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TRANSPORTATION STANDARDS MEMO

DATE: June 30, 2021

TO: Project Management Team

FROM: Rochelle Starrett, Kevin Chewuk, Carl Springer | DKS

SUBJECT: Newport TSP Update
Technical Memorandum #10: Transportation Standards

Project #17081-007

This document provides an overview of the transportation system standards recommended for Newport. Included is a detail of the recommended transportation system classifications, including multimodal corridors, to support the movement of all people, details on the recommended design of streets, and performance standards to ensure that the network functions as outlined in this document. Together, these standards will help ensure future facilities are designed appropriately and that all facilities are managed to serve their intended purpose.

MULTIMODAL STREET SYSTEM CLASSIFICATIONS AND CORRIDORS

All streets in Newport include a functional classification and proposed supplemental corridors to help support the movement of all people and help the city work towards achieving the transportation Goals and Objectives. Functional classifications from the 2012 Transportation System Plan (TSP) were reviewed to propose new functional classifications for Newport's streets. The proposed new functional classifications along with the existing roadway functional classification are summarized below. The 2021 TSP update also identifies new supplemental corridors for pedestrian, bicycle, and freight travel. The new corridors identify locations where special priorities for these modes are recommended and help to ensure the transportation system is comfortable, convenient, safe, and well-connected for all users. The roadway functional classification ultimately determines the facility type and cross-section design requirements for each mode.

The 2021 TSP recommended functional classification map and 2021 TSP recommended supplemental corridors do not include the proposed US 101 or US 20 couplet alternatives for simplicity. In the event these alternatives are advanced through the 2021 TSP update, revisions to these maps will be required.

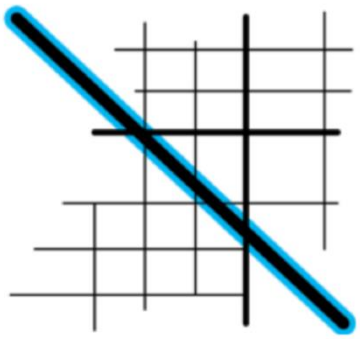
ROADWAY FUNCTIONAL CLASSIFICATION

The motor vehicle classifications for streets help support the movement of vehicles by indicating the street's intended level of mobility, access, and use for vehicles. A city's street functional classification system is an important tool for managing the transportation system. It is based on a hierarchical system of roads in which streets of a higher classification, such as arterials, are designed for a higher level of mobility for through movements, while streets of a lower classification are designed to facilitate access to adjacent land uses. From highest to lowest intended use, the recommended classifications are Arterial, Major Collector, Neighborhood Collector, and Local Streets. Streets with higher intended usage generally limit access to adjacent property in favor of more efficient motor vehicle traffic movement (i.e., mobility). Local roadways with lower intended usage have more driveway access and intersections, and generally accommodate shorter trips to nearby destinations.

This recommended set of classifications differs from those in the current 2012 TSP. The City currently uses the designations of Principal Arterial, Minor Arterial, Collector, and Local Streets.

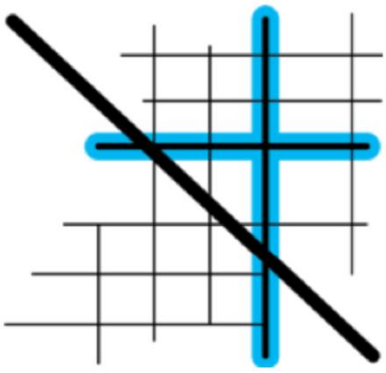
ARTERIAL STREETS

Arterial streets (seen at right) are primarily intended to serve regional and citywide traffic movement. Safety should be the highest priority on Arterials and separation should be provided between motor vehicles and people walking, and bicycling. Safe multimodal crossings should also be provided to key destinations. Arterials provide the primary connection to collector streets. Where an Arterial intersects with a Neighborhood Collector or Local Street, access management and/or turn restrictions may be employed to reduce traffic delay. The only Arterial streets in Newport are US 101 and US 20 which are also classified by the FHWA as Rural Other Principal Arterials.



MAJOR COLLECTOR STREETS

Major Collector Streets (seen at right) are intended to distribute traffic from Arterials to streets of the same or lower classification. Safety should be a high priority on Major Collectors. Where a Major Collector street intersects with a Neighborhood Collector or Local Street, access management and/or turn restrictions may be employed to reduce traffic delay.

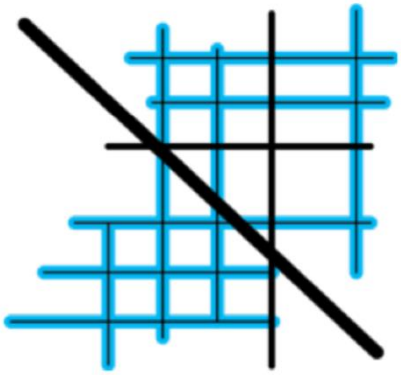


NEIGHBORHOOD COLLECTOR STREETS

Neighborhood Collector streets (seen at right) distribute traffic from Arterial or Major Collector streets to Local Streets. They are distinguishable from Major Collectors in that they principally serve residential areas. Neighborhood Collector streets should maintain slow vehicle operating speeds to accommodate safe use by all modes and through traffic should be discouraged. Where a Neighborhood Collector street intersects with a higher-classified street, access management and/or turn restrictions may be employed to reduce traffic delay and discourage through traffic.

LOCAL STREETS

All streets not classified as Arterial, Major Collector, or Neighborhood Collector streets are classified as Local Streets (seen at right). Local Streets provide local access and circulation for traffic, connect neighborhoods, and often function as through routes for pedestrians and bicyclists. Local Streets should maintain slow vehicle operating speeds to accommodate safe use by all modes.



Private Streets

Private Streets are a special type of Local Streets that are used to facilitate access to specific properties or small neighborhoods. Private Streets can include driveways or private roadway connections that serve four or fewer parcels;[1] the City of Newport is not responsible for maintenance on Private Streets. These streets are not shown on the following functional classification maps.

RECOMMENDED CHANGES TO ROADWAY CLASSIFICATIONS

Figure 1 shows the recommended functional classifications in Newport. These are recommended to better reflect the intended function in the movement of motor vehicles. Due to Newport's unique

[1] *Newport Municipal Code: 13.05.005 Section J.*
https://www.newportoregon.gov/dept/adm/documents/newportmunicipalcode.pdf

topography and environmental constraints, typical spacing guidelines for arterial and collector streets cannot always be applied. The 2021 TSP recommends maintaining US 101 and US 20 as Arterials in conjunction with an off-highway network of collector streets. This change recognizes that many of Newport's existing Minor Arterial roads function as collector streets rather than minor arterials. The 2021 TSP also recommends splitting the collector designation into a new Major Collector and a new Neighborhood Collector classification to identify locations on collectors where local access needs should be accommodated while maintaining a local street character for pedestrians and bicyclists. Introducing two levels of collectors will better establish transportation priorities for different streets in Newport.

The current functional classifications from the 2012 Newport TSP[2] were reviewed to identify locations where reclassifications should be considered. The recommended reclassifications summarized in Figure 1 and Table 1 will provide better system spacing and connectivity.

TABLE 1: RECOMMENDED ROADWAY FUNCTIONAL CLASSIFICATION CHANGES

ROADWAY	EXTENTS	EXISTING FUNCTIONAL CLASSIFICATION	RECOMMENDED FUNCTIONAL CLASSIFICATION
NE 31ST ST	US 101 and NE Harney St	Arterial	Local
SE MOORE DR	HWY 20 and SE Bay Blvd	Minor Arterial	Major Collector
SE BAY BLVD	SE Moor Dr and City Limits	Minor Arterial	Major Collector
SE MARINE SCIENCE DR	US 101	Minor Arterial	Major Collector
SW ABALONE ST	US 101 and SW Abalone St	Minor Arterial	Major Collector
SE FERRY SLIP RD	SE Marine Science Dr and Ash St	Minor Arterial	Major Collector
NE HARNEY ST	End of Road and Hwy 20	Minor Arterial	Major Collector
NE HARNEY ST	NE 31st St and NE Big Creek Rd	Minor Arterial	Neighborhood Collector
NE AVERY ST	City Limits and NE 73rd St	Collector	Major Collector

[2] *Newport Transportation System Plan*, 2012. https://www.oregon.gov/ODOT/Planning/TPOD/tsp/city/city_of_newport_tsp_2012.pdf

TABLE 1: RECOMMENDED ROADWAY FUNCTIONAL CLASSIFICATION CHANGES			
ROADWAY	**EXTENTS**	**EXISTING FUNCTIONAL CLASSIFICATION**	**RECOMMENDED FUNCTIONAL CLASSIFICATION**
NE 73RD ST	NE Avery St and US 101	Collector	Major Collector
NW/NE 11TH ST	NW Oceanview St and NE Eads St	Collector	Major Collector
NW 15TH ST	NW Oceanview Dr and US 101	Collector	Major Collector
NW/SW NYE ST	NW 11th St and SW 2nd St	Collector	Major Collector
NE BENTON ST	NE 12th St and NE 3rd St	Collector	Major Collector
SE COOS ST	NE 3rd St and SE 2nd St	Collector	Major Collector
SE 2ND ST	SE Coos St and SE Benton St	Collector	Major Collector
SW 7TH STREET	SW 2nd St and SW Hurbert St	Collector	Major Collector
SE/SW 10TH ST	SE 2nd St and SW Angle St	Collector	Major Collector
SE FOGARTY ST	4th St and SE Bay Blvd	Collector	Major Collector
SW ELIZABETH ST	W Olive St and SW Bayler St	Collector	Major Collector
ASH ST	SE Ferry Slip Rd and SE 40th St	Collector	Major Collector
SE 40TH ST/SE HARBOR DRIVE	US 101 and SE College Way	Collector	Major Collector
SE 62ND PL	US 101 and End of Road	Collector	Major Collector
SW 9TH ST	SW Angle St and SW Bay St	Collector	Major Collector
SW NATERLIN DR	US 101 and SW Bay St	Collector	Major Collector

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ROADWAY	**EXTENTS**	**EXISTING FUNCTIONAL CLASSIFICATION**	**RECOMMENDED FUNCTIONAL CLASSIFICATION**
SW BAY ST	SW Naterlin Dr and SW Bay Blvd	Collector	Major Collector
SW BAY BLVD	SW Bay St and SE Moore Dr	Collector	Major Collector
NW 6TH ST	NW Nye St and US 101	Collector	Major Collector
NE 6TH ST	US 101 and NE Benton St	Collector	Major Collector
NE 3RD ST	NE Eads St and NE Harney St	Collector	Major Collector
NE YAQUINA HEIGHTS DR	NE Harney St and US 101	Collector	Major Collector
SW CANYON WAY	SW 10th St and SW Fall St	Collector	Major Collector
SW HURBERT ST	SW 10th St and SW 7th St	Collector	Major Collector
SW FALL ST	SW Canyon Way and SW Bay Blvd	Collector	Major Collector
SE 35TH ST	SE Ferry Slid Rd and End of Road	Collector	Major Collector
60TH ST	US 101 and NW Gladys St	Collector	Neighborhood Collector
55TH ST	58th St and US 101	Collector	Neighborhood Collector
NE 36TH ST	US 101 and NE Harney St	Collector	Neighborhood Collector
NW OCEANVIEW ST	US 101 and NW 12th St	Collector	Neighborhood Collector
NW EDENVIEW WAY	NW Oceanview St and NW 20th St	Collector	Neighborhood Collector

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ROADWAY	**EXTENTS**	**EXISTING FUNCTIONAL CLASSIFICATION**	**RECOMMENDED FUNCTIONAL CLASSIFICATION**
NW/NE 20TH ST	NW Edenview way and NE Crestview Pl	Collector	Neighborhood Collector
NW SPRING ST	NW 12th St and NW 8th St	Collector	Neighborhood Collector
NW 8TH ST	NW Spring St and NW Coast St	Collector	Neighborhood Collector
NW NYE ST	NW 15th St and NW 11th St	Collector	Neighborhood Collector
NE 12TH ST	US 101 and NE Eads St	Collector	Neighborhood Collector
NE EADS ST	12th Street and Hwy 20	Collector	Neighborhood Street
NE 6TH ST	NE Benton St and NE Eads St	Collector	Neighborhood Collector
NW 6TH ST	NW Coast St and NW Nye St	Collector	Neighborhood Collector
NW 3RD ST	US 101 and NW Cliff St	Collector	Neighborhood Collector
W OLIVE ST	US 101 and SW Elizabeth St	Collector	Neighborhood Collector
SW 7TH ST	SW Hurbert St and SW Bayley St	Collector	Neighborhood Collector
SW HURBERT ST	SW 7th St and SW 2nd St	Collector	Neighborhood Collector
SW ABBEY ST	SW 6th St and SW 11th St	Collector	Neighborhood Collector
SW HARBOR WAY	SW 11th St and SW 13th St	Collector	Neighborhood Collector
SW 13TH ST	SW Harbor Way and SW Bay St	Collector	Neighborhood Collector

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ROADWAY	EXTENTS	EXISTING FUNCTIONAL CLASSIFICATION	RECOMMENDED FUNCTIONAL CLASSIFICATION
NW COAST ST	NW 11th St and SW 2nd St	Collector	Neighborhood Collector
SW 2ND ST	SW Elizabeth St and SW Nye St	Collector	Neighborhood Collector
NE 7TH ST	NE Eads St and NE 7th Dr	Collector	Neighborhood Collector
NE 6TH ST	NE 7th Dr and End of Road	Collector	Neighborhood Collector
SW HARTFIELD DR	SW 10th St and SW Bay Blvd	Collector	Neighborhood Collector
60TH ST	NW Gladys St and NW Biggs St	Collector	Local
NW BIGGS ST	NW 60th St and NW 55th St	Collector	Local
NW NYE ST	NW 15th St and NW 16th St	Collector	Local
NE BENTON ST	NE 11th St and NE 12th St	Collector	Local
NE 1ST ST	US 101 and Eads Street	Collector	Local
SW 2ND ST	NW Nye St and SW Angle St	Collector	Local
SW ALDER ST/SW NEFF WAY	SW 2nd St and US 101	Collector	Local
SE 50TH ST/SE 50TH PL	US 101 and End of road	Collector	Local
SE 4TH ST	SE Fogarty St and SE Harney St	Collector	Local
SE HARNEY ST	SE 4th St and SE 2nd St	Collector	Local
SE 2ND ST	SE Harney St and SE Moore Dr	Collector	Local

TABLE 1: RECOMMENDED ROADWAY FUNCTIONAL CLASSIFICATION CHANGES			
ROADWAY	**EXTENTS**	**EXISTING FUNCTIONAL CLASSIFICATION**	**RECOMMENDED FUNCTIONAL CLASSIFICATION**
SE 32ND ST	US 101 and SE Ferry Slip Rd	Collector	Local
SE FOGARTY ST	Hwy 20 and SE 4th St	Local	Major Collector
SW ELIZABETH ST	SW Bayler St and SW Government St	Local	Major Collector
SW GOVERNMENT ST	SW Elizabeth St and Yaquina Bay State Park	Local	Major Collector
YAQUINA BAY STATE PARK	SW Elizabeth St and SW Naterlin Dr	Local	Major Collector
NW GLADYS ST	NW 60th St and NW 55th St	Local	Neighborhood Collector
55TH ST	Pinery and 58th St	Local	Neighborhood Collector
NE 71ST ST	NE Avery St and Iron Mountain Rd	Local	Neighborhood Collector
NW 12TH ST	NW Nye St and US 101	Local	Neighborhood Collector
NW 77TH ST	US 101 and End of Road	Local	Private
NE 70TH ST/NE 70TH ST	NE Avery St and End of Road	Local	Private
NW 68TH ST	US 101 and End of Road	Local	Private
NE WINDHILL DR	NE 54th St and Evergreen Ln	Local	Private
EVERGREEN LN	NE 54h St and End of Road	Local	Private
NE 56TH ST	Evergreen Ln and 57th St	Local	Private

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ROADWAY	**EXTENTS**	**EXISTING FUNCTIONAL CLASSIFICATION**	**RECOMMENDED FUNCTIONAL CLASSIFICATION**
NE 57TH ST	Evergreen Ln and NE 56th St	Local	Private
NE 55TH ST	Evergreen Ln and NE 54th St	Local	Private
NE 54TH ST	NE 55th St and Evergreen Ln	Local	Private
NE 58TH ST/NE 58TH CT	NE Deer Ln and End of Road	Local	Private
NE DEER LN	End of Rd and NE 58th St	Local	Private
NE 60TH CT	NE Deer Ln and Evergreen Ln	Local	Private
NE 59TH ST	NE Deer Ln and End of Road	Local	Private
NE 60TH ST	Evergreen Ln and NE Deer Ln	Local	Private
NE 61ST ST	Evergreen Ln and NE Deer Ln	Local	Private
NE 62ND ST	NE Deer Ln and End of Rd	Local	Private
NE 32ND ST	NE 31st and NE Douglas St	Local	Private
NE DOUGLAS ST	NE 32nd St and NE 35th St	Local	Private
NE COOS ST	NE 32nd St and NE 35th St	Local	Private
NE BENTON ST	NE 32nd St and NE 35th St	Local	Private
NE 33RD ST/NE 33RD DR	NE Benton St and NE Avery St	Local	Private
NE AVERY ST	NE 33rd St and NE 35th St	Local	Private

TABLE 1: RECOMMENDED ROADWAY FUNCTIONAL CLASSIFICATION CHANGES			
ROADWAY	**EXTENTS**	**EXISTING FUNCTIONAL CLASSIFICATION**	**RECOMMENDED FUNCTIONAL CLASSIFICATION**
NE 35TH ST	NE Douglas St and End of Road	Local	Private
NW CHEROKEE LN	NW Wade Way and End of Road	Local	Private
NW 42ND ST	End of Road and US 101	Local	Private
NW 43RD ST	End of Road and US 101	Local	Private
NW 44TH ST	End of Road and US 101	Local	Private
NW 45TH ST	End of Road and US 101	Local	Private
NW 46TH ST	End of Road and US 101	Local	Private
NW 48TH ST	End of Road and US 101	Local	Private
NW 33RD ST	NW Oceanview Dr and End of Road	Local	Private
NE 47TH ST	US 101 and End of Road	Local	Private
NE 50TH ST	US 101 and End of Rd	Local	Private
SW 62ND ST	US 101 ad SW Arbor Dr	Local	Private
SW ARBOR DR	End of Road and End of Road	Local	Private
SW 60TH LOOP	SW Arbor Dr and End of Road	Local	Private
SW 59TH ST	SW Arbor Dr and End of Road	Local	Private
SW 58TH ST	SW Arbor Dr and SW Cupola Dr	Local	Private

TABLE 1: RECOMMENDED ROADWAY FUNCTIONAL CLASSIFICATION CHANGES			
ROADWAY	**EXTENTS**	**EXISTING FUNCTIONAL CLASSIFICATION**	**RECOMMENDED FUNCTIONAL CLASSIFICATION**
SW BARNACLE CT	SW 58th St and End of Road	Local	Private
SW 61ST ST	End of Road and SW Cupola Dr	Local	Private
SW CUPOLA DR	SW 61st and End of Road	Local	Private
SE DOGWOOD ST	SE 35th St and End of Road	Local	Private
SW ANCHOR WAY	US 101 and End of Road	Local	Private

