

Key Transit Hub Report

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Executive Summary

The Oregon Department of Transportation (ODOT) has identified a special component in the statewide public transportation network: the Key Transit Hub (KTH). A KTH is a transit stop served by three or more fixed route transit services. ODOT sees KTHs as an important aspect of a useful, connected statewide transit network.

This Report provides a comprehensive review of these important connection points. It contains details about each of Oregon's 40 KTHs (as of July 2019), including information about the type of site (e.g., a bus transit center or train station), kinds of passenger amenities, and the functionality of the site for public use.

The Report also examines the reach of each KTH, describing the transit providers and routes that serve them, and which locations passengers can travel to using these services. ODOT believes that KTHs provide vital connectivity and transfer opportunities, and are critical gateways to regional and intrastate travel. The Report looks at how KTHs function as features of the statewide transit network and the importance of intercommunity transit services.

Although KTHs are the primary focus of the analysis, the environment surrounding a KTH is an important element to its success. Further analyses include zoning codes, nearby points of interest, and walkability studies. Other information analyzed to improve the understanding of KTHs included: pedestrian safety and crash data, transit service scheduling, 2019 service changes, and extensive data sets and photo documentation for each of them.

ODOT hopes the Report highlights the importance of KTHs in the statewide transportation network. This information has the potential to encourage improvement of existing infrastructure and services, and promote the creation of new KTHs or consolidation of transit stops at a single location.

The body of the Report contains the primary data of the analyses. The appendices contain supplemental information as well as figures and map sets.

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Introduction

Convenient, timely, and safe connections between transit services are important elements of a useful fixed route transit network. As part of the process of understanding and investing in Oregon's transit network, the Oregon Department of Transportation (ODOT) considers and studies "Key Transit Hubs." A Key Transit Hub (KTH) is a transit stop or stop cluster¹ served by **three or more** general public fixed route transit services (each with a unique service area).

KTHs were identified using ODOT's Transit Network Exploration Tool (TNExT)² which allows for the visualization, analysis, and reporting of transit in Oregon using General Transit Feed Specification ([GTFS](#)) data.

Key Transit Hub Facts

- Based on GTFS data from July 2019, ODOT identified 40 KTHs in Oregon.
- These have service from a minimum of three transit agencies and some are served by as many as 10 transit agencies.
- Important local and regional transit hubs that serve many passengers but have service from only one or two transit agencies are not considered KTHs.
- KTHs change as the network changes.³
- The KTH list is based on a specific point in time - July 2019. All other information and data in this report (such as scheduling changes and route information) are current as of **November 15, 2019**.

See [Appendix A](#) for additional information on the process for identifying KTHs.

The importance of KTHs cannot be overstated. These large, capital-intensive sites are often the nucleus of a city's transit network and facilitate the health and success of a system. Key transit hubs are hives of activity and host public and private transit providers, and local and regional services.

One of the primary strengths of KTHs is the connection opportunities they provide. Riders can use these locations to transfer from one service to another and travel farther using public transit. Another is the extent of services at these KTHs – the amount of regional and intrastate services. KTHs give passengers the opportunity to travel to the next city, across the state, or to an adjacent state. They form the backbone of Oregon's long-distance transit network.

¹ ODOT defines a stop cluster as a collection of two or more transit stops that can be contained within a .16 (~845 feet) mile diameter circle.

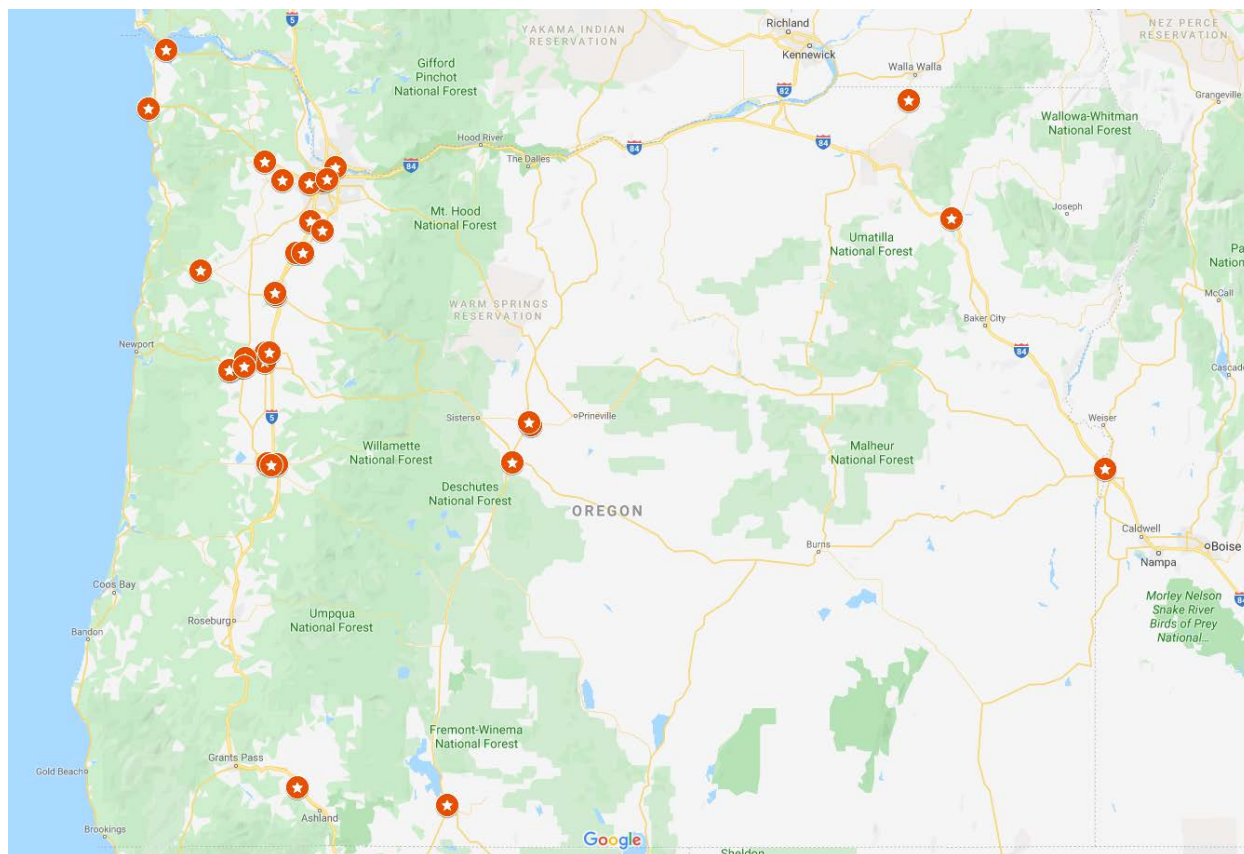
² TNExT is a web-based software tool developed for the visualization, analysis, and reporting of regional and statewide transit networks in the state of Oregon. The TNExT software tool has been developed using open source tools. [Oregon TNExT. https://oregon.tnext.io/?n=-&dbindex=14](https://oregon.tnext.io/?n=-&dbindex=14).

³ The statewide transit network contains every transit service in Oregon. "KTH-connected system" is defined as the network created by the sites and the agencies and routes that provide service to them. Everything in this system interacts with and links back to a KTH in some way. Therefore, the KTH-connected system is a specific subcategory and exists within the overall statewide transit network.

The Key Transit Hub List

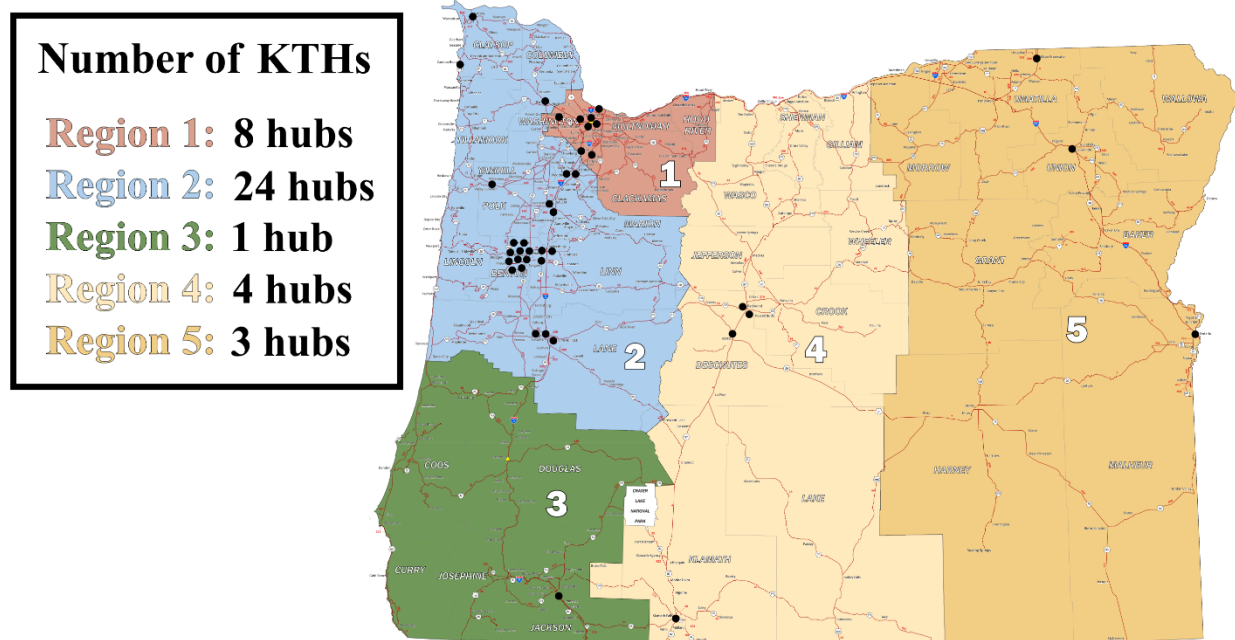
Oregon's 40 KTHs are located across the state, though most are located in more densely populated metropolitan areas of the Willamette Valley that are served by more transit routes and transit providers.

Figure 1: Oregon's 40 Key Transit Hubs



Map data: ©2019 Google

Table 1 provides an alphabetical list of the KTHs listed by the official name of the stop per the transit provider, or the street address of the site. In this table, Site Type describes the core elements that make up the KTH. These vary in complexity and scope (for example, from simple bus stops to transit centers or train stations).

Figure 2: Map of Key Transit Hubs by ODOT Region

Figures 2 and 3 show the distribution of KTHs around the state and throughout ODOT regions. Not surprisingly, most of them (80 percent) are located in the Portland metropolitan area and the urban centers of the Willamette Valley. The remaining 20 percent are distributed across southern, central, and eastern Oregon.

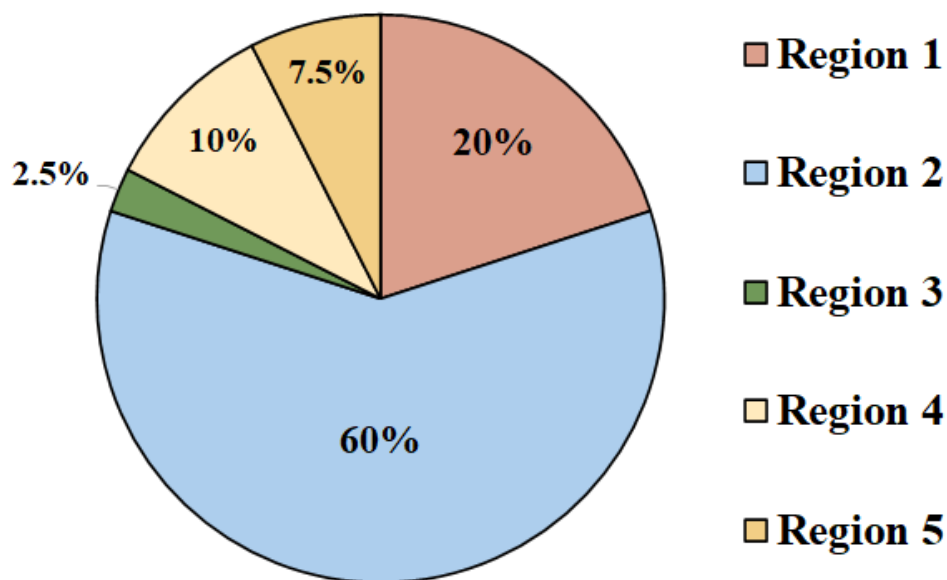
Figure 3: Key Transit Hubs per ODOT Region

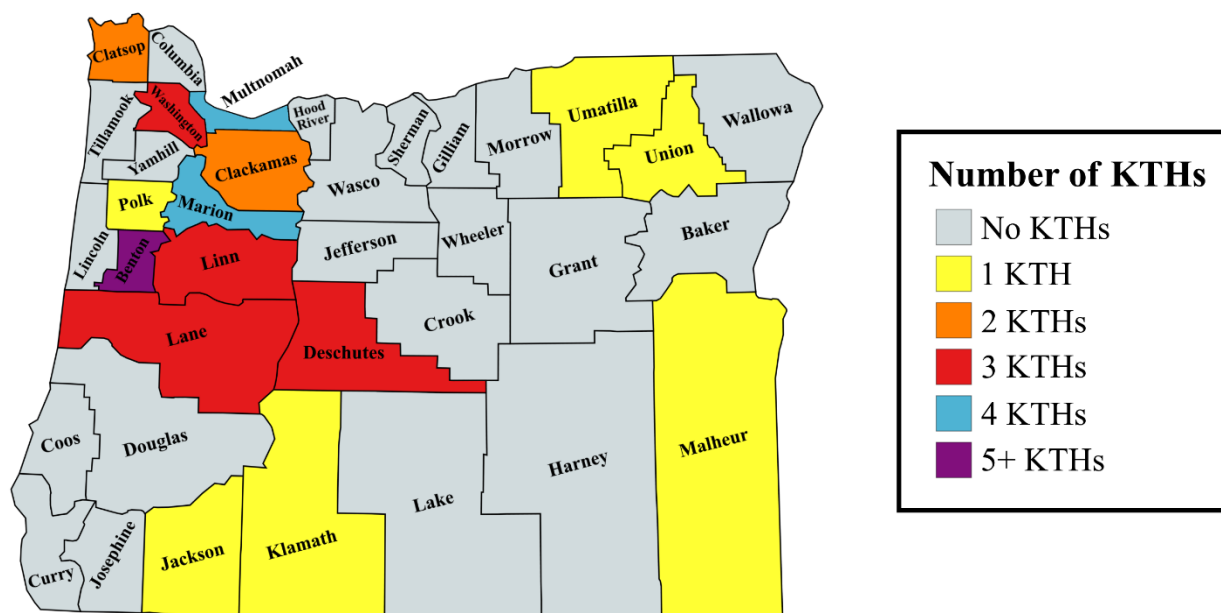
Figure 4: Key Transit Hubs per County

Figure 4 shows the number of KTHs in each county. Most counties in the Willamette Valley have two or more KTHs; Benton County has the most. Deschutes County in Central Oregon has three and other counties in southern and eastern Oregon each have one.

Table 2 provides the name of the KTH, the name and number of transit agencies providing service to the site, and the names or numbers of the transit routes providing service.

It is important to note that this analysis of KTHs is an analysis of a **single point in time** (July 2019). When there are changes to the transit network, there will be changes to the characteristics of a KTH. When transit providers move stops, add routes, or discontinue service, the count and location of KTHs can change. Since November 2019, there have been several major service changes in the system and several KTHs have changed significantly.

For example: The agency of Amtrak's Coast Starlight is not Amtrak but Coast Starlight. Technically, this service is a specific route of Amtrak, but the TNExT tool happens to list it as a separate service. Similarly, Diamond Express service is listed separately in TNExT even though it is operated by Lane Transit District.

Note: The names of the transit agencies and their routes, in **Table 2** and throughout the Report, follow the organization and categorization of data from TNExT. In some cases, agencies and the service have the same name; others are listed using the service name, rather than the name of the transit provider. This naming structure is an anomaly of the TNExT tool.

Table 1: Core Elements of Oregon's Key Transit Hubs

Number	Name	City	Site Type
1	Albany Amtrak Station	Albany	Train station and transit center
2	Albany Clay St at Heritage Mall	Albany	Single bus stop
3	Albany Linn-Benton Community College	Albany	Single bus stop
4	Astoria Transit Center	Astoria	Transit center and train station
5	Banks	Banks	Single bus stop
6	Beaverton Sunset Transit Center	Beaverton	Train station and transit center
7	Bend Hawthorne Station	Bend	Transit center and multiple bus stops
8	Canby Transit Center	Canby	Transit center
9	Cannon Beach Midtown Transit Center	Cannon Beach	Transit center
10	Corvallis 1st St & Washington Ave	Corvallis	Multiple bus stops and hotel
11	Corvallis 9th St & Reiman Ave	Corvallis	Multiple bus stops
12	Corvallis 15th St & Jefferson Way	Corvallis	Multiple bus stops
13	Corvallis 26th St & Western Blvd	Corvallis	Multiple bus stops and hotel
14	Corvallis Circle Blvd & 9th St	Corvallis	Multiple bus stops
15	Corvallis Circle Blvd & Four Acre Place	Corvallis	Multiple bus stops
16	Corvallis Downtown Transit Center	Corvallis	Transit center
17	Corvallis Good Samaritan Center	Corvallis	Single bus stop
18	Eugene Amtrak Station	Eugene	Train station and multiple bus stops
19	Eugene EmX Walnut Station	Eugene	BRT station ¹ and multiple bus stops
20	Grand Ronde	Valley Junction	Single bus stop
21	Hillsboro Central Transit Center	Hillsboro	Train station and transit center
22	Klamath Falls Amtrak Station	Klamath Falls	Train station and transit center
23	La Grande Transit Center	La Grande	Transit center
24	Medford Front Street Station	Medford	Transit center
25	Milton-Freewater	Milton-Freewater	Single bus stop
26	Ontario	Ontario	Transit center
27	PDX Transit Center	Portland	Airport, train station, single bus stop

¹ Bus Rapid Transit (BRT) Station

Number	Name	City	Site Type
28	Philomath Applegate St & 11th St	Philomath	Single bus stop
29	Philomath Main St & 14th St	Philomath	Single bus stop
30	Portland 6th Ave & Taylor St	Portland	Train station and multiple bus stops
31	Portland Lloyd Center	Portland	Train station and multiple bus stops
32	Redmond Airport	Redmond	Airport
33	Redmond Transit Hub	Redmond	Transit center
34	Salem Amtrak Station	Salem	Train station, transit center, multiple bus stops
35	Salem Downtown Transit Center	Salem	Transit center
36	Springfield Greyhound Station	Springfield	Transit center, BRT station
37	Union Station	Portland	Train station, transit center, multiple bus stops
38	Wilsonville Transit Center	Wilsonville	Train station, transit center
39	Woodburn Hwy 211 & Hwy 214	Woodburn	Multiple bus stops
40	Woodburn Memorial Transit Center	Woodburn	Transit center and hotel

Transit Agencies and Routes that Serve Key Transit Hubs

Table 2: Transit Agencies and Routes That Serve the Key Transit Hubs

Name	Number of Agencies	Agencies	Routes
Albany Amtrak Station	9	Albany Transit System	1, 2, 3
		Amtrak Cascades	Cascades
		Benton County Transportation	Corvallis to Amtrak Connector
		BoltBus Oregon	Full Route
		Cascades POINT	Cascades
		Coast Starlight	Coast Starlight
		Lincoln County Transit	Coast to Valley Express
		Linn-Benton Loop	N/A
		Linn Shuttle	N/A
Albany Clay St at Heritage Mall	3	Albany Transit System	2
		Linn-Benton Loop	Saturday Service
		Linn Shuttle	N/A
Albany Linn-Benton Community College	3	Albany Transit System	1, 3
		Linn-Benton Loop	N/A
		Linn Shuttle	N/A
Astoria Transit Center	4	Astoria Riverfront Trolley	N/A
		NorthWest POINT	NorthWest
		Pacific Transit	24, 50
		Sunset Empire Transportation District	10, 13, 15, 101, Lower Columbia Connector, Pacific Connector
Banks	3	Columbia County Rider	6
		Ride Connection	WestLink
		Tillamook County Transportation District	5

Name	Number of Agencies	Agencies	Routes
Beaverton Sunset Transit Center	3	NorthWest POINT	NorthWest
		Tillamook County Transportation District	5
		TriMet	20, 48, 50, 59, 62, MAX Blue Line, MAX Red Line
Bend Hawthorne Station	5	Cascades East Transit	1, 2, 3, 4, 5, 6, 7, 10, 11, Commuter 24, Commuter 29, Commuter 30
		Eastern POINT	Eastern
		Pacific Crest Lines	Coos Bay to Bend, Redmond to Chemult
		People Mover	Monument to Bend, Prairie City to Bend
		Shuttle Oregon	N/A
Canby Transit Center	3	Canby Area Transit	99X
		South Clackamas Transportation District	Molalla to Canby
		South Metro Area Regional Transit	3X
Cannon Beach Midtown Transit Center	3	NorthWest POINT	NorthWest
		Sunset Empire Transportation District	17, 20, 21, Pacific Connector
		Tillamook County Transportation District	3
Corvallis 1 st St & Washington Ave	3	Benton County Transportation	Corvallis to Amtrak Connector
		Corvallis Transit System	20, Night Owl Southeast, Night Owl Southwest
		Groome Transportation	N/A
Corvallis 9th St & Reiman Ave	3	Benton County Transportation	99 Express
		Corvallis Transit System	2
		Linn-Benton Loop	N/A
Corvallis 15th St & Jefferson Way	3	Benton County Transportation	Corvallis to Amtrak Connector
		Corvallis Transit System	3, 6, 8, Night Owl North, Philomath Connection
		Linn-Benton Loop	N/A

Name	Number of Agencies	Agencies	Routes
Corvallis 26th St & Western Blvd	4	Benton County Transportation	Coast to Valley Express
		Corvallis Transit System	3, 8, Night Owl Southeast, Night Owl Southwest, Philomath Connection
		Groome Transportation	N/A
		Lincoln County Transit	Coast to Valley Express
Corvallis Circle Blvd & 9th St	3	Benton County Transportation	99 Express
		Corvallis Transit System	2, 7
		Linn-Benton Loop	N/A
Corvallis Circle Blvd & Four Acre Place	3	Benton County Transportation	Corvallis to Amtrak Connector
		Corvallis Transit System	7
		Linn-Benton Loop	N/A
Corvallis Downtown Transit Center	5	Benton County Transportation	99 Express, Coast to Valley Express, Corvallis to Amtrak Connector
		BoltBus Oregon	Short Line
		Corvallis Transit System	1, 2, 3, 4, 5, 6, 7, 8, 9, 20, 50, Night Owl North, SE, SW, Philomath Connection
		Lincoln County Transit	Coast to Valley Express
		Linn-Benton Loop	N/A
Corvallis Good Samaritan Center	3	Benton County Transportation	99 Express, Coast to Valley Express
		Corvallis Transit System	2, 4
		Lincoln County Transit	Coast to Valley Express
Eugene Amtrak Station	6	Amtrak Cascades	Cascades
		Cascades POINT	Cascades
		Coast Starlight	Coast Starlight
		Diamond Express	N/A
		Lane Transit District	1, 40
		Pacific Crest Lines	Coos Bay to Bend

Name	Number of Agencies	Agencies	Routes
Eugene EmX Walnut Station	3	Diamond Express	N/A
		Groome Transportation	N/A
		Lane Transit District	27, 91, 98, EmX Eugene
Grand Ronde	3	Caravan Airport Transportation	N/A
		Tillamook County Transportation District	60X, 70X
		Yamhill County Transit	22
Hillsboro Central Transit Center	3	Ride Connection	WestLink
		TriMet	46, 47, 48, 57, MAX Blue Line
		Yamhill County Transit	33
Klamath Falls Amtrak Station	5	Basin Transit Service	Mainline #2
		Coast Starlight	Coast Starlight
		Klamath Shuttle	Klamath Shuttle
		Sage Stage	Klamath Falls
		SouthWest POINT	Medford to Klamath Falls
La Grande Transit Center	3	Greyhound	Portland to Boise
		Kayak Public Transit	Arrow
		Northeast Oregon Public Transit	La Grande Trolley Blue, Yellow Line, Baker Connector, Wallowa Link
Medford Front Street Station	4	Greyhound	Redding to Seattle
		Josephine Community Transit	Commuter 100
		Rogue Valley Transportation District	1X, 2, 10, 21, 25, 30, 40, 60, 61
		SouthWest POINT	Medford to Brookings, Medford to Klamath Falls ⁵

⁵ The SouthWest POINT service is divided into two routes: Brookings to Medford and Medford to Klamath Falls. There is a 3 to 4-hour layover in Medford for both eastbound and westbound buses. Due to this long layover, a transfer is required for passengers who want to continue on the other segment of the SouthWest POINT route.

Name	Number of Agencies	Agencies	Routes
Milton-Freewater	3	City of Milton-Freewater	N/A
		Kayak Public Transit	Walla Walla Whistler
		People Mover	Monument to Walla Walla, Prairie City to Walla Walla
Ontario	4	Eastern POINT	Eastern
		Greyhound	Portland to Boise
		Malheur Council on Aging and Community Services	Local
		People Mover	John Day to Ontario
PDX Transit Center	7	Blue Star Bus	N/A
		C-TRAN	67
		Caravan Airport Transportation	N/A
		Central Oregon Breeze	N/A
		Groome Transportation	N/A
		Shuttle Oregon	N/A
		TriMet	272, MAX Red Line
Philomath Applegate St & 11th St	3	Benton County Transportation	Coast to Valley Express
		Corvallis Transit System	Philomath Connection
		Lincoln County Transit	Coast to Valley Express
Philomath Main St & 14th St	3	Benton County Transportation	Coast to Valley Express
		Corvallis Transit System	Philomath Connection
		Lincoln County Transit	Coast to Valley Express
Portland 6th Ave & Taylor St	4	Blue Star Bus	N/A
		Columbia County Rider	1
		C-TRAN	105, 134, 164, 177, 199
		TriMet	1, 2, 4, 9, 10, 12, 14, 15, 17, 19, 30, 35, 36, 44, 51, 54, 56, 94, 99, MAX Blue Line, MAX Red Line

Name	Number of Agencies	Agencies	Routes
Portland Lloyd Center	3	BoltBus Oregon	Short Line, Full Route
		C-TRAN	157
		TriMet	8, 70, MAX Blue Line, MAX Green Line, MAX Red Line
Redmond Airport	3	Central Oregon Breeze	N/A
		Pacific Crest Lines	Redmond to Chemult
		People Mover	Monument to Bend, Prairie City to Bend
Redmond Transit Hub	4	Cascades East Transit	Commuter 22, Commuter 24, Commuter 26, Commuter 28
		Central Oregon Breeze	N/A
		People Mover	Monument to Bend, Prairie City to Bend
		Shuttle Oregon	N/A
Salem Amtrak Station	7	Amtrak Cascades	Cascades
		BoltBus Oregon	Short Line
		Cascades POINT	Cascades
		Cherriots	8, 18
		Coast Starlight	Coast Starlight
		Greyhound	Redding to Seattle
		Tillamook County Transportation District	60X
Salem Downtown Transit Center	3	Cherriots	1X, 2, 3, 4, 5, 6, 7, 8, 9, 13, 16, 17, 18, 19, 21, 22, 23, 10X, 20X, 30X, 40X, 50X
		South Metro Area Regional Transit	1X
		Tillamook County Transportation District	60X, 70X
Springfield Greyhound Station	3	Greyhound	Redding to Seattle
		Lane Transit District	11, 17, 18, 85, 91, EmX Eugene, EmX Gateway
		Pacific Crest Lines	Coos Bay to Bend

Name	Number of Agencies	Agencies	Routes
Union Station	10	Amtrak Cascades	Cascades
		Cascades POINT	Cascades
		Central Oregon Breeze	N/A
		Coast Starlight	Coast Starlight
		Columbia County Rider	1
		Empire Builder	Empire Builder
		NorthWest POINT	NorthWest
		Shuttle Oregon	N/A
		Tillamook County Transportation District	5
		TriMet	17, 291, MAX Green Line, MAX Orange Line, MAX Yellow Line
Wilsonville Transit Center	3	Cherriots	1X
		South Metro Area Regional Transit	1X, 2X, 3X, 4, 5, 6, 7
		WES Commuter Rail	N/A
Woodburn Hwy 211 & Hwy 214	3	Canby Area Transit	99X
		Cherriots	10X, 20X
		Woodburn Transit	N/A
Woodburn Memorial Transit Center	3	Cascades POINT	Cascades
		Groome Transportation	N/A
		Woodburn Transit	N/A

“Almost” Key Transit Hubs

Location is an essential characteristic of KTHs. Specifically, in what city are they located? Which cities have KTHs and which have none?

Most cities do not have a KTH and are served by two or fewer agencies. However, there is a group of cities that have “almost” KTHs. These cities are served by three or more agencies but the transit routes do not meet in the same spot so they do not create a KTH. Therefore, given existing levels of service, these cities have the potential to have KTHs if all of the relevant transit providers aggregate their stop locations at a single site. The following cities are in this category.



“Almost” Key Transit Hub Locations

Table 3: Almost Key Transit Hub Locations

City	Transit Agencies	City	Transit Agencies
Baker City	Greyhound	Lincoln City	Caravan Airport Transportation
	Northeast Oregon Public Transit		Lincoln County Transit
	People Mover		Tillamook County Transportation District
Coos Bay	Coos County Area Transit	Newport	Benton County Transportation
	Curry Public Transit		Caravan Airport Transportation
	Pacific Crest Lines		Lincoln County Transit
Florence	Florence-Yachats Connector	Oregon City	Amtrak Cascades
	Pacific Crest Lines		Canby Area Express
	Rhody Express		CCC Xpress
Forest Grove	Ride Connection		South Clackamas Transportation District
	TriMet		TriMet
	Yamhill County Transit	Pendleton	Greyhound
Grants Pass	Greyhound		Kayak Public Transit
	Josephine Community Transit		People Mover
	Rogue Valley Commuter Line	Salem (West Salem Transit Center)	Cherriots
	SouthWest POINT		Tillamook County Transportation District
Gresham	Central Oregon Breeze		Yamhill County Transit Area
	Sandy Area Metro	Sandy	Central Oregon Breeze
	TriMet		Mt Hood Express
King City	Caravan Airport Transportation		Sandy Area Metro
	Ride Connection	Sisters	Cascades East Transit
	Yamhill County Transit		Cog Wild Shuttles (Seasonal)
	TriMet		Shuttle Oregon

See [Appendix B](#) for additional information on which cities do and do not host a KTH.

Transit Agencies Not Connected to a Key Transit Hub

Of the approximately 74 transit providers operating in Oregon, 52 (70 percent) are connected to and serve at least one KTH. The remaining 22 providers (30 percent) are not connected to a KTH and are not connected to the KTH system.

The following transit providers and services are not connected to a KTH:

- Berg's Ski Shop Shuttle
- Burns Paiute Tribal Transit Service
- CCC Xpress
- City of Bandon Trolley
- Cog Wild Shuttles
- Columbia Area Transit
- Coos County Area Transit
- Curry Public Transit
- Florence Yachats Connector
- Klamath Tribes
- Let'er Bus Transit
- Mt Bachelor Shuttle
- Mt Hood Express
- Portland Aerial Tram
- Portland Streetcar
- Rhody Express
- Sandy Area Metro
- South Lane Wheels
- Swan Island Evening Shuttle
- U-Trans
- Warm Springs Transit
- Washington Park Shuttle

Reach

One of the most important features of KTHs is their ability to demonstrate how Oregonians move around the state and connect to distant cities and services. The “reach” of a KTH is the geographic distance the transit services can provide without a transfer. If a passenger begins their journey at one location, how far can they travel on a one-seat ride? In which directions? Which cities and regions can they access? Each KTH has its own reach profile and when all KTH profiles are combined, a detailed image of the statewide system is visible.

Local Routes vs Regional Routes

When analyzing a KTH’s reach, the primary focus is the regional, intrastate, and interstate routes and services connected to it. Local routes are not a relevant consideration for reach. Local routes are defined as services that do not leave the geographic boundaries of the cities in which they serve. This focus is aligned with the State’s interest in connections across transit agencies and between communities rather than in local service within local transit agency areas of interest.

To calculate the reach of a KTH, all agencies and routes that service it are listed. This creates a specific reach profile for each KTH. The following table demonstrates the reach profile of the Klamath Falls Amtrak Station:

Table 4: Example of the Reach Profile of a Key Transit Hub

Name	Agency	Route	Reach Miles
Klamath Falls Amtrak Station	Basin Transit Service	Mainline #2	
	Coast Starlight	Coast Starlight	667.0
	Klamath Shuttle	Klamath Shuttle	60.0
	Sage Stage	Klamath Falls	100.3
	SouthWest POINT	Klamath Falls to Medford	104.5
Total			931.8

Table 4 shows that five unique services operate at this KTH. Both Klamath Shuttle and SouthWest POINT provide service across the state and allow riders in Klamath Falls to reach distant destinations. Coast Starlight and Sage Stage yield even greater reach by providing service to locations outside Oregon to California and Washington. Basin Transit Service only provides local service and does not leave the city limits of Klamath Falls.

As a local service, the route miles of Basin Transit Service Mainline #2 are not factored in the calculation of reach. This remains true for every KTH with local services.

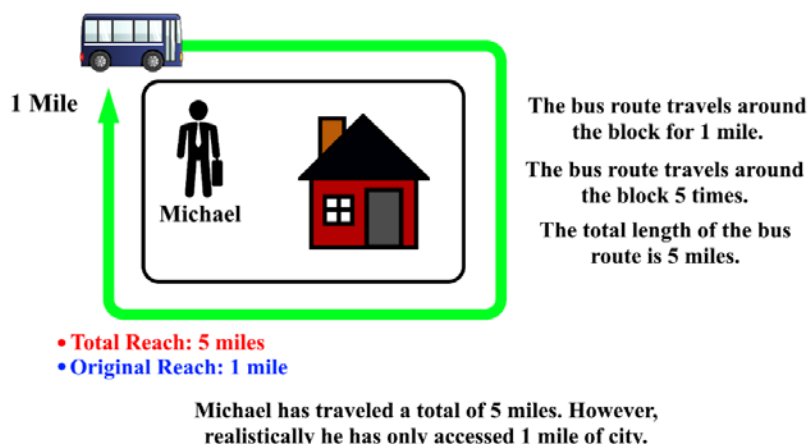
In total, the Klamath Falls Key Transit Hub offers transit riders 932 miles of service reach. See [Appendix C](#) for additional information on the difference between local and regional routes, and the methodology for dealing with adjacent cities in urban areas.

Original Miles vs Total Miles

The routes that serve a KTH will often leave and arrive at the site traveling over the same section of road. Several routes might enter a community on the same highway or use the same highway when traveling between cities. Duplicated route sections such as these do not actually contribute to the reach of the KTH, so they need to be removed from consideration. Determining the number of “original” or unique miles that serve a KTH is key to understanding the true value of the services offered and its potential for connecting passengers to other places.

Figure 5: Original Reach and vs Total Reach

For example, the bus route in [Figure 5](#) has a route around the block that is 1 mile long. It travels along this route five times. The bus is traveling a total of five miles. Technically the route has a reach of five miles, but it only has an original reach of one mile because the other four miles are duplicated. From the point of view of the rider, they are traveling five miles but they only have access to one unique mile of city.⁶



See [Appendix C](#) for additional information on the methodology for determining original route mileage.

Once the total number of reach miles for a KTH are calculated, the number of original miles is calculated by eliminating the duplication. Each KTH reach profile lists the routes that serve it in alphabetical order. The first service at a KTH will always have 100 percent original reach. For each subsequent service, mileage that is new and has not been covered yet is calculated and added. In the end, each KTH has its total reach and its total original reach. Consider this example from the Cannon Beach Midtown Transit Center:

⁶ In this example, the bus run is one trip of five miles, not five trips of one mile. The riders are only allowed to exit the bus after the five-mile run is completed; highlighting the fact that the last four miles of their trip are redundant.

Table 5: Key Transit Hub Reach Statistics – Total Reach vs Original Reach Example

Name	Agency	Route	Reach Miles	Original Reach Miles
Cannon Beach Midtown Transit Center	NorthWest POINT	NorthWest	102.1	102.1
	Sunset Empire Transportation District	17		
	Sunset Empire Transportation District	20	12.2	4.9
	Sunset Empire Transportation District	21	13.0	0
	Sunset Empire Transportation District	Pacific Connector	29.5	1.8
	Tillamook County Transportation District	3	43.0	42.4
Total			199.8	151.2

With the service providers in alphabetical order, the effort to remove duplicative miles starts with NorthWest POINT. All miles of NorthWest POINT are considered original so all 102.1 miles count towards the total original reach miles. Sunset Empire Route 17 only provides local service so it does not count toward the reach of this location. Sunset Empire Route 20 travels 12.2 miles to Seaside, but, of those, 7.3 miles travel along the same route as NorthWest POINT, so its original reach is calculated at 4.9 miles. Sunset Empire Route 21 travels the same route as Sunset Empire Route 20 (but on different days of the week) so it does not provide any additional original reach. The final two services are calculated in this same way until total original reach mileage for the KTH has been determined.

Overall, the Cannon Beach KTH has 200 miles of service but only 151 miles of these provide original service. Approximately 24 percent of this KTH's reach is duplicated. From a rider perspective, if they rode every single service, they could travel a total of 200 miles. However, they could only travel a maximum of 151 unique miles. 50 miles of transit service in and out of this KTH are duplicated and covered by two or more services.

Reach duplication is not a bad thing. Some level of duplication is necessary to provide riders with multiple options to travel to the same location. Too much or too little duplication may indicate a missed opportunity to provide unique service or useful alternatives. The optimal level of overlapping service varies by KTH.⁷

⁷ **Note:** For the reach analysis, a “best-case scenario” is assumed where all transit services operate simultaneously on the same day of the week. This analysis displays each KTH's maximum route mileage potential. In reality, a KTH's Wednesday reach could be very different from its Saturday reach, for instance. See the [Scheduling](#) section for a detailed analysis on reduced service days.

Reach Findings

Once reach and original reach are calculated, other analyses can be done to create detailed profiles of each KTH's service area. KTHs can be compared against their peers to reveal common themes and similarities. A sample of the reach data is shown in [Table 6](#). See [Table C-1](#) for the all data.

Table 6: Key Transit Hub Reach Statistics Example (In Miles)

Name	Minimum Reach ⁸	Mean Reach	Median Reach	Maximum Reach	Total Reach	Total Original Reach	% of Reach Duplicated
Hillsboro Central Transit Center	3.5	22.8	21.0	32.1	114.2	108.7	5%
Medford Front Street Station	4.8	131.8	30.5	462.7	922.6	838.3	9%
Ontario	18.0	350.0	350.0	318.0	700.0	699.7	0%
Salem Downtown Transit Center	9.0	32.9	30.8	61.0	263.1	202.8	23%
Union Station	7.5	174.9	110.2	481.0	2,098.5	1,661.6	21%

Minimum reach refers to the first transit stop outside of town, the minimum amount of distance required to take a regional trip. Minimum reach are at least a few miles when a bus route leaves the limits of one city and travels to another location. From Medford's KTH, it takes at least five miles to exit Medford and reach the next city, Phoenix. Therefore, Phoenix is the first regional stop along this route and is the closest regional destination. From Ontario's KTH, the first city served by a regional service is Vale, 18 miles away.

Mean and median reach factor in all services at a KTH and how far they travel. Notice the discrepancy between mean and median at Medford KTH. This is due to the Greyhound route inflating the reach distance. Median is much more accurate and useful in this case. Most services at Medford's KTH are about 30 miles in length.

Maximum reach is the absolute farthest someone can travel on one of these regional services. From Union Station, riders can travel up to 481 miles to Redding, CA⁹. Conversely, at Hillsboro Central, riders can only travel up to 32 miles to Gresham. Traveling farther than the maximum reach requires a transfer.

Total reach and total original reach can be used to calculate the percentage of reach duplicated at any given location. The KTHs in Hillsboro and Medford have low levels of duplication. At Salem Downtown KTH, nearly a quarter of the services offered overlap and travel along the same route to the same destinations. At Ontario KTH, all services travel along unique routes in different directions so there is no duplication.

⁸ Minimum, mean, median and maximum reach values are calculated based on a hub's regular reach profile, not its original reach profile.

⁹ Coast Starlight continues farther south to Los Angeles, but for the purposes of this analysis the maximum distance was capped at Redding. [Appendix C](#) contains an explanation of this distinction.

Table 7: Total Figures, in Miles, for All 40 Key Transit Hubs¹⁰

	Minimum Reach	Mean Reach	Median Reach	Maximum Reach	Total Reach	Total Original Reach	% of Reach Duplicated
Mean	11.4	95.6	77.5	152.7	480.8	383.2	20.3%
Median	8.3	56.2	49.7	96.0	271.6	214.0	21.2%

Table 7 shows the mean and median values combined for all 40 KTHs. It is, essentially, an average of the averages. For example, the maximum reach for each KTH is a mean of that hub's services and the mean maximum reach of 152.7 miles is the mean of those 40 maximum reach values.

The mean mean reach of all KTHs is **95.6 miles** but excluding the mega-hub outliers, the median mean reach is **56.2 miles**. This indicates that the median reach value is a more accurate figure from a statewide perspective.

At most, regional and long-distance KTH services travel up to 152.7 miles or 96 miles respectively. Total reach and total original reach can be calculated with both means and medians as well. The values continue to decrease when moving from total to total original and from mean to median. The median total original reach of 214 miles eliminates the outliers and redundancies of the other values and represents a more accurate estimate of KTH reach. The mean reach duplication for all 40 KTHs is approximately **20 percent**.

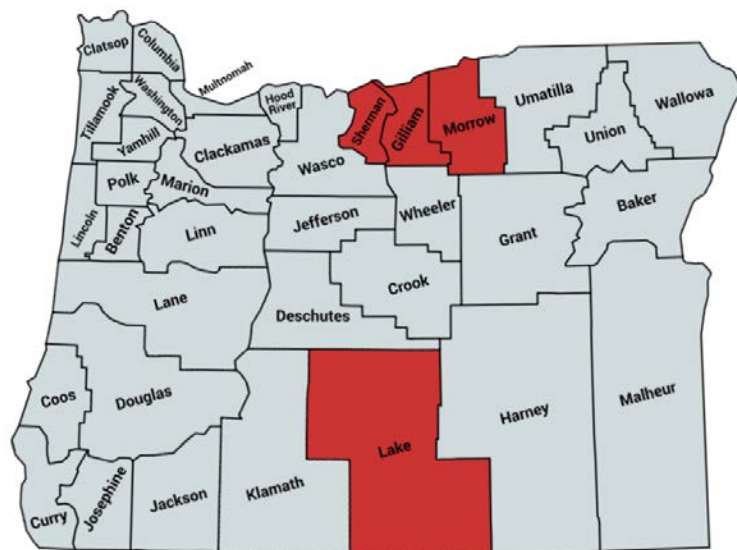


¹⁰ This table double counts transit service routes because many KTHs have the same services as other KTHs. For example: Both Bend Hawthorne Station and Redmond Transit Hub offer Cascades East Transit Commuter Route 24 so this route would be counted twice in this table and thus, overrepresented. **Table 11** shows statewide totals when each service is only counted once.

Counties Served by a Key Transit Hub

Reach can be used to analyze the KTH-connected system on a county level. Of Oregon's 36 counties, 32 (89 percent) contain a transit stop for a service that connects to a KTH without a transfer. Some counties contain multiple services and some only contain one. For example, although Eastern POINT is the only transit route that travels through Harney County, the service makes four stops within so the county is served by a KTH and is part of the system.

Figure 6: Oregon Counties Not Served by a Key Transit Hub



Four counties are not served by a KTH service. Greyhound's Portland to Boise route passes through Sherman, Gilliam and Morrow Counties on Interstate 84, but the service does not stop in any of these counties. To the south, Eastern POINT passes through Lake County along U.S. Route 20 but it does not stop in the county. Therefore, residents of these four counties would have to travel outside their county to connect to a KTH.

The reach of a KTH can reveal the number of counties served by each KTH without a transfer. Canby Transit Center only serves two counties, but Eugene Amtrak Station serves 16. Any passenger who arrives at Eugene Amtrak Station has access to 15 other counties through the transit services offered. Most KTHs serve between **five and seven counties**. The counties served can be adjacent to the county with the KTH or on the other side of the state. [Tables 8 and 9](#) display this information.

Table 8: Counties Served by Key Transit Hubs

Least number of counties served	2
Greatest number of counties served	23
Mean number of counties served	7
Median number of counties served	5

Table 9: Examples of KTH Service and Connections

Name	Counties Served	KTHs Reached	Other Key Transit Hubs Reached
Astoria Transit Center	5	3	1) Cannon Beach Midtown Transit Center 2) Beaverton Sunset Transit Center 3) Union Station
Canby Transit Center	2	2	1) Woodburn Hwy 211 & Hwy 214 2) Wilsonville Transit Center
Eugene Amtrak Station	16	8	1) Klamath Falls Amtrak Station, 2) Bend Hawthorne Station 3) Albany Amtrak Station, 4) Salem Amtrak Station 5) Woodburn Memorial Transit Center, 6) Union Station 7) Eugene EmX Walnut Station 8) Springfield Greyhound Station
La Grande Transit Center	10	1	Ontario
Milton-Freewater	3	0	None

The full dataset is available in [Table C-2](#).

Interconnected Key Transit Hubs

The reach profile shows which KTHs are interconnected without a transfer. Milton-Freewater is not connected to any other KTH. La Grande Transit Center is only connected to the Ontario KTH. Conversely, Eugene Amtrak Station is connected to eight other KTHs. On average, each KTH is connected to **six other key transit hubs**.

See [Appendix C](#) for additional information on the out-of-state counties served by Oregon's KTH-connected system.

Regional Routes in the Key Transit Hub System

The transit providers and routes of each KTH can be combined into one table to create a comprehensive picture of the KTH system. Every service that connects to a KTH is displayed in alphabetical order. Here, all routes are only represented once. [Table 10](#) provides a sample of these data; the full list is in [Table C-3](#).

Table 10: Sample of Included Regional Routes in the Key Transit Hub System

Agency	Route	Origin	Destination	Reach Miles	Original Reach Miles
Rogue Valley Transportation District	1X	Medford	Ashland	15.0	6.9
Rogue Valley Transportation District	10	Medford	Ashland	16.4	11.7
Rogue Valley Transportation District	30	Medford	Jacksonville	6.0	5.9
Sage Stage	Klamath Falls	Klamath Falls	Alturas, CA	100.3	100.3
Shuttle Oregon	N/A	Redmond	Portland (PDX)	213.5	70.1
South Clackamas Transportation District	Molalla to Canby	Molalla	Canby	27.9	26.5
South Metro Area Regional Transit	2X	Wilsonville	Tualatin	10.3	5.5
South Metro Area Regional Transit	3X	Wilsonville	Canby	8.7	6.4
SouthWest POINT	Medford to Brookings	Medford	Brookings	137.5	114.8
SouthWest POINT	Medford to Klamath Falls	Medford	Klamath Falls	104.5	79.9

With all agencies and routes listed, the KTH-connected system is treated as one big hub. In the same way that duplicated route miles were eliminated on a hub level, the same principle can be applied on the state level. Eliminating duplicate miles uncovers the original reach miles across the whole state.

Table 11: Total Figures for Oregon's KTH-Connected System

	Reach	Original Reach	% of Reach Duplicated
Total	7,634.2 Miles	5,081.7 Miles	33.4%
Mean	71.3 Miles		
Median	28.5 Miles		

Across the state, regional routes cover **7,634 service miles**. Of these, 2,500 are covered by two or more services. The original reach of the state is **5,082 miles**. From a statewide perspective, **33 percent** of route mileage is duplicated. Again, no duplication means there is only one route servicing a given area and if a passenger misses their bus or train, they have no other option but to wait for the next one. A score of 100 percent duplication is equally unfavorable as it means there is too much overlap and redundancy in the system.

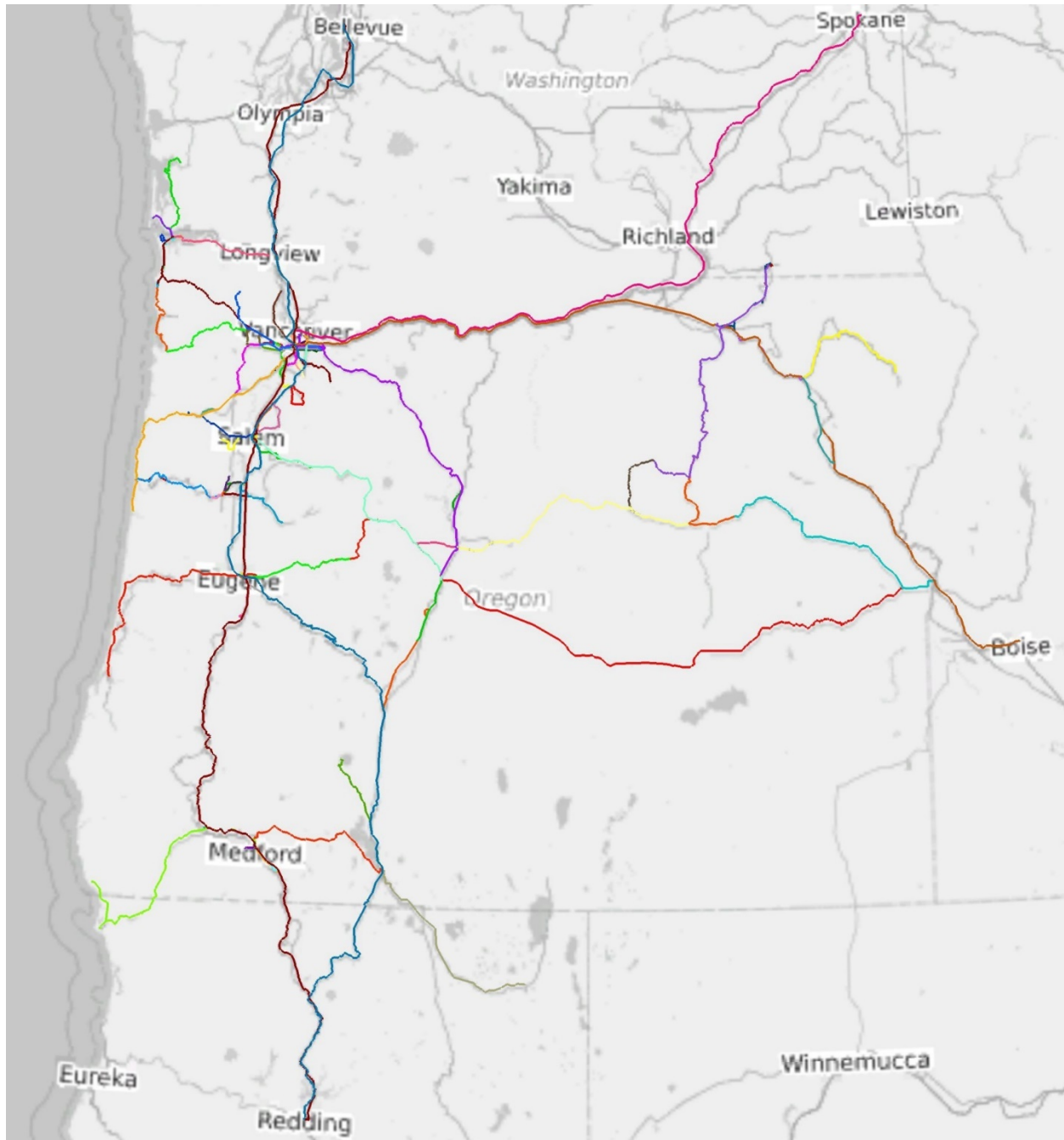
Finally, there is a big discrepancy between the median and mean regional route lengths. Across the state, the median regional route length is **28.5 miles**. The mean is **71.3 miles**. This large difference is because the mean is inflated due to the abnormally long route lengths of a select few routes. Amtrak and Greyhound services are the outliers when it comes to regional route length so it is important to mitigate their effects to discover a more meaningful value.



Reach Visuals

Figure 7 shows all of the regional routes on the KTH-connected system. Each one connects to a KTH. This map allows a broad view of the network and no transfer regional service from KTHs. It can be used to quickly locate gaps in service.

Figure 7: Master Reach of All Key Transit Hub Regional Routes

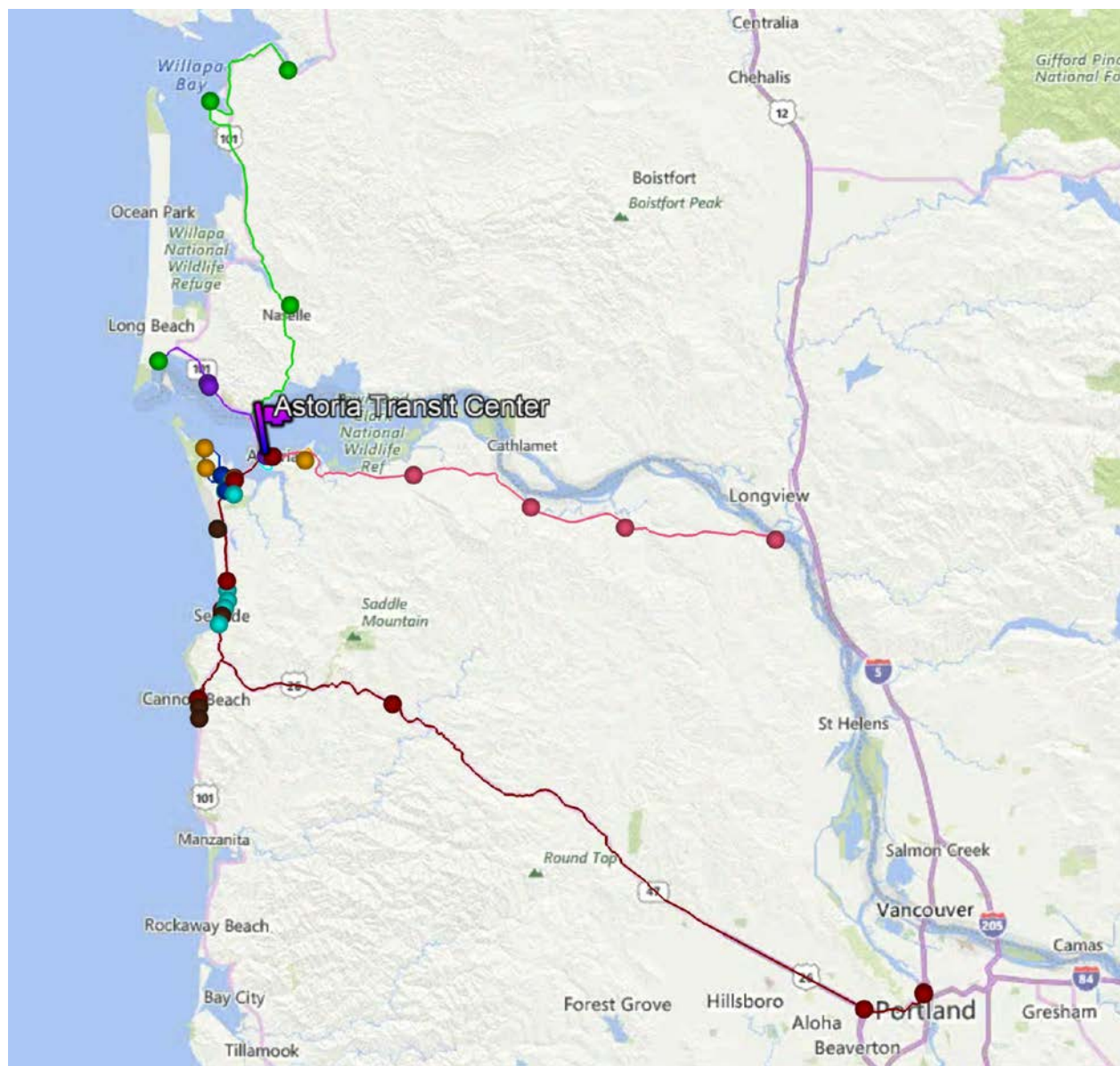


Map data: ©2019 Google, Microsoft

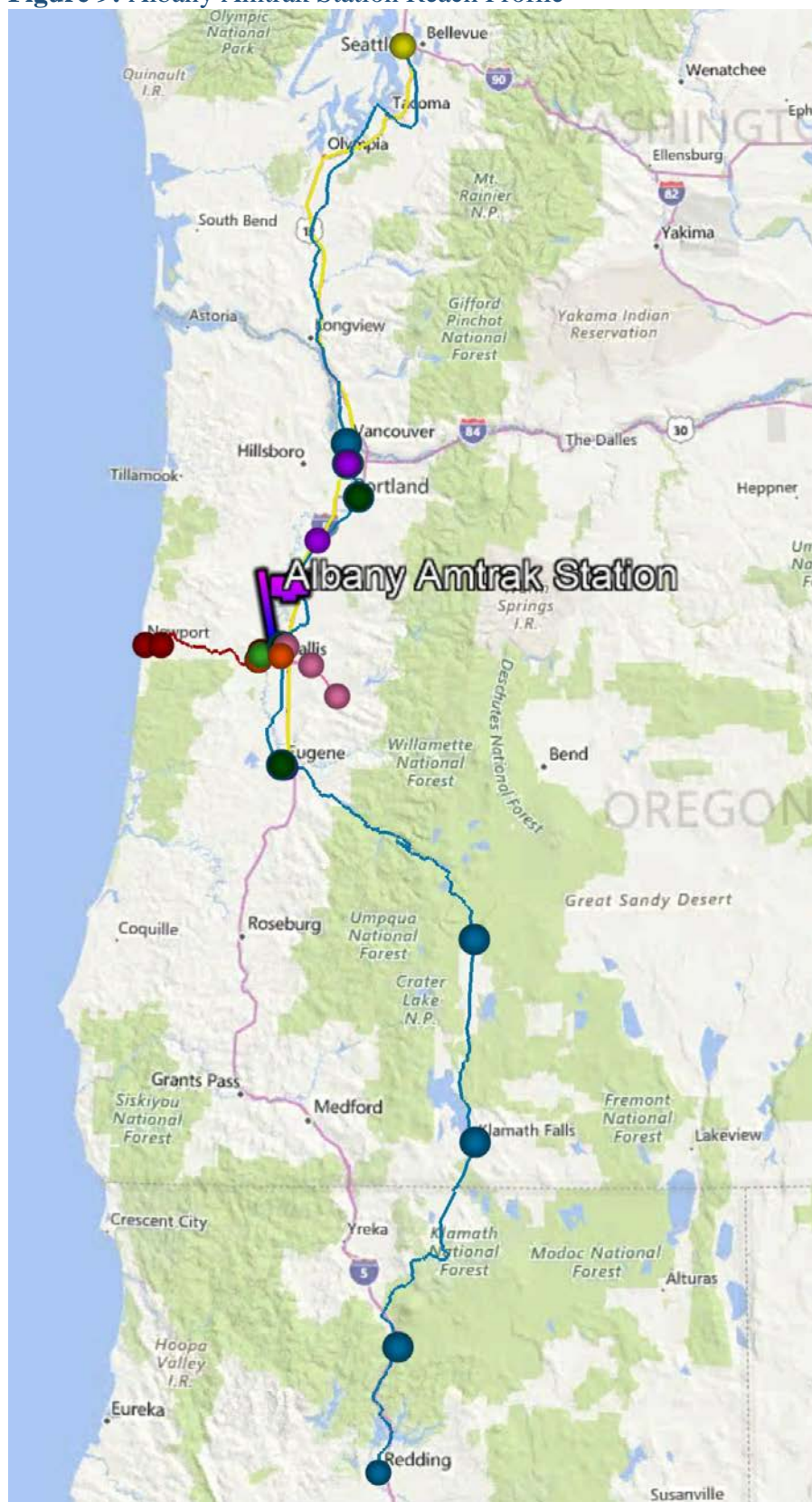
The following figures are examples of the individual reach profiles of several KTHs. They demonstrate how far riders can travel from a KTH, which directions they can go, and which cities and regions they can reach.

See [Appendix D](#) for the complete dataset.

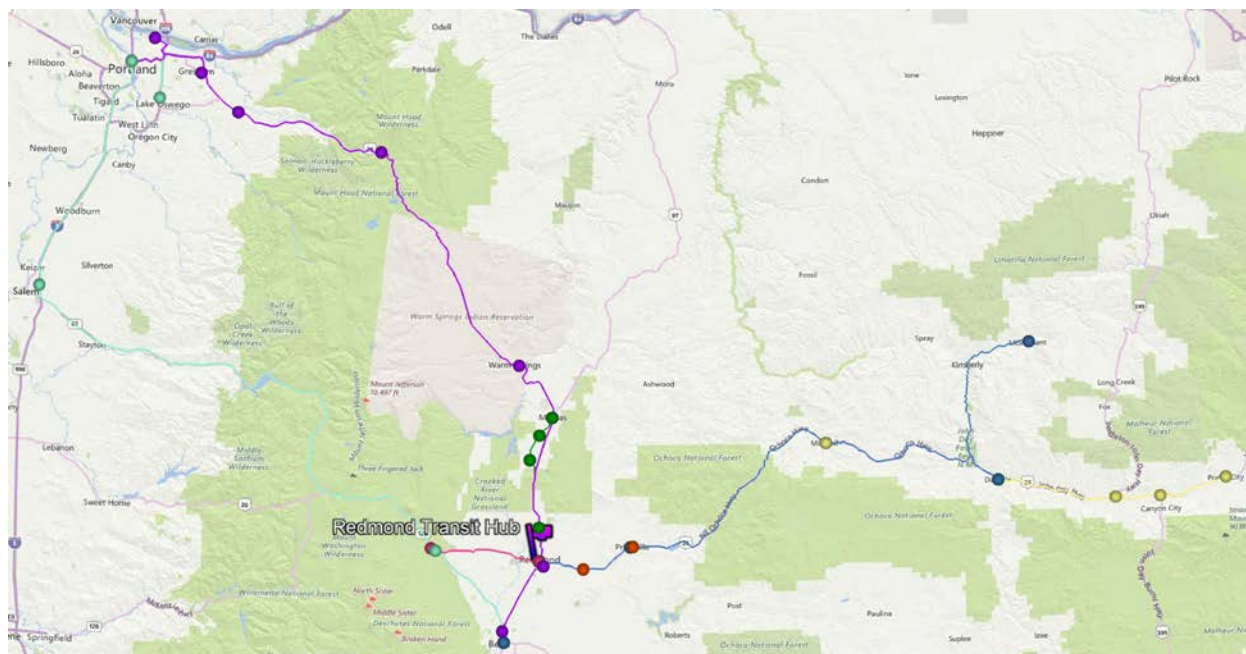
Figure 8: Astoria Transit Center Reach Profile



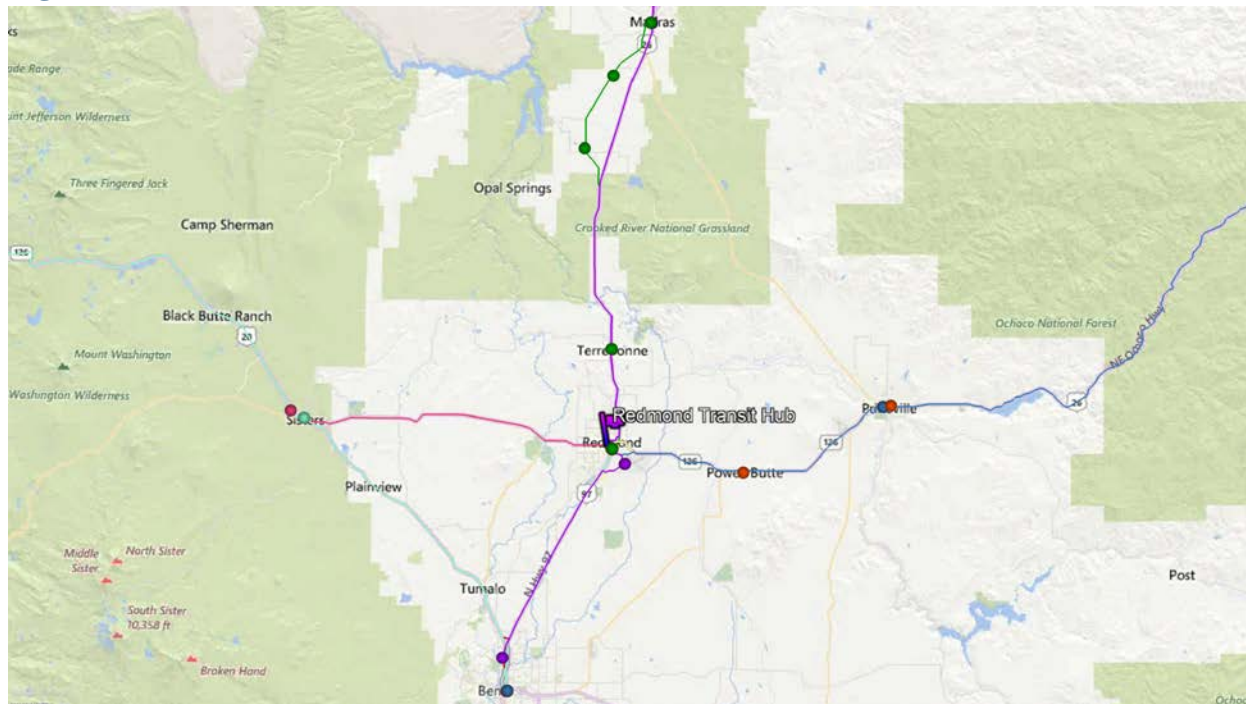
Map data: ©2019 Google, Microsoft

Figure 9: Albany Amtrak Station Reach Profile

Map data: ©2019 Google, Microsoft

Figure 10: Redmond Transit Hub Reach Profile

Map data: ©2019 Google, Microsoft

Figure 11: Redmond Transit Hub Reach Profile (Detailed)

Map data: ©2019 Google, Microsoft

Unconnected Highways

In the previous section on reach, all KTH regional routes were mapped to create a complete image of the KTH system. It showed all stretches of highways in the system and all cities and towns connected to a KTH with no transfers. Therefore, this map can be reversed to display all stretches of highways **not** in the system and all cities and towns **not** connected to a KTH by a one-seat ride.

