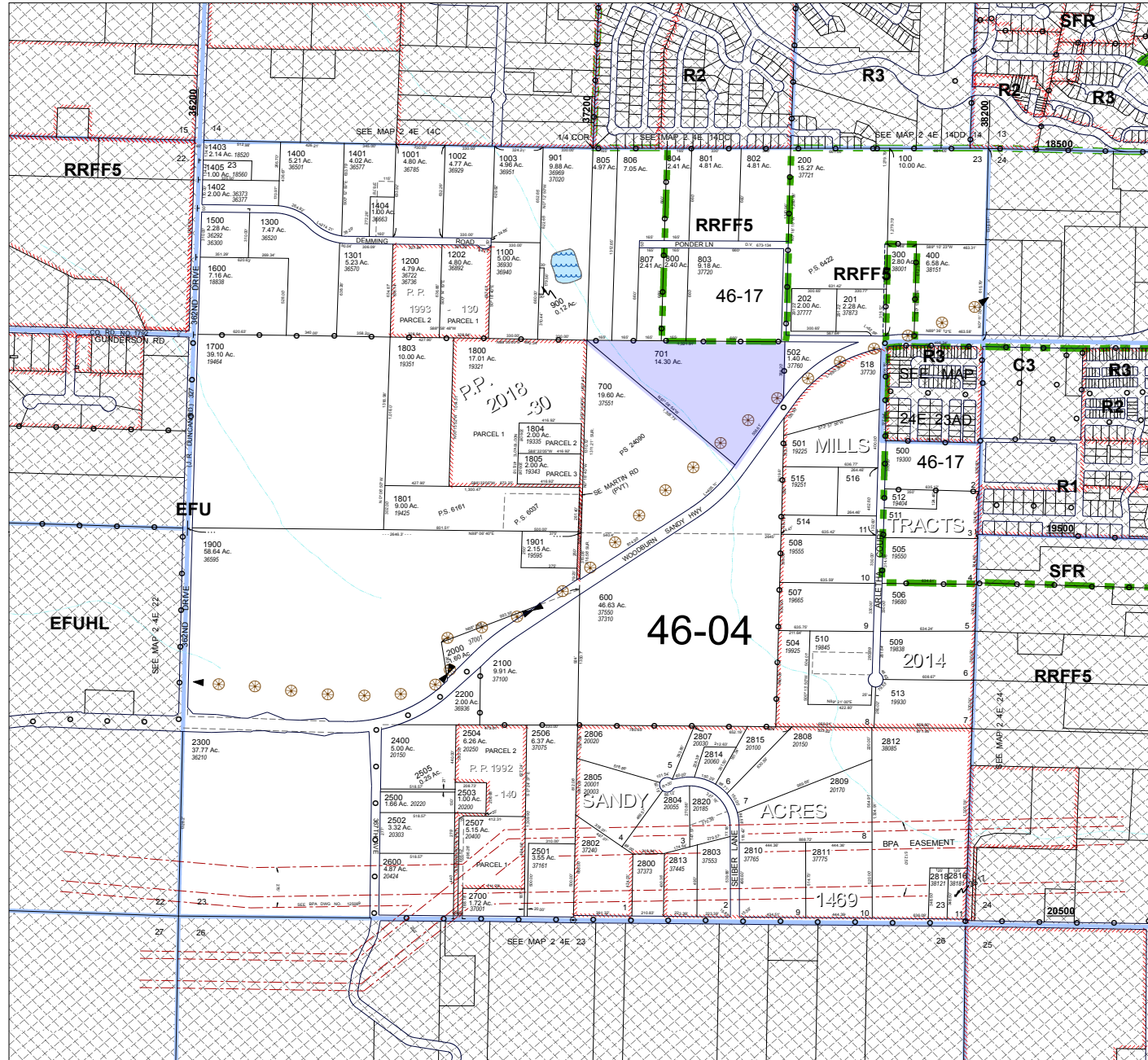


**Exhibit F: Clackamas County Assessor's Map**

SECTION 23 T.2S. R.4E. W.M.  
CLACKAMUS COUNTY  
1" = 400'