FIGURE 1A: RECOMMENDED ROADWAY FUNCTIONAL CLASSIFICATION – AGATE BEACH

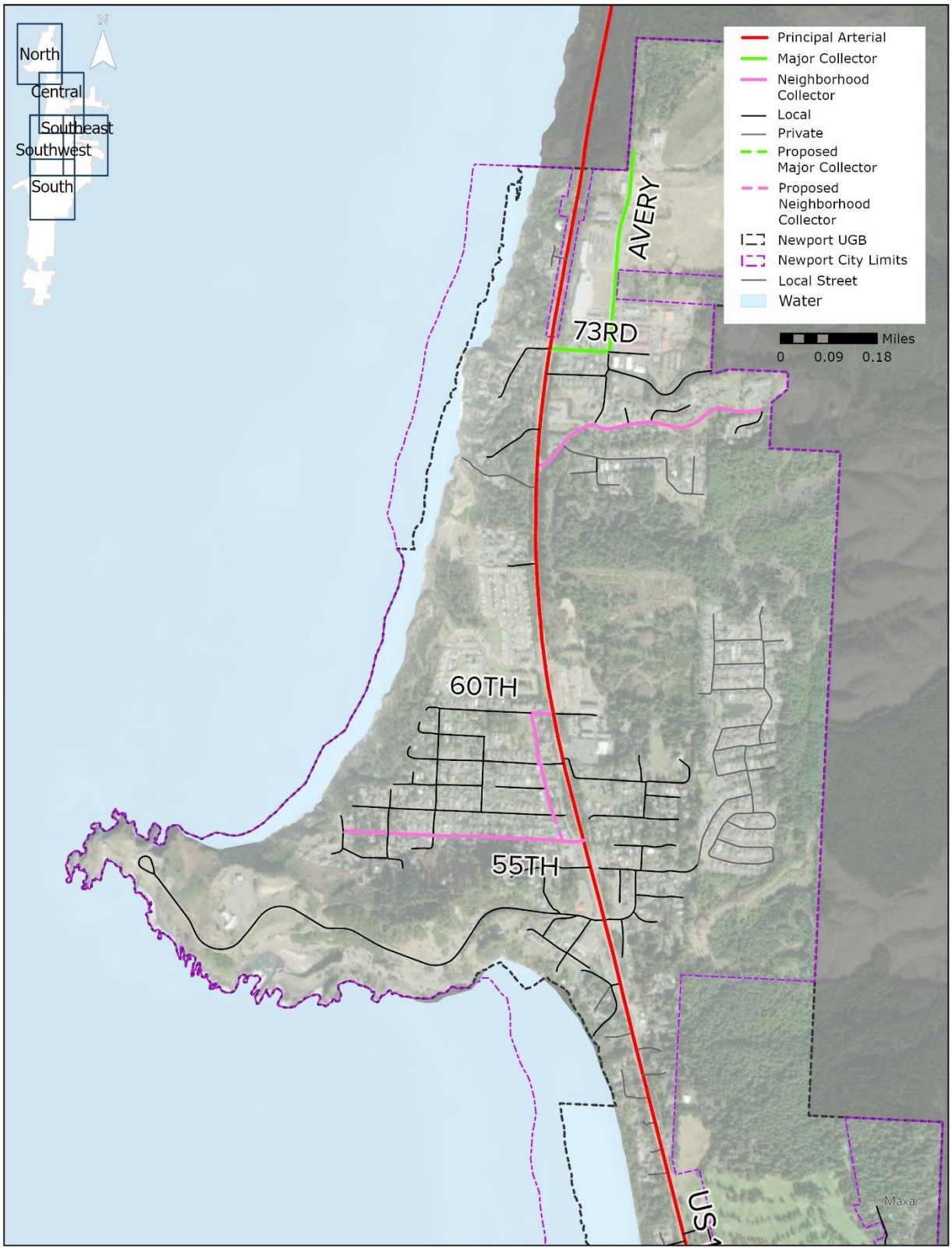


FIGURE 1B: RECOMMENDED ROADWAY FUNCTIONAL CLASSIFICATION – OCEANVIEW/HARNEY

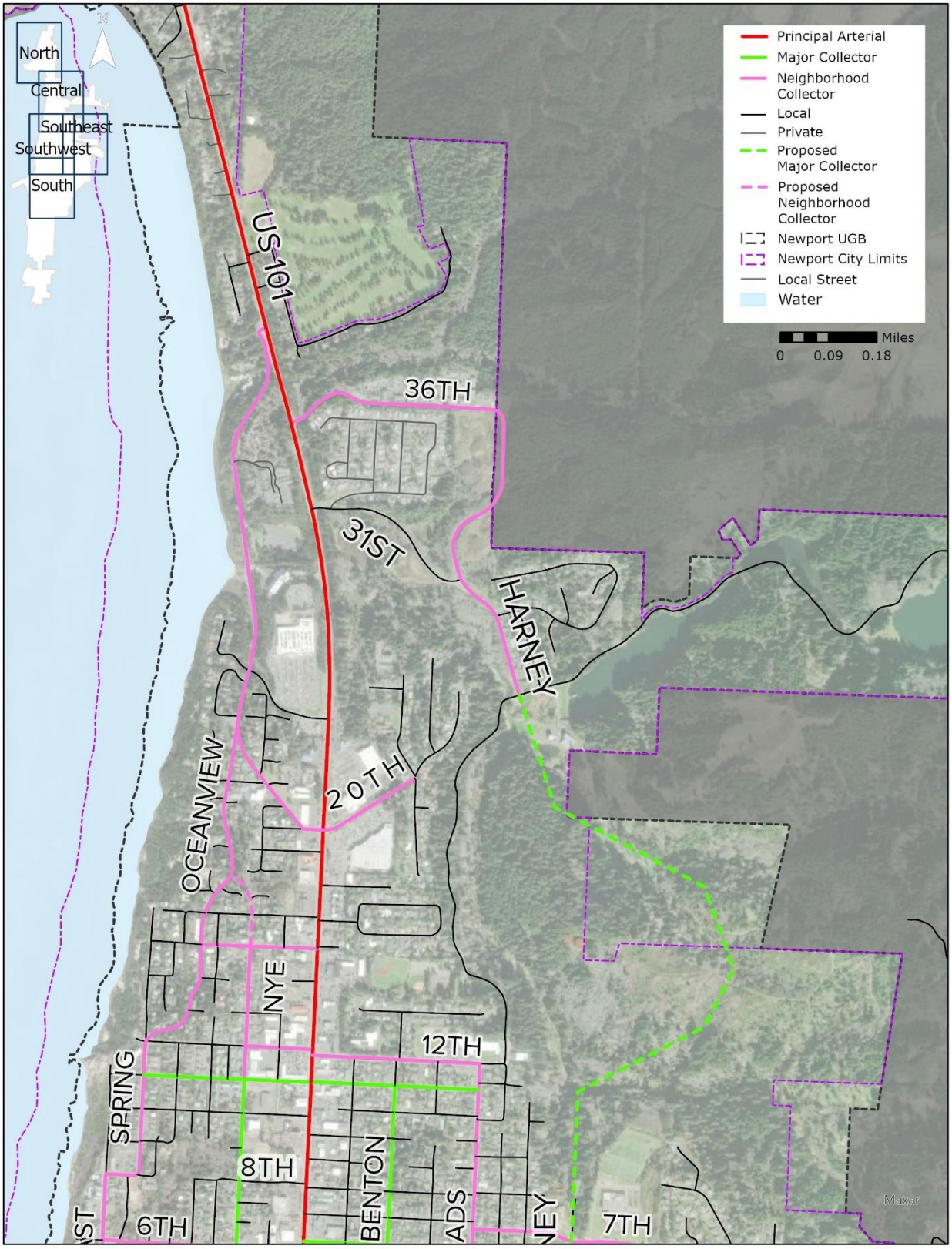


FIGURE 1C: RECOMMENDED ROADWAY FUNCTIONAL CLASSIFICATION – DOWNTOWN

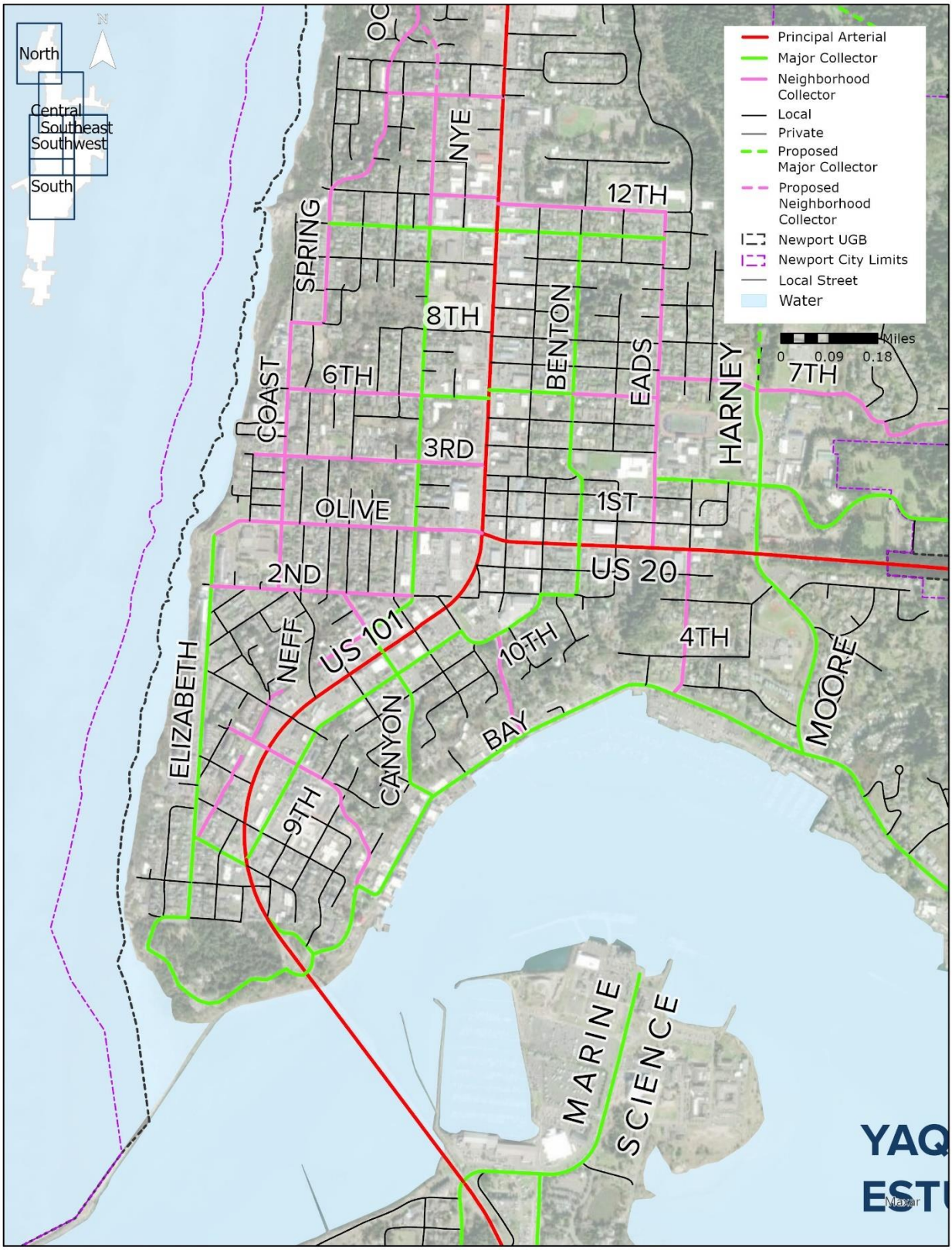


FIGURE 1D: RECOMMENDED ROADWAY FUNCTIONAL CLASSIFICATION – EAST NEWPORT

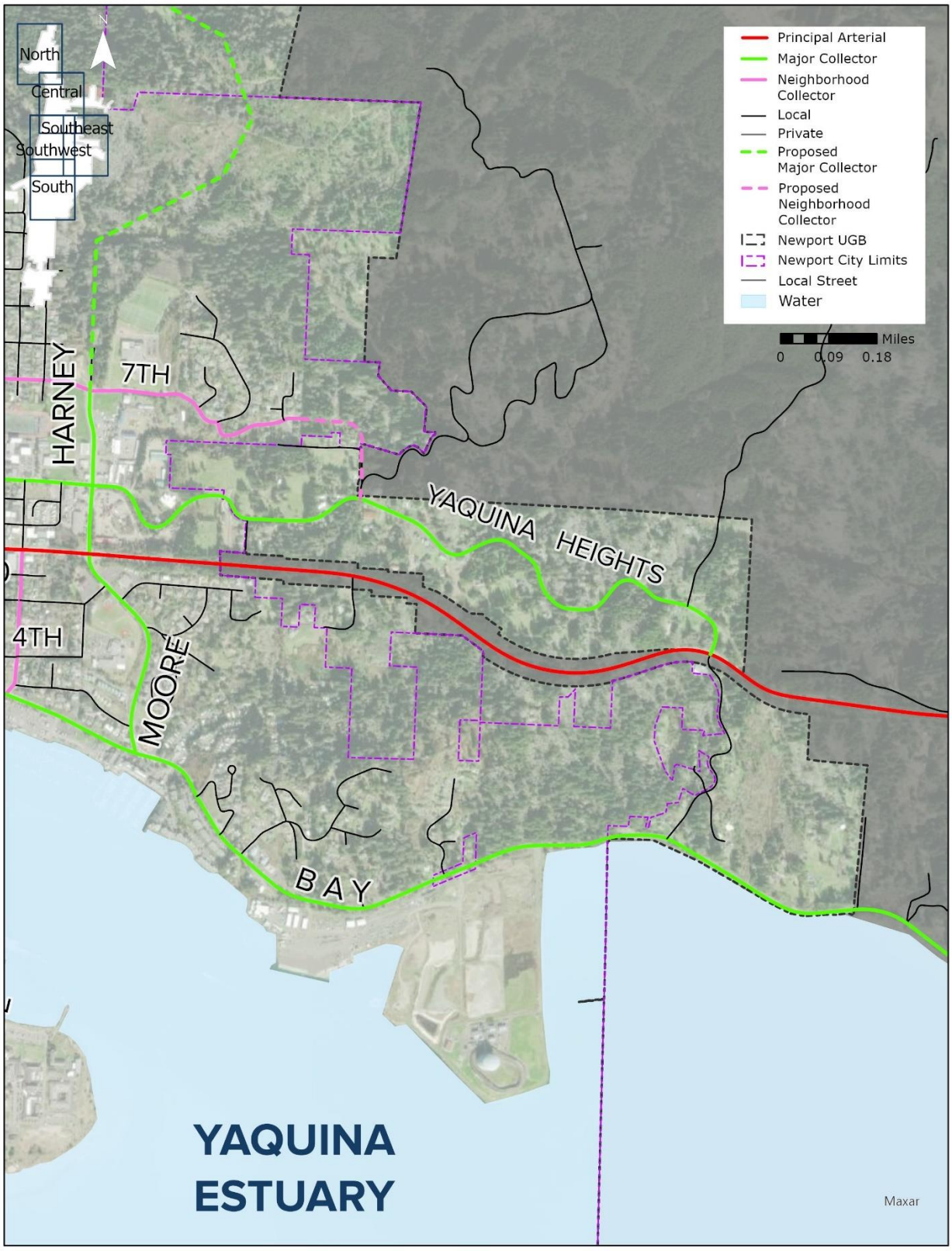
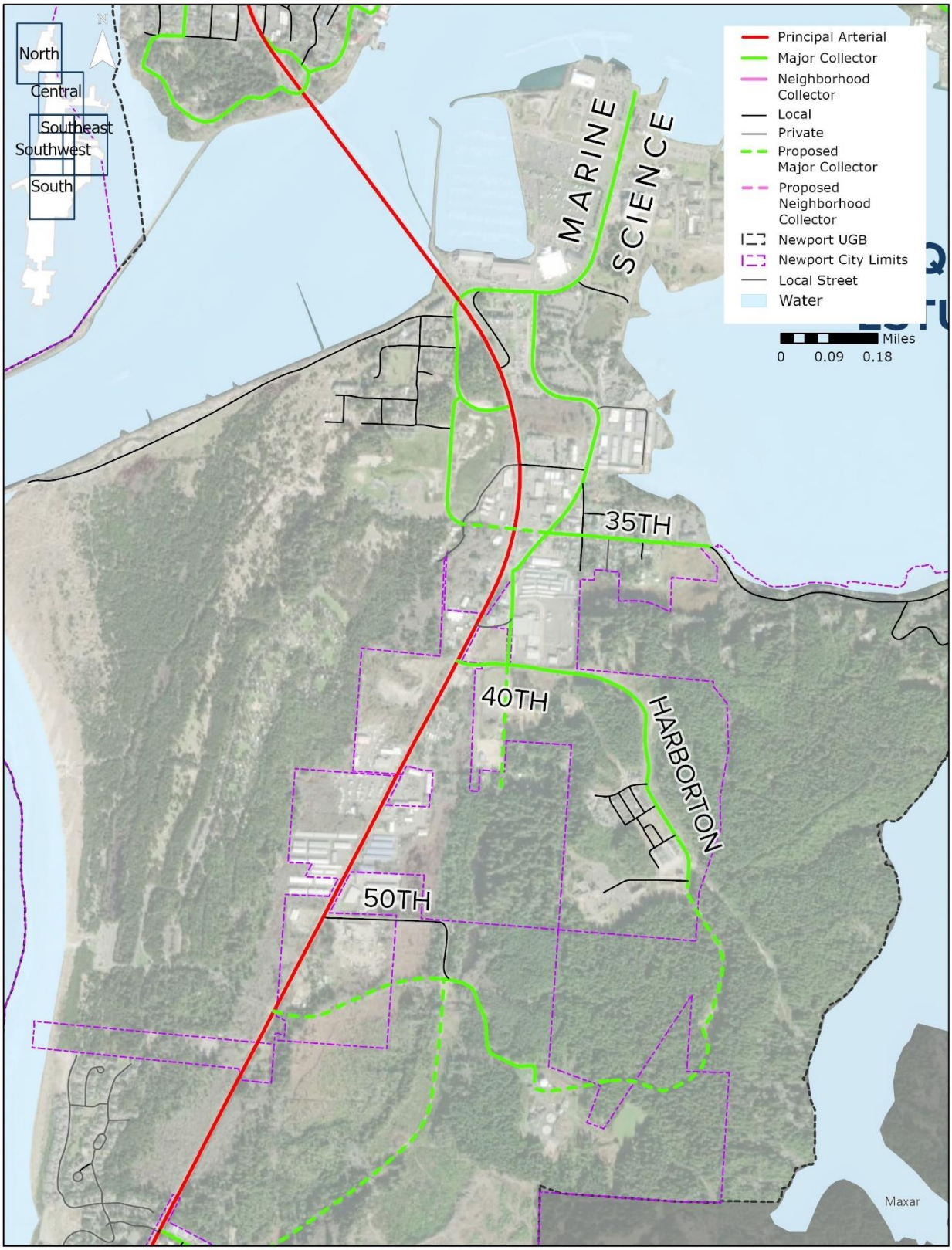


FIGURE 1E: RECOMMENDED ROADWAY FUNCTIONAL CLASSIFICATION – SOUTH BEACH



FREIGHT AND TRUCK CORRIDORS

Newport currently has two designated statewide freight routes. US 101 (north of US 20) is a National Network freight route while US 20 is a designated freight route in the Oregon Highway Plan (OHP). The National Network designates a set of highways based on geometric specifications (e.g., 12 feet travel lanes) specifically for use by large trucks while the OHP identifies freight routes based on the tonnage carried. Both of these corridors are also identified freight reduction review routes that requires the Mobility Advisory Committee to review and approve proposed changes to any reduction in the vehicle carrying capacity of these routes.[3] US 101 south of US 20 is not a National Network freight route, OHP freight route, or reduction review route.

It is also recommended that the city identify local truck routes to supplement the statewide system. The proposed local network, summarized in Figure 2, includes NE 73rd Street, NE Avery Street, NE 36th Street, NE Harney Street, SW/E Bay Boulevard, SE Moore Drive, Yaquina Bay Road, US 101 (south of US 20), SE Marine Science Drive, SE Ferry Slip Road, SE 35th Street, and the future extensions of SE 50th Street and SE 62nd Street.

Newport will benefit from ensuring that its truck routes are designed to accommodate the needs of industrial and commercial activity. Establishing local truck routes that connect industrial areas with the state highway system and implementing freight-specific design treatments makes these routes more desirable for freight travel which can protect residential neighborhoods from freight traffic. Having designated freight routes will help the city better coordinate and improve its efforts regarding both freight and non-freight transportation system users, including the following:

- **Roadway and Intersection Improvements** can be designed for freight vehicles with adjustments for turn radii, sight distance, lane width, turn pocket lengths, and pavement design. Designated local trucks routes should provide wider travel lanes (i.e., 12 feet travel lanes). The intersection/roadway geometry and pavement design should also accommodate turning movements or loads from the identified design vehicle and be consistent with city code.
- **Bicycle and Pedestrian Improvements** – such as protected or separated bike facilities, enhanced pedestrian crossings, and other safety improvements – can be identified to reduce freight impacts to other road users, particularly along bikeways and walkways.
- **Roadway Durability** can be increased by using concrete instead of asphalt in areas with significant freight traffic.
- **Coordination with Businesses and Adjacent Jurisdictions** can ensure that local and regional freight traffic uses Newport's freight routes to travel within the City.

[3] Freight reduction review routes are governed by ORS 366.215. Changes to the horizontal or vertical clearance of the roadway are considered to reduce vehicle carrying capacity. More information on freight reduction review routes is available here: https://www.oregon.gov/ODOT/Planning/Documents/ORS_366.215_Implementation_Guidance.pdf

