APPENDIX C

Future Conditions and Deficiencies

APPENDIX C

Future Transportation Conditions, Deficiencies, and Needs

This appendix provides an analysis of future year 2030 to determine the No Build transportation deficiencies. The no build analysis assumes existing roadway geometry and traffic control with future volumes. Population growth, cumulative analysis description, expected future development, future conditions traffic analysis, bicycle, pedestrian, and transit modes, and future transportation system deficiencies are included in this section.

The analysis performed for this section entails future operational assessment of each of the 14 study intersections using the cumulative analysis method. The cumulative analysis method projects future traffic volumes based on expected land use development in the study area and historic growth. This analysis method is described in more detail over the following pages. Projected future conditions deficiencies are identified in this section.

Population Growth

In 2005, a buildable lands inventory was conducted for areas within the Seaside Urban Growth Boundary (UGB) and City of Seaside city limits.. Although not adopted, the City uses the buildable lands inventory as a basis for demographic and development projections. Future population estimates and for 2025 and projected growth rates are listed in Table 1. The growth rates from the buildable lands inventory have been extrapolated to identify project area population for the TSP planning horizon year of 2030.

TABLE 1
Population Projections for Seaside, Oregon

Location	2025 Population Projection	2005-2025 Average Annual Growth Rate (%)	2030 Population Projection [1]
Seaside UGB	7,903	0.89	8,261
City of Seaside	7,678	1.14	8,126

Source: Buildable Lands Inventory and Land Needs Analysis prepared for City of Seaside (2006)
1) Based on 2005-2025 average annual growth rate

Cumulative Analysis

There is no available transportation model for the study area; consequently, a cumulative analysis method was used to project future traffic volumes in the study area. The cumulative analysis method considers traffic generated by two sources: 1)expected development in study area; and 2)historical traffic growth not associated with the development of land uses. Projected future volumes are distributed onto the study network

based on proximity to study intersections, and are used to evaluate future deficiencies and identify potential transportation system improvements.

Expected Future Development

The basis for projected land use demand and supply is the Buildable Lands Inventory and Land Needs Analysis Final Draft (2006, not adopted) supplied by the City of Seaside. The buildable lands inventory has been updated by City staff to reflect best known environmental constraints. Available gross acreage was determined by summing all acreage identified as vacant or redevelopable by land use. Available developable acreage was determined by subtracting areas for roads and right-of-way (assumed to be 25 percent of gross acreage) and environmentally constrained areas— defined as locations within the FEMA-defined floodway or along very steep slopes (25 percent grade or higher).

For the purposes of forecasting transportation needs and differentiating areas with potential for significant growth above historic growth rates, the following criteria were applied to identify parcels with significant development and redevelopment potential.

Development Potential Criteria

- Parcels ≥ 4,000 square feet (over 0.09 acres)
- The improvement value is ≤ $10,000
- Can be vacant land
- NOT land owned by North Coast Land Conservancy (a land trust)
- NOT owned by a People's Utility District (PUD).

Redevelopment Potential Criteria

- Parcels ≥ 0.5 acres
- Value < $50,000
- Land value ≥ improvement value
- NOT land owned by North Coast Land Conservancy (a land trust)
- NOT owned by the Peoples Utility District

Table 2 provides a summary of projected land demand and availability by land use category. In all instances, demand is greater than supply. To address limitations in land supply, the City is applying for a UGB expansion, which is a separate process from the planning process for the TSP. The UGB expansion process will be negotiated with the State's Department of Land Conservation and Development (DLCD). Development of the TSP is limited to consideration of lands already within the adopted UGB; therefore, the future conditions analysis makes use of available developable acres, and not projected demand for land. The application for a UGB expansion is being prepared in concurrence with the development of the TSP. If the UGB expansion is approved by DLCD during the development of the TSP, future conditions analysis will be updated to incorporate this change.