Cancelled Taxlots

- 2801
- 1000
- 2319
- 2300A1
- 1301
- 2701
- 503E1
- 503
- 1902
- 1802
- 517



- Parcel Boundary
- - - Private Road ROW
- - - Historical Boundary
- Railroad Centerline
- TaxCodeLines
- Map Index
- WaterLines
- Land Use Zoning
- Plats
- Water
- Corner
- Section Corner
- 1/16th Line
- Govt Lot Line
- - - DLC Line
- - - Meander Line
- - - PLSS Section Line
- Historic Corridor 40'
- Historic Corridor 20'

THIS MAP IS FOR ASSESSMENT  
PURPOSES ONLY



**Exhibit G: Noticing Materials**

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24E23 00200  
Leslie Geren  
37721 SE Ponder Ln  
Sandy, OR 97055

24E23 00201  
Paul Klahn  
Po Box 671  
Sandy, OR 97055

24E23 00202  
Lucille Tiscus  
37777 SE Ponder Ln  
Sandy, OR 97055

24E23 00501  
Nancy Bennett  
19225 SE Arletha Ct  
Sandy, OR 97055

24E23 00502  
Broek Boaz & Brian Galovin  
244 Plant Ln SE  
Salem, OR 97317

24E23 00514  
Robert & Barbara Johnson  
19555 SE Arletha Ct  
Sandy, OR 97055

24E23 00515  
William Fisher  
19251 SE Arletha Ct  
Sandy, OR 97055

24E23 00518  
Garrett & Meri Lang  
37730 SE Highway 211  
Sandy, OR 97055

24E23 00600  
Robert & Shana Foster  
21442 S Parkview Ln  
Estacada, OR 97023

24E23 00700  
Calvin & Teresa Mckinnis  
37551 SE Highway 211  
Sandy, OR 97055

24E23 00701  
Lawrence Pullen  
36940 Deming Rd  
Sandy, OR 97055

24E23 00800  
Grant Sturm  
647 E Historic Columbia River Hwy  
Troutdale, OR 97060

24E23 00803  
Grant Sturm  
647 E Historic Columbia River Hwy  
Troutdale, OR 97060

24E23 00805  
Sherrene Teneyck  
37020 Deming Rd  
Sandy, OR 97055

24E23 00806  
Sherrene Teneyck  
37020 Deming Rd  
Sandy, OR 97055

24E23 00807  
Sherrene Teneyck  
37020 Deming Rd  
Sandy, OR 97055

24E23 00900  
Eyck Ten & Richard Pullen  
37020 Deming Rd  
Sandy, OR 97055

24E23 00901  
Sherrene Teneyck  
37020 Deming Rd  
Sandy, OR 97055

24E23 01100  
Richard Pullen  
36940 Deming Rd  
Sandy, OR 97055

24E23 01800  
University Developments Llc  
17150 University Ave STE 200  
Sandy, OR 97055

24E23 01804  
Sixth Generation Properties Llc  
Po Box 1750  
Oregon City, OR 97045

## Exhibit GGGG



January 13, 2020

Emily Meharg  
Senior Planner  
City of Sandy Development Services  
39250 Pioneer Boulevard  
Sandy, OR 97055

### RE: CITY OF SANDY BAILEY MEADOWS SUBDIVISION (FILE NO. 19-023 SUB/VAR/TREE) PRELIMINARY REVIEW

Dear Emily:

This letter is in response to the September 27, 2019 memo from Hassan Ibrahim with Curran-McLeod, Inc. Consulting Engineers to the City of Sandy.

#### Comments

1. *We have briefly reviewed the "Geotechnical Engineering Report" prepared by Geopacific Engineering, Inc., dated June 18, 2019 and recommend that the developer retains appropriate professional geotechnical services for observation of construction of earthwork and grading activities. The grading setbacks, drainage and terracing should comply with the Oregon Structural Specialty Code (OSSC) requirements and the geotechnical report recommendations and conclusions as indicated in the report. When the grading is completed, a final report should be submitted to the City by the Geotechnical Engineer stating that adequate inspections and testing have been performed on the lots and all of the work is in compliance with the above noted report and the OSSC.*

**Response:** Professional geotechnical engineering services will be provided for observation of construction earthwork and grading activities. Grading setbacks, drainage, and terracing will meet the OSSC and the geotechnical engineer's report recommendations. A final geotechnical engineering observation report will be submitted as required.