FIGURE 2A: NEWPORT FREIGHT NETWORK – AGATE BEACH

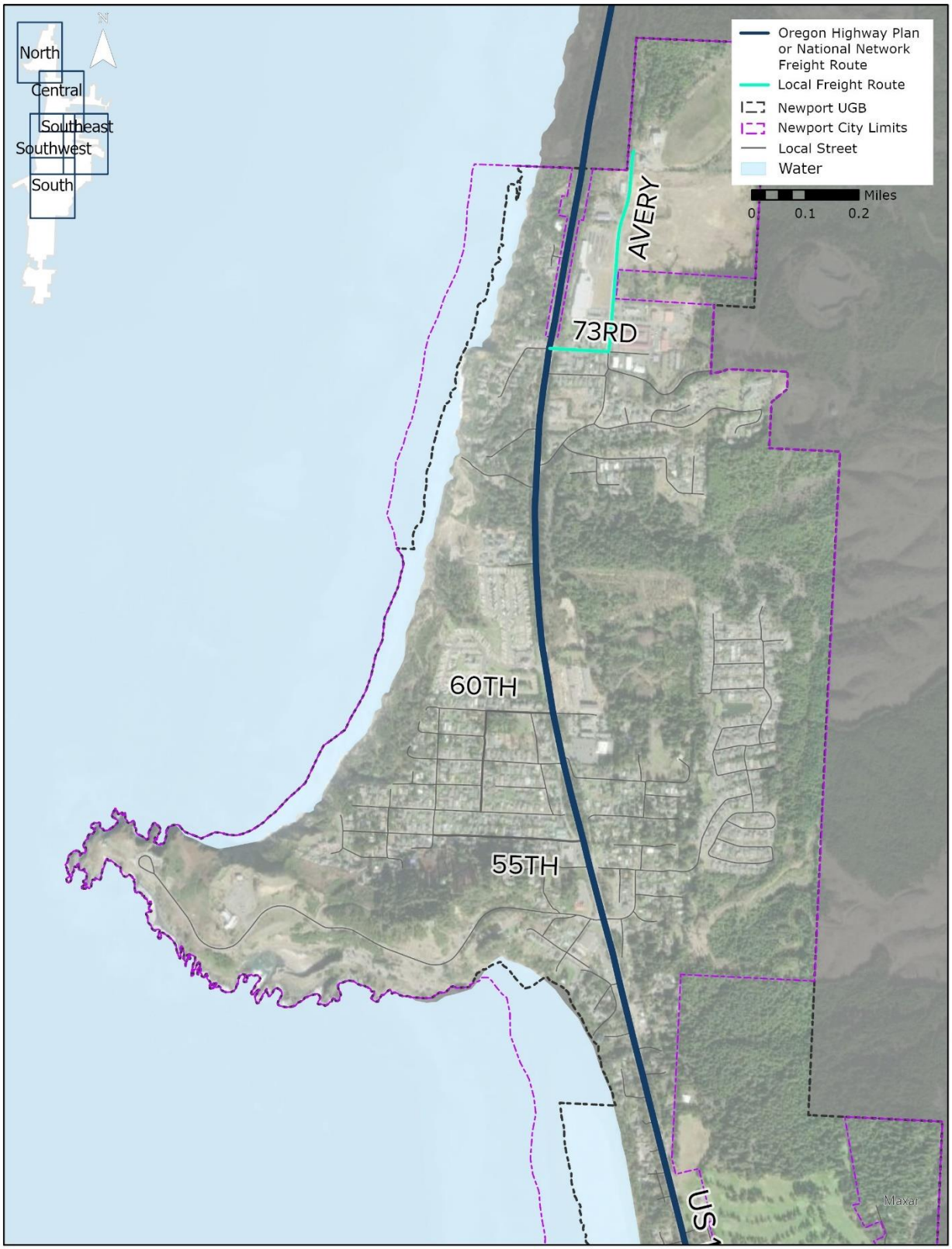


FIGURE 2B: NEWPORT FREIGHT NETWORK – OCEANVIEW/HARNEY

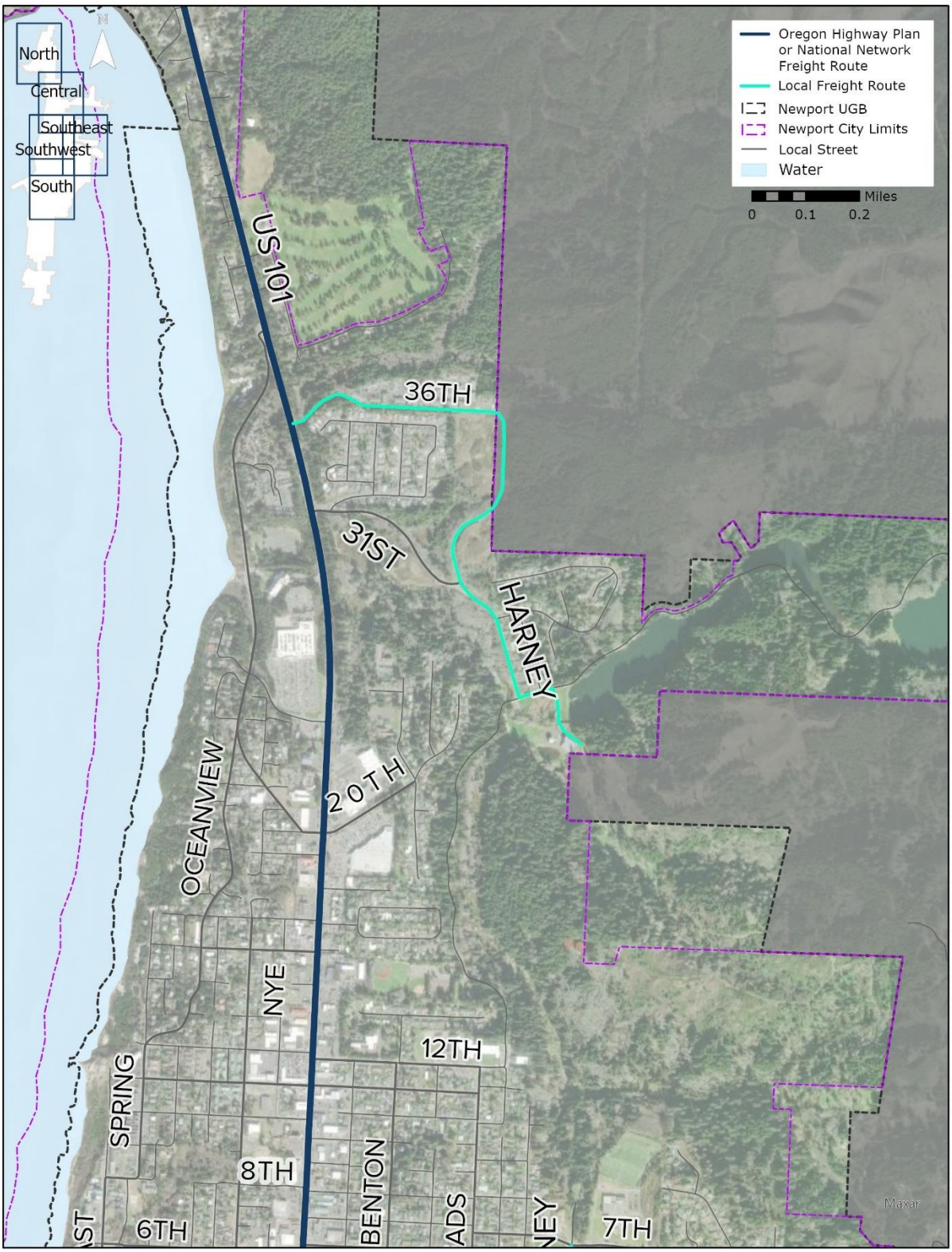


FIGURE 2C: NEWPORT FREIGHT NETWORK – DOWNTOWN

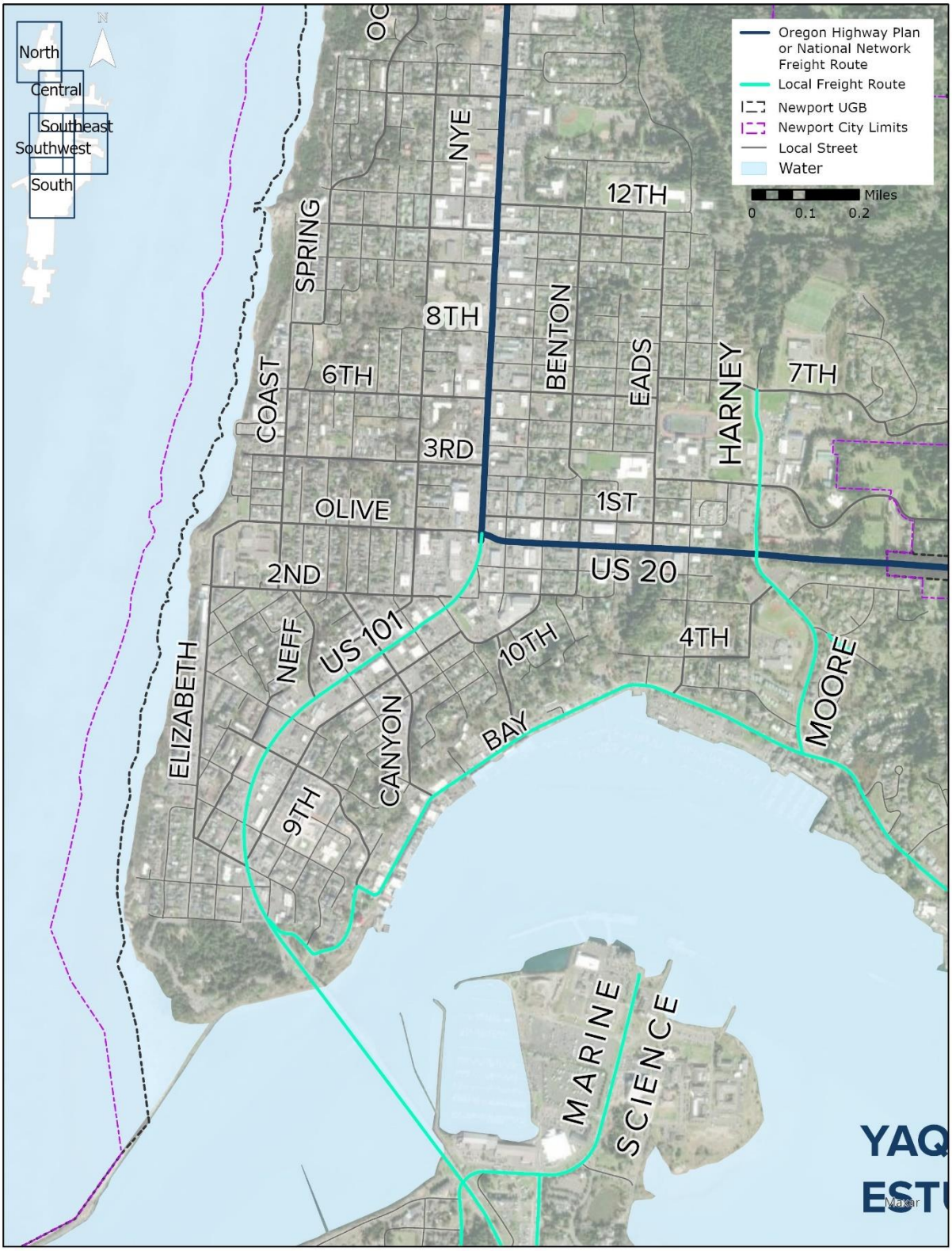


FIGURE 2D: NEWPORT FREIGHT NETWORK – EAST NEWPORT

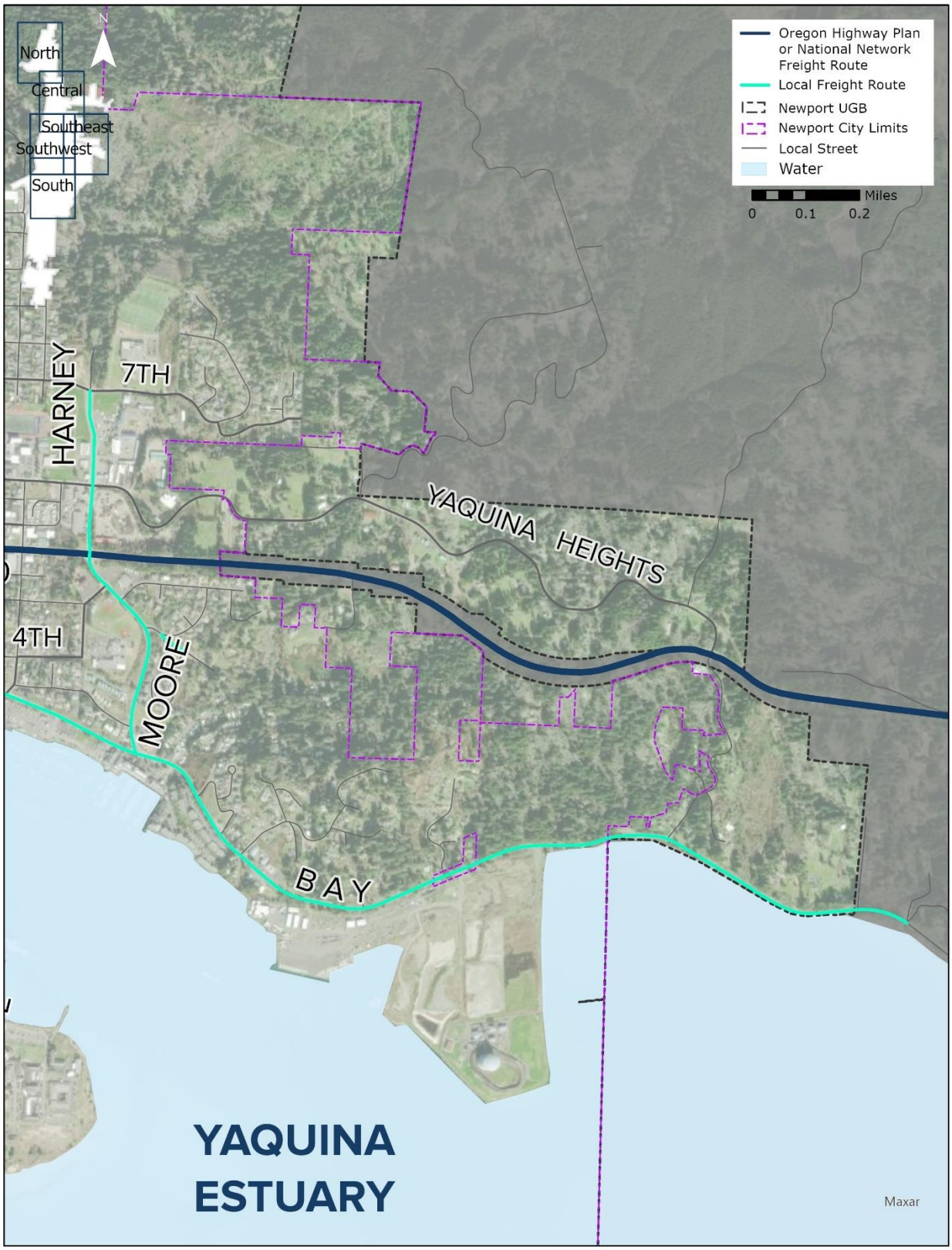
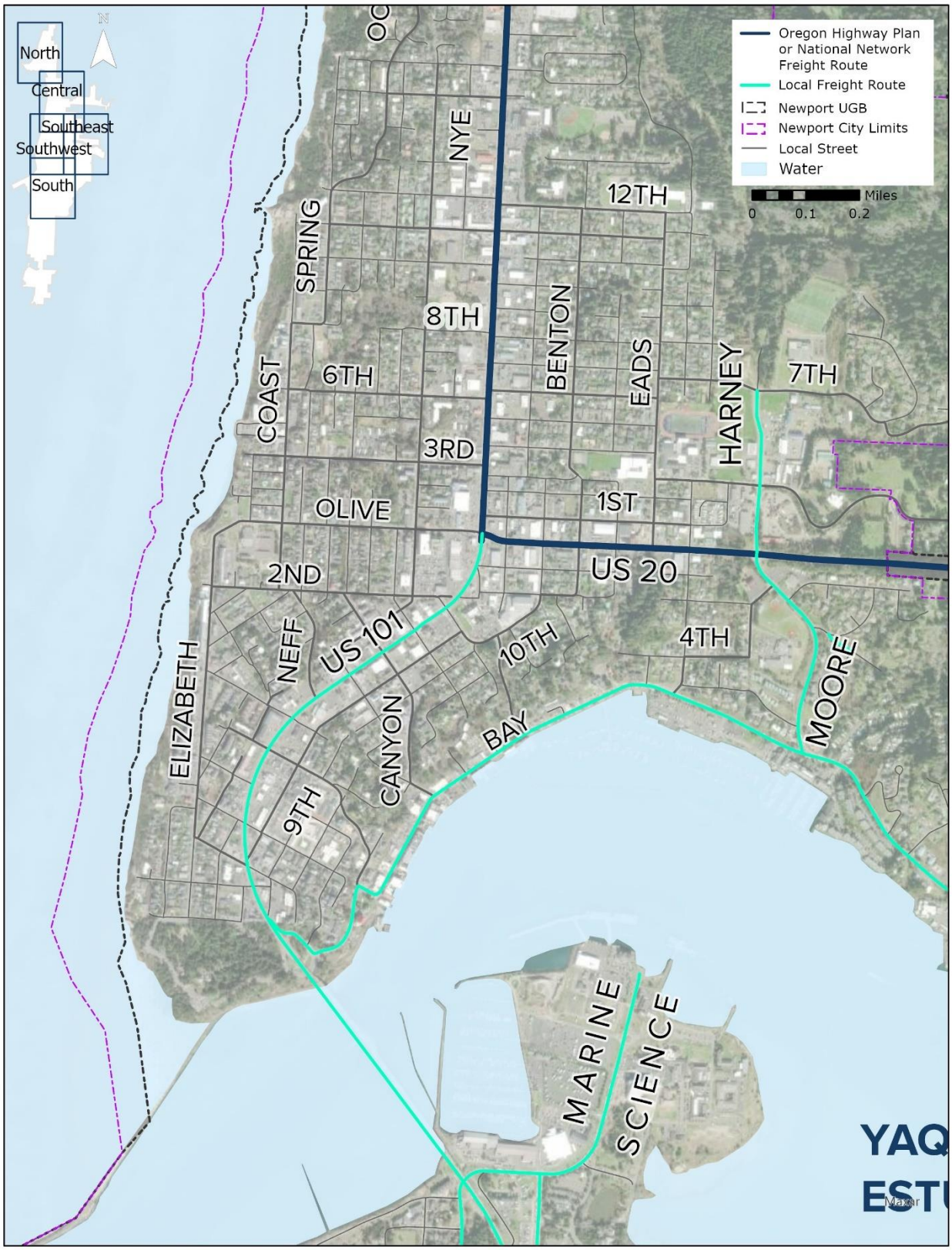


FIGURE 2E: NEWPORT FREIGHT NETWORK – SOUTH BEACH



PEDESTRIAN CORRIDORS

Identifying pedestrian corridors helps to support pedestrian movement and access to adjacent land use by identifying priority routes that connect popular destinations where pedestrian travel should be prioritized. The pedestrian corridors are applied to prioritize sidewalk infill projects and to determine the appropriate (i.e., preferred or acceptable) sidewalk configuration in constrained roadway conditions. Figure 3 shows the recommended pedestrian corridors in Newport, including Major Pedestrian streets and Neighborhood Pedestrian streets. All other streets are Local Pedestrian streets.

MAJOR PEDESTRIAN STREET

A Major Pedestrian street includes the most important corridors for pedestrian travel that link different parts of the city and provide access to Newport's existing attractions (e.g., Nye Beach, Bayfront). These streets should include safe, convenient, and attractive facilities for pedestrians.

NEIGHBORHOOD PEDESTRIAN STREET

A Neighborhood Pedestrian street includes those connecting to Major Pedestrian streets and those providing access to schools, pedestrian trails, parks, open spaces, and other significant destinations. These streets may include safe, convenient, and attractive facilities for pedestrians.

LOCAL PEDESTRIAN STREET

All streets not classified as Major Pedestrian or Neighborhood Pedestrian streets are classified as Local Pedestrian streets. Local Pedestrian streets provide local access and circulation for pedestrians and must include safe and convenient facilities for pedestrians that are appropriate to the local street context.