TABLE 2
Projected Land Use Demand and Supply

Land Use	Projected Demand (acres)[1]	Available Gross Land (acres)[2]	Available Developable (acres)	Acreage Assigned
Commercial	16*	9	8	8
Industrial	20	0	0	19.8**
Multi-Family Residential	22	5	4	4
Single-Family Residential	53	57	47	47
Vacation Rental	40	1	1	1

* Needs assessment includes both office and retail

** Currently zoned Residential/Suburban; however, City staff have indicated the parcels will be rezoned Industrial

1) Source: Buildable Lands Inventory and Land Needs Analysis Final Draft (2006)

2) Source: Buildable Lands Inventory and Land Needs Analysis Final Draft (2006) as updated by City staff and after application of developable and redevelopable parcel criteria

Since demand exceeded available buildable acres in all cases, expected future development was assessed based on available developable acres. After application of the development and redevelopment criteria to buildable parcels, remaining buildable parcels were used to identify six areas with clustered development potential, which could generate trips above the historic growth rate. These areas, referred to as "development zones", are depicted in Figure 1.

The project management team analyzed the six Development Zones. Some general observations emerged:

- *Commercial Development*—Available parcels with commercial zoning, or parcels that City staff expect to be rezoned commercial, are concentrated around Lewis and Clark Road (Development Zone #1), along the northern end of Wahanna Road (Development Zone #2), and east of US 101 in the southern part of the city (Development Zone #5).
- *Industrial Development*—Industrial growth is expected to occur along Lewis and Clark Road (Development Zone #1). This area is currently zoned for residential development, but the City intends to change zoning on the large parcels to allow industrial development.
- *Multi-Family Residential Development*—Generally, the potential for multi-family residential development is focused along the southern end of Wahanna Road (Development Zone #3) and east of US 101 in the southern part of the city (Development Zone ##5). Other areas allow residential medium density development, which based on existing development patterns, are assumed to develop with mainly single family residential homes.

- *Vacation Home Development* – Based on conversations with City staff, vacation homes in the form of single family residential units are expected to develop primarily in Development Zone #1, in the vicinity of Lewis and Clark Road
- *Single-Family Residential Development* – Single-Family Residential has the greatest development potential in Seaside. Single-Family-Residential units are expected to develop primarily along Wahanna Road South (Development Zone #3), East of US 101 (Development Zone #5), and in the vicinity of Sunset Boulevard (Development Zone #6).

The cumulative analysis is organized into these six Development Zones, where land use is expected to impact the overall transportation network at a greater rate than historical trends. Land uses were defined according to land use categories listed in the Institute for Transportation Engineers (ITE) Trip Generation Manual (7th Edition), and associated vehicle trips were identified for each Development Zone. Estimated trip generation is described in more detail for each Development Zone below.

Development Zone #1 – Lewis and Clark Road

All developable property was assumed for buildout by 2030. Parcels in this area are zoned either Residential Low Density (R1), Suburban Residential (SR), or Commercial (C3). Based on conversations with City staff, some of the parcels zoned residential are expected to be rezoned Industrial (M1). Based on observations of current development within the area and conversations with City staff, the land uses listed in Table 3 are expected to develop by 2030.

TABLE 3
Trips Generated for Projected Development in #1 Lewis & Clark Road Development Zone, by Land Use Category

Zoning	Land Use Category/ITE Code	Developable Acres	PM Peak-Hour Trips Generated
Industrial*	General Light Industrial (110), Manufacturing (140), Warehousing (150)**	19.8	249
Residential	Single-Family Detached Housing (210)	3.5	49
Commercial	Mini-warehouse (151)	0.3	46

Used peak hour of adjacent street traffic, one hour between 4:00 p.m. and 6:00 p.m.

* Currently zoned Residential/Suburban; however, City staff have indicated it will be rezoned Industrial.