2. *We have reviewed the preliminary stormwater calculations that was provided with this submittal. The calculations are found to meet the water quality/quantity criteria as stated in the City of Sandy Development Code (SDC) 13.18 Standards and the City of Portland Stormwater Management Manual (SWMM) Standards, that were adopted by reference into the Sandy Development Code. However, a detailed final report stamped by a licensed professional shall be submitted for review with the final construction plans.*

**Response:** A final stormwater report, including updated calculations, will be submitted with the final construction plans.

3. *We have reviewed the "Traffic Impact Analysis" prepared by Lancaster Engineering dated June 20, 2019. The study doesn't identify any concerns as a result of this development.*

**Response:** This is understood.

4. *3/4 Improvements should be required on Ponder Street north-south between Gunderson Road and the most northerly east-west street to include 28-foot wide paved surface, curbs on both sides, 5-foot*

BEND, OR | KEIZER, OR | TUALATIN, OR | VANCOUVER, WA  
[www.aks-eng.com](http://www.aks-eng.com)

*planter strip with street trees, street lighting and 5-foot wide sidewalks on the west side of the roadway.*

**Response:** A three-quarter street improvement cannot be constructed in this portion of Ponder Lane because there is not adequate right-of-way. The existing right-of-way width is only 30 feet for this section. Also, the existing right-of-way is currently being used as driveway access for the neighboring property to the east (Tax Lot 200; Clackamas County Assessor's Map 2 4E 23) and blocking this access (with this project) is not desirable. Emergency vehicle access gates will be provided at the ends of the east-west oriented street stubs, so only emergency vehicles are permitted to ingress/egress. This provides for desirable emergency vehicle access between Bailey Meadows, Ponder Lane, and neighborhoods to the north. Introducing the opportunity for additional traffic (beyond what exists currently) to access the intersection of Highway 211 and Ponder Lane, as a 3/4 street improvement would do, is also considered not desirable.

5. *All interior streets to include the east-west Ponder lane should be constructed to local street standards (28-foot wide paved surface, curbs on both sides, 5-foot planter strips and 5-foot wide sidewalks) in compliance with the City of Sandy Transportation System Plan (TSP), figure 12. The proposed 50-foot right of way is adequate.*

**Response:** All interior streets will be designed and constructed as required.

6. *Gunderson Road is classified in the City of Sandy Transportation System Plan (TSP), figure 5 as a minor arterial street. A minimum of 34 feet of right of way dedication will be required along the entire site frontage as per City of Sandy Development Code, chapter 17.84. This roadway will be extended in the future as the surrounding properties develop around this site.*

*A half Improvements would be required on Gunderson Road to include 22-foot wide paved surface, curbs on one side, 5-foot planter strips and 6-foot wide sidewalks along the south plat boundary line as per the TSP. At the request of the City, we have developed a layout of this site and came up with 98 lots including a 34-foot of right of way dedication along Gunderson Road.*

**Response:** This comment is outdated. The alignment of Gunderson Road has been modified to better fit actual on-site conditions based on other applicable information that has become available. The reference to a different layout is also not applicable at this time.

7. *Melissa Avenue is classified in the City of Sandy Transportation System Plan (TSP), figure 5 as a local street and is proposed to be the only access to this development. Currently, the street surface is in bad condition. This site is generating an additional 944 trips while the combined AADT generated from this site and the existing Nicholas Glen No. 2 is 2,490 trips. The traffic volumes increase is deemed to deteriorate the existing street cross section further and potentially cause a complete failure. The TSP alludes to a traffic capacity on local streets between 800 and 1,000 ADT. The projected capacity exceeds the preferred capacity limitations.*

*We are also concerned that the increase in traffic volumes through one access is detrimental to the overall life and safety in case an evacuation is needed. A review by the Fire Department is needed to confirm whether an additional emergency access is needed or not. However, we recommend as a minimum a temporary/emergency access to Hwy 211.*

**Response:** The City has performed maintenance on Melissa Avenue since the date this comment was made. The project's traffic engineer (Todd Mobley with Lancaster-Mobley Engineering) performed a site visit analysis on Melissa Avenue after the maintenance was completed



and stated that the avenue appears to be in good condition. Please see photographs included below. We also do not see any basis for the statement that additional trips will “cause a complete failure.” The TSP is not an approval criterion for this land use action.