FIGURE 3A: NEWPORT'S PROPOSED PEDESTRIAN CORRIDORS – AGATE BEACH

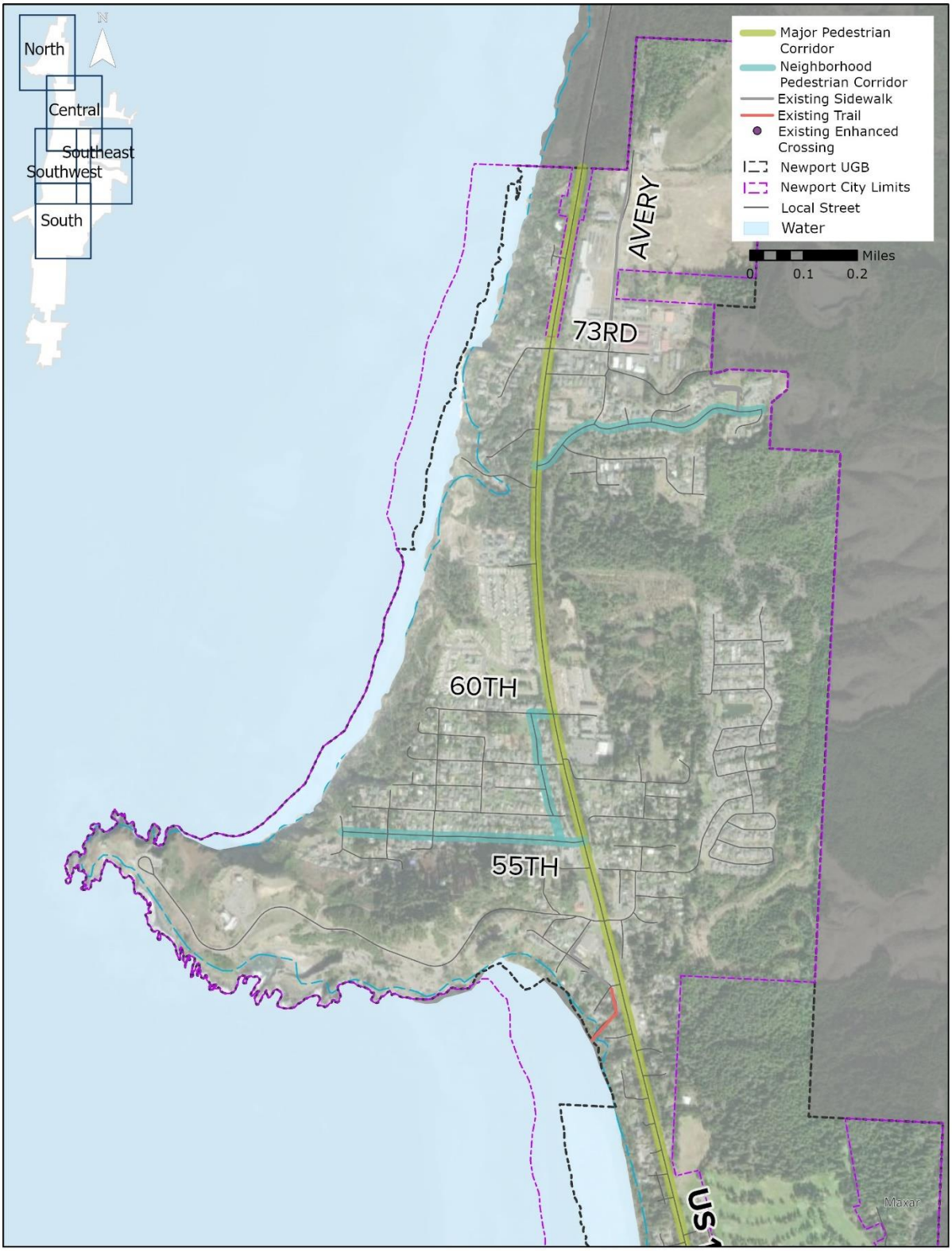


FIGURE 3B: NEWPORT'S PROPOSED PEDESTRIAN CORRIDORS – NYE BEACH

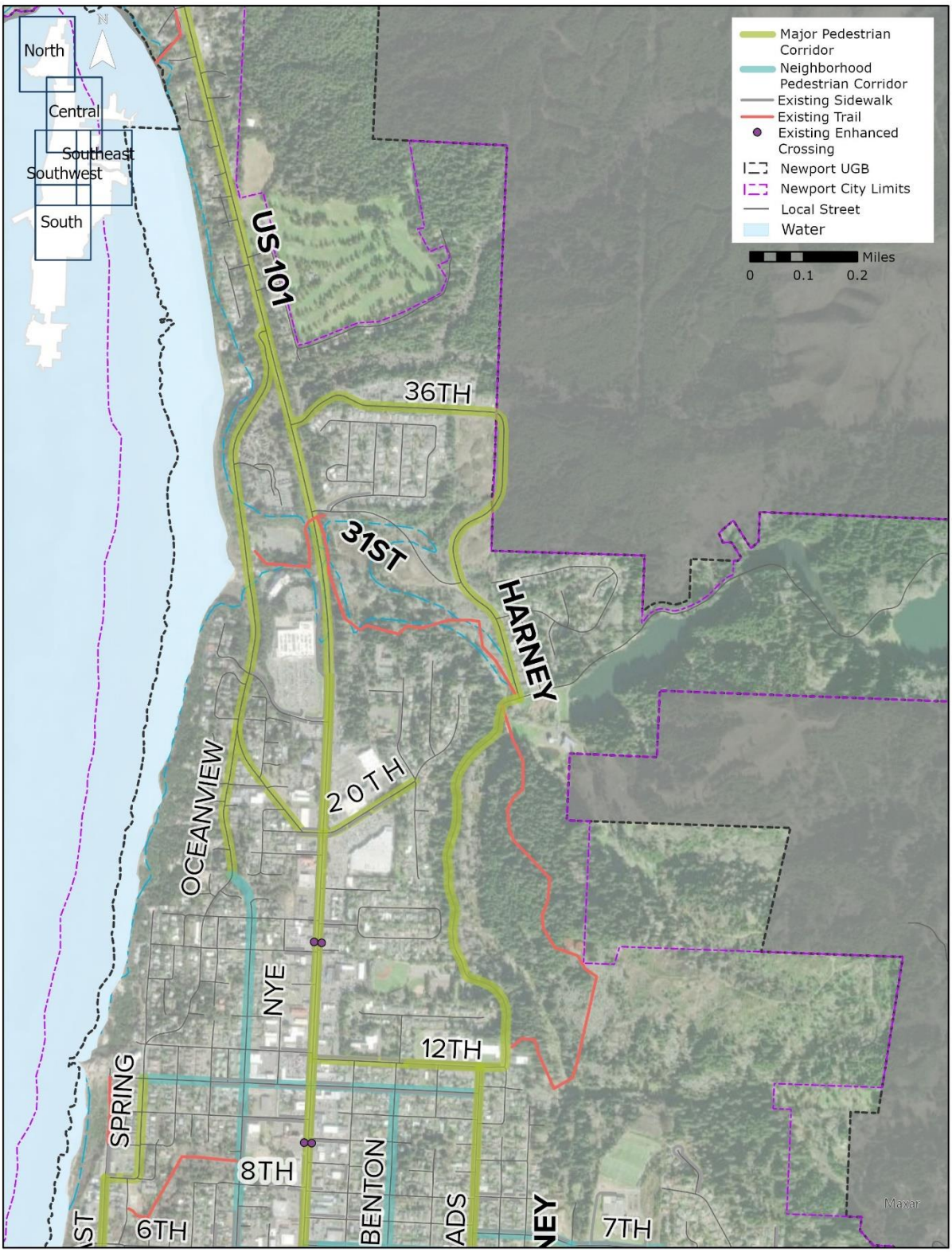


FIGURE 3C: NEWPORT'S PROPOSED PEDESTRIAN CORRIDORS – DOWNTOWN

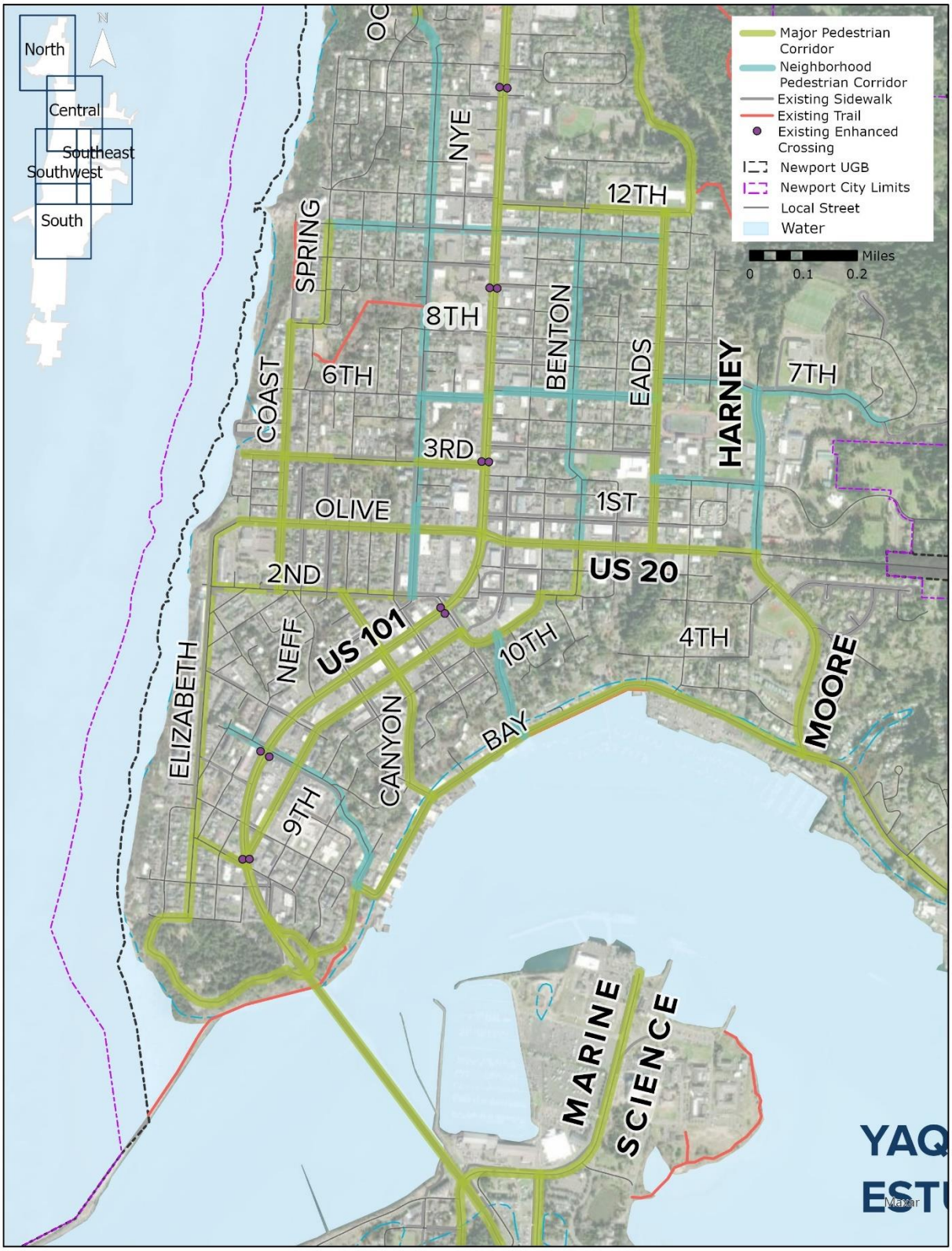


FIGURE 3D: NEWPORT'S PROPOSED PEDESTRIAN CORRIDORS – EAST

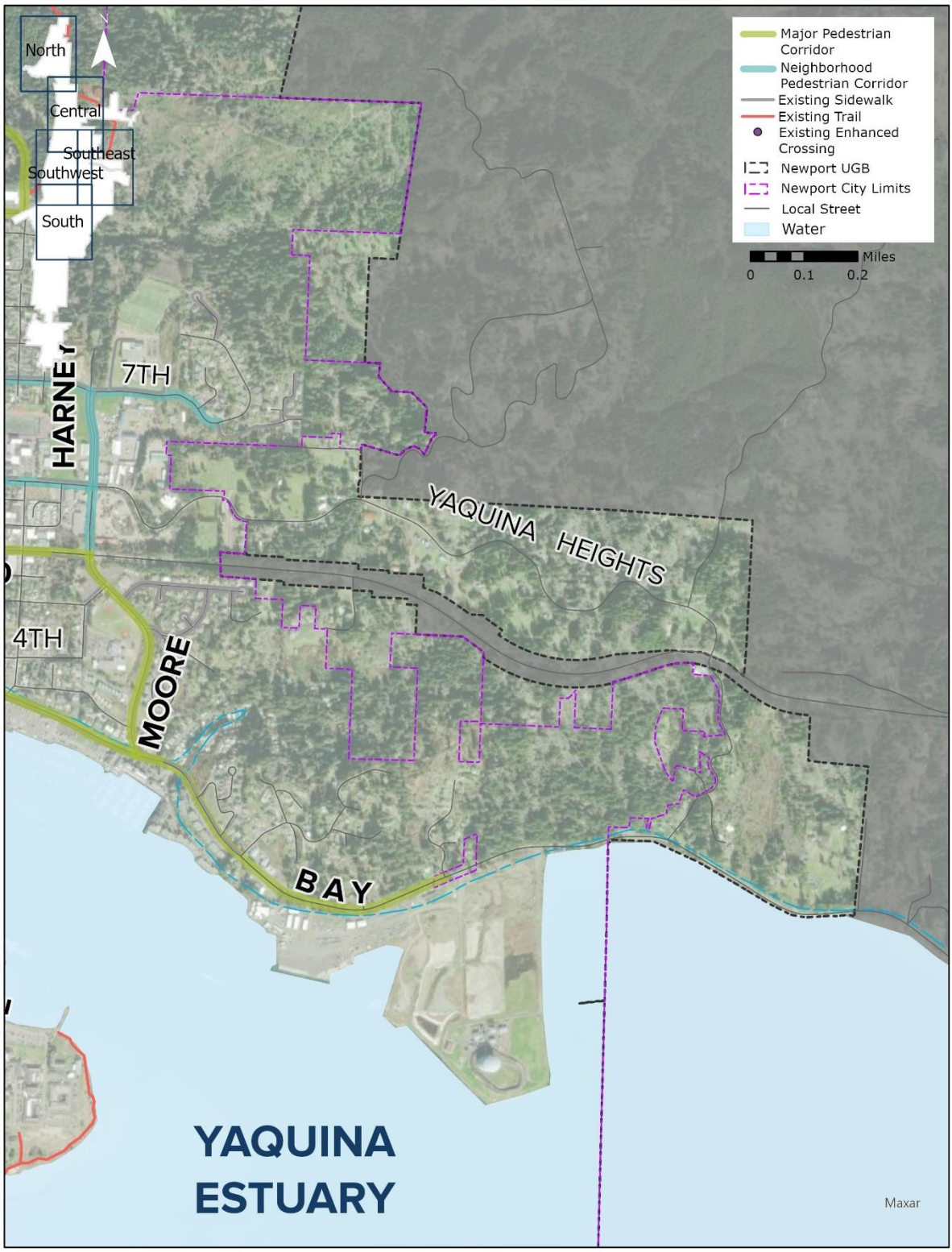
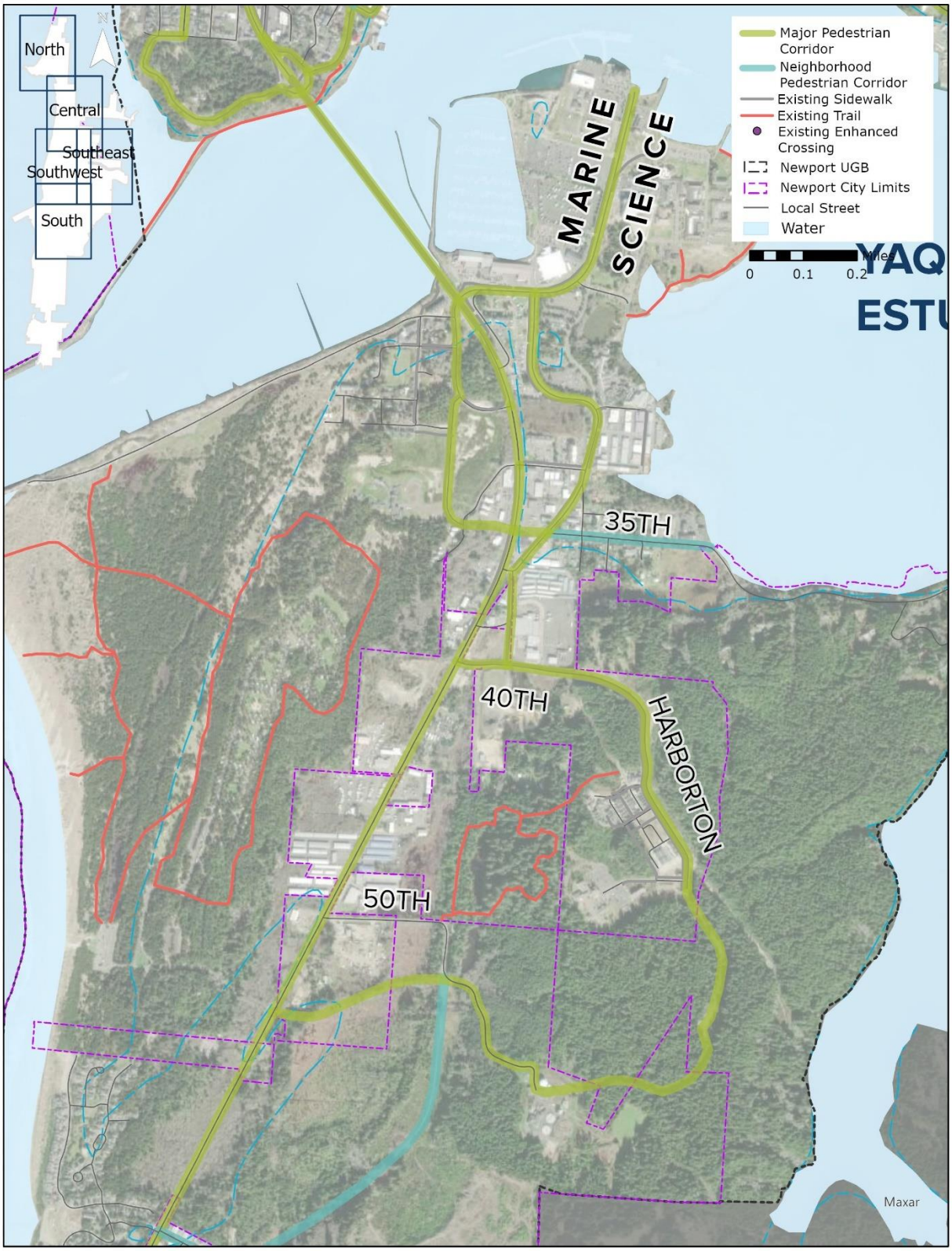


FIGURE 3E: NEWPORT'S PROPOSED PEDESTRIAN CORRIDORS – SOUTH BEACH



BICYCLE CORRIDORS

Identifying bicycle corridors helps to support the movement of people riding bikes. The bicycle corridors are applied to prioritize bicycle improvement projects and to determine the appropriate (i.e., preferred or acceptable) bicycle facility in constrained roadway conditions. Figure 4 shows the recommended bicycle corridors for Newport, including Major Bicycle, Neighborhood Bicycle, and Local Bicycle streets. The identified corridors are intended to provide a complete and connected bicycle network to facilitate travel for Newport's residents on city streets. Where either US 101 or US 20 provide the only travel connection, a corridor was also identified on the state system. However, bicycle facilities constructed on state roadways are subject to review and approval by ODOT based on guidance from the Blueprint for Urban Design (BUD)[4] and the Highway Design Manual (HDM),[5] and consequently, lack of a bicycle corridor designation on US 101 or US 20 does not preclude the construction of future bicycle improvements.

MAJOR BICYCLE STREET

A Major Bicycle street includes corridors linking different parts of the city, and those providing primary access to key attractions within Newport. The bike facilities should be high quality for the roadway functional classification and emphasize safe, convenient, and comfortable bicycle travel. Although both US 101 and US 20 provide key connections for bicycle travel within Newport, without significant capital improvements, these streets will likely remain a barrier for bicyclists. Where feasible, a Major Bicycle street has been designated on parallel city streets that are more suitable to bicycle travel.

NEIGHBORHOOD BICYCLE STREET

A Neighborhood Bicycle street includes those connecting to Major Bicycle streets and those providing access to schools, bicycle paths, parks, open spaces, and other significant destinations. These routes establish direct and convenient bicycle routes and provide bicycle facility coverage within ¼ of a mile of any given point in the city. These routes may include wayfinding to direct bicyclists to other areas of Newport

LOCAL BICYCLE STREET

All streets not classified as Major Bicycle or Neighborhood Bicycle streets are classified as Local Bicycle streets. Local Bicycle streets provide local access and circulation for bicyclists in a shared roadway environment (without shared lane markings). The low vehicle speeds and volumes make them suitable for shared bicycle travel.

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[4] ODOT. *Blueprint for Urban Design.* https://www.oregon.gov/odot/Engineering/Documents_RoadwayEng/Blueprint-for-Urban-Design_v1.pdf. 2020.

[5] ODOT. *Highway Design Manual.* https://www.oregon.gov/odot/Engineering/Pages/Hwy-Design-Manual.aspx. 2012.