** Assume a blend of uses will develop.

Development Zone #2 – Wahanna Road North

Parcels in this area are zoned either Suburban Residential (SR) or Commercial General (C3). Future land uses assumptions were based on the existing character of the area and conversations with City staff. Table 4 provides details of the land use assumptions.

TABLE 4
Trips Generated for Projected Development in #2 Wahanna Road North Development Zone, by Land Use Category

Zoning	Land Use Category/ITE Code	Developable Acres	PM Peak-Hour Trips Generated
Residential	Single-Family Detached Housing (210)	5.8	29
Commercial	Specialty Retail Center (814), General Office Building (710)*	2.0	221
Commercial	Automobile Parts Sales (843), High-Turnover (Sit-Down) Restaurant (932)*	1.4	62

Used peak hour of adjacent street traffic, one hour between 4:00 p.m. and 6:00 p.m.
*multiple codes listed assume a blend of uses to develop.

Development Zone #3 – Wahanna Road South

Parcels within this area are zoned Residential Low Density (R1) or Multi-Family Residential (R3). No re-zoning is anticipated in this area over the next 20 years, therefore residential uses were assumed to develop in this area. Table 5 lists specific land use assumptions.

TABLE 5
Trips Generated for Projected Development in #3 Wahanna Road South Development Zone, by Land Use Category

Zoning	Land Use Category/ITE Code	Developable Acres	PM Peak-Hour Trips Generated
Residential	Single-Family Detached Housing (210)	4.9	76
Residential	Mid-Rise Apartment (223)	0.6	24

Used peak hour of adjacent street traffic, one hour between 4:00 p.m. and 6:00 p.m.

Development Zone #4 – West of Necanicum River

Parcels within this area are zoned Residential Medium Density (R2), Residential High Density (R3), and Residential Resort (RR). Specific types of projected residential development were based on the existing pattern of development in the area and consultation with City staff. Table 6 lists specific land use assumptions.

TABLE 6
Trips Generated for Projected Development in #4 West of Necanicum River Development Zone, by Land Use Category

Zoning	Land Use Category/ITE Code	Developable Acres	PM Peak-Hour Trips Generated
Residential Medium Density	Single-Family Detached Housing (210), Residential Condominium/Townhouse (230)*	1.9	24
Residential High Density	Mid-Rise Apartment (223)	1.2	22
Resort Residential	Mid-Rise Apartment (223)	0.6	20

Used peak hour of adjacent street traffic, one hour between 4:00 p.m. and 6:00 p.m.
*Multiple codes listed assume a blend of uses to develop

Development Zone #5 – East of US 101

Parcels within this area are zoned Residential Medium Density (R2), Residential Commercial (RC), and Commercial General (CG). Specific types of projected residential development were based on the existing pattern of development in the area and consultation with City staff. Table 7 lists specific land use assumptions.

TABLE 7
Trips Generated for Projected Development in #5 East of US 101 Development Zone, by Land Use Category

Zoning	Land Use Category/ITE Code	Developable Acres	PM Peak-Hour Trips Generated
Residential Medium Density	Single-Family Detached Housing (210), Residential Condominium/Townhouse (230)*	5.8	111
Residential – Commercial	Single-Family Detached Housing (210), Specialty Retail Center (814)*	0.5	26
Commercial	High-Turnover (Sit-Down) Restaurant (932), Video Rental Store (896), Specialty Retail Center (814), Apparel Store (870)*	4.0	265

Used peak hour of adjacent street traffic, one hour between 4:00 p.m. and 6:00 p.m.
*Multiple codes listed assume a blend of uses to develop

Development Zone #6 – Sunset Boulevard

Parcels within this area are zoned Residential Medium Density (R2). Based on existing land use patterns in the area, the majority of development is assumed to be single-family detached housing. City staff suggested that clustered development would likely occur here to avoid environmental constraints and incorporate natural areas into development. Table 8 lists specific land use assumptions.