A secondary emergency access to the site has been discussed with and reviewed by the fire marshal. A secondary emergency access to Ponder Lane has been provided, as shown on the preliminary plans and described in the response to #5, above.

**Inclusions:** Photos taken on Melissa Avenue on Thursday, December 26, 2019.



8. *The developer’s engineer should provide a profile design for a minimum of 200 feet for all future street extensions stubbed streets past the project boundary to ensure future grades can be met.*

**Response:** The profile design will be provided as required.

9. *All ADA ramps shall be designed, inspected by the design engineer and constructed by the contractor to meet the most current PROWAG requirements.*

**Response:** ADA ramps will be designed and constructed as required.

10. *All public sanitary sewer, waterline mains to be a minimum of 8-inches in diameter and a minimum of 12—inches in diameter for storm drains and be extended to the plat boundaries where practical to provide future connections to adjoining properties. All utilities are extended to the plat boundary for future connections.*

**Response:** Sanitary sewer, storm drain, and water mains will be provided as required and will be extended to boundaries where practical.





11. The new site layout eliminated the detention pond and a detention tank can be used in lieu of a pond meeting the requirements of the 2016 City of Portland StormWater Management Manual (SWWM).

**Response:** Stormwater facilities meeting the City's requirements will be provided.

Sincerely,

**AKS ENGINEERING & FORESTRY, LLC**



Montgomery B. Hurley, PE, PLS - Principal  
503-563-6151 | monty@aks-eng.com  
12965 SW Herman Road, Suite 100  
Tualatin, OR 97062



**PLANNING COMMISSION  
STAFF REPORT  
TYPE III LAND DIVISION**

**DATE OF REPORT:** December 10, 2019

**HEARING DATE:** December 17, 2019

**FILE NO.:** 19-023 SUB/VAR/TREE

**PROJECT NAME:** Bailey Meadows Subdivision

**OWNER/APPLICANT:** Allied Homes & Development

**LEGAL DESCRIPTION:** T2S R4E Section 23 Tax Lots 800, 801, 802, 803, 804

**EXHIBITS:**

**Applicant's Submittals**

A. Land Use Application Form

B. Narrative

C. Project Plan Set

- Sheet P1-01: Cover Sheet with Site & Vicinity Maps & Legend
- Sheet P1-02: Preliminary Existing Conditions Plan
- Sheet P1-03: Preliminary Existing Conditions Plan
- Sheet P1-04: Preliminary Subdivision Plat with Future Building Setbacks
- Sheet P1-05: Preliminary Grading & Erosion & Sediment Control Plan
- Sheet P1-06: Preliminary Grading & Erosion & Sediment Control Plan
- Sheet P1-07: Preliminary Composite Utility Plan
- Sheet P1-08: Preliminary Composite Utility Plan
- Sheet P1-09: Preliminary Street Plan
- Sheet P1-10: Preliminary Street Plan
- Sheet P1-11: Preliminary Street Cross Sections & Profiles
- Sheet P1-12: Preliminary Street Profiles
- Sheet P1-13: Preliminary Street Profiles
- Sheet P1-14: Preliminary Street Profiles
- Sheet P1-15: Conceptual Future Street Plan
- Sheet P1-16: Preliminary Tree Preservation & Removal Plan & Arborist Report
- Sheet P1-17: Preliminary Tree Preservation & Removal Plan & Arborist Report
- Sheet P1-18: Preliminary Tree Preservation & Removal Table & Arborist Report
- Sheet P1-19: Preliminary Tree Preservation & Removal Table & Arborist Report
- Sheet P1-20: Preliminary Demolition Plan
- Sheet P1-21: Preliminary Demolition Plan
- Sheet P1-22: Preliminary Street Tree and Stormwater Screening Planting Plan
- Sheet P1-23: Preliminary Landscape Notes and Details
- Sheet P1-24: Preliminary Parking Plan