FIGURE 4A: NEWPORT'S PROPOSED BICYCLE CORRIDORS – AGATE BEACH

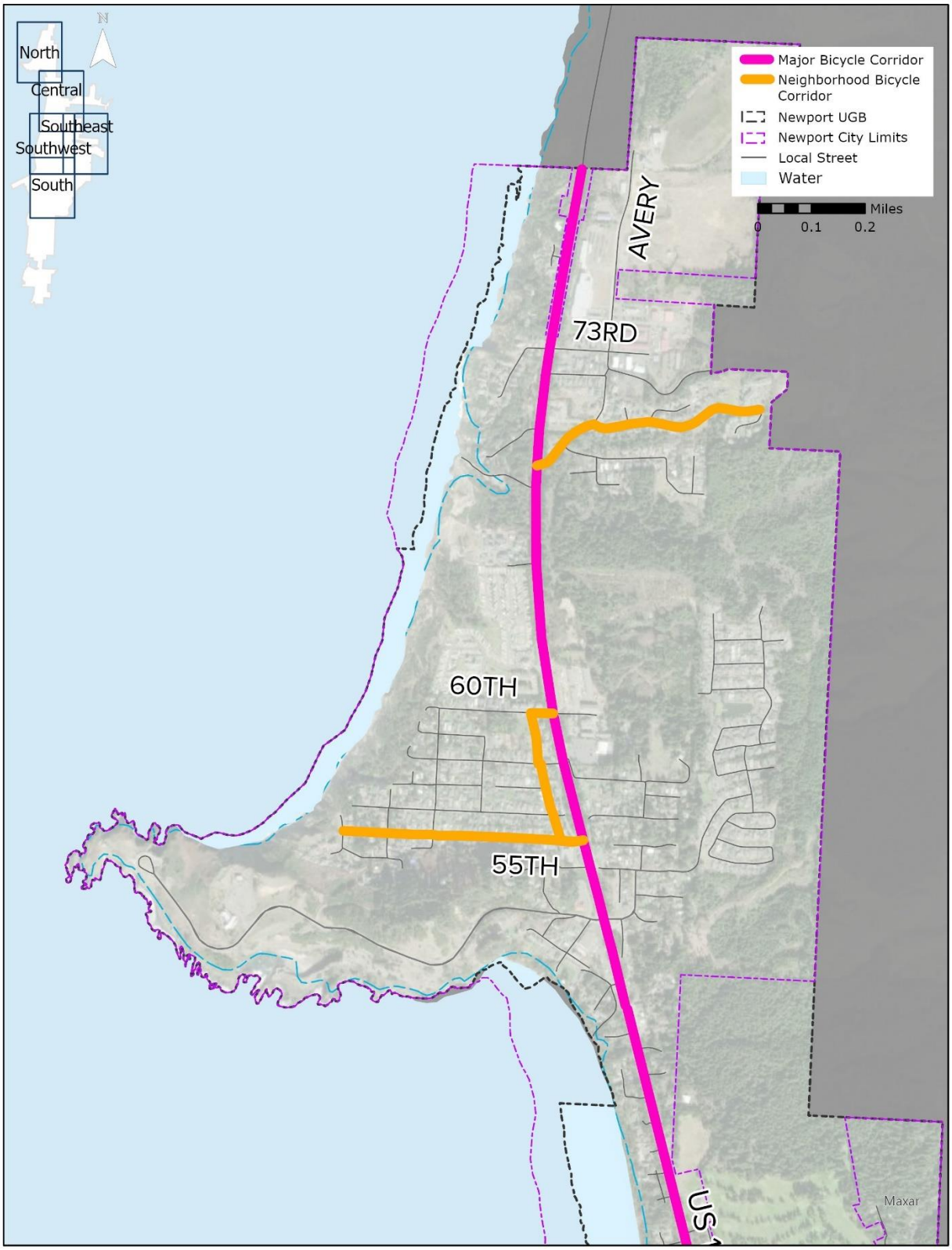


FIGURE 4B: NEWPORT'S PROPOSED BICYCLE CORRIDORS – NYE BEACH

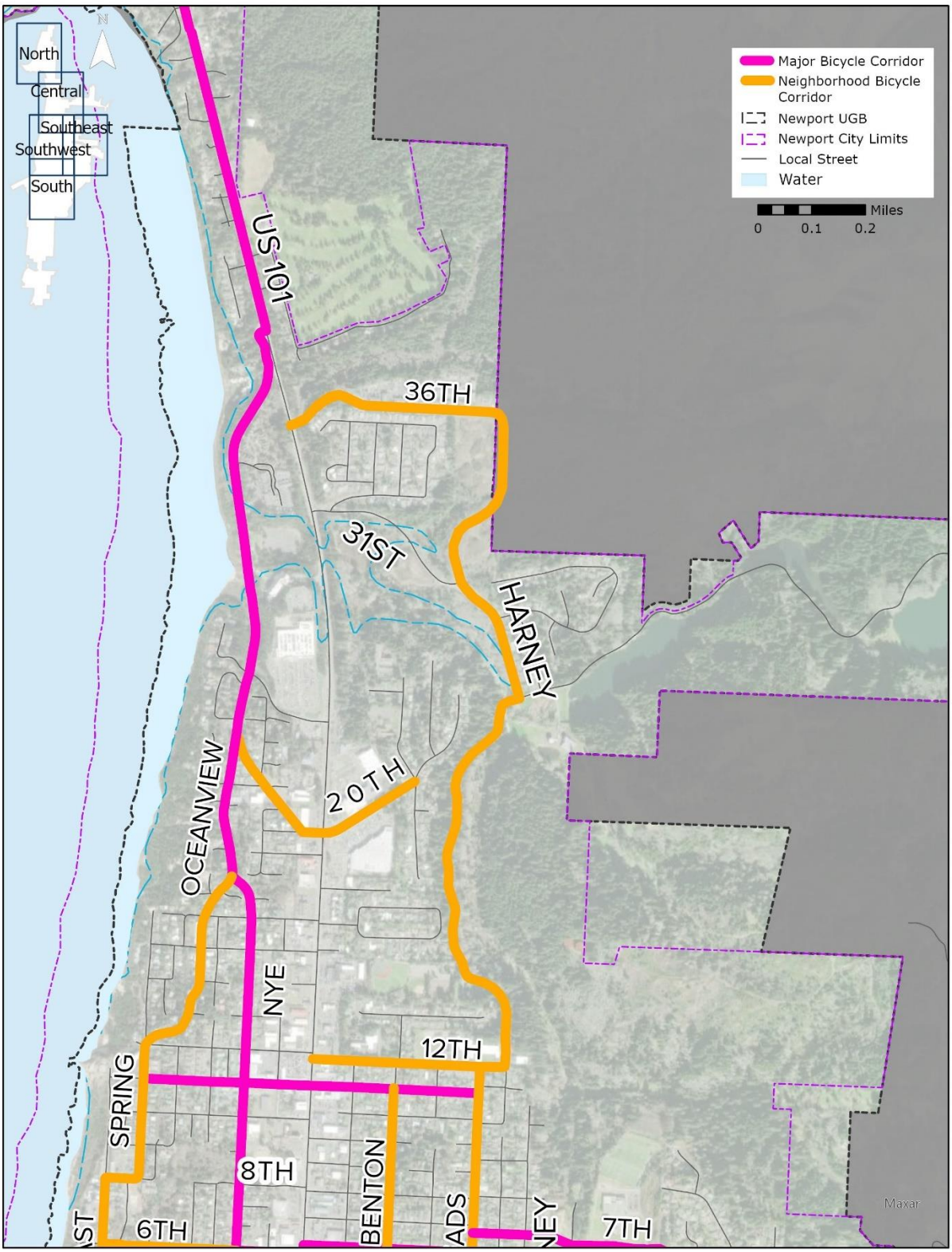


FIGURE 4C: NEWPORT'S PROPOSED BICYCLE CORRIDORS – DOWNTOWN

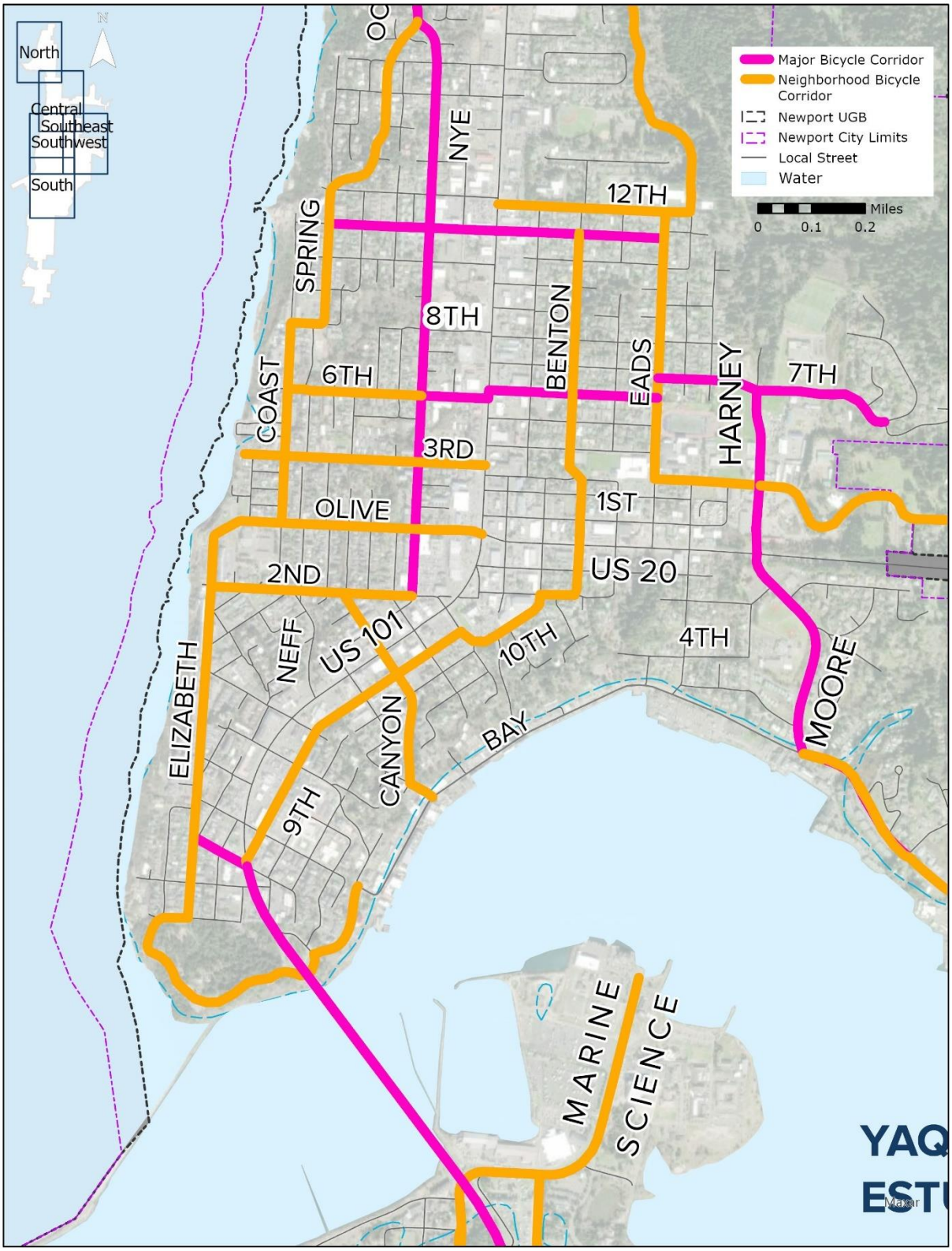


FIGURE 4D: NEWPORT'S PROPOSED BICYCLE CORRIDORS – EAST

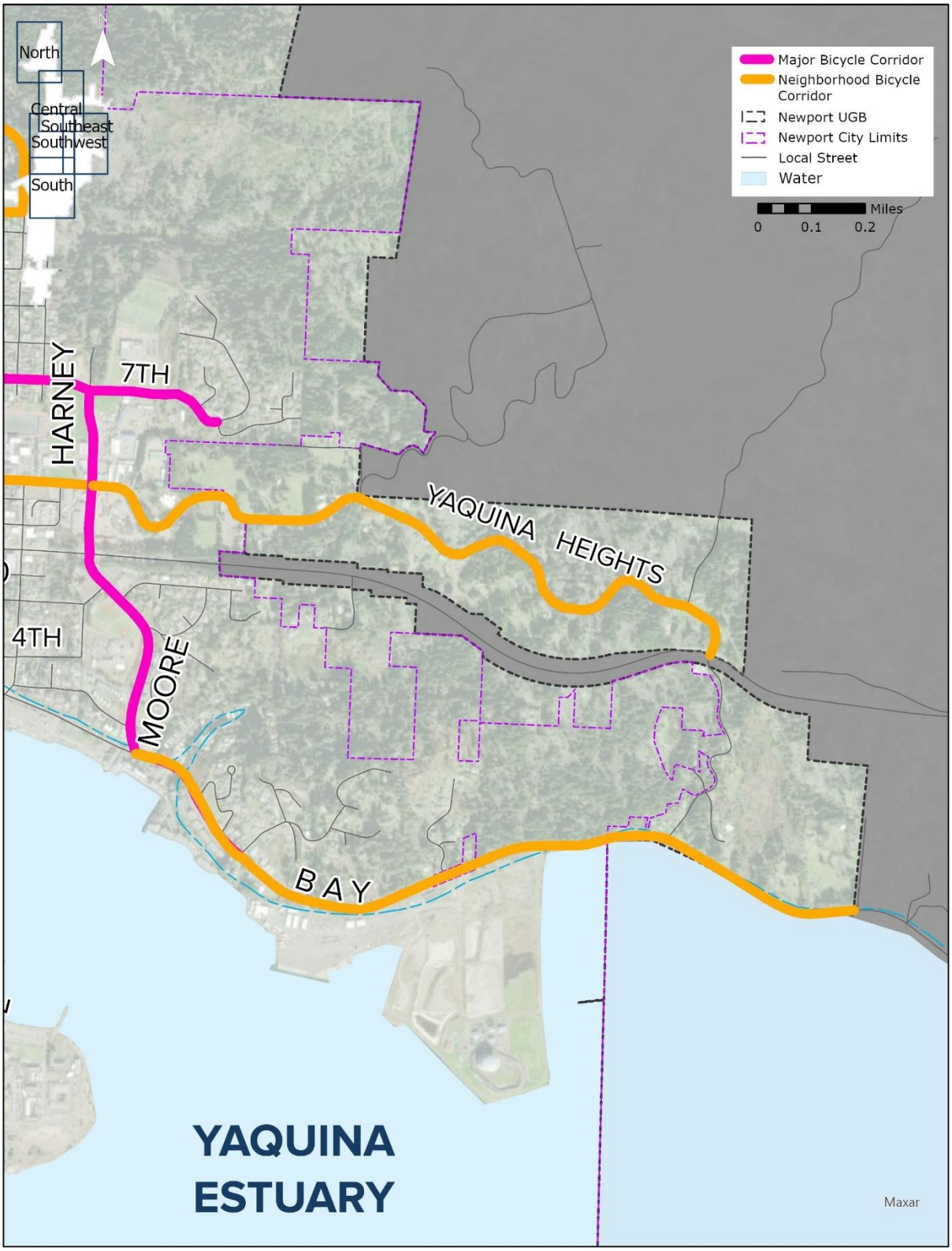
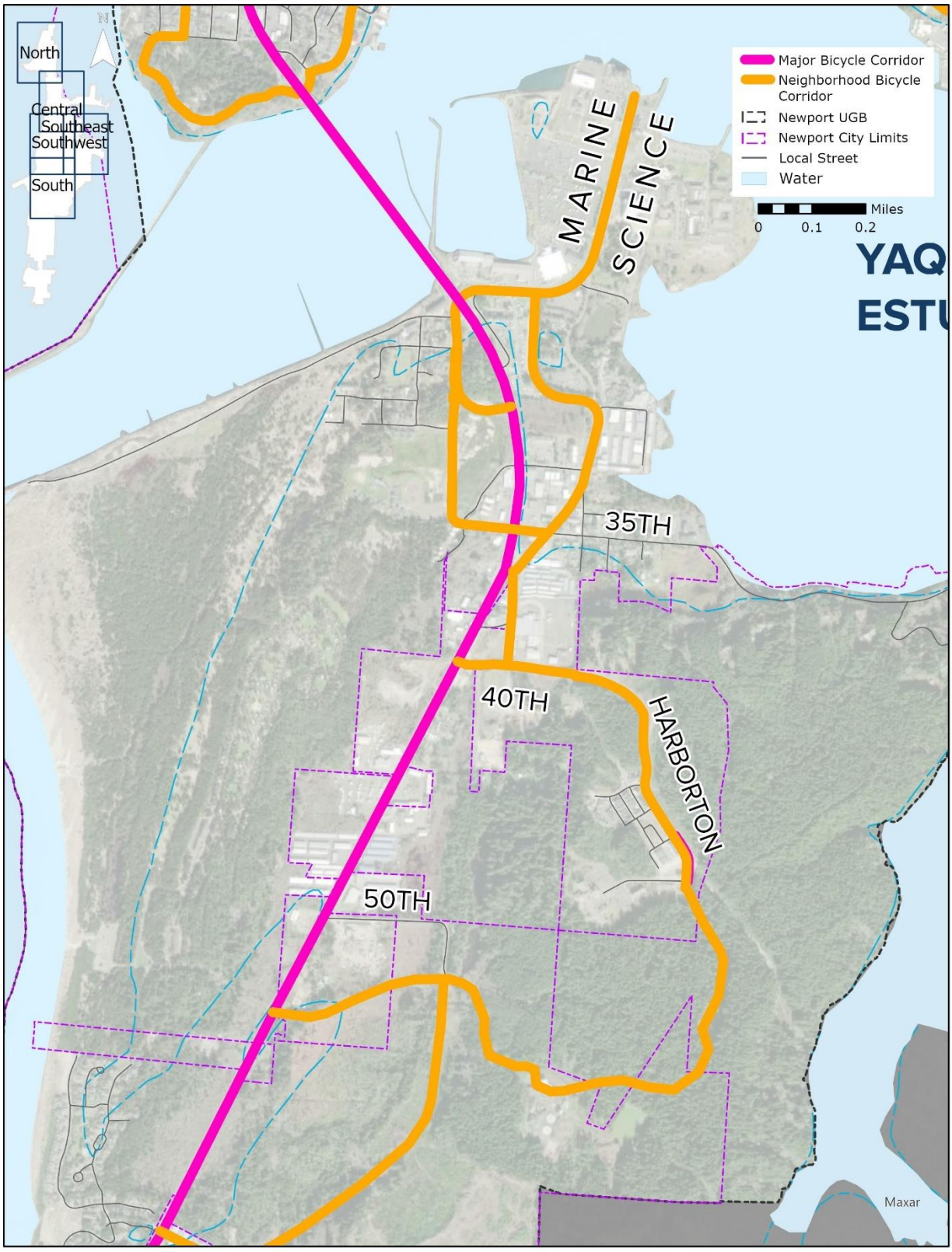


FIGURE 4E: NEWPORT'S PROPOSED BICYCLE CORRIDORS – SOUTH BEACH



MULTIMODAL NETWORK DESIGN

The recommended design of the streets in Newport is based on the functional classifications for motor vehicles. The recommended designs are intended to be implemented in newly developing or redeveloping areas of the city, where constrained conditions do not limit the ability to construct the typical cross-section described in the following sections. The construction or reconstruction of some streets may be constrained by challenging topography or environmentally sensitive, historic, or developed areas, and various minimum design parameters are outlined for these locations. Even unconstrained locations may be candidate locations to apply the minimum design parameters if they function as low-volume local streets (i.e., fewer than 500 vehicles per day).

Roadway cross-section design elements include travel lanes, curbs, planter strips, sidewalks on both sides of the road, and bicycle facilities. The following sections detail both preferred (for application in unconstrained locations) and minimum element widths (for application in constrained locations or for low-volume local streets) for each of Newport's functional classifications along with guidance for identifying an acceptable street cross-section in constrained locations. Acceptable street cross-sections are derived from the preferred cross-section standard based on the street's pedestrian and bicycle corridor classification. Preferred element widths should be implemented in most locations; minimum element widths require a documented constraint (e.g., topography, environmental, existing buildings) and approval by the City Engineer and Planning Director. The minimum element widths were expanded to allow flexibility in the width of specific elements depending on the multimodal corridors detailed above. The existing minimum right-of-way width and roadway width for the City of Newport are outlined in the Municipal Code (13.05.015).

Although this technical memo provides guidance for the preferred facilities on Arterial streets, both US 101 and US 20 are under the state's jurisdiction and are subject to the design criteria in the Highway Design Manual (HDM),[6] other ODOT manuals, and the companion document, the Blueprint for Urban Design (BUD).[7] The BUD supplements existing design manuals and provides enhanced design guidance until a full design manual update can be completed. The recommended guidance is consistent with the BUD, and the recommended urban contexts for US 101 and US 20 in Newport are provided in the appendix.

TRAVEL LANES AND PARKING

The vehicle classifications and freight corridors determine the design parameters for travel lanes of each street. This is the throughway for drivers, including cars, buses, and trucks. Table 2 provides the recommended travel lane and on-street parking requirements. The vehicle functional classification of the street is the starting point to determine the number of through lanes, lane

[6] ODOT. *Highway Design Manual.* https://www.oregon.gov/odot/Engineering/Pages/Hwy-Design-Manual.aspx. 2012.

[7] ODOT. *Blueprint for Urban Design.* https://www.oregon.gov/odot/Engineering/Documents_RoadwayEng/Blueprint-for-Urban-Design_v1.pdf. 2020.

widths, and median and left-turn lane requirements. However, freight corridors takes precedence when determining the appropriate lane width regardless of the functional classification. Streets identified as part of Newport's truck network may include travel lanes up to 12 feet wide although 11 feet travel lanes are also acceptable. Wider lanes (over 12 feet) should only be used for short distances at intersections, where needed. Streets that require a median/ center turn lane should include a minimum 6-foot-wide pedestrian refuge at marked crossings. Otherwise, the median can be reduced to a minimum of 4 feet at midblock locations, before widening at intersections for left-turn lanes (where required or needed).

Select low-volume Local Streets (i.e., fewer than 500 vehicles per day) are also candidates for a Shared Streets treatment where all roadway users share a single, unmarked travel lane that is narrower than a traditional Local Street. Shared Streets require vehicle traffic to yield to pedestrians and bicyclists within the roadway which is reinforced by the narrow pavement width. The design of these streets is similar to many of Newport's existing, low-volume streets. Shared Streets are intended as an alternative to Local Street design where widening is not feasible, and this treatment supersedes the requirements of the Oregon Fire Code by authority granted to the City under ORS 368.039.

TABLE 2: RECOMMENDED TRAVEL LANE AND ON-STREET PARKING REQUIREMENTS

ROADWAY CLASSIFICATION	ARTERIAL STREET[1]	MAJOR COLLECTOR STREET	NEIGHBORHOOD COLLECTOR STREET	LOCAL STREET	SHARED STREET[2]
TYPICAL THROUGH LANES (BOTH DIRECTIONS)	2 to 4	2	2	2	1
MINIMUM LANE WIDTH	11-12 ft.[3]	10 ft.[4]	10 ft.[4]	10 ft.	16 ft.
MEDIAN/ CENTER TURN LANE [5]	Optional 11-14 ft. median/ center turn lane[6]	Optional 11 ft. center turn lane [7]	None	None	None
MINIMUM ON-STREET PARKING WIDTH	Context dependent, 7-8 ft. where applicable	Optional 8 ft. preferred, 7 ft. allowed in residential areas[8]	Optional 8 ft. preferred, 7 ft. allowed in residential areas [8]	Optional 8 ft. preferred, 7 ft. allowed in residential areas [8]	None

Notes:

1. Although guidance is provided for Arterial streets, these are under state jurisdiction. Values presented in this table are consistent with the Blueprint for Urban Design (BUD). For detailed design recommendations on US 101 and US 20, the identified urban contexts for Newport are provided in the appendix and the BUD is publicly available.
2. Shared Street conditions may apply to local streets that carry fewer than 500 vehicles per day.
3. 11 ft. travel lanes are preferred for most urban contexts within Newport. 11 ft. travel lanes are standard for central business district areas in the BUD. Adjustments may be required for freight reduction review routes. Final lane width recommendations are subject to review and approval by ODOT.
4. Travel lanes up to 12 ft. may be permitted for designated local truck routes only.
5. A minimum 6-foot-wide pedestrian refuge should be provided at marked crossings. Otherwise, a median can be reduced to a minimum of 4 feet at midblock locations, before widening at intersections for left-turn lanes (where required or needed).
6. The BUD recommends a 14 ft. lane for speeds above 40 mph. Final lane width recommendations are subject to review and approval by ODOT.
7. Center left-turn lane required at intersections with Arterials; minimum 6-foot-wide median required where refuge is needed for pedestrian/bicycle street crossings.
8. 8 feet width required in commercial areas and 7 feet width allowed in residential areas. Provision of on-street parking (one-side only) should be limited to City streets (not on a designated freight route) with a minimum 28 ft. paved width in commercial areas or a minimum 27 ft. in residential areas. Provision of on-street parking (both sides) should be limited to City streets (not on a designated freight route) with a minimum 36 ft. paved width in commercial areas or a minimum 34 ft. in residential areas. For designated freight routes, on-street parking may only be provided with an additional 4 ft. paved width. On-street parking may be eliminated on one or both sides if adequate parking is provided off-street or to accommodate bicycle/pedestrian facilities.

NEIGHBORHOOD TRAFFIC MANAGEMENT TOOLS

Neighborhood Traffic Management (NTM) describes strategies that can be deployed to slow traffic, and potentially reduce volumes, creating a more inviting environment for pedestrians and bicyclists. NTM strategies are primarily traffic calming techniques for improving neighborhood livability on local streets. These strategies are most appropriate on Local Streets and Neighborhood Collectors, although a limited set of strategies can also be applied to Major Collectors and Arterials in special cases. NTM strategies on Arterial roadways requires review and approval by ODOT. Mitigation measures for neighborhood traffic impacts must balance the need to manage vehicle speeds and volumes with the need to maintain mobility, circulation, and function for service providers, such as emergency responders. Examples of tools are shown in Figure 5.

FIGURE 5: SUMMARY OF NEIGHBORHOOD TRAFFIC MANAGEMENT STRATEGIES

Chicanes

www.pedbikeimages.org/Dan Burden

Chokers

www.pedbikeimages.org/Dan Burden

Curb Extensions

www.pedbikeimages.org/Carl Sundstrom

Diverters

www.pedbikeimages.org/Adam Fukushima

Median Islands

www.pedbikeimages.org/Dan Burden

Raised Crosswalks

www.pedbikeimages.org/Tom Harned

Speed Cushions

NACTO Urban Street Design Guide

Speed Hump

www.pedbikeimages.org/Dan Burden

Traffic Circles

www.pedbikeimages.org/Carl Sundstrom

Table 3, below, lists common NTM applications. Any NTM project should include coordination with emergency response staff to ensure that public safety is not compromised. NTM strategies implemented on a state facility would require coordination with ODOT regarding freight mobility considerations.

TABLE 3: APPLICATION OF NTM STRATEGIES

APPLICATION	USE BY FUNCTIONAL CLASSIFICATION				IMPACT	
	ARTERIALS *	MAJOR COLLECTORS	NEIGHBORHOOD COLLECTORS	LOCAL STREETS	SPEED REDUCTION	TRAFFIC DIVERSION
CHICANES				✓	✓	✓
CHOKERS				✓	✓	✓
CURB EXTENSIONS	✓	✓	✓	✓	✓	
DIVERTERS (WITH EMERGENCY VEHICLE PASS-THROUGH)		✓	✓	✓		✓
MEDIAN ISLANDS	✓	✓	✓	✓	✓	
RAISED CROSSWALKS			✓	✓	✓	✓
SPEED CUSHIONS (WITH EMERGENCY VEHICLE PASS-THROUGH)			✓	✓	✓	✓
SPEED HUMP			✓	✓	✓	✓
TRAFFIC CIRCLES			✓	✓	✓	✓

*Traffic calming strategies on Arterials require review and approval by ODOT

SIDEWALKS

Sidewalks provide for pedestrian movement and access, enhance pedestrian connectivity, and promote walking. The recommended pedestrian facilities in Newport intend to encourage walking by making it more attractive. Vehicle functional classification determine the appropriate pedestrian facilities along streets, including the width of the throughway for pedestrians and the buffer from the vehicle travel way. Sidewalk may be provided on one side of the street only where significant topographical constraints exist as determined by the City Engineer and Planning Director. The sidewalk encompasses four zones, including the frontage, pedestrian throughway, furnishings/landscape, and the buffer (i.e., on-street parking or bike facilities). The recommended configuration for each of these zones is provided in Table 4.

FIGURE 6: SIDEWALK ZONES

- The **frontage** describes the section where a pedestrian interacts with the adjacent buildings or private property and includes entryways and outdoor seating. This zone is typically between 1 and 3 feet wide for Major Pedestrian streets and ½ foot for other streets. It may include a concrete or natural surface depending on the adjacent land use.
- The **pedestrian throughway** is the accessible zone in which pedestrians travel. It includes a minimum eight-foot-wide clear throughway along Major Pedestrian, a minimum six-foot-wide clear throughway for Neighborhood Pedestrian streets, and five-feet wide clear throughway along Local Pedestrian streets.
- The **furnishings/ landscape** zone is the sidewalk section located between the pedestrian throughway and the curb, and includes street furnishings or landscaping (e.g., benches, lighting, bicycle parking, tree wells, and/or plantings). If adjacent to on-street parking, it should also include a clearance distance between any curbside parking and the street furnishing area or landscape strip (i.e., so vehicles parking, or opening doors do not interfere with street furnishings and/or landscaping). Streets located along a transit route should incorporate furnishings to support transit ridership, such as transit shelters and benches, into the furnishings/landscape strip. It should include a minimum width of four feet.
- The **buffer** is the space between the pedestrian throughway and the vehicle travel way, and may consist of bike facilities, on-street parking, curb extensions, or other elements. This is also the location where users will access transit. It should include a minimum width between four

and 12 feet, depending on the pedestrian classification, and encompasses the width of on-street parking, bike facilities, and furnishings/landscape zone.

TABLE 4: PREFERRED SIDEWALK CONFIGURATION

FUNCTIONAL CLASSIFICATION	ARTERIAL OR MAJOR COLLECTOR		NEIGHBORHOOD COLLECTOR	LOCAL STREET[1]
	COMMERCIAL	RESIDENTIAL		
PREFERRED CONFIGURATION				
FRONTAGE	3 ft. (City) 1-4 ft. (ODOT)	1 ft. (City) 1 ft. (ODOT)	0.5 ft.	0.5 ft.
PEDESTRIAN THROUGHWAY	8 ft. (City) 8-10 ft. (ODOT)	8 ft. (City) 8 ft. (ODOT)	6 ft.	5 ft.
FURNISHINGS/ LANDSCAPE (INCLUDES CURB)[2]	4 ft. (City) 5.5-6.5 ft. (ODOT)	4 ft. (City) 6.5 ft. (ODOT)	4 ft.	4 ft.
DESIRED WALKWAY WIDTH	15 ft. (City) Variable (ODOT)[4]	13 ft. (City) Variable (ODOT)[4]	10.5 ft.	9.5 ft.
DESIRED BUFFER (PEDESTRIAN THROUGHWAY TO VEHICLE TRAVEL WAY)[3]	12 ft. (City) Variable (ODOT)[4]	12 ft. (City) Variable (ODOT)[4]	4 ft.	4 ft.

Notes:

1. Shared Streets do not require sidewalk
2. Furnishings/landscape width may be reduced to the "acceptable" standard if bike facilities or on-street parking is included within the buffer zone
3. Includes width of on-street parking, bike facilities, and furnishings/landscape zone, if provided
4. Desired walkway and buffer width for ODOT facilities depends on the urban context and are subject to review and approval by ODOT. Additional detail is provided in the BUD.

The construction or reconstruction of some streets may be constrained by challenging topography or environmentally sensitive, historic, or developed areas. These roadways may require modified designs to allow for reasonable construction costs. Guidance for modifications to the standard sidewalk designs is provided in Table 5. The preferred sidewalk element widths, documented in Table 4, should be implemented in most locations; minimum element widths, summarized in Table 5, require a documented constraint (e.g., topography, environmental, existing buildings) and approval by the City Engineer and Planning Director. Any modification of a standard sidewalk design requires justification of any constraints (e.g., topography, environmental, existing buildings) and approval of an acceptable deviation prior to construction. Sidewalk facilities constructed on state facilities are subject to review and approval by ODOT based on guidance from the BUD.

TABLE 5: ACCEPTABLE SIDEWALK CONFIGURATION				
FUNCTIONAL CLASSIFICATION	ARTERIAL OR MAJOR COLLECTOR		NEIGHBORHOOD COLLECTOR	LOCAL STREET[1]
	COMMERCIAL	RESIDENTIAL		
ACCEPTABLE CONFIGURATION				
FRONTAGE	0.5 ft. (City) 1-2 ft. (ODOT)	0.5 ft. (City) 1 ft. ODOT	0.5 ft.	0.5 ft.
PEDESTRIAN THROUGHWAY	8 ft. (City)[3] 5-8 ft. (ODOT)	6 ft. (City) 5 ft. (ODOT)	6 ft.	5 ft.
FURNISHINGS/ LANDSCAPE (INCLUDES CURB)	3 ft. (City) 0.5 ft. (ODOT)	3 ft. (City) 0.5 ft. (ODOT)	0.5 ft.	0.5 ft.
MINIMUM WALKWAY WIDTH	11.5 ft. (City) Variable (ODOT)[4]	9.5 ft. (City) Variable (ODOT)[4]	7 ft.	6 ft.
RECOMMENDED MINIMUM BUFFER (PEDESTRIAN THROUGHWAY TO VEHICLE TRAVEL WAY)[2]	3 ft. (City) Variable (ODOT)[4]	3 ft. (City) Variable (ODOT)[4]	0.5 ft.	0.5 ft.

Notes:

1. Shared Streets do not require sidewalk
2. Includes width of on-street parking, bike facilities, and furnishings/landscape zone
3. In highly constrained locations, the landscape buffer may be eliminated to meet the required 8 ft. pedestrian throughway with approval from the City Engineer and Planning Director
4. Desired walkway and buffer width for ODOT facilities depends on the urban context and are subject to review and approval by ODOT. Additional detail is provided in the BUD.

BICYCLE FACILITIES

Bike facilities help support the movement of people riding bikes. Streets should be safe and comfortable for bicyclists of all ages and abilities to encourage ridership. Building high quality bicycle infrastructure can improve transportation safety, minimize public health risks, reduce

congestion, and provide more equitable access to transportation. The preferred and acceptable bicycle facilities can be seen in Table 6. Vehicle function classification is used to determine the appropriate facilities along streets. The preferred treatments are recommended to include protected or separated facilities from the vehicle travel way along Arterial and Major Collector streets and bicycle lanes along Neighborhood Collector streets. A shared street environment will be provided on Newport's Local Streets.

The construction or reconstruction of some streets may be constrained by challenging topography or environmentally sensitive, historic, or developed areas. These roadways may require modified designs to allow for reasonable construction costs. Guidance for modifications to the preferred bike facility is provided in Table 6. Any modification of a standard bike facility requires justification of any constraints (e.g., topography, environmental, existing buildings) and approval of an acceptable deviation prior to construction.

TABLE 6: PREFERRED AND ACCEPTABLE BICYCLE FACILITIES

VEHICLE CLASSIFICATION	ARTERIAL OR MAJOR COLLECTOR	NEIGHBORHOOD COLLECTOR	LOCAL STREET
PREFERRED BIKE FACILITY (UNCONSTRAINED CONDITIONS)	Protected or separated facilities from the vehicle travel way (e.g., shared use path, separated bicycle lanes)	Bicycle lanes	Shared streets without shared lane markings
ACCEPTABLE BIKE FACILITY (CONSTRAINED CONDITIONS)[1]	Bicycle lanes	Shared streets with shared lane markings	Shared streets without shared lane markings

Notes:

1. Any modification of a standard bike facility requires justification of any constraints (e.g., topography, environmental, existing buildings) and approval of an acceptable deviation prior to construction.

BICYCLE FACILITY OPTIONS

Table 7 shows bicycle facility options and recommended configurations. In general, facilities that are protected or separated from the vehicle travel way include a 10-foot two-way or 6-foot one-way cycle track, 10-foot shared use path, or 8-foot buffered bike lanes. Non-buffered bike lanes should be a minimum of 6-feet wide, while some shared streets should include shared lane markings, with vehicle speed and volume management. The preferred bicycle facility types, documented in Table 6, should be implemented in most locations while implementation of an acceptable bicycle facility requires a documented constraint (e.g., topography, environmental, existing buildings) and approval by the City Engineer and Planning Director. Bicycle facilities constructed on state facilities are subject to review and approval by ODOT based on guidance from the BUD.