TABLE 8
Trips Generated for Projected Development in #6 Sunset Boulevard Development Zone, by Land Use Category

Zoning	Land Use Category/ITE Code	Developable Acres	PM Peak-Hour Trips Generated
Residential Medium Density	Single-Family Detached Housing (210), Residential Condominium/Townhouse (230)*	4.8	51
Residential Medium Density	Single-Family Detached Housing (210)	6.0	67

Used peak hour of adjacent street traffic, one hour between 4:00 p.m. and 6:00 p.m.
* Multiple codes listed assume a blend of uses to develop

Trip generation assumptions for the six Development Zones, where land use is expected to generate trips greater than the historic average, were used in subsequent traffic projection steps.

Future Conditions Analysis

Future Planned Infrastructure Projects

No planned transportation infrastructure projects on the state highway system were identified within the City of Seaside by the 2030 future analysis year. A review of the Statewide Transportation Improvement Program (STIP) for 2008 through 2011 identified no projects that would be constructed or reasonably funded within the study area. Therefore, no capacity or infrastructure improvement projects were included in the future traffic analysis network.

The nearest transportation improvement project to the study area was identified north of the City of Seaside along US 101 between Camp Rilea (milepost 10) and Surf Pines (milepost 16). The project is currently only funded for an environmental assessment and has been classified as a modernization project, where proposed improvements included roadway widening, dedicated turn lanes and access management. It should be noted that while this project is not within the study area, and was not included in the analysis network, it could influence traffic through Seaside by providing improved capacity on US 101.

No capacity improvement projects were identified on the local roadway system by the City of Seaside within the 20-year horizon.

Future Year Analysis Volume Development

Existing year (2008) analysis volumes were grown to reach future year (2030) land use scenario analysis volumes. Future volumes were reached using a combination of the historical trends method (to account for background trip growth), and the cumulative analysis method (to account for trips generated by future potential land use developments).

The existing volumes were counted in April 2008, seasonally adjusted to the peak month for the study area (August) and then balanced between local intersections. The historical trends growth rate was then applied to these turning movement volumes. This growth rate was

obtained using the most current version of the ODOT Future Transportation Volume Table[14]. This table projects average annual daily traffic volumes roughly 20 years into the future for highways throughout the state. Each forecasted volume is given an R-squared value, which measures the relationship between the historical counts over time. Forecasted volumes with an R-squared value of greater than 0.75 are typically considered acceptable for use in growth rate calculations. Eight forecasted locations along US 101 in Seaside were considered valid and resulted in an average 20-year growth factor of 1.37 or an annual growth factor of 1.86 percent. The existing turning movements were grown at this rate over 22 years to reach 2030 background growth turning movement volumes.

The ODOT cumulative analysis method (Analysis Procedure Manual, Chapter 4: Developing Design Hour Volumes) accounts for identified development in addition to expected growth. See the Cumulative Analysis Method section for a detailed discussion of this method.

Future Year Traffic Analysis

Future year (2030) PM peak hour turning movements were analyzed using the Synchro 7 microsimulation software. In general, all seven intersections along US 101 are not expected to meet OHP mobility standards in 2030 under the land use scenario. Intersections that are not located along US 101 are expected to meet their respective OHP mobility standards. The intersections of Broadway and Holladay Drive, and 12th Avenue and Wahanna Road are expected to have V/C ratios approaching their mobility standard. Intersections operation results can be found in Figure 2 and in Table 9 below.