- Sheet P1-25: Preliminary Emergency Vehicle Access Plan
- Sheet P1-26: Preliminary Emergency Vehicle Access Plan
- D. Conceptual Connectivity Plan
- E. Preliminary Numbered Parking Plan
- F. Traffic Impact Analysis
- G. Preliminary Stormwater Report
- H. Flood & Slope Hazard (FSH) Analysis
- I. Geotechnical Engineering Report
- J. Letter from Michael Robinson (July 2, 2019)
- K. Mailing Labels
- L. Applicant Submittal Checklist
- M. Warranty Deed
- N. Clackamas County Assessor's Map
- O. Documentation of Plat Name Reservation
- P. Letter from Michael Robinson with Exhibits (August 20, 2019)
- Q. 120 Day Extension Letter (October 15, 2019)
- R. Letter from Michael Robinson (November 21, 2019)
- S. Updated Sheet P1-04 (Plan Dated November 15, 2019)
- T. Updated Sheet P1-15 (Plan Dated November 21, 2019)
- U. Updated Narrative (November 21, 2019)
- V. Gunderson Extension Exhibit from Todd Mobley (November 22, 2019)
- W. Letter from Michael Robinson with Exhibits (November 25, 2019)
- X. Trip Distribution with Gunderson Road Email from Todd Mobley (December 5, 2019)

**Agency Comments Received Prior to November 2019 Updated Submittal**

- Y. City Engineer (September 27, 2019)
- Z. PGE (September 18, 2019)
- AA. ODOT (October 4, 2019)
- BB. Parks and Trails Advisory Board (October 9, 2019)
- CC. ODOT Design Speed Email (November 19, 2019)

**Public Comments**

- DD. Paul and Jolette Owen, 37189 Rachael Drive (September 14, 2019)
- EE. Paul Savage, 37506 Rachael Drive (September 26, 2019)
- FF. Sarah Bettey, 18195 Melissa Avenue (September 26, 2019)
- GG. Tiffany Harris, Rachael Drive (September 27, 2019)
- HH. Todd Cooper, 18190 Melissa Avenue (September 27, 2019)
- II. Tom Newell, 18007 Rachael Drive (September 27, 2019)
- JJ. Cary Mallon, corner of Melissa Avenue and Rachael Drive (September 28, 2019)
- KK. Lonnie McVey, No address provided (September 28, 2019)
- LL. John and Carol Dick, 18255 Grey Avenue (September 29, 2019)
- MM. Marilyn and Treena Siewell, No address provided (October 1, 2019)
- NN. Marguerite Wadkins, 18291 Myra Court (October 1, 2019)
- OO. Doris E. Rooney, 37214 Rachael Drive (October 1, 2019)
- PP. Susan Hebb, Reich Court and Dubarko Road (October 1, 2019)
- QQ. Dawn and Jordan Allen, Melissa Avenue (October 1, 2019)

RR. Dave Meeker, 18198 Grey Avenue (October 1, 2019)  
 SS. Carol Hassebroek, 39400 SE Trubel Road (October 1, 2019)  
 TT. Karen Higgins, 37487 Rachael Drive (October 2, 2019)  
 UU. The Molcany Family, Wewer Avenue (October 2, 2019)  
 VV. Esther Naomi Quick, 18214 Grey Avenue (October 2, 2019)  
 WW. Edith Newton, 18246 Grey Avenue (October 2, 2019)  
 XX. Lori Graham, 37322 Rachael Drive (October 3, 2019)  
 YY. Jeff Conder, 36345 Dubarko Road (October 3, 2019)  
 ZZ. Belus and Juanita Schonek, 18102 Wewer Avenue (October 3, 2019)  
 AAA. Danielle and Oliver Mullon, Myra Court (October 3, 2019)  
 BBB. Corri Baldwin, 37524 Rachael Drive (October 3, 2019)  
 CCC. Mike Schell, 37524 Rachael Drive (October 3, 2019)  
 DDD. Ashley Parrish, 37356 Rachael Drive (October 3, 2019)  
 EEE. Guimar and James DeVaere, 18176 Rachael Drive (October 3, 2019)  
 FFF. Erin Findlay, 37616 Rachael Drive (October 3, 2019)  
 GGG. Krista and Gabriel Stone, 18111 Rachael Drive (October 4, 2019)  
 HHH. Faith Egli, 37708 Rachael Drive (October 4, 2019)  
 III. Tim Sellin, 18256 Melissa Avenue (October 4, 2019)  
 JJJ. Nicole Sellin, 18256 Melissa Avenue (October 4, 2019)  
 KKK. Barbara Coutts, 37265 Solso Drive (October 4, 2019)  
 LLL. Roberta (Shelly) Evett, 18192 Rachael Drive (October 4, 2019)  
 MMM. Laura Kvamme, 37438 Rachael Drive (October 11, 2019)  
 NNN. Kelli Acord, 36366 Industrial Way Ste B (October 18, 2019)  
 OOO. Elizabeth A. (Libby) Burke, 37412 Rachael Drive (October 20, 2019)  
 PPP. Brad Robison, 37412 Rachael Drive (October 20, 2019)  
 QQQ. Laurie Gilbert, 18392 SE 370th Avenue (November 4, 2019)