TABLE 7: BICYCLE FACILITY OPTIONS AND RECOMMENDED CONFIGURATIONS		
BICYCLE FACILITY TYPE	**RECOMMENDED CONFIGURATION**	**RECOMMENDED DESIGN PARAMETERS**
TWO-WAY CYCLE TRACK (PROTECTED/ SEPARATED FACILITY)[1]		Option: At sidewalk grade Minimum width: 12 ft. Minimum buffer: Up to 6 ft. from vehicle travel way; consider a buffer or other delineation to separate bicycle facility from sidewalk
		Option: At roadway grade Minimum width: 12 ft. Minimum buffer: Up to 6 ft. from vehicle travel way; 0 ft. from sidewalk
ONE-WAY CYCLE TRACK (PROTECTED/ SEPARATED FACILITY)[1]		Option: At sidewalk grade Minimum width: 8 ft. Minimum buffer: Up to 6 ft. from vehicle travel way; consider a buffer or other delineation to separate bicycle facility from sidewalk
		Option: At roadway grade Minimum width: 8 ft. Minimum buffer: Up to 6 ft. from vehicle travel way; 0 ft. from sidewalk
SHARED USE PATH (PROTECTED/ SEPARATED FACILITY)[1]		Minimum width: 12 ft. Minimum shoulder: 2 ft. on each side Minimum buffer: Up to 6 ft. from vehicle travel way
BUFFERED BIKE LANES (PROTECTED FACILITY)[1]		Minimum width: 8 ft. (5 ft. bike lane with 3 ft. buffer)

TABLE 7: BICYCLE FACILITY OPTIONS AND RECOMMENDED CONFIGURATIONS		
BICYCLE FACILITY TYPE	**RECOMMENDED CONFIGURATION**	**RECOMMENDED DESIGN PARAMETERS**
BIKE LANES[1]		Minimum width: 6 ft.
SHARED STREET		Optional treatments: Shared lane markings, vehicle speed and volume management

Notes:

1. Desired bicycle facility and buffer width for ODOT facilities depends on the urban context and are subject to review and approval by ODOT. Additional detail is provided in the BUD.

PREFERRED STREET CROSS-SECTIONS FOR CITY STREETS

To determine the typical cross-section for a street implemented in newly developing or redeveloping areas of the city, the motor vehicle functional classification is used to determine the design requirements for each mode. In unconstrained conditions, the preferred facility design requirements should be met for all modes (see Tables 2, 4, 6, and 7 earlier in this document). The recommended preferred cross-sections for Major Collectors, Neighborhood Collectors, and Local Streets in unconstrained conditions are provided below in Figures 7, 8, and 9/9B, respectively. The preferred Local Street cross-sections include options for parking on one side of the street only and no on-street parking. The provision of parking on one side of the street only should be determined based on the availability of off-street parking as determined by the City Engineer and Planning Director. All typical cross-sections provided below assume that the street is not located on a designated local freight route. Local freight routes may require travel lanes up to 12 ft. although 11 ft. travel lanes are also acceptable.

No typical cross-sections are provided for Arterials in Newport since these streets are subject to review and approval by ODOT. Design guidance from ODOT can be found in the BUD and is summarized in Tables 2, 4, 6, and 7 earlier in this document. ODOT's design guidance is context dependent which provides flexibility in specific element widths when determining typical cross-sections.

FIGURE 7: PREFERRED MAJOR COLLECTOR TYPICAL CROSS-SECTION (SOURCE: STREETMIX)

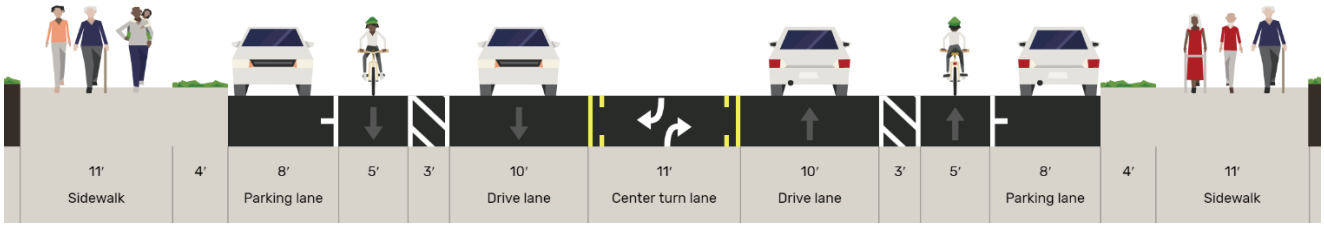


FIGURE 8: PREFERRED NEIGHBORHOOD COLLECTOR TYPICAL CROSS-SECTION (SOURCE: STREETMIX)

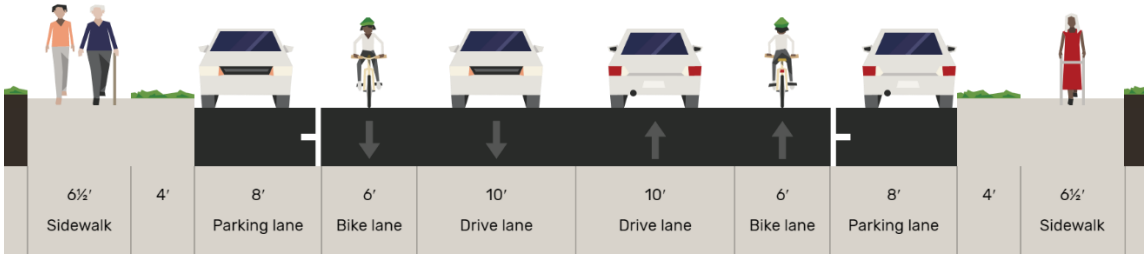


FIGURE 9A: PREFERRED LOCAL STREET TYPICAL CROSS-SECTION – PARKING ONE SIDE ONLY (SOURCE: STREETMIX)

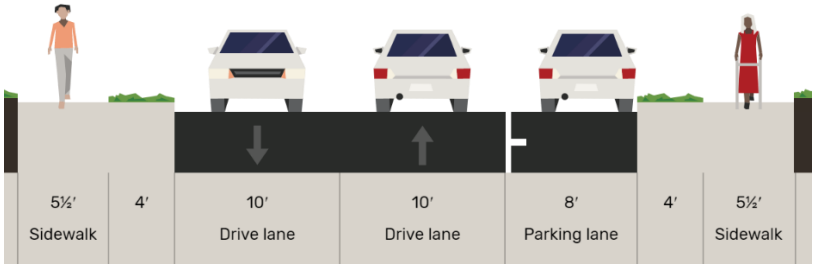
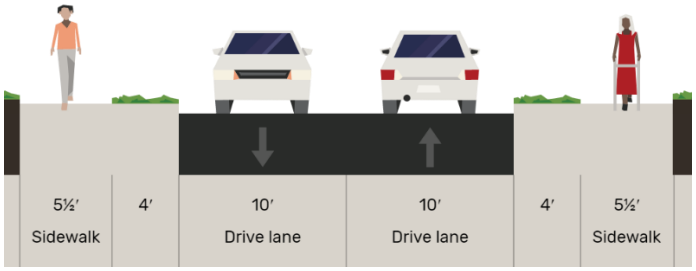


FIGURE 9B: PREFERRED LOCAL STREET TYPICAL CROSS-SECTION – NO PARKING (SOURCE: STREETMIX)



ACCEPTABLE STREET CROSS-SECTIONS FOR CITY STREETS

The preferred designs recommended in the previous section (Preferred Street Cross-Sections for City Streets) are intended to be implemented in newly developing or redeveloping areas of the city (e.g., areas where two or more adjacent parcels redevelop concurrently, subdivisions constructed on existing parcels), where constrained conditions do not limit the ability to construct the typical cross-section. The construction or reconstruction of some streets may be constrained by challenging topography or environmentally sensitive, historic, or developed areas, and various acceptable design parameters are provided for these locations. Constrained conditions may apply when the required width of the street cross-section (i.e., the sum of the recommended widths of travel lanes, on-street parking, pedestrian, and bicycle facilities) exceeds the available right-of-way.

If the required cross-section is wider than the available right-of-way, coordination with the City of Newport is required to determine whether right-of-way acquisition is necessary or design elements can be narrowed or removed. For locations with constrained right-of-way, guidance for determining an acceptable street cross-section is summarized in Table 7 and typical constrained cross-sections are summarized below in Figures 10, 11, and 12A/12B/12C. The steps outlined in Table 8 provide guidance on the order in which cross-section elements should be reduced to acceptable minimum standards based on the designated pedestrian or bicycle corridors. Any modifications to the preferred street cross-section will require findings that the proposal meets defined constraints (e.g., topography, environmental, existing buildings) and approval of an acceptable deviation from the City Engineer and Planning Director prior to construction. Constrained conditions on ODOT facilities will require review and approval by ODOT

TABLE 8: PROCESS FOR DETERMINING STREET CROSS-SECTIONS IN CONSTRAINED CONDITIONS				
ANY NON-ARTERIAL[1] STREET FUNCTIONAL CLASSIFICATION WITH:	**STEPS TO REDUCE LOWER PRIORITY STREET COMPONENTS[5]**			
	STEP 1	**STEP 2**	**STEP 3**	**STEP 4**
EQUAL PEDESTRIAN AND BICYCLE CORRIDORS[2]	Eliminate on-street parking on one or both sides	Reduce sidewalk frontage zone to acceptable width	Choose acceptable bike facility	Reduce the furnishings/ landscape zone or pedestrian throughway to acceptable width
HIGHER PEDESTRIAN VS. BICYCLE CORRIDORS [3]		Implement acceptable bike facility	Reduce sidewalk frontage zone to acceptable width	
HIGHER BICYCLE VS. PEDESTRIAN CORRIDORS[4]		Reduce sidewalk frontage zone to acceptable width	Reduce the furnishings/ landscape zone or pedestrian throughway to acceptable width	Implement acceptable bike facility

Notes:

1. The street cross-section for ODOT facilities depends on the urban context and are subject to review and approval by ODOT. Additional detail is provided in the BUD.
2. Includes Major Pedestrian vs. Major Bicycle corridor, Neighborhood Pedestrian vs. Neighborhood Bicycle corridor, or Local Pedestrian vs. Local Bicycle corridor.
3. Includes Major Pedestrian vs. Neighborhood or Local Bicycle corridor, or Neighborhood Pedestrian vs. Local Bicycle corridor.
4. Includes Major Bicycle vs. Neighborhood or Local Pedestrian corridor, or Neighborhood Bicycle vs. Local Pedestrian corridor
5. Local Streets that carry less than 500 vehicles per day are candidates for shared street treatments in lieu of this process

FIGURE 10: ACCEPTABLE MAJOR COLLECTOR TYPICAL CROSS-SECTION (SOURCE: STREETMIX)

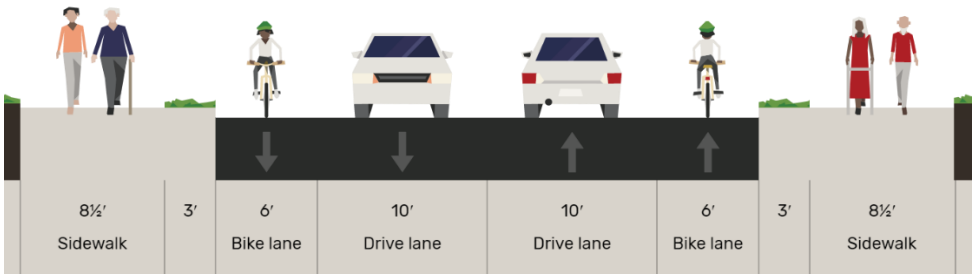


FIGURE 11: ACCEPTABLE NEIGHBORHOOD COLLECTOR TYPICAL CROSS-SECTION (SOURCE: STREETMIX)

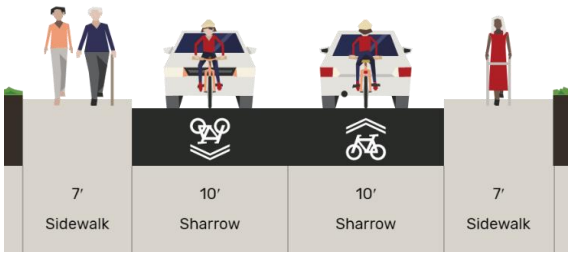


FIGURE 12A: ACCEPTABLE LOCAL STREET TYPICAL CROSS-SECTION – PARKING ONE SIDE ONLY (SOURCE: STREETMIX)

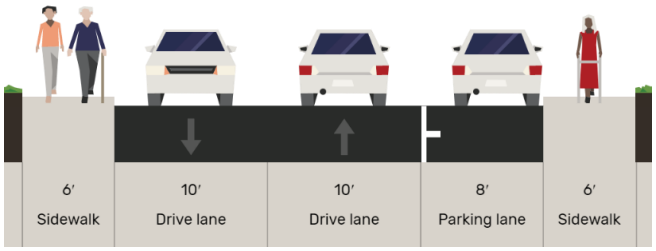


FIGURE 12B: ACCEPTABLE LOCAL STREET TYPICAL CROSS-SECTION – NO PARKING (SOURCE: STREETMIX)

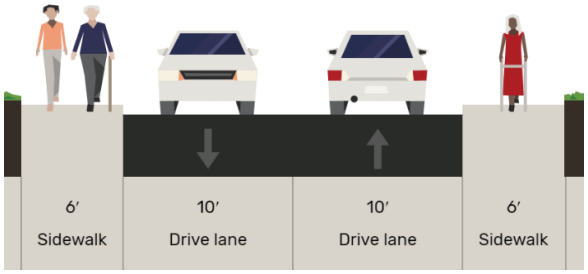
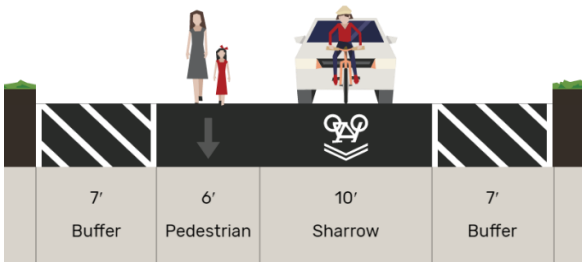


FIGURE 12C: ACCEPTABLE LOCAL STREET TYPICAL CROSS-SECTION – SHARED STREET (SOURCE: STREETMIX)



SEPARATED PEDESTRIAN AND BICYCLE FACILITIES

Some pedestrian and bicycle facilities may be separated from the right-of-way of a street. These facilities include pedestrian trails, pedestrian and bicycle accessways, and shared use paths. These facilities serve a variety of recreation and transportation needs for pedestrians and bicyclists.

PEDESTRIAN TRAIL

Pedestrian trails are typically located in parks or natural areas and provide opportunities for both pedestrian circulation and recreation. They are recommended to include a minimum width of 5 feet (see Table 9) and may include a hard or soft surface.

ACCESSWAY

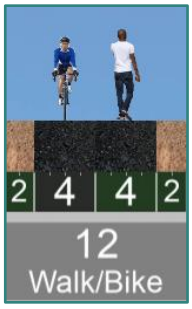
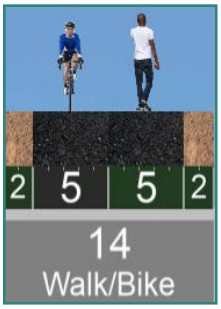
Accessways provide short path segments between disconnected streets or localized recreational walking and biking opportunities. Accessways must be on public easements or rights-of-way and have minimum paved surface of 8 feet, with a 2-foot shoulder on each side, and 12 feet of right-of-way. Accessways should be provided in any locations where the length between existing pedestrian and bicycle connections exceeds the maximum allowable length identified in Table 10.

SHARED USE PATH

Shared use paths provide off-roadway facilities for walking and biking travel. Depending on their location, they can serve both recreational and citywide circulation needs. Shared use path designs vary in surface types and widths. Hard surfaces are generally better for bicycle travel. Widths need to provide ample space for both walking and biking and should be able to accommodate maintenance vehicles.

A shared use path is recommended to be at least 10 feet wide, with a 2-foot shoulder on each side, and 14 feet of right-of-way (see Table 9). In areas with significant walking or biking demand (e.g., Nye Beach Area, Oregon Coast Bike Route) or on ODOT facilities, that path is recommended to be 12 feet wide, with a 2-foot shoulder on each side and a total right-of-way of 16 feet (see Table 9). A shared use path may be narrowed to 8 feet over short distances to address environmental or right-of-way constraints.

TABLE 9: SEPARATED PEDESTRIAN AND BICYCLE FACILITIES RECOMMENDED DESIGNS

FACILITY OPTIONS	PEDESTRIAN TRAIL DESIGN	ACCESSWAY DESIGN	TYPICAL SHARED USE PATH DESIGN	HIGH-DEMAND SHARED USE PATH DESIGN[1]
RECOMMENDED CONFIGURATION				

Notes:

1. **HIGH-DEMAND SHARED USE PATH IS REQUIRED PARALLEL TO ODOT FACILITIES AND IN OTHER AREAS WITH SIGNIFICANT WALKING OR BIKING DEMAND (E.G., NYE BEACH AREA, OREGON COAST BIKE ROUTE)**

STREET CROSSINGS

Streets with high traffic volumes and/or speeds in areas with trail crossings, or nearby transit stops, residential uses, schools, parks, shopping and employment destinations generally require enhanced street crossings with treatments, such as marked crosswalks, high visibility crossings, and curb extensions to improve the safety and convenience for pedestrians. Crossings should be consistent with the recommended transportation facility spacing standards shown in Table 10. Street crossings along US 101 or US 20 should be provided between every 250 to 1,500 feet, depending on the urban context, as summarized in Table 3-9 of the BUD. Exceptions include where the connection is impractical due to topography, inadequate sight distance, high vehicle travel speeds, lack of supporting land use or other factors that may prevent safe crossing. All crossings on state facilities require review and approval by ODOT.

Enhanced pedestrian crossing treatments should be considered on high speed or high volume roads (*e.g.* US 101, US 20) at transit stops, trail crossings, and at Major Pedestrian street highway crossings that connect major destinations (*e.g.* parks, grocery stores, schools) to residential areas. The recommended enhanced pedestrian crossing treatment should be determined using the National Cooperative Highway Research Program (NCHRP) Report 562, Improving Pedestrian Safety at Unsignalized Intersections. These guidelines for pedestrian crossing treatments are based on vehicle speed on the major street, pedestrian crossing distance, peak hour pedestrian volume, peak hour vehicle volume, and local parameters such as motorist compliance, pedestrian walking speed, and pedestrian start-up and clearance time. NCHRP Report 562 includes worksheets for inputting the variables above and identifying the appropriate treatment type. It is recommended

that these guidelines be reviewed with all traffic studies for any potential street crossing associated with new development in the city.

NEIGHBORHOOD TRAFFIC MANAGEMENT PROGRAM

It is recommended that neighborhood traffic impacts be reviewed with all traffic studies associated with new development in the city. Any development that would be expected to increase through-trips on existing residential-adjacent Neighborhood Collector or Local Streets by 40 or more vehicles during the evening peak hour or 400 vehicles per day will require assessment and mitigation of residential street impacts. Through-trips are defined as those to and from a proposed development that have neither an origin nor a destination in the neighborhood. The study shall include all of the following:

- Existing number of through-trips per day on adjacent residential Local Streets or Neighborhood Collector streets.
- Projected number of through-trips per day on adjacent residential Local Streets or Neighborhood Collector streets that will be added by the proposed development.

A Neighborhood Collector or Local Street is considered impacted if volumes are increased above 1,500 average daily trips on Neighborhood Collector streets or 1,200 average daily trips on Local Streets. Volume and speed management tools must be provided to mitigate for the impacts of projected through-trips consistent with Table 3.

In addition, a formal neighborhood traffic management program is recommended to respond to neighborhood concerns outside of the development review process. The process should be initiated by a citizen filed request that includes petition signatures of impacted neighbors or business owners and include a preliminary evaluation on vehicle travel speeds or volumes along the petitioned street. If a problem were found to exist, solutions would be identified and the process continued with neighborhood meetings, feedback from service and maintenance providers, cost evaluation, and traffic calming device implementation. Six to twelve months after implementation, the device should be reevaluated for effectiveness.

PERFORMANCE STANDARDS

Performance standards are applied to the operation and design of transportation facilities to ensure that the network functions as intended. In Newport, this includes performance standards for vehicles and overall system connectivity.

TRANSPORTATION FACILITY AND ACCESS SPACING STANDARDS

Transportation facility and access spacing standards include a broad set of techniques that balance the need to provide for efficient, safe, and timely multimodal travel with the ability to allow access to individual destinations. These standards help create a system of direct, continuous, and connected transportation facilities to minimize out-of-direction travel and decrease travel times for all users, while enhancing safety for people walking, biking and driving by reducing conflict points.

Currently, the city restricts driveways onto Arterial streets to spacing of 500 feet where practical,[8] and limits blocks to 1,000 feet in length between corners.[9] Table 10 identifies recommended maximum and minimum public roadway intersection, minimum private access, and maximum pedestrian and bicycle connection spacing standards for streets in Newport. New streets or redeveloping properties must comply with these standards to the extent practical, as determined by the city engineer. As the opportunity arises through redevelopment, streets or driveways not complying with these standards could improve with strategies such as shared access points, access restrictions (through the use of a median or channelization islands), or closure of unnecessary access points, as feasible.

All Arterial streets in Newport are under ODOT jurisdiction. See the Oregon Highway Plan and Blueprint for Urban Design for spacing standards along US 101 and US 20.

TABLE 10: TRANSPORTATION FACILITY AND ACCESS SPACING STANDARDS[1]

	ARTERIALS[4]	MAJOR COLLECTORS	NEIGHBORHOOD COLLECTORS	LOCAL STREETS
MAXIMUM BLOCK LENGTH (PUBLIC STREET TO PUBLIC STREET)		1,000 feet	1,000 feet	1,000 feet
MINIMUM BLOCK LENGTH (PUBLIC STREET TO PUBLIC STREET)		200 feet	150 feet	125 feet
MAXIMUM LENGTH BETWEEN PEDESTRIAN/BICYCLE CONNECTIONS (PUBLIC STREET TO PUBLIC STREET, PUBLIC STREET TO CONNECTION **OR** CONNECTION **TO** CONNECTION**)**[2]		300 feet	300 feet	300 feet
MINIMUM DRIVEWAY SPACING (DRIVEWAY TO DRIVEWAY)	350-1,320 feet	100 feet	75 feet	N/A
MINIMUM INTERSECTION SET BACK (FULL ACCESS DRIVEWAYS ONLY)[3]	350-1,320 feet	150 feet	75 feet	25 feet

[8] City of Newport Municipal Code 14.14.120

[9] City of Newport Municipal Code 13.05.020

TABLE 10: TRANSPORTATION FACILITY AND ACCESS SPACING STANDARDS[1]				
	ARTERIALS[4]	**MAJOR COLLECTORS**	**NEIGHBORHOOD COLLECTORS**	**LOCAL STREETS**
MINIMUM INTERSECTION SET BACK (RIGHT-IN/RIGHT-OUT DRIVEWAYS ONLY)[3]	350-1,320 feet	75 feet	50 feet	25 feet

Notes:

1. All distances measured from the edge of adjacent approaches.
2. Mid-block pedestrian and bicycle connections must be provided when the block length exceeds 300 feet to ensure convenient access for all users. Mid-block pedestrian and bicycle connections must be provided on a public easement or right-of-way every 300 feet, unless the connection is impractical due to topography, inadequate sight distance, high vehicle travel speeds, lack of supporting land use or other factors that may prevent safe crossing. When the block length is less than 300 feet, mid-block pedestrian and bicycle connections are not required.
3. A property must construct access to a lower classified roadway, where possible
4. All Arterial streets in Newport are under ODOT jurisdiction. ODOT facilities are subject to access spacing guidelines in the Oregon Highway Plan (see Table 14 of Appendix C) and the Blueprint for Urban Design which vary based on posted speed and urban context

VEHICLE MOBILITY STANDARDS

Mobility standards for streets and intersections in Newport provide a metric for assessing the impacts of new development on the existing transportation system and for identifying where capacity improvements may be needed. They are the basis for requiring improvements needed to sustain the transportation system as growth and development occur. Two common methods currently used in Oregon to gauge traffic operations for motor vehicles are volume to capacity (v/c) ratios and level of service (LOS), described below. Vehicle miles travelled (VMT) is a new mobility standard that is currently being considered by Oregon, but there is currently no guidance or legislation for its implementation. VMT provides a more comprehensive look at transportation impacts by encouraging compact development that supports active transportation and transit over traditional vehicle mobility standards which can encourage developments on the periphery of urban areas. As part of the next TSP update, Newport should consider implementing a VMT mobility standard if additional guidance for implementation is provided by ODOT at that time.

- Volume-to-capacity (v/c) ratio: A v/c ratio is a decimal representation (between 0.00 and 1.00) of the proportion of capacity that is being used at a turn movement, approach leg, or intersection. The ratio is the peak hour traffic volume divided by the hourly capacity of a given intersection or movement. A lower ratio indicates smooth operations and minimal delays. A ratio approaching 1.00 indicates increased congestion and reduced performance.
- Level of service (LOS): LOS is a "report card" rating (A through F) based on the average delay experienced by vehicles at the intersection. LOS A, B, and C indicate conditions where traffic moves without significant delays over periods of peak hour travel demand. LOS D and E are progressively worse operating conditions. LOS F represents conditions where average vehicle delay is excessive, and demand exceeds capacity, typically resulting in long queues and delays.