A highway that is not used by a regional transit route is considered independent of the KTH-connected system. Any cities, towns, census-designated places, attractions, points of interest, or anything else located on these stretches of highway are therefore not accessible via a one-seat ride from a KTH and would require at least one transfer to get there. There are no public transit services available whatsoever on some of the more remote highways.

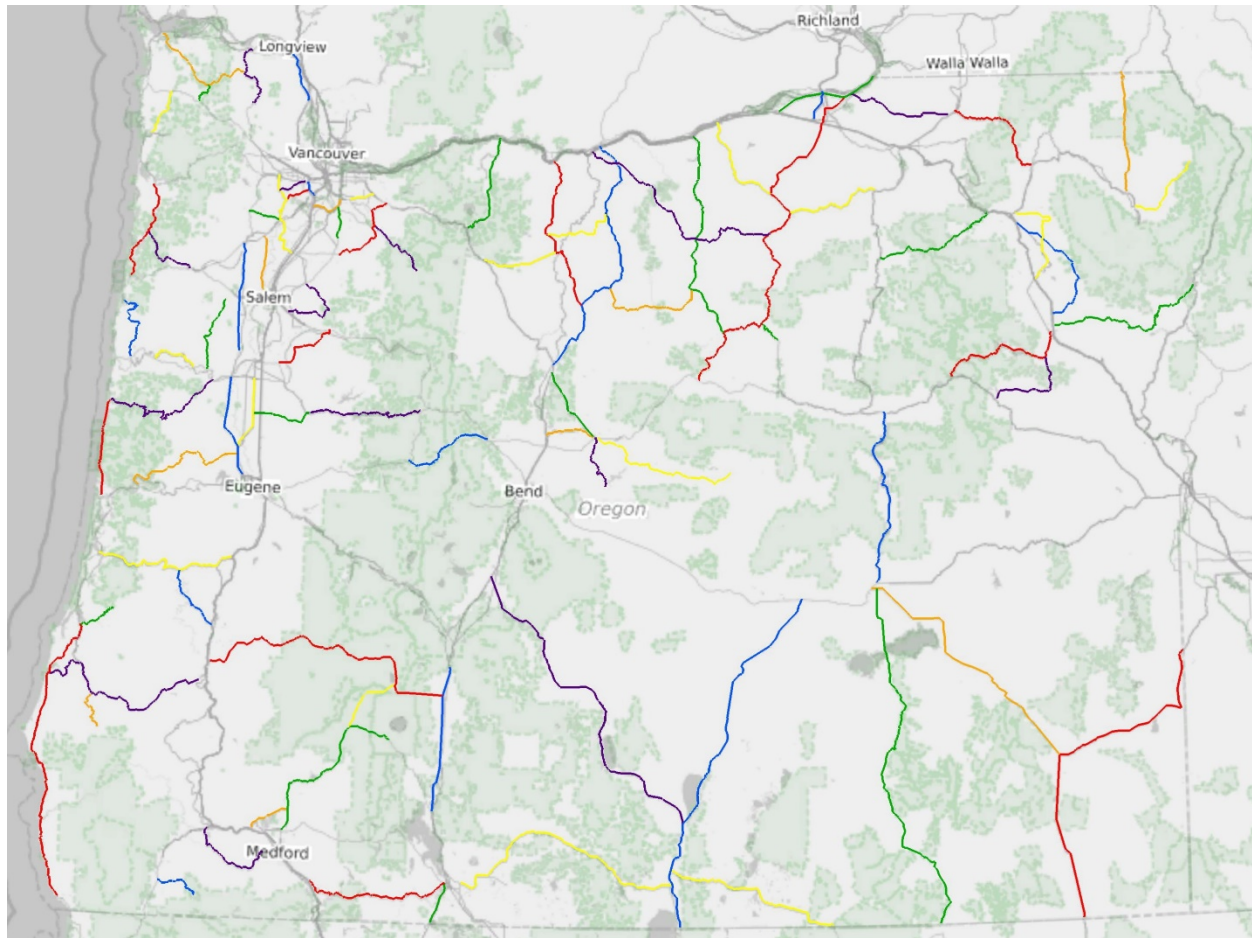
See [Appendix E](#) for additional information on unconnected highways, including the methodology for segment selection and the unique status of the Portland Metropolitan Area.

Table 12: Unconnected Highways Sample

Highway Type	Route #	Origin	Destination	Length (Miles)
State	241	Coos Bay	Allegany	18.3
State	242	Junction State 126	Sisters	36.5
State	244	Junction I-84	Junction US 395	46.8
State	245	Junction State 7	Junction US 26	36.3
State	350	Joseph	Imnaha	29.2
State	370	Prineville	Redmond	17.6
State	380	Prineville	Paulina	55.1
State	542	Junction State 42	Powers	18.3
US	20	Junction State 126	Sweet Home	44.0
US	26	Madras	Prineville	25.9
US	30	Rainier	St Helens	17.3
US	95	OR/ID Border	McDermitt	121.0

All highway segments not served by a regional route connected to a KTH can be mapped and listed in a spreadsheet. [Table 12](#) shows a sample of segments and information regarding their origin and destination, and the length of the segments. See [Table E-1](#) for all data.

There are approximately **3,600 miles** of highways that are not connected to the KTH system. Cities and recreational destinations along these miles do not have access to the statewide KTH-connected system.

Figure 12: Unconnected Highway Segments

Map data: ©2019 Google

Figure 12 shows these unconnected highways. This mapping demonstrates the gaps in the system and the communities that are not served by KTH transit routes. Repeating this analysis in the future will show which communities gained or lost statewide or regional transit service. Other observations:

- All miles of I-5 and I-84 have transit service.
- U.S. Route 101 has **three** distinct gaps and unconnected segments of transit service.
- Such unconnected highways are located across the state, from dense metropolitan areas in the Willamette Valley to rural areas of central and eastern Oregon.
- These unconnected segments include coastal routes, connectors, secondary highways, mountain passes, rural highways, stubs, and scenic byways.

Surrounding Area

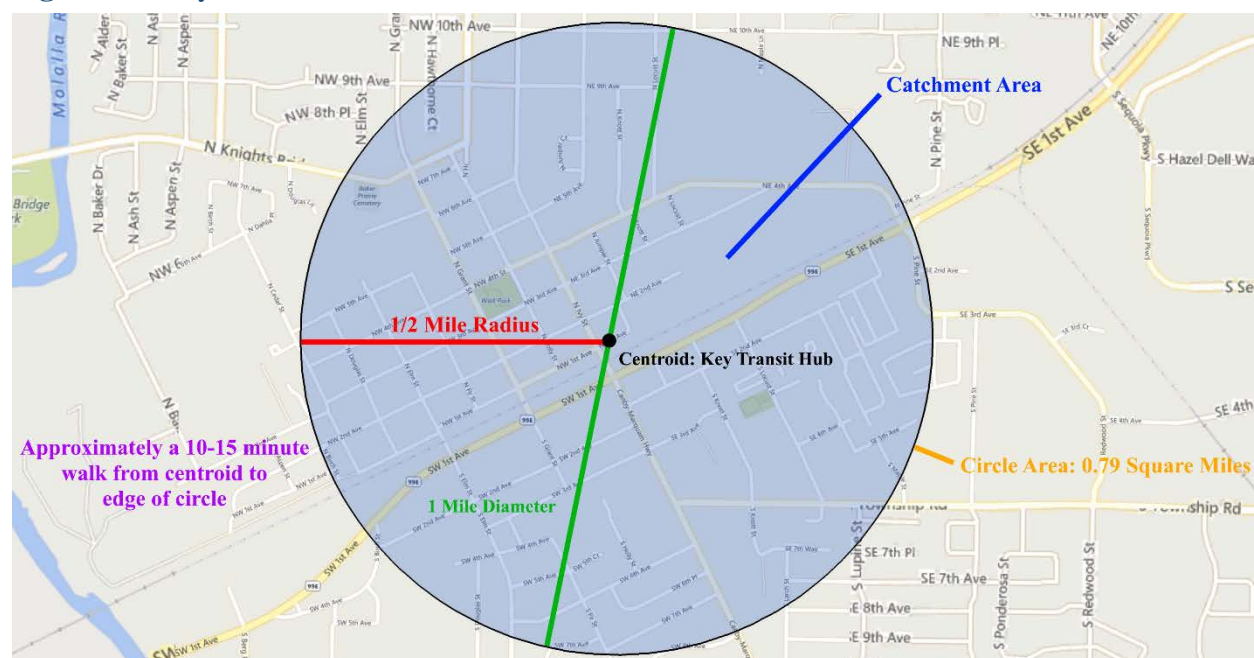
KTHs are both part of their community and influenced by it. An analysis of the physical area surrounding a KTH allows it to be considered within the larger context of a city. The value of a KTH is affected by the routes servicing it, but also by the development around it. Attractions, shops, services, and walking paths around the site can encourage ridership.

Considering each KTH as a starting point or final destination helps evaluate the effects on a transit rider's journey. Creating a specific geographic area around a KTH allows for a standard practice for evaluation.

The latitude and longitude of a KTH becomes the centroid. A circle is drawn around it to determine a review area. In human geography, this is also known as a “catchment area” which is defined as the area from which a city, service, or institution attracts a population that uses its services.

This evaluation uses a **one-half mile radius**, which is the industry standard for reviewing the catchment area of light rail stations or large-scale transit centers. This results in a catchment area of approximately **0.79 square miles**. Any location within this circle is approximately a **10 to 15-minute walk** from the KTH. An analysis of this area can reveal the experiences and opportunities for pedestrians and bicyclists to make vital first and last-mile connections.

Figure 13: Key Transit Hub Radius and Catchment Area



Map data: ©2019 Google, Microsoft

This standard 0.79 square mile catchment area will also be used later to determine the population, employment, and demographic information of the area around a KTH.

Land Uses and Zoning

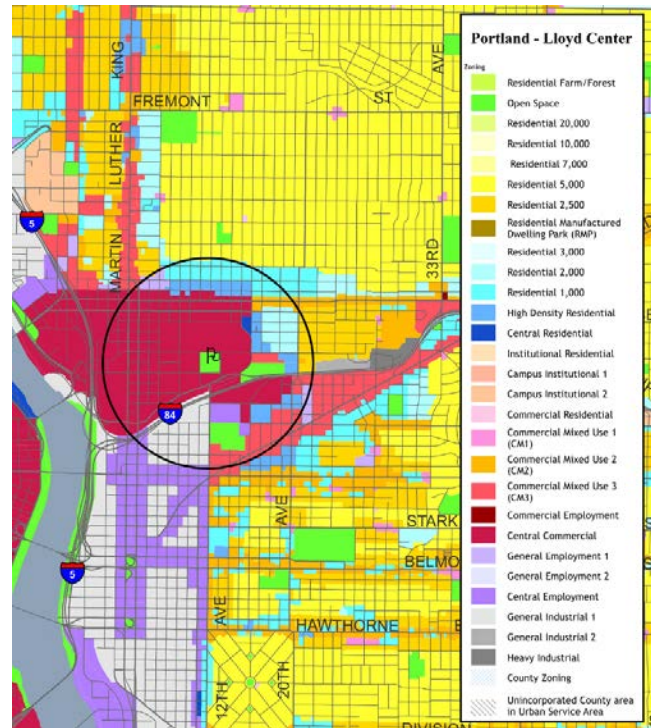
Initially, review of official zoning maps from city and county governments provides detailed information on the land uses and zoning codes around a KTH. Zoning information can help predict where transit riders will go after a transit trip and where pedestrians are most likely to walk. Points of interest are more likely to be in specific zoning areas such as mixed-use developments and downtown areas, which can be in both urban areas and rural community “main streets”.

Similarly, pedestrians are more likely to find areas that are amenable to pedestrian travel in a downtown or residential neighborhood than many commercial or industrial areas.

Reviewing zoning maps is also useful if a city is determining where to place a new transit center. Its success or failure could depend upon it. A transit center in the middle of an industrial park are not as appropriate for transit riders or pedestrians.

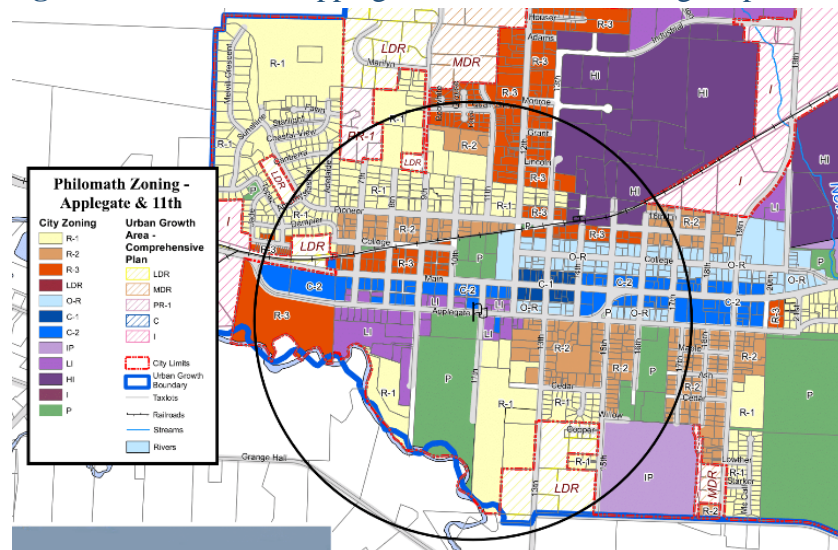
Figures 14 and 15 are examples of zoning maps around KTHs. See [Appendix F](#) for a full list.

Figure 14: Portland Lloyd Center Zoning Map



Map data: ©2019 City of Portland

Figure 15: Philomath Applegate St & 11th St Zoning Map



Map data: ©2019 City of Philomath

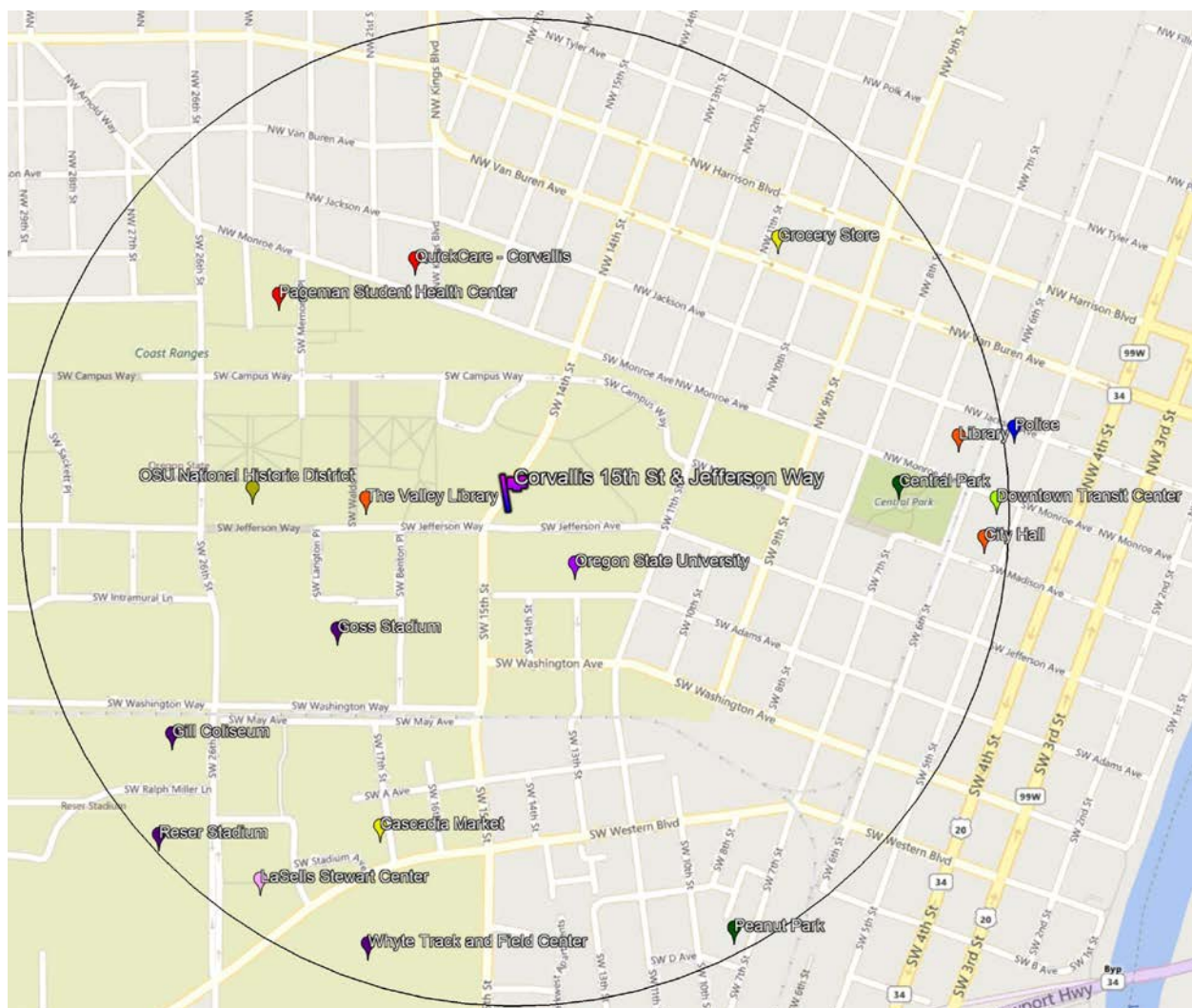
Points of Interest

Another analysis of the area surrounding a KTH is a review of the major points of interest around it. Given the proximity of these destinations to KTHs, it is possible for individuals to use public transit to access them. These places can be important to local communities as well as important on a regional and state level.

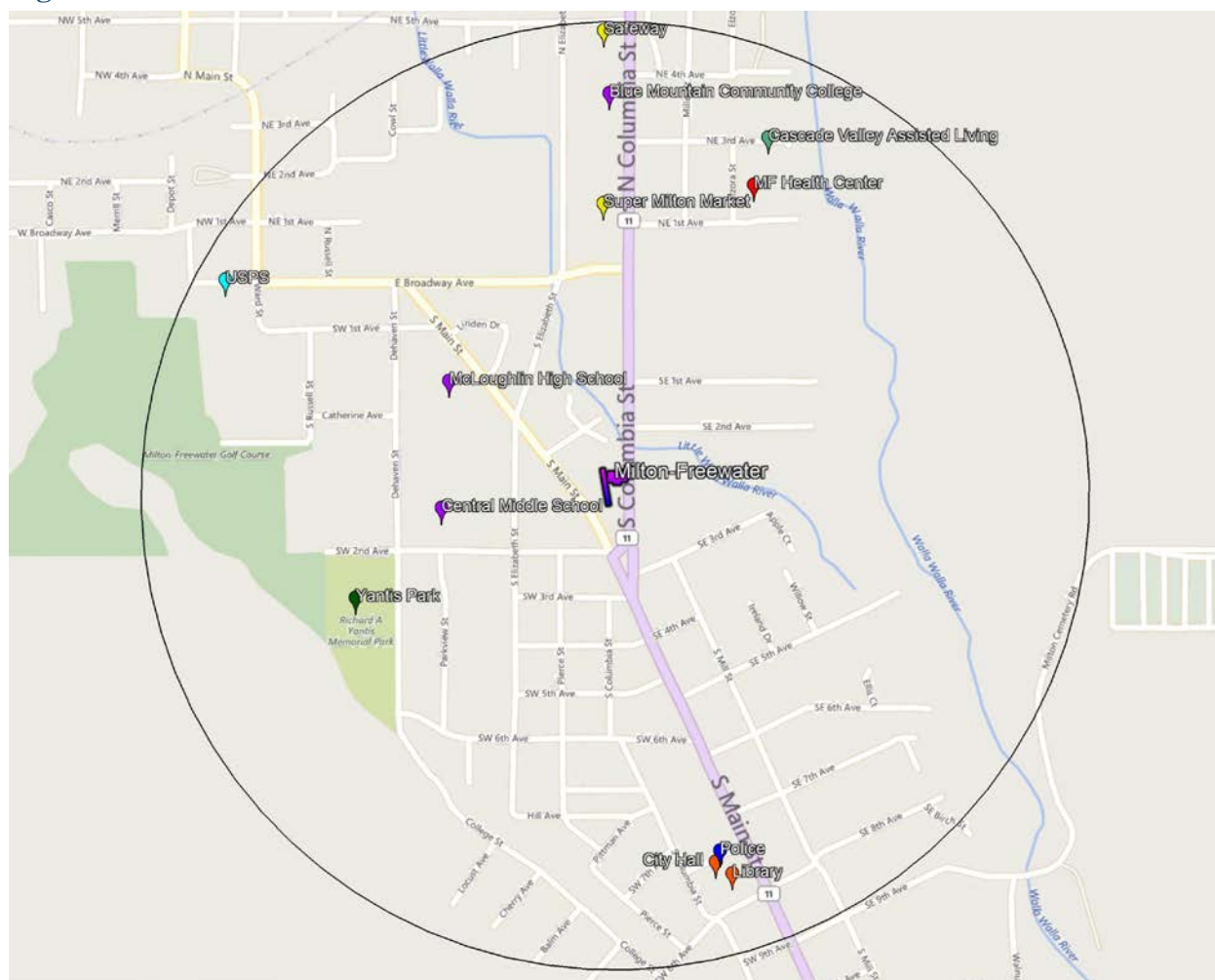
See [Appendix G](#) for a detailed list of the destination categories.

Plotting points of interest on a hub radius map provides a perspective on where disembarking riders are likely to go. The following figures show two examples. See [Appendix G](#) for a full list.

Figure 16: Corvallis 15th St & Jefferson Way Points of Interest



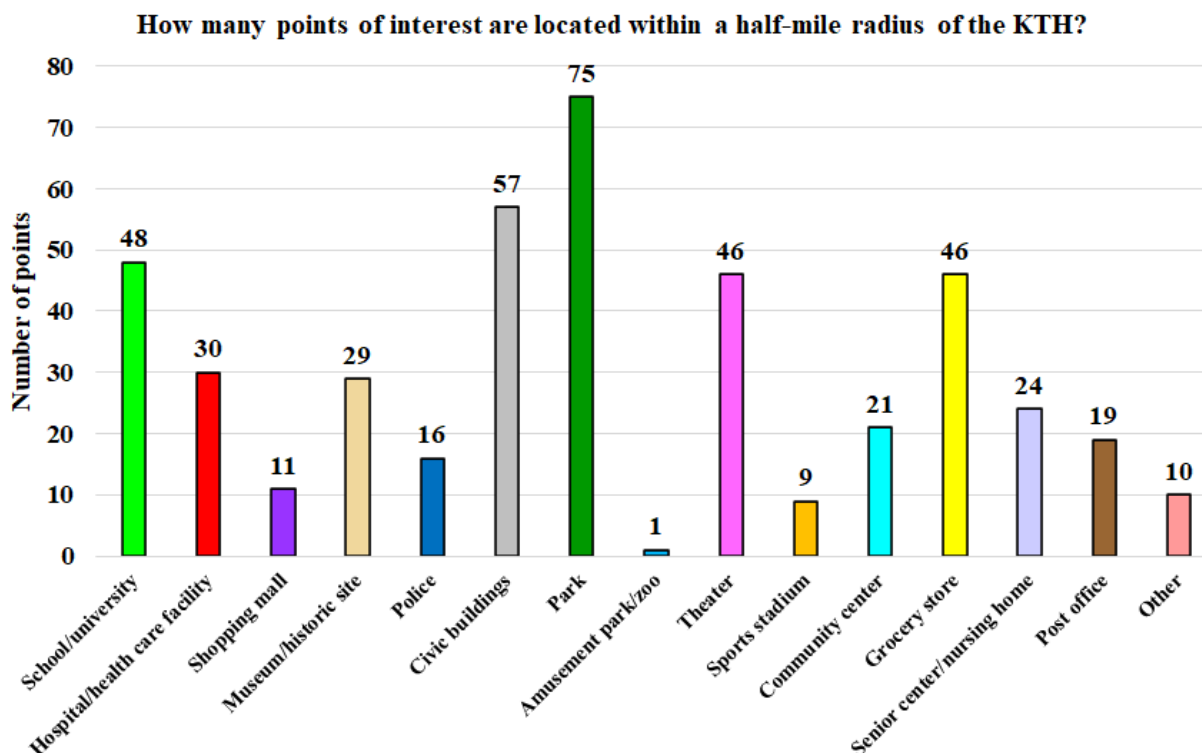
Map data: ©2019 Google, Microsoft

Figure 17: Milton-Freewater Points of Interest

Map data: ©2019 Google, Microsoft

In addition, the points of interest at each KTH can be aggregated to reveal the total numbers in the state. When traveling by transit through KTHs, passengers have access to a wide range of unique places and services. **Figure 18** shows these by category:

Figure 18: Points of Interest on the KTH-Connected System



Statewide, KTHs provide access to 48 schools and universities, 30 hospitals, 29 museums, 57 civic buildings, 75 parks and 46 theaters. These data are just one of the ways to measure the importance of KTHs and their role in the community and the statewide transportation network.

Table 13: Breakdown of Other Points of Interest

Other Points of Interest	Number
Convention center	2
Downtown transit center	2
Tourist attraction	3
Tourist office	1
Fairgrounds	1
Hewlett-Packard campus	1

Walk Audits

Although the evaluation of the area surrounding a KTH can generally be completed online, walk audits provide an evaluation from the field, experiencing the area around a KTH in person. A walk audit is an assessment of the walkability and pedestrian access of an external environment. It assesses the safety and comfort of the environment for pedestrians and bicyclists traveling to the KTH and allows evaluation of first and last-mile connectivity.

Toolkit

The Centers for Disease Control and Prevention (CDC) promotes physical activity as a way to improve overall health and reduce the risk of many chronic diseases. In their Healthier Worksite Initiative¹¹ they developed the Walkability Audit Tool¹². See the tool's worksheet in [Figure H-1](#). The tool includes a short two-page survey designed to allow employees and the general public to assess and score their walking and biking routes. The CDC survey was adapted to assess the walkability of each KTH since improving the safety and comfort around a site can encourage more people to walk, bike, and take transit.

Walk Audit Survey

The survey is taken during a walk from a point of origin to a destination and back again. It is important to observe the entire built environment, or physical makeup of the area, which includes homes, schools, businesses, streets, sidewalks, open spaces, and transportation options. Each category of the route receives a score between 1 and 5. Each walk is scored on a 100-point scale based on a formula with nine weighted categories. The survey prioritizes safety over comfort.

According to the CDC, walks with scores of 0-39 points are high-risk and not attractive for walking, scores of 40-69 are medium-risk with average and non-descript Environments, and walks that score 70 and above are low-risk and generally pleasant.

Figure 19: Walk Audit Scoresheet

Importance	Category	Score
High	A) Pedestrian Facilities	1-5
	B) Pedestrian Conflicts	1-5
	C) Crosswalks	1-5
Medium	D) Maintenance	1-5
	E) Path Size	1-5
	F) Buffer	1-5
	G) Universal Accessibility	1-5
	H) Aesthetics	1-5
Low	I) Shade	1-5
Sum of High Importance		(A-C) x 3
Sum of Medium Importance		(D-H) x 2
Sum of Low Importance		(I) x 1
Total Score		/100

¹¹ [Centers for Disease Control and Prevention: Worksite Physical Activity](https://www.cdc.gov/physicalactivity/worksite-pa/)
<https://www.cdc.gov/physicalactivity/worksite-pa/>

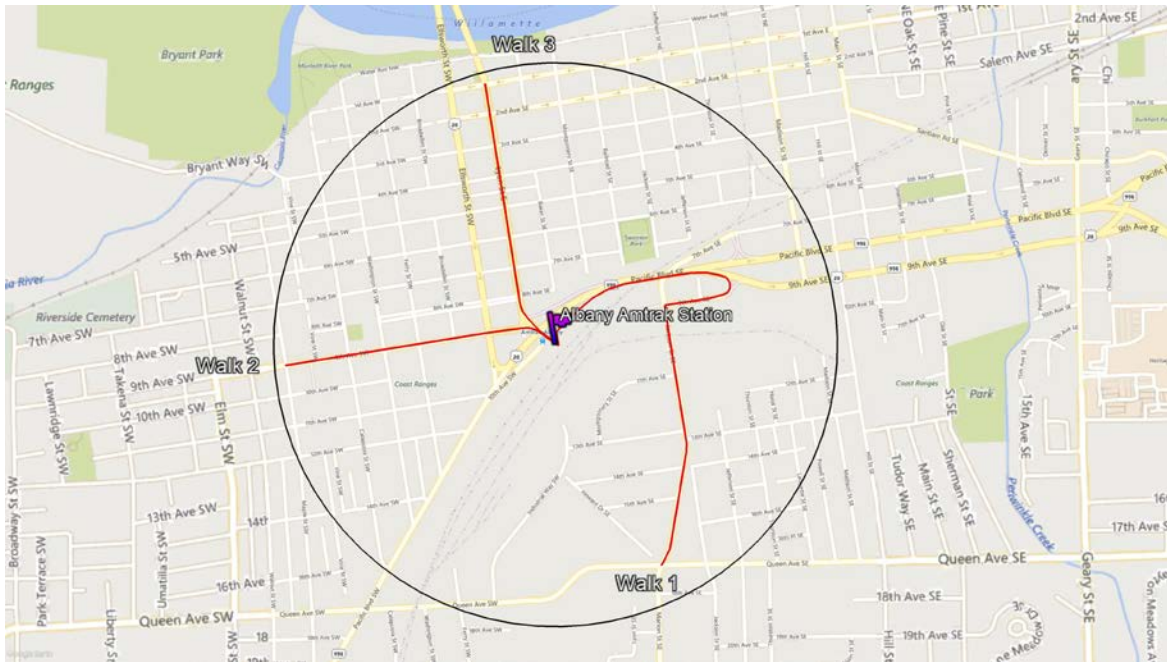
¹² [Centers for Disease Control and Prevention: Walkability Audit Tool](https://www.cdc.gov/physicalactivity/worksite-pa/pdf/walkability_audit_tool.pdf)
https://www.cdc.gov/physicalactivity/worksite-pa/pdf/walkability_audit_tool.pdf

The end of the survey includes five open-ended questions about dangerous and unpleasant segments of the walk, observable improvement opportunities, determining how direct the path is, and whether it is appropriate for recreational use.

Each KTH received **three walk audits** to generate a fair, well-rounded assessment. The starting point was always the KTH and the ending point was either a specific point of interest or the edge of the ½ mile circle catchment area. Each walk went out on one side of the street and back to the site on the other side. Route selection was based on:

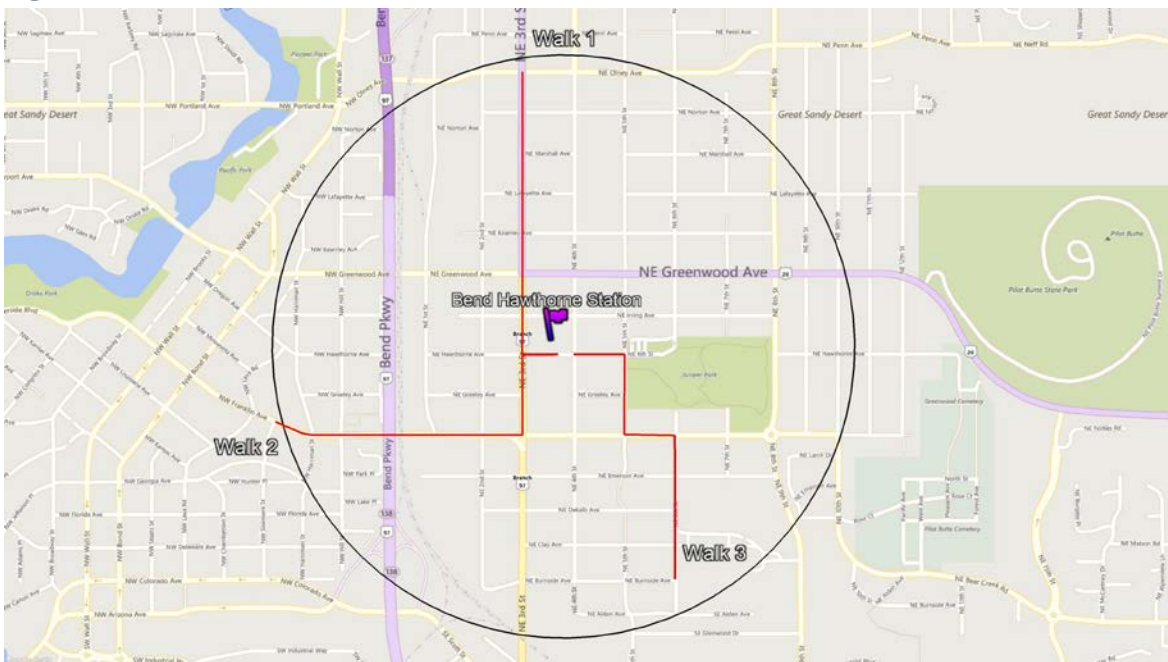
- **Most direct path:** People typically take the path of least resistance so the most direct and logical route was used.
- **Overcoming pedestrian barriers (Freeways, rivers, railroad lines):** If a direct path is not available it is likely due to a barrier separating the origin and destination. With such barriers, pedestrians are only able to cross at designated crossing points, such as a railroad crossing, bridge or tunnel. These barriers often force a pedestrian to travel in a more circuitous path to reach their destination.
- **Directional representation:** To provide an appropriate sample, routes going in different directions were reviewed to ensure that walk samples did not all go in the same direction.
- **Connection to major destinations and downtown areas:** Transit riders on a regional route may access points of interest, including historic downtowns, shopping districts, sports stadiums, or museums. Such locations generate substantial foot traffic, so it is important to view how transit riders walk to and from these places.

Figures 20 and **21** are examples of these walk routes. See [Appendix I](#) for the full set of maps.

Figure 20: Albany Amtrak Station Walk Routes

Map data: ©2019 Google, Microsoft

Figure 20 shows the results of the walk routes for Albany Amtrak Station. Walk 1 reaches the southeast edge of the catchment area but requires a circuitous route because of a freight railroad yard and highway overpass that obstruct the path. Walk 2 goes due west and Walk 3 goes due north into the historic downtown district. **Figure 21** shows the relatively straightforward walk routes for Bend Hawthorne Station.

Figure 21: Bend Hawthorne Station Walk Routes

Map data: ©2019 Google, Microsoft

Findings

After completing the walk audits, scores and totals were calculated to evaluate a KTH's walkability. The full results of all walk audits for each KTH are in [Table H-1](#). The totals for all 40 KTHs are displayed in this section. [Table 14](#) shows the factors of highest importance.

Table 14: Walk Audit High Importance Category Scores

	Pedestrian Facilities		Pedestrian Conflicts		Crosswalks	
	Points	%	Points	%	Points	%
Mean	4.43	88.6%	3.36	67.2%	3.45	69%
Median	5	100%	4	80%	3	60%

Pedestrian facilities include suitable walking paths along the route. Higher marks indicate the majority of walking paths had hard-surfaced pathways on both sides of the street for the entire route. KTH scores for pedestrian conflicts are lower – 67.2-80 percent -- representing minor conflicts between pedestrians and vehicular traffic due to speed and traffic volume, multiple driveways, and large intersections. Crosswalks at KTHs scored the lowest – 60-69 percent -- indicating that crosswalks are not present, are unsuitable/deteriorated, or pedestrian walk lights and curb extensions (bulb-outs) are uncommon or insufficient. Overall, the facilities in the high importance category are generally safe and well-built – 75-80 percent.

Table 15: Walk Audit Medium Importance Category Scores

	Maintenance		Path Size		Buffer		Universal Accessibility		Aesthetics	
	Points	%	Points	%	Points	%	Points	%	Points	%
Mean	3.43	68.6%	3.86	77.2%	3.49	69.8%	3.82	76.4%	3.51	70.2%
Median	4	80%	4	80%	4	80%	4	80%	4	80%

Walk audit categories that are of medium importance all received median scores of 4 out of 5 or 80 percent. The mean scores tell a different story. Sidewalk maintenance only returns a score slightly above average at 3.43 points (68.6 percent). This indicates hazardous walking conditions and the frequent presence of cracked, smashed or buckled sidewalks. Path size is much better and frequently scores above average at 3.86 points (77.2 percent).

The buffer between roadways and walking paths was often insufficient or nonexistent, resulting in low scores -- 3.49 points (69.8 percent). Universal accessibility scores higher with 3.82 points (76.4 percent). If a pathway is not specifically designed to facilitate wheelchair access, then at the very least a wheelchair accessible route is available but inconvenient. Finally, scores for aesthetics have an mean score of 3.51 points (70.2 percent). Overall, the medium importance category averages out with scores between 72-80 percent.

Table 16: Walk Audit Low Importance Category Score

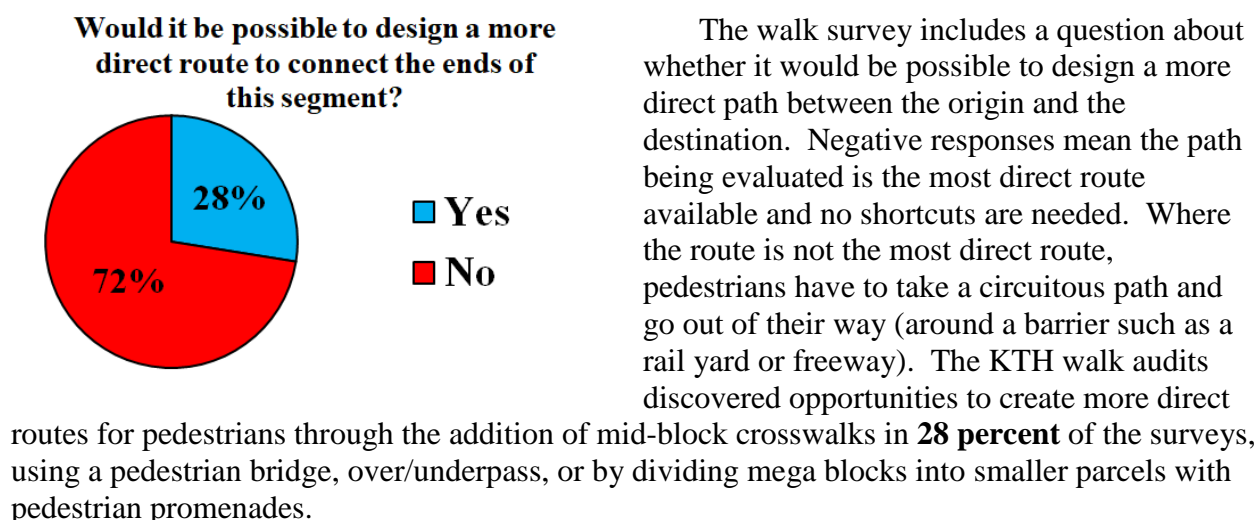
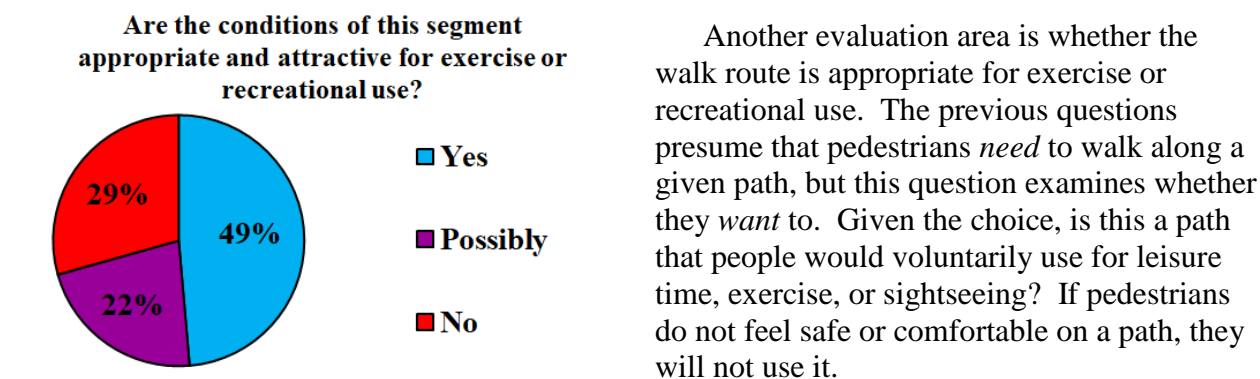
Access to shade was the only component in the low importance category and generally scored poorly – 60-67.2 percent.

	Shade	
	Points	%
Mean	3.36	67.2%
Median	3	60%

Table 17: Walk Audit Total Scores

Table 17 shows the mean and median total scores for all KTHs. The table represents the compilation of **109 walk audits**. Out of a total possible score of 100, the mean score of a walk audit was 73.2 points/percent. Median score is slightly higher with 75 points/percent. Overall, the walk audits average out with several scoring substantially above or below the baseline. Statewide, walk routes score an average grade of C.

	Total Score	
	Points	%
Mean	73.2	73.2%
Median	75	75%

Figure 22: Walk Audit Direct Route Availability**Figure 23: Walk Audit Route Recreational Attractiveness**

About half (**49 percent**) of the routes that were evaluated were suitable for exercise and recreational use, meaning they were safe, direct, aesthetically pleasing, universally accessible, had high-quality pedestrian facilities, and low pollution levels. Under one-quarter (22 percent) were possibly appropriate. Such routes may have a mix of suitable and unsuitable sections. The first half of a walk route could be enjoyable; the second half is unpleasant. As a result of zoning and land use policies, the character of a city and walk routes can change quite dramatically in as little as one-half mile.

Luckily, less than a third (29 percent) of the routes were totally unsuitable for exercise and recreational use. They were unsafe, not universally accessible, had low-quality or no pedestrian facilities, or had a great deal of pollution.

See [Table H-2](#) for a detailed comparative analysis of each site's walkability, ODOT's walk audit scores, and scores from other sources.



Pedestrian Safety

Safety is directly related to the usability and walkability of a KTH. Safe cities with safe transit stops can encourage more people to walk and bike, helping improve first and last mile connections to KTHs. The following section describes the level of safety (related to transportation) for areas in and around KTHs. This analysis used the Oregon Transportation Safety Data Explorer tool¹³, created by the ODOT Geographic Information Services Unit.

Crash Data

The interactive tool displays ODOT crash data for the years 2013-2017. All reported crashes are displayed as colored dots representing their severity. The crashes are mapped and tallied within each KTH radius.

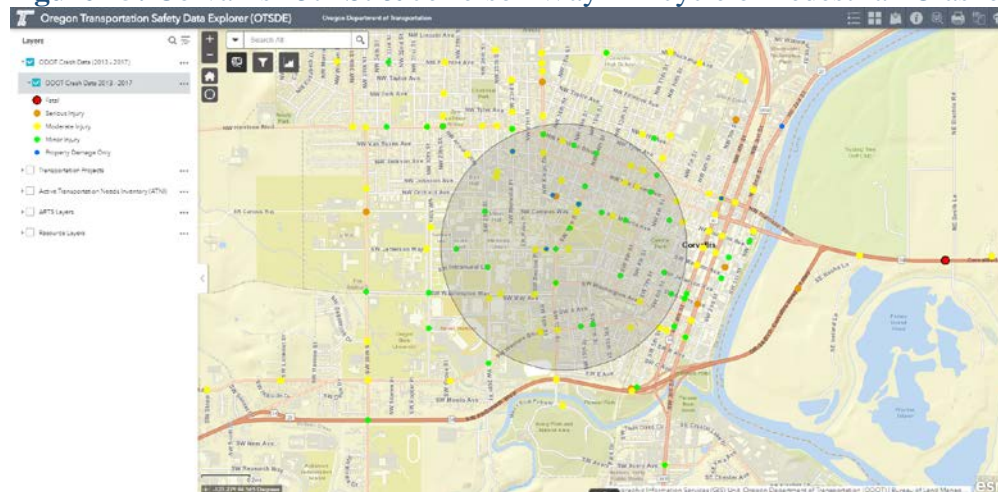
Pedestrian safety consists of two separate crash data analyses. The first analysis considers all modes of transportation but only the two most severe crashes: fatal and serious injury. In this analysis, the fatality could be a motorist, not a bicyclist or pedestrian. Vehicle to vehicle crashes are arguably less relevant to pedestrians on the sidewalk.

The second analysis considers all crash severities but only those involving bicycles or pedestrians. This analysis specifically focuses on vehicle to pedestrian crashes. All crash severities are included because even moderate and minor pedestrian injuries can be significant to an individual's well-being and safety. **Figure 25** shows an example of these crash instances plotted on a KTH radius map.

Figure 24: Safety Data Explorer Legend



Figure 25: Corvallis 15th St & Jefferson Way – Bicycle or Pedestrian Crashes



Map data: Esri, ODOT

¹³ [Oregon Transportation Safety Data Explorer.](https://hub.arcgis.com/datasets/df0b3cdb2f1149d3bd43436bc1dd4eac)
<https://hub.arcgis.com/datasets/df0b3cdb2f1149d3bd43436bc1dd4eac>

Table 18: Safety Data Explorer Results: All Transportation Modes – Serious Injury and Fatal Crashes Only

Key Transit Hub	All Transportation Modes - Serious Injury and Fatal Crashes Only (2013-2017)		
	Fatal	Serious Injury	Total
Albany Amtrak Station	0	6	6
Albany Clay St at Heritage Mall	2	17	19
Albany Linn-Benton Community College	2	0	2
Astoria Transit Center	0	6	6
Banks	0	0	0
Beaverton Sunset Transit Center	1	11	12
Bend Hawthorne Station	1	11	12
Canby Transit Center	1	3	4
Cannon Beach Midtown Transit Center	0	0	0
Corvallis 1st St & Washington Ave	0	9	9
Corvallis 9th St & Reiman Ave	0	6	6
Corvallis 15th St & Jefferson Way	0	2	2
Corvallis 26th St & Western Blvd	0	4	4
Corvallis Circle Blvd & 9th St	2	2	4
Corvallis Circle Blvd & Four Acre Place	2	2	4
Corvallis Downtown Transit Center	0	11	11
Corvallis Good Samaritan Center	0	4	4
Eugene Amtrak Station	4	15	19
Eugene EmX Walnut Station	0	1	1
Grand Ronde	1	1	2
Hillsboro Central Transit Center	2	10	12
Klamath Falls Amtrak Station	0	7	7
La Grande Transit Center	0	1	1
Medford Front Street Station	1	12	13
Milton-Freewater	0	1	1
Ontario	0	5	5
PDX Transit Center	0	1	1
Philomath Applegate St & 11th St	0	1	1
Philomath Main St & 14th St	0	3	3
Portland 6th Ave & Taylor St	0	32	32
Portland Lloyd Center	2	43	45
Redmond Airport	0	0	0
Redmond Transit Hub	0	8	8
Salem Amtrak Station	0	9	9
Salem Downtown Transit Center	0	23	23
Springfield Greyhound Station	2	5	7
Union Station	3	18	21
Wilsonville Transit Center	0	1	1
Woodburn Hwy 211 & Hwy 214	1	8	9
Woodburn Memorial Transit Center	1	11	12

Table 19: Safety Data Explorer Results: Bicycle or Pedestrian Involved Crashes Only – All Crash Severity

Key Transit Hub	Bicycle or Pedestrian Involved Crashes Only All Crash Severity (2013-2017)					
	Fatal	Serious Injury	Moderate Injury	Minor Injury	Property Damage	Total
Albany Amtrak Station	0	2	11	8	0	21
Albany Clay St at Heritage Mall	1	6	21	15	0	43
Albany Linn-Benton Community College	0	0	0	0	0	0
Astoria Transit Center	0	1	18	5	0	24
Banks	0	0	1	1	0	2
Beaverton Sunset Transit Center	1	0	3	3	1	8
Bend Hawthorne Station	1	4	20	5	1	31
Canby Transit Center	0	0	6	12	0	18
Cannon Beach Midtown Transit Center	0	0	2	0	0	2
Corvallis 1st St & Washington Ave	0	5	20	14	0	39
Corvallis 9th St & Reiman Ave	0	2	26	7	2	37
Corvallis 15th St & Jefferson Way	0	2	30	22	4	58
Corvallis 26th St & Western Blvd	0	2	11	8	1	22
Corvallis Circle Blvd & 9th St	2	1	13	14	1	31
Corvallis Circle Blvd & Four Acre Place	2	0	11	9	0	22
Corvallis Downtown Transit Center	0	5	37	21	2	65
Corvallis Good Samaritan Center	0	0	0	1	0	1
Eugene Amtrak Station	1	3	20	18	0	42
Eugene EmX Walnut Station	0	1	9	2	0	12
Grand Ronde	0	0	0	0	0	0
Hillsboro Central Transit Center	2	1	15	18	2	38
Klamath Falls Amtrak Station	0	2	7	7	0	16
La Grande Transit Center	0	0	3	3	0	6
Medford Front Street Station	0	3	26	33	1	63
Milton-Freewater	0	0	0	4	0	4
Ontario	0	2	4	3	0	9
PDX Transit Center	0	0	0	2	0	2
Philomath Applegate St & 11th St	0	0	1	0	0	1
Philomath Main St & 14th St	0	1	2	1	0	4
Portland 6th Ave & Taylor St	0	19	107	94	3	223
Portland Lloyd Center	0	10	68	37	0	115
Redmond Airport	0	0	0	1	0	1
Redmond Transit Hub	0	0	3	3	0	6
Salem Amtrak Station	0	0	12	14	1	27
Salem Downtown Transit Center	0	4	39	40	2	85
Springfield Greyhound Station	0	1	17	10	0	28
Union Station	3	10	77	81	16	187
Wilsonville Transit Center	0	0	1	1	0	2
Woodburn Hwy 211 & Hwy 214	0	0	2	5	0	7
Woodburn Memorial Transit Center	0	2	6	3	0	11

Tables 18 and **19** show the crash results for each KTH. This data needs to be considered with several caveats. First, crashes correlate with population and traffic volume. The more people living and driving in an area, the more likely there will be crashes and conflicts. A large number of crashes does not conclusively mean that the area is unsafe, but may simply indicate that there is a higher level of traffic activity.

Another consideration is that some KTH radiuses include portions of interstates or highways. Such high-speed, high-volume routes can inflate the number of crashes at a KTH. Finally, crashes on interstates or highways, especially those that are grade-separated, are arguably less important to pedestrians since they would be on an underpass or overpass, thereby avoiding these hazards. However, highways that run through populated cities at-grade, with sidewalks and crosswalks, do contribute to the safety of pedestrians.

See [Appendix J](#) for the full set of crash data maps.



Key Transit Hub Site Surveys

Methodology

Inspecting and surveying each KTH provides an important part of the analysis. The focus of the survey was the KTH itself, the physical components present at the site, and the scope of the transit infrastructure and passenger amenities.

Each KTH was visited at least once, and, whenever possible, the trip in and out was taken on public transit. This provided an assessment of how the KTH is used and how to navigate the site when arriving by bus or train. The site survey also included photo documentation.

The Survey Sheet

The survey, or inventory, includes specific categories with objective questions that are, to the greatest extent, calculated in ways that reduce bias and increase impartiality. However, questions such as perceived comfort and cleanliness levels, were determined by surveyor. Nevertheless, even the more subjective questions can yield information that is important to transit riders and have an impact on whether the service is used.

Table 20: Key Transit Hub Site Survey Categories

1) Key Transit Hub Location	2) Route Assignment	3) Site Fundamentals	4) Transit Route Signage
5) Transit Facility	6) Passenger Amenities	7) Passenger Experience	8) Safety and Security
9) Walkability	10) Bicycling Infrastructure	11) Surrounding Area	

These categories and the questions within were selected to give a well-rounded, comprehensive, and detailed understanding of each KTH and its components. See [Figure K-1](#) for the full inventory. Details about question methodology are in [Appendix K](#).

Key Transit Hub Survey Results

Visuals

Figure 26: Key Transit Hub Site Type

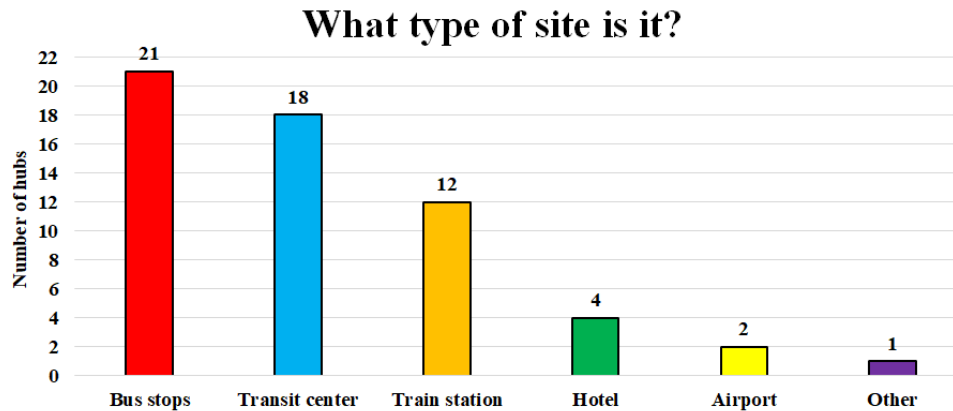


Figure 28: Number of Different Sites Within a Stop Cluster Radius

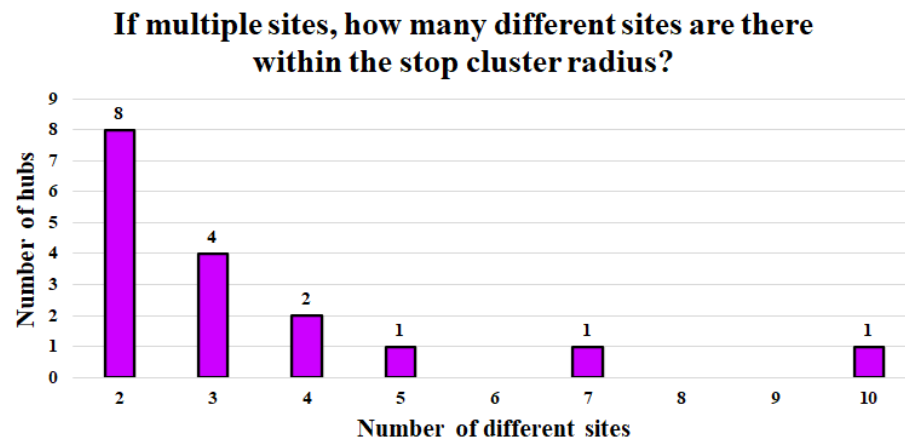


Figure 27: Key Transit Hub Site Configuration

What is the site configuration?

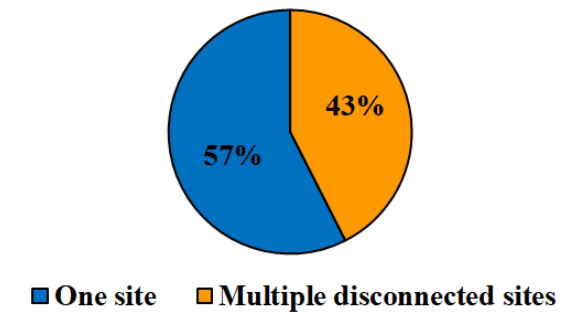


Figure 29: Transit Agency Name and Logo Display

Is the transit agency name and logo clearly displayed on the route sign?

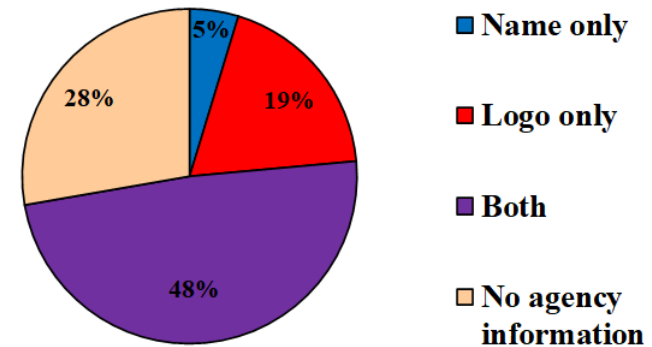
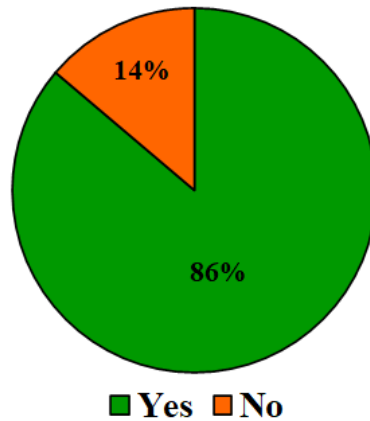
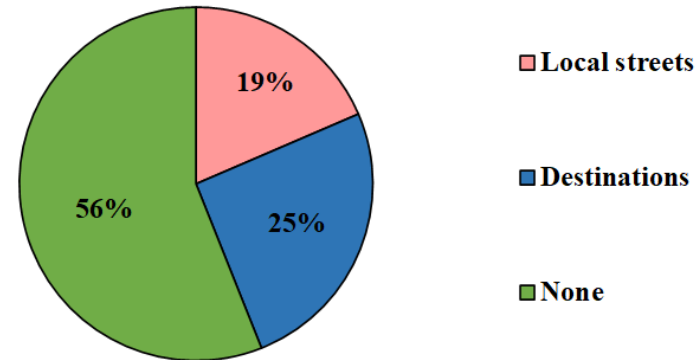


Figure 30: Transit Route Number or Name Display

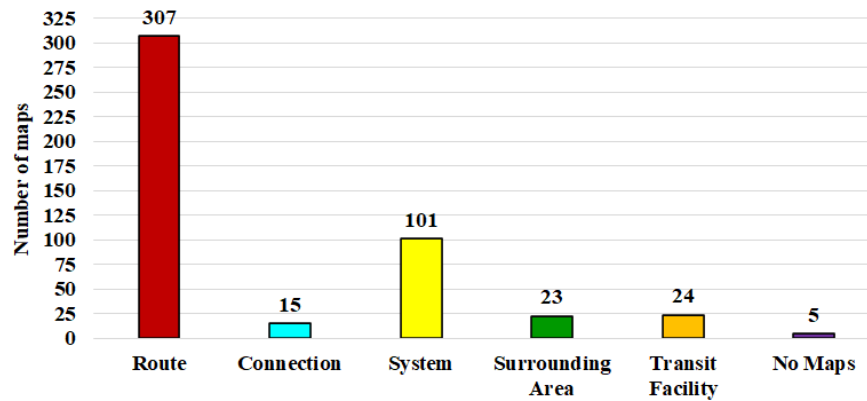
Is the route number or name clearly displayed on the sign?

**Figure 31:** Destination Information on Transit Route Signage

What information does the sign provide about where the bus will go and what its destinations are?

**Figure 32:** Number and Type of Maps Present

How many and what type of maps are present?

**Figure 33:** Number of Timetables and Route Information Displays Present

How many timetables/route information displays are present?

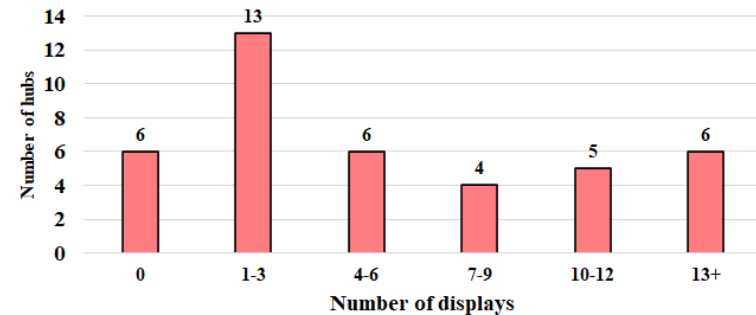


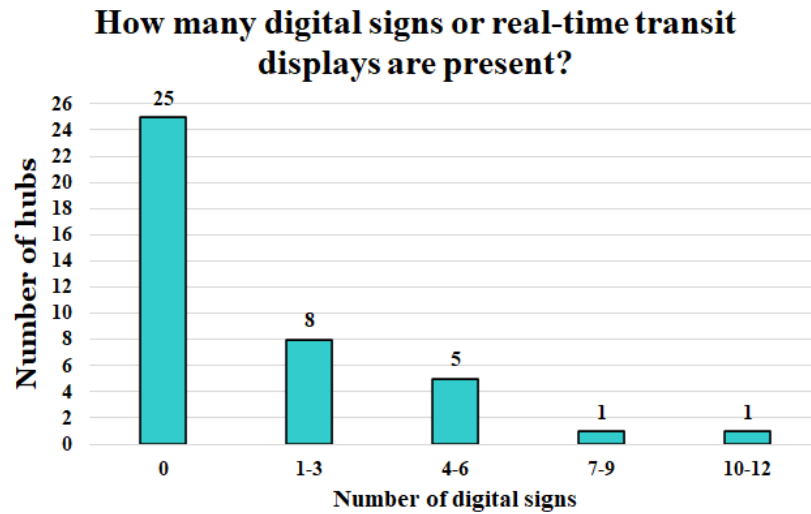
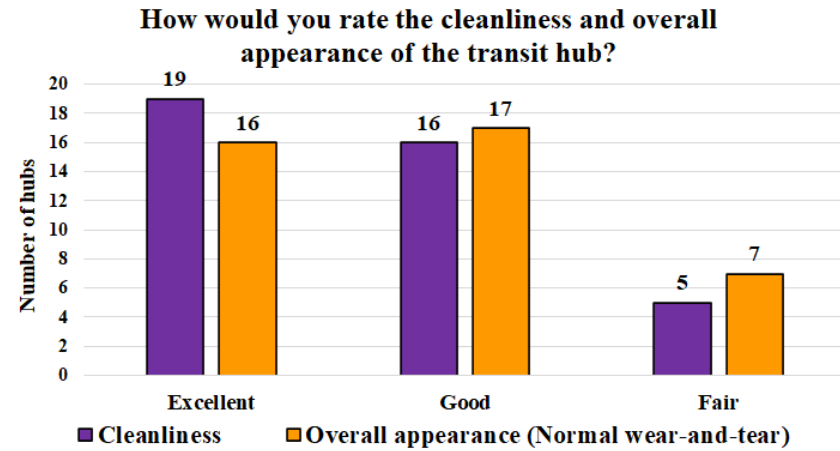
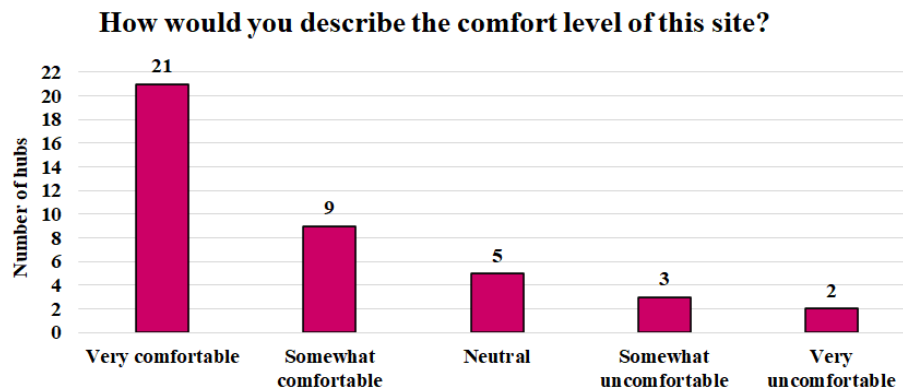
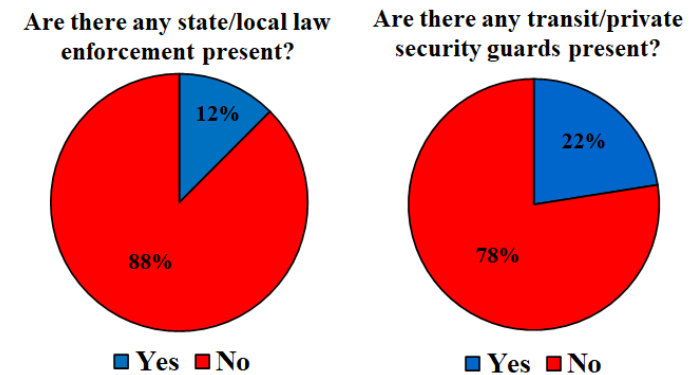
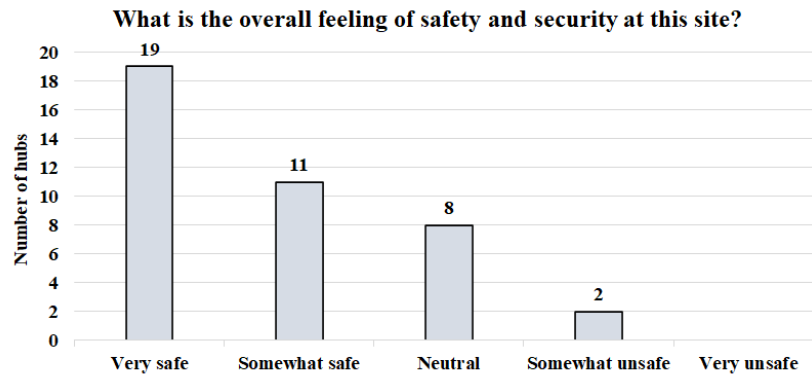
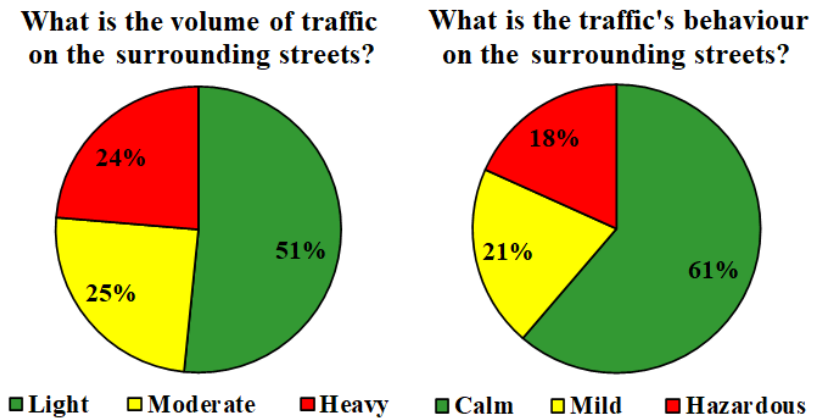
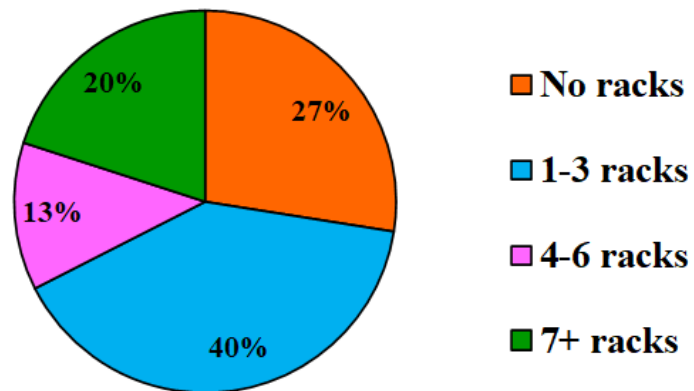
Figure 34: Digital Signs Present**Figure 35: Cleanliness and Overall Appearance****Figure 36: Comfort Level****Figure 37: Presence of Law Enforcement**

Figure 38: Overall Feeling of Safety and Security**Figure 39: Volume and Behavior of Surrounding Streets****Figure 40: Bike Racks**

How many bike racks are present?