**BACKGROUND AND SIGNIFICANT ISSUES**

1. Allied Homes & Development submitted an application to subdivide 23.42 acres into a 100-lot residential subdivision. The subject property is located on Ponder Lane south of the Nicholas Glen subdivision and north of Highway 211. The 100 proposed lots vary in size from 7,500 to 9,706 square feet. The proposal also includes a 22,521 square foot stormwater detention tract. The proposed development includes removal of trees to accommodate the extension and/or construction of rights-of-way. There are no existing structures on the subject property. The application as submitted proposed to rely solely on using Melissa Avenue in the Nicolas Glen subdivision to access the 100 lots in this subdivision.
  
2. The city received the application on July 5, 2019, and notified the applicant that it was incomplete. The applicant responded with a letter and additional submittal items that the city received on August 22, 2019. Under state law, the application was deemed complete on August 22, 2019 because the applicant provided some information in response to the incompleteness notice and stated that it would provide no additional information.
  
3. The subject site consists of five lots with a total area of approximately 23.42 acres. The site is located north of Highway 211, south of Rachael Drive, and west of Ponder Lane. The parcel has

a Plan Map designation of Low Density Residential and Zoning Map designation of SFR, Single Family Residential.

4. According to the applicant, the 100 proposed lots will add approximately 944 vehicle trips each weekday to Melissa Avenue. In discussions with the applicant, both during the preapplication stage and after the application was submitted, staff expressed concerns about having one access into Bailey Meadows via Melissa Avenue.
5. One challenge in providing a second access into the proposed subdivision is the location of the subject property relative to the city's urban growth boundary ("UGB"). The city has a road identified in its transportation system plan ("TSP") that would serve as a second way to access Bailey Meadows. That road ("Gunderson Road") could connect the southern portion of the subdivision with Highway 211, as the TSP generally envisions. However, the connection from the subject property to 211 would occur outside of the city's UGB. State law would only allow Gunderson Road to be built if it were either: (a) in the city's UGB; or (b) Clackamas County approved an "exception" in accordance with state law that would allow the road to be built on rural land outside the UGB.
6. Initially, during the preapplication period, the applicant considered filing an exception application with Clackamas County to extend Gunderson. However, senior planning staff at the county were not supportive of an exception. The applicant discusses the exception in more detail on page 3 of its August 20, 2019 letter to city staff (Exhibit P). After concluding that an exception would not be approved, the applicant submitted the application and proposed relying solely on Melissa Avenue for access to the subdivision. As discussed further in Exhibit P, the applicant asserts that state law prohibits the city from denying the application for only proposing one access point from Melissa Avenue. The city attorney will address these assertions at the hearing on December 17.
7. After the application was deemed complete, the applicant chose to hold a neighborhood meeting regarding the proposed subdivision, which occurred on September 18, 2019 at the Sandy library. Subsequent to that meeting, on September 26, the applicant, its representatives and its attorney met with city staff and the city attorney to discuss issues related to the application. The parties discussed the impacts to Melissa Avenue and the residents of Nicolas Glen if a second access was not provided. At the conclusion of that meeting, the applicant agreed to explore a UGB expansion that would, if approved, permit the construction of Gunderson Road and provide a second access into and out of the proposed subdivision.
8. Ideally, a UGB expansion and the specifics of how Gunderson Road could be built and financed would occur prior to considering the subdivision application. However, this approach does not work for the applicant for reasons it can discuss at the December 17 hearing. Instead, the applicant is proposing that the city impose a condition of approval on its subdivision application that would require the applicant to seek, in a subsequent application process, an expansion of the UGB to allow the applicant to construct Gunderson Road, subject to certain contingencies. The applicant summarizes this proposal in a November 25, 2019 letter to the city (Exhibit W).