The City of Newport does not currently have adopted mobility standards for motor vehicles. It is recommended that the City of Newport consider adopting mobility standards to include both a v/c ratio and LOS standard. Having both a LOS (delay-based) and v/c (congestion-based) standard can be helpful in situations where one metric may not be enough, such as an all-way stop where one approach is over capacity but the overall intersection delay meets standards. The City of Newport should also introduce mobility standards that depend on the intersection control which can better capture acceptable levels of performance across different intersection control types. Table 11, below, summarizes recommended mobility targets.

TABLE 11: RECOMMENDED VEHICLE MOBILITY STANDARDS FOR LOCAL STREETS

INTERSECTION TYPE	PROPOSED MOBILITY STANDARD	REPORTING MEASURE
SIGNALIZED	LOS D and v/c ≤0.90	Intersection
ALL-WAY STOP OR ROUNDABOUTS	LOS D and v/c ≤0.90	Worst Approach
TWO-WAY STOP [1]	LOS E and v/c ≤0.95	Worst Major Approach/Worst Minor Approach

NOTES:

1. **APPLIES TO APPROACHES THAT SERVE MORE THAN 20 VEHICLES; THERE IS NO STANDARD FOR APPROACHES SERVING LOWER VOLUMES.**

For State facilities, mobility targets are v/c ratio based and listed in the OHP. Alternative mobility targets have previously been adopted on US 101 in South Beach. Table 12 lists the existing mobility targets for state facilities in Newport. Note that the need for alternative mobility targets will be evaluated and discussed in Technical Memorandum #11: Alternative Mobility Targets.

TABLE 12: EXISTING MOBILITY TARGETS FOR US 20 AND US 101

ROADWAY	EXTENTS	ADOPTED V/C MOBILITY TARGET	
		SIGNALIZED	UNSIGNALIZED[1]
US 101	North Urban Growth Boundary to NE 20th Street	≤ 0.80	≤ 0.80/0.90
US 101	NE 20th Street to SE 40th Street[2]	≤ 0.90 except US 101/SE 32nd St: ≤0.99	≤ 0.90/0.95

TABLE 12: EXISTING MOBILITY TARGETS FOR US 20 AND US 101			
ROADWAY	EXTENTS	ADOPTED V/C MOBILITY TARGET	
		SIGNALIZED	UNSIGNALIZED[1]
		US 101/SE 35th St: ≤0.99	
US 101	SE 40th Street to south Urban Growth Boundary[2]	≤ 0.80 except US 101/SE 40th St: ≤0.99 US 101/SE 50th St: ≤0.85 US 101/South Beach State Park Entrance: ≤0.85	≤ 0.80/0.90
US 20	Urban Growth Boundary to Moore Drive	≤ 0.80	≤ 0.80/0.90
US 20	Moore Drive to US 101	≤ 0.85	≤ 0.85/0.95

Notes:

1. For unsignalized intersections, the mobility target is listed for major approach/minor approach.
2. Alternative mobility targets have been adopted in South Beach.

[A] For unsignalized intersections, the mobility target is listed for major approach/minor approach.

[B] Alternative mobility targets have been adopted in South Beach.

LIFELINE ROUTES

Newport's location on the Oregon Coast makes it vulnerable to both earthquakes and tsunamis. Statewide planning efforts have previously identified seismic lifeline routes and tsunami evacuation routes within Newport. No additional emergency routes are recommended in the 2021 TSP.

The Oregon Seismic Lifeline Routes are a set of streets designated to facilitate emergency response and rapid economic recovery following a disaster. These routes include three tiers of streets, and higher tier routes are prioritized for seismic retrofits on the existing state-owned facilities.[10] Within Newport, US 101 (north of US 20) is a designated Tier 1 lifeline route. Both US 101 (south of US

[10] CH2MHill. *Seismic Lifelines Evaluation, Vulnerability Synthesis, and Identification*, 2012. https://www.oregon.gov/ODOT/Planning/Documents/Seismic-Lifelines-Evaluation-Vulnerability-Synthese-Identification.pdf

20) and US 20 are designated Tier 3 lifeline routes.[11] These routes are identified below in Figure 13.

While much of Newport is outside of the tsunami hazard area, the beach front, creek drainages, and the south beach area will need to evacuate in the event of a tsunami. The tsunami hazard areas and identified evacuation assembly areas are also identified below in Figure 13. Specific evacuation routes for each low-lying area are also available online.[12]

Ensuring the lifeline and evacuation routes serve their intended purpose both during and following a disaster will be critical to ensure public safety and facilitate recovery. Transportation projects which promote seismic resilience on lifeline routes, pedestrian or bicycle facilities on evacuation routes, or other wayfinding projects should be prioritized in the 2021 TSP.

[11] Figure 6-1. *Seismic Lifelines Evaluation, Vulnerability Synthesis, and Identification*, 2012. https://www.oregon.gov/ODOT/Planning/Documents/Seismic-Lifelines-Evaluation-Vulnerability-Synthese-Identification.pdf

[12] *Detailed, Neighborhood-Specific Tsunami Evacuation Routes.* https://www.oregongeology.org/tsuclearinghouse/pubs-evacbro_neighborhoods.htm

FIGURE 13A: LIFELINE ROUTES – AGATE BEACH

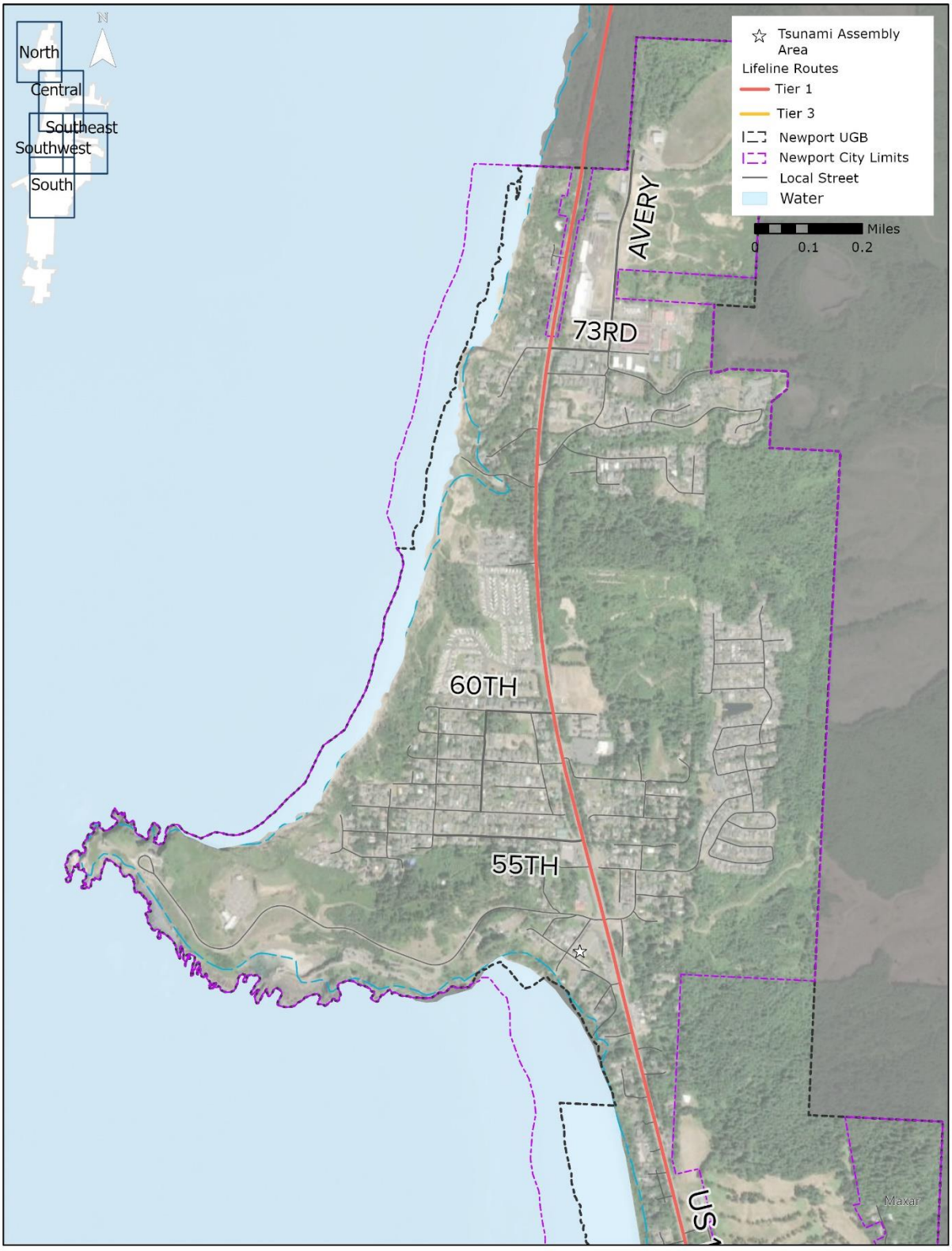


FIGURE 13B: LIFELINE ROUTES – NYE BEACH

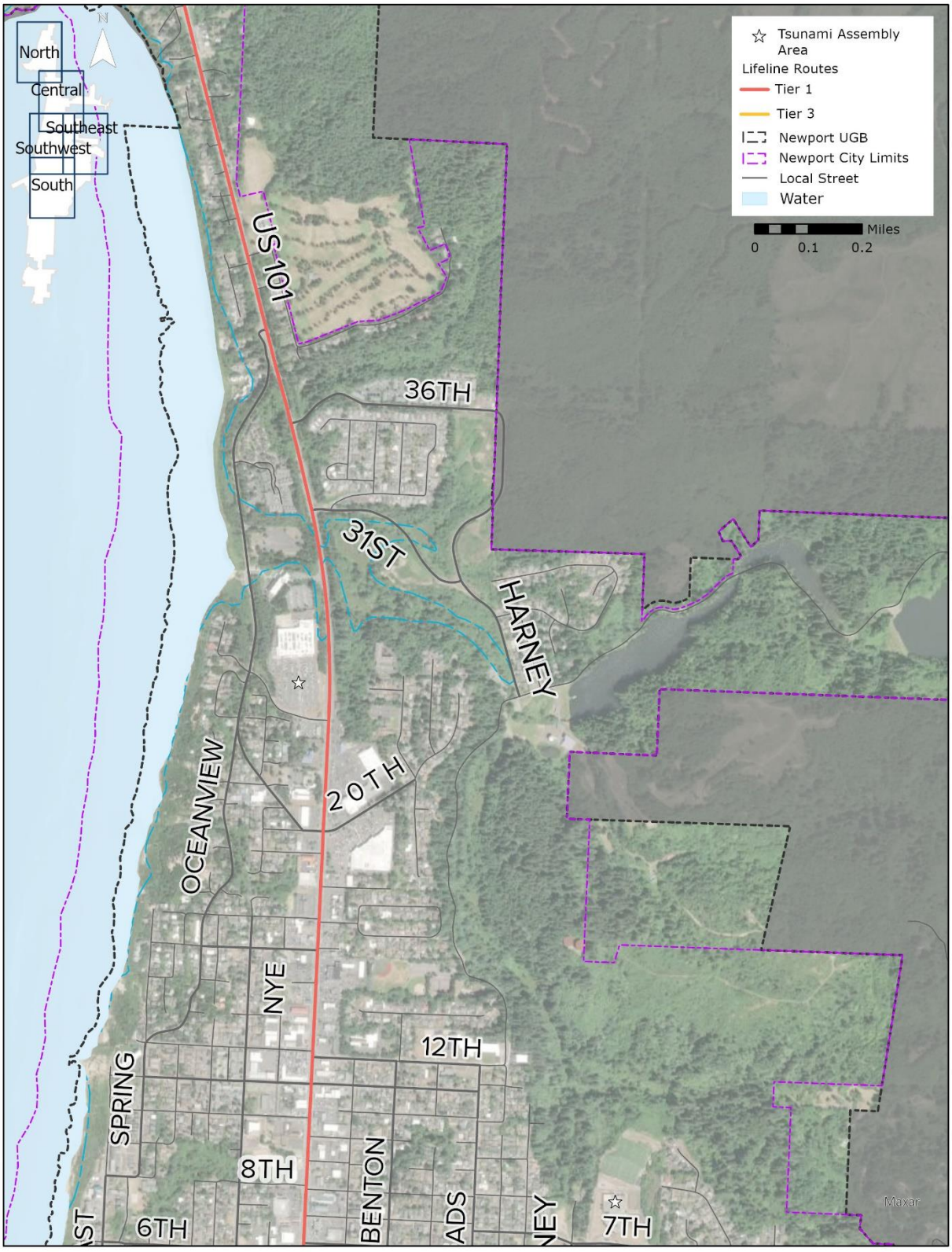


FIGURE 13C: LIFELINE ROUTES – DOWNTOWN

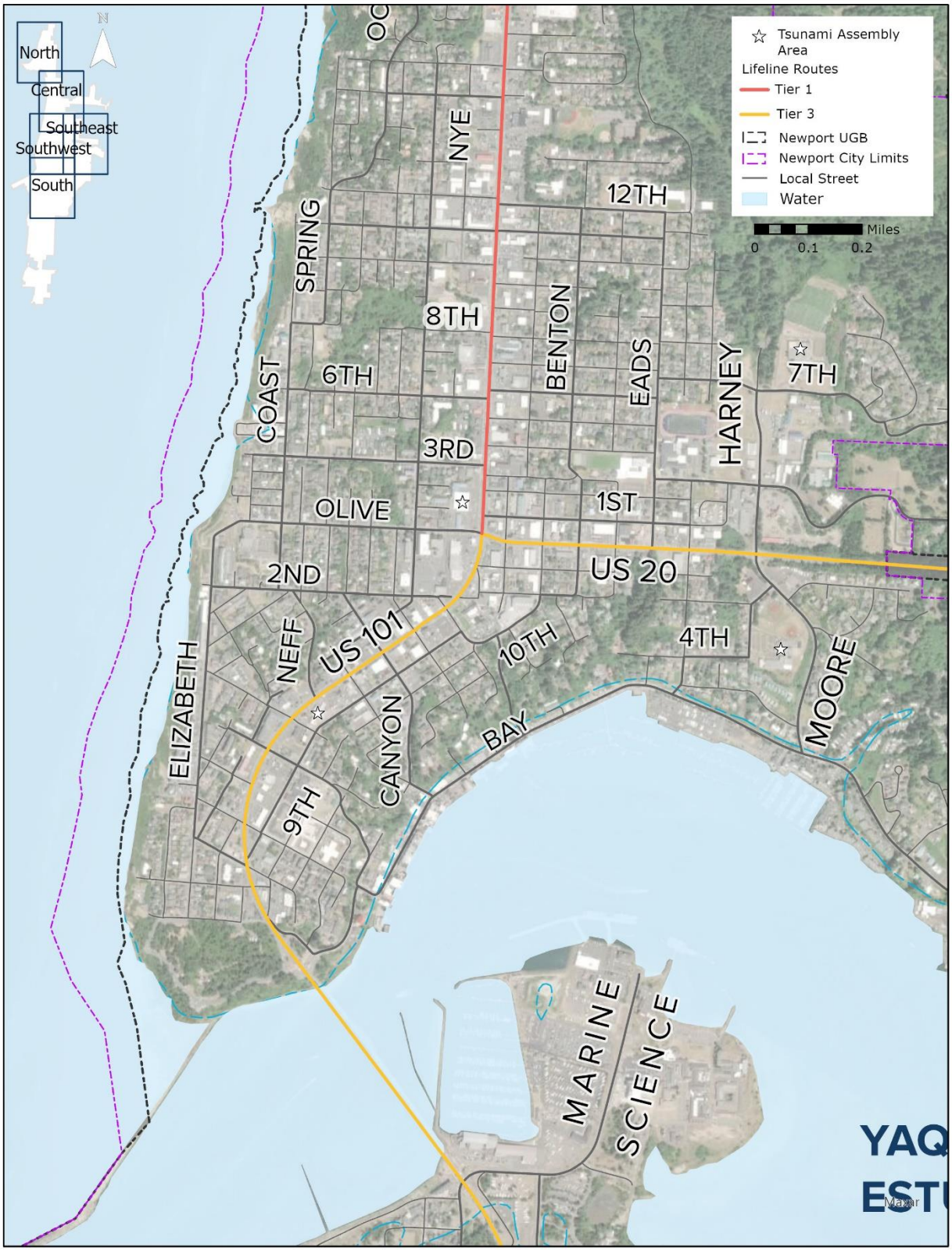


FIGURE 13D: LIFELINE ROUTES – EAST NEWPORT

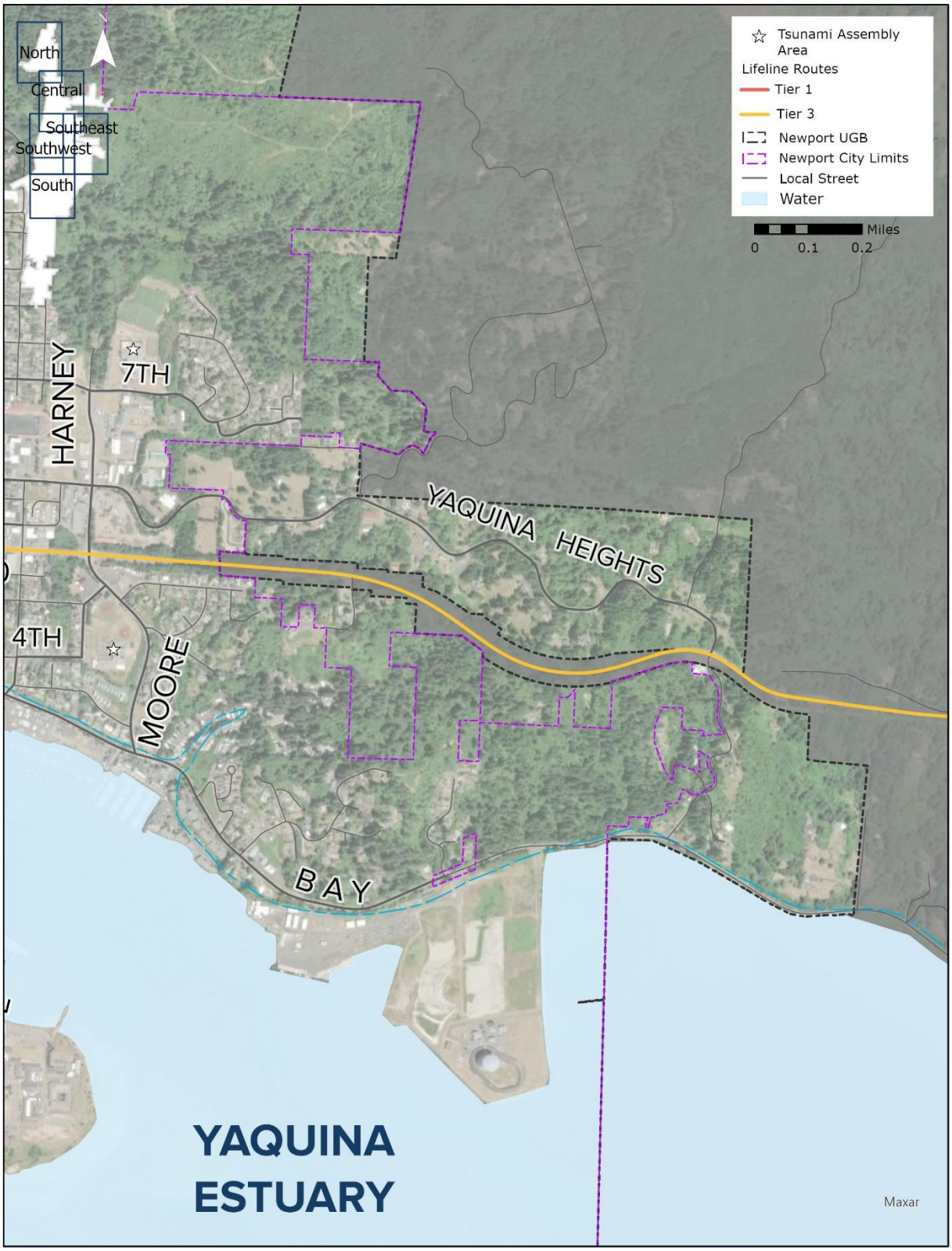
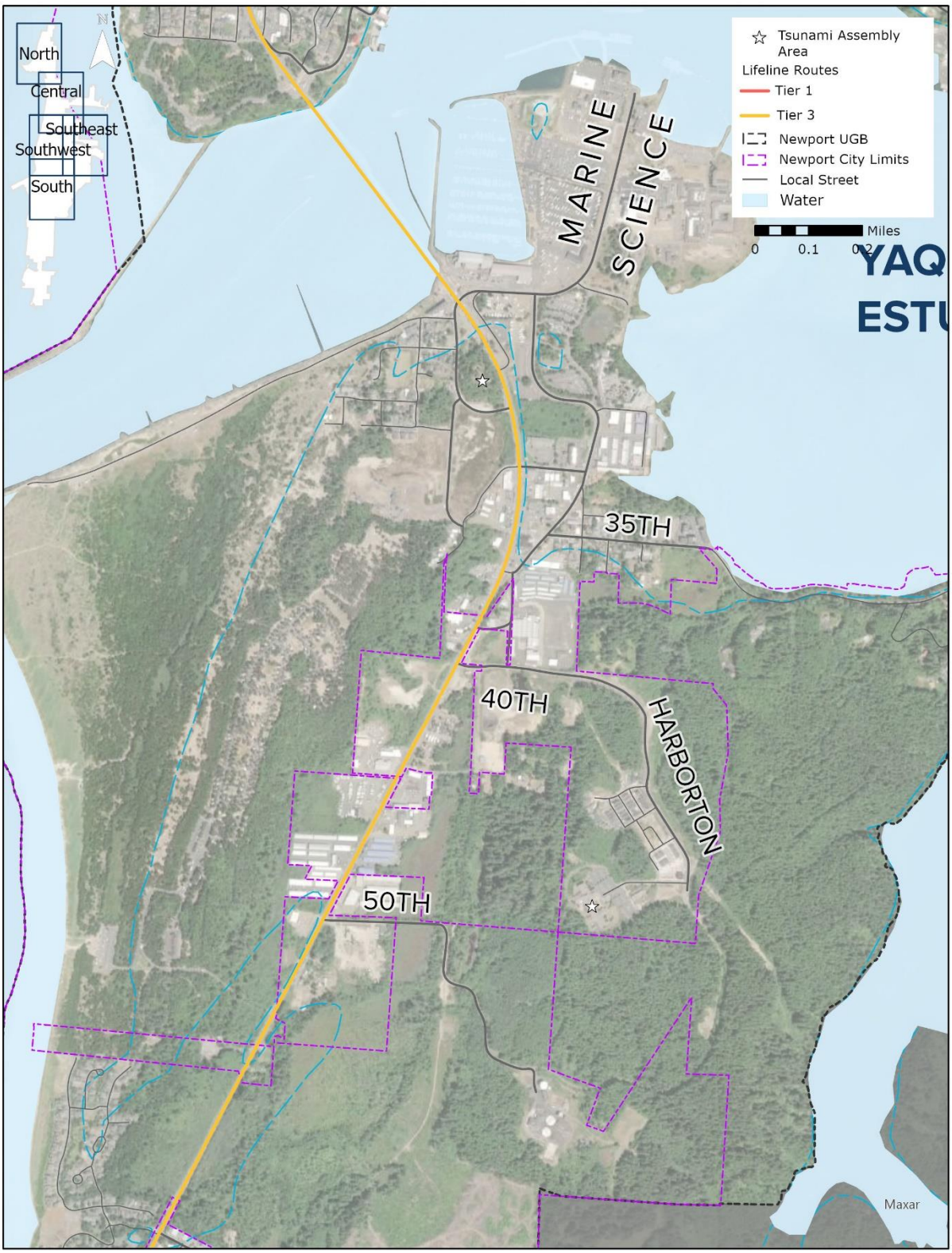


FIGURE 13E: LIFELINE ROUTES – SOUTH BEACH



STREET STORMWATER DRAINAGE MANAGEMENT

The City of Newport Municipal Code states that drainage facilities should be designed to consider the capacity and grade necessary to maintain unrestricted flow from areas draining from a new land division and to allow extension of the system to serve such areas.