14 (http://www.oregon.gov/ODOT/TD/TDATA/tsm/volumetables.shtml)

TABLE 9
Seaside TSP Future (2030) Traffic Analysis Results

ID	Intersection	Control Type	Future Mobility Standard	Intersection Performance	
				Average Vehicle Delay (sec)	V/C Ratio
1	US 101 and 12th Avenue	Signal	0.85	**> 150**	**1.91**
2	US 101 and Broadway	Signal	0.85	**> 150**	**1.75**
3	US 101 and Avenue U	Signal	0.85	**108.6**	**1.72**
4	US 101 and Wahanna Road	TWSC	0.80	**> 150**	**> 2.0**
5	US 101 and 24th Avenue	TWSC	0.80	**> 150**	**> 2.0**
6	Broadway and Holladay Drive	AWSC	0.90	21.9	0.81
7	Broadway and Wahanna Road	AWSC	0.90	17.0	0.67
8	US 101 and Holladay Drive	TWSC	0.85	**121.4**	**1.40**
9	US 101 and Avenue S	TWSC	0.85	**> 150**	**> 2.0**
10	Broadway and Columbia Street	Signal	0.90	7.6	0.25
11	12th Avenue and Holladay Drive	AWSC	0.90	14.8	0.56
12	12th Avenue and Wahanna Road	AWSC	0.90	32.2	0.88
13	Wahanna Road and Cooper Road	TWSC	0.90	28.5	0.68
14	Avenue U and Edgewood Street	AWSC	0.90	11.5	0.53

Note: Highlighted text indicates intersections with one or more approach operating worse than Oregon Highway Plan mobility standards.

TWSC: Two-way stop-controlled

AWSC: All-way stop-controlled

Mobility standards for intersections not along US 101 established from 1999 Oregon Highway Plan, Policy Element, Table 6: Maximum volume to capacity ratios for peak hour operating conditions.

Intersections along US 101 are anticipated to fail in the future 2030 land use scenario due to increases in traffic volume. Local intersections (those not along US 101) are also expected to see increases in volume, but most would continue to operate below capacity in the future.

The study intersections along US 101 are expected to fail primarily due to the large increase in north-south traffic volume associated with vehicles traveling through Seaside, as well as vehicles traveling from inside the study area to a location outside, or from outside the study are to a location inside. Vehicles using US 101 for internal trips within the study area also contribute to the increase in delay, but would not be considered significant compared to the types of trips identified above.

The increase in north-south vehicle volume also contributes to east-west cross street vehicle delays. Vehicles approaching from the east or west at stop-controlled intersections may have long delays due to difficulty in finding safe gaps in traffic on US 101. Especially long wait times could be anticipated for stop-controlled vehicles turning left from a cross street

onto the highway, since a safe gap would need to occur in both directions of US 101. At signalized intersections, vehicles turning right onto US 101 (on a red signal) may also have difficulty finding safe gaps in vehicle traffic to perform the turning movement.

Traffic operations are expected to fail at these intersections under the No Build scenario due to a lack of north-south vehicle capacity. While volumes increase, the existing infrastructure remains as is, with no additional lane capacity assumed. Existing turn pocket storage lengths may be exceeded with future volumes, and turn lane queues may spillback into the mainline of the highway. This spillback could cause additional congestion and delay times for north-south through traffic.

Queuing Analysis

The 2030 No-build scenario was analyzed using SimTraffic. Five runs of SimTraffic were averaged to report the 95th percentile queues of both turn pockets and through lanes. These queues are expected to occur less than five percent of the time during the peak hour of the day. Table 10 presents the expected queue lengths for through lanes, as well as queue lengths compared with the existing storage capacity at turn pockets. The percent of time that turn pocket queues would extend beyond their storage capacity is also provided.