**Figure 41: Bike Lockers**

How many bike lockers are present?

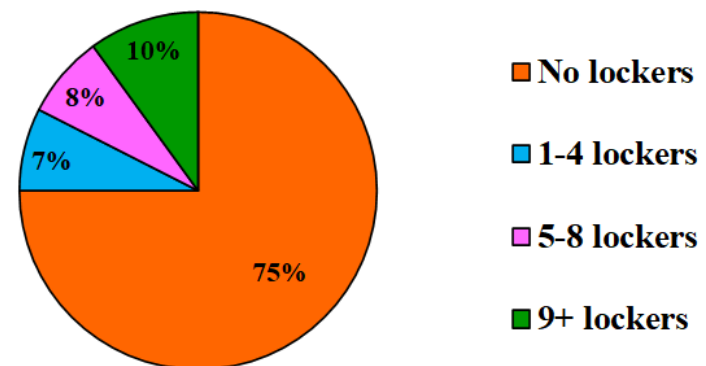
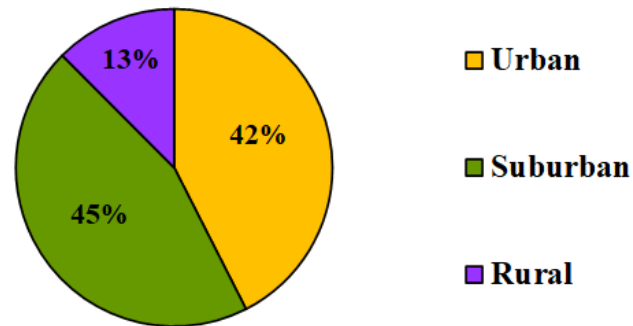
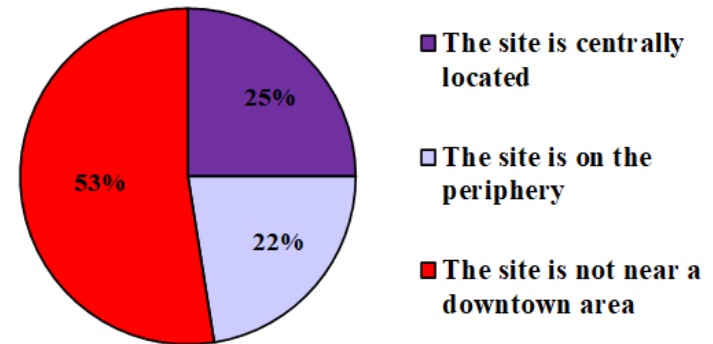


Figure 42: Type of Developed Environment

What type of developed environment is the site located in?

**Figure 43:** Key Transit Hub Location in Downtown Area

Is the site centrally located in a dense, downtown area?

**Figure 44:** Transfer Stress

How would you rate the "transfer stress" of a passenger trying to make a connection?

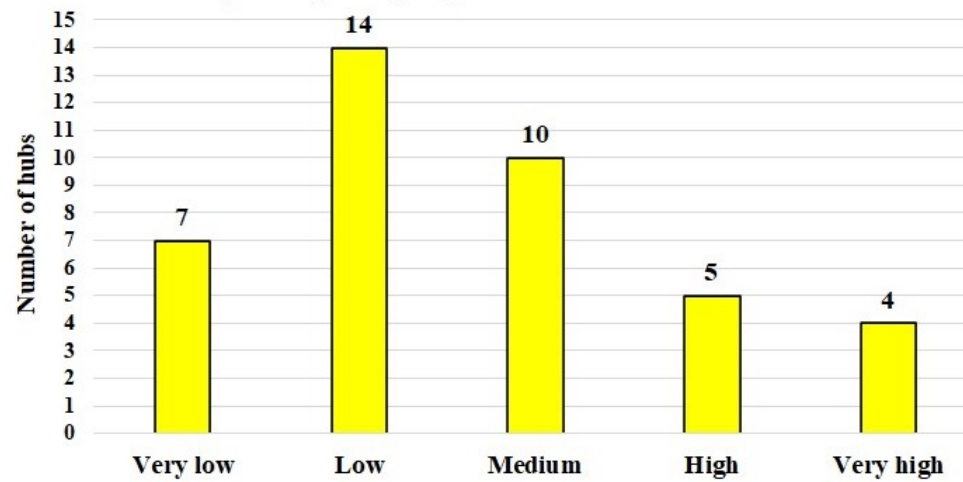
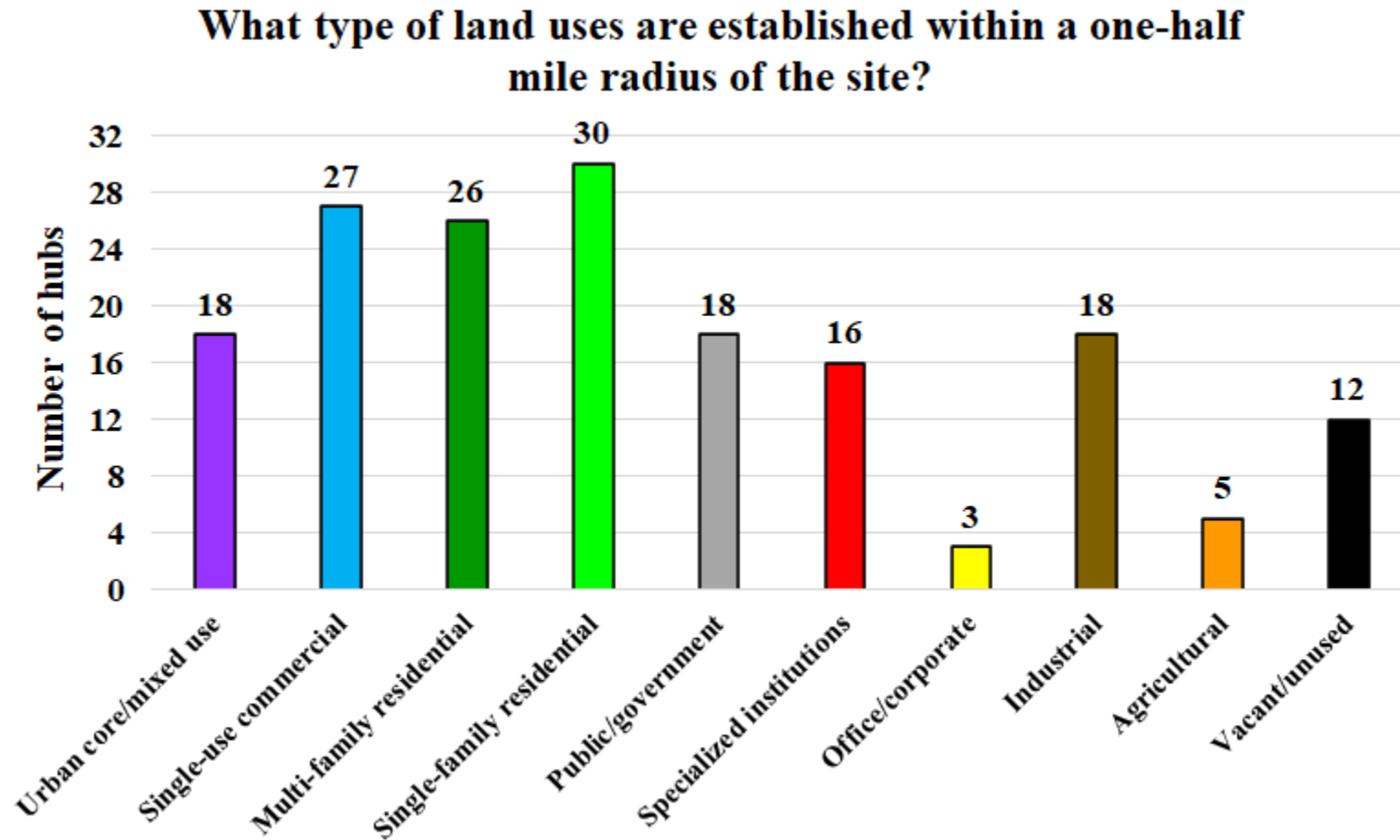


Figure 45: Land Uses

See [Appendix L](#) for additional site survey visual results.

Totals and Averages

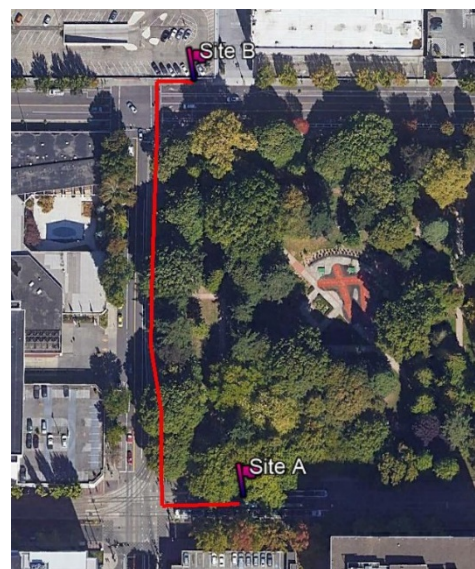
The following section contains additional KTH site survey results. These results are best displayed as averages or total counts. See [Appendix L](#) for additional results.

- Is there a specific sign for each transit agency route serving the KTH?
 - Transit agency routes with specific signs: 231 (76.5 percent)
 - Transit agency routes without specific signs: 71 (23.5 percent)
- Is the transit agency name and logo clearly displayed on the route sign?
 - Signs with no agency information: 53 (28 percent)
 - Signs with both agency name and logo: 93 (48 percent)
- Is the route number/name clearly displayed on the sign?
 - Signs with route number/name: 206 (86 percent)
 - Signs with no route number/name: 33 (14 percent)
- What info does the sign provide about where the bus will go and what its destinations are?
 - Route signs with destination information on them: 102 (44 percent)



Designated transit sign with agency name, logo, route name, and destination information

- If multiple disconnected sites, how long does it take to walk between them?
 - Mean time: 3 minutes 40 seconds
- What is the square footage of the site?
 - Mean: 82,559 square feet
 - Median: 35,884 square feet
- What is the square footage of the passenger waiting area?
 - Mean: 21,892 square feet
 - Median: 10,949 square feet



Disconnected Sites Transfer Time

- Does the KTH have any solar panels to power the facility?
 - KTHs with solar panels: 5 (12.5 percent)
- Is there a designated bike/scooter share drop-off area on site?
 - KTHs with a drop-off area: 6 (15 percent)
 - All six KTHs featured a physical, upstanding corral for bike share (docking model)
- How many and what type of restrooms are present?
 - KTHs with restrooms: 21 (52.5 percent)
- How many and what type of shelters are present?
 - KTHs with shelters: 37 (92.5 percent)
 - Mean number of individual bus stop shelters: 3
- Is there an indoor component to the KTH?
 - KTHs with an indoor area: 19 (47.5 percent)
- All indoor areas were furnished with adequate seating. Every KTH had at least one piece of outdoor seating furniture.
- How many and what type of maps are present?
 - KTHs with at least one map present: 35 (87.5 percent)
 - Route maps were by far the most common type of map at KTHs. This is partly because a transit agency can display a poster on a bus shelter that has their entire system map on one side and 10 route maps on the other. Route maps are individual and the other maps are collective.
- How many digital signs or real-time transit displays are present?
 - KTHs with digital signs: 15 (37.5 percent)
- Is there a customer service center with a live person?
 - KTHs with a customer service center: 14 (35 percent)
- Only one KTH had an interactive information kiosk. The kiosk was located in a hotel on private property.
- Are there any clocks present?
 - KTHs with clocks: 23 (57.5 percent)
- Are there any drinking fountains present?
 - KTHs with drinking fountains: 18 (45 percent)



Digital Signage

- Are any of the signs, maps, displays or announcements in another language?
 - KTHs with second language information: 7 (17.5 percent)
 - The second language was always Spanish
- Are there any paper route/timetable pamphlets available for passengers at the facility?
 - KTHs with paper pamphlets: 11 (27.5 percent)
- Is there a specific webpage or website section that contains information about the transit site?
 - KTHs with a specific webpage: 17 (42.5 percent)
- Is there a transit provider intercom to contact a live-person for transit help?
 - Only one KTH had an intercom for live help



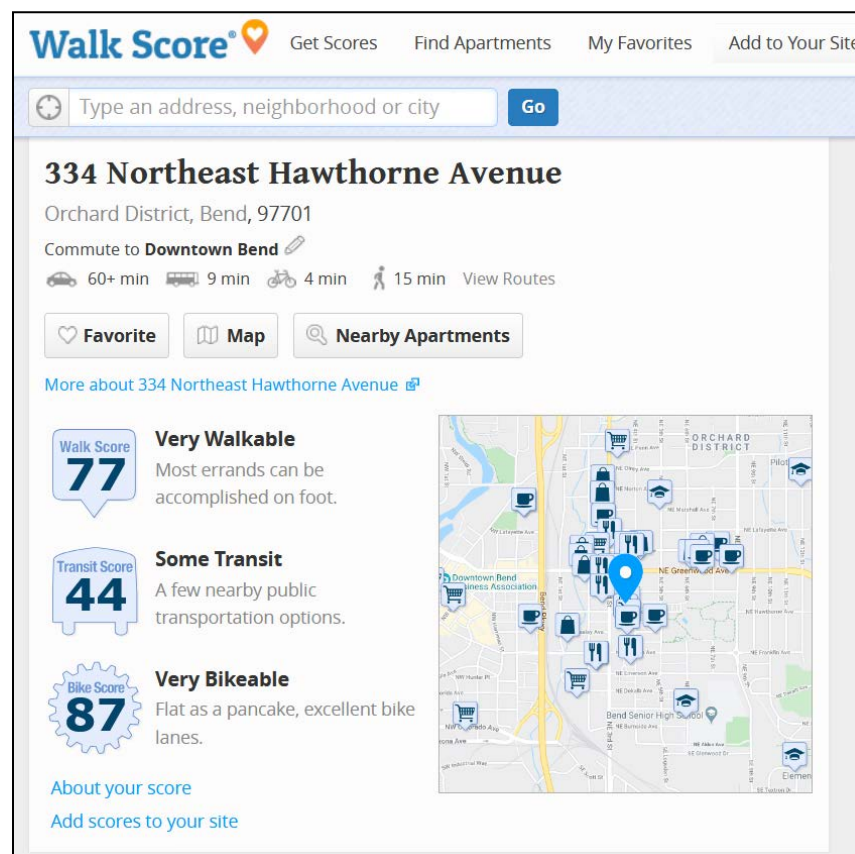
Paper Pamphlets

- Rate the “transfer stress” of a passenger trying to make a connection.
 - 21 KTHs (52.5 percent) had transfer stress of low or very low
 - 19 KTHs (47.5 percent) had transfer stress of medium or more
- How would you describe the comfort level of this site?
 - 30 KTHs (75 percent) had a comfort level of somewhat comfortable or very comfortable
 - 10 KTHs (25 percent) had a comfort level of neutral and below
- Is there an emergency phone box, speakerphone, or panic button that would connect passengers to emergency services?
 - Only one KTH had an emergency contact button. The button was located at PDX airport and is intended for private airline travel, not public transit.
- Is the site centrally located in a dense, downtown area?
 - KTHs near a downtown area: 19 (48 percent)
- How many bike racks/lockers are present?
 - KTHs with bike racks: 29 (73 percent)
 - KTHs with bike lockers: 10 (25 percent)



Bike Lockers

- What is the KTH's Walk Score®?
 - Mean Walk Score®: 64 (Somewhat walkable)
 - Median Walk Score®: 70 (Very walkable)
- What is the KTH's Transit Score®?
 - Mean Transit Score®: 38 (Some transit)
 - Median Transit Score®: 32 (Some transit)
- What is the KTH's Bike Score™?
 - Mean Bike Score™: 77 (Very bikeable)
 - Median Bike Score™: 80 (Very bikeable)



Walk Score ® Profile of a Key Transit Hub

Scheduling

The number of daily transit trips in and out of a KTH affects the usefulness of the facility. If a KTH's schedule is full and diverse, riders will have multiple options to transfer between services or start their journey at a time that works for them.

Daily Regional Trips

Timetables provide the number of available trips on each day of the week for each transit service at a KTH. If a KTH is the end point of a route, only the outbound trips are counted because inbound trips do not pick up passengers. If a KTH is in the middle of a route, both inbound and outbound trips are counted because they allow riders to travel in both directions.

Table 21 shows this nuance. NorthWest POINT has four daily trips through Beaverton Sunset Transit Center (two eastbound and two westbound) because it is in the middle of the route. However, Astoria Transit Center only has two trips for the same service because it is an end point for the route and thus only the outbound eastward trips are counted. The full scheduling dataset is available in [Table N-1](#).

Table 21: Key Transit Hub Scheduling – Daily Regional Trips Example

Name	Agency	Route	Greatest Number of Daily Trips ¹⁴
Astoria Transit Center	NorthWest POINT	NorthWest	2
	Pacific Transit	24	4
	Pacific Transit	50	4
	Sunset Empire Transportation District	10	17
	Sunset Empire Transportation District	15	2
	Sunset Empire Transportation District	101	12
	Sunset Empire Transportation District	Lower Col. Conn.	2
	Sunset Empire Transportation District	Pacific Connector	5
	Total		48
Beaverton Sunset Transit Center	NorthWest POINT	NorthWest	4
	Tillamook County Transportation District	5	4
	TriMet	20	143
	TriMet	48	42
	TriMet	MAX Blue Line	200
	TriMet	MAX Red Line	144
	Total		537

¹⁴ These figures represent the maximum number of daily trips, on the busiest day of the week, for each transit service. This table does not show the reduction in trips on different days of the week. Also, not all services operate their maximum number of trips on the same day of the week as their peers.

Table 22: Daily Regional Trips and Change in Service

Key Transit Hub	Greatest Number of Daily Trips	Least Number of Daily Trips	Change in Service
Albany Amtrak Station	46	30	-35%
Albany Clay St at Heritage Mall	13	0	-100%
Albany Linn-Benton Community College	29	0	-100%
Astoria Transit Center	43	11	-74%
Banks	12	4	-67%
Beaverton Sunset Transit Center	537	390	-27%
Bend Hawthorne Station	24	7	-71%
Canby Transit Center	62	0	-100%
Cannon Beach Midtown Transit Center	38	29	-24%
Corvallis 1st St & Washington Ave	42	42	-0%
Corvallis 9th St & Reiman Ave	12	0	-100%
Corvallis 15th St & Jefferson Way	21	0	-100%
Corvallis 26th St & Western Blvd	58	50	-14%
Corvallis Circle Blvd & 9th St	12	0	-100%
Corvallis Circle Blvd & Four Acre Place	7	0	-100%
Corvallis Downtown Transit Center	38	12	-68%
Corvallis Good Samaritan Center	9	3	-67%
Eugene Amtrak Station	15	12	-20%
Eugene EmX Walnut Station	67	46	-31%
Grand Ronde	29	8	-72%
Hillsboro Central Transit Center	280	212	-24%
Klamath Falls Amtrak Station	6	5	-17%
La Grande Transit Center	6	1	-83%
Medford Front Street Station	84	8	-90%
Milton-Freewater	22	0	-100%
Ontario	3	2	-33%
PDX Transit Center	136	119	-13%
Philomath Applegate St & 11th St	16	8	-50%
Philomath Main St & 14th St	16	8	-50%
Portland 6th Ave & Taylor St	1,366	784	-43%
Portland Lloyd Center	642	469	-27%
Redmond Airport	8	4	-50%
Redmond Transit Hub	29	3	-90%
Salem Amtrak Station	34	30	-12%
Salem Downtown Transit Center	52	3	-94%
Springfield Greyhound Station	10	8	-20%
Union Station	259	210	-19%
Wilsonville Transit Center	70	0	-100%
Woodburn Hwy 211 & Hwy 214	27	0	-100%
Woodburn Memorial Transit Center	51	51	-0%
Mean	106	64	-57%
Median	29	8	-58%

Table 22 shows each KTH's best and worst performing day marked by the greatest and least number of trips per day respectively. In downtown Portland at 6th Ave and Taylor St, **1,366 regional trips** pass through this location on its best day. Conversely, the most trips at the KTH in Ontario is three trips. In general, KTHs have more trips on weekdays and fewer trips on weekends. Several KTHs have zero trips on certain days.

Change in Service

The last column shows the difference between a KTH's most frequent service day to its least frequent service day. The KTH at the Woodburn Memorial Transit Center shows no change in service because the same number of trips serve it every day of the week. However, the KTH at the Wilsonville Transit Center has a 100 percent change in service because none of its services run on Saturday or Sunday. Oregon's KTHs see a mean reduction in service of **about 60 percent**, mainly from the difference in service Monday through Friday vs Saturday and Sunday.

This information provides a powerful story about how useful KTHs are to transit riders and the options they provide for regional travel. It would be ideal for every KTH to have consistent levels of service on all days of the week. Although scheduling gaps still exist, several transit agencies expanded service and increased frequency during calendar year 2019, particularly on Saturday or Sunday. Such increases and expansions are beneficial for passengers needing regular and frequent service on the weekends.

For further information on scheduling and a detailed look at service reduction days see [Table N-2](#).

Time	No.	Train	To	Status	Gate/Track
1:40p	5528	Thruway Bus	Portland	Now 1:55p	
1:55p	14	Coast Starlight	Seattle	Now 2:17p	1
1:55p	5503	Thruway Bus	Eugene Univ of Oreg	On Time	BUS
3:25p	5506	Thruway Bus	Portland	On Time	1
3:37p	11	Coast Starlight	Los Angeles	On Time	BUS
4:35p	5517	Thruway Bus	Eugene Univ of Oreg	On Time	BUS
5:41p	508	Cascades	Seattle	On Time	1
7:11p	505	Cascades	Eugene	On Time	BUS
7:15p	5548	Thruway Bus	Portland	On Time	1
8:35p	5547	Thruway Bus	Eugene Univ of Oreg	On Time	BUS
11:25p	5507	Thruway Bus	Eugene Univ of Oreg	On Time	BUS

Friday October 11, 2019

Changes in Key Transit Hubs

The components of a KTH – routes and scheduling – change as service changes. A transit stop is considered a KTH when three unique services stop at the same location. A transit stop can lose its status as a KTH if these services cease to operate at the site, resulting in lost connectivity. This can occur when a transit agency moves a stop or route away from a common location, or when transit agencies merge and a unique provider of services goes away.

Certain large KTHs, such as Portland’s Union Station, are likely to always be served by at least three unique services, but the transit services available at many other places can be substantially affected when transit agencies change routes or stops. It is important for transit providers to consider the implications of moving the location of a stop at or near a KTH and when their service is in close proximity to other regional services. The analysis shows that KTHs change quite often and the effects can be substantial and extensive.

Table 23 shows several transit stops that were KTHs but due to service changes they no longer fit the definition. Moving forward, it is important to track and display changes in service over time as these changes can affect active KTHs or foster the creation of new ones.

Table 23: Changes in Key Transit Hubs

Key Hub Name	March 2019 – Agencies Providing Service	July 2019 – Agencies Providing Service
Eugene University of Oregon Student Recreation Center	Berg's Ski Shop Shuttle	Groome Transportation
	HUT Airport Shuttle	
	Oregon Express Shuttle	
Location moved from UO Student Recreation Center to School of Law one block east. Berg's Ski Shop Shuttle no longer stops here. HUT Airport Shuttle and Oregon Express Shuttle merged into Groome Transportation. Cascades POINT stop moved from Rec Center to School of Law. Flixbus added service in late 2019.		
Salem Market Street Park and Ride	Cherriots	Cherriots
	Mt Hood Teleporter	South Metro Area Regional Transit
	Oregon Express Shuttle	
	South Metro Area Regional Transit	
Mt Hood Teleporter became Shuttle Oregon. Shuttle Oregon no longer stops here and now stops at Salem Amtrak Station. Oregon Express Shuttle merged into Groome Transportation. Groome Transportation no longer stops here and now stops at Salem Airport.		
Mt Bachelor	Berg's Ski Shop Shuttle	Berg's Ski Shop Shuttle
	Cog Wild Shuttles	Cog Wild Shuttles
	Mt Bachelor	Mt Bachelor
Berg's Ski Shop Shuttle and Mt Bachelor only stop here during the winter season. Cog Wild Shuttles only stops here during the summer season. Because these services are seasonal, and no three agencies ever operating through this KTH at any given time, it is not considered a KTH.		
Portland Marquam Hill Upper Tram Terminal	Caravan Airport Transportation	C-TRAN
	C-TRAN	Portland Aerial Tram
	Portland Aerial Tram	TriMet
	TriMet	
Caravan Airport Transportation no longer stops at this location. The Portland Aerial Tram does not represent a unique service area as its route is wholly contained within TriMet's existing system. By this logic, there are only two unique services that stop at this location: C-TRAN and TriMet.		
Portland Gateway Transit Center	Columbia Area Transit	Columbia Area Transit
	TriMet	Columbia Gorge Express
		TriMet
Columbia Gorge Express not originally in March 2019 snapshot possibly due to its seasonality. Represented in July 2019 snapshot. However, Columbia Gorge Express merged with Columbia Area Transit so the hub is now only served by two agencies.		

Statewide Network Changes in 2019

Major Service Changes

From a statewide perspective, service changes can significantly affect KTHs. The most direct consequence is the change in the number of agencies and routes servicing KTHs. They can also alter the destinations and cities connected to KTHs as well as connections, scheduling, pricing, and competition.

Changes can include addition, subtraction, consolidation, acquisition, renaming, or redesign of agencies, routes, and services. Some of the major changes from 2019:

- HUT Airport Shuttle and Oregon Express Shuttle were merged into Groome Transportation.
- Mt Hood Teleporter changed its name and became Shuttle Oregon.
- The Greyhound bus terminal in downtown Portland closed. The new Portland curbside stop is located at 1090 NW Station Way, about one block north of Union Station. The Greyhound ticket office is located at 427 NW 6th Ave.
- The Greyhound bus terminal in downtown Eugene closed and the stop was moved to Springfield, at 355 South A St.
- Pacific Crest Lines is now operating the HighDesert POINT route. The route has been renamed as the Redmond to Chemult line. The route still operates as an Amtrak Thruway service.
- Columbia Area Transit is now operating Columbia Gorge Express. Columbia Gorge Express retained its name and saw additional stops added to its route and new runs added to its schedule.
- The Water Avenue Shuttle was discontinued.
- BoltBus added service to Corvallis and Salem, but only as a preliminary trial run.
- Flixbus began operations in Oregon and Washington and now serves Eugene, Corvallis, Albany, Salem, and Portland, and travels as far north as Seattle.

Future Changes

This section briefly reviews major changes expected in the near future and changes to Oregon's statewide network. Some changes are definite; others are tentative. Many projects, improvements, and service expansions are likely the result of House Bill 2017 and the Statewide Transportation Improvement Fund (STIF). It is clear that these changes can have vast impacts on local service providers and those using public transit.

Note: This report was written before COVID-19 and the massive disruptions to transit services it caused. Subsequent reports can determine the transformative impacts of the pandemic on public transportation in Oregon.

- In 2019, BoltBus added service to Corvallis and Salem, but only as a preliminary trial run. Service only runs on Fridays and Sundays and the two cities are only connected to each other and Portland. This “short line” is not connected to the existing route that serves Eugene, Albany, Portland and north to Seattle. It will be interesting to see what kind of ridership these cities will generate and whether they will be included in the longer distance Eugene-Portland-Seattle route later on.
- TriMet permanently closed some MAX light rail stations on March 1, 2020 (Kings Hill/SW Salmon, Mall/SW 5th and Mall/SW 4th). All stations are currently served by the Blue and Red lines.
- Caravan Airport Transportation discontinued its stop at Union Station on its route to PDX.
- Columbia Area Transit made a major redesign of their routes. This included: discontinuing the ‘Portland Route’ to Lloyd Center and acquisition of the Columbia Gorge Express service to Portland, terminating at Gateway Transit Center, providing an important public transit connection to Portland.
- The Corvallis to Amtrak Connector service was discontinued. Benton County Transportation is temporarily continuing the service, and will be making major service changes and possible expansions in 2020. This service provides a critical link between Corvallis and the Amtrak Station in Albany.
- C-TRAN introduced route 67 from Fisher’s Landing Transit Center, Vancouver, WA, to PDX with limited service hours. A direct connection between Vancouver and PDX is important for Southern Washington residents and the Portland Metropolitan Area.
- Shuttle Oregon now stops at Salem Amtrak Station but no longer stops at Clackamas Town Center in Portland. It also no longer stops at Redmond Transit Hub.
- Rogue Valley Transportation District will add four new routes in December 2019: local routes 24, 26, 27 and 63 to Eagle Point.

- Cascades East Transit added Saturday service to its intercity commuter routes. These include routes 20, 22, 24, 26, 29 and 30 (Saturday service was not added to route 28.)
- Pacific Crest's Bend to Coos Bay service has been restructured. As of February 18, 2020, it runs between Bend and Eugene (a service title change is expected), with a stop in Sisters to be added.



Conclusion

There are more than 12,000 transit stops in Oregon where transit riders can board a bus or train and travel around a city or the whole state using public transportation. Each component of the statewide transportation network is important to passengers and the communities it serves and helps create a more extensive and effective transit system. As of July 2019, there are approximately 7,000 stops or stop clusters (more than one stop in close proximity) in Oregon. Slightly more than 200 are served by two transit agencies and 40 are KTHs (stop or stop clusters) served by three or more agencies with unique service areas.

Key transit hubs are a rare commodity in Oregon's statewide transit network and represent a special class of spatial connection points. This report aspires to increase general awareness of this unique class of network element and note that KTHs are worthy of attention by ODOT and Oregon transit providers and should get consideration during stop change planning, service design, timing coordination, and investments in passenger amenities.

Glossary of Terms

Bus Rapid Transit (BRT) – A high-quality bus-based transit system that delivers fast and efficient service that may include dedicated lanes, busways, traffic signal priority, off-board fare collection, elevated platforms, and enhanced stations. Two key transit hubs in Eugene feature BRT stations: EmX Walnut Station and Springfield Greyhound Station.

Centers for Disease Control and Prevention (CDC) – The national public health institute of the United States under the Department of Health and Human Services. One of their focuses is on physical activity and the health benefits it provides. The Walkability Audit Tool was created for use in this focus area.

Center for Neighborhood Technology (CNT) – An innovations laboratory for urban sustainability that delivers research, tools, and solutions to create sustainable and equitable communities. They created the AllTransit™ database and online tool.

Environmental Protection Agency (EPA) – An independent executive agency of the United States federal government for environmental protection. Their Smart Growth program provided datasets for zero-car households and additional walkability scores.

Fixed Route Service – Service provided on a fixed schedule on a specific route, most often with designated stops to pick up and drop off passengers. The report only focuses on this type of service.

General Transit Feed Specification (GTFS) – Data specification that allows public transportation providers to publish their data in a format that can be processed by various software. This data was used to find and isolate key transit hubs, and extract individual route shapefiles.

Intercity – Transportation service connecting two or more urban areas or a rural community to an urban area not in close proximity (20+ miles) with limited stops between and capacity to carry luggage.

Key Transit Hub (KTH) – A transit stop or stop cluster served by three or more general public fixed route transit services (each with a unique service area).

Local – Transportation service primarily operating within one urban or rural group.

Oregon Department of Transportation (ODOT)

Transit Network Explorer Tool (TNExT) - A web-based software tool developed for the visualization, analysis and reporting of regional and statewide transit networks in the state of Oregon. Used to find key transit hubs.

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Appendix A: Key Transit Hub Identification Process

Before there was a separate KTH report feature on TNExT, ODOT manually searched for Oregon's KTHs using existing tools. The initial process was:

1. Use the TNExT Transit Hub report.
2. Discard all stops and stop clusters not served by at least three transit services.
3. Review remaining stops and stop clusters and delete any that do not represent at least three unique service areas. For example; a cluster that is serviced by TriMet, C-TRAN and Portland Streetcar is removed from the list because the Portland Streetcar is wholly contained within TriMet's service area.
4. Declare the remaining stops and stop clusters to be Oregon's key transit hubs.
5. Sort to develop a ranked list of stops and stop clusters. Sort order: agencies, routes, visits, population served, employment served and stops. For most uses rank is irrelevant.

Once this process was refined a separate KTH report was added to TNExT. Now any user can have the KTH report generated automatically through the website. The report is under **"Reports → Connectivity Reports → Key Transit Hubs Report."**

In addition, users can select which GTFS dataset they want to use to generate the report. This is what is referred to as a "snapshot" as each GTFS dataset takes a moment in time and captures it into a feed for use. The last updated snapshot used for this report was July 2019. The previous snapshot was for March 2019 and so forth. With the ability to generate KTH reports based on different moments in time ODOT can easily create a history and analyze the changes that occur over months and years.

The key transit hub list was based on the July 2019 snapshot. All other information and data in this report, particularly concerning reach and active transit services, is current as of **November 15, 2019.**

For reference, there are approximately 15,000 transit stops in Oregon. Of these, 40 are classified as key transit hubs.

Appendix B: Cities With and Without a Key Transit Hub

Public transit has a positive correlation with population size. The larger the city, the more services, routes, agencies and infrastructure that exists and vice versa. Therefore, it is expected that larger cities have KTHs while smaller ones do not. The next section refutes this assumption.

Table B-1: Largest Cities Without a Key Transit Hub

30 Largest Cities without a KTH by Population (2018 Estimate)¹⁵		
Rank	City	Population
4	Gresham	110,158
11	Tigard	54,758
13	Keizer	39,692
14	Lake Oswego	39,532
15	Grants Pass	38,191
16	Oregon City	37,129
17	McMinnville	34,617
19	Tualatin	27,602
20	West Linn	26,756
22	Forest Grove	24,624
24	Newberg	23,844
25	Roseburg	23,379
26	Happy Valley	21,694
28	Ashland	21,263
29	Milwaukie	21,014
30	Sherwood	19,679

Table B-2: Smaller Cities With a Key Transit Hub

Smaller Cities with a KTH by Population		
Rank	City	Population
18	Redmond	30,914
21	Woodburn	26,078
23	Wilsonville	24,582
27	Klamath Falls	21,536
32	Canby	17,817
41	La Grande	13,271
45	Ontario	11,080
52	Astoria	9,976
66	Milton-Freewater	7,053
78	Philomath	4,839
119	Banks	2,026
133	Cannon Beach	1,749
N/A	Grand Ronde	N/A

The first chart shows that over half of the 30 largest cities in the state do not have a KTH. The citizens of these cities do not have immediate access to the benefits that KTHs provide. Even cities as large as Gresham at number 4 and Tigard at number 11 do not host a KTH. The second chart shows the small cities that do have a KTH. These small population sizes contrast sharply with figures from the first chart. For example, Grants Pass is the 15th largest city in the state with 38,191 people but does not have a KTH. Banks is the 119th largest city with a mere 2,026 people but it does have a KTH.

The standard reasoning that large cities should contain KTHs because they are large and small cities should not because they are small does not follow here. These charts prove that population size alone is insufficient to predict where KTHs are located and which cities host them.

¹⁵ Annual Estimates of the Resident Population: April 1, 2010 to July 1, 2018. Census.gov. July 2018. Retrieved September 17, 2019.

Table B-3: Cities That Almost Have a Key Transit Hub

Some of the “Almost” cities from **Table B-5**, such as Oregon City and Forest Grove, appear in **Table B-1** for the 30 largest cities. The “Almost” cities with smaller populations are shown to the right. **Table B-3** compares with the two tables above. For example: Lincoln City is the 60th largest city with a population of 9,018 and is *closer* to having a KTH than Ashland is at 28th largest and a population of 21,263, a city double its size. Again, population size does not guarantee the presence of a KTH.

"Almost" Cities		
Rank	City	Population
35	Pendleton	16,781
37	Coos Bay	16,415
44	Sandy	11,326
46	Newport	10,680
55	Baker City	9,757
59	Florence	9,103
60	Lincoln City	9,018
84	King City	3,955
104	Sisters	2,747

Table B-4: Largest Cities Without a Key Transit Hub

Largest Cities without a KTH		
Rank	City	Population
11	Tigard	54,758
13	Keizer	39,692
14	Lake Oswego	39,532
17	McMinnville	34,617
19	Tualatin	27,602
20	West Linn	26,756
24	Newberg	23,844
25	Roseburg	23,379
26	Happy Valley	21,694
28	Ashland	21,263
29	Milwaukie	21,014
30	Sherwood	19,679

Table B-5: Cities That Almost Have a Key Transit Hub

Cities with an "Almost" KTH		
Rank	City	Population
4	Gresham	110,158
15	Grants Pass	38,191
16	Oregon City	37,129
22	Forest Grove	24,624
35	Pendleton	16,781
37	Coos Bay	16,415
44	Sandy	11,326
46	Newport	10,680
55	Baker City	9,757
59	Florence	9,103
60	Lincoln City	9,018
84	King City	3,955
104	Sisters	2,747

These charts compare the population similarities and differences between the 30 largest cities that do not have a KTH and the cities with an “Almost” KTH. For example: Roseburg (25) and Forest Grove (22) have comparable population sizes but the former does not have a KTH and the latter almost does. King City (84) is much closer to hosting a KTH than a much larger city, and its neighbor, Tigard (11) is.

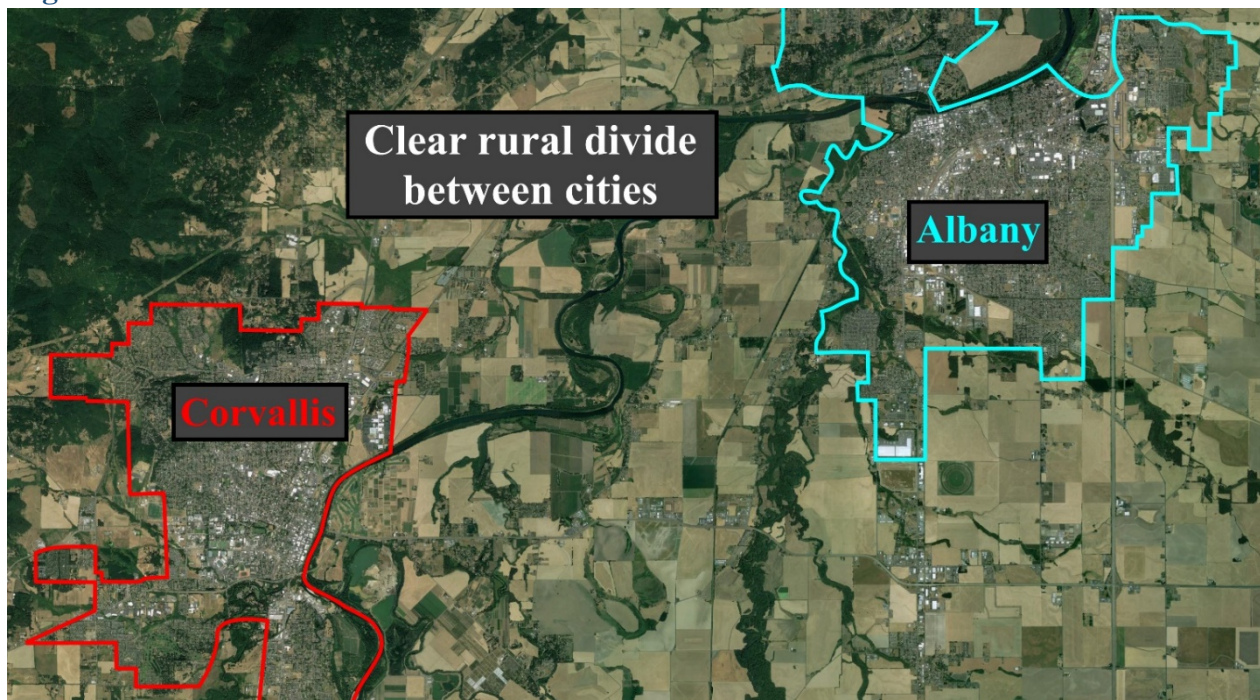
Appendix C: Reach – Additional Information

As previously mentioned, the reach analysis only factors in regional routes, not local routes. Deciding whether or not a service exits a city and provides regional service can be somewhat complicated and is not always straightforward. These are the steps taken for this report.

City Limits and Local Routes vs Regional Routes

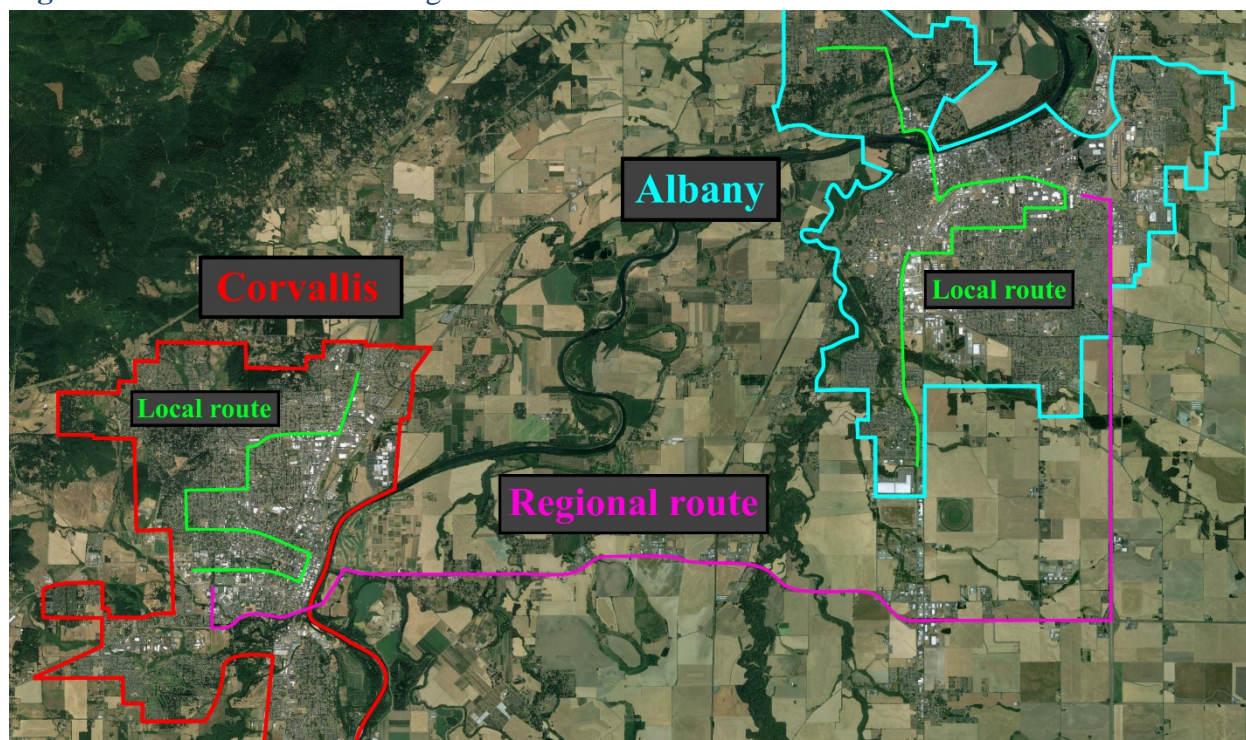
First is to determine whether or not a transit service exits a city by studying the official city limits. For most cities in Oregon, the developed environment extends to the city limits where the development ends and the rural farmland or undeveloped parcels begin. This rural landscape continues until the next town or census-designated place is reached. **Figure C-1** shows the clear divide between two communities.

Figure C-1: Rural Divide between Two Cities



Map data: ©2019 Google

The city limits for Corvallis and Albany are well defined and there is a clear rural divide between them. Even if communities are only separated from each other by a few miles, if the transit service crosses the divide it is counted as a regional route. For Figure C-1, any local routes within Corvallis or Albany are not counted nor is their reach calculated. A regional route that connects the two cities is counted and its reach calculated. **Figure C-2** shows the difference between these two types of service.

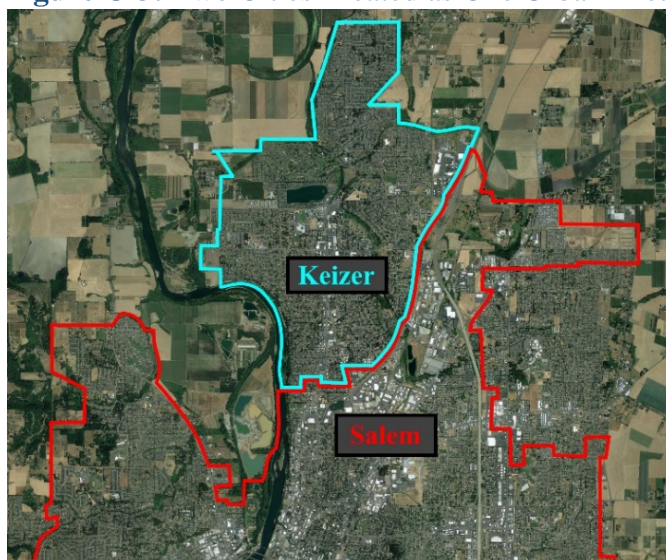
Figure C-2: Local Routes vs Regional Routes

Map data: ©2019 Google

Regional Urbanized Areas

Some cities however, do not have this divide. In dense, urban areas, cities bump up next to each other and there is no clear divide. Each of these instances was looked at separately given their unique circumstances, location and what transit provider(s) served them. It was necessary to determine whether these cities were truly independent of one another or whether they were a part of the larger urban area and more of an extension of the larger city. The exceptions and special nuances are:

- **Salem and Keizer:** Treated as the same city and urbanized area. Cherriots provides local service across both cities and the divide is seamless.
- **Klamath Falls and Altamont:** Treated as the same city and urbanized area.
- **Medford and Central Point:** Treated as the same city and urbanized area.
- **Medford and Phoenix:** Not treated as the same city due to the small gap between them. Their

Figure C-3: Two Cities Treated as One Urban Area

Map data: ©2019 Google

city limits do not border one another.

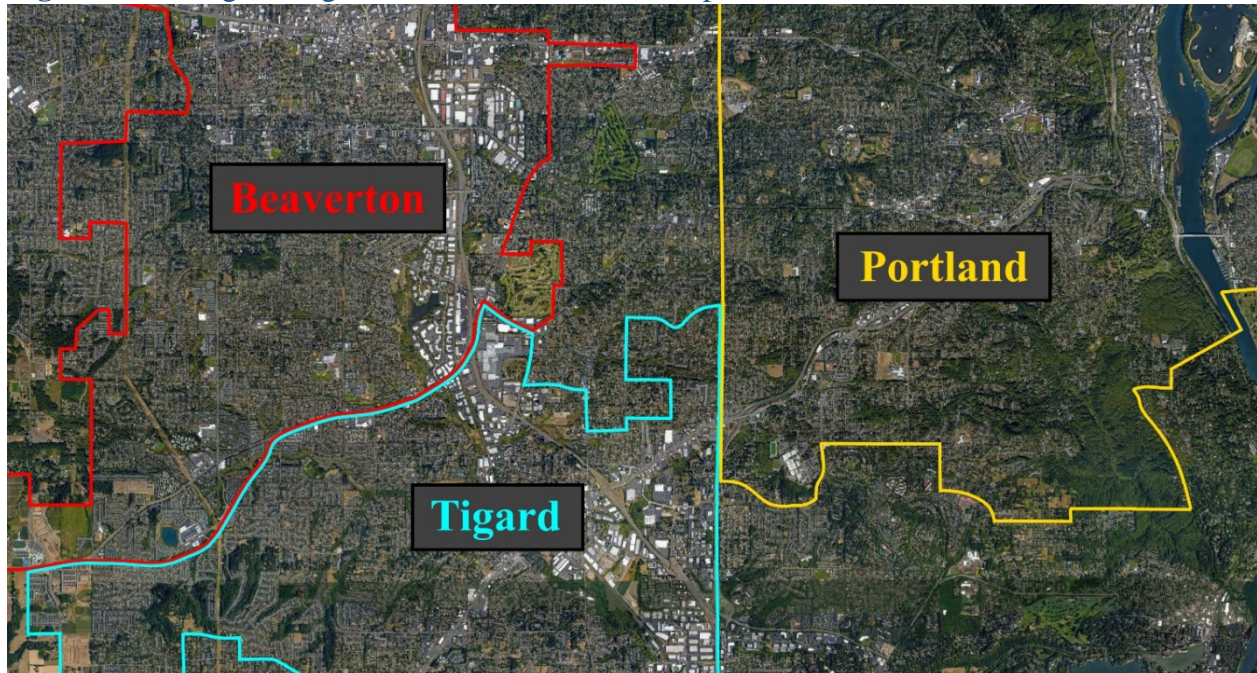
- **Eugene and Springfield:** Treated as the same city and urbanized area. Lane Transit District provides local service across both cities and the divide is seamless.
- **Corvallis and Albany:** Treated as separate cities.
- **Wilsonville:** Treated as a separate city from the Portland Metropolitan Area. The city has its own transit service: South Metro Area Regional Transit.
- **Forest Grove and Cornelius:** Treated as separate cities. Not considered part of the Portland Metropolitan Area and not attached to Hillsboro.

Portland Metropolitan Area

This mega-region is the one exception in this analysis as all cities border one another to create one giant continuous urban area with often seamless divides. However, each city here is treated separately and service that goes from one city to the next is considered regional service. The following cities are all treated independently:

- Portland, Beaverton, Hillsboro, Tigard, Tualatin, Lake Oswego, West Linn, Oregon City, Clackamas, Happy Valley, Milwaukie, Gresham, Troutdale
- For the purposes of the reach study, if a TriMet bus only serves Portland and does not exit the city limits, it is considered local. If it does exit the city limits, it is considered regional (For example: Portland to Gresham or Beaverton to Tigard).

Figure C-4: Neighboring Cities in the Portland Metropolitan Area

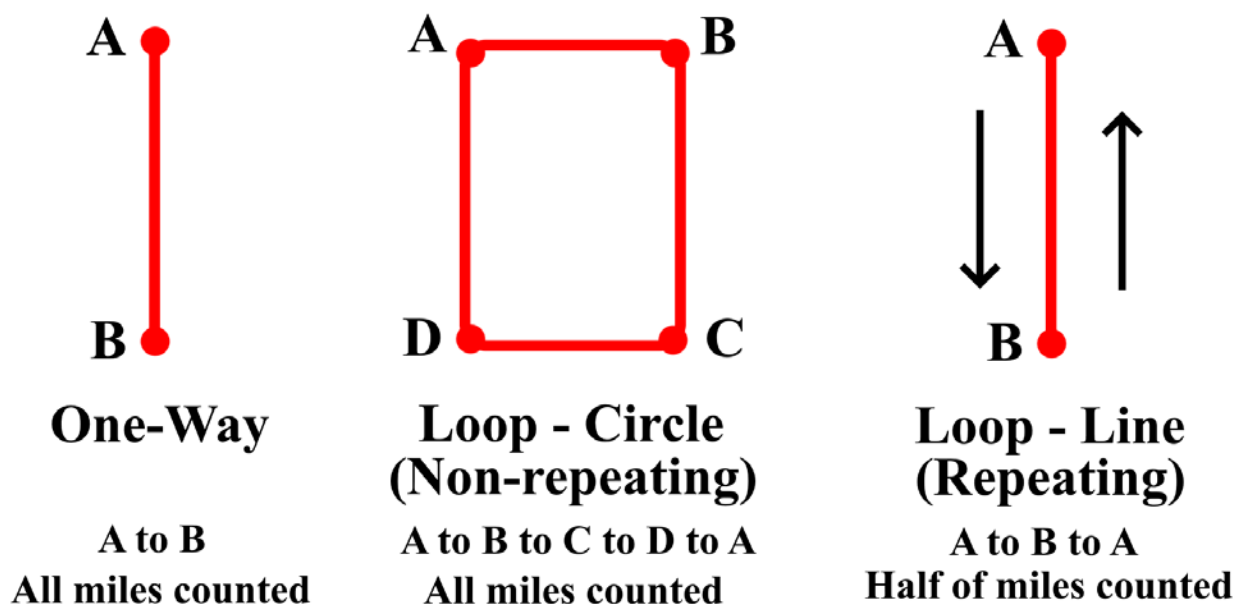


Map data: ©2019 Google

Transit Route Types

In addition to not counting any mile that duplicated, there is also the type of route and its shape to consider. First, is the route type one-way or a loop? A one-way route goes from A to B and all miles are counted. A loop route goes from A to B and back to A again all in the same run. There are two kinds of loop routes. If the route travels in a circle and does not double back on itself, then all miles are counted. If the route doubles back on itself by taking the same streets, only one direction of the trip is counted.

Figure C-5: Transit Route Types - One-Way vs Loop



Minus the duplication caused by a route doubling back on itself, for the most part each route's reach is the entire length of its service run. For a given KTH, each service's reach is calculated and contributes to the total reach for that location.

Reach Statistics

Table C-1: Key Transit Hub Reach Statistics (In Miles)

Name	Minimum Reach	Mean Reach	Median Reach	Maximum Reach	Total Reach	Total Original Reach	% of Reach Duplicated
Albany Amtrak Station	10.7	192.9	93.5	401.0	1,543.5	1,095.0	29%
Albany Clay St at Heritage Mall	12.2	37.6	37.6	34.1	75.2	61.0	19%
Albany Linn Benton Community Coll.	10.4	37.5	37.5	30.0	74.9	68.0	9%
Astoria Transit Center	4.1	39.7	27.3	97.7	317.4	238.7	25%
Banks	7.0	45.5	36.1	50.3	136.4	116.6	15%
Beaverton Sunset Transit Center	4.9	45.4	29.2	95.3	272.3	231.6	15%
Bend Hawthorne Station	16.8	132.1	153.9	261.0	1,188.5	919.8	23%
Canby Transit Center	8.7	19.0	20.3	13.8	56.9	55.5	2%
Cannon Beach Midtown Transit Center	7.9	40.0	29.5	81.5	199.8	151.2	24%
Corvallis 1st St & Washington Ave	14.5	78.6	78.6	98.5	157.1	156.6	0%
Corvallis 9th St & Reiman Ave	9.8	19.3	19.3	15.0	38.5	37.0	4%
Corvallis 15th St & Jefferson Way	7.0	18.4	15.7	15.7	55.1	39.7	28%
Corvallis 26th St & Western Blvd	4.8	69.7	63.2	99.5	278.6	225.2	19%
Corvallis Circle Blvd & 9th St	8.1	19.3	19.3	16.2	38.5	37.0	4%
Corvallis Circle Blvd & Four Acre Pl.	10.6	22.1	22.1	16.4	44.2	30.8	30%
Corvallis Downtown Transit Center	8.5	39.9	28.5	88.0	279.4	191.2	32%
Corvallis Good Samaritan Center	6.8	45.4	59.0	49.8	136.3	78.2	43%
Eugene Amtrak Station	38.9	276.1	238.0	357.0	1,380.6	1,067.7	23%
Eugene EmX Walnut Station	10.8	67.7	50.7	139.4	270.8	260.8	4%
Grand Ronde	6.7	66.8	48.6	73.7	267.0	182.0	32%
Hillsboro Central Transit Center	3.5	22.8	21.0	32.1	114.2	108.7	5%

Name	Minimum Reach	Mean Reach	Median Reach	Maximum Reach	Total Reach	Total Original Reach	% of Reach Duplicated
Klamath Falls Amtrak Station	30.4	233.0	102.4	505.0	931.8	931.8	0%
La Grande Transit Center	11.8	157.2	72.7	264.0	628.8	549.7	13%
Medford Front Street Station	4.8	131.8	30.5	462.7	922.6	838.3	9%
Milton-Freewater	7.3	107.1	110.1	174.0	428.2	240.4	44%
Ontario	18.0	350.0	350.0	318.0	700.0	699.7	0%
PDX Transit Center	8.1	102.1	141.4	205.5	714.4	586.3	18%
Philomath Applegate St & 11th St	5.0	45.7	59.0	50.0	137.2	77.7	43%
Philomath Main St & 14th St	5.0	45.7	59.0	50.0	137.2	77.7	43%
Portland 6th Ave & Taylor St ¹⁶	5.6	18.3	16.5	30.0	348.5	242.1	31%
Portland Lloyd Center	6.3	67.2	20.1	173.0	470.4	367.9	22%
Redmond Airport	16.7	144.2	160.5	151.0	576.7	423.9	26%
Redmond Transit Hub	16.3	98.9	91.2	213.5	791.1	582.8	26%
Salem Amtrak Station	17.9	309.5	214.2	428.0	1,857.0	1,357.1	27%
Salem Downtown Transit Center	9.0	32.9	30.8	61.0	263.1	202.8	23%
Springfield Greyhound Station	48.4	302.0	238.0	315.0	906.1	850.1	6%
Union Station	7.5	174.9	110.2	481.0	2,098.5	1,661.6	21%
Wilsonville Transit Center	6.1	16.5	12.5	32.2	65.8	62.2	5%
Woodburn Hwy 211 & Hwy 214	2.5	23.5	20.9	29.3	70.5	65.7	7%
Woodburn Memorial Transit Center	17.9	129.9	129.9	96.6	259.7	156.1	40%

¹⁶ The MAX Blue, Green, Orange and Red Lines and the WES Commuter Rail are regional routes and contribute to reach. The MAX Yellow Line, the Portland Streetcar and the Aerial Tram are local routes and do not contribute to reach.

Counties Served and Other Key Transit Hubs Reached

Table C-2: Counties Served by Key Transit Hubs and Interconnected Key Transit Hubs

Name	Counties Served	KTHs Reached	List of Other Key Transit Hubs Reached
Albany Amtrak Station	16	17	1) Albany Heritage Mall, 2) Albany LBCC, 3) Corvallis DTC, 4) Corvallis 15th/Jefferson, 5) Corvallis 26th/Western, 6) Corvallis 9th/Reiman, 7) Corvallis Circle/9th, 8) Corvallis Circle/Four Acre, 9) Corvallis 1st/Washington, 10) Philomath Main/14th, 11) Philomath Applegate/11th, 12) Eugene Amtrak Station, 13) Klamath Falls Amtrak Station, 14) Salem Amtrak Station, 15) Woodburn MTC, 16) Portland Lloyd Center, 17) Union Station
Albany Clay St at Heritage Mall	2	6	1) Albany Amtrak Station, 2) Albany LBCC, 3) Corvallis DTC, 4) Corvallis 9th/Reiman, 5) Corvallis Circle/9th, 6) Corvallis Circle/Four Acre
Albany Linn Benton Community College	2	7	1) Albany Amtrak Station, 2) Albany Heritage Mall, 3) Corvallis DTC, 4) Corvallis 15th/Jefferson, 5) Corvallis 9th/Reiman, 6) Corvallis Circle/9th, 7) Corvallis Circle/Four Acre
Astoria Transit Center	5	3	1) Cannon Beach, 2) Beaverton Sunset Transit Center, 3) Union Station
Banks	4	3	1) Hillsboro Transit Center, 2) Beaverton Sunset Transit Center, 3) Union Station
Beaverton Sunset Transit Center	4	8	1) Astoria, 2) Cannon Beach, 3) Hillsboro Central Transit Center, 4) Banks, 5) Portland 6th/Taylor, 6) Portland Lloyd Center, 7) Union Station, 8) PDX
Bend Hawthorne Station	11	7	1) Redmond Airport, 2) Redmond Transit Hub, 3) Ontario, 4) Springfield Greyhound Station, 5) Eugene Amtrak Station, 6) Union Station, 7) PDX
Canby Transit Center	2	2	1) Woodburn Hwy 211 & Hwy 214, 2) Wilsonville Transit Center
Cannon Beach Midtown Transit Center	4	3	1) Astoria, 2) Beaverton Sunset Transit Center, 3) Union Station
Corvallis 1st St & Washington Ave	5	10	1) Eugene EmX Walnut Station, 2) Albany Amtrak Station, 3) Salem Amtrak Station, 4) Woodburn MTC, 5) PDX, 6) Corvallis 26th/Western, 7) Corvallis DTC, 8) Corvallis 15th/Jefferson, 9) Corvallis 9th/Reiman, 10) Corvallis Circle/Four Acre
Corvallis 9th St & Reiman Ave	2	7	1) Corvallis 15th/Jefferson, 2) Corvallis DTC, 3) Corvallis Circle/9th, 4) Corvallis Circle/Four Acre, 5) Albany Amtrak Station, 6) Albany LBCC, 7) Albany Heritage Mall
Corvallis 15th St & Jefferson Way	2	11	1) Albany Amtrak Station, 2) Albany LBCC, 3) Corvallis DTC, 4) Corvallis 26th/Western, 5) Corvallis 1st/Washington, 6) Corvallis 9th/Reiman, 7) Corvallis Circle/9th, 8) Corvallis Circle/Four Acres, 9) Philomath Main/14th, 10) Philomath Applegate/11th

Name	Counties Served	KTHs Reached	List of Other Key Transit Hubs Reached
Corvallis 26th St & Western Blvd	6	12	1) Albany Amtrak Station, 2) Corvallis DTC, 3) Corvallis 15th/Jefferson, 4) Corvallis 1st/Washington, 5) Corvallis 9th/Reiman, 6) Corvallis Circle/9th, 7) Corvallis Circle/Four Acre, 8) Eugene EmX Station, 9) Woodburn MTC, 10) PDX, 11) Philomath Main/14th, 12) Philomath Applegate/11th
Corvallis Circle Blvd & 9th St	2	7	1) Corvallis 15th/Jefferson, 2) Corvallis DTC, 3) Corvallis 9th/Reiman, 4) Corvallis Circle/Four Acre, 5) Albany Amtrak Station, 6) Albany LBCC, 7) Albany Heritage Mall
Corvallis Circle Blvd & Four Acre Place	2	8	1) Corvallis 15th/Jefferson, 2) Corvallis DTC, 3) Corvallis 9th/Reiman, 4) Corvallis Circle/9th, 5) Corvallis Good Samaritan Center, 6) Albany Amtrak Station, 7) Albany LBCC, 8) Albany Heritage Mall
Corvallis Downtown Transit Center	5	13	1) Albany Amtrak Station, 2) Albany LBCC, 3) Philomath Main/14th, 4) Philomath Applegate/11th 5) Corvallis 15th/Jefferson, 6) Corvallis 26th/Western, 7) Corvallis 1st/Washington, 8) Corvallis 9th/Reiman, 9) Corvallis Circle/9th, 10) Corvallis Circle/Four Acre, 11) Corvallis Good Samaritan Center, 12) Salem Amtrak Station, 13) Portland Lloyd Center
Corvallis Good Samaritan Center	3	7	1) Albany Amtrak Station, 2) Philomath Main/14th, 3) Philomath Applegate/11th, 4) Corvallis Circle/9th, 5) Corvallis 9th/Reiman, 6) Corvallis Downtown Transit Center, 7) Corvallis 26th/Western
Eugene Amtrak Station	16	8	1) Klamath Falls Amtrak Station, 2) Bend Hawthorne Station, 3) Albany Amtrak Station, 4) Salem Amtrak Station, 5) Woodburn Memorial Transit Center, 6) Union Station, 7) Eugene EmX Walnut Station, 8) Springfield Greyhound Station
Eugene EmX Walnut Station	4	6	1) Eugene Amtrak Station, 2) Springfield Greyhound Station, 3) Corvallis 26th/Western, 4) Corvallis 1st/Washington, 5) Woodburn Memorial Transit Center, 6) PDX
Grand Ronde	6	3	1) Salem Amtrak Station, 2) Salem Downtown Transit Center, 3) PDX
Hillsboro Central Transit Center	3	4	1) Banks, 2) Beaverton Sunset Transit Center, 3) Portland 6th/Taylor, 4) Portland Lloyd Center
Klamath Falls Amtrak Station	15	5	1) Medford, 2) Eugene Amtrak Station, 3) Albany Amtrak Station, 4) Salem Amtrak Station, 5) Union Station
La Grande Transit Center	10	1	1) Ontario
Medford Front Street Station	12	3	1) Klamath Falls Amtrak Station, 2) Springfield Greyhound Station, 3) Salem Amtrak Station
Milton-Freewater	3	0	None
Ontario	12	2	1) Bend Hawthorne Station, 2) La Grande Transit Center

Name	Counties Served	KTHs Reached	List of Other Key Transit Hubs Reached
PDX Transit Center	12	12	1) Eugene EmX Walnut Station, 2) Bend Hawthorne Station, 3) Redmond Transit Center, 4) Redmond Airport, 5) Corvallis 26th/Western, 6) Corvallis 1st/Washington, 7) Grande Ronde, 8) Woodburn Memorial Transit Center, 9) Beaverton Sunset Transit Center, 10) Union Station, 11) Portland 6th/Taylor, 12) Portland Lloyd Center
Philomath Applegate St & 11th St	3	6	1) Albany Amtrak Station, 2) Corvallis DTC, 3) Corvallis Good Samaritan Center, 4) Corvallis 26th/Western, 5) Corvallis 15th/Jefferson, 6) Philomath Main/14th
Philomath Main St & 14th St	3	6	1) Albany Amtrak Station, 2) Corvallis DTC, 3) Corvallis Good Samaritan Center, 4) Corvallis 26th/Western, 5) Corvallis 15th/Jefferson, 6) Philomath Applegate/11th
Portland 6th Ave & Taylor St	5	5	1) Hillsboro Transit Center, 2) Beaverton Sunset Transit Center, 3) Union Station, 4) PDX, 5) Portland Lloyd Center
Portland Lloyd Center	10	8	1) Hillsboro Transit Center, 2) Beaverton Sunset Transit Center, 3) Union Station, 4) PDX, 5) Portland 6th/Taylor, 6) Salem Amtrak Station, 7) Albany Amtrak Station, 8) Corvallis Downtown Transit Center
Redmond Airport	7	4	1) Redmond Transit Hub, 2) Bend Hawthorne Station, 3) Union Station, 4) PDX
Redmond Transit Hub	8	4	1) Redmond Airport, 2) Bend Hawthorne Station, 3) Union Station, 4) PDX
Salem Amtrak Station	17	11	1) Klamath Falls Amtrak Station, 2) Medford, 3) Eugene Springfield Station, 4) Eugene Amtrak Station, 5) Albany Amtrak Station, 6) Corvallis Downtown Transit Center, 7) Salem Downtown Transit Center, 8) Grande Ronde, 9) Woodburn MTC, 10) Union Station, 11) Portland Lloyd Center
Salem Downtown Transit Center	5	3	1) Salem Amtrak Station, 2) Grand Ronde, 3) Wilsonville Transit Center
Springfield Greyhound Station	10	5	1) Medford, 2) Eugene Amtrak Station, 3) Eugene EmX Walnut Station, 4) Bend Hawthorne Station, 5) Salem Amtrak Station
Union Station	23	15	1) Amtrak Klamath Falls, 2) Bend Hawthorne Station, 3) Redmond Airport, 4) Redmond Transit Hub, 5) Eugene Amtrak Station, 6) Albany Amtrak Station, 7) Salem Amtrak Station, 8) Woodburn Memorial Transit Center, 9) Banks, 10) Cannon Beach, 11) Astoria, 12) Beaverton Sunset Transit Center, 13) Portland 6th/Taylor, 14) PDX, 15) Portland Lloyd Center
Wilsonville Transit Center	3	2	1) Canby Transit Center, 2) Salem Downtown Transit Center
Woodburn Hwy 211 & Hwy 214	2	3	1) Canby Transit Center, 2) Salem Downtown Transit Center, 3) Woodburn Memorial Transit Center
Woodburn Memorial Transit Center	5	9	1) Union Station, 2) PDX, 3) Salem Amtrak Station, 4) Corvallis 1st/Washington, 5) Corvallis 26th/Western, 6) Albany Amtrak Station, 7) Eugene Amtrak Station, 8) Eugene EmX Walnut, 9) Woodburn Hwy 211 & Hwy 214

Out-of-state Service

This section evaluates the agencies and services that cross the state line to deliver important connections to neighboring states and communities. For the reach analysis, local routes were disregarded because they were too short. This section focuses on routes that are *too long*. Sometimes a route goes far beyond where we can expect most passengers to travel to.