9. The specific details of the second access intersecting with HWY 211 are still being defined by the City of Sandy, the Oregon Department of Transportation (“ODOT”), and the applicant. The city, the county, the Oregon Department of Land Conservation and Development (“DLCD”) and ODOT have discussed the concept of a possible UGB expansion to accommodate a Gunderson Road connection. While the county had some procedural questions, these agencies have not expressed opposition to the concept and DLCD understood the justification for it. The land to be added to the UGB, and upon which Gunderson Road would be built, is under the control of the applicant. The amount of land added to the UGB would essentially be limited to the right-of-way necessary to accommodate constructing Gunderson Road from the subdivision to HWY 211 in accordance with the city’s right-of-way standards for a minor arterial road. The basis for adding the land to the UGB would be to satisfy an unmet need for a transportation facility and it would not justify any other type of development (e.g. additional housing or commercial development). The applicant currently intends to seek a UGB expansion in early January 2020. The city would need to hold at least two hearings on the proposed expansion – one before the planning commission and one before the city council. If approved, the county would also need to hold a hearing to amend its comprehensive plan map to account for the change to Sandy’s UGB.
10. Although there are significant details to address, staff is encouraged that the applicant is seeking a solution to provide a second access to the subdivision. As of the date of this report, a draft condition of approval is being considered that the city could ultimately impose on the subdivision, which we intend to discuss at the hearing on December 17.

#### **PUBLIC COMMENTS**

11. Neighbors in the vicinity of the proposed subdivision and other members of the public have expressed significant interest in and concern regarding the proposed subdivision, particularly regarding the impacts it may have on city infrastructure and services. As of the date of this report, the city has received approximately 40 written comments from the public. These comments are contained in the record in Exhibits DD through QQQ. The vast majority of the public comments express concern with traffic and access issues, particularly the effect of adding 100 new homes if a second access is not provided to the subdivision. As discussed above, city staff shares this concern.

#### **PROCEDURAL ISSUES**

12. The Planning Commission hearing was originally scheduled to be held on October 28, 2019. The applicant agreed to postpone the original hearing to a later date to consider a second access into the proposed subdivision. The original 120-day deadline was December 20, 2019. On October 15, 2019 the City of Sandy received a notice from the applicant’s attorney granting an extension of the 120-day clock to February 8, 2020 (Exhibit Q).
13. Notification of the proposal was originally mailed to property owners within 500 feet of the subject property and to affected agencies on September 12, 2019 regarding the October 28, 2019 public hearing. On October 16, 2019 a notice was mailed to property owners within 500 feet of the subject property stating that the October 28, 2019 meeting was cancelled. On November 27, 2019 notification of the revised proposal was mailed to property owners within 500 feet of the subject property and a legal notice was published in the Sandy Post on December 4, 2019 regarding the rescheduled public hearing on December 17, 2019.

14. Agency comments were initially received from the City Engineer, PGE, the Parks and Trails Advisory Board, and ODOT. On November 21, 2019, the applicant submitted updated materials to city staff (Exhibits R-U). On November 25, 2019, the applicant through its legal counsel clarified its intention to seek a UGB expansion to allow a Gunderson Road connection, subject to certain conditions (Exhibit W). On December 5, 2019, the applicant's traffic consultant submitted a memo (Exhibit X) that outlines anticipated changes in trip distributions from the subdivision if Gunderson Road were built and connected to HWY 211. As of the date of this report, the city has not received comments from other agencies or outside consultants to the city relative to the applicant's November 21 revised submittals or the December 5 memo from the applicant's traffic consultant. Staff would like to have these comments to guide the planning commission's review of the application. In particular, staff would like to have the city's traffic consultant review the applicant's December 5 submittal regarding anticipated trip redistribution if Gunderson Road were constructed. As of the date of this report, the city is also anticipating construction cost estimates for the Gunderson Road connection. These estimates are important for the city to consider in order to adequately respond to certain conditions that accompany the applicant's willingness to accept the condition of approval described above.
15. In light of the Thanksgiving holiday, planning staff schedules, staff workloads (exacerbated by the departure of one of the city's associate planners) and details that remain to be considered relative to a Gunderson Road connection, a number of code sections are still being evaluated by staff. Staff anticipates continuing to work on a customary staff report for the planning commission's consideration.
16. Staff understands from talking with the city attorney that the applicant anticipates there will be a desire and a need to allow the planning commission to consider additional evidence and testimony after the December 17 hearing, prior to the planning commission making a decision on the application. Staff concurs with this and an approach that the applicant's attorney and the city attorney have discussed for the planning commission's consideration is discussed below.