TABLE 10
Queuing Analysis – 2030 No Build

ID	Intersection		Approach	Lane Group	95th % Queue Length (feet)	Storage Length (feet)	Percent Time Blocking
1	12th Avenue and US 101		Southbound	Left	150	110	4
				Through/Right	1950	---	
			Northbound	Left	100	110	
				Through/Right	1275	---	
			Westbound	Left	100	50	25
				Through/Right	400	---	
			Eastbound	Left/Through/Right	975	---	
2	Broadway and US 101		Southbound	Left	150	80	43
				Through/Right	1850	---	
			Northbound	Left	90	90	1
				Through/Right	1625	---	
			Westbound	Left/Through	2475	---	
				Right	100	50	14
			Eastbound	Left/Through	675	---	
				Right	100	50	9
3	Avenue U and US 101		Southbound	Through/Right	520	---	
			Northbound	Left	75	45	6
				Through	925	---	
			Eastbound	Left/Right	1075	---	
4	US 101 and Wahanna Road		Southbound	Left	125	75	19
				Through	1375	---	
			Northbound	Through/Right	50	---	
			Westbound	Left	50	20	100
				Right	275	---	
5	24th Avenue and US 101		Southbound	Through	500	---	
				Right	75	50	< 1
			Northbound	Left/Through	1325	---	
			Eastbound	Left	125	75	87
				Right	625	---	
6	Broadway and Holladay Drive		Southbound	Left/Through/Right	400	---	
			Northbound	Left/Through/Right	925	---	
			Westbound	Left/Through/Right	100	---	
7	Broadway and Wahanna Rd		Southbound	Left/Through/Right	650	---	
			Northbound	Left	150	100	17
				Through/Right	300	---	
			Westbound	Left/Through/Right	150	---	
			Eastbound	Left/Through	100	---	
				Right	75	100	

TABLE 10
Queuing Analysis – 2030 No Build

ID	Intersection		Approach	Lane Group	95th % Queue Length (feet)	Storage Length (feet)	Percent Time Blocking
8	Holladay Drive and US 101		Southbound	Through/Right	1275	---	
			Northbound	Left	125	70	7
				Through	1350	---	
			Eastbound	Left	50	15	44
				Right	750	---	
9	Avenue S and US 101		Southbound	Left/Through	1350	---	
			Northbound	Through/Right	1400	---	
			Westbound	Left/Right	3225	---	
10	Broadway and Columbia Street		Southbound	Through/Right	75	---	
			Northbound	Left/Through	75	---	
			Westbound	Left	50	100	
				Through/Right	50	---	
			Eastbound	Left/Right	75	---	
11	12th Avenue and Holladay Drive		Southbound	Left/Through/Right	150	---	
			Northbound	Left/Through/Right	625	---	
			Westbound	Left/Through/Right	75	---	
			Eastbound	Left/Through/Right	975	---	
12	12th Avenue and Wahanna Rd		Southbound	Left/Through/Right	125	---	
			Northbound	Left/Through/Right	125	---	
			Westbound	Left/Through/Right	75	---	
			Eastbound	Left/Through/Right	100	---	
13	Cooper Street and Wahanna Rd		Southbound	Left/Through	1025	---	
			Westbound	Left/Right	1050	---	
14	Avenue U and Edgewood St		Southbound	Left/Through/Right	75	---	
			Northbound	Left/Through/Right	450	---	
			Westbound	Left/Through/Right	75	---	
			Eastbound	Left/Through/Right	875	---	

Notes:
Queuing analysis performed using SimTraffic.
95th Percentile queues are reported, movements where queues were not calculated are not reported.
' – ' indicates effectively unlimited storage length, shaded cells indicate queues that exceed storage length.
Queue lengths rounded up to the nearest 25-feet, as directed by TPAU APM, page 7-74.

In the 2030 No-build condition, most queues would be accommodated by existing storage length. Other queues, while showing calculated queue lengths significantly longer than the available storage length, are not expected to block mainline operations for a significant amount of time, and would not be likely to affect adjacent vehicle lane operations.

However, the 95th percentile queues at some intersections would not be accommodated by the existing turn lane storage capacity, and may spillback to affect through traffic.

At US 101 and Broadway, the southbound left turn queue could be expected to reach 150 feet. This may spill back into the mainline and block the southbound through lanes of US 101. Southbound queues at the traffic signal at Broadway could extend back 1850 feet on US 101, or approximately one third of a mile to 6th Avenue. In the northbound direction at the Broadway traffic signal the through lane queues on US 101 could extend back 1625 feet, or approximately to Avenue H.