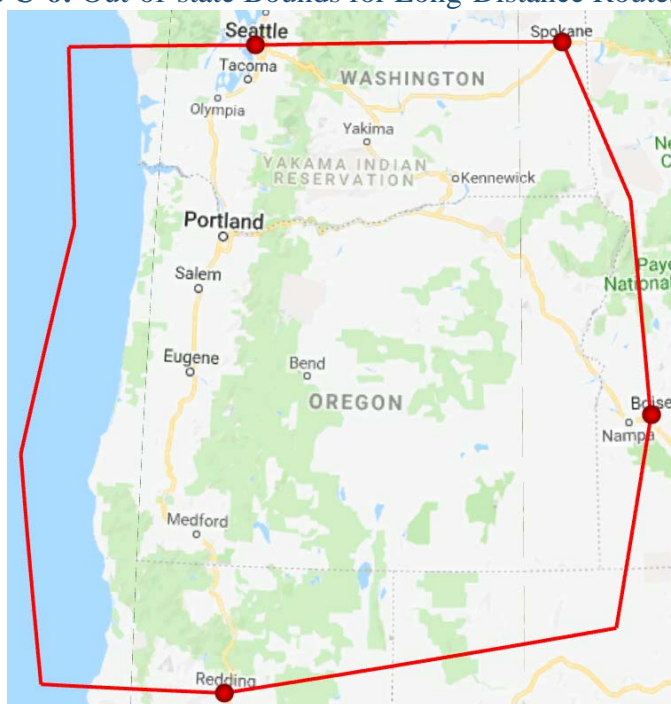
For example, Amtrak's Coast Starlight makes the trip from Portland to Los Angeles, CA in 31 hours. It is highly unlikely and unrealistic to assume that a significant amount of people takes this entire trip because it simply takes too long. If they needed to travel from Portland to Los Angeles, a 2-hour 30-minute plane ride would be more realistic. Similarly, are there a significant number of riders who are taking the Empire Builder from Portland to Chicago, IL, a trip of 46 hours? At some point, taking a bus or train to far destinations becomes unrealistic and flying becomes a better, more realistic alternative.

For the sake of the reach analysis, cut-off points for unusually long transit routes had to be established. These mostly involved Greyhound and Amtrak services. Riders seeking to travel beyond these points might consider flying due to the time and cost savings involved. Establishing a cut-off point was also important so that very long-distance routes did not artificially inflate the reach numbers.

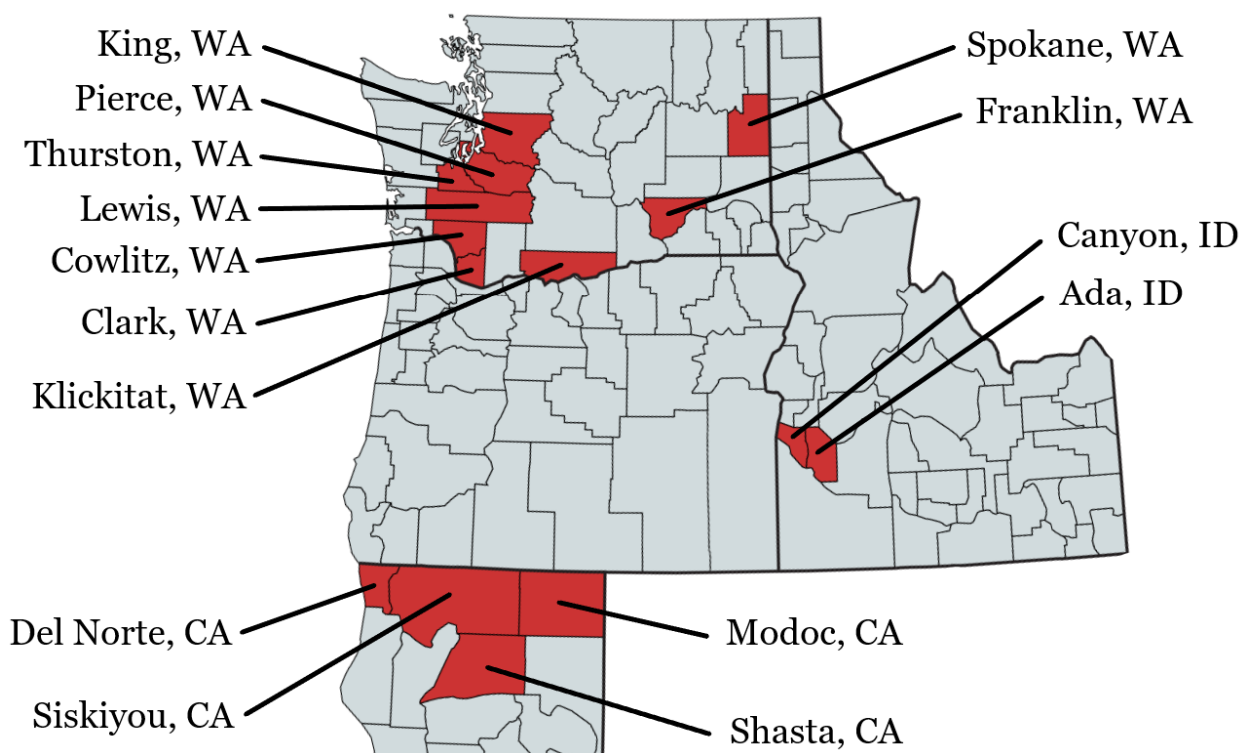
Figure C-6: Out-of-state Bounds for Long-Distance Routes

This map displays the out-of-state city bounds for long-distance routes. In Washington, Seattle and Spokane form the border. In Idaho it is Boise and in California it is Redding. With these boundaries, the number of out-of-state counties that are served by Oregon's KTH system can be counted.

On the statewide system a passenger can travel to four counties in California, two in Idaho and nine in Washington. Not only do these routes provide Oregonians with useful near-state travel options but the routes are absolutely critical to border cities and towns because a state line should not hinder a person's ability to move freely.



Map data: ©2019 Google

Figure C-7: Out-of-State Counties Served by Oregon's Key Transit Hubs

Regional Routes in the Key Transit Hub System

Table C-3: Included Regional Routes in the Key Transit Hub System (Reach in Miles)

Agency	Route	Origin	Destination	Intermediate Stops	Reach	Original Reach
Amtrak Cascades	Cascades	Eugene	Seattle, WA	Albany, Salem, Oregon City, Portland	310.0	310.0
Benton County Transportation	99 Express	Corvallis	Adair Village		10.0	10.0
Benton County Transportation	Coast to Valley Express	Corvallis	Newport	Philomath, Toledo	59.0	58.6
Benton County Transportation	Corvallis-Amtrak Connect	Corvallis	Albany		15.7	12.9
Bolt Bus Oregon	Eugene to Portland	Eugene	Portland	Salem	88.0	88.0
Bolt Bus Oregon	Redding to Seattle	Redding, CA	Seattle, WA	Eugene, Albany, Portland	289.0	219.0
Blue Star Bus	N/A	Portland	Portland (PDX)		18.5	17.7
C-TRAN	67	Vancouver, WA	Portland (PDX)		8.1	5.5
C-TRAN	105	Salmon Creek, WA	Portland		17.7	7.2
C-TRAN	134	Salmon Creek, WA	Portland		16.5	0.0
C-TRAN	157	Hazel Dell, WA	Portland		13.0	0.7
C-TRAN	164	Vancouver, WA	Portland		14.5	6.4
C-TRAN	177	Vancouver, WA	Portland		15.9	3.7
C-TRAN	199	Salmon Creek, WA	Portland		14.8	3.6
Canby Area Transit	99X	Woodburn	Oregon City	Canby	20.3	20.3
Caravan Airport Transportation	N/A	Waldport	Portland (PDX)	Newport, Lincoln City, Grand Ronde, McMinnville, Tigard	142.0	122.4
Cascades East Transit	Commuter 22	Redmond	Madras		28.5	28.5
Cascades East Transit	Commuter 24	Redmond	Bend		16.8	16.8
Cascades East Transit	Commuter 26	Redmond	Prineville		19.9	19.6

Agency	Route	Origin	Destination	Intermediate Stops	Reach	Original Reach
Cascades East Transit	Commuter 28	Redmond	Sisters		20.7	20.2
Cascades East Transit	Commuter 29	Bend	Sisters		23.5	21.2
Cascades East Transit	Commuter 30	Bend	La Pine		29.8	29.8
Cascades POINT	Cascades	Eugene	Portland	Albany, Salem, Woodburn	119.6	5.1
Central Oregon Breeze	N/A	Bend	Portland (PDX)	Redmond, Madras, Government Camp, Gresham, Portland	170.8	128.6
Cherriots	1X	Salem	Wilsonville		32.2	4.1
Cherriots	10X	Salem	Woodburn		20.9	19.4
Cherriots	20X	Salem	Woodburn	Mt Angel, Silverton	29.3	24.5
Cherriots	30X	Salem	Gates	Turner, Aumsville, Stayton, Mill City	41.8	41.2
Cherriots	40X	Salem	Dallas	Independence, Monmouth	24.7	24.7
Cherriots	50X	Salem	Dallas		17.0	9.2
City of Milton-Freewater	N/A	Milton-Freewater	Walla Walla, WA		24.5	24.5
Coast Starlight	Coast Starlight	Redding, CA	Seattle, WA	Klamath Falls, Chemult, Eugene, Albany, Salem, Portland	667.0	357.0
Columbia County Rider	1	Portland	Saint Helens	Scappoose	30.3	30.3
Columbia County Rider	6	Hillsboro	Vernonia	Banks	36.1	36.1
Corvallis Transit System	Philomath Conn	Corvallis	Philomath		10.9	7.9
Diamond Express	N/A	Eugene	Oakridge		46.0	45.7
Empire Builder	Empire Builder	Portland	Spokane, WA	Vancouver, WA, Pasco, WA	376.0	366.0
Eastern POINT	Eastern	Ontario	Bend	Vale, Harper, Juntura, Burns, Riley, Hampton, Brothers	261.0	261.0

Agency	Route	Origin	Destination	Intermediate Stops	Reach	Original Reach
Greyhound	Redding to Seattle	Redding, CA	Seattle, WA	Medford, Springfield, Corvallis, Salem, Portland	612.7	315.4
Greyhound	Portland to Boise	Portland	Boise, ID	Hood River, The Dalles, Pendleton, La Grande, Baker City	439.0	423.7
Groome Transportation	N/A	Eugene	Portland (PDX)	Corvallis, Salem, Woodburn	141.4	4.5
Josephine Community Transit	Commuter 100	Grants Pass	Medford	Rogue River, Gold Hill	30.5	4.4
Kayak Public Transit	Arrow	Pendleton	La Grande		74.2	17.6
Kayak Public Transit	Walla Whistler	Pendleton	Walla Walla, WA	Milton-Freewater	64.1	27.4
Klamath Shuttle	Klamath Shuttle	Klamath Falls	Crater Lake		60.0	60.0
Lane Transit District	91	Eugene	McKenzie Bridge	Walterville, Vida, Nimrod, Finn Rock, Blue River	55.4	52.7
Lane Transit District	98	Eugene	Cottage Grove	Creswell	28.0	8.1
Lincoln County Transit	Coast to Valley Ex	Albany	Newport	Corvallis, Philomath, Toledo	67.3	0.0
Linn-Benton Loop	Weekdays	Albany	Corvallis		28.5	6.0
Linn-Benton Loop	Saturday	Albany	Corvallis		28.8	0.9
Linn Shuttle	N/A	Albany	Sweet Home	Lebanon	46.4	29.5
Northeast Oregon Public Transit	Baker Connector	La Grande	Baker City	North Powder, Haines	44.4	19.3
Northeast Oregon Public Transit	Wallowa Link	La Grande	Joseph	Elgin, Wallowa, Enterprise	71.2	70.5
NorthWest POINT	NorthWest	Portland	Astoria	Beaverton, Cannon Beach, Seaside, Gearhart, Warrenton	102.1	85.5
Pacific Transit	24	Astoria	Ilwaco, WA	Chinook, WA	16.7	15.8

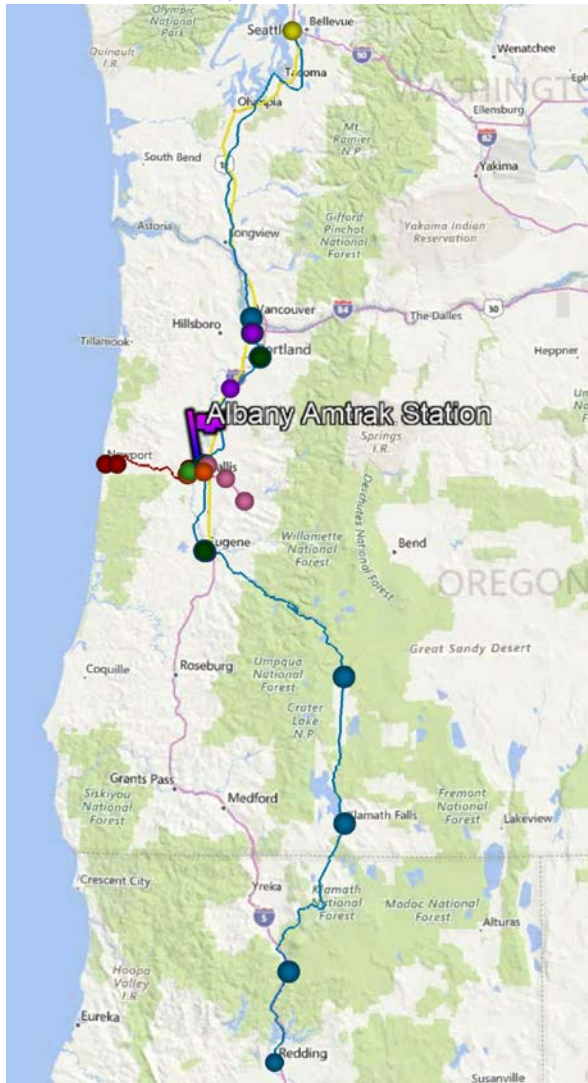
Agency	Route	Origin	Destination	Intermediate Stops	Reach	Original Reach
Pacific Transit	50	South Bend, WA	Ilwaco, WA	Naselle, WA, Astoria, OR, Chinook, WA	63.7	46.9
Pacific Crest Lines	Bend to Coos Bay	Bend	Coos Bay	Sisters, Springfield, Eugene, Florence, Reedsport	238.0	158.0
Pacific Crest Lines	Redmond-Chemult	Redmond	Chemult	Bend, Sunriver, La Pine	85.0	41.4
People Mover	John Day to Ontario	Mt Vernon	Ontario	John Day, Prairie City, Unity, Brogan, Jamieson, Vale	141.0	123.0
People Mover	Monument to Bend	Monument	Bend	Kimberly, Dayville, Mitchell, Prineville, Redmond	153.9	117.1
People Mover	Monument to Walla Walla	Monument	Walla Walla, WA	Milton-Freewater, Pendleton, Ukiah, Long Creek	156.0	118.0
People Mover	Prairie City to Bend	Prairie City	Bend	John Day, Mt Vernon, Dayville, Prineville, Redmond	167.0	22.9
People Mover	Prairie City to Walla Walla	Prairie City	Walla Walla, WA	Milton-Freewater, Pendleton, Long Creek, John Day	183.6	28.7
Ride Connection	WestLink	Hillsboro	Forest Grove	North Plains, Banks	21.0	17.0
Rogue Valley Transportation District	1X	Medford	Ashland		15.0	6.9
Rogue Valley Transportation District	10	Medford	Ashland	Phoenix, Talent	16.4	11.7
Rogue Valley Transportation District	30	Medford	Jacksonville		6.0	5.9
Sage Stage	Klamath Falls	Klamath Falls	Alturas, CA	Canby, CA, Perez, CA, Tulelake, CA, Merrill, OR	100.3	100.3

Agency	Route	Origin	Destination	Intermediate Stops	Reach	Original Reach
Shuttle Oregon	N/A	Redmond	Portland (PDX)	Bend, Sisters, Salem, Clackamas	213.5	70.1
South Clackamas Transportation District	Molalla to Canby	Molalla	Canby	Liberal, Mulino	27.9	26.5
South Metro Area Regional Transit	2X	Wilsonville	Tualatin		10.3	5.5
South Metro Area Regional Transit	3X	Wilsonville	Canby		8.7	6.4
SouthWest POINT	Medford to Brookings	Medford	Brookings	Gold Hill, Grants Pass, Cave Junction, Crescent City, CA	137.5	114.8
SouthWest POINT	Medford to Klamath Falls	Medford	Klamath Falls	White City, Ashland	104.5	79.9
Sunset Empire Transportation District	10	Astoria	Warrenton		25.1	21.8
Sunset Empire Transportation District	15	Astoria	Warrenton		10.2	0.0
Sunset Empire Transportation District	20	Cannon Beach	Seaside		12.2	5.0
Sunset Empire Transportation District	21	Cannon Beach	Seaside		13.0	2.2
Sunset Empire Transportation District	101	Astoria	Seaside	Warrenton, Sunset Beach	21.3	3.7
Sunset Empire Transportation District	LCC	Astoria	Rainier	Knappa, Westport, Clatskanie	48.9	45.5
Sunset Empire Transportation District	Pacific Connector	Astoria	Cannon Beach	Warrenton, Sunset Beach, Seaside	29.5	0.0
Tillamook County Transportation District	3	Cannon Beach	Tillamook	Garibaldi, Rockaway Beach, Wheeler, Manzanita	43.0	43.0
Tillamook County Transportation District	5	Portland	Tillamook	Beaverton, Hillsboro, North Plains, Banks	79.3	50.3

Agency	Route	Origin	Destination	Intermediate Stops	Reach	Original Reach
Tillamook County Transportation District	60X	Salem	Lincoln City	Grand Ronde	61.0	18.8
Tillamook County Transportation District	70X	Salem	Grand Ronde		36.2	0.0
TriMet	2	Portland	Gresham		13.8	11.3
TriMet	9	Portland	Gresham		15.4	13.1
TriMet	12	Portland	Tigard		15.7	8.8
TriMet	20	Beaverton	Gresham	Portland	25.9	24.1
TriMet	30	Portland	Estacada	Milwaukie, Clackamas	29.9	28.3
TriMet	35	Portland	Oregon City	Lake Oswego	22.0	19.1
TriMet	36	Portland	Tualatin	Lake Oswego	14.9	6.6
TriMet	48	Hillsboro	Beaverton		12.5	11.5
TriMet	54	Portland	Beaverton		9.8	7.4
TriMet	56	Portland	Beaverton		10.3	3.3
TriMet	57	Beaverton	Forest Grove	Hillsboro, Cornelius	17.1	16.3
TriMet	70	Portland	Milwaukie		13.6	13.0
TriMet	94	Portland	Sherwood	Tigard, King City	17.3	1.6
TriMet	99	Portland	Oregon City	Milwaukie, Gladstone	18.7	12.1
TriMet	291	Portland	Milwaukie		8.3	0.0
TriMet	MAX Blue Line	Hillsboro	Gresham	Beaverton, Portland	32.4	24.7
TriMet	MAX Green Line	Portland	Clackamas		14.3	0.0
TriMet	MAX Orange Line	Portland	Milwaukie		8.6	1.2
TriMet	MAX Red Line	Beaverton	Portland (PDX)		20.1	1.3
WES Commuter Rail	N/A	Wilsonville	Beaverton	Tualatin, Tigard	14.6	14.6
Yamhill County Transit Area	22	Grand Ronde	McMinnville	Willamina, Sheridan	27.8	8.9
Yamhill County Transit Area	33	Hillsboro	McMinnville	Cornelius, Forest Grove, Yamhill	31.2	25.8

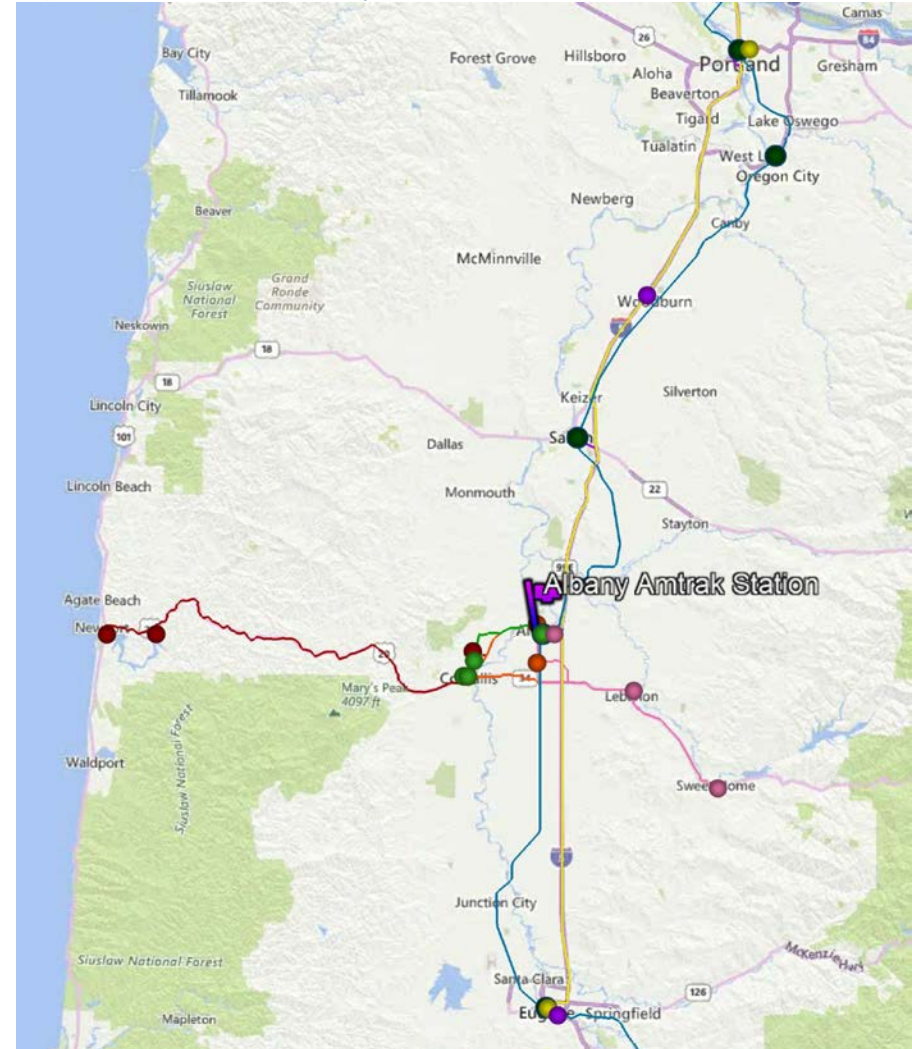
Appendix D: Key Transit Hub Reach Profiles

Figure D-1: Albany Amtrak Station Reach Profile

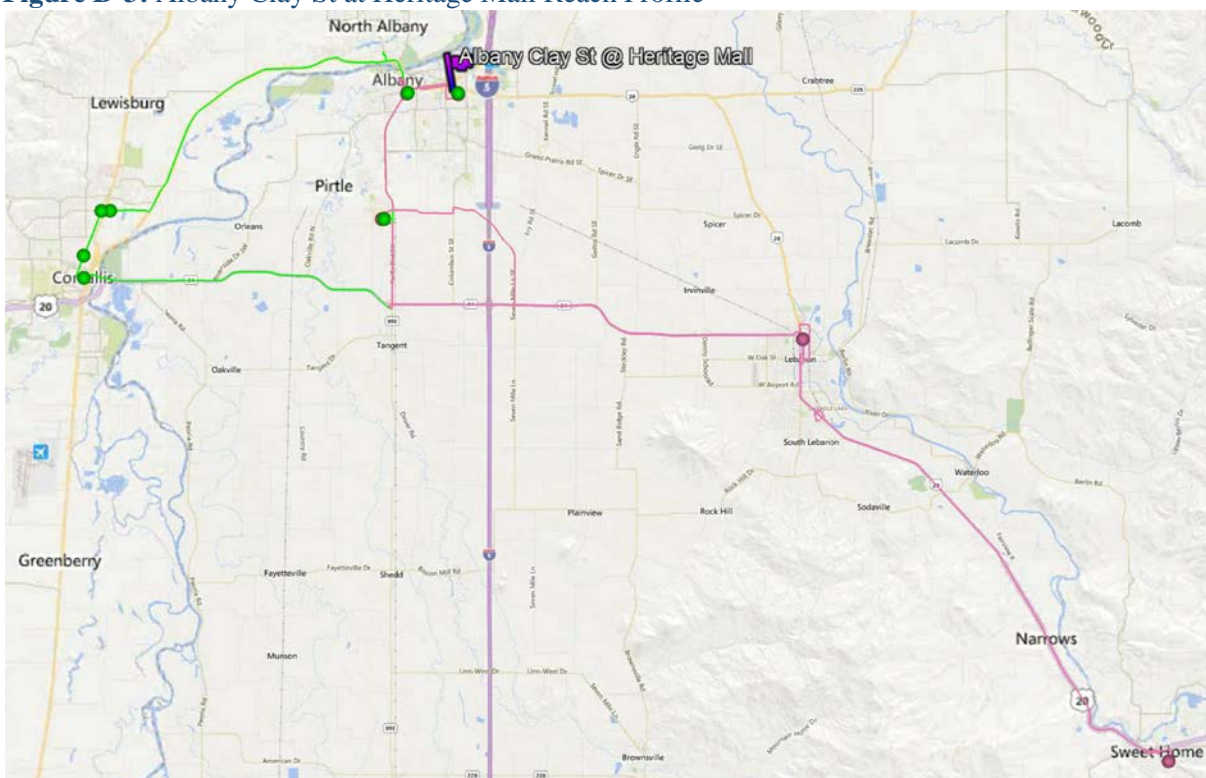


Map data: ©2019 Google, Microsoft

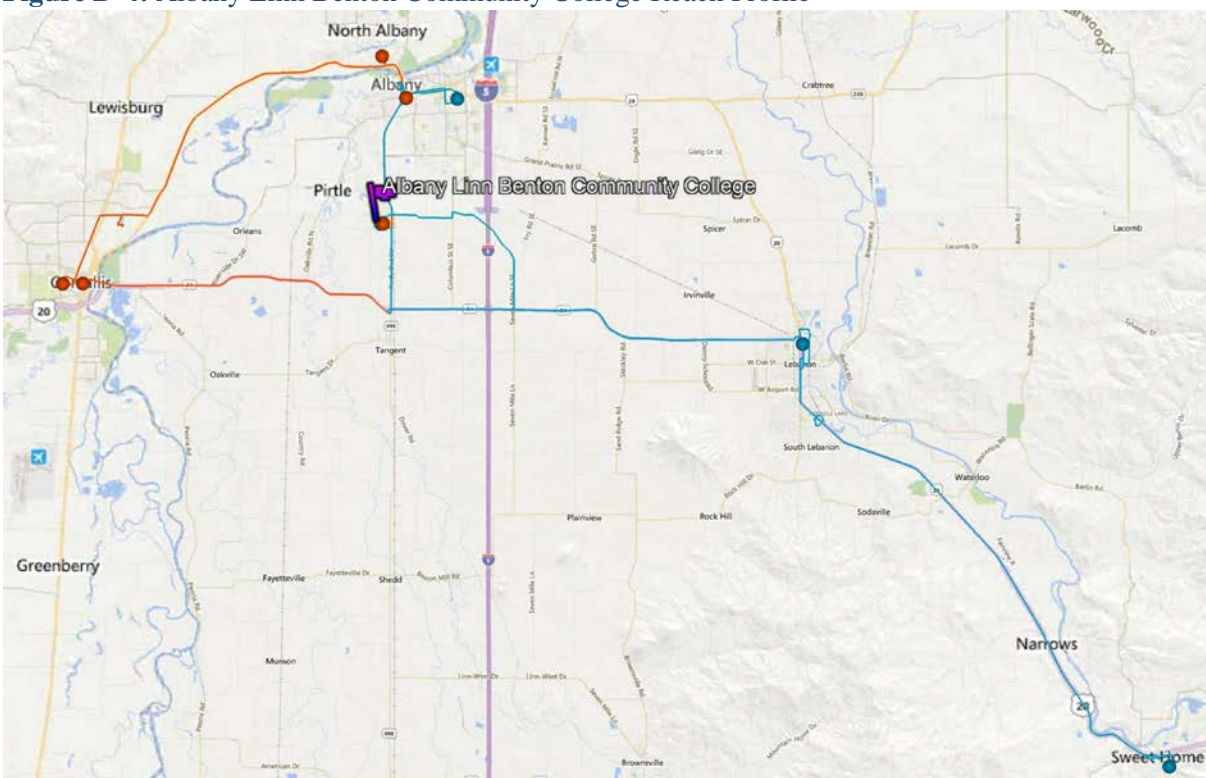
Figure D-2: Details of Albany Amtrak Station Reach Profile



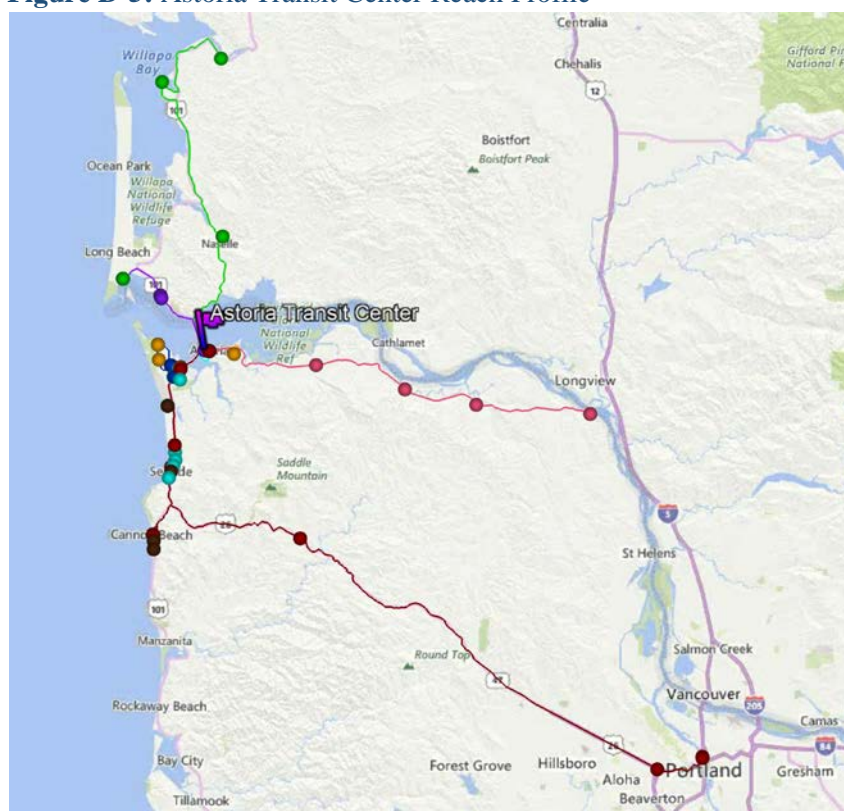
Map data: ©2019 Google, Microsoft

Figure D-3: Albany Clay St at Heritage Mall Reach Profile

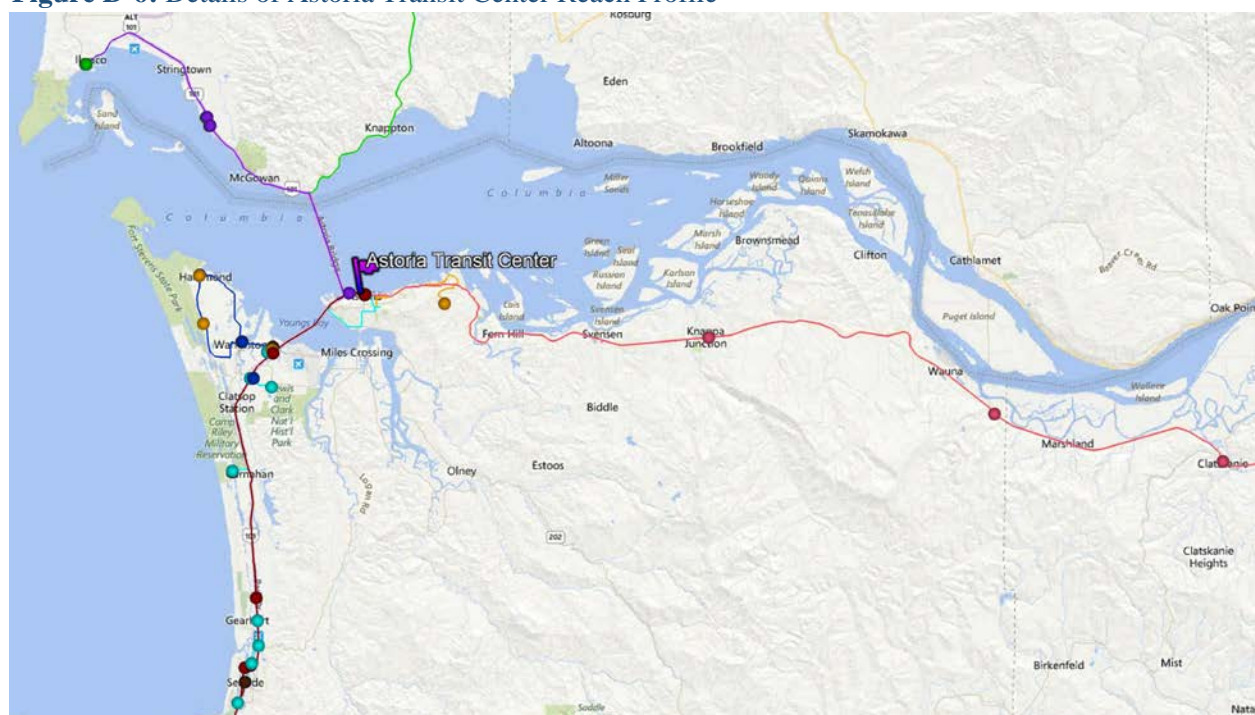
Map data: ©2019 Google, Microsoft

Figure D-4: Albany Linn Benton Community College Reach Profile

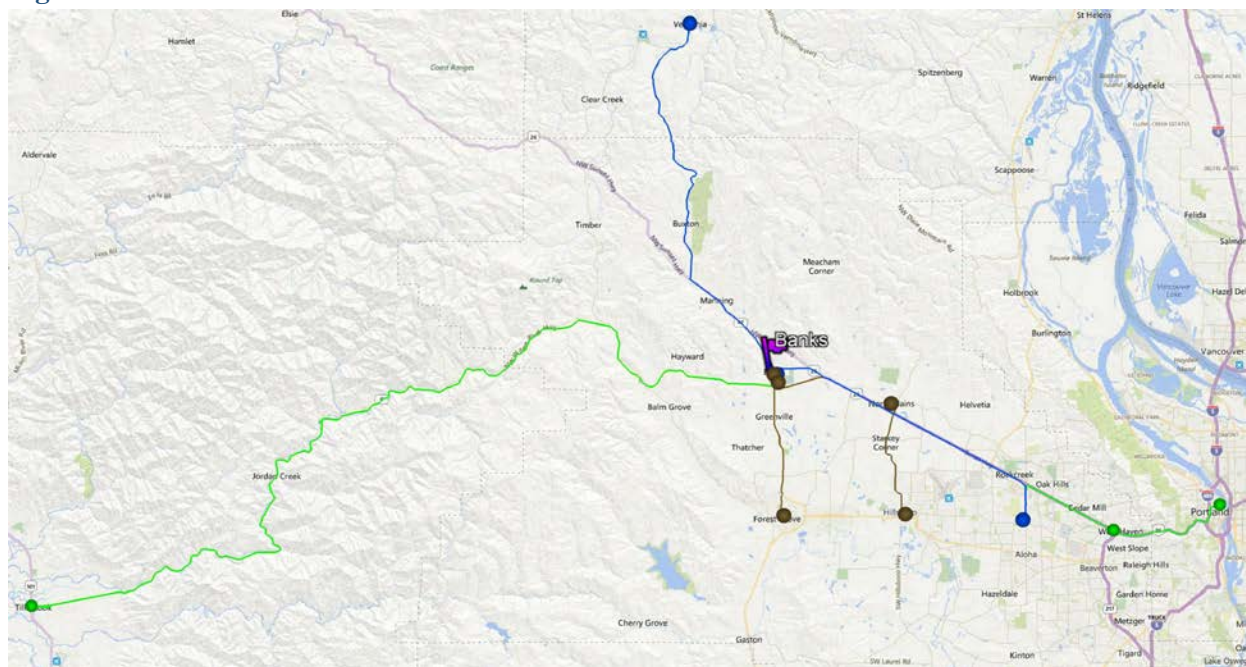
Map data: ©2019 Google, Microsoft

Figure D-5: Astoria Transit Center Reach Profile

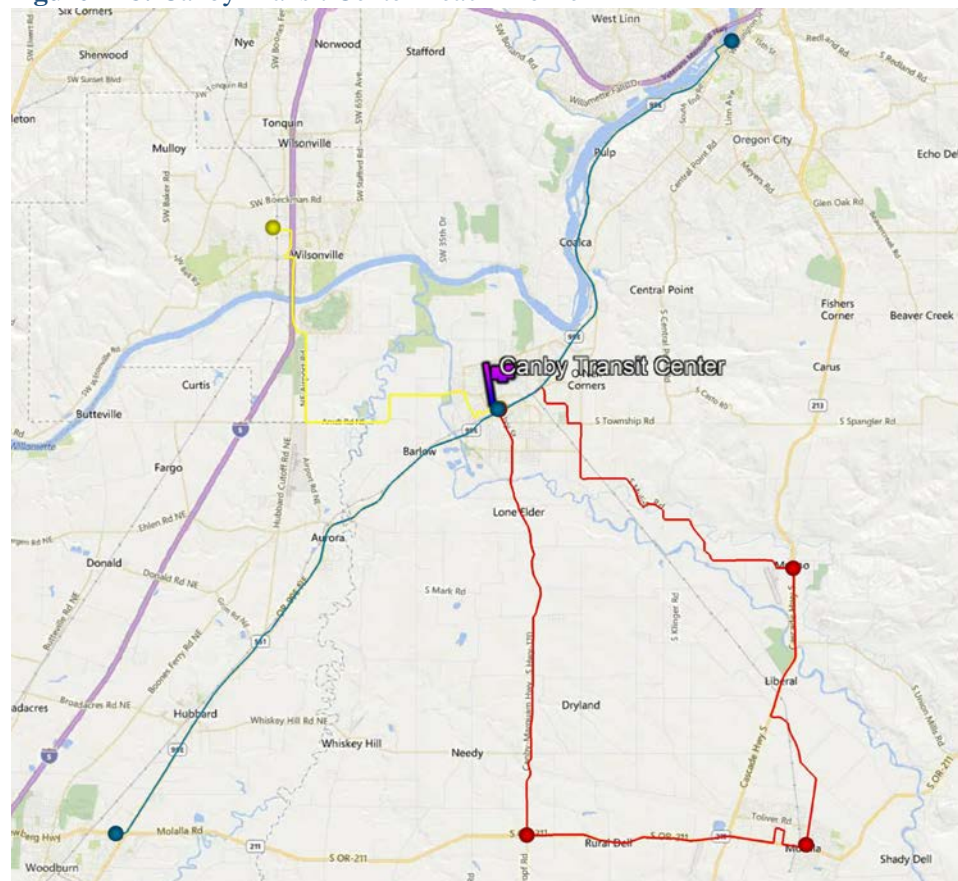
Map data: ©2019 Google, Microsoft

Figure D-6: Details of Astoria Transit Center Reach Profile

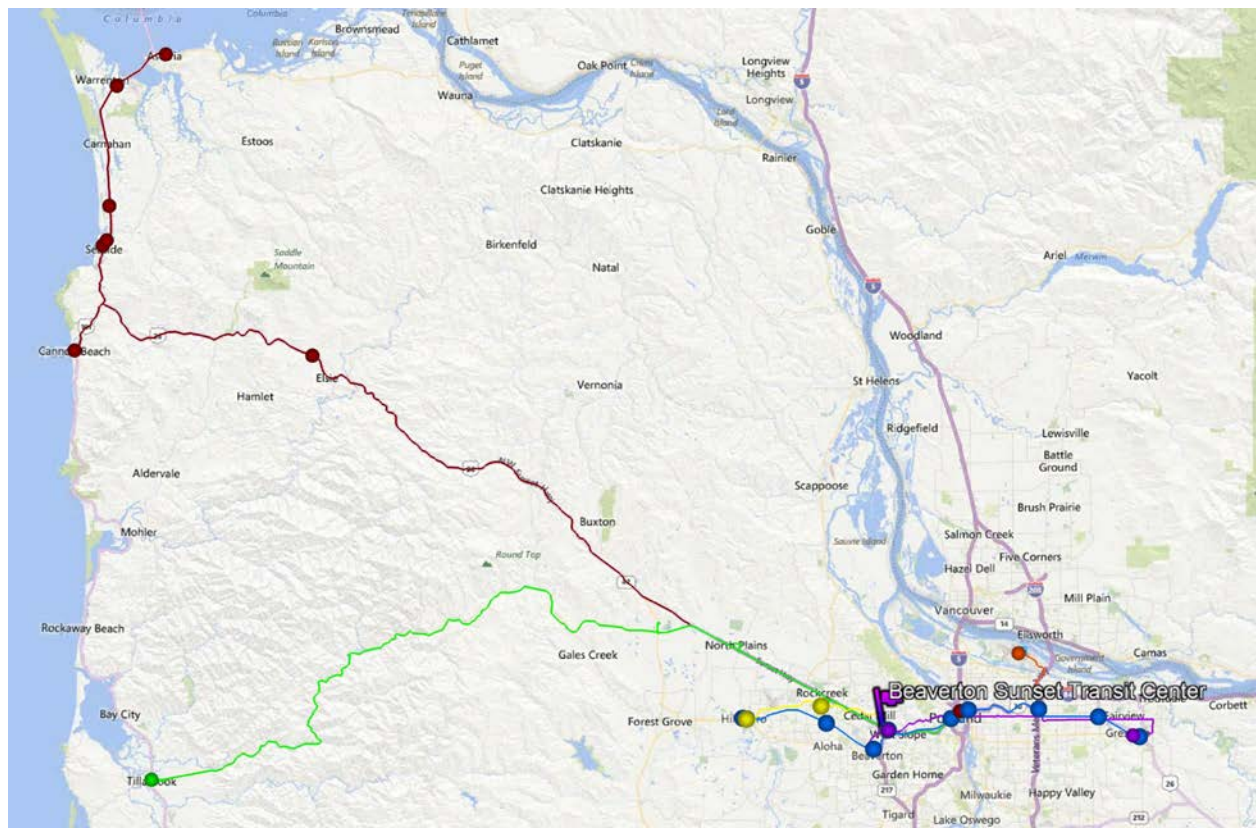
Map data: ©2019 Google, Microsoft

Figure D-7: Banks Reach Profile

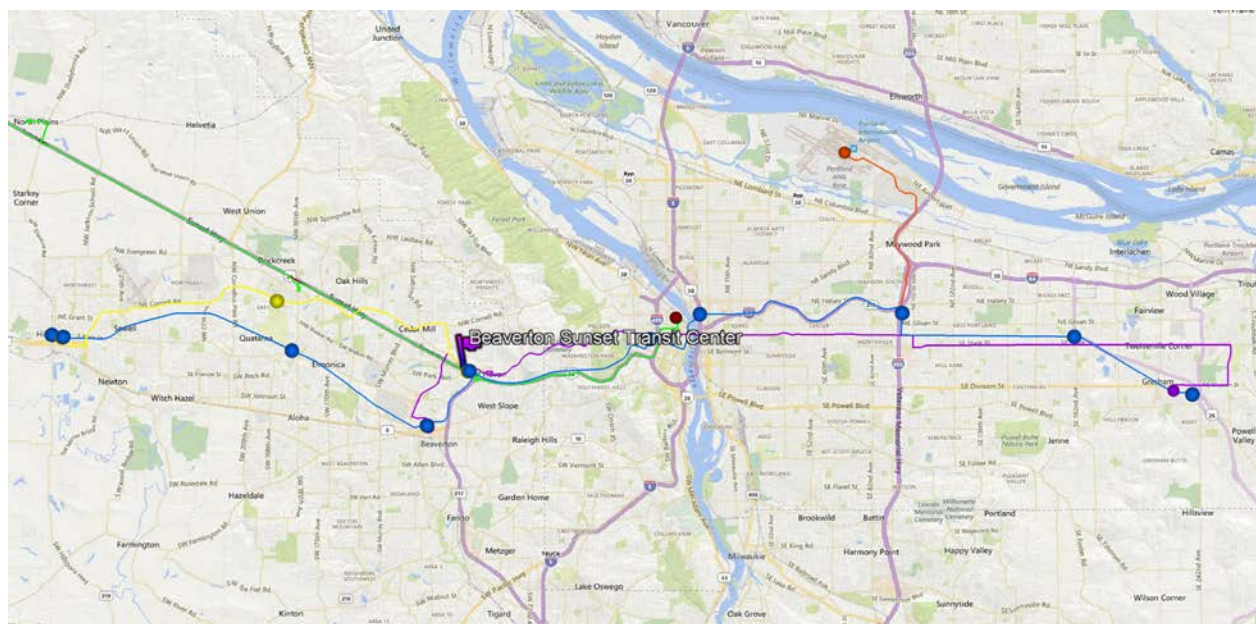
Map data: ©2019 Google, Microsoft

Figure D-8: Canby Transit Center Reach Profile

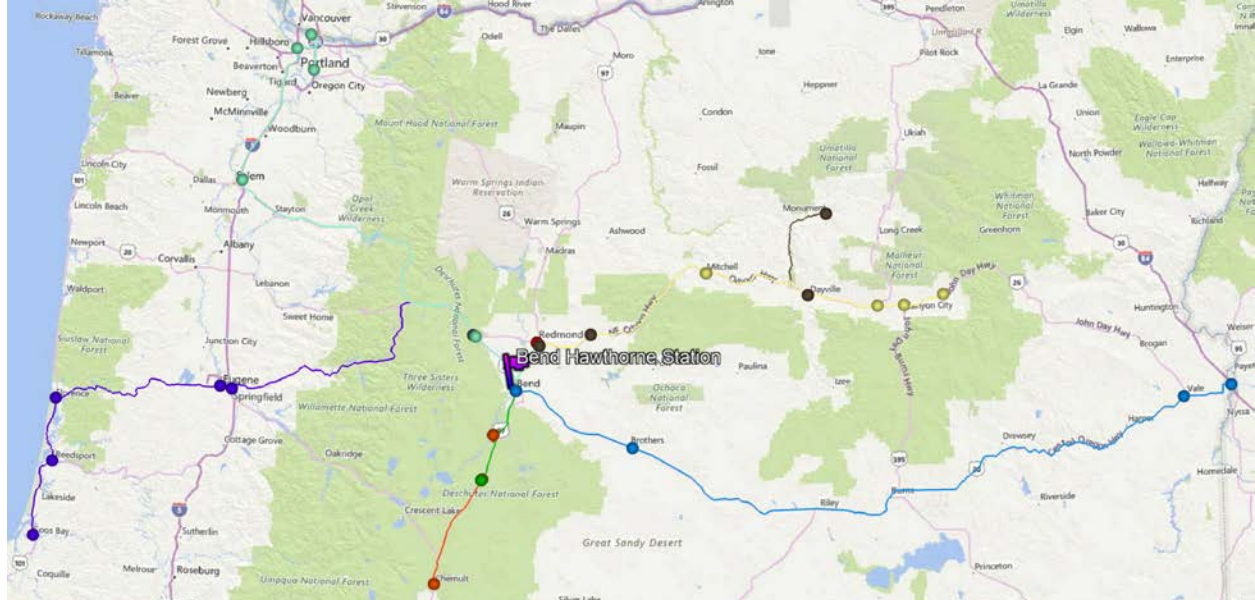
Map data: ©2019 Google, Microsoft

Figure D-9: Beaverton Sunset Transit Center Reach Profile

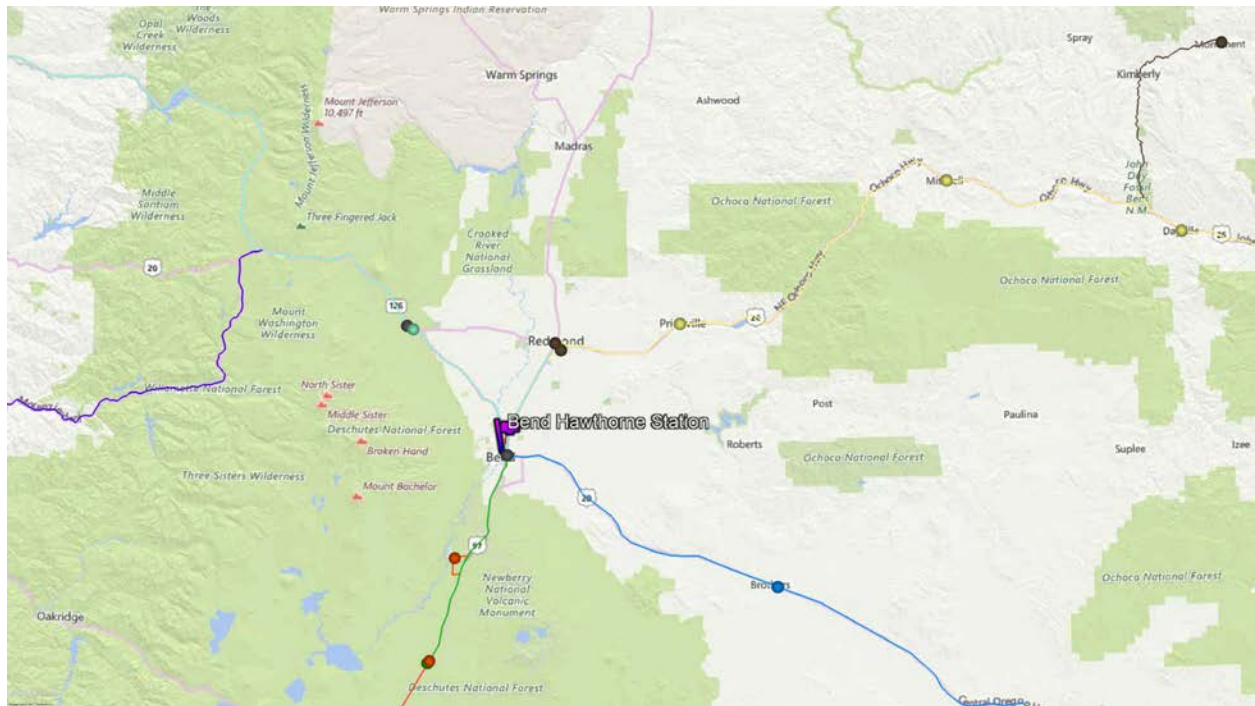
Map data: ©2019 Google, Microsoft

Figure D-10: Details of Beaverton Sunset Transit Center Reach Profile

Map data: ©2019 Google, Microsoft

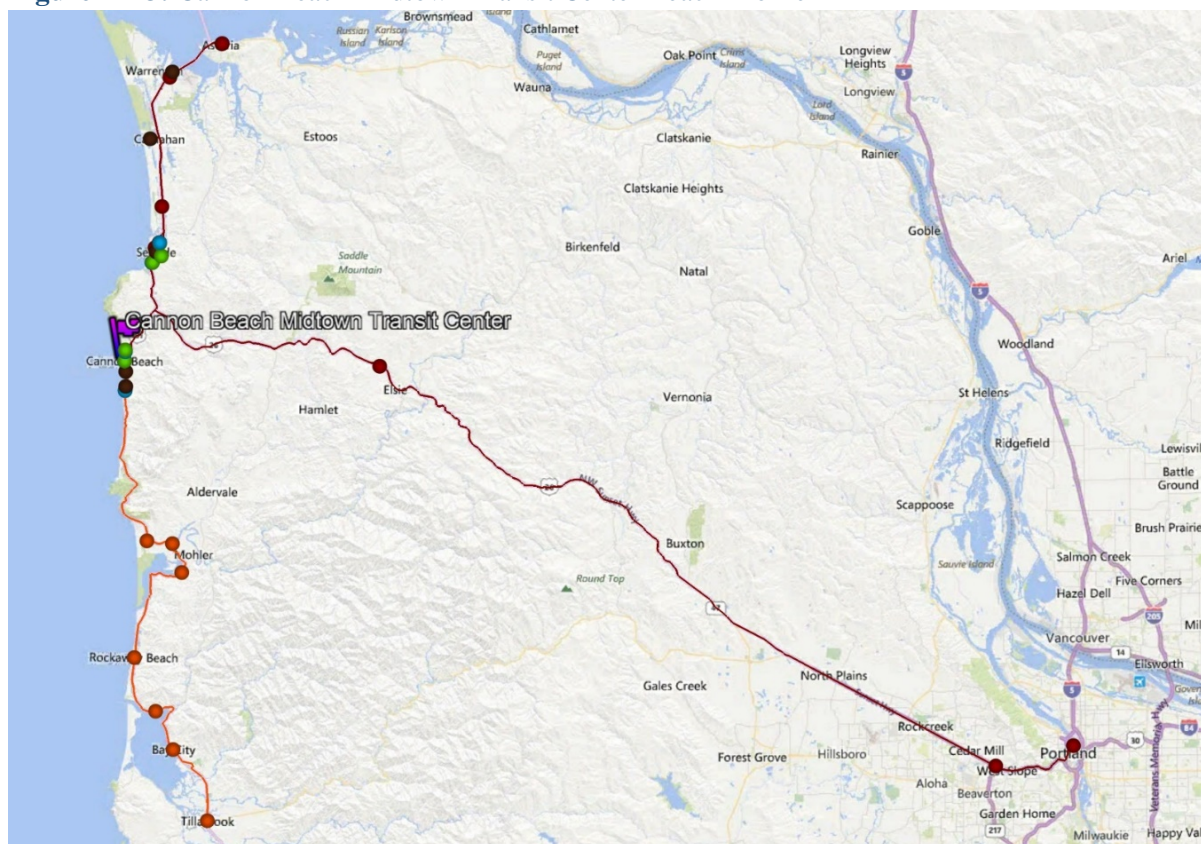
Figure D-11: Bend Hawthorne Station Reach Profile

Map data: ©2019 Google, Microsoft

Figure D-12: Details of Bend Hawthorne Station Reach Profile

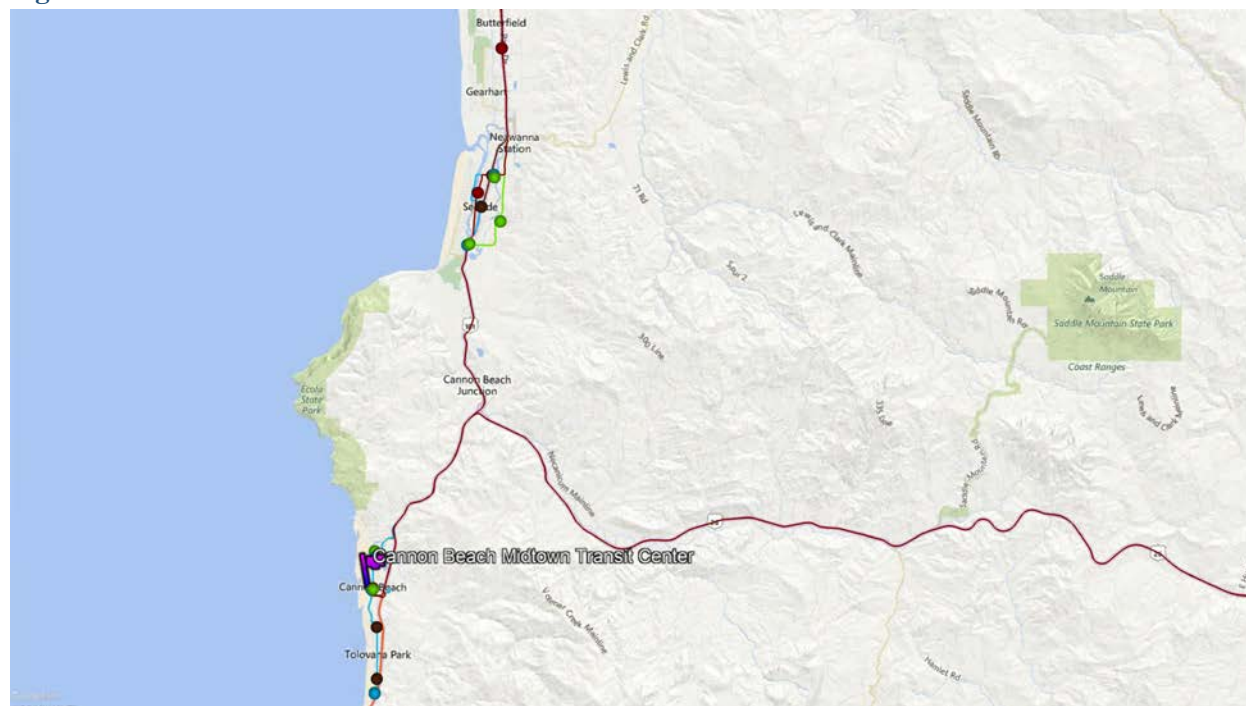
Map data: ©2019 Google, Microsoft

Figure D-13: Cannon Beach Midtown Transit Center Reach Profile



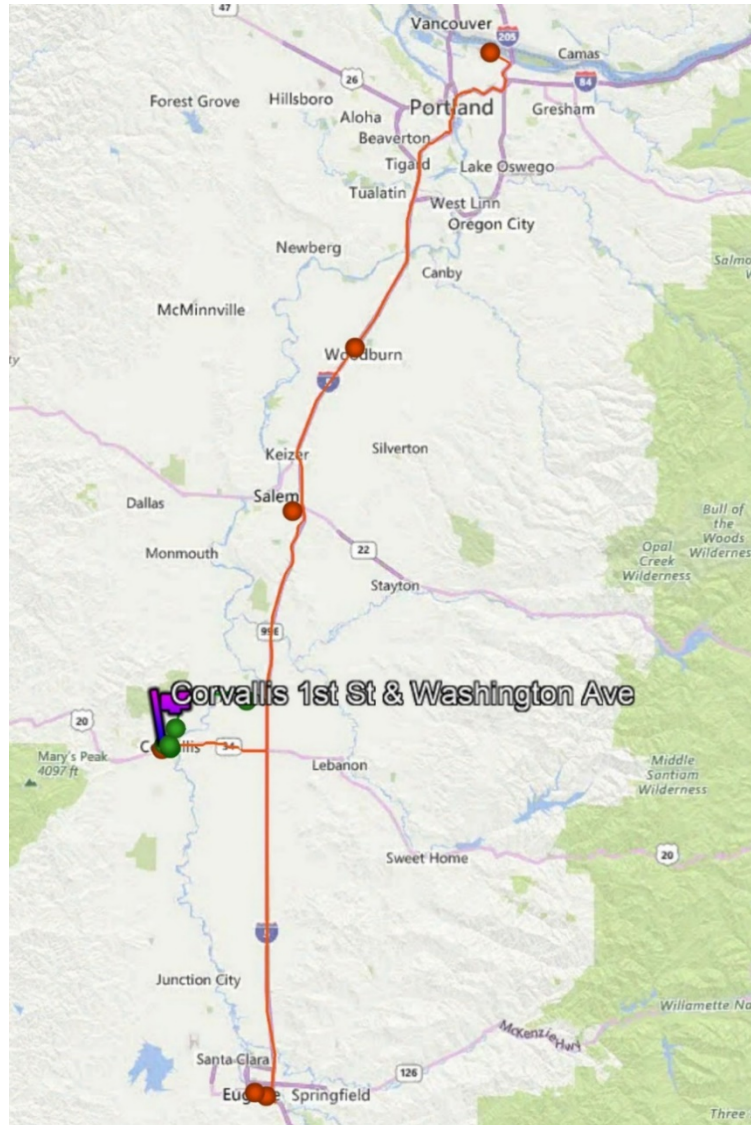
Map data: ©2019 Google, Microsoft

Figure D-14: Details of Cannon Beach Midtown Transit Center Reach Profile



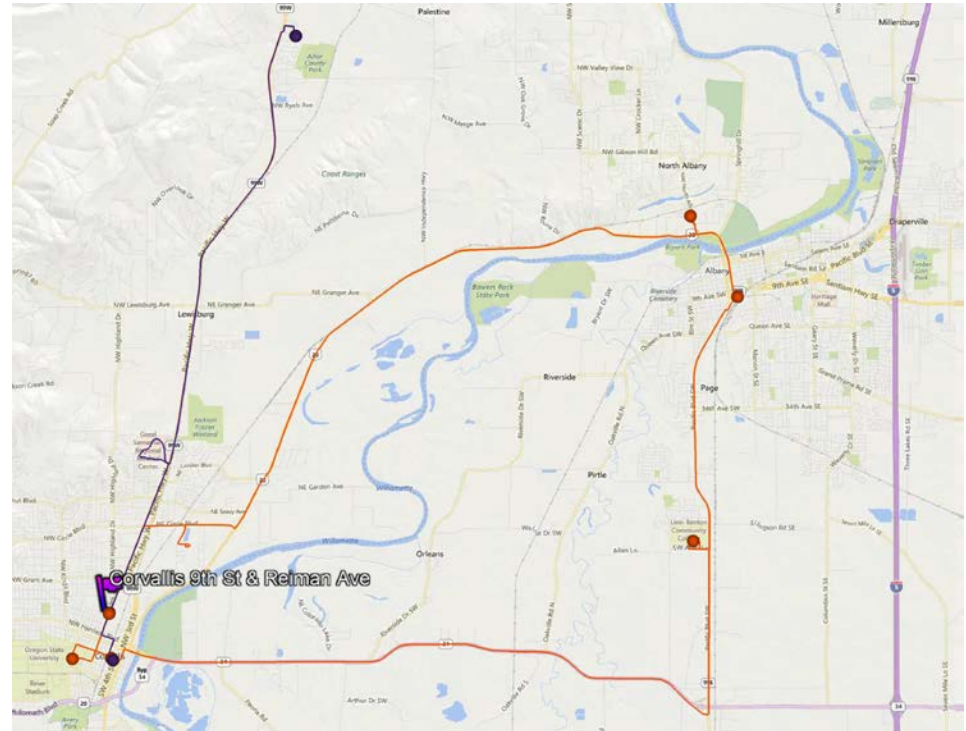
Map data: ©2019 Google, Microsoft

Figure D-15: Corvallis 1st St & Washington Ave Reach Profile

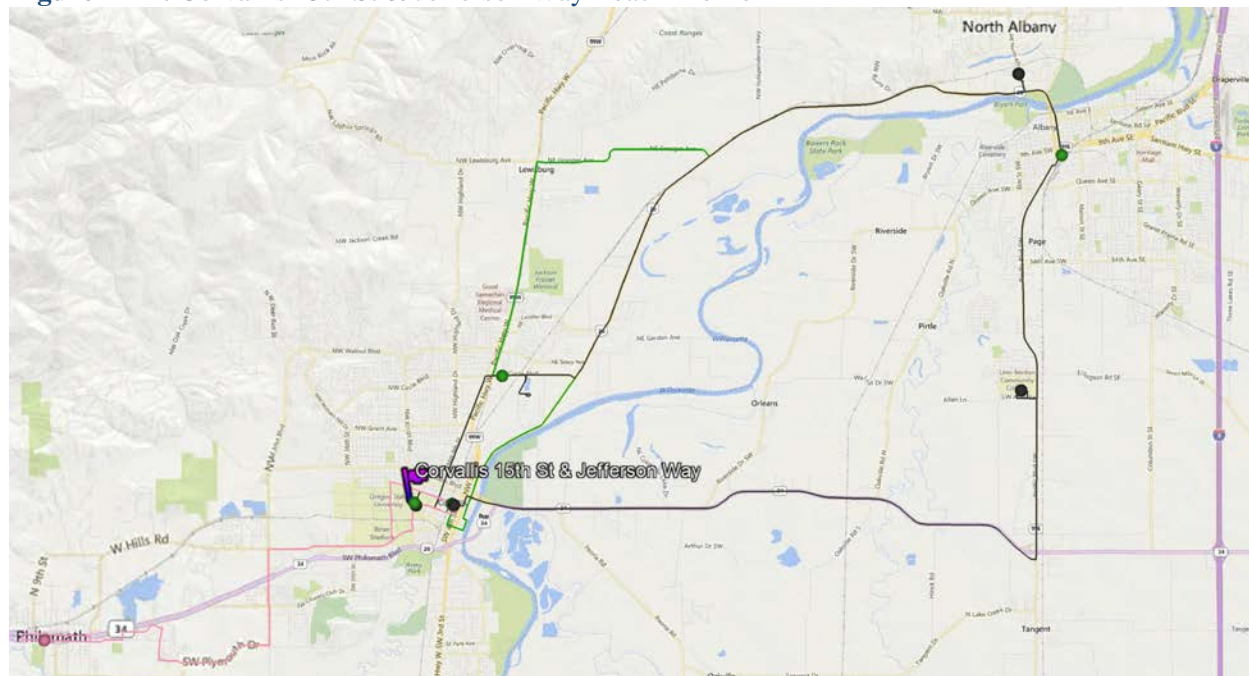


Map data: ©2019 Google, Microsoft

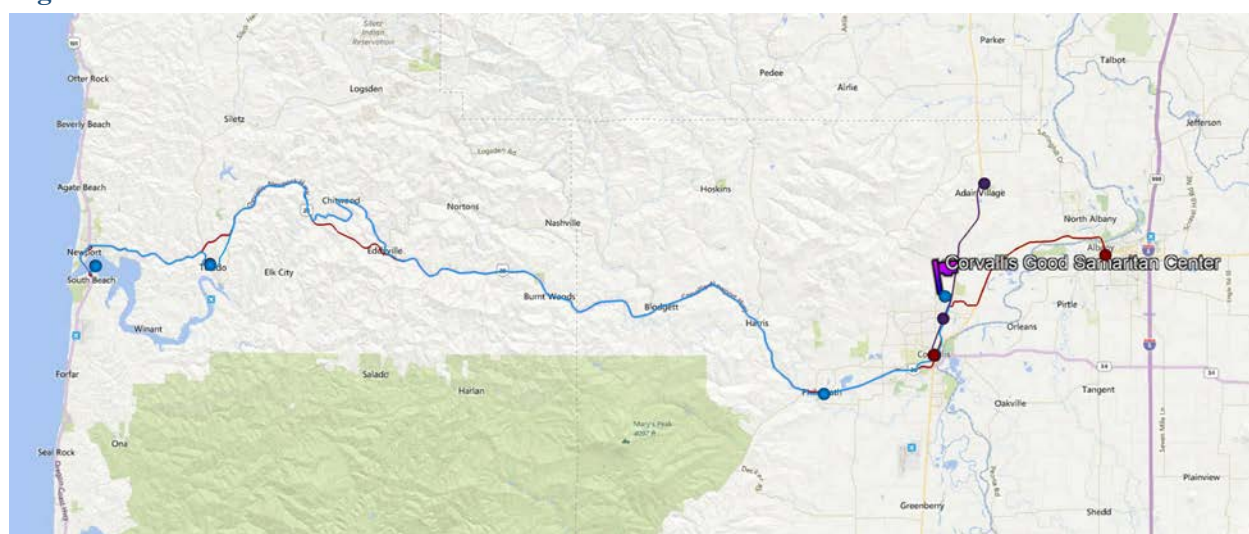
Figure D-16: Corvallis 9th St & Reiman Ave Reach Profile