## **RECOMMENDATION**

Staff recommends the Planning Commission open a public hearing to receive public testimony. Once the hearing has been completed staff recommends the Planning Commission close the public hearing but leave the record open in accordance with state law, specifically ORS 197.763(6).

Given the upcoming holidays and the issues relating to the condition of approval for the additional access from Gunderson Road, the city attorney believes the best way to proceed is to have an initial open record period that would end on January 14, 2020. During this first open record period, any party would be able to submit any additional evidence or testimony that is relevant to the application. Then, a second open record period would begin that would run through January 28, 2020. During this second open record period, parties would be able to submit evidence and testimony that responds to issues raised during the first open record period, but parties would not be able to raise new issues. A final period of seven days would be reserved exclusively for the applicant to submit its final argument. This period would expire on February 4, 2020.

Staff would review the submissions and put together a summary of what was received, as well as a final recommendation to the planning commission. The planning commission would then reconvene in a public meeting to deliberate and make a decision on the application. Consistent with the poll staff recently sent to commissioners, the date of that meeting would be February 11, 2020. Based on discussions with the city attorney, staff understands that this proposed schedule is acceptable to the applicant and that the applicant would extend the 120-day deadline for the amount of time between December 17 and the date the commission would reconvene to make a decision on February 11, 2020.

RECEIVED

JAN 16 2020

CITY OF SANDY

Exhibit III

JAN 16 2020

January 15<sup>th</sup>, 2020

Les & Kathy Geren  
37721 SE Ponder Ln.  
Sandy, OR 97055

To Whom It May Concern:

For the past 46 years we have owned the property east of the proposed development Bailey Meadows. We own a strip of land from our home to Highway 211 via Ponder Lane. We recently had the property line resurveyed and are planning on building a security fence on the west side of our property, which is the east side of what is called Ponder Lane. We plan on installing a gate on both ends of our property. One gate will be where there is a direct access to our home and property. The second gate will be on the south end of our property where Ponder Lane heads east towards Highway 211. Both gates would be electronic gates with punch boxes for emergency vehicle access.

This will assure us that we can continue to receive semi-trucks to our barn for our business, Geren's Farm Supply, as well make our multiple trips to the barn to retrieve hay or straw for said business. It will also assure that the only access to Highway 211 via Ponder Lane will be for the four existing homes with no restrictions.

Looking at the plot plan for Bailey Meadows, they need to have pylons installed to prevent access to Ponder Lane, and have traffic exist via Avenue 2 and the proposed Gunderson access to Highway 211.

We are sharing our plans to assist in the planning of Bailey Meadows and to reassure the state highway department that there would be limited access to Highway 211 via Ponder Lane.

Thank you,

  
Les Geren  
503-668-5913

# 19023 sub/VAR/Tree  
Bailey Meadows

January 15<sup>th</sup>, 2020

To whom it may concern:

We want to address an awareness of the seasonal spring that lives on two properties on Ponder Lane and runs through a culvert on the corner of Ponder Lane. When it isn't running we still have storm runoff that exits the properties from the North and East in the same manner. This would be running down the South end of Bailey Meadows to No Name creek and eventually makes its way to Tickle Creek and a man made pond on land adjacent to this property. This could impact the proposed housing on plots 55 thru 64.

Thank you for including these concerns in the overall land management plan.





Existing  
Drainage  
Area

1/9/2020

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