Newport has neighborhoods with significant stormwater constraints, including Agate Beach, where landslide hazards and coastal erosion are common on the western edge of the neighborhood. As transportation improvements are constructed in Agate Beach, stormwater management will be critical to ensure that runoff from roadway improvements do not contribute to these existing hazards which could result in significant property damage. Potential management strategies could include requiring permeable pavement or bioswales which would hold stormwater prior to infiltration. These solutions could mitigate runoff which could impact the coastal bluffs in this neighborhood.

In addition to the coastal hazards, previous grading practices within the Agate Beach neighborhood could lead to excessive settlement for roadways and pathways due to the nature of the underlying soil. These settlement considerations could require flexible pavement or unimproved roadway/natural surface pathway standards which are more resilient to ground settlement.

Prior to construction of any transportation improvements within the Agate Beach neighborhood, a geotechnical and stormwater investigation will need to be completed to further detail any potential challenges or stormwater concerns for this area. A summary of the specific hazards facing Agate Beach is provided in the appendix.

[PLACE HOLDER FOR ADDITIONAL TEXT FROM THE CIVIL ENGINEERING SUB CONSULTANT]

ITS COORDINATION GUIDELINES

WHY ITS?

Intelligent Transportation Systems (ITS) involve the application of advanced technologies and proven management techniques to relieve congestion, enhance safety, provide services to travelers, and assist transportation system operators in implementing suitable traffic management strategies. ITS focuses on increasing the efficiency of the existing transportation infrastructure, which enhances the overall system performance and reduces the need to add capacity (e.g., travel lanes). Efficiency is achieved by providing services and information to travelers so that they can make better travel decisions and to transportation system operators so they can better manage the system. Quantifiable benefits from ITS include:

- Reduced vehicle delays
- Reduced crashes
- Improved air quality
- Reduced fuel consumption
- Improved travel times

This technology is supported by communications systems, which include wireless radio Bluetooth and Wi-Fi, microwave systems, and fiber optics. ITS and the supporting communication systems allow agencies to monitor and manage the transportation system remotely.

WHEN TO CONSIDER INTELLIGENT TRANSPORTATION SYSTEMS?

ITS solutions should be considered for a variety of reasons, but often depend on the context of a specific problem. The following list of situations are times to consider implementing ITS:

- To maximize the use of existing infrastructure and improve the efficient movement of vehicles before building more lanes
- To mitigate the impact of work zones, seasonal congestion, high crash locations, or adverse weather conditions
- To increase traveler information for road users to make informed decisions about their travel options including mode choice, travel time, and/or travel routing
- To increase the ability for agencies to monitor traffic conditions and make data-driven decisions remotely

General ITS strategies are summarized below in Table 13 while individual ITS components are summarized in Table 14.

TABLE 13: GENERAL ITS STRATEGIES

CATEGORY	TOOL	POTENTIAL APPLICATIONS TO CONSIDER FOR NEWPORT
REGIONAL TRANSPORTATION MANAGEMENT	• Traffic Surveillance • Regional Traffic Management • Transportation Demand Management • Roadside Lighting • Railroad Grade Crossings	• Monitor traffic on US 101 and US 20 to respond to incidents
ARTERIAL MANAGEMENT	• Enhanced Traffic Signal Operations • Pedestrian and Bicycle Operations and Safety	• Implement enhanced signal operations to facilitate travel on US 101 during peak summer travel
INCIDENT AND EMERGENCY MANAGEMENT	• Regional Incident and Emergency Management • Emergency Vehicle Routing and Signal Preemption • Regional Alert System	• Implement signal preemption to facilitate travel to and from the hospital
TRAVELER INFORMATION	• Roadside Traveler Information Dissemination • Regional Traveler Information • Trip Planning and Routing • Parking Availability Information and Guidance	• Monitor and notify public of parking availability
REGIONAL OPERATIONS COORDINATION AND PLANNING	• Multi-Agency Operations Coordination and Planning	• Coordinate with ODOT for Yaquina Bay Bridge planning • Coordinate with Lincoln County Transit
PUBLIC TRANSPORTATION MANAGEMENT	• Advanced Transit Operations Management • Regional Transit Fare Integration • Transit Surveillance and Security • Multi-Modal Travel Coordination • Real-time Transit Information • Transit Signal Priority	• Coordinate with coastal transit agencies to support an integrated transit fare for travel on US 101
ROAD WEATHER OPERATIONS	• Road Weather Information Systems • Weather-Adaptive Traffic Management • Winter Roadway Maintenance	• Distribute information on US 20 conditions for regional travel

TABLE 13: GENERAL ITS STRATEGIES

CATEGORY	TOOL	POTENTIAL APPLICATIONS TO CONSIDER FOR NEWPORT
MAINTENANCE AND CONSTRUCTION	• Maintenance and Construction Management • Work Zone Management	• Provide real time work zone management for major projects on US 101 and US 20
REGIONAL DATA ARCHIVING	• Regional Transportation Data Archive	○ Establish a local traffic count data archive
REGIONAL COMMUNICATIONS INFRASTRUCTURE MANAGEMENT	• Communications Infrastructure Coordination	• Install communications infrastructure at signals on US 101 and US 20

TABLE 14: EXAMPLES OF ITS ELEMENTS

ITS ELEMENT	DESCRIPTION
TRAFFIC CAMERAS (CCTV)	Closed-circuit television that help agency operators detect and quickly respond to congestion, incidents, and other problems on the road. The camera images can be broadcasted to the public, to the media, and to other emergency responders and public agencies.
ROAD/WEATHER INFORMATION SYSTEMS (RWIS)	RWIS stations are installed along the roadway with instruments and equipment, which provide weather and road surface condition observations. This information is used to help with decisions on maintenance strategies and to provide information to drivers. These stations may measure: • Air and road surface temperature • Barometric pressure • Humidity • Wind speed and direction • Precipitation • Visibility • Road surface condition (dry, wet, freezing, etc)

ELECTRIC VEHICLES

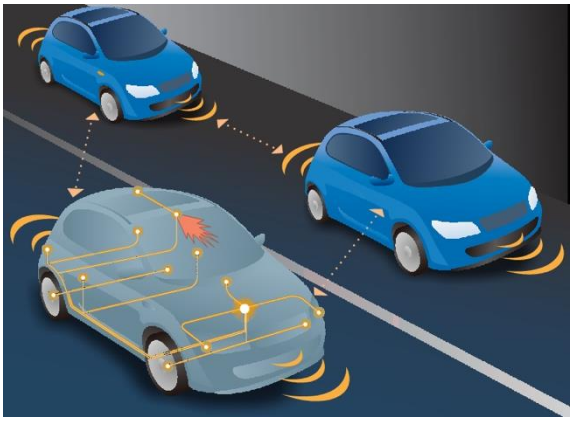
Electric Vehicles (EVs) have been on the road for decades, but are becoming more economically feasible as the production costs of batteries decline, the potential range increases, and vehicle fuel prices increase. EVs rely on an electric engine to travel, eliminating tailpipe emissions, and can be

more sustainable depending on the source used to generate electricity. Although increases in vehicle range have increased, EVs still require charging infrastructure for longer-distance trips or for local residents who lack charging infrastructure at their homes.

To accommodate a future where electric vehicles are the majority of the vehicle fleet, additional charging infrastructure will be required. Cities, electric utilities, regions, and states will need to work together to create enough reliable electricity supply to fulfill the increased electrical demand. Oregon HB 2180 allows city planning directors to require EV charging facilities as part of commercial, multifamily residential, or mixed-use buildings with five or more dwelling units[13]. Currently, Newport has also budgeted funds to install EV charging at the Oregon Coast Aquarium, City Hall, and the Earnest Bloch Memorial Wayside.

CONNECTED, AUTONOMOUS, AND SHARED VEHICLES

Emerging transportation technologies will shape streets, communities, and daily lives for generations. Vehicles are becoming more connected, automated, and shared. While the timing of when these advances will occur is uncertain, they will have significant impacts on how a community plans, designs, builds, and uses the transportation system. Below are some important emerging transportation technology terms and definitions that provide the basis for the impacts, policies and action items discussed in the following sections.



- **Connected vehicles** (CVs) will enable communications between vehicles, infrastructure, and other road users. This means that vehicles will be able to assist human drivers and prevent crashes while making the system operate more smoothly.
- **Automated vehicles** (AVs) will, to varying degrees, take over driving functions and allow travelers to focus their attention on other matters. Vehicles with combined automated functions like lane keeping and adaptive cruise control exist today. In the future, more sophisticated sensing and programming technology will allow vehicles to operate with little to no operator oversight.
- **Shared vehicles** (SVs) allow ride-hailing companies to offer customers access to vehicles through cell phone applications. Ride-hailing applications give on-demand transportation with comparable convenience to car ownership without the hassle of maintenance and parking. Examples of shared vehicles include companies like Uber and Lyft.

Many of these technologies will not be exclusive of the others and it is important to think of the host of implications that arise from the combination of them. These vehicles are referred to as

[13] *House Bill 2180*. https://olis.oregonlegislature.gov/liz/2021R1/Downloads/MeasureDocument/HB2180/Enrolled

connected, automated, and shared (CAS) vehicles. These technologies can also be implemented in coordination with existing EV technology.

IMPACTS OF CAS VEHICLES

CONGESTION AND ROAD CAPACITY

There are several competing forces that will unfold as connected, automated, and shared vehicles are deployed. It is difficult to predict how these vehicles will influence congestion and road capacity.

- AVs will provide a more relaxing or productive ride experience and people may have less resistance to longer commutes.
- Shared AVs are projected to have lower fuel and operating costs, making them less expensive on a per mile basis than private vehicle ownership. This may increase demand for auto-based travel in the future.
- CV technology will allow vehicles to operate safely with closer following distance, less unnecessary braking, and better coordinated traffic control. This will increase road capacity in the long run when CVs and AVs comprise most of the public and private fleet of vehicles.
- In the near term, since AVs make up a fraction of the fleet of vehicles, road capacity could decrease as AVs will operate more slowly and cautiously than regular vehicles.
- A new class of traffic – zero-occupant vehicles – will increase traffic congestion. These could include AVs making deliveries or shared AVs circulating around the city and traveling to their next rider.
- Roadways may need to be redesigned or better maintained to accommodate the needs of automated driving systems. For instance, striping may need to be wider and more consistently maintained to ensure the vehicle's sensors can recognize it.

These points raise questions about the degree to which CASvehicles will impact road capacity and congestion. The development and use of the technologies should be monitored closely.

TRANSIT

AVs could become cost competitive with transit and reduce transit ridership as riders prefer a more convenient alternative. However, transit will remain the most efficient way to move high volumes of people through constricted urban environments. AVs will not eliminate congestion and as discussed above, could exacerbate it – especially in the early phases of AV adoption. In addition, shared AVs may not serve all sectors of a community so many will still require access to transit to meet their daily needs.

PARKING

Because AVs will be able to park themselves, travelers will elect to get dropped off at their destination while their vehicle finds parking or its next passenger. Shared AVs will have an even

greater impact on parking because parking next to the destination will no longer be a priority for the traveling public. This means that parking may be over-supplied in some areas and new opportunities to reconfigure land use will emerge. Outstanding questions related to parking include:

- How does vehicle ownership impact parking behavior?
- What portion of the AV fleet will be shared?
- How far out of the downtown area will AVs be able to park while remaining convenient and readily available?

CURB SPACE

In addition to parking impacts, the ability to be dropped off at the destination will create more potential for conflicts in the right-of-way between vehicles that are dropping passengers off or picking them up, vehicles moving through traffic, and vehicles parked on the street. This issue is already occurring in many urban areas with ride-hailing companies, where popular destinations are experiencing significant double-parking issues.

AVs will also be used to deliver packages and food. This may mean that delivery vehicles need to be accommodated in new portions of the right-of-way. For instance, if the AV parks at the curb in a neighborhood and smaller robots are used to deliver packages from door to door, new conflicts will arise between vehicles, pedestrians, robots, and bicyclists.

APPENDIX

CONTENTS

DKS

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SHAPING A SMARTER TRANSPORTATION EXPERIENCE™

AN EMPLOYEE-OWNED COMPANY

SECTION 1. BLUEPRINT FOR URBAN DESIGN: URBAN CONTEXT DESIGNATIONS

2015 City of Newport Comprehensive Plan Map

Legend

City Limits

Urban Growth Boundary

Comprehensive Plan Designation

- Commercial
- Industrial
- Public
- Low Density Residential
- High Density Residential
- Shoreland
- Open Space

N

0 2,500 5,000 10,000 Feet

City of Newport
Community Development Department
169 SW Coast Highway Phone: 541.574.0629
Newport, OR 97365 Fax: 541.574.0644

This map is for informational use only and has not been prepared for, nor is it suitable for legal, engineering, or surveying purposes. It includes data from multiple sources. The City of Newport assumes no responsibility for its compilation or use and users of this information are cautioned to verify all information with the City of Newport Community Development Department.

SUBURBAN FRINGE

MIXED URBAN

SUBURBAN FRINGE

MIXED URBAN

CBD

SUBURBAN FRINGE

COMMERCIAL CORRIDOR

SUBURBAN FRINGE

60th

Meander

34th

101

36th

25th

15th

12th

Coast

Harney

Olive

Elizabeth

Bay

20

Minnie

Jetty

Abalone

35th

30th

101

SECTION 2. GEOTECHNICAL GUIDANCE FOR AGATE BEACH

Foundation Engineering, Inc.
Professional Geotechnical Services

Memorandum

Date:	October 11, 2020
To:	Carl Springer, P.E., P.T.P. DKS Associates, Inc.
From:	David Running, P.E., G.E.
Subject:	Geotechnical Consultation for Agate Beach
Project:	Newport Transportation System Plan Update Project No.: 2191027-103

This memorandum provides a brief summary of the geotechnical challenges and constraints related to siting and developing new transportation improvement projects in Agate Beach.

BACKGROUND

The City of Newport and the Oregon Department of Transportation are currently updating the City's Transportation System Plan (TSP) to enhance safety, improve access and mobility, and address future transportation needs. DKS Associates, Inc. (DKS) is the design lead for the project. DKS retained Foundation Engineering to provide geotechnical consultation. The current work is focused on evaluating transportation improvement options for the Agate Beach neighborhood.

DISCUSSION

The geotechnical challenges in Agate Beach include mapped landslide and coastal erosional hazards that will prohibit development of new transportation projects adjacent to the ocean bluff along the west margin of the neighborhood. Figure 1 (attached) shows the current landslide hazard map for Agate Beach obtained from the DOGAMI SLIDO 4.1 website (DOGAMI, 2020a). Figure 2 (attached) shows the current coastal erosion hazard map for Agate Beach obtained from the DOGAMI HAZVU website (DOGAMI, 2020b). Transportation improvements will need to be setback from existing bluffs or areas of mapped landslide topography and focus on the relatively flat terrain in the neighborhood to the east. The setback from the bluff may be assumed to coincide with the eastern extent of the landslide terrain shown on Figure 1, which also approximately corresponds to eastern boundary of the high coastal erosion hazard area.

The potential presence of undocumented fill in the flat terrain within the Agate Beach neighborhood is another geotechnical consideration. The flat terrain was formerly rolling hills and ravines similar to the terrain in the undeveloped areas to the east of Hwy. 101. The contrast between the developed and undeveloped terrain can be seen in the LiDAR imaging shown on Figure 3 (attached). Like much of the developed coastal areas in and around Newport, the current flat terrain in Agate

DRAFT

Beach is the result of extensive site grading. Much of the historic site grading in the coastal communities was not conducted in accordance with current engineering standards. Poorly-placed fill and buried organics are common in former ravines and low-lying areas. Therefore, even in the current flat terrain, potential geologic hazards may exist that can result in settlement of roadways and pathways. Once preferred alignments for the proposed transportation improvement projects are identified, the subsurface conditions will need to be evaluated and geologic hazards will need to be addressed, where they are encountered.

We trust this information satisfies your current needs. Please feel free to contact us if you have questions or require additional information.

REFERENCES

DOGAMI, 2020a, *SLIDO (Statewide Landslide Information Database for Oregon) Viewer, SLIDO-4.1:* Oregon Department of Geology and Mineral Industries (DOGAMI), website: https://gis.dogami.oregon.gov/maps/slido/, accessed October 11, 2020.

DOGAMI, 2020b, *Oregon HazVu: Statewide Geohazards Viewer:* Oregon Department of Geology and Mineral Industries (DOGAMI), website: https://gis.dogami.oregon.gov/maps/hazvu/, accessed October 11, 2020.

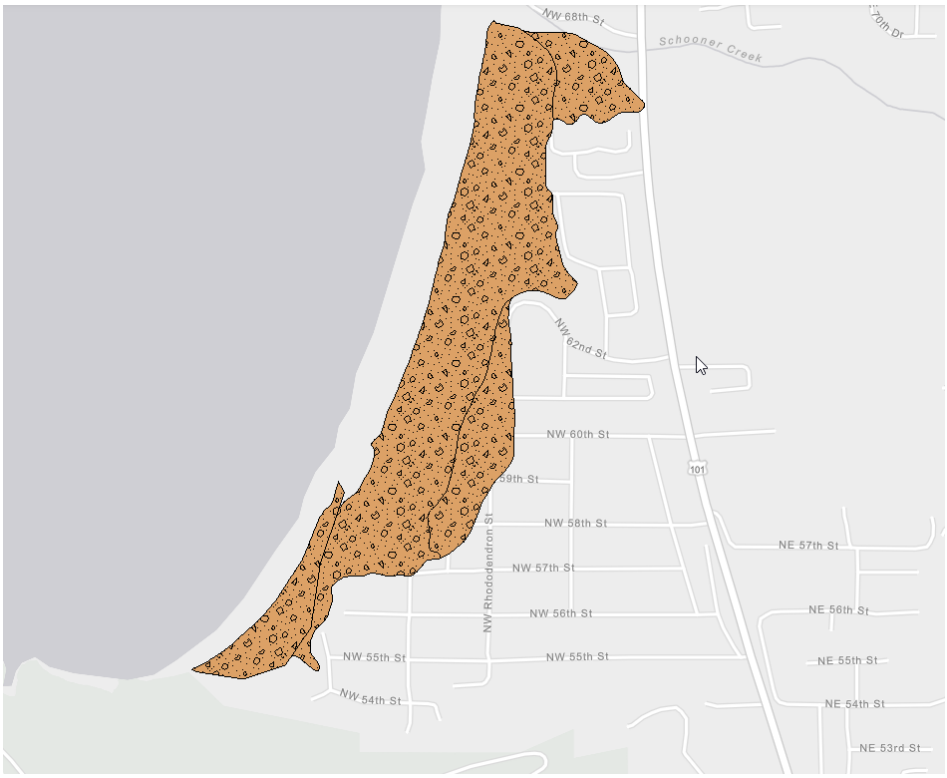

Figure 1. Landslide Hazard Map for Agate Beach (DOGAMI, 2020a).

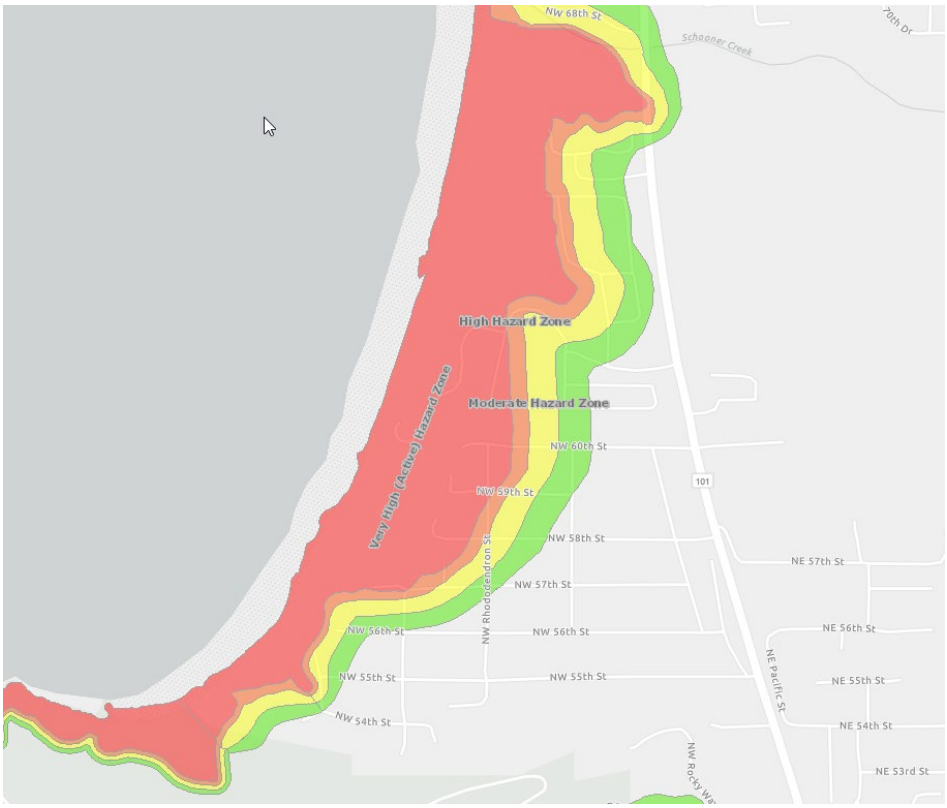

Figure 2. Coastal Erosion Hazard Map for Agate Beach (DOGAMI, 2020b).

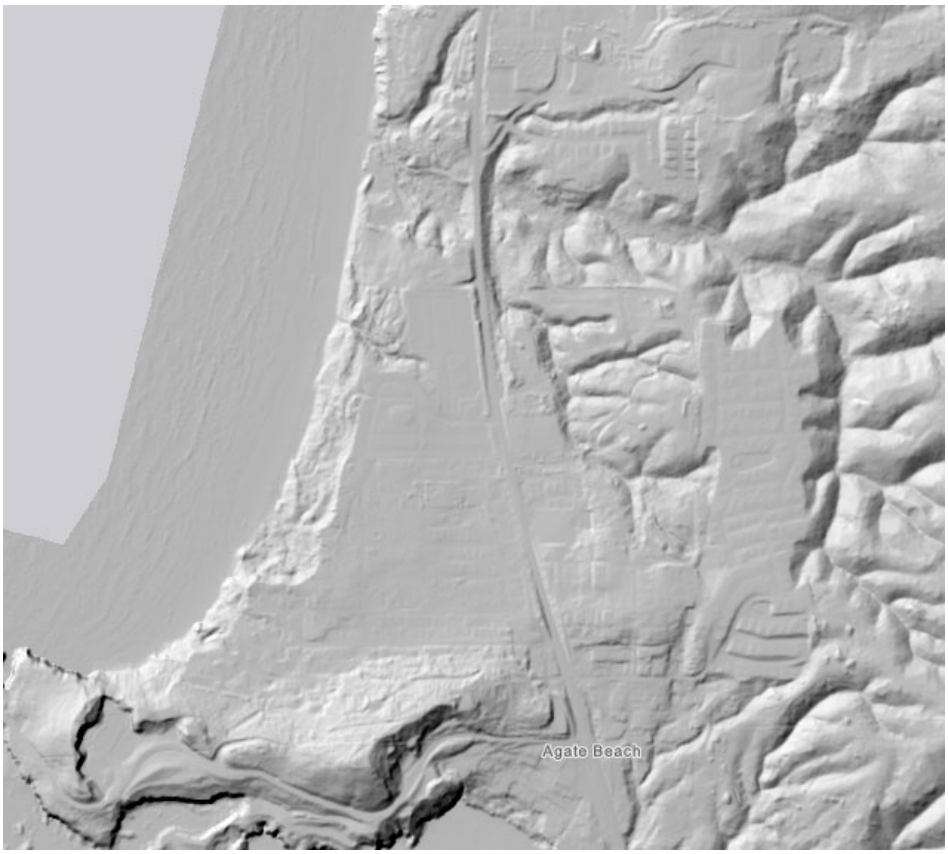

Figure 3. LiDAR Image for Agate Beach (DOGAMI, 2020a).