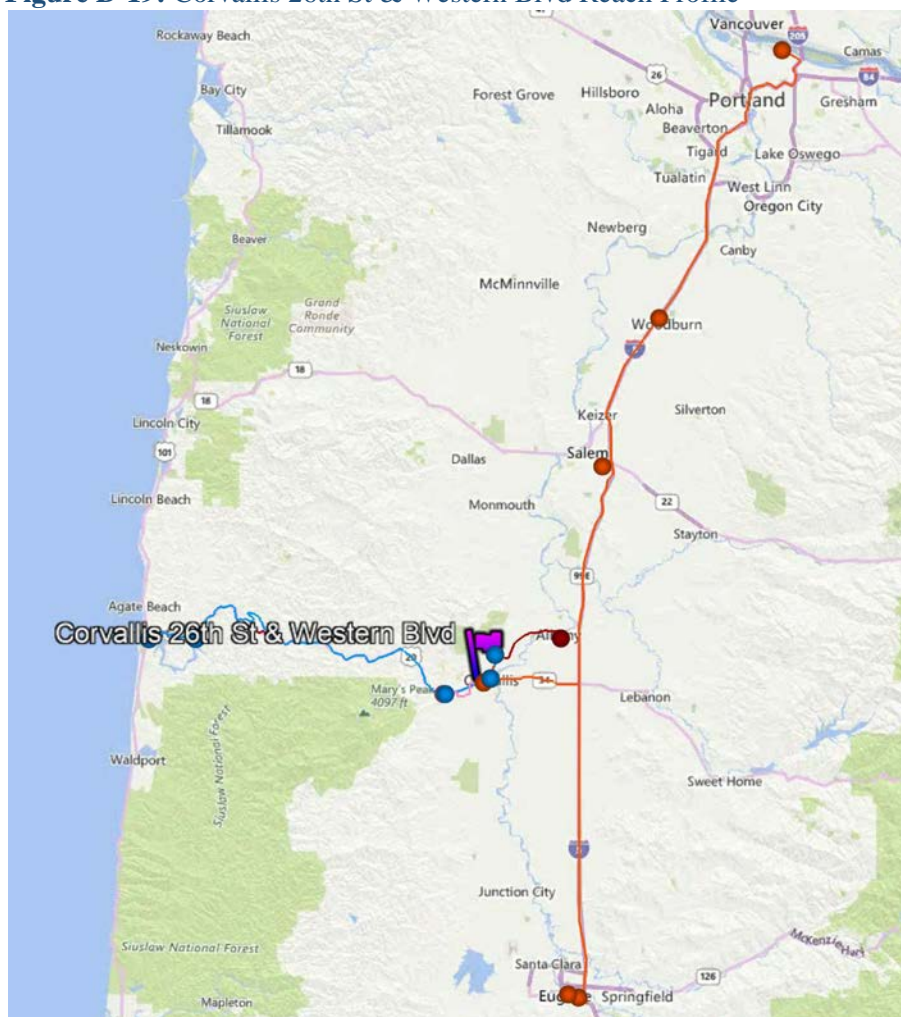
Map data: ©2019 Google, Microsoft

Figure D-17: Corvallis 15th St & Jefferson Way Reach Profile

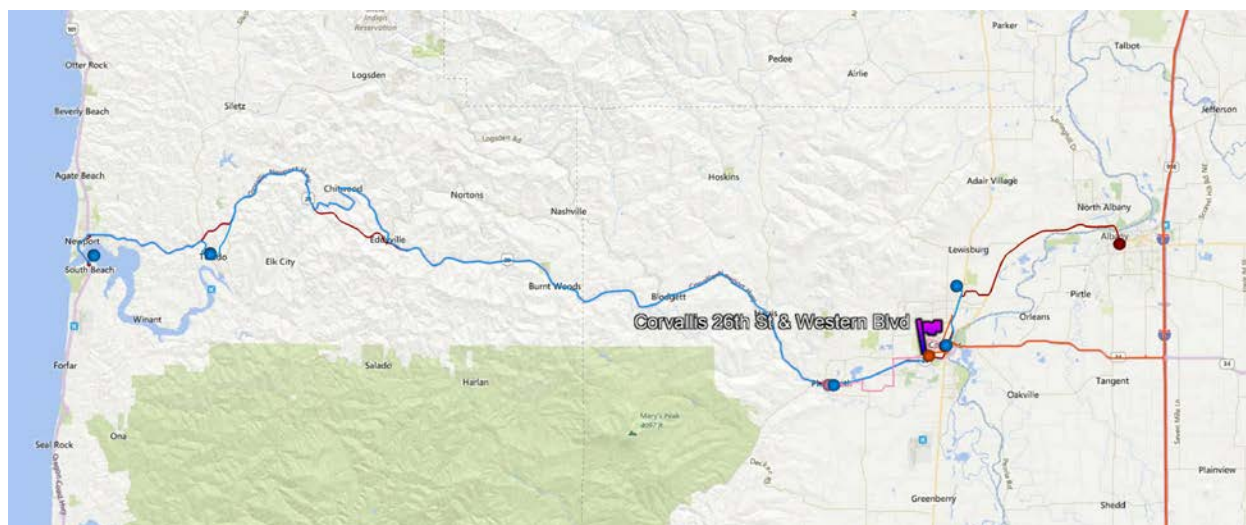
Map data: ©2019 Google, Microsoft

Figure D-18: Corvallis Good Samaritan Center Reach Profile

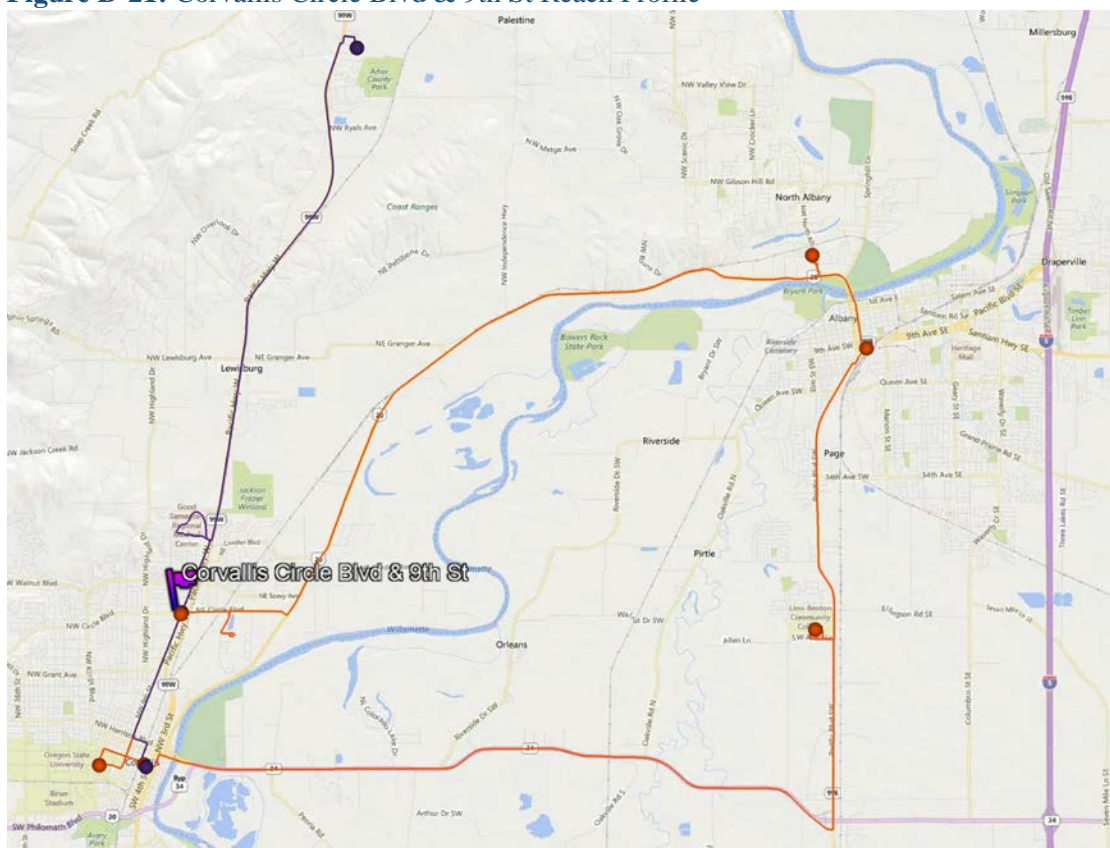
Map data: ©2019 Google, Microsoft

Figure D-19: Corvallis 26th St & Western Blvd Reach Profile

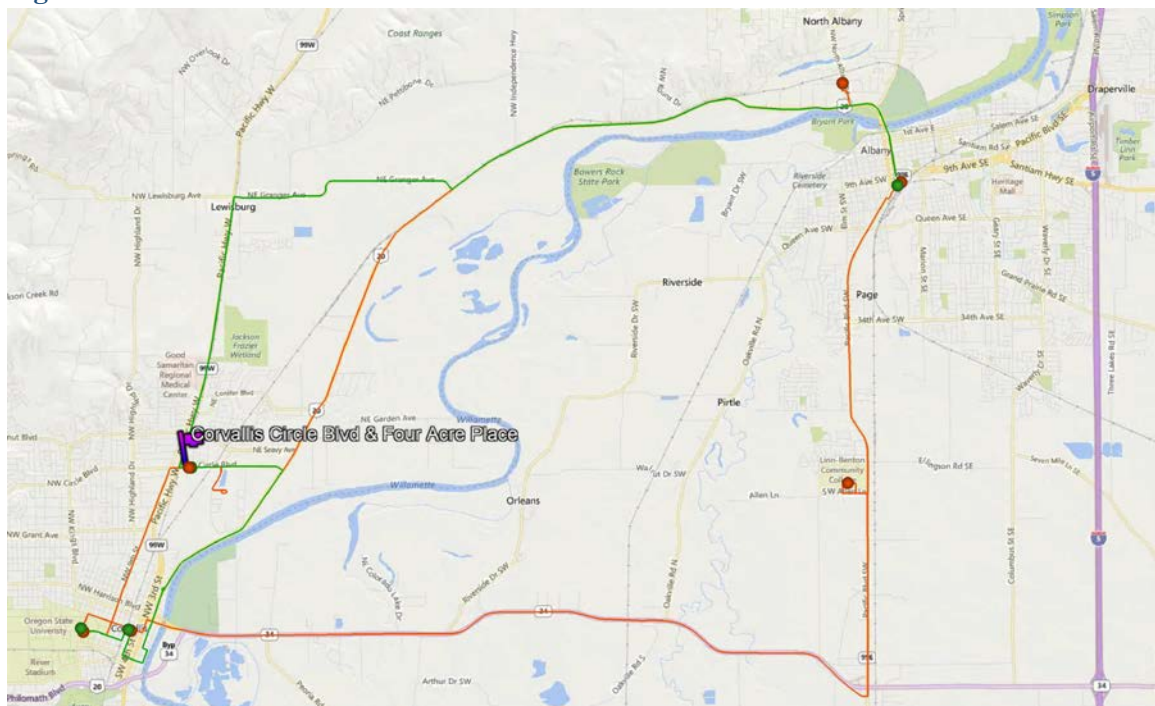
Map data: ©2019 Google, Microsoft

Figure D-20: Details of Corvallis 26th St & Western Blvd Reach Profile

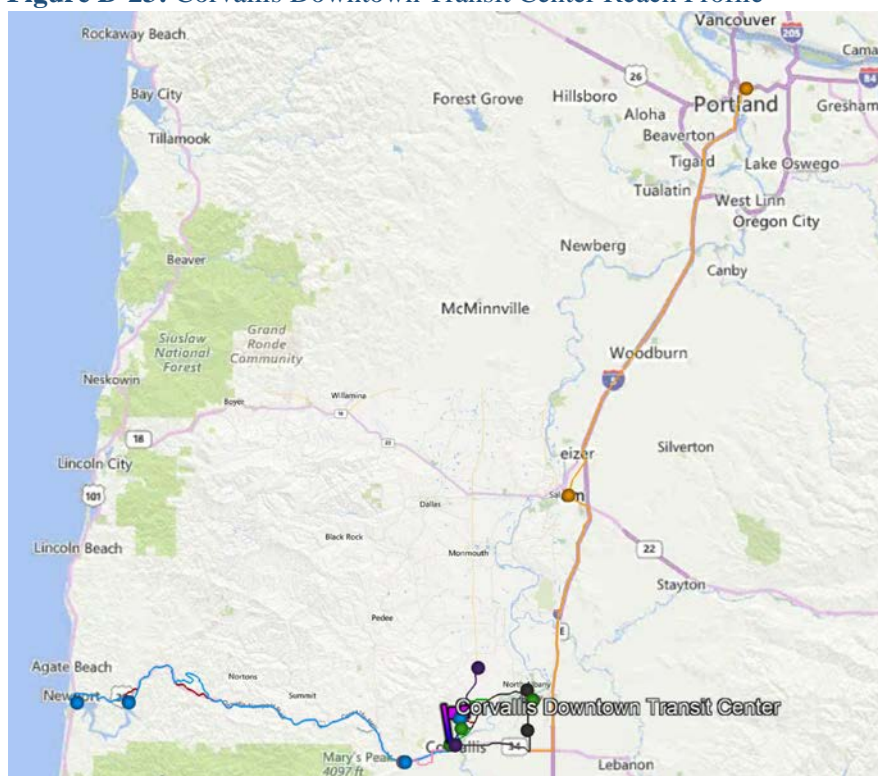
Map data: ©2019 Google, Microsoft

Figure D-21: Corvallis Circle Blvd & 9th St Reach Profile

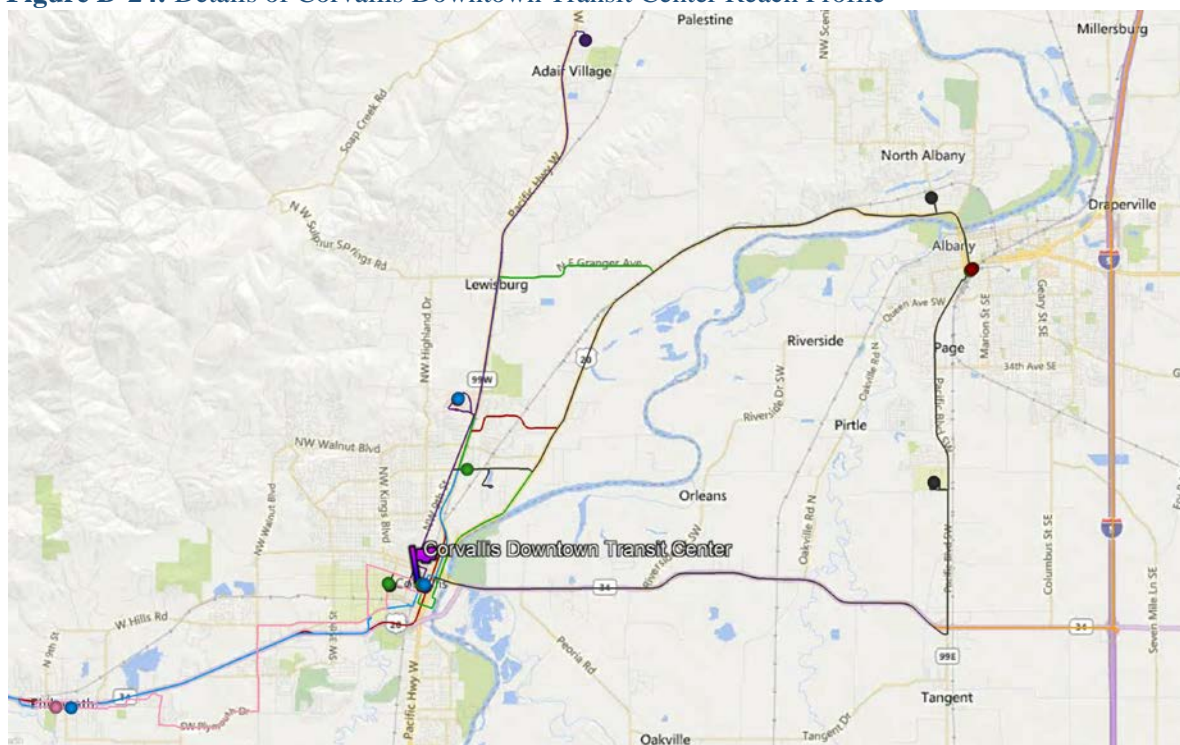
Map data: ©2019 Google, Microsoft

Figure D-22: Corvallis Circle Blvd & Four Acre Place Reach Profile

Map data: ©2019 Google, Microsoft

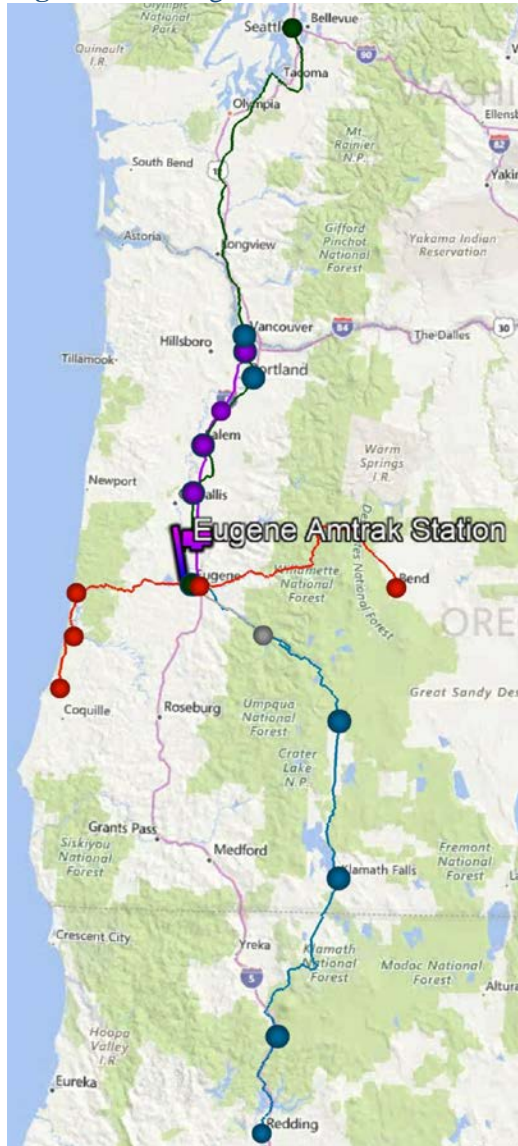
Figure D-23: Corvallis Downtown Transit Center Reach Profile

Map data: ©2019 Google, Microsoft

Figure D-24: Details of Corvallis Downtown Transit Center Reach Profile

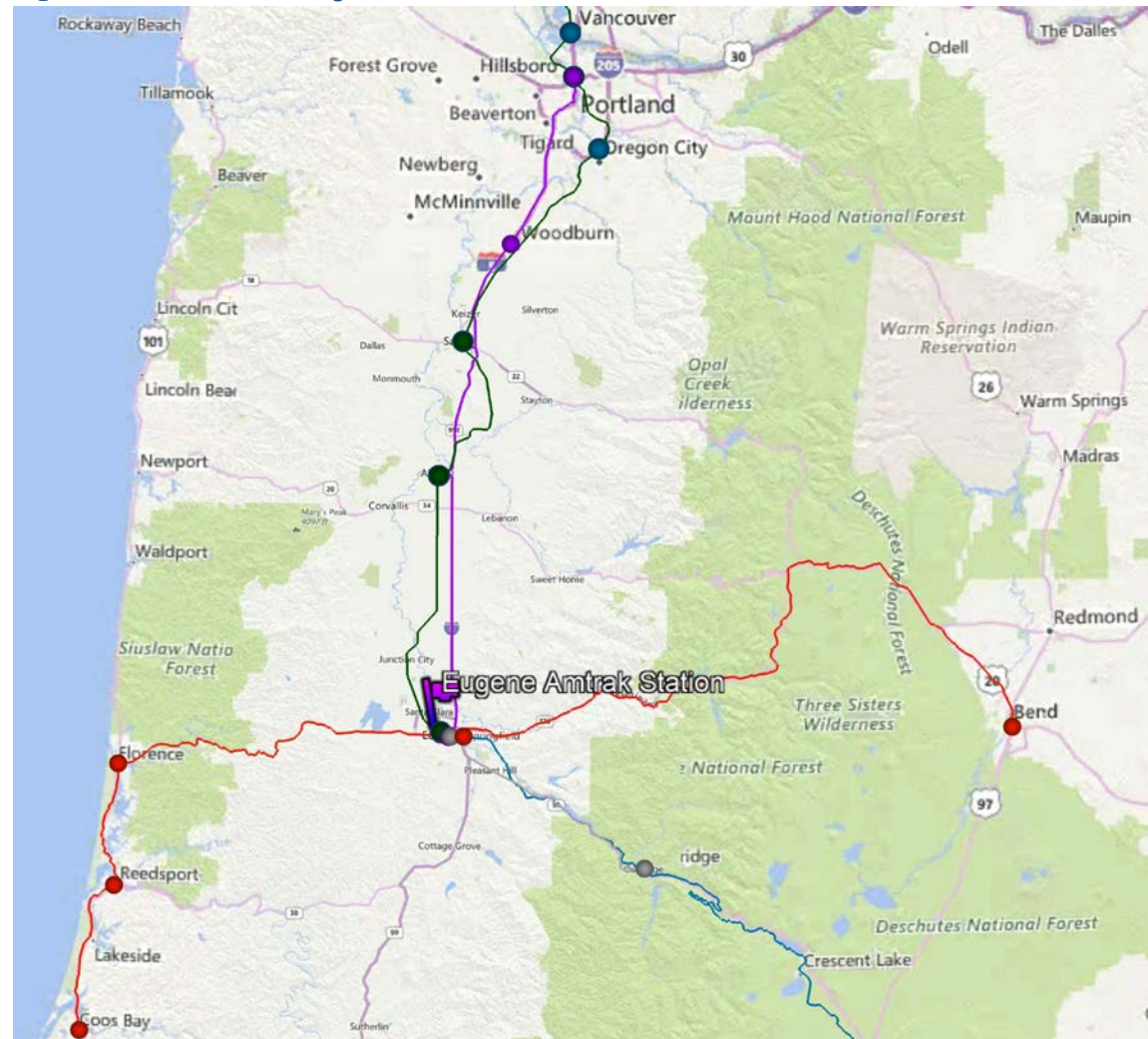
Map data: ©2019 Google, Microsoft

Figure D-25: Eugene Amtrak Station Reach Profile



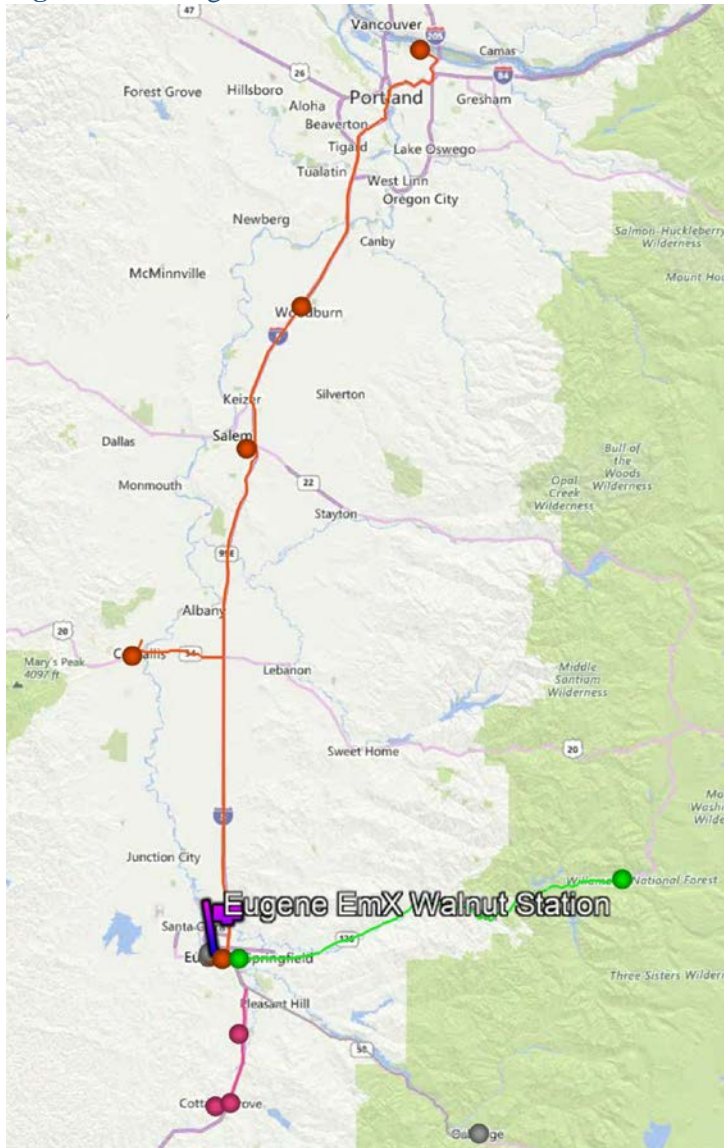
Map data: ©2019 Google, Microsoft

Figure D-26: Details of Eugene Amtrak Station Reach Profile



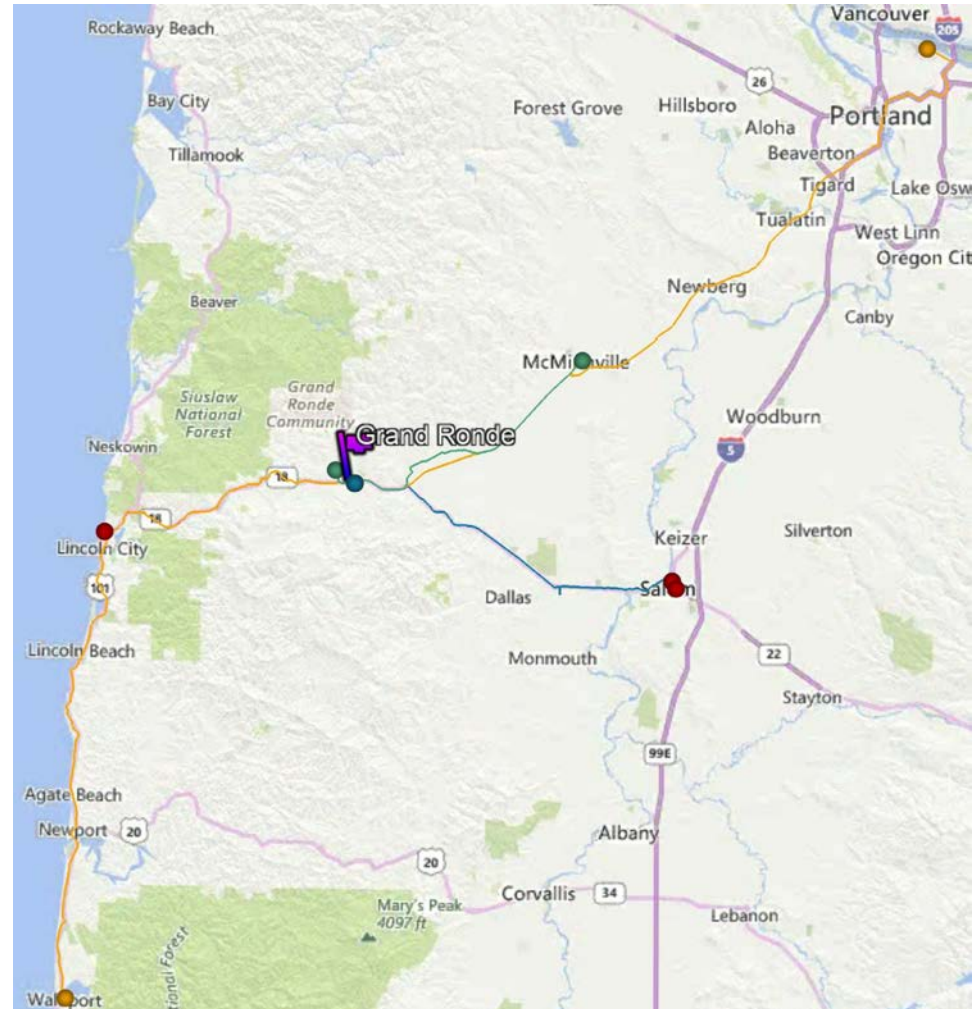
Map data: ©2019 Google, Microsoft

Figure D-27: Eugene EmX Walnut Station Reach Profile

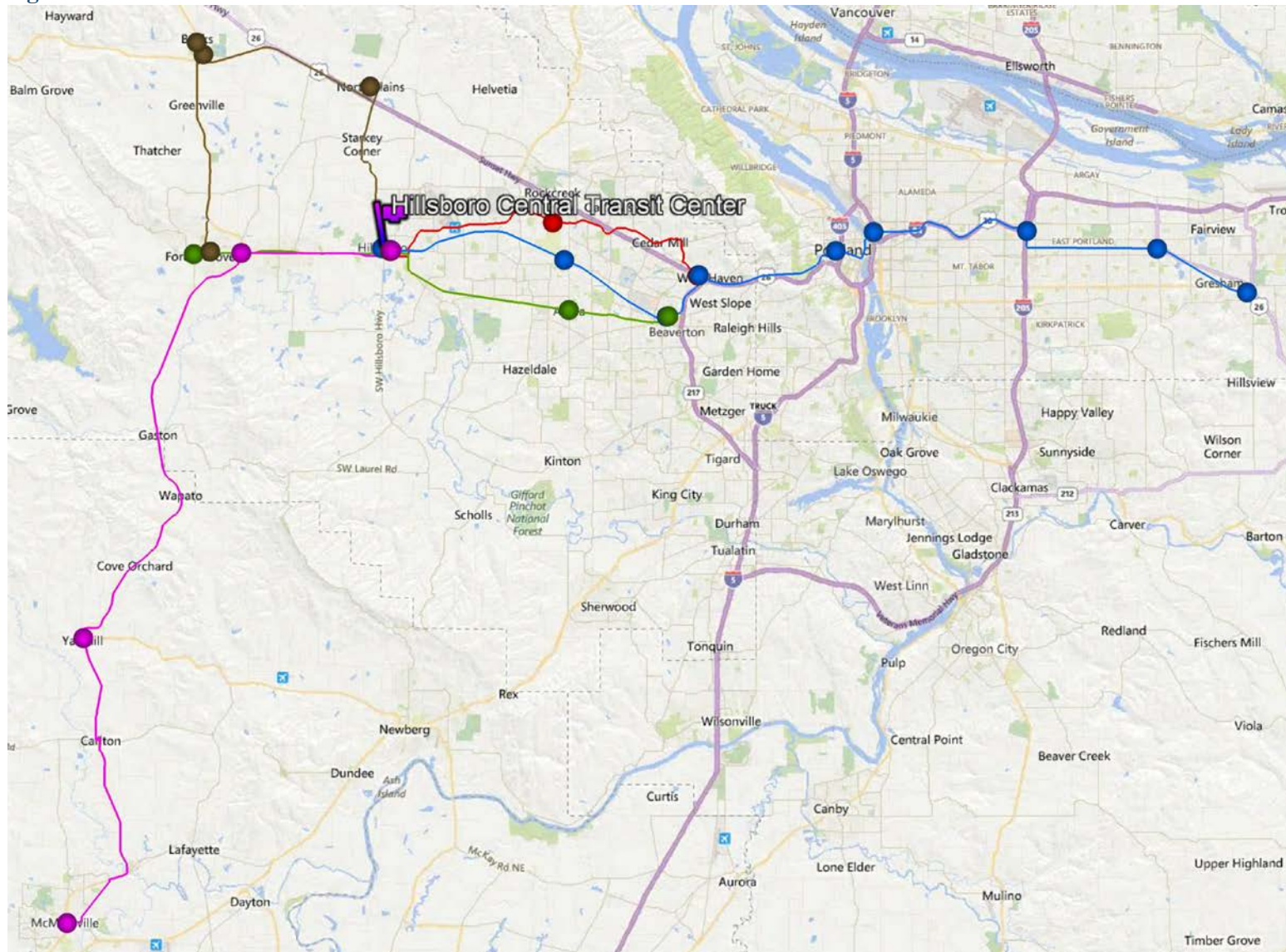


Map data: ©2019 Google, Microsoft

Figure D-28: Grand Ronde Reach Profile



Map data: ©2019 Google, Microsoft

Figure D-29: Hillsboro Central Transit Center Reach Profile

Map data: ©2019 Google, Microsoft

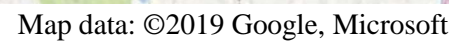
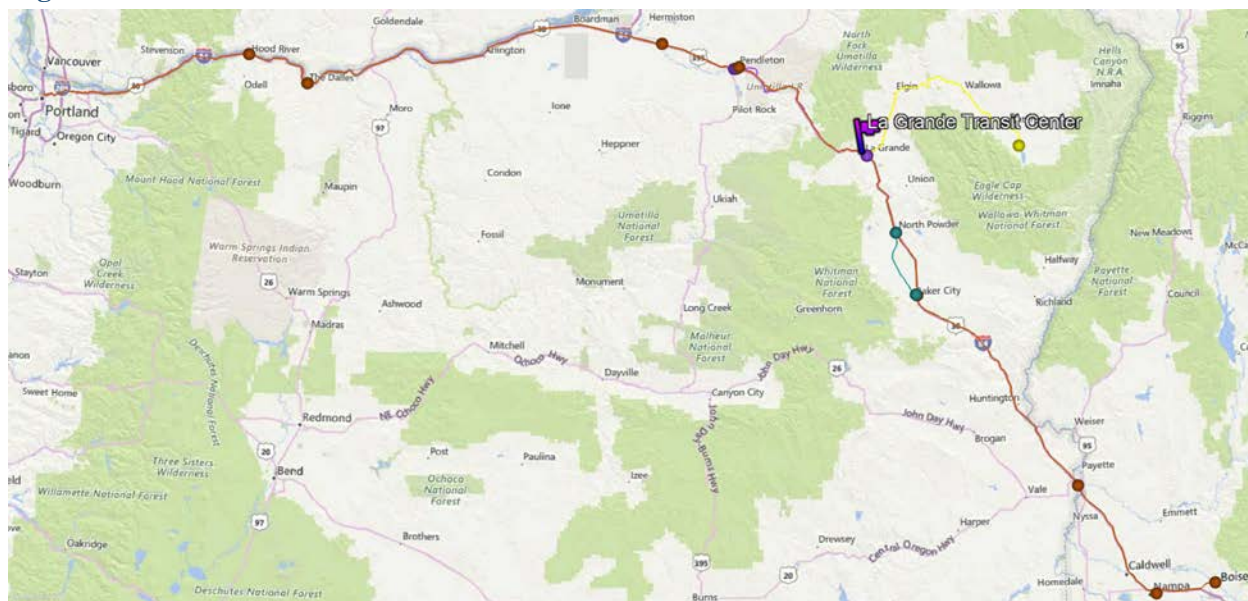
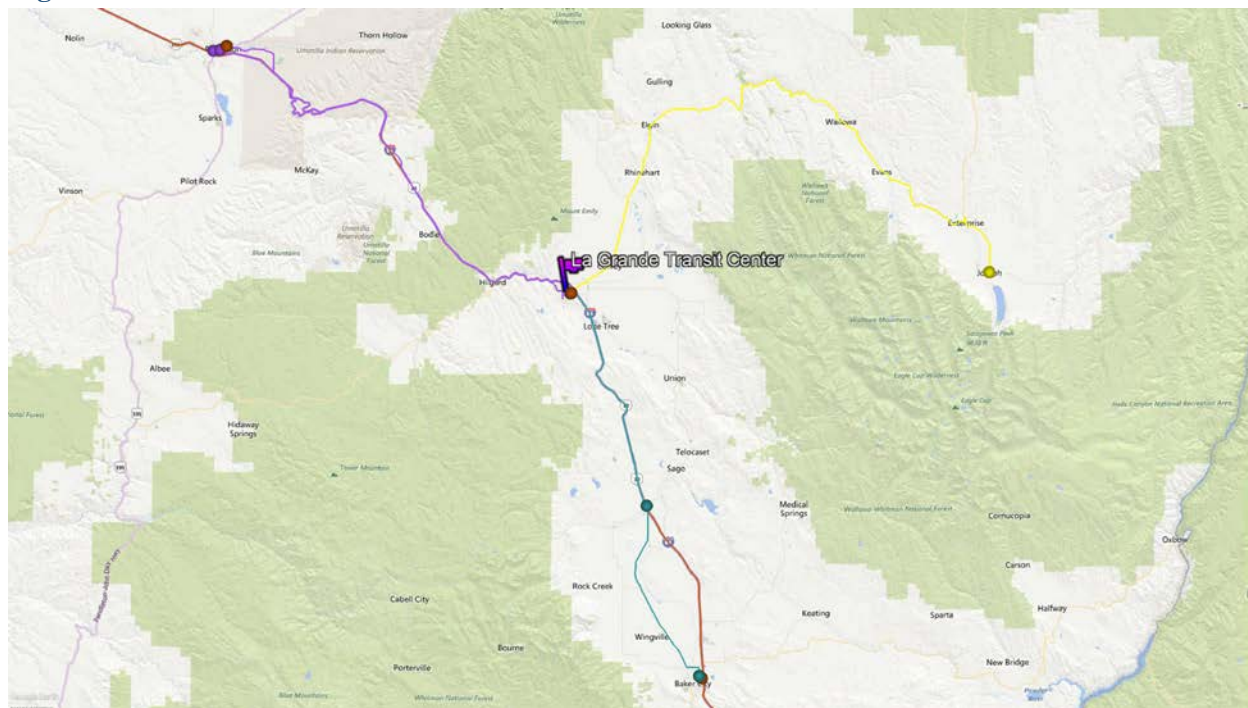


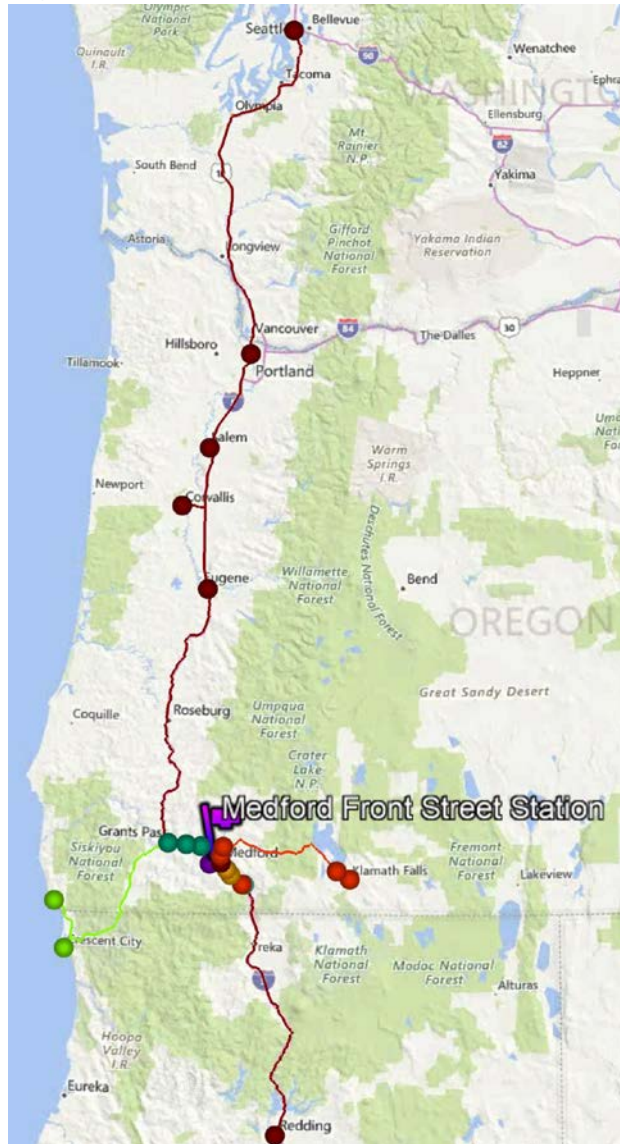
Figure D-32: La Grande Transit Center Reach Profile

Map data: ©2019 Google, Microsoft

Figure D-33: Details of La Grande Transit Center Reach Profile

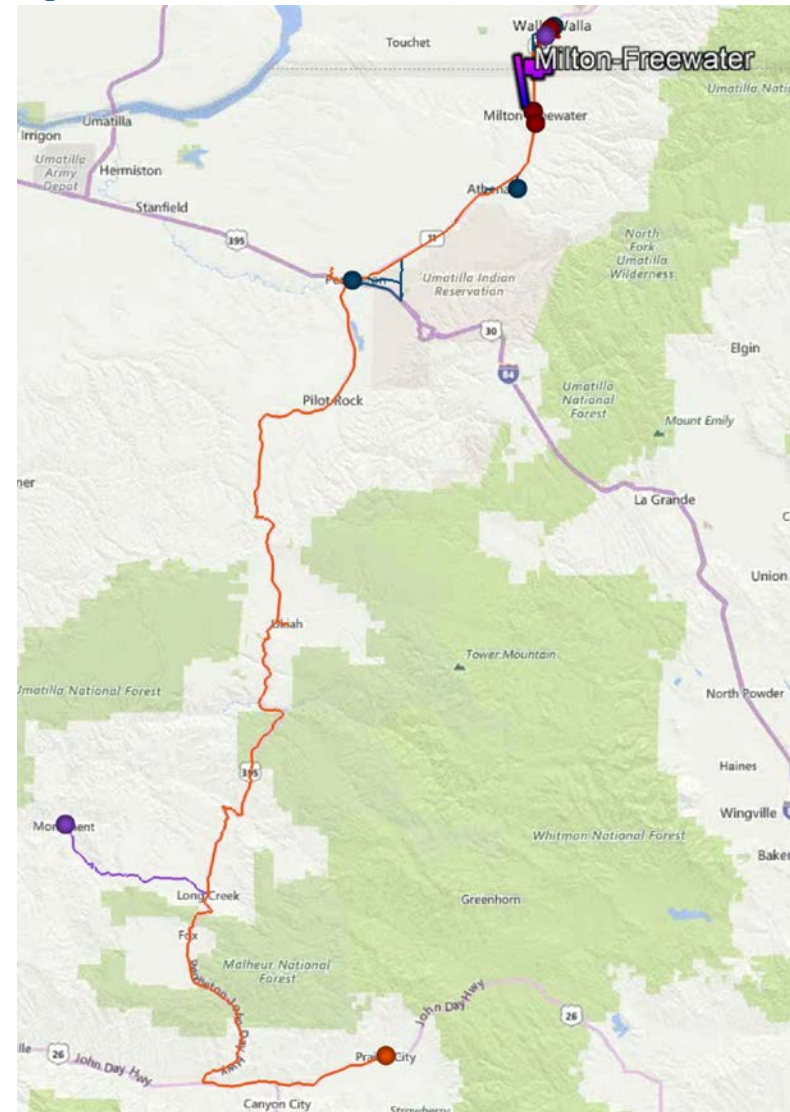
Map data: ©2019 Google, Microsoft

Figure D-34: Medford Front Street Station Reach Profile

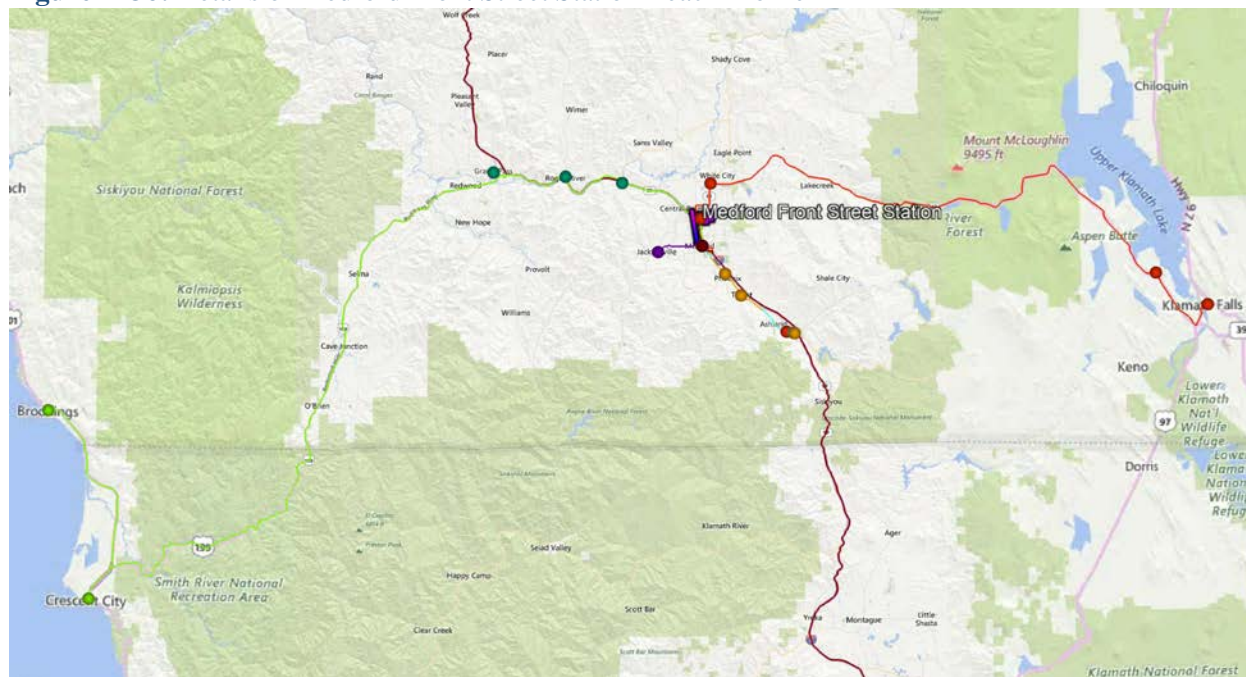


Map data: ©2019 Google, Microsoft

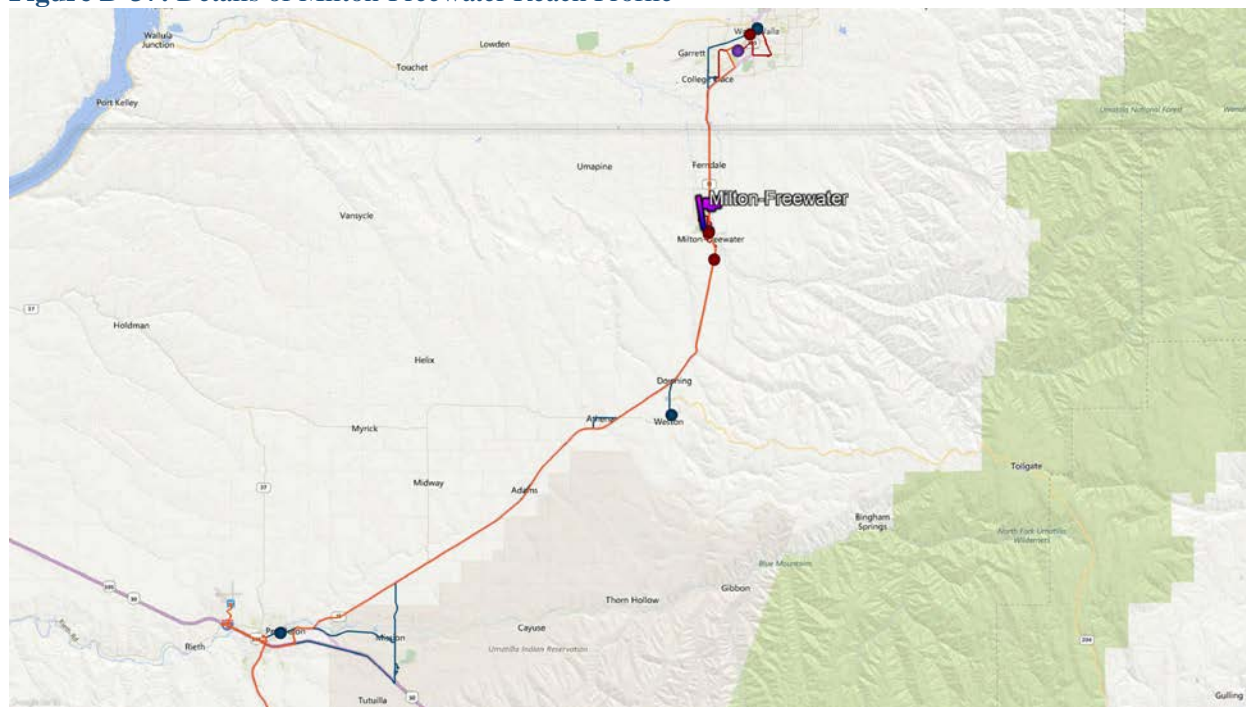
Figure D-35: Milton-Freewater Reach Profile



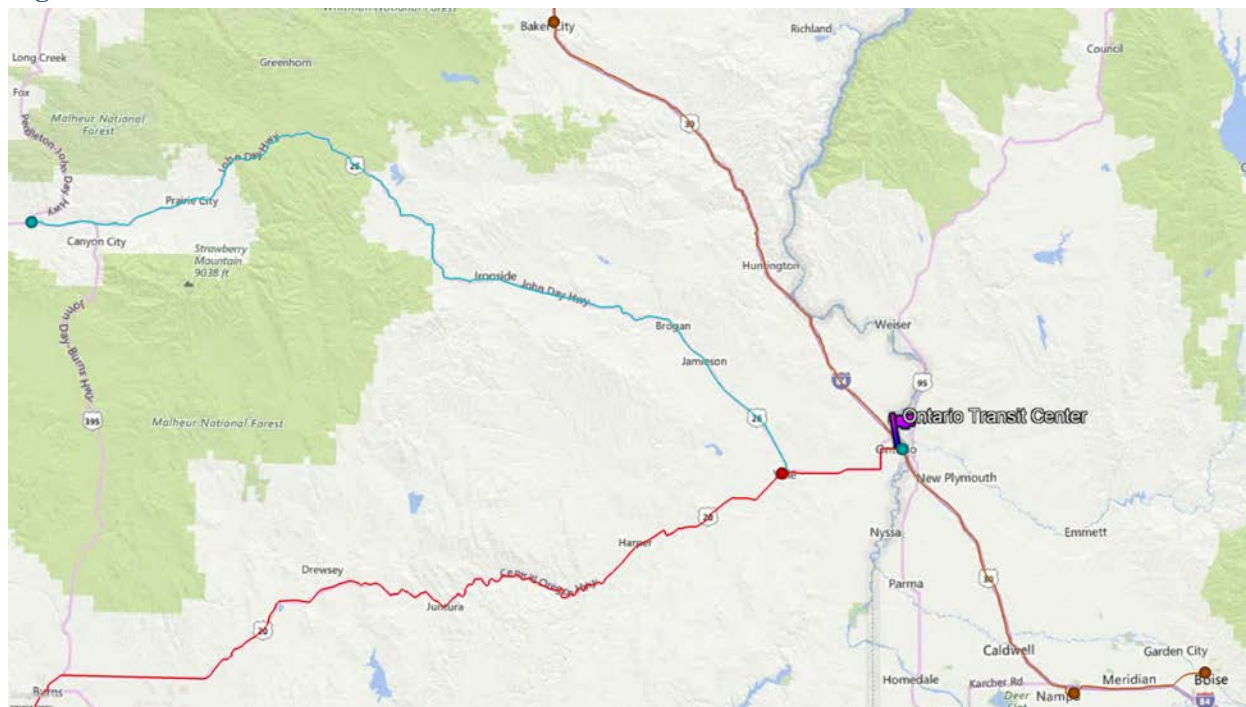
Map data: ©2019 Google, Microsoft

Figure D-36: Details of Medford Front Street Station Reach Profile

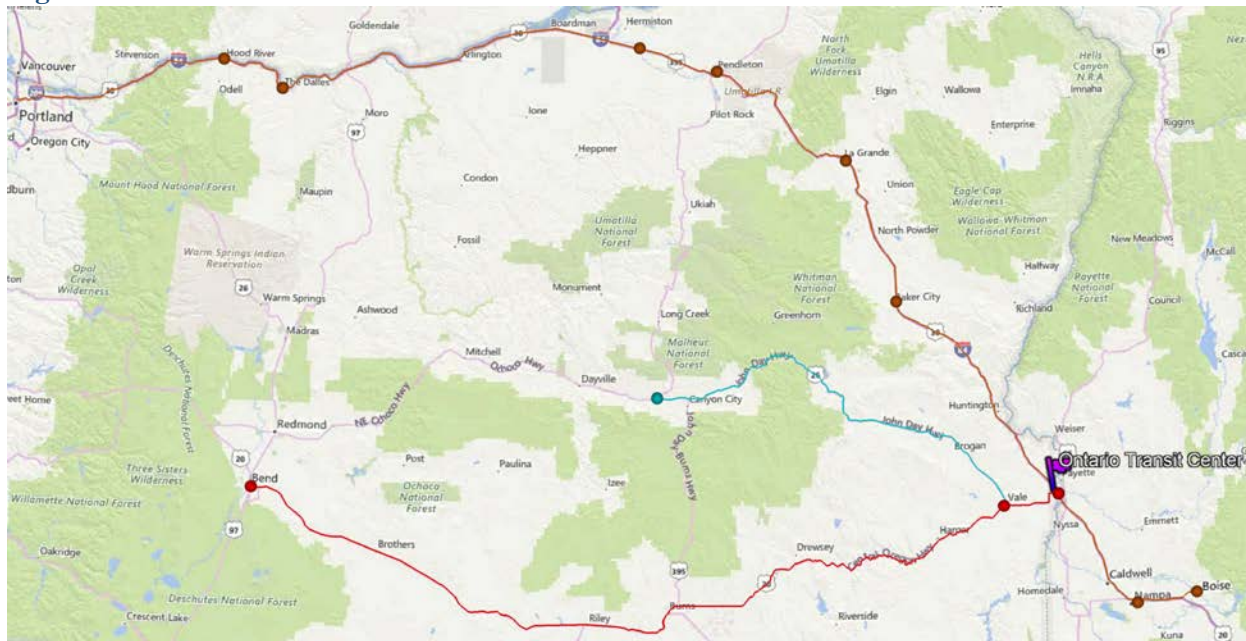
Map data: ©2019 Google, Microsoft

Figure D-37: Details of Milton-Freewater Reach Profile

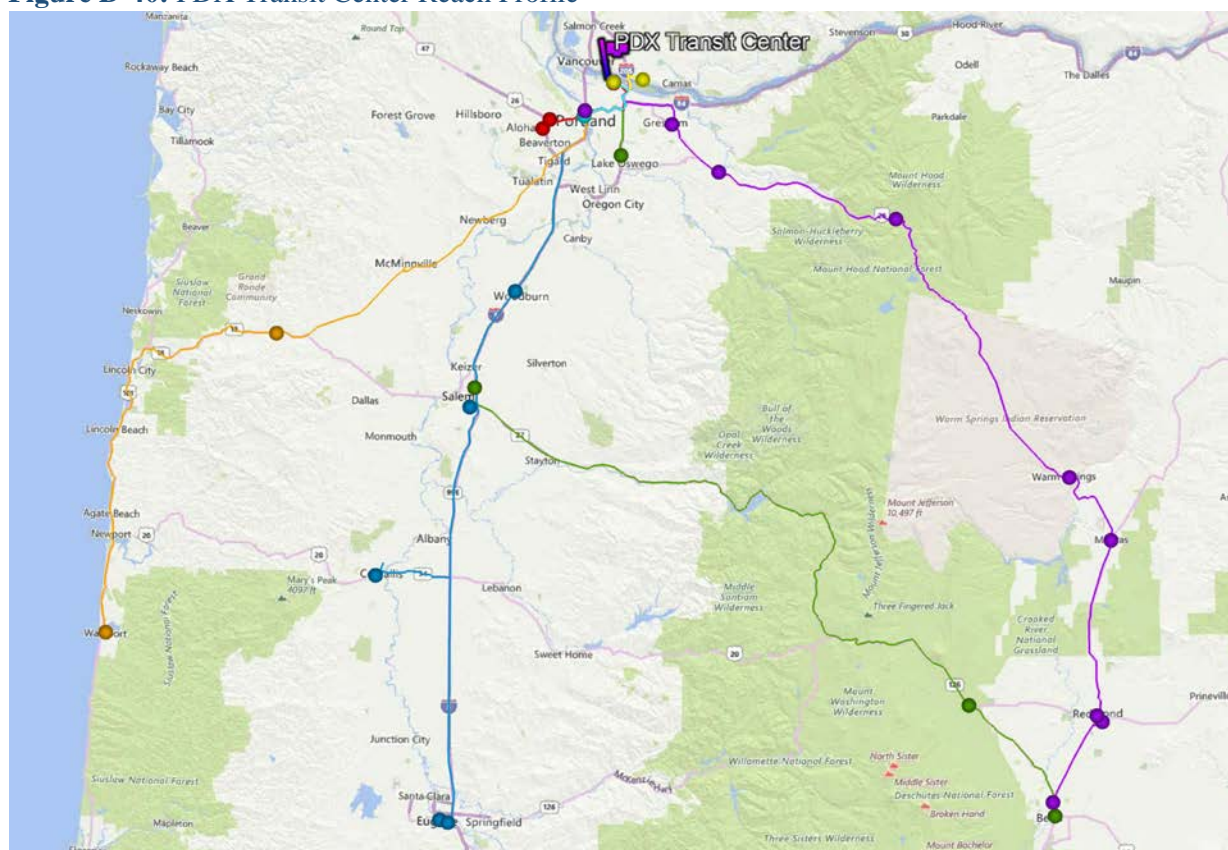
Map data: ©2019 Google, Microsoft

Figure D-38: Ontario Transit Center Reach Profile

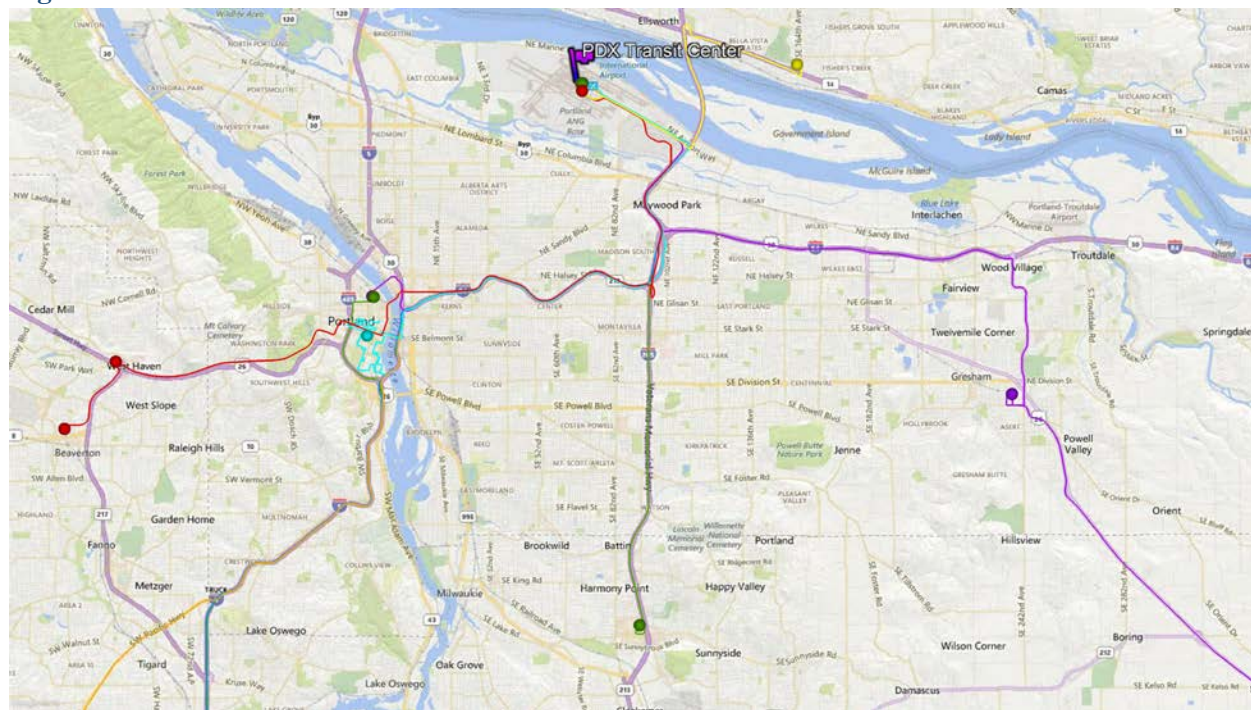
Map data: ©2019 Google, Microsoft

Figure D-39: Details of Ontario Transit Center Reach Profile

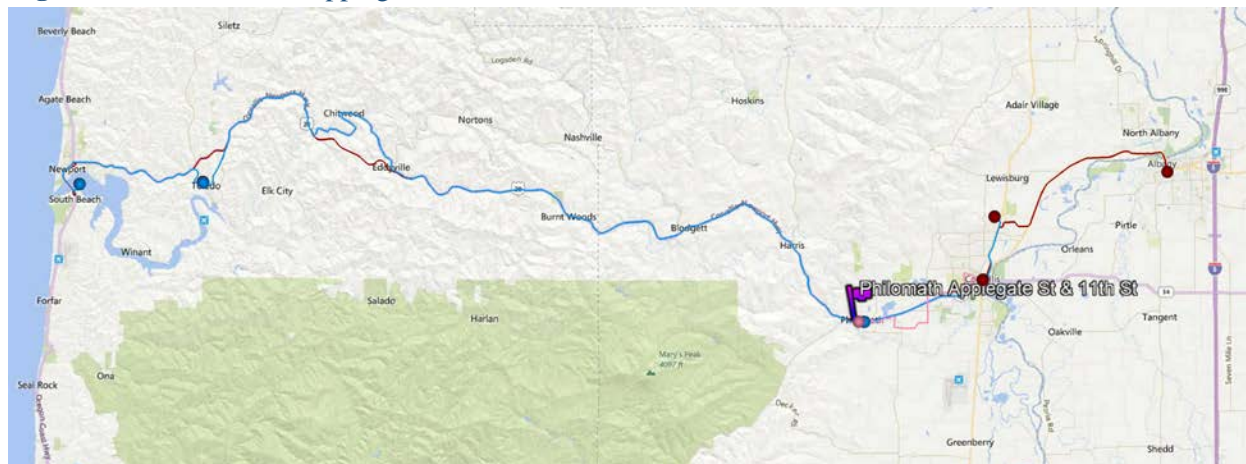
Map data: ©2019 Google, Microsoft

Figure D-40: PDX Transit Center Reach Profile

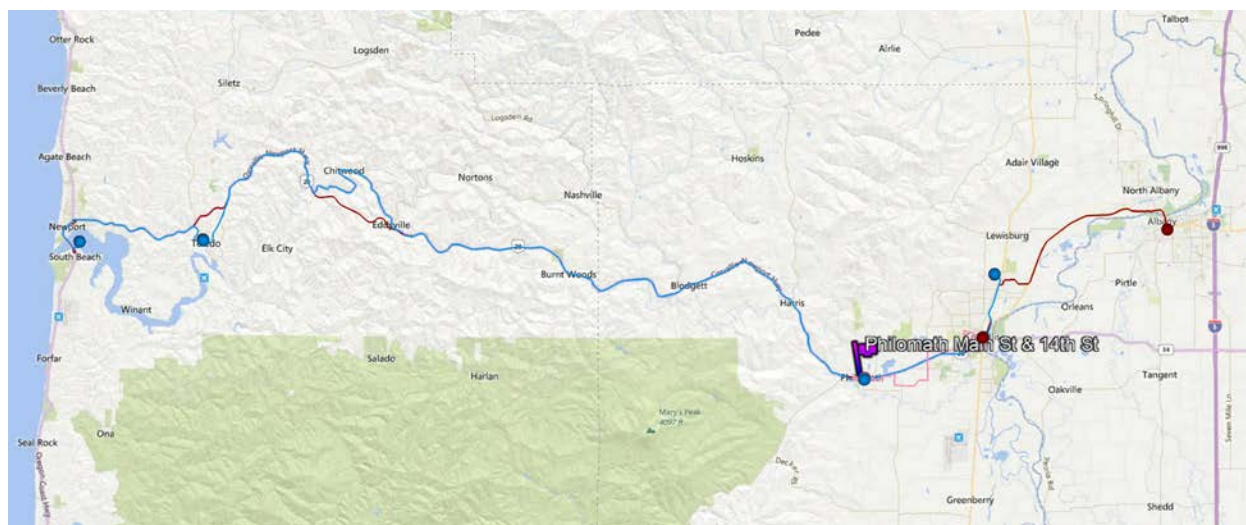
Map data: ©2019 Google, Microsoft

Figure D-41: Details of Downtown PDX Transit Center Reach Profile

Map data: ©2019 Google, Microsoft

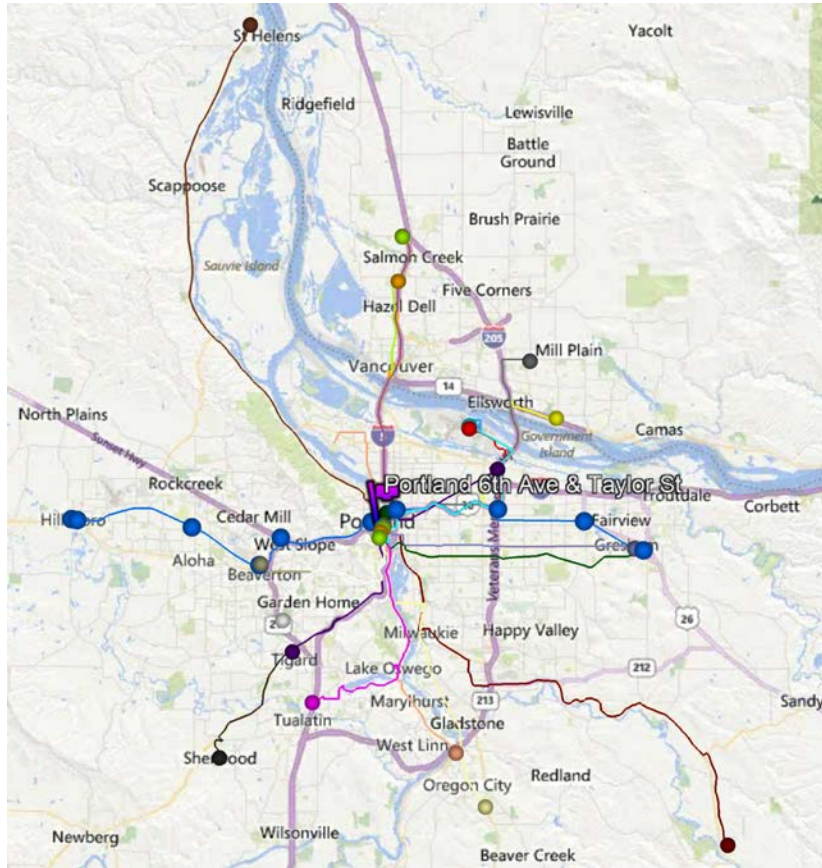
Figure D-42: Philomath Applegate St & 11th St Reach Profile