Similar mainline queuing could occur at US 101 and 12th Avenue. In the northbound direction, the through lanes could queue back 1950 feet or approximately to 6th Avenue. The southbound through lane queues could extend to almost 1300 feet, or back to just north of 17th Avenue.

Other northbound and southbound queues at intersections along US 101 would be approximately 1000 feet to 1500 feet in length, with some queues being shorter depending on lane configuration. Driveways to businesses along US 101 may be blocked by queues temporarily, but access is not expected to be impeded significantly as right-turning traffic into and out of businesses is typically allowed by vehicles waiting in the mainline queue.

Eastbound and westbound queuing at cross streets along US 101 could also be significant. On the eastbound approach at 12th Avenue and US 101, queues could extend back approximately 975 feet (almost to the bridge), and may block traffic from Lincoln Street and Holladay Drive.

The westbound queue at Broadway and US 101 may extend back almost half a mile. This queue would extend through the intersection with Wahanna Road and may affect local traffic on Broadway east of Wahanna.

At the intersection of US 101 and Avenue S, westbound left and right turning vehicles could be expected to queue back approximately 3000 feet. This long queue is likely due to wait times while vehicles wait for a safe gap in traffic on US 101. This queue could also extend back onto Wahanna Road and affect turning traffic from Cooper Road.

Bicycle, Pedestrian, and Transit Modes

As congestion for vehicular traffic increases, more people are expected to switch to other modes for some trips, such as bicycling, walking and transit. Consequently, future demand for alternative modes is expected to increase. Bicycle, pedestrian, and transit deficiencies have been identified within Appendix B: Existing Conditions, and are expected to persist in the future No Build scenario. Latent demand for bicycle, pedestrian, and transit is documented through the community survey and transit ridership surveys described in the aforementioned appendix. Increased demand due to congestion and latent demand are expected to persist under future conditions.

Please see Appendix B: Existing Conditions for specific bicycle, pedestrian, and transit deficiencies.

Summary of Future Transportation System Deficiencies

Vehicle Traffic Deficiencies

Based on intersection analysis, study intersections along US 101 are expected to fail primarily due to the large amount of north-south traffic volume growth from vehicles traveling through Seaside, as well as vehicles with either an origin or destination outside of the study area. The increase in north-south vehicle volume also contributes to east-west cross street vehicle delays. Vehicles approaching from the east or west at stop-controlled intersections may have long delays due to difficulty in finding safe gaps in traffic on US 101. Especially long wait times could be anticipated for stop-controlled vehicles turning left from a cross street onto the highway, since a safe gap would need occur in both directions of US 101. At signalized intersections, vehicles turning right onto US 101 (on a red signal) may also have difficulty finding safe gaps in vehicle traffic to perform the turning movement. The operations are expected to fail at these intersections under the No Build scenario due to a lack of north-south vehicle capacity.

The 95th percentile westbound left turn queue at US 101 and Wahanna Road, the eastbound left turn queue at US 101 and Holladay Drive, and the eastbound left turn queue at US 101 and 24th Avenue are anticipated to exceed the existing storage length for a duration significant enough to cause a spillback that could block through vehicles, and may result in congestion on the mainline of US 101.

At US 101 and Broadway, southbound left turn queue volumes are anticipated to exceed available storage length for a significant amount of time, resulting in adverse impacts to through-movement travel in adjacent lanes.

Bicycle, Pedestrian, and Transit Mode Deficiencies

As congestion for vehicular traffic increases, more people will switch to other modes for some trips, such as bicycling, walking, and transit. Consequently, future demand is expected to increase, and bicycle, pedestrian, and transit deficiencies that have been identified in Appendix B: Existing Conditions are expected to persist and worsen in the future No Build scenario. Please see Appendix B: Existing Conditions for specific bicycle, pedestrian, and transit deficiencies.

Figure 1: Development Zones