Map data: ©2019 Google, Microsoft

Figure D-43: Philomath Main St & 14th St Reach Profile

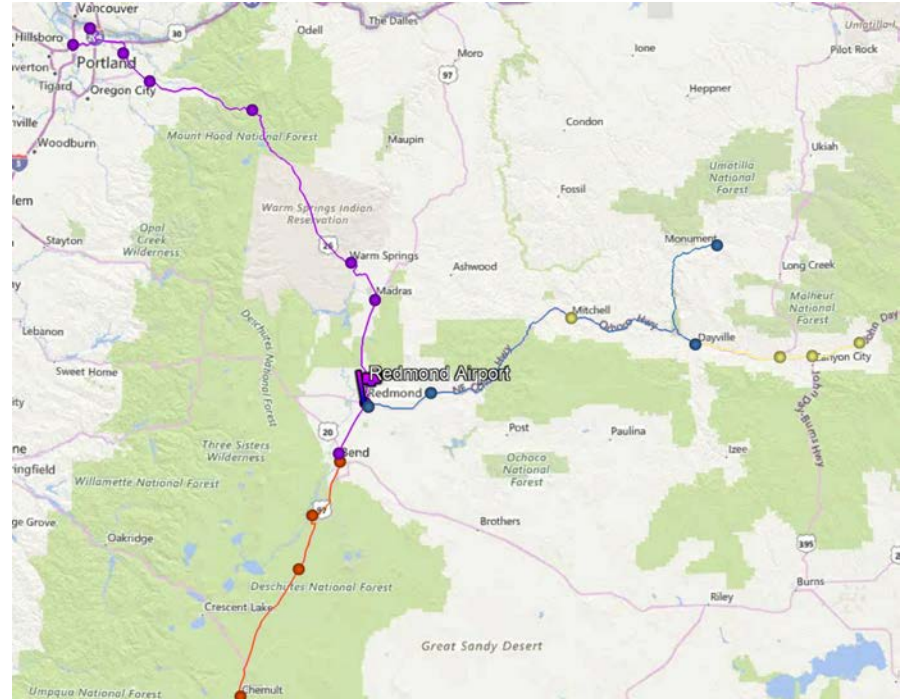
Map data: ©2019 Google, Microsoft

Figure D-44: Portland 6th Ave & Taylor St Reach Profile

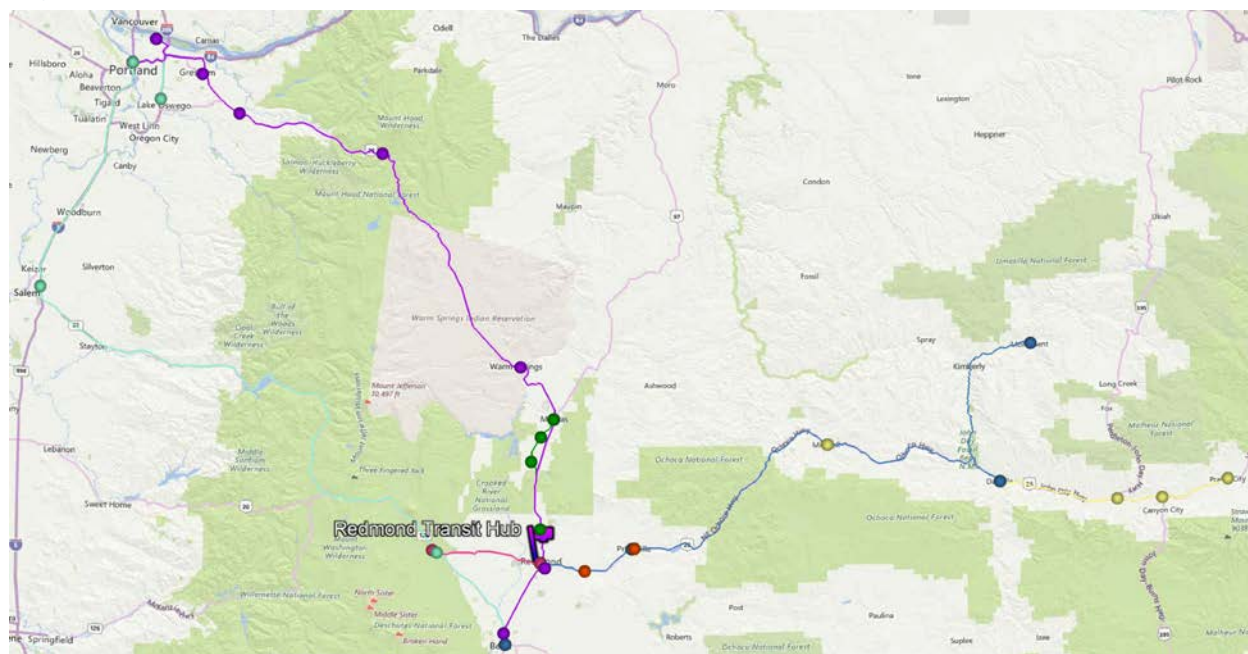


Map data: ©2019 Google, Microsoft

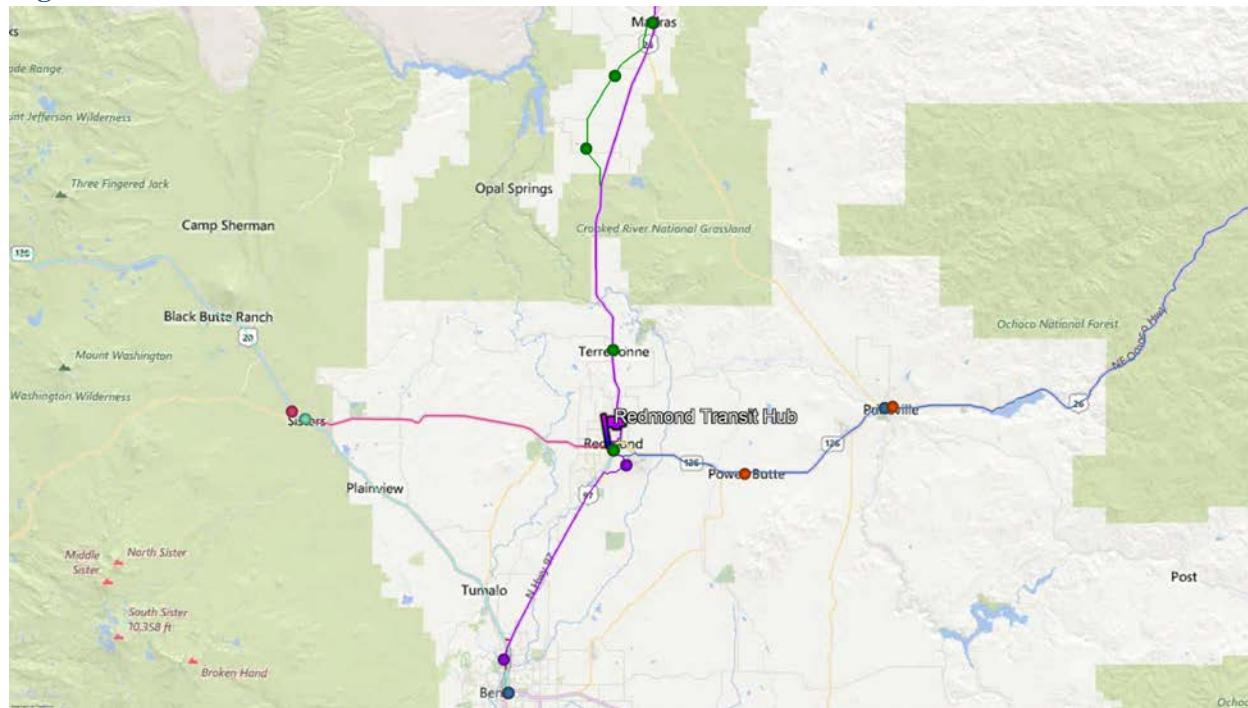
Figure D-45: Redmond Airport Reach Profile



Map data: ©2019 Google, Microsoft

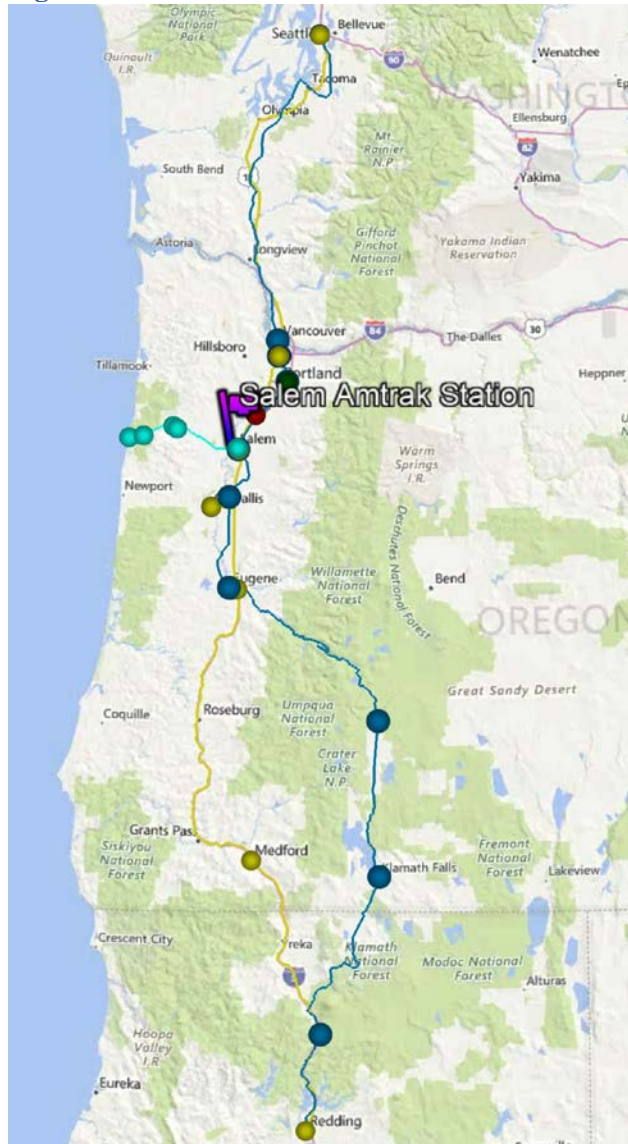
Figure D-46: Redmond Transit Hub Reach Profile

Map data: ©2019 Google, Microsoft

Figure D-47: Details of Redmond Transit Hub Reach Profile

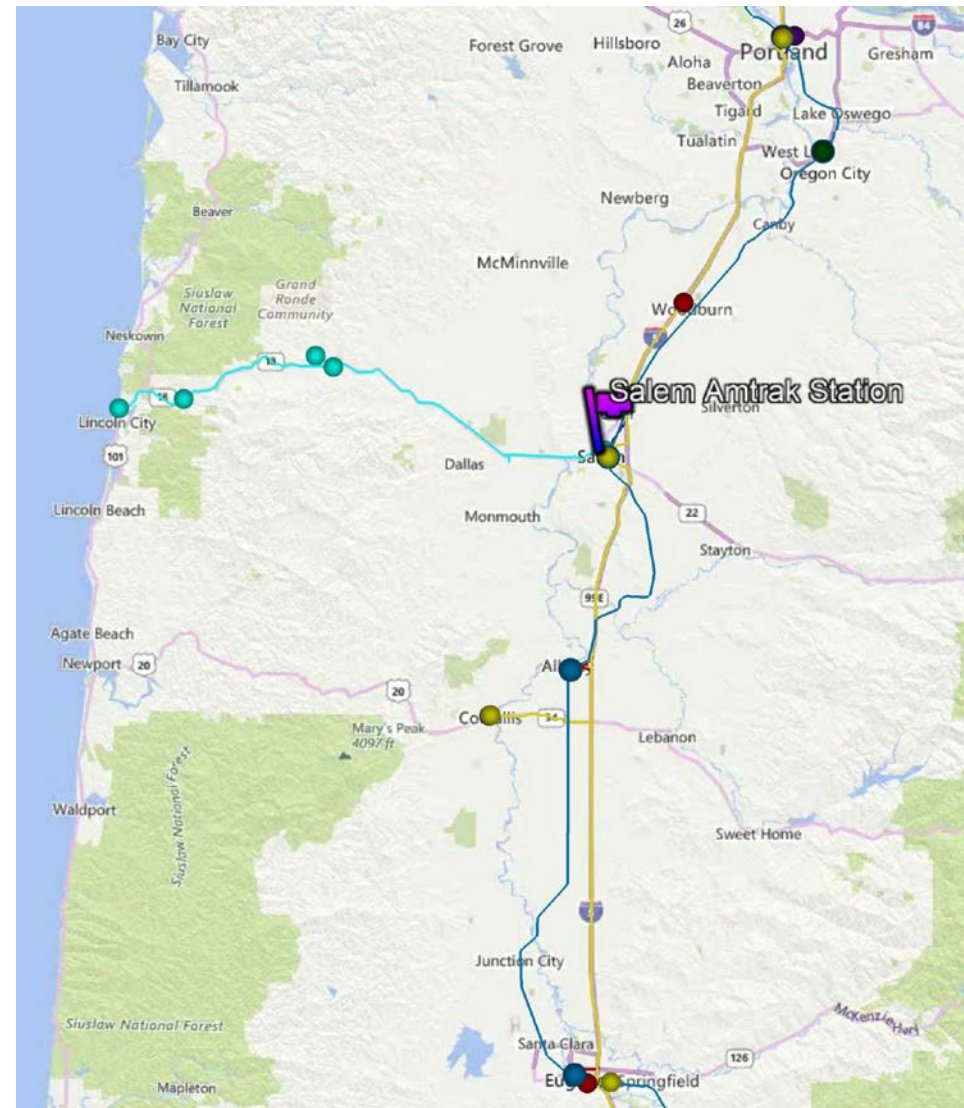
Map data: ©2019 Google, Microsoft

Figure D-48: Salem Amtrak Station Reach Profile

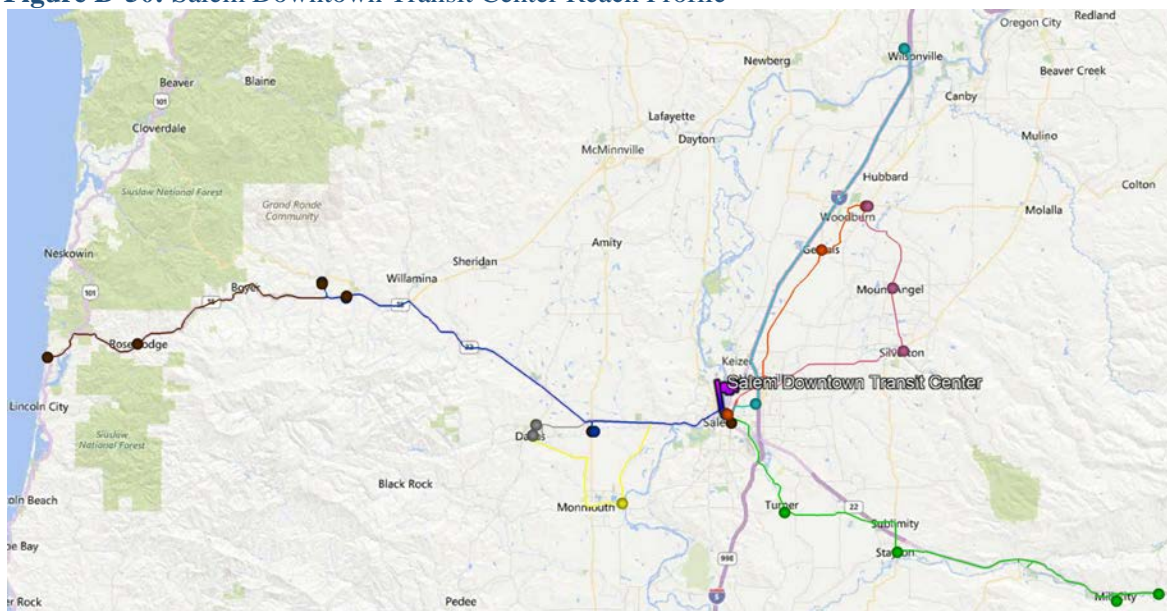


Map data: ©2019 Google, Microsoft

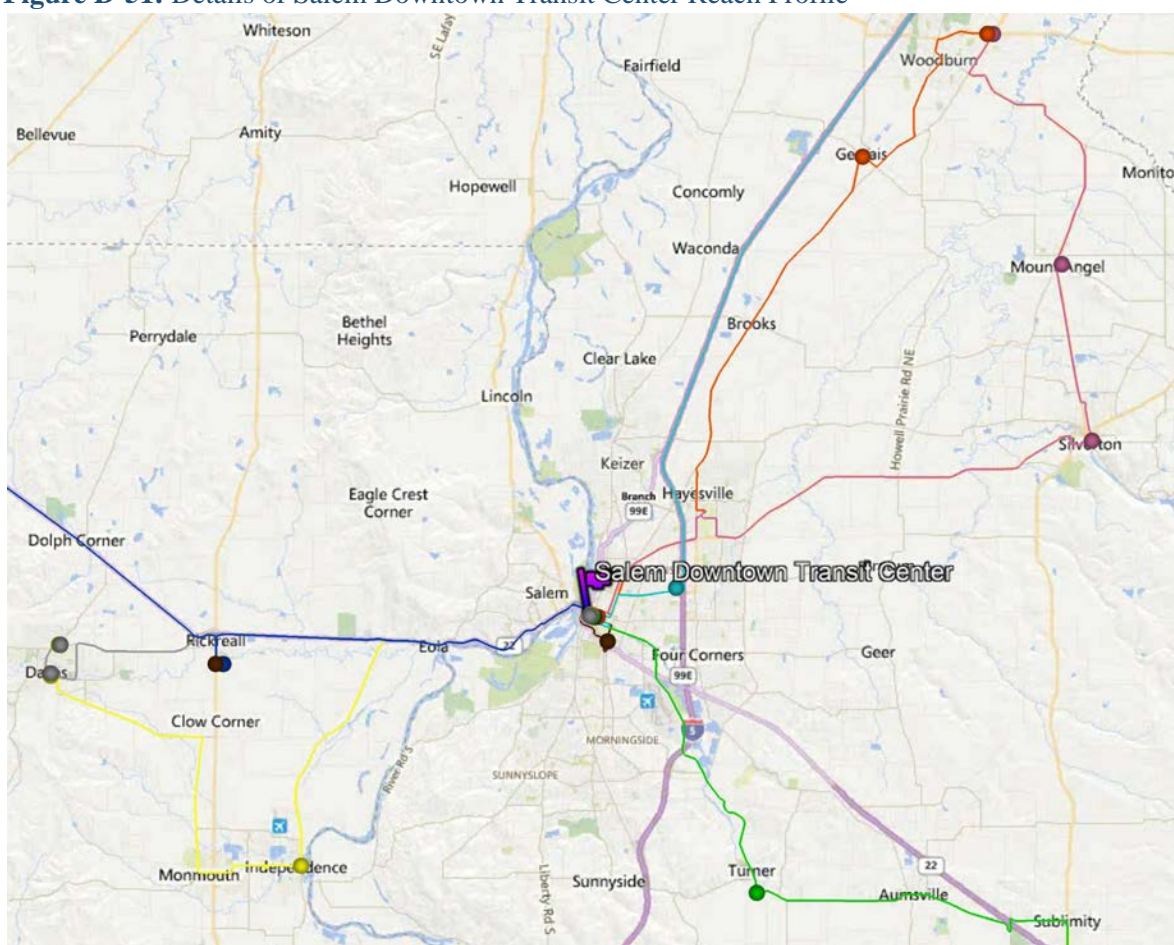
Figure D-49: Details of Salem Amtrak Station Reach Profile



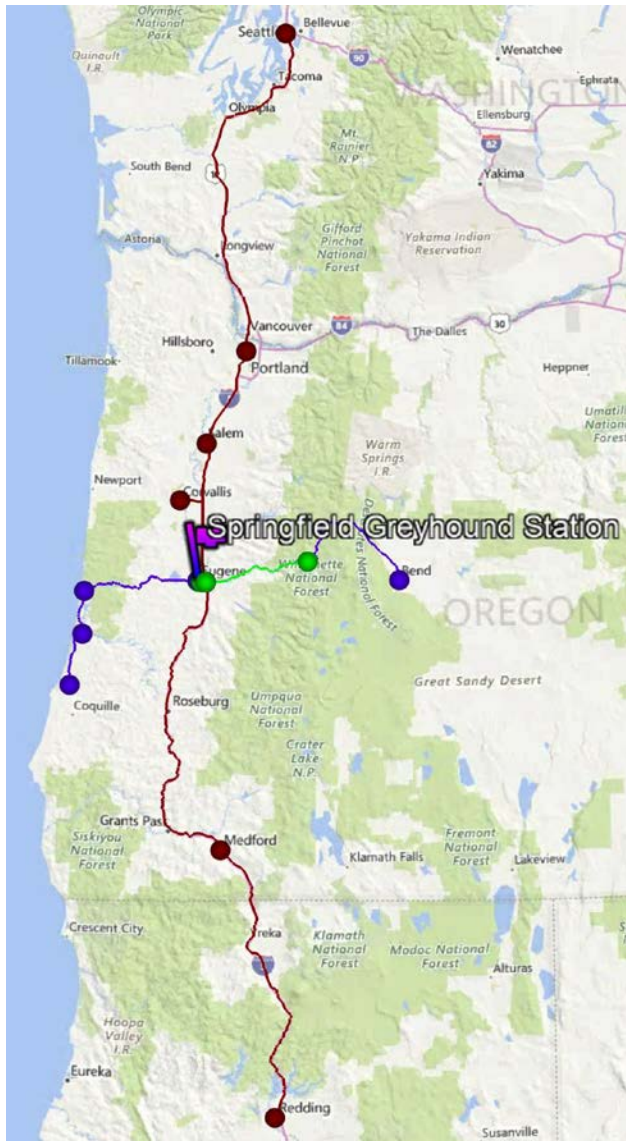
Map data: ©2019 Google, Microsoft

Figure D-50: Salem Downtown Transit Center Reach Profile

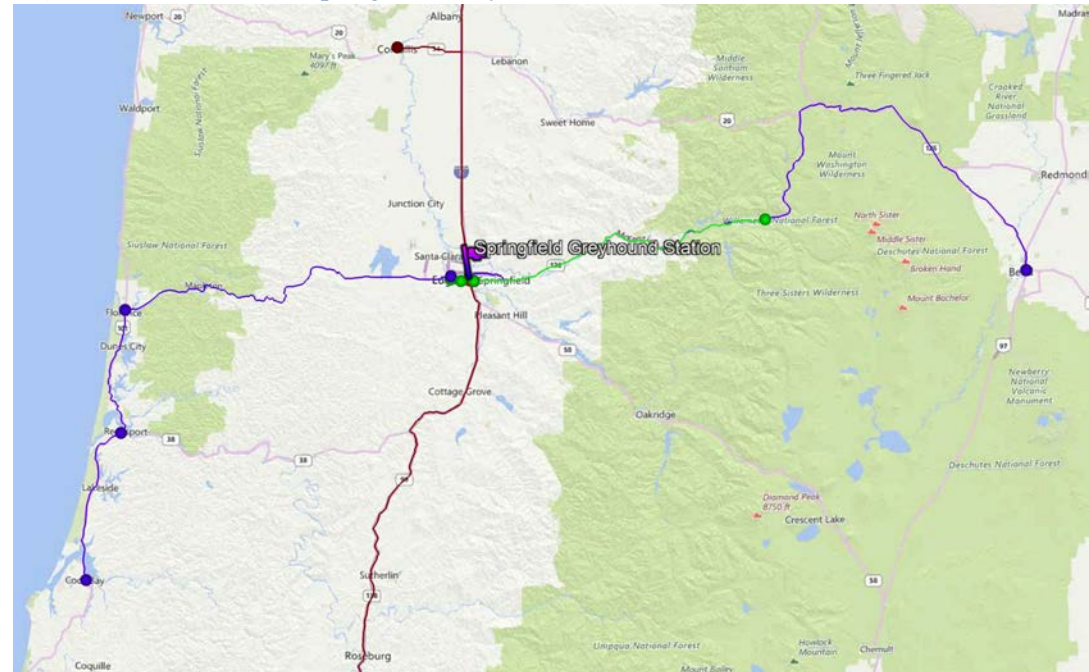
Map data: ©2019 Google, Microsoft

Figure D-51: Details of Salem Downtown Transit Center Reach Profile

Map data: ©2019 Google, Microsoft

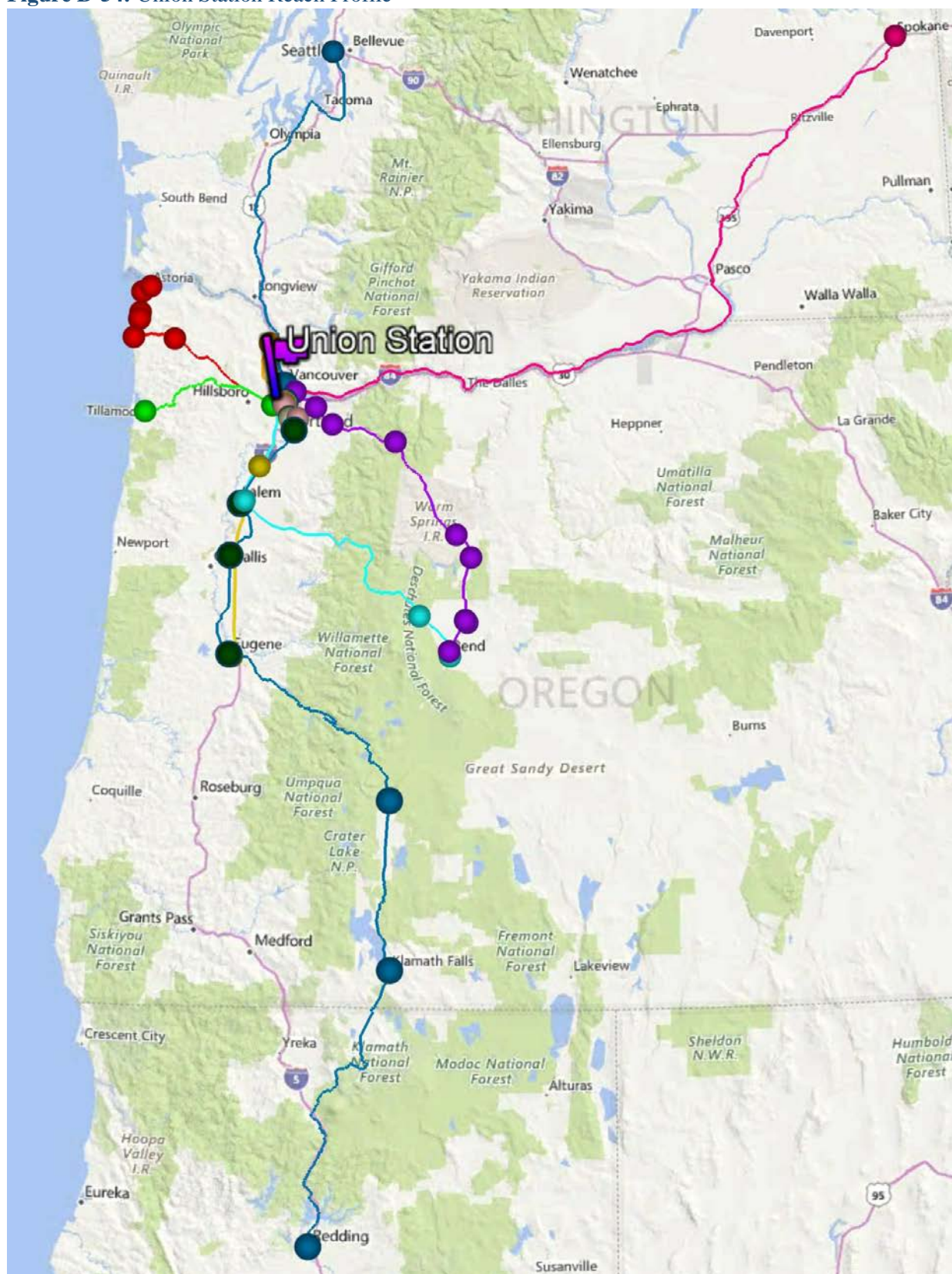
Figure D-52: Springfield Greyhound Station Reach Profile

Map data: ©2019 Google, Microsoft

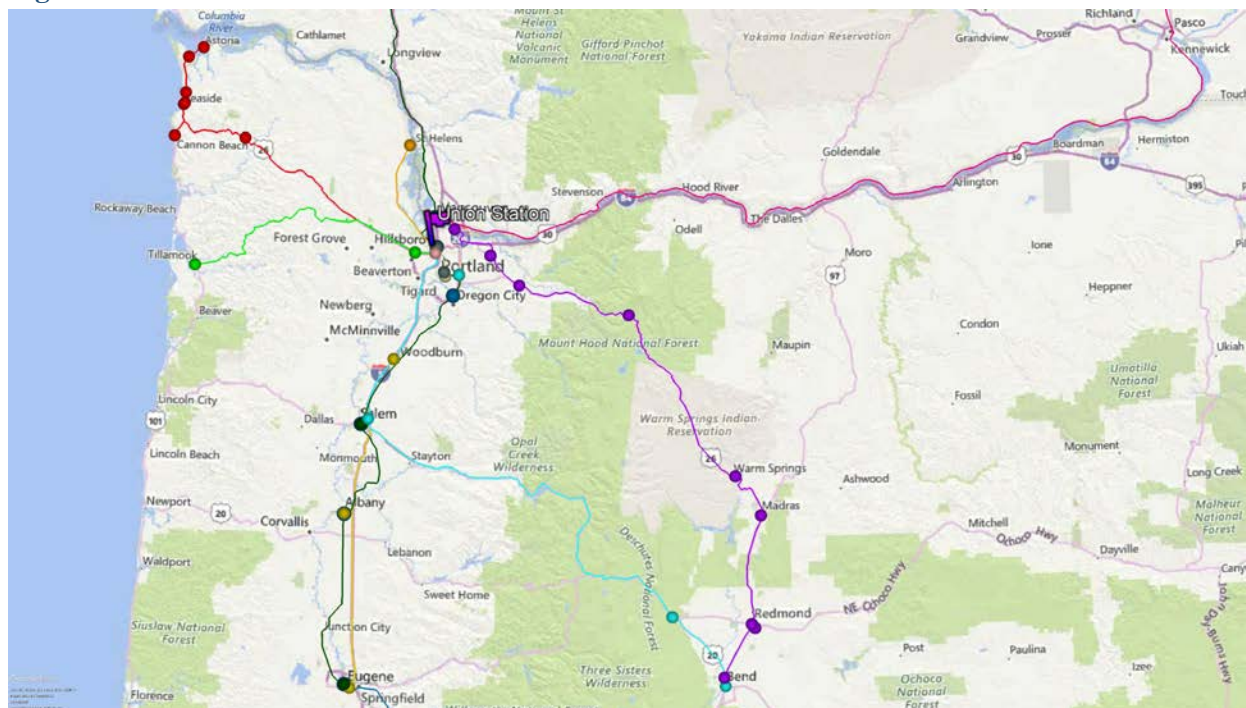
Figure D-53: Details of Springfield Greyhound Station Reach Profile

Map data: ©2019 Google, Microsoft

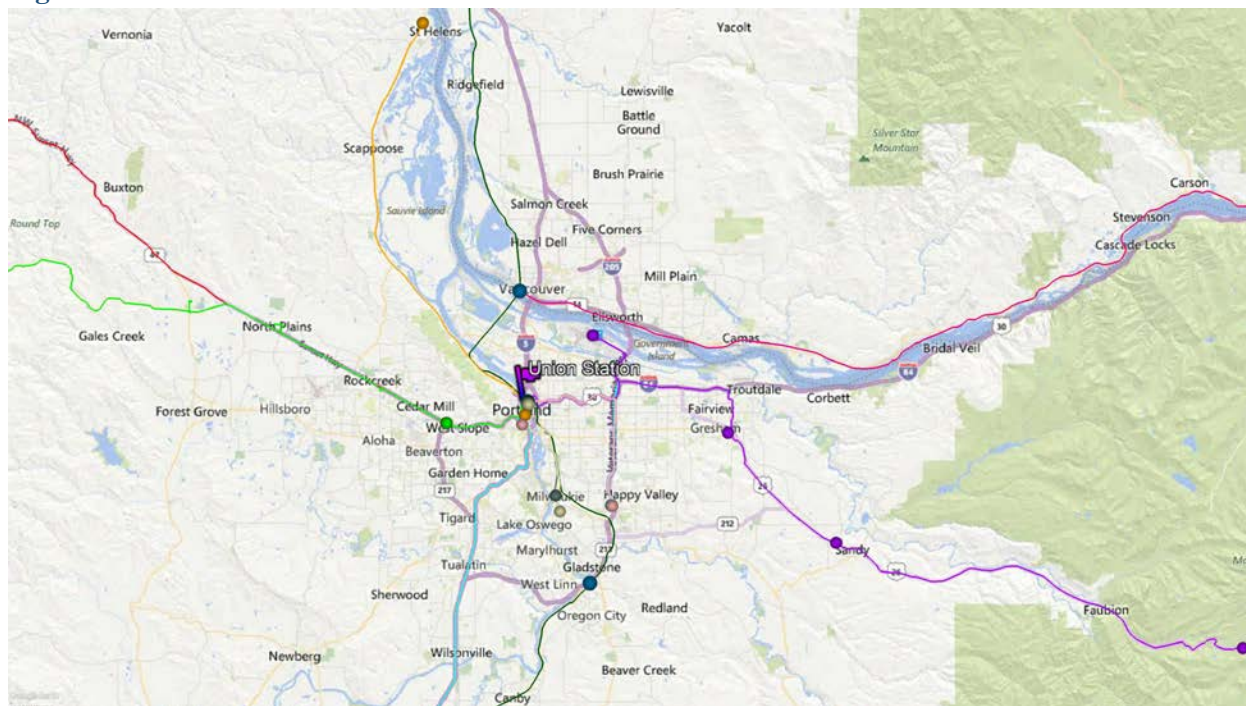
Figure D-54: Union Station Reach Profile



Map data: ©2019 Google, Microsoft

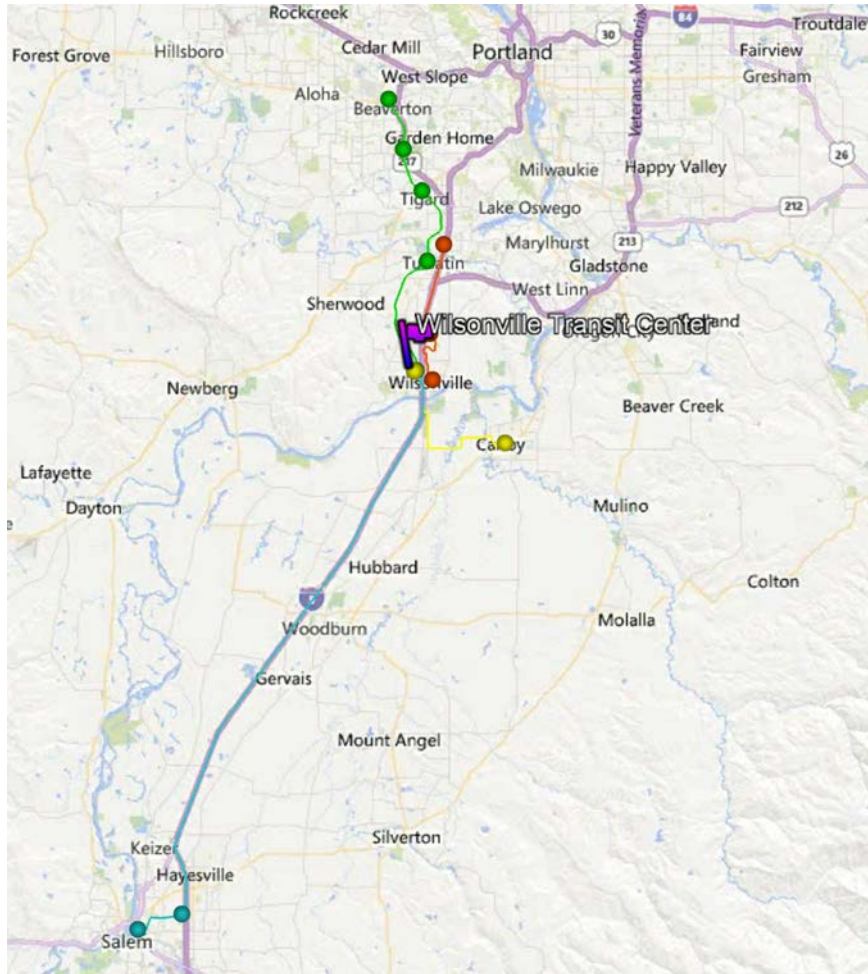
Figure D-55: Details #1 - Union Station Reach Profile

Map data: ©2019 Google, Microsoft

Figure D-56: Details #2 - Union Station Reach Profile

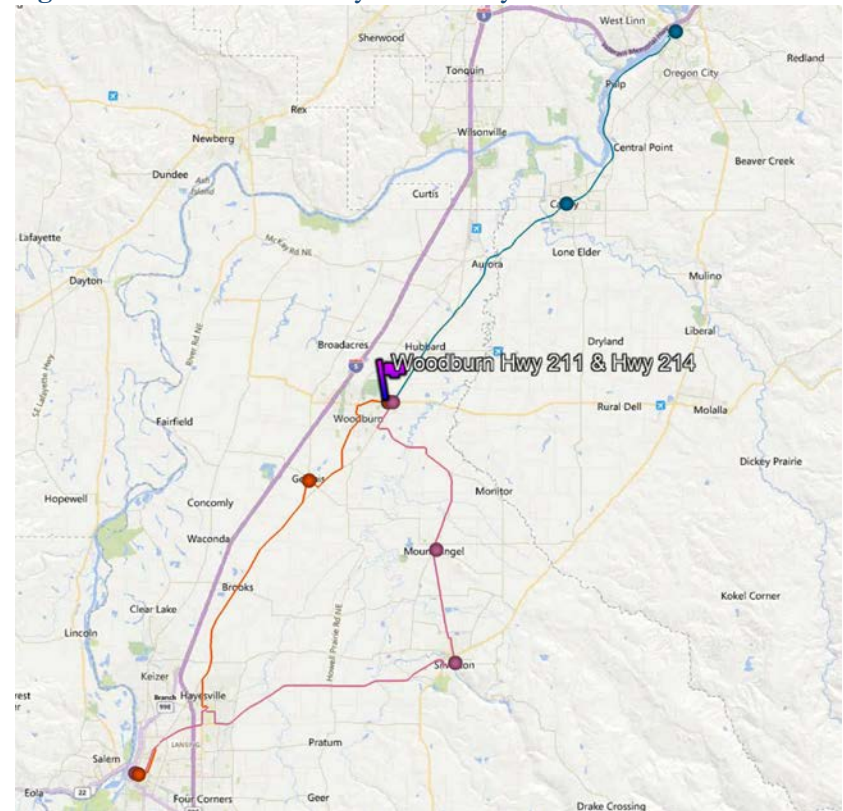
Map data: ©2019 Google, Microsoft

Figure D-57: Wilsonville Transit Center Reach Profile

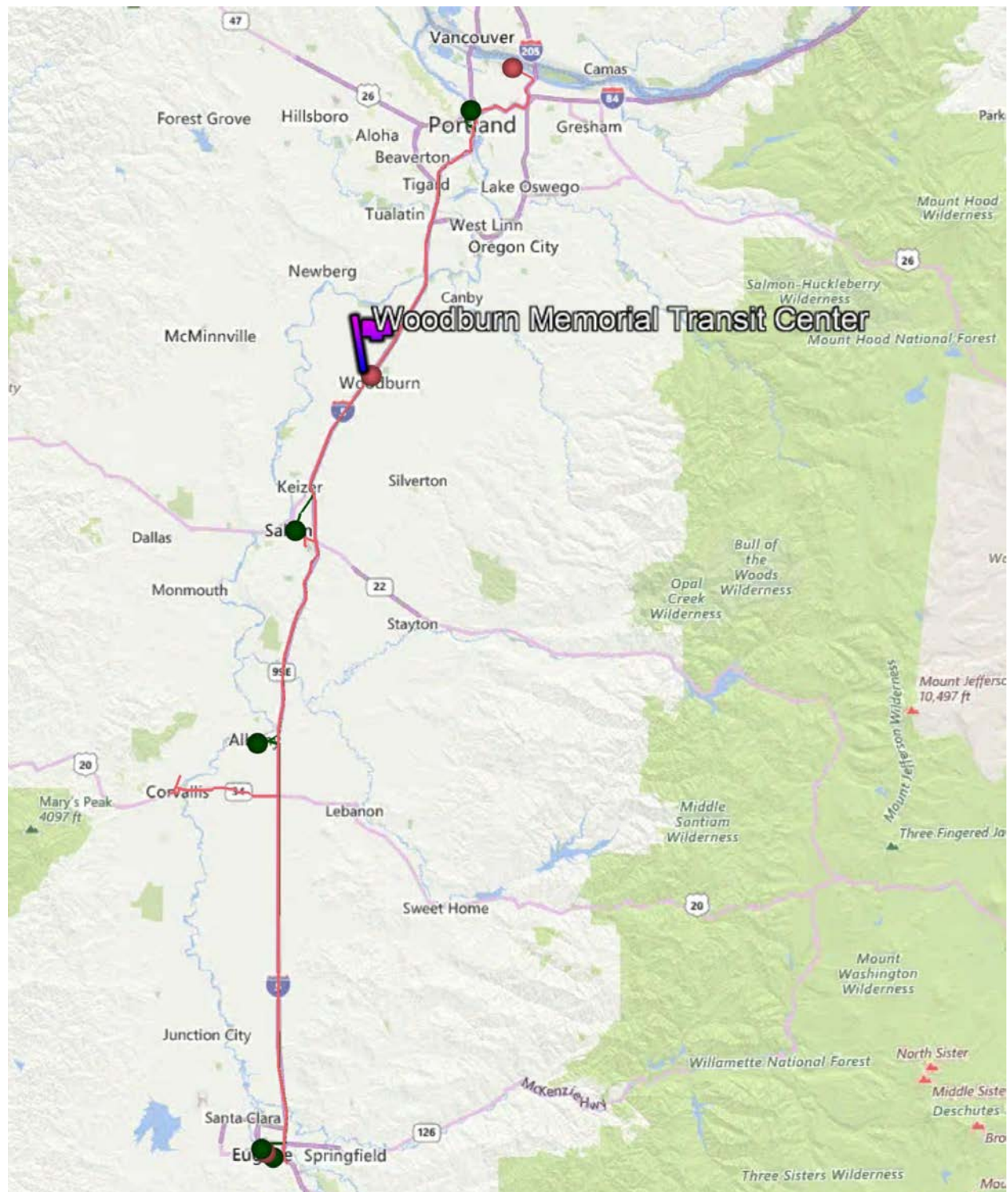


Map data: ©2019 Google, Microsoft

Figure D-58: Woodburn Hwy 211 & Hwy 214 Reach Profile



Map data: ©2019 Google, Microsoft

Figure D-59: Woodburn Memorial Transit Center Reach Profile

Map data: ©2019 Google, Microsoft

Appendix E: Unconnected Highway Notes

“Highways” are defined and identified by the Oregon Official State Map created by ODOT’s Transportation Development Division. The map and an insert picture can be seen on the next two pages. On the state map, three roadways are considered for inclusion in the KTH-connected system:

Figure E-1: State Map Legend – Highway Inclusion

1. **Interstate Freeway (Double green line)**
2. **Divided Highway (Double red line)**
3. **Other Highway (Single red line)**



Notes about Unconnected Highways:

- Paved roads (Single black line) and gravel roads (Single grey line) are not considered in this analysis. This was done to establish a cut-off point and simplify the analysis.
- Any relevant highway is identified with an accompanying route marker. Per the map, Interstate, U.S. Route and State Route Markers identify the relevant highways.
- In this section, the term “highway” is used generically and includes all three of the relevant roadways listed above. “Highway” and “Freeway” are not differentiated.

Figure E-2: Map of Oregon

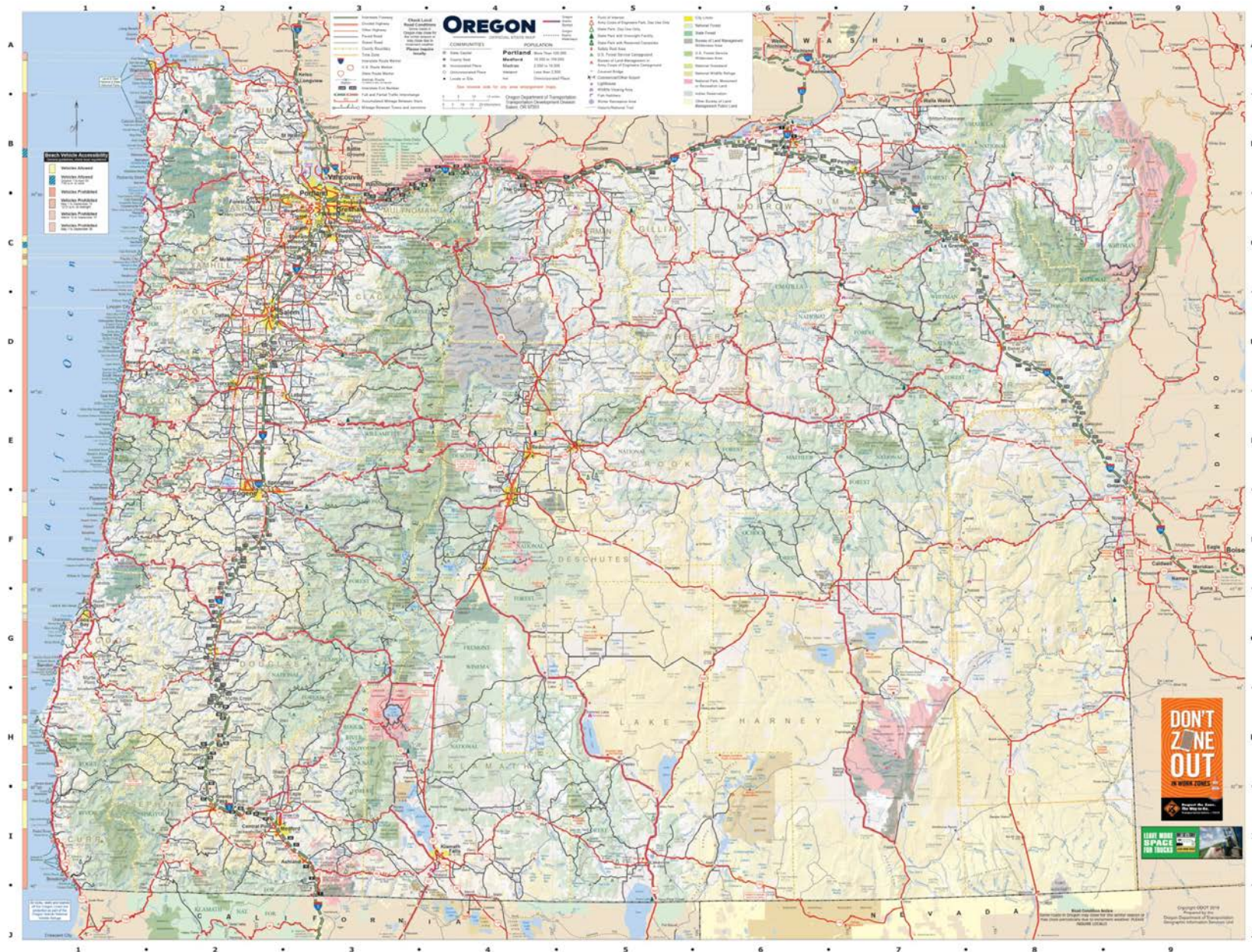


Figure E-3: Example of Oregon Highways and Roads

*For this review, green and red highways are counted, black roads are not.

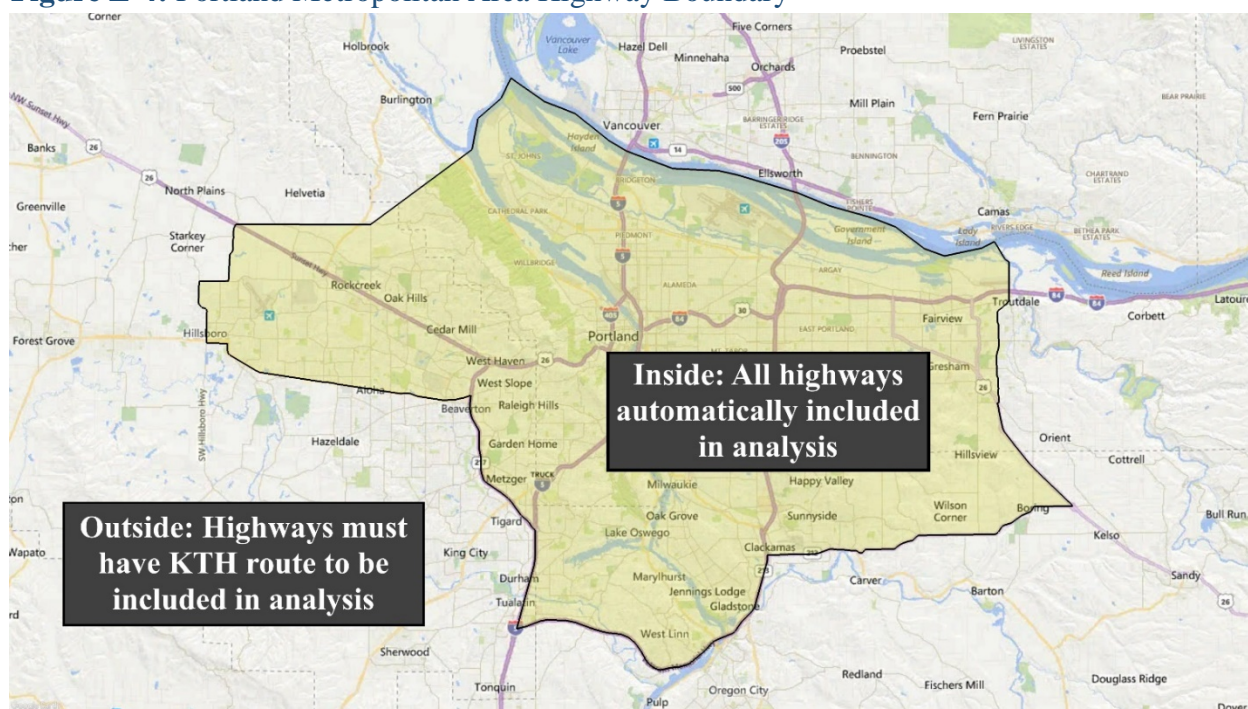
More notes about unconnected highways:

- These highways may host other local or regional services but these services do not serve a KTH so the highways are not part of the KTH system.
- Railroads have their own right-of-way and are considered their own “highway.” A highway parallel to a railroad is not counted if only served by the rail line. For example: U.S. Route 97 from Klamath Falls to the Oregon/California border. Amtrak’s Coast Starlight runs on the rail line parallel to the highway but the highway is considered unconnected because no regional/intercity routes run on it.
- Smaller highways that run parallel to major highways/interstates are counted if they are reasonably close to the main route, less than a few miles. For example: Interstate 5 and State Route 99 run parallel to each other from Medford to Grants Pass. Even though the regional routes only travel along Interstate 5, State Route 99 is considered connected due to its proximity to the main highway.

Portland Metropolitan Area Bounds

The Portland Metropolitan Area is a unique exception due to its size and contains its own set of rules. A line was drawn around the metro area to establish a perimeter. Every highway outside the area must have a KTH route to be included in the analysis like normal. Every highway inside the area is considered part of the KTH system by default.

Figure E-4: Portland Metropolitan Area Highway Boundary



Map data: ©2019 Google, Microsoft

Even if no regional route travels along a highway inside the Portland area, it is most likely served by a local route (TriMet) or its proximity to lines that connect to a KTH make it relevant. The bounds are as follows from East to West:

- **U.S. Route 26:** From junction with State Route 212 to Gresham at SE Powell Valley Rd. Continues north along SE Kane Dr and SW 257 Dr through Troutdale to the Oregon/Washington border.
- **State Route 212:** From junction with U.S. Route 26 to junction with Interstate 205.
- **Interstate 205:** From junction with State Route 212 to junction with Interstate 5.
- **Interstate 5:** From junction with Interstate 205 to junction with State Route 217.
- **State Route 217:** From junction with Interstate 5 to junction with State Route 8.
- **State Route 8:** From junction with State Route 217 to Hillsboro at approximately S 1st Ave.
- **S 1st Ave:** Eastern bound which travels north by northeast back to the Oregon/Washington border.



Unconnected Highways Statistics

Table E-1: List of Unconnected Highways

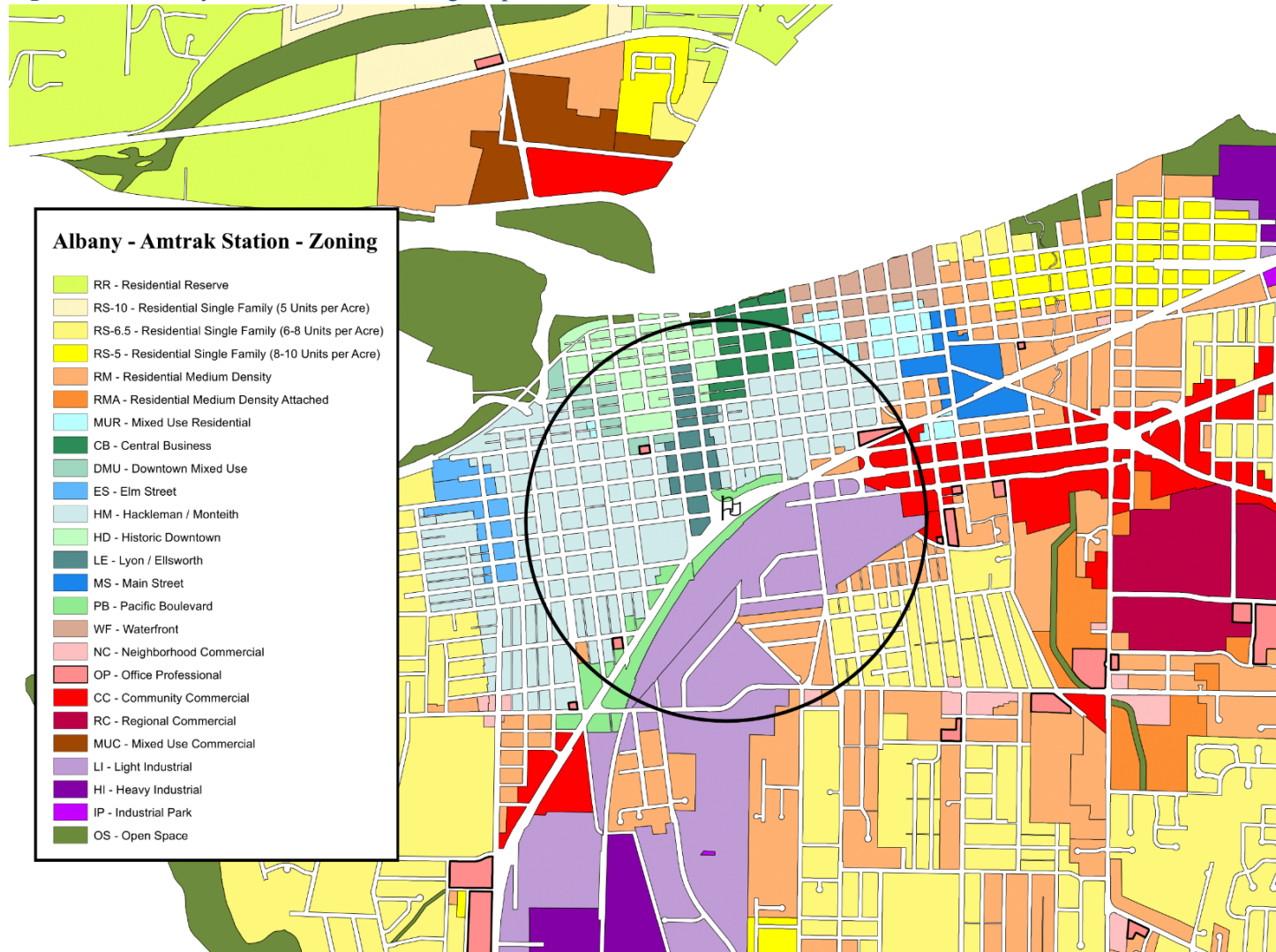
Highway Type	Route #	Origin	Destination	Length (In Miles)
Interstate	82	OR/WA Border	Junction I-84	10.3
Interstate	205	Clackamas	Junction I-5	11.8
State	3	OR/WA Border	Enterprise	43.0
State	7	Baker City	Junction US 26	50.9
State	10	Junction State 8	Junction State 219	9.6
State	19.1	Junction I-84	Junction State 207	76.3
State	19.2	Junction State 207	Kimberly	9.6
State	22	Hebo	Valley Junction	24.9
State	27	Prineville	Prineville Reservoir	22.9
State	31	La Pine	Valley Falls	120.0
State	34	Philomath	Waldport	56.4
State	35	Hood River	Junction US 26	38.4
State	36	Junction State 99	Mapleton	51.4
State	37-334	Junction US 730	Junction State 11	37.2
State	38	Junction I-5	Reedsport	56.5
State	42	Winston	Bandon	75.4
State	46	Cave Junction	OR Caves Nat. Monument	19.5
State	47	Clatskanie	Vernonia	28.2
State	53	Junction US 26	Wheeler	18.7
State	62	Munson Valley Rd	White City	64.8
State	66	Junction US 97	Ashland	58.0
State	74.1	Junction I-84	Lexington	36.0
State	74.2	Heppner	Junction US 395	37.0
State	78	Burns	Junction US 95	91.2
State	86	Baker City	OR/ID Border	67.0
State	99E	Tangent	Junction City	24.4
State	99W.1	McMinnville	Adair Village	35.6
State	99W.2	Corvallis	Junction State 569	34.0
State	103	Junction State 202	Junction US 26	8.9
State	138.1	Roseburg	Junction US 97	101.0
State	138.2	Elkton	Sutherlin	24.0
State	140.1	Altamont	Junction US 395	91.0
State	140.2	Junction US 395	OR/NV Border	64.9
State	180	Blodgett	Eddyville	19.8
State	202	Astoria	Junction State 47	44.3
State	203	Junction I-84	Junction I-84	49.0
State	204	Junction State 11	Junction State 82	41.3

Highway Type	Route #	Origin	Destination	Length (In Miles)
State	205	Burns	Denio	131.0
State	206	Junction I-84	Junction State 207	83.9
State	207	Junction State 730	Junction State 26	145.0
State	210	Junction State 217	Junction State 219	8.8
State	211	Sandy	Molalla	31.8
State	212	Junction US 26	Junction State 224	8.3
State	213	Junction I-205	Mulino	11.0
State	214	Silverton	Junction State 22	31.6
State	216.1	Junction US 26	Maupin	25.5
State	216.2	Junction US 197	Junction US 97	28.3
State	217	Junction State 10	Junction I-5	5.4
State	218	Fossil	Junction US 97	41.9
State	219	Hillsboro	Woodburn	36.4
State	221	Dayton	West Salem	18.5
State	223	Dallas	Wren	27.8
State	224	Estacada	Ripplebrook	25.1
State	226	Junction State 22	Junction US 20	25.2
State	228	Sweet Home	Halsey	21.3
State	229	Kernville	Toledo	30.9
State	230	Junction State 138	Junction State 62	23.7
State	234	Junction State 62	Gold Hill	15.0
State	237	La Grande	Junction I-84	38.0
State	238	Jacksonville	Grants Pass	33.0
State	240	Newburg	Yamhill	11.4
State	241	Coos Bay	Allegany	18.3
State	242	Junction State 126	Sisters	36.5
State	244	Junction I-84	Junction US 395	46.8
State	245	Junction State 7	Junction US 26	36.3
State	350	Joseph	Imnaha	29.2
State	370	Prineville	Redmond	17.6
State	380	Prineville	Paulina	55.1
State	542	Junction State 42	Powers	18.3
US	20	Junction State 126	Sweet Home	44.0
US	26	Madras	Prineville	25.9
US	30	Rainier	St Helens	17.3
US	95	OR/ID Border	McDermitt	121.0
US	97.1	Chemult	Junction State 62	48.3
US	97.2	Biggs Junction	Madras	92.7
US	97.3	Junction State 140	OR/CA Border	14.2

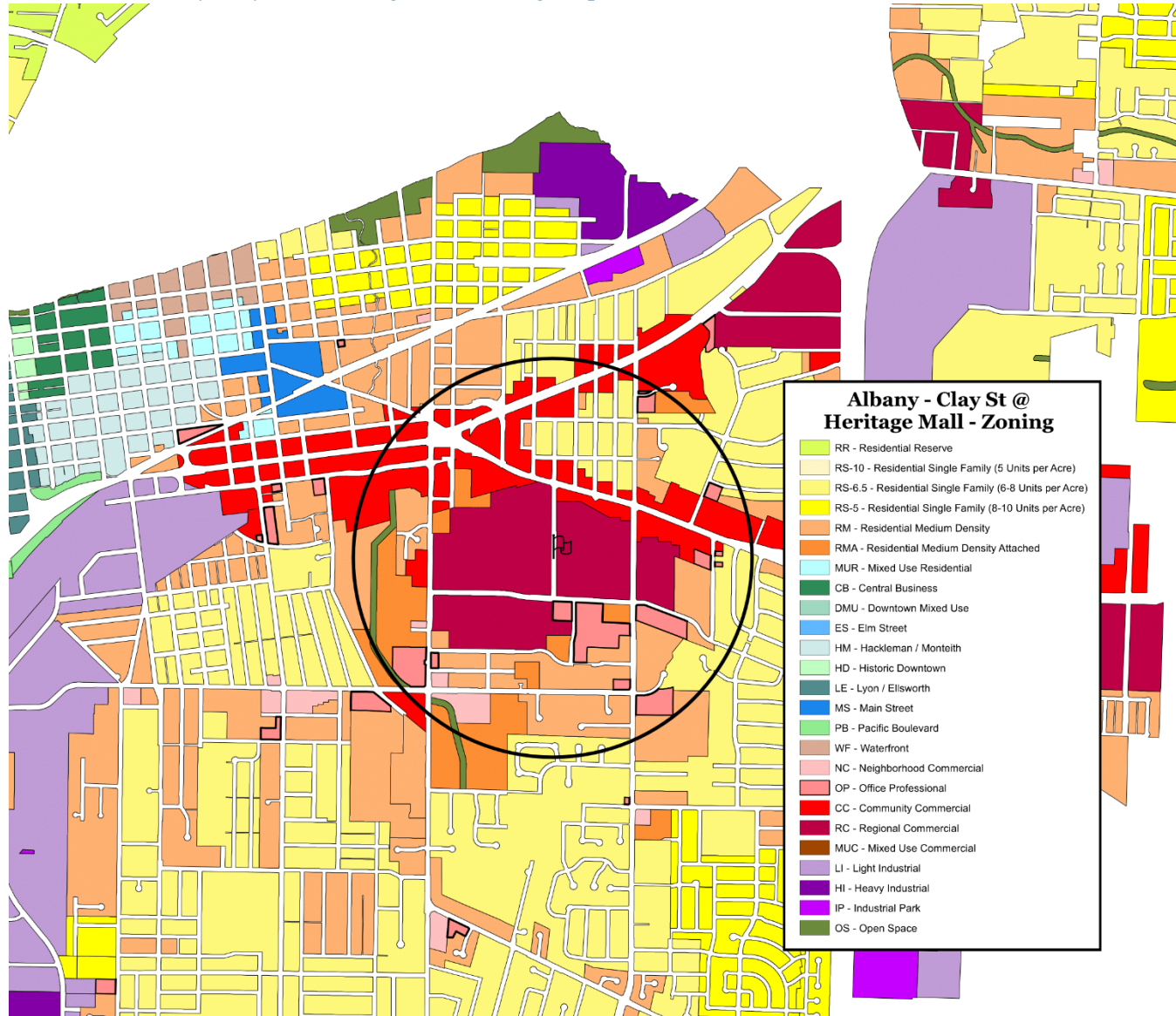
Highway Type	Route #	Origin	Destination	Length (In Miles)
US	101.1	Tillamook	Junction State 18	38.3
US	101.2	Waldport	Florence	34.0
US	101.3	Coos Bay	Brookings	106.0
US	197	The Dalles	Junction US 97	59.5
US	395.1	Riley	New Pine Creek	127.0
US	395.2	John Day	Burns	67.4
US	730	OR/WA Border	Junction I-84	35.0
TOTAL				3600.7

Appendix F: Zoning Maps

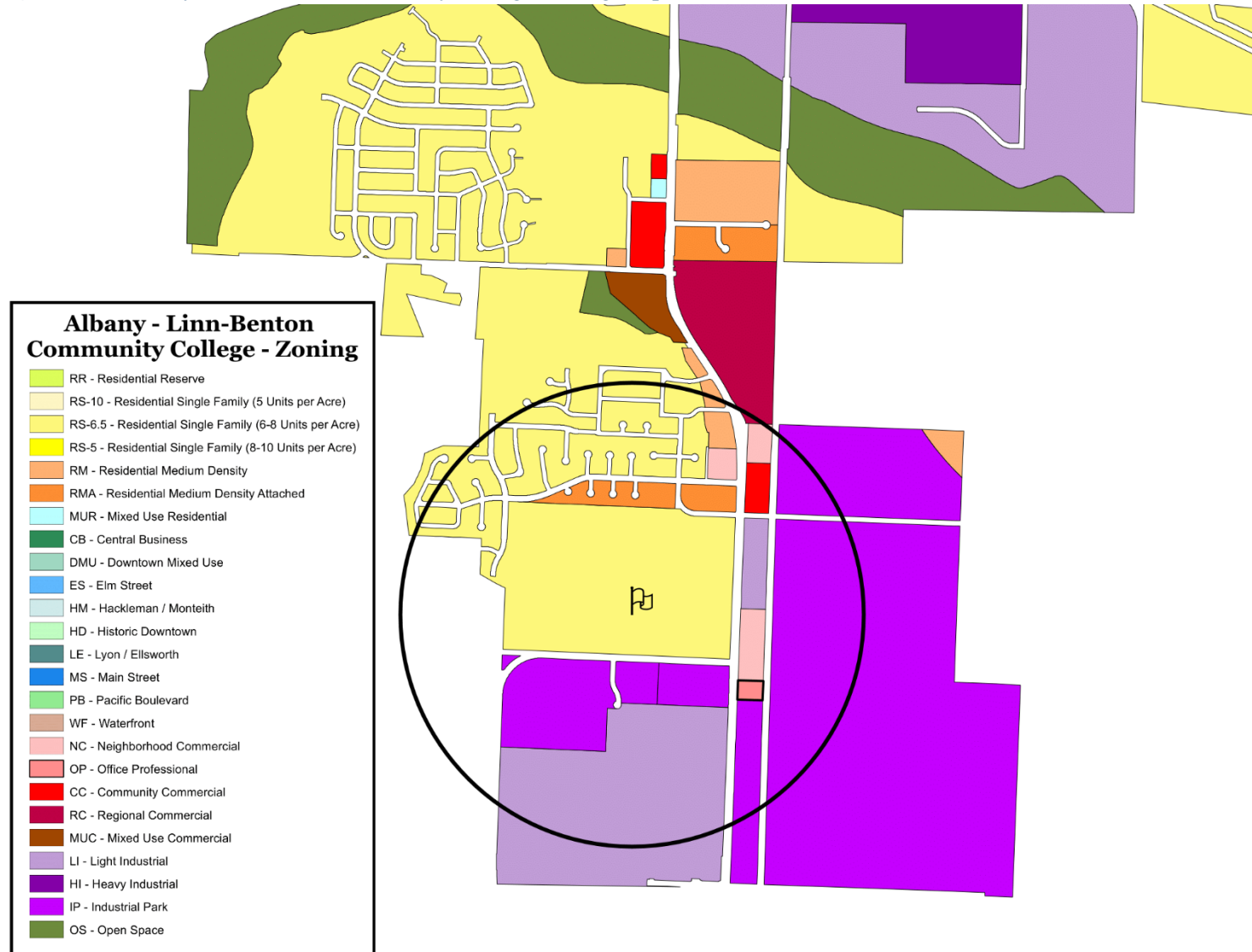
Figure F-1: Albany Amtrak Station Zoning Map



Map data: City of Albany

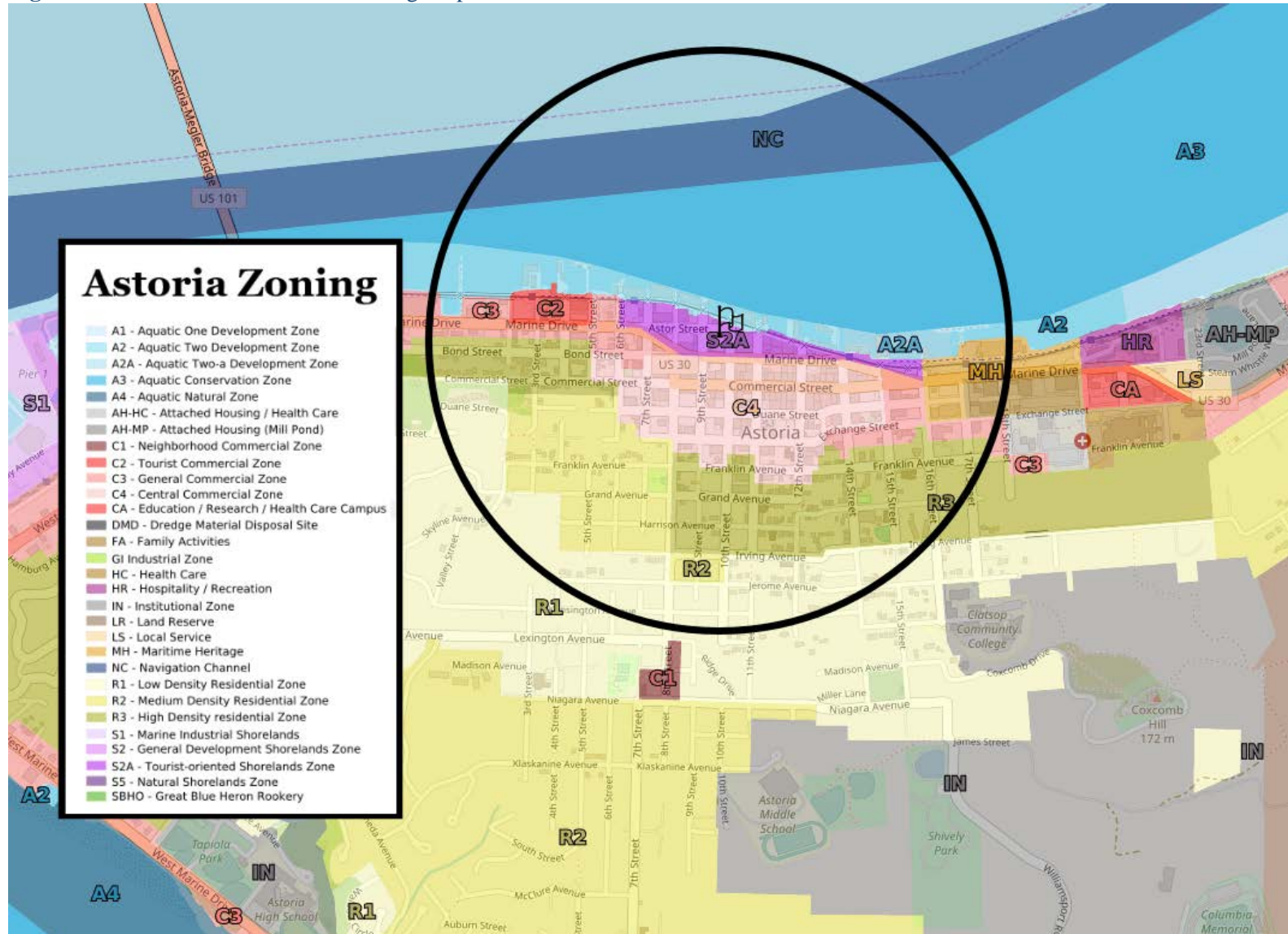
Figure F-2: Albany Clay St at Heritage Mall Zoning Map

Map data: City of Albany

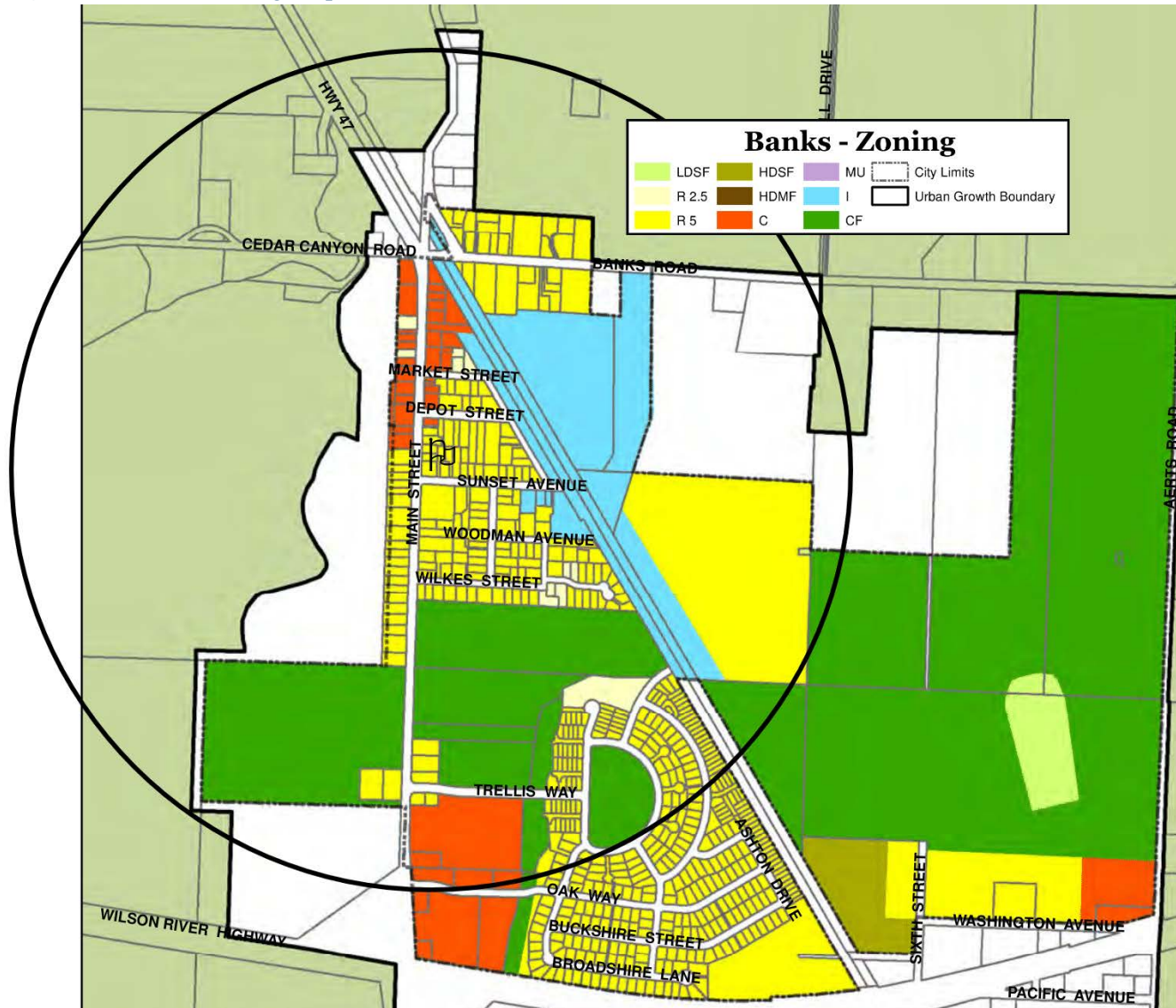
Figure F-3: Albany Linn Benton Community College Zoning Map

Map data: City of Albany

Figure F-4: Astoria Transit Center Zoning Map



Map data: City of Astoria

Figure F-5: Banks Zoning Map

Map data: City of Banks

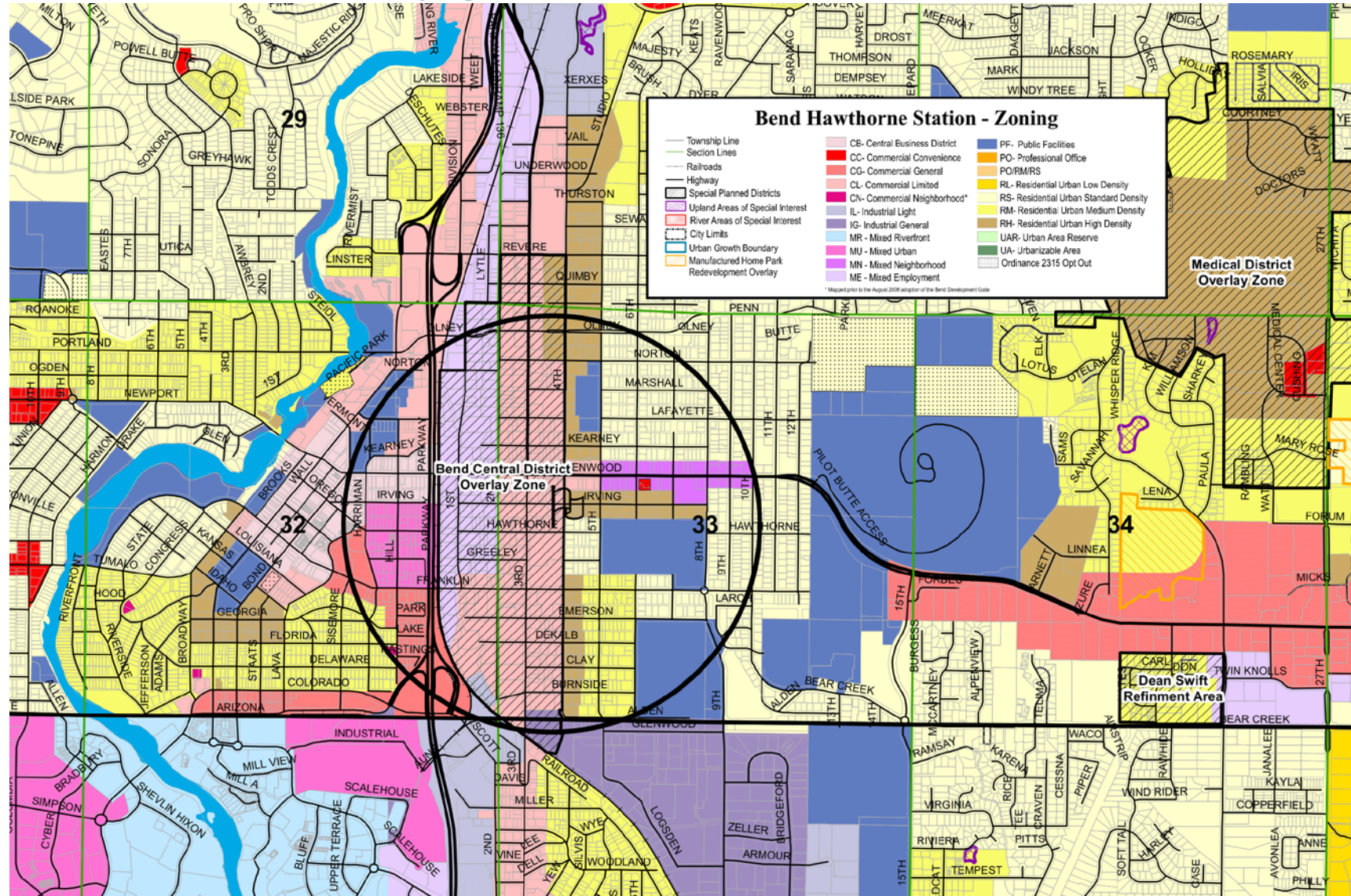
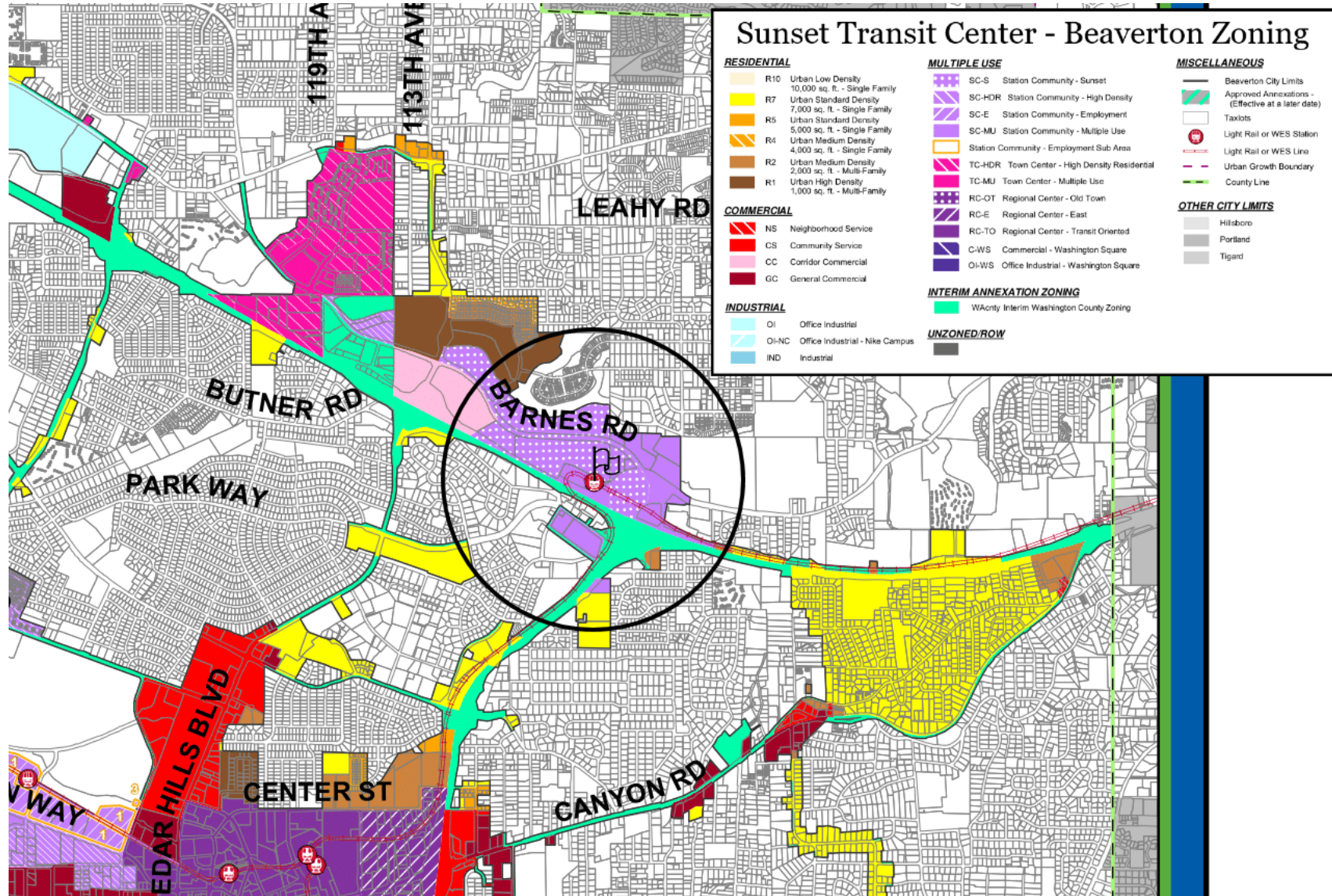
Figure F-6: Bend Hawthorne Station Zoning Map

Figure F-7: Beaverton Sunset Transit Center Zoning Map – City of Beaverton



Map data: City of Beaverton

Figure F-8: Beaverton Sunset Transit Center Zoning Map – Washington County

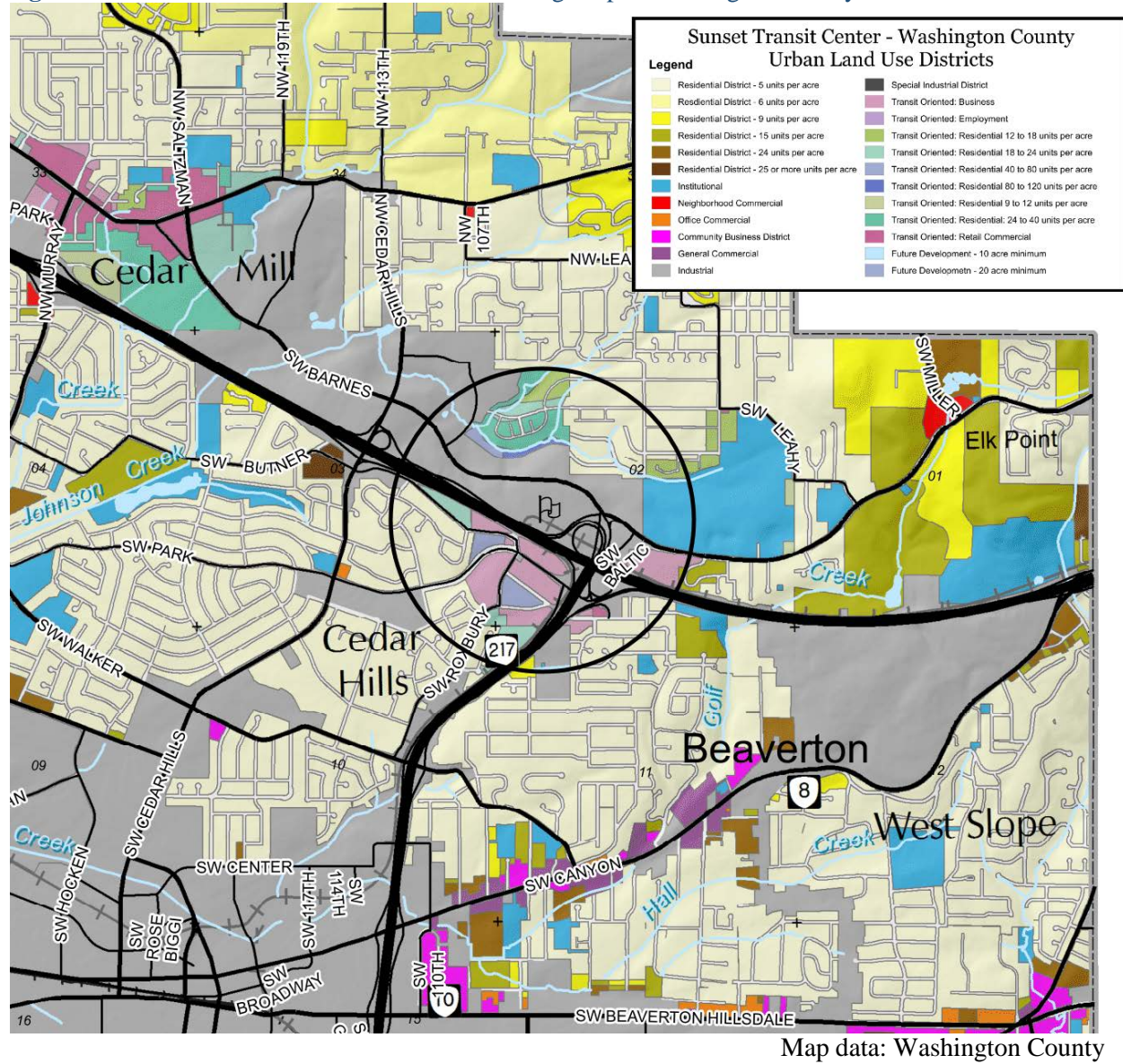
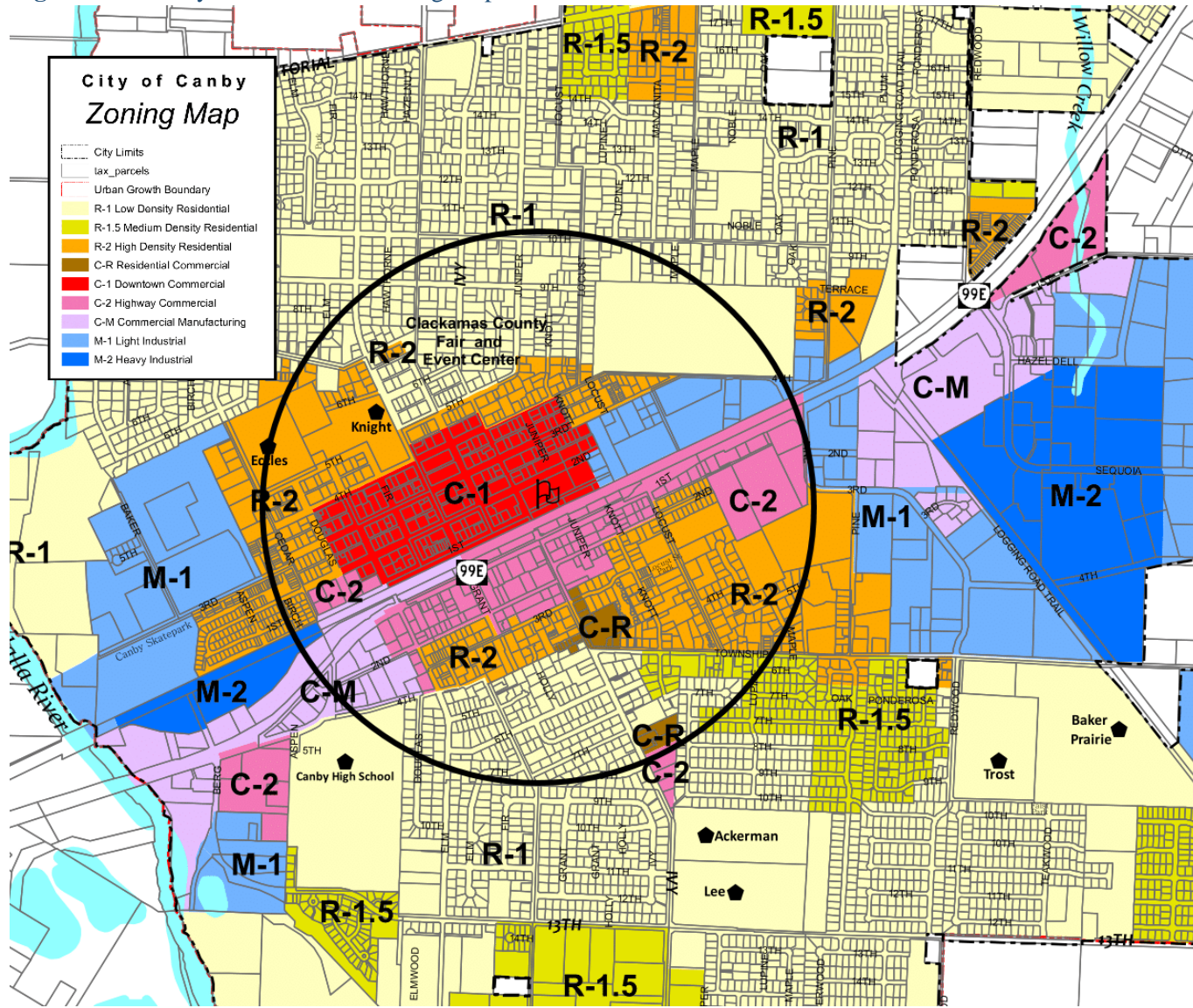
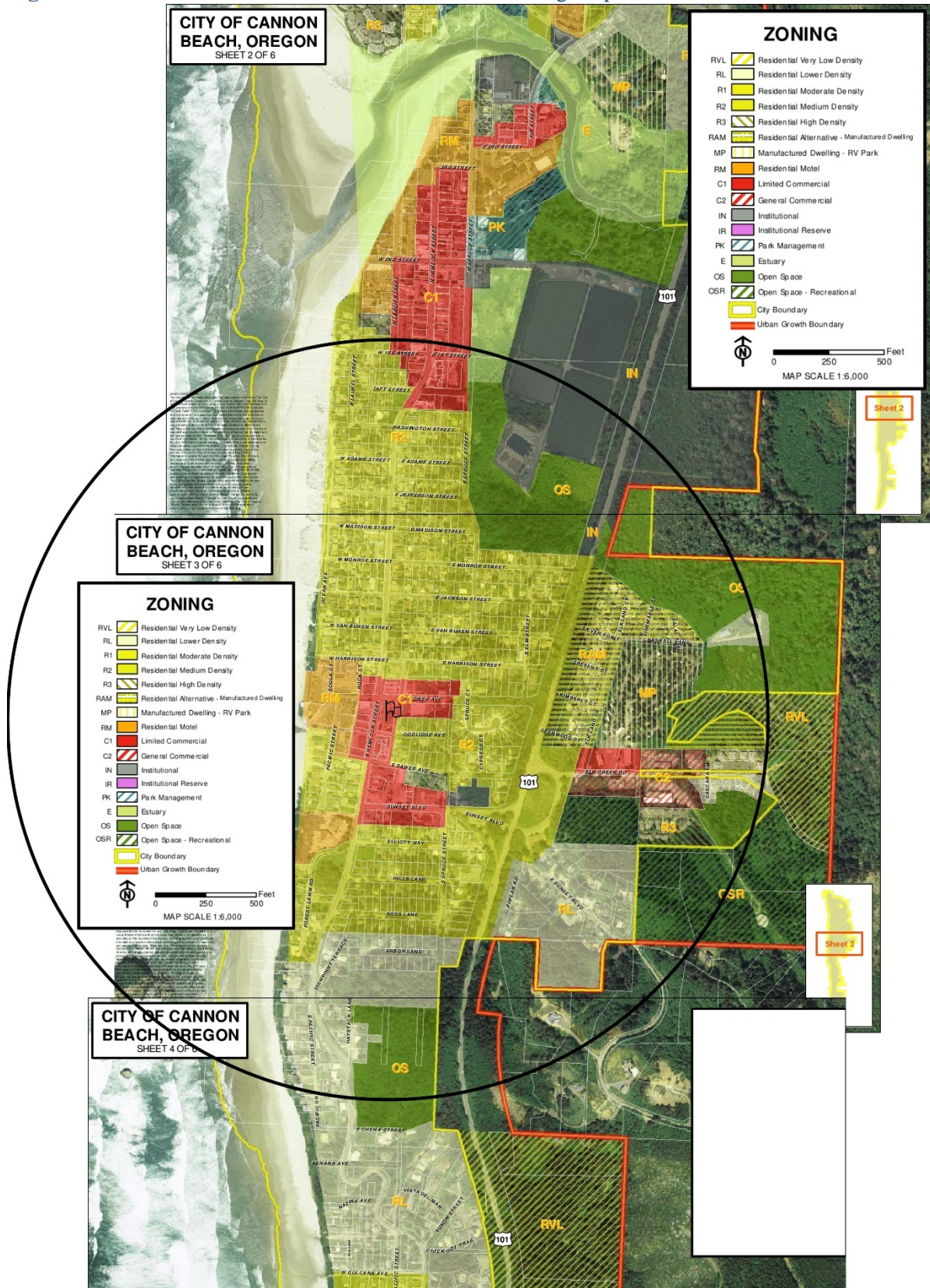


Figure F-9: Canby Transit Center Zoning Map

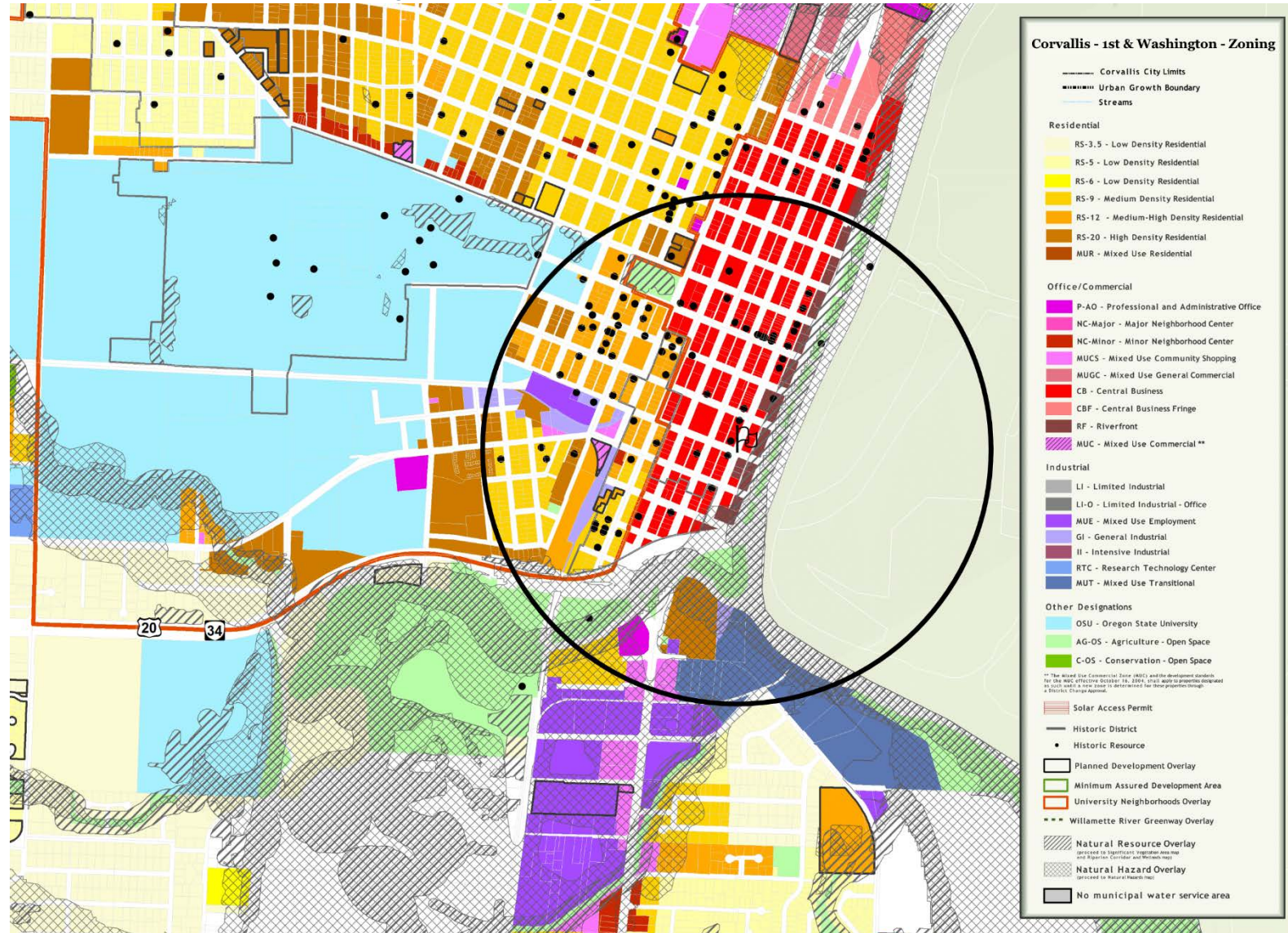


Map data: City of Canby

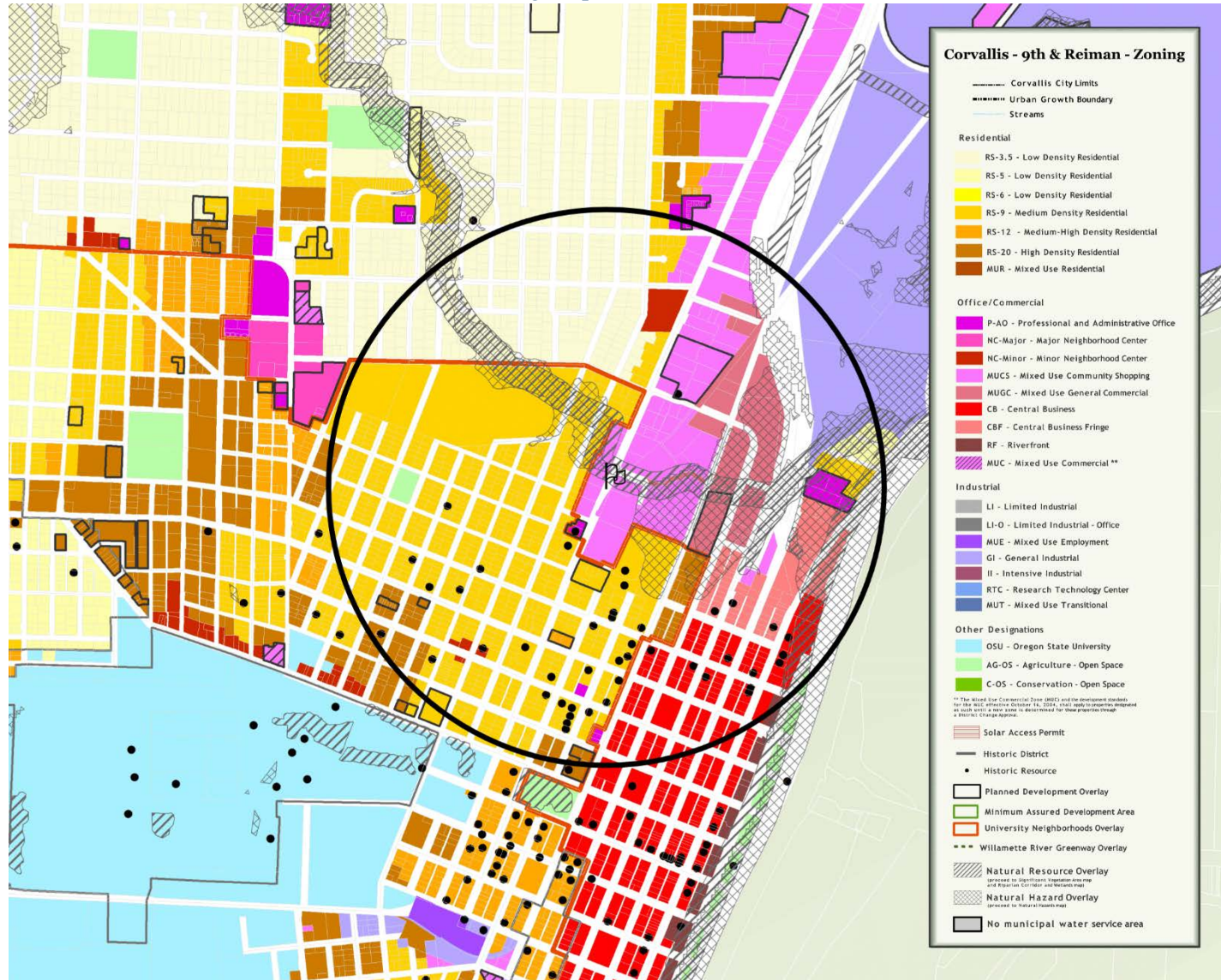
Figure F-10: Cannon Beach Midtown Transit Center Zoning Map



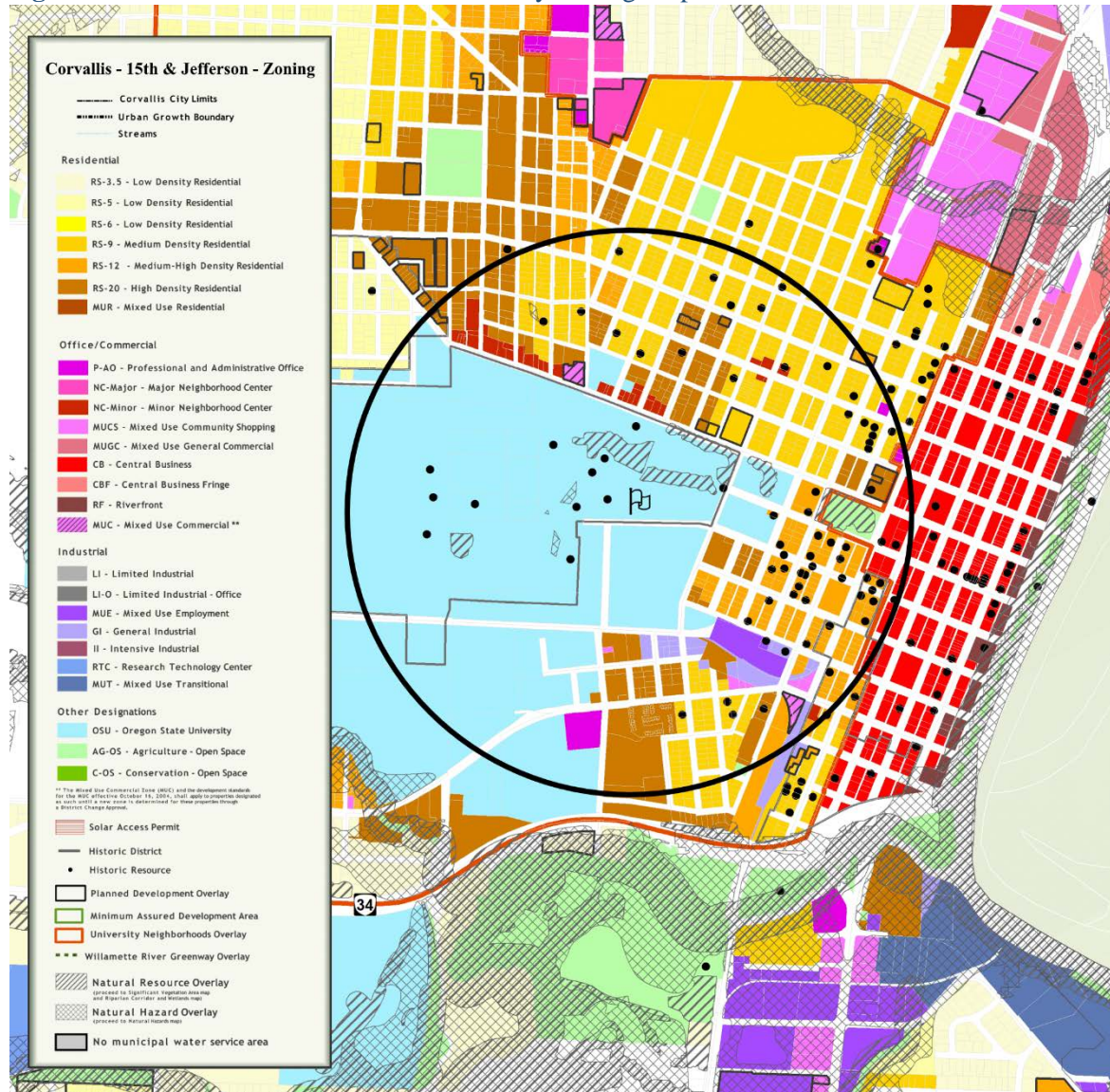
Map data: City of Cannon Beach

Figure F-11: Corvallis 1st St & Washington Ave Zoning Map

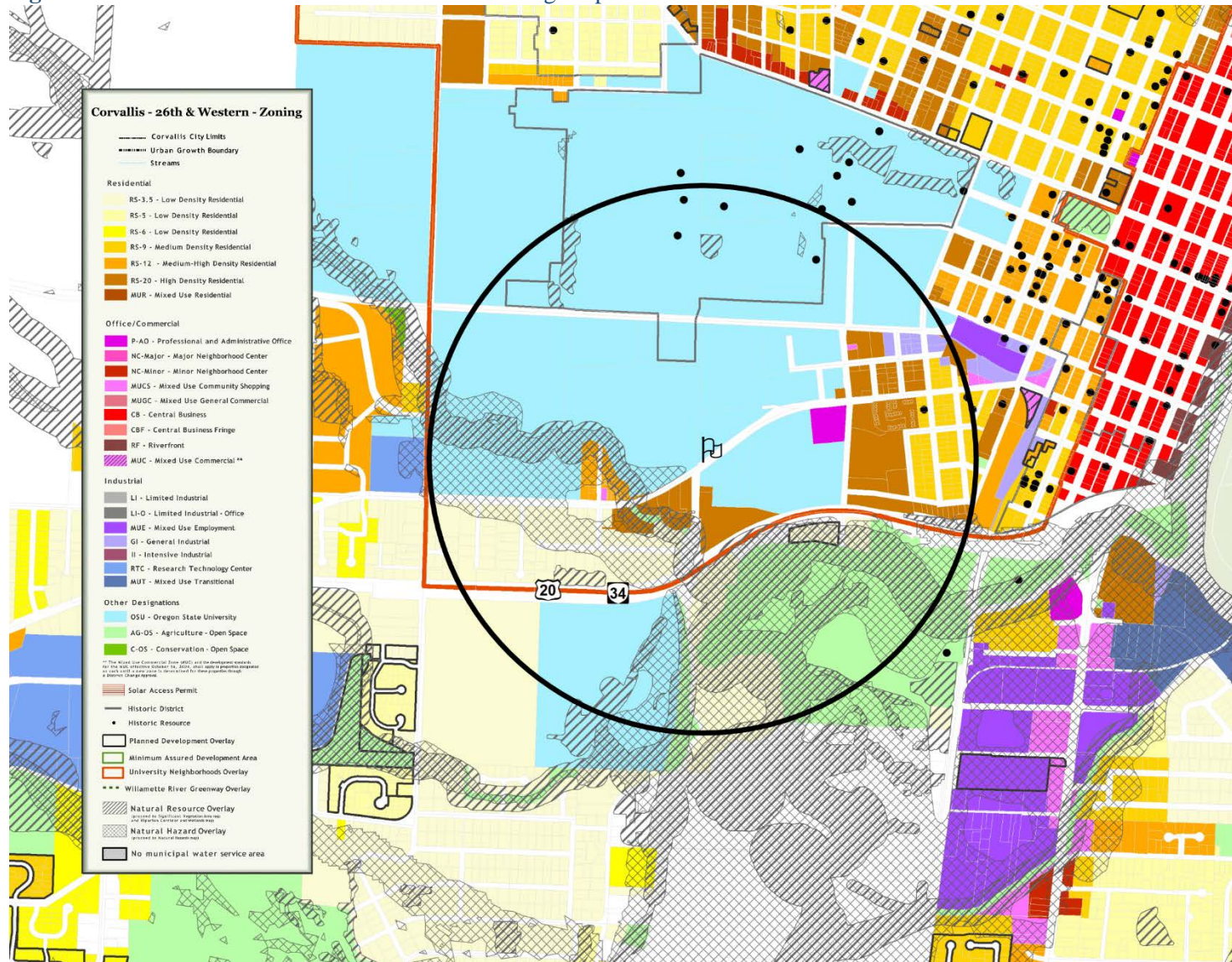
Map data: City of Corvallis

Figure F-12: Corvallis 9th St & Reiman Ave Zoning Map

Map data: City of Corvallis

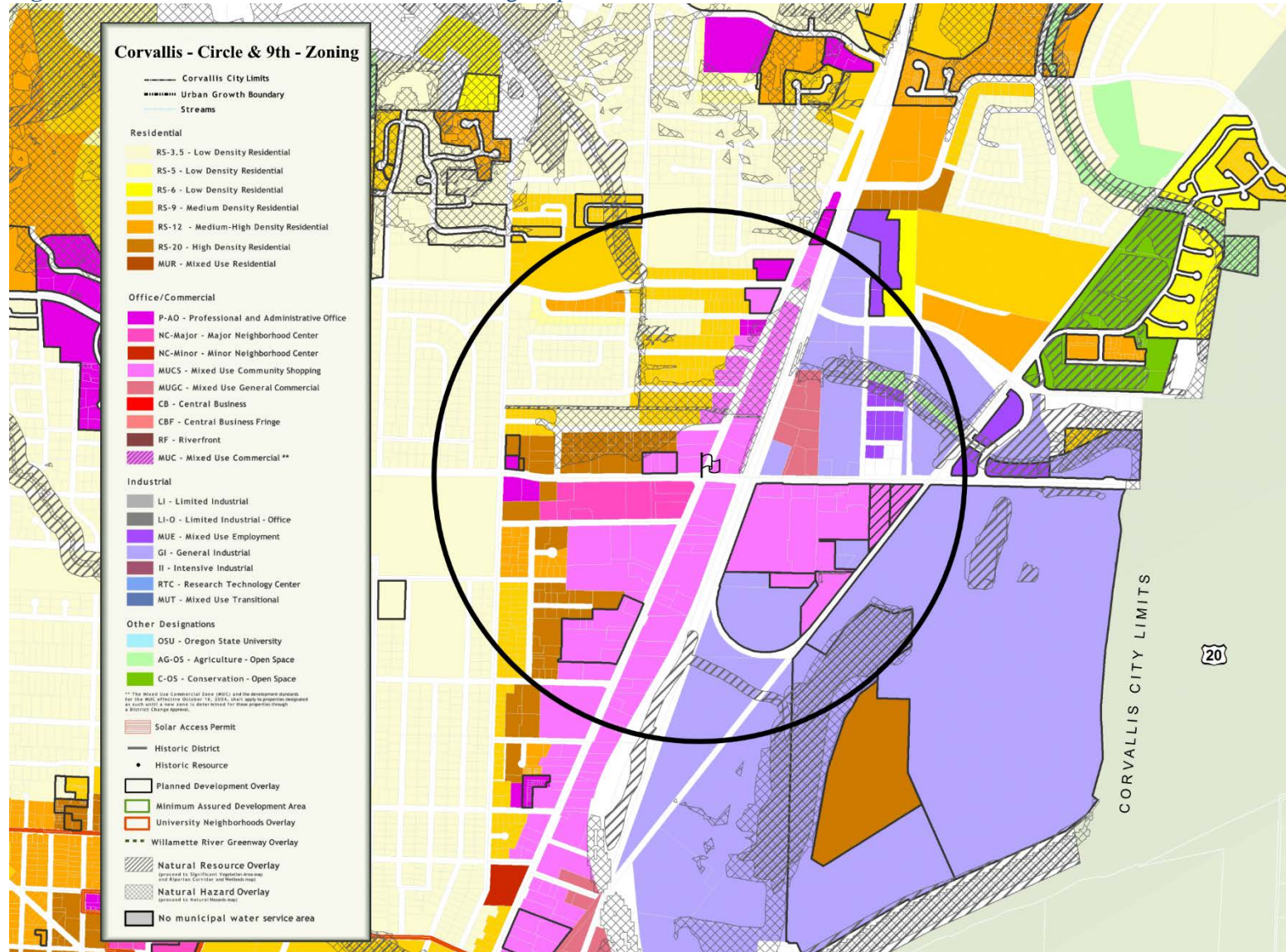
Figure F-13: Corvallis 15th St & Jefferson Way Zoning Map

Map data: City of Corvallis

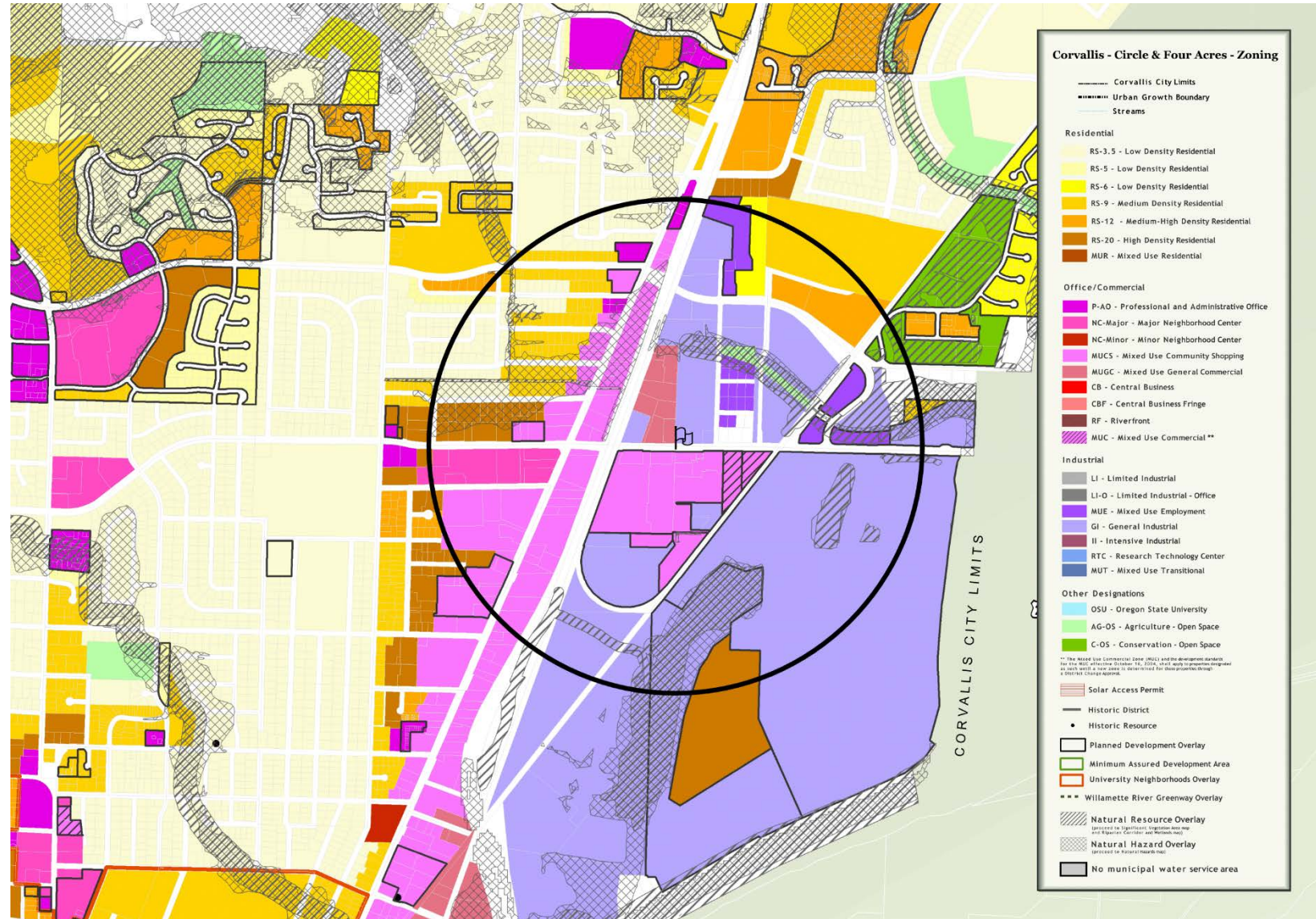
Figure F-14: Corvallis 26th St & Western Blvd Zoning Map

Map data: City of Corvallis

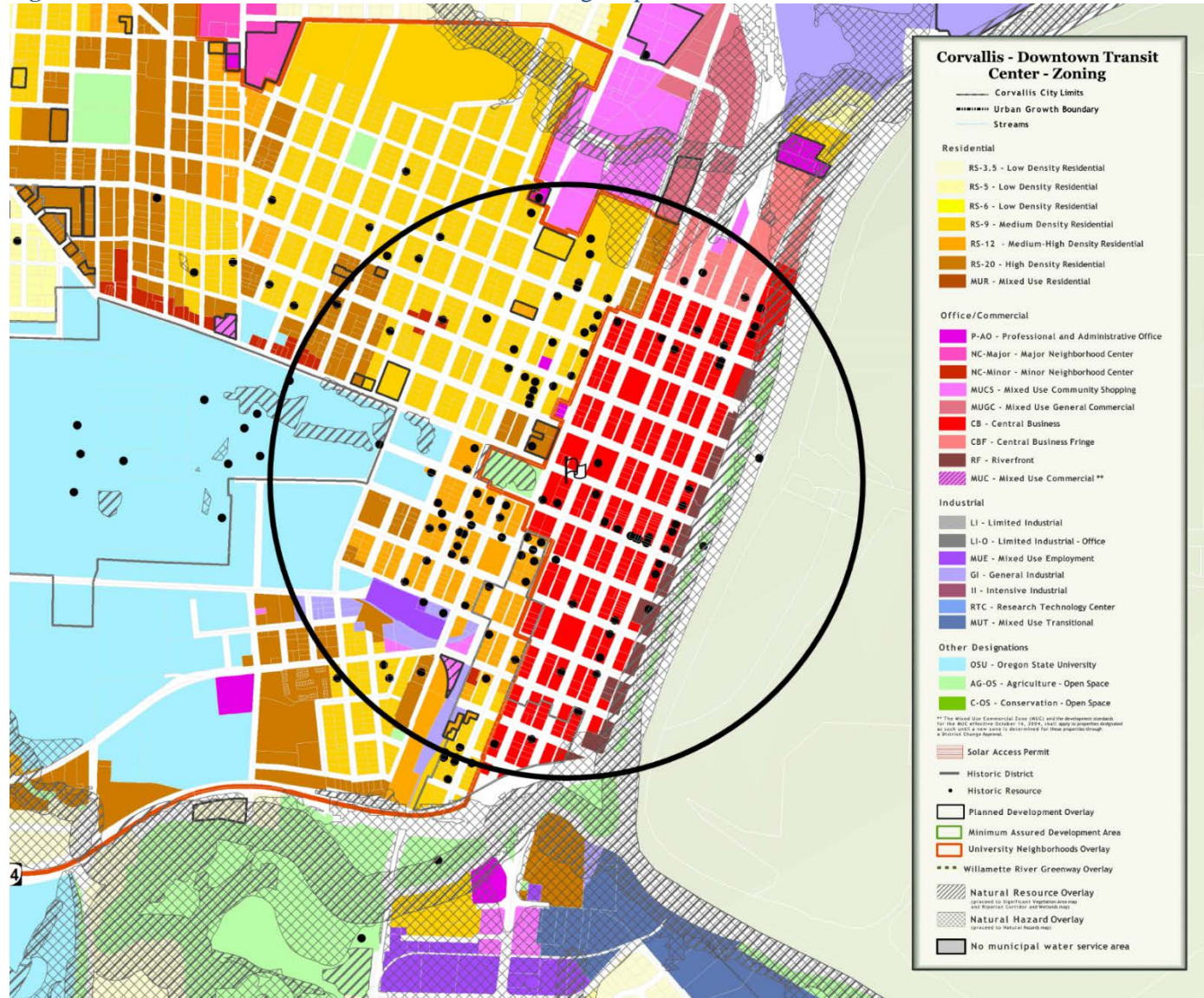
Figure F-15: Corvallis Circle Blvd & 9th St Zoning Map



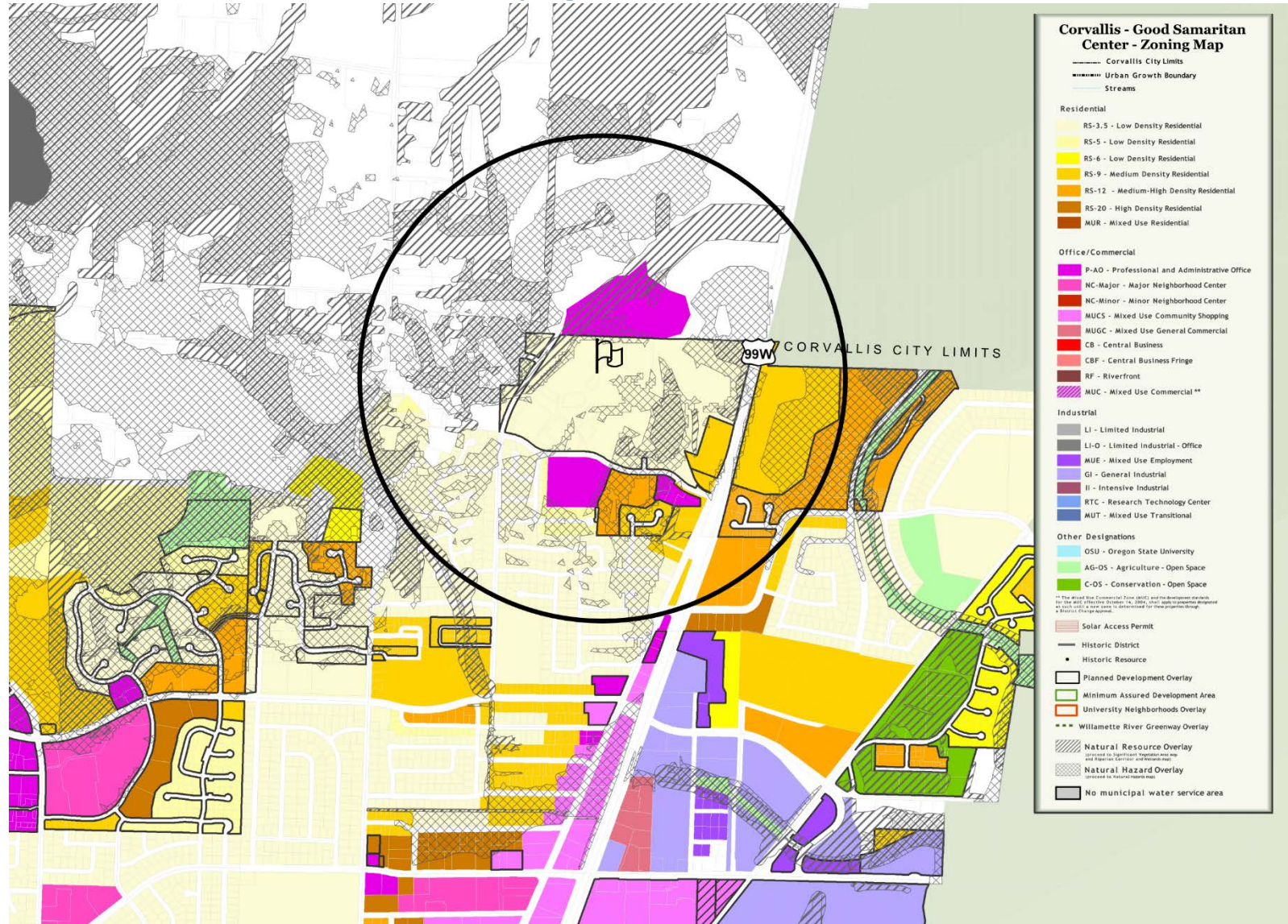
Map data: City of Corvallis

Figure F-16: Corvallis Circle Blvd & Four Acre Place Zoning Map

Map data: City of Corvallis

Figure F-17: Corvallis Downtown Transit Center Zoning Map

Map data: City of Corvallis

Figure F-18: Corvallis Good Samaritan Center Zoning Map

Map data: City of Corvallis

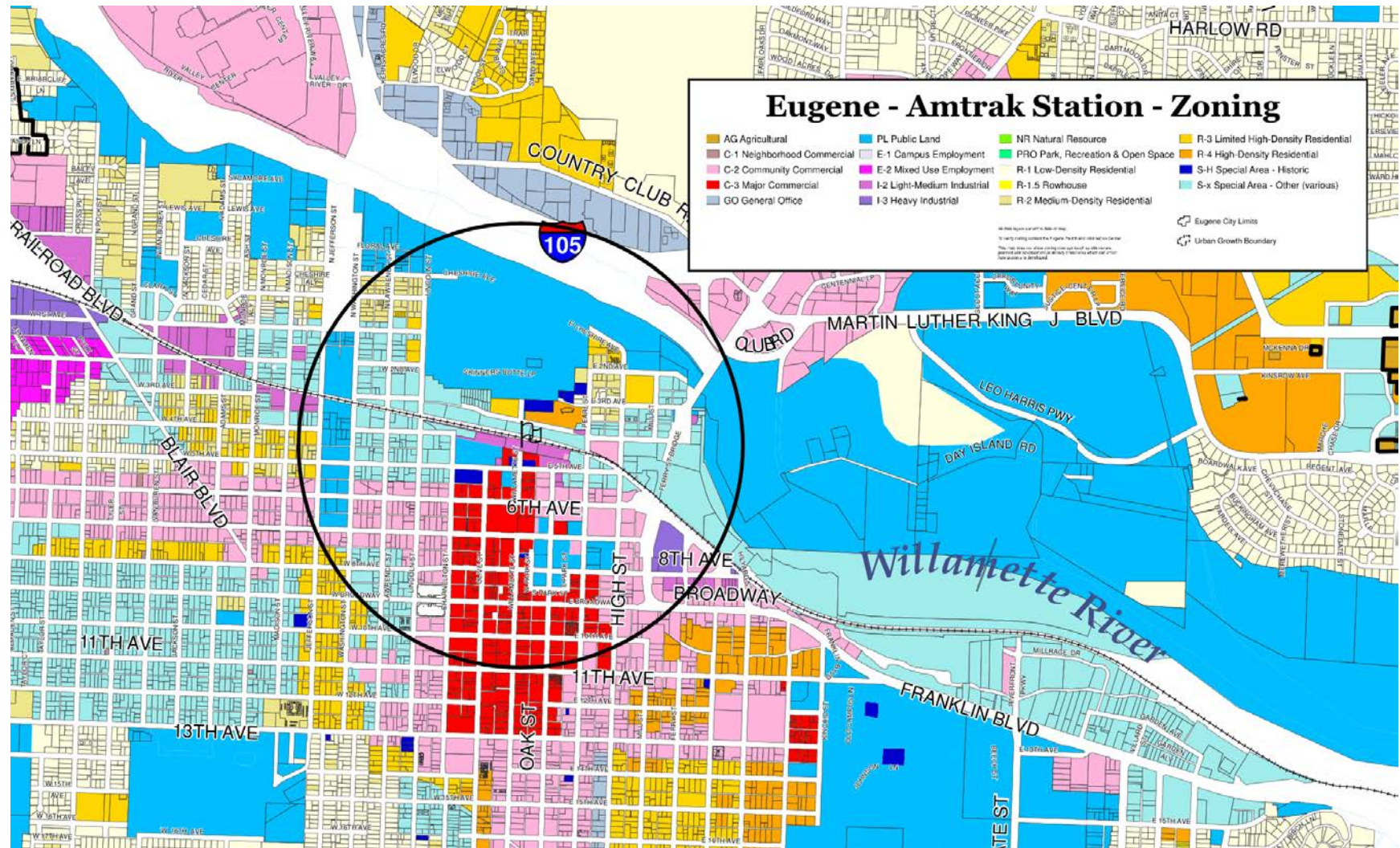
Figure F-19: Eugene Amtrak Station Zoning Map

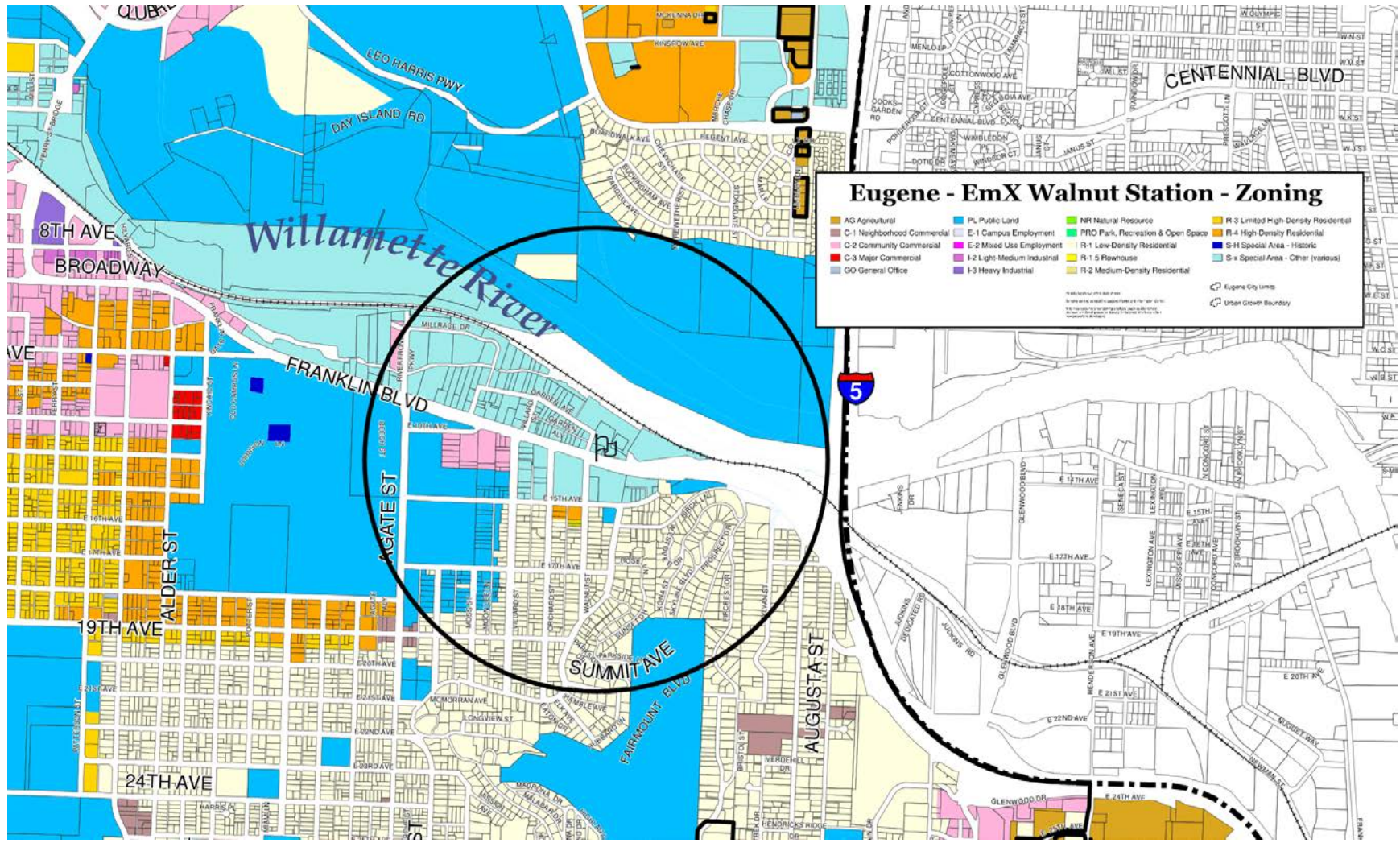
Figure F-20: Eugene EmX Walnut Station Zoning Map

Figure F-21: Grand Ronde Zoning Map

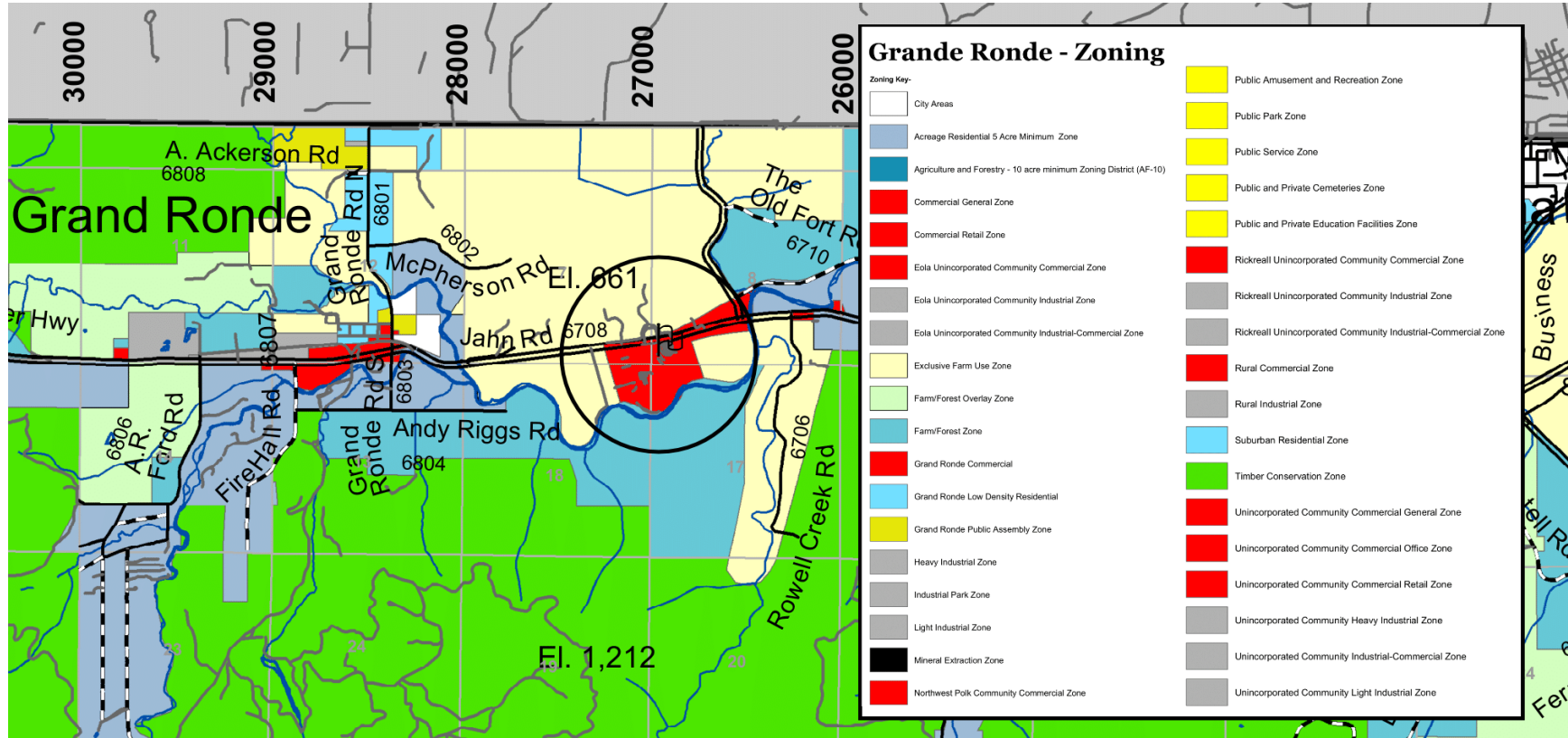
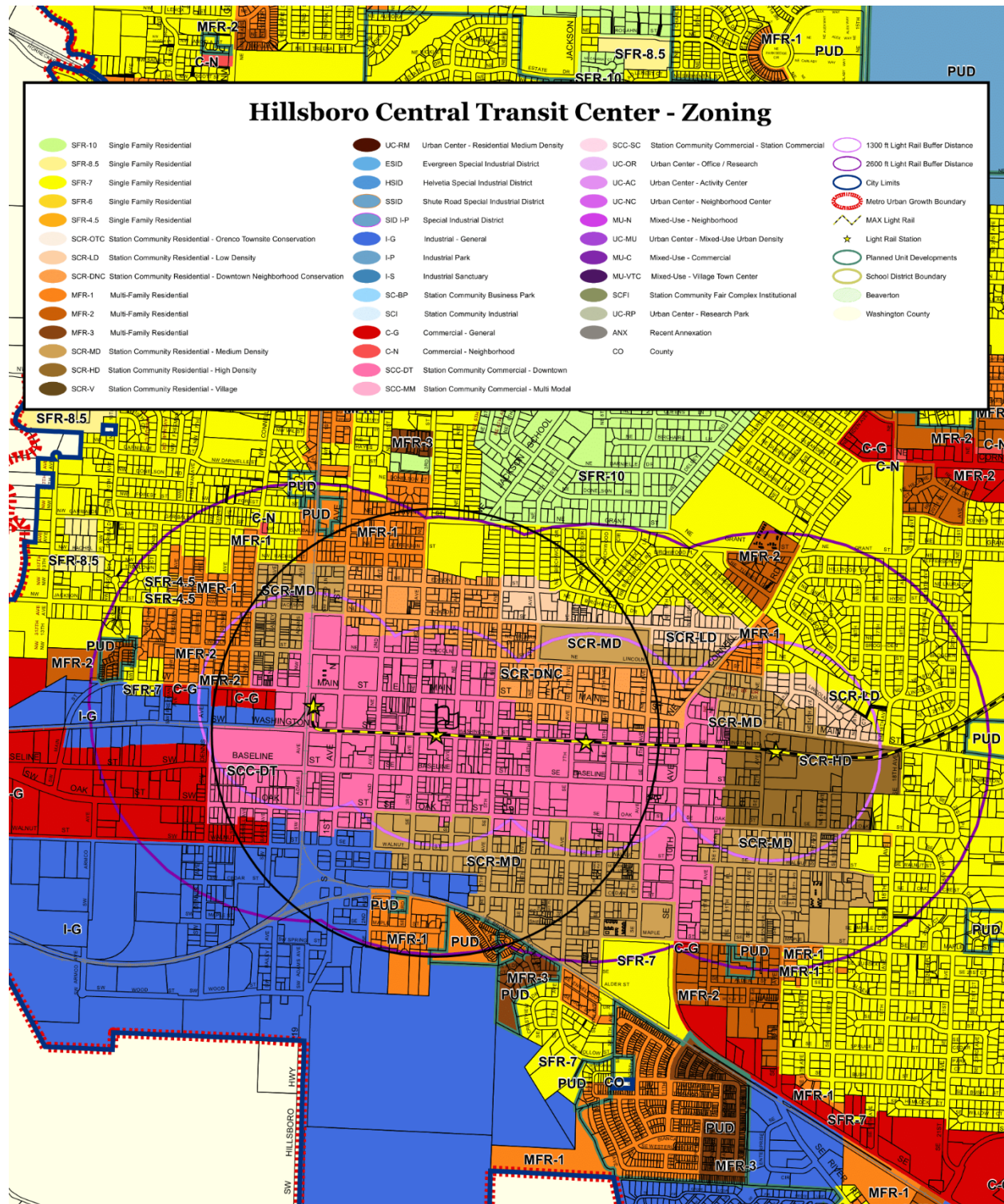
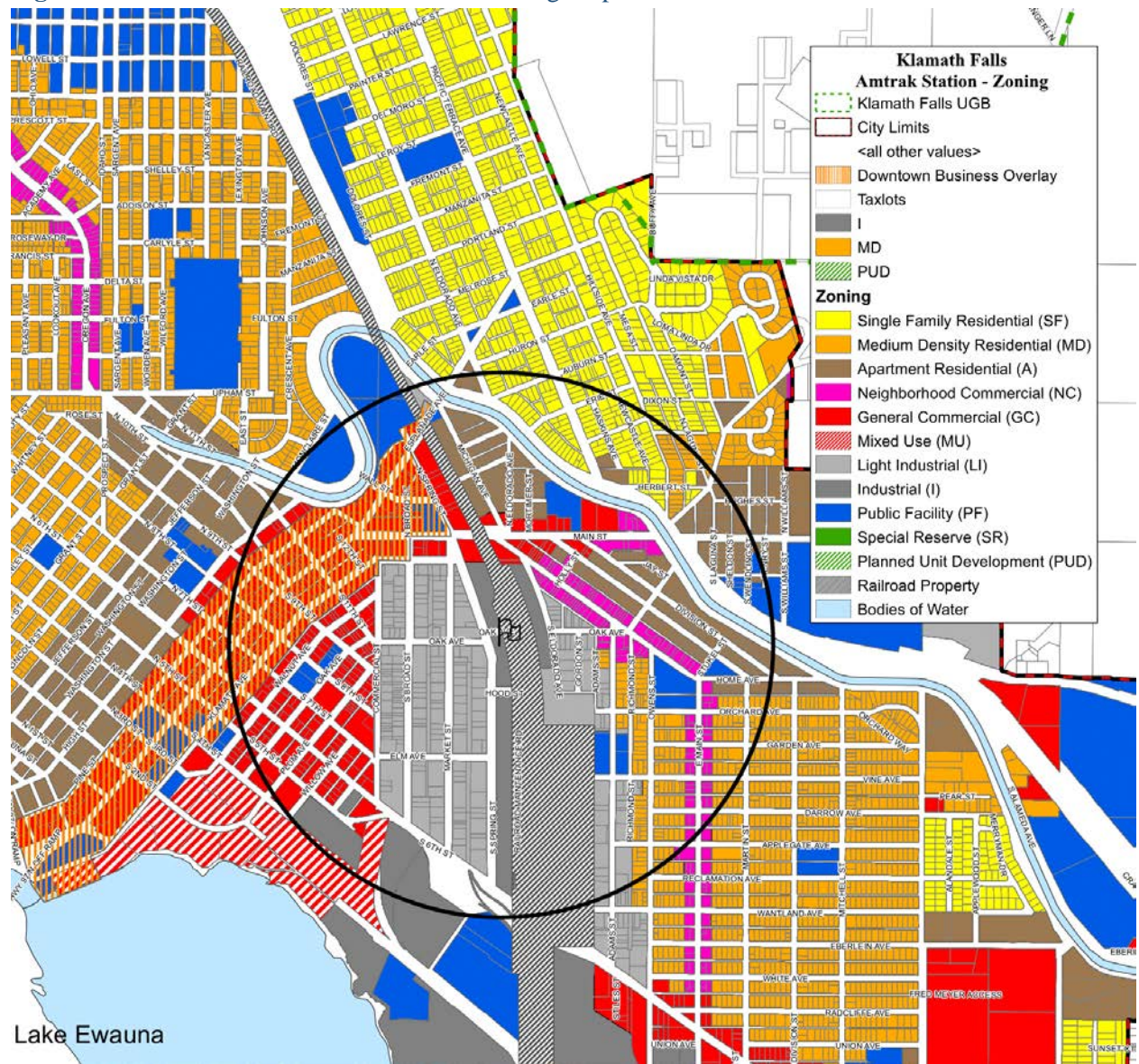


Figure F-22: Hillsboro Central Transit Center Zoning Map

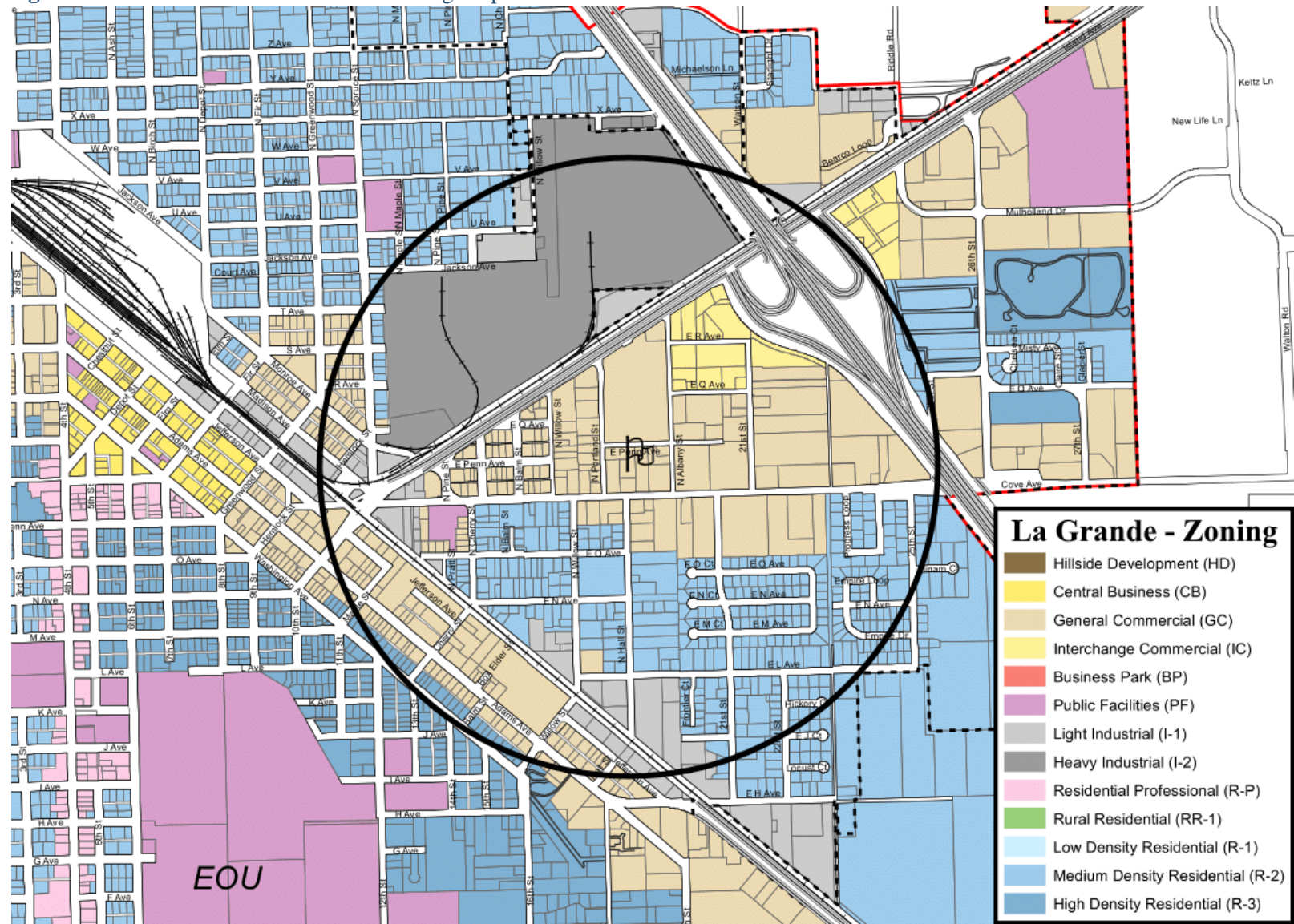


Map data: City of Hillsboro

Figure F-23: Klamath Falls Amtrak Station Zoning Map



Map data: City of Klamath Falls

Figure F-24: La Grande Transit Center Zoning Map

Map data: City of La Grande

Figure F-25: Medford Front Street Station Zoning Map

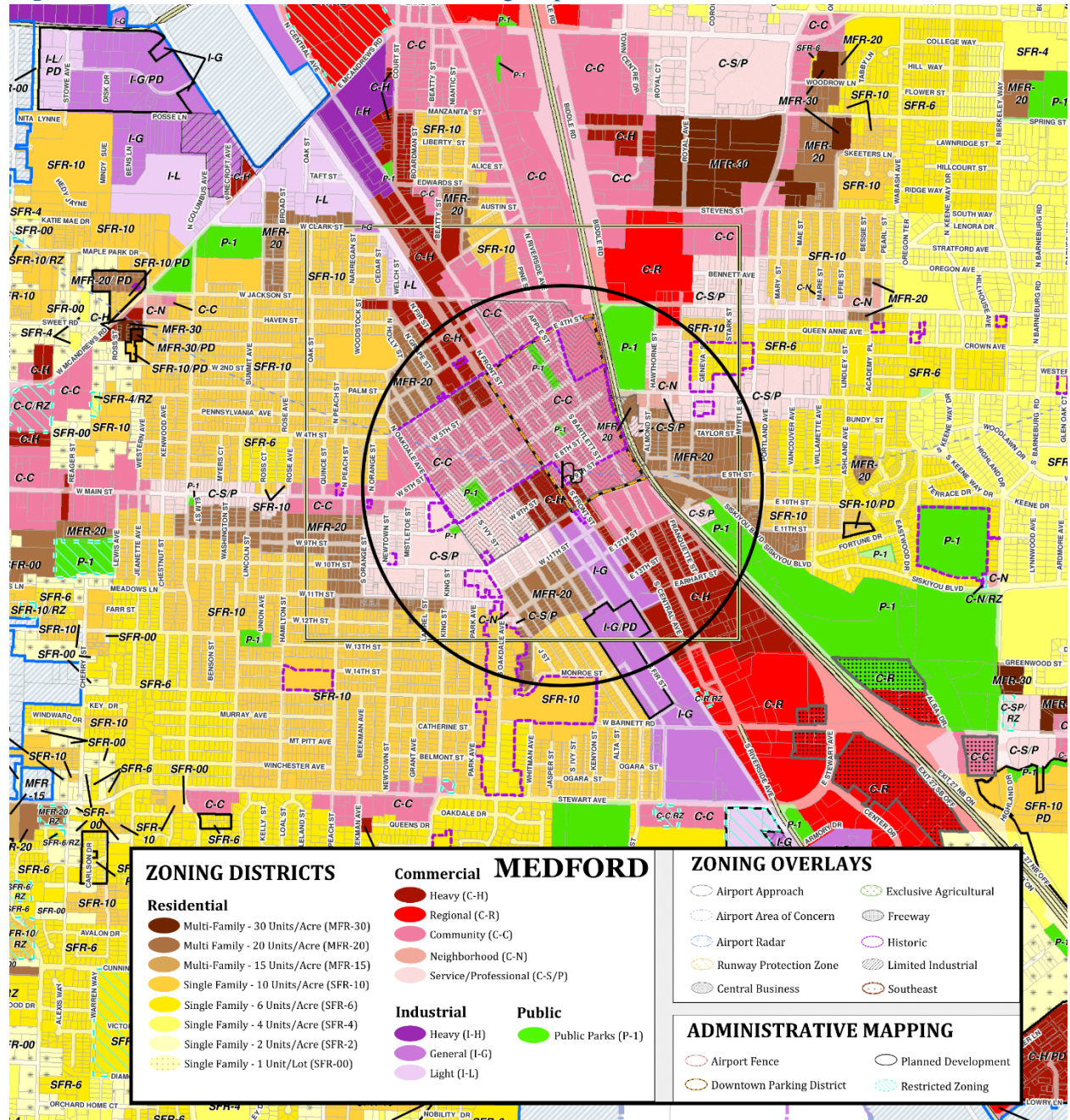
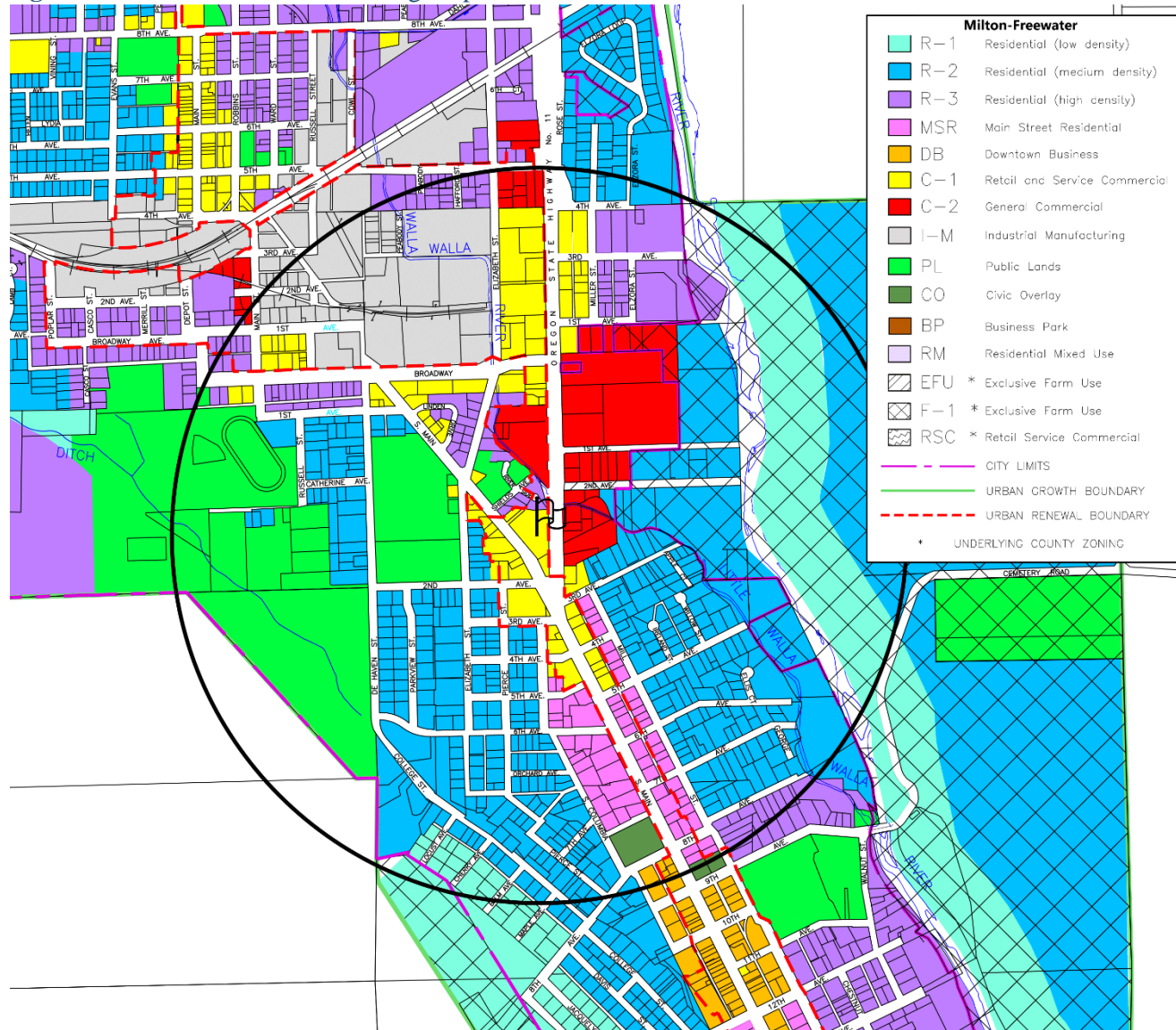


Figure F-26: Milton-Freewater Zoning Map



Map data: City of Milton-Freewater

Figure F-27: Ontario Zoning Map

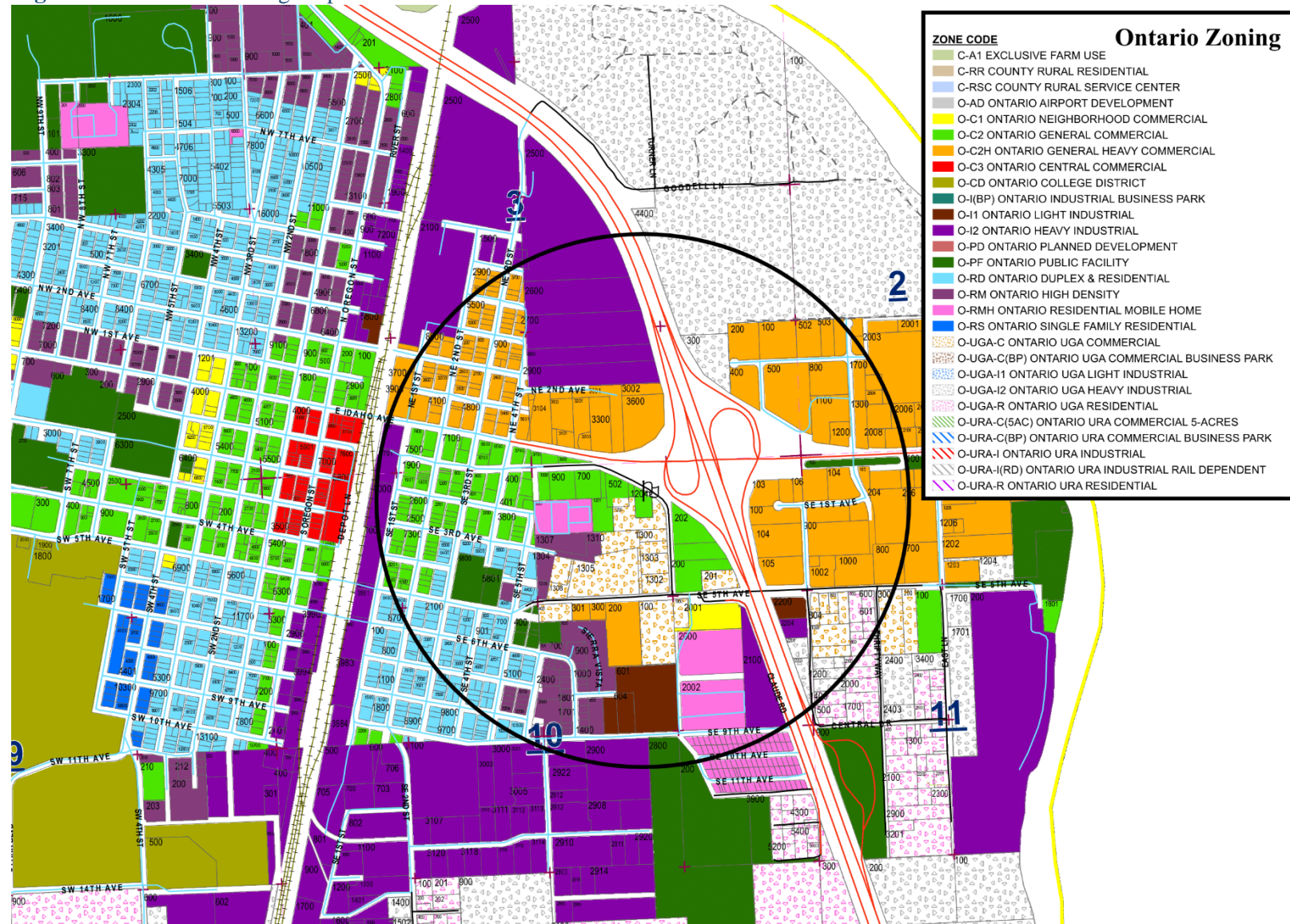
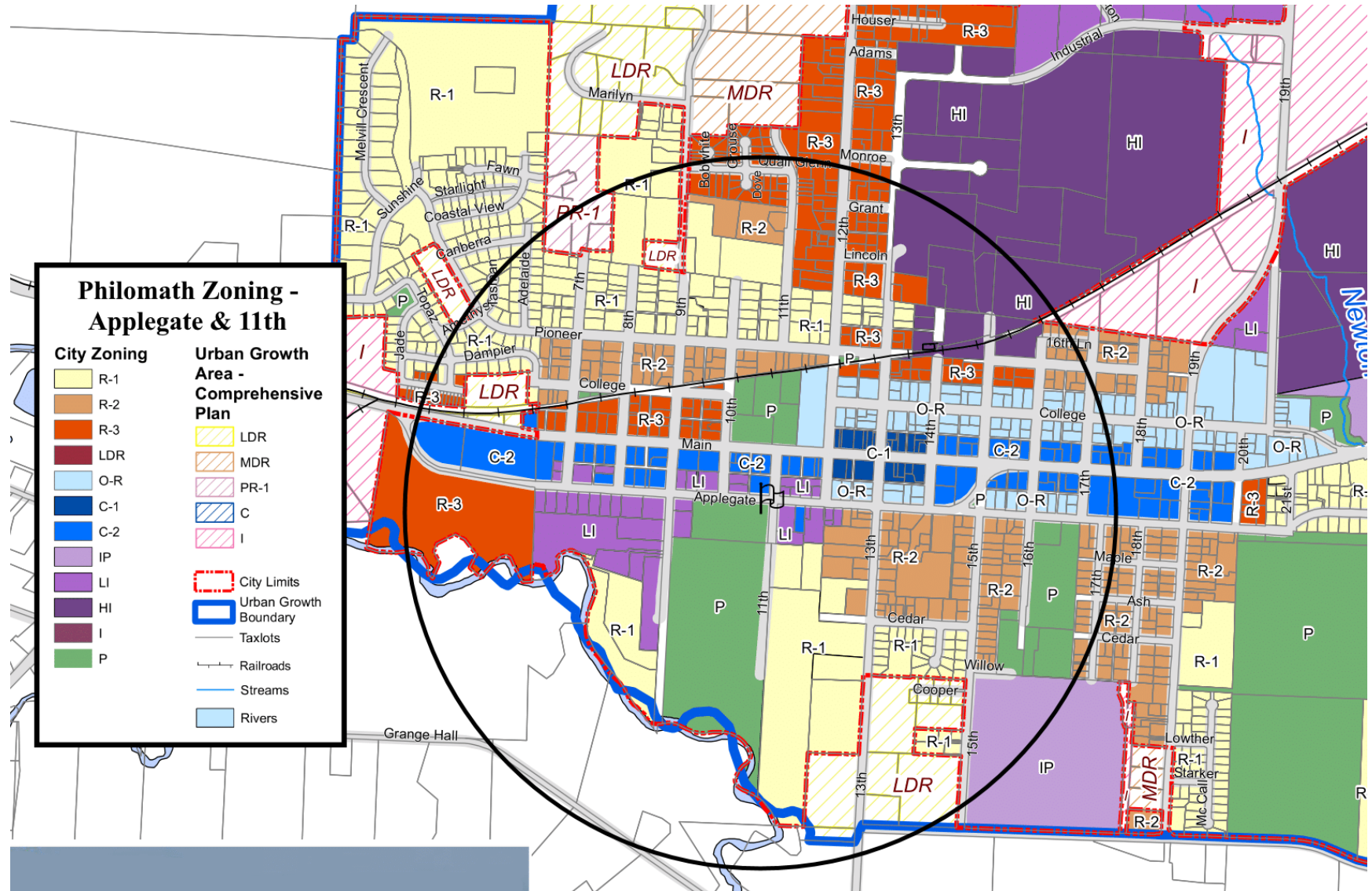
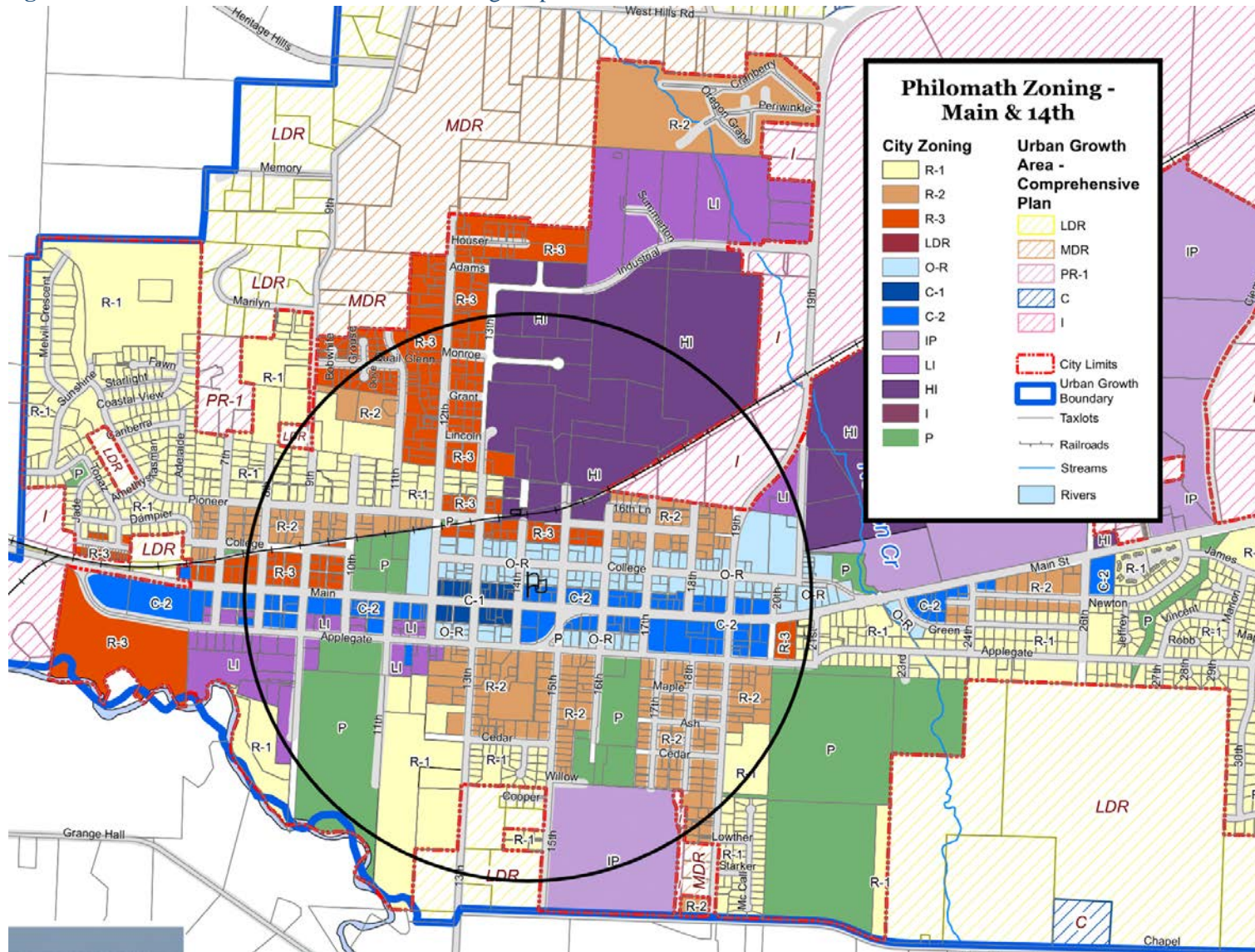


Figure F-28: Philomath Applegate St & 11th St Zoning Map

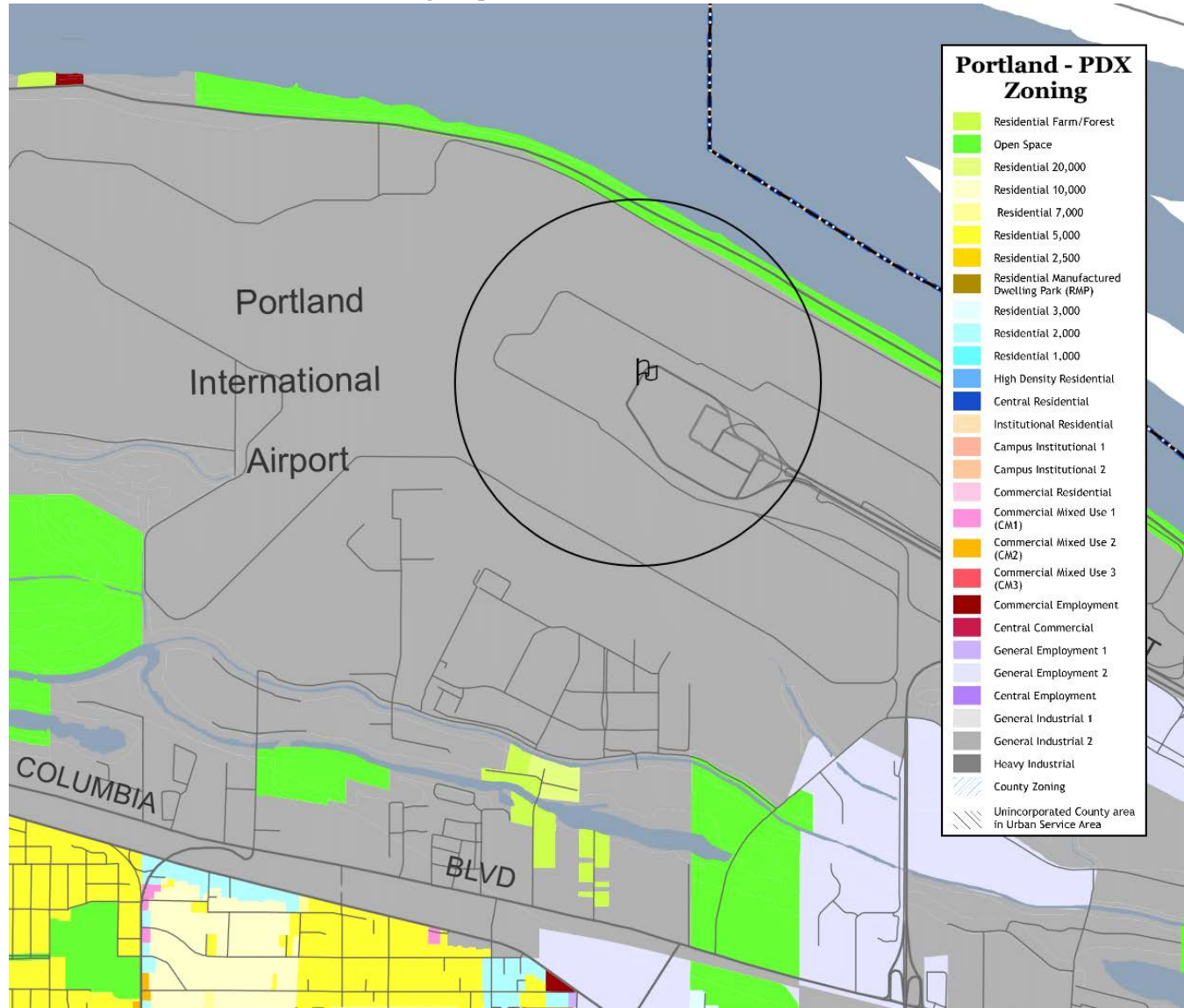


Map data: City of Philomath

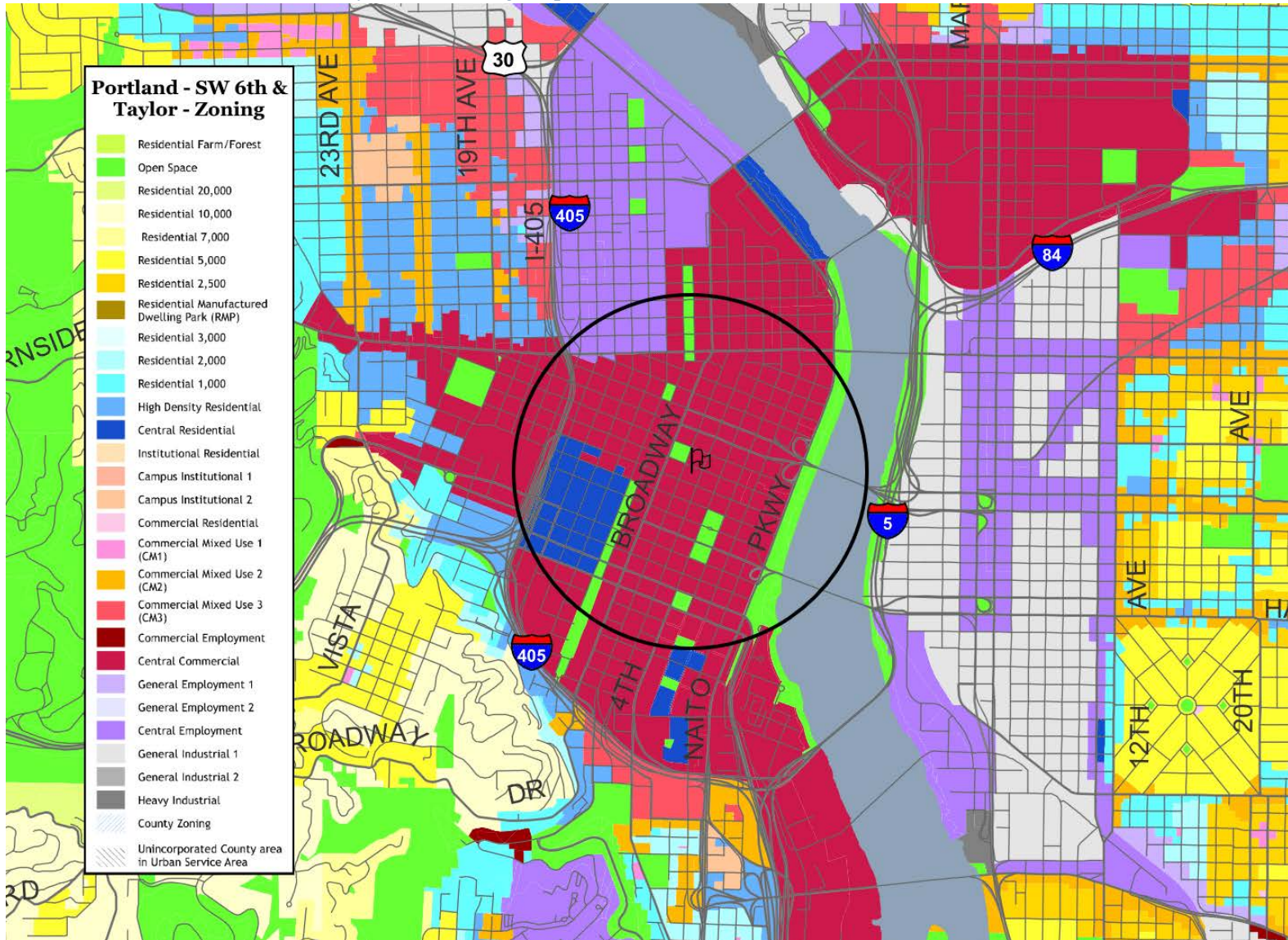
Figure F-29: Philomath Main St & 14th St Zoning Map



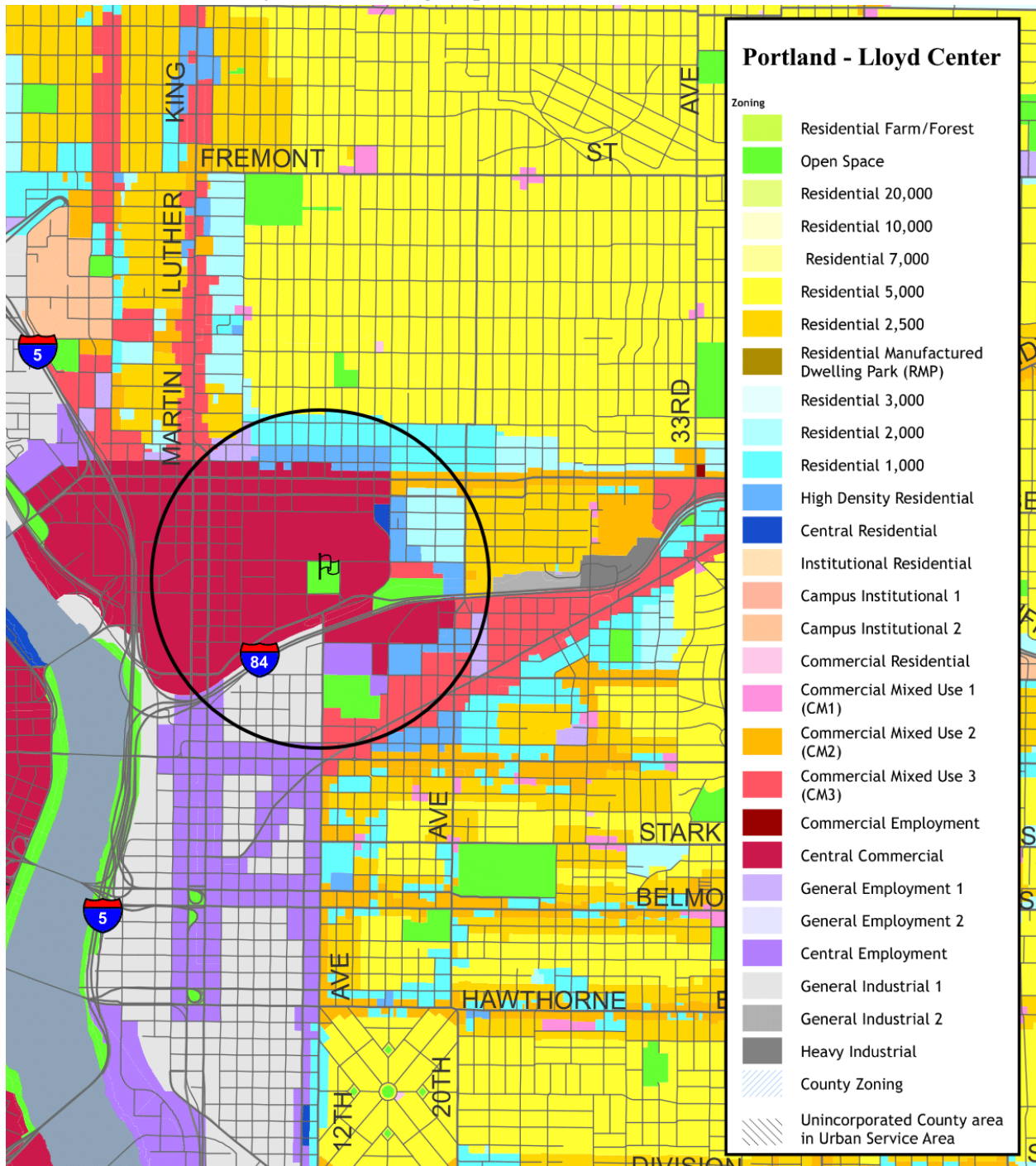
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Figure F-30: PDX Transit Center Zoning Map

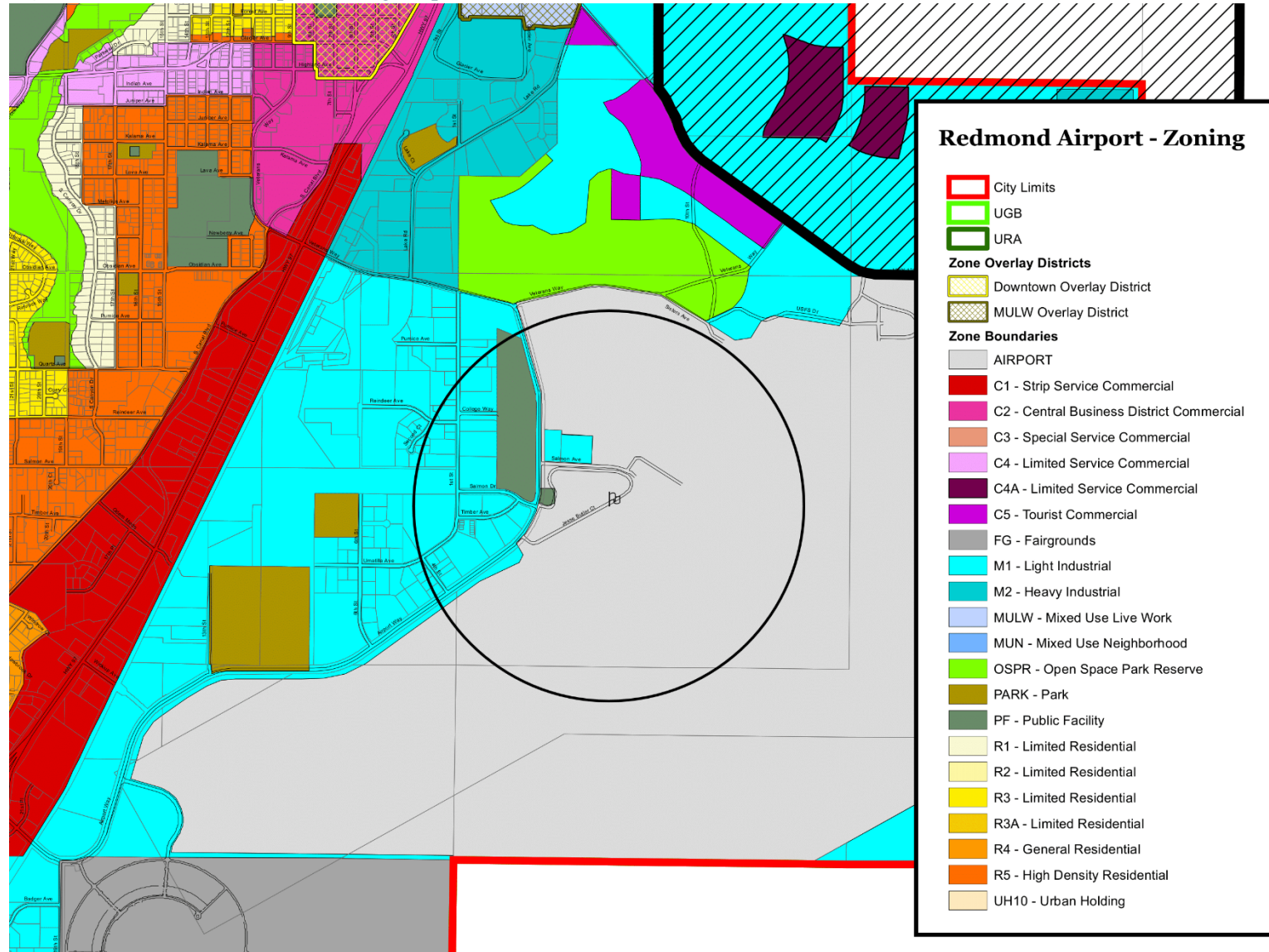
Map data: City of Portland

Figure F-31: Portland 6th Ave & Taylor Ave Zoning Map

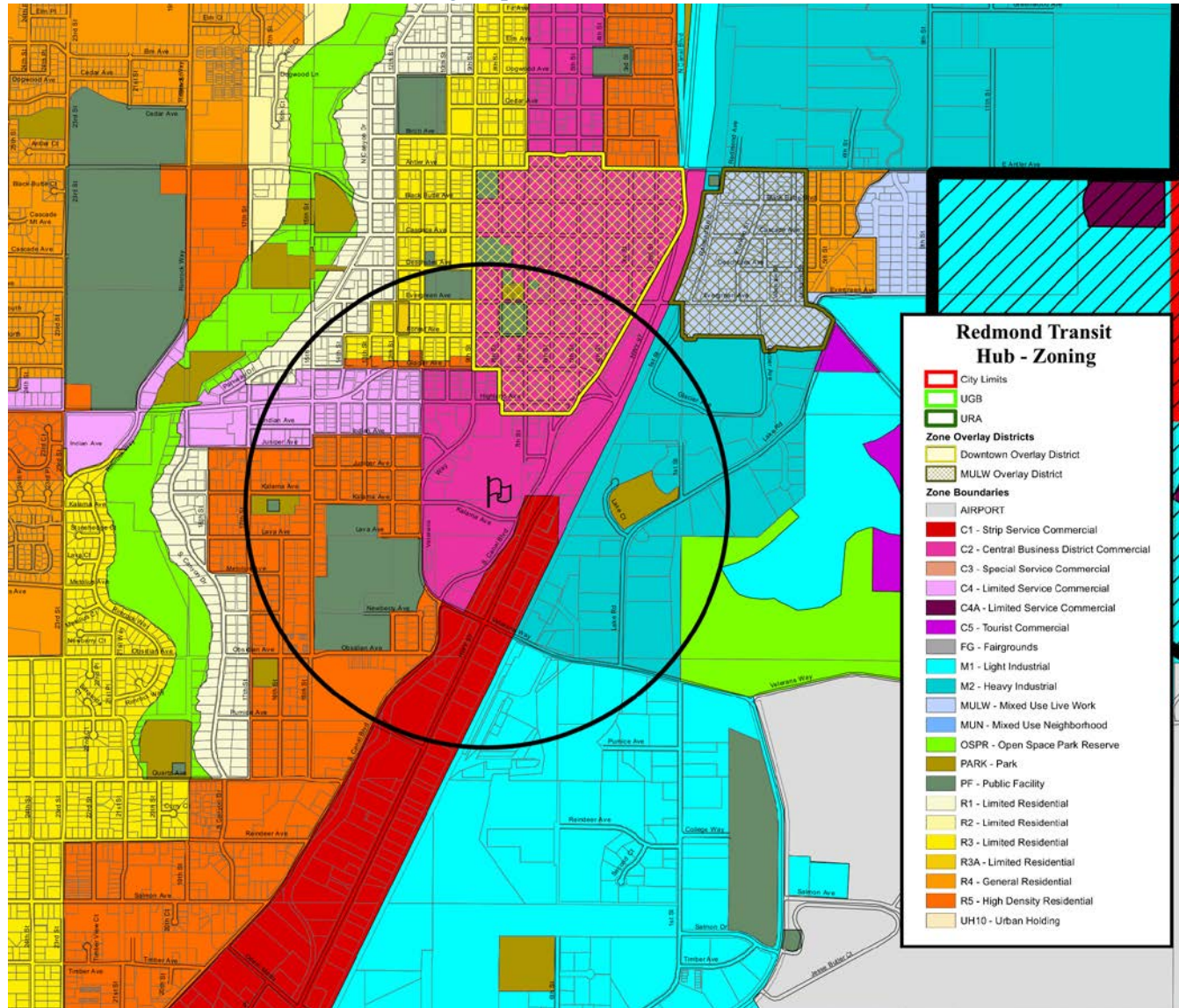
Map data: City of Portland

Figure F-32: Portland Lloyd Center Zoning Map

Map data: City of Portland

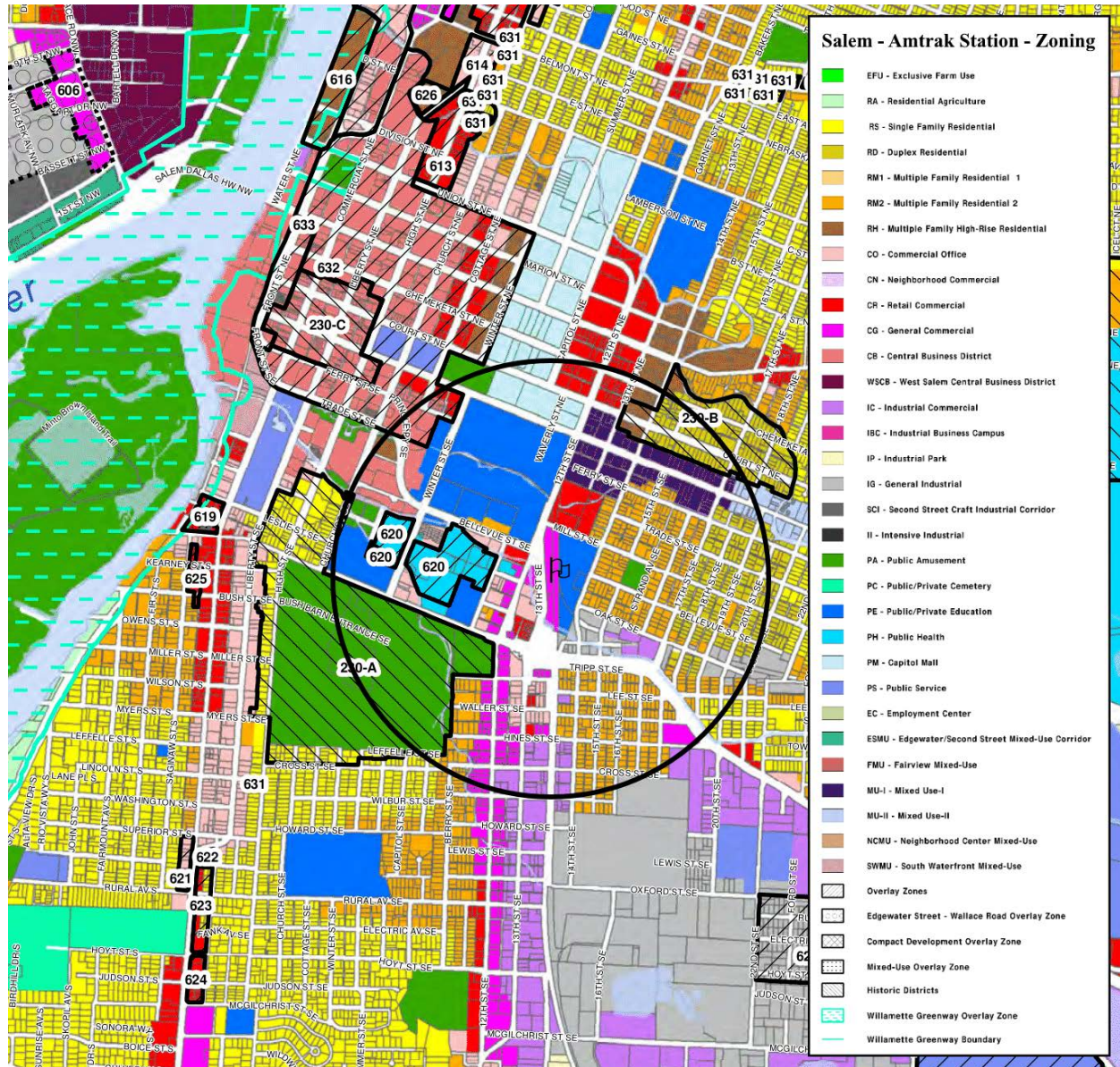
Figure F-33: Redmond Airport Zoning Map

Map data: City of Redmond

Figure F-34: Redmond Transit Hub Zoning Map

Map data: City of Redmond

Figure F-35: Salem Amtrak Station Zoning Map



Map data: City of Salem

Figure F-36: Salem Downtown Transit Center Zoning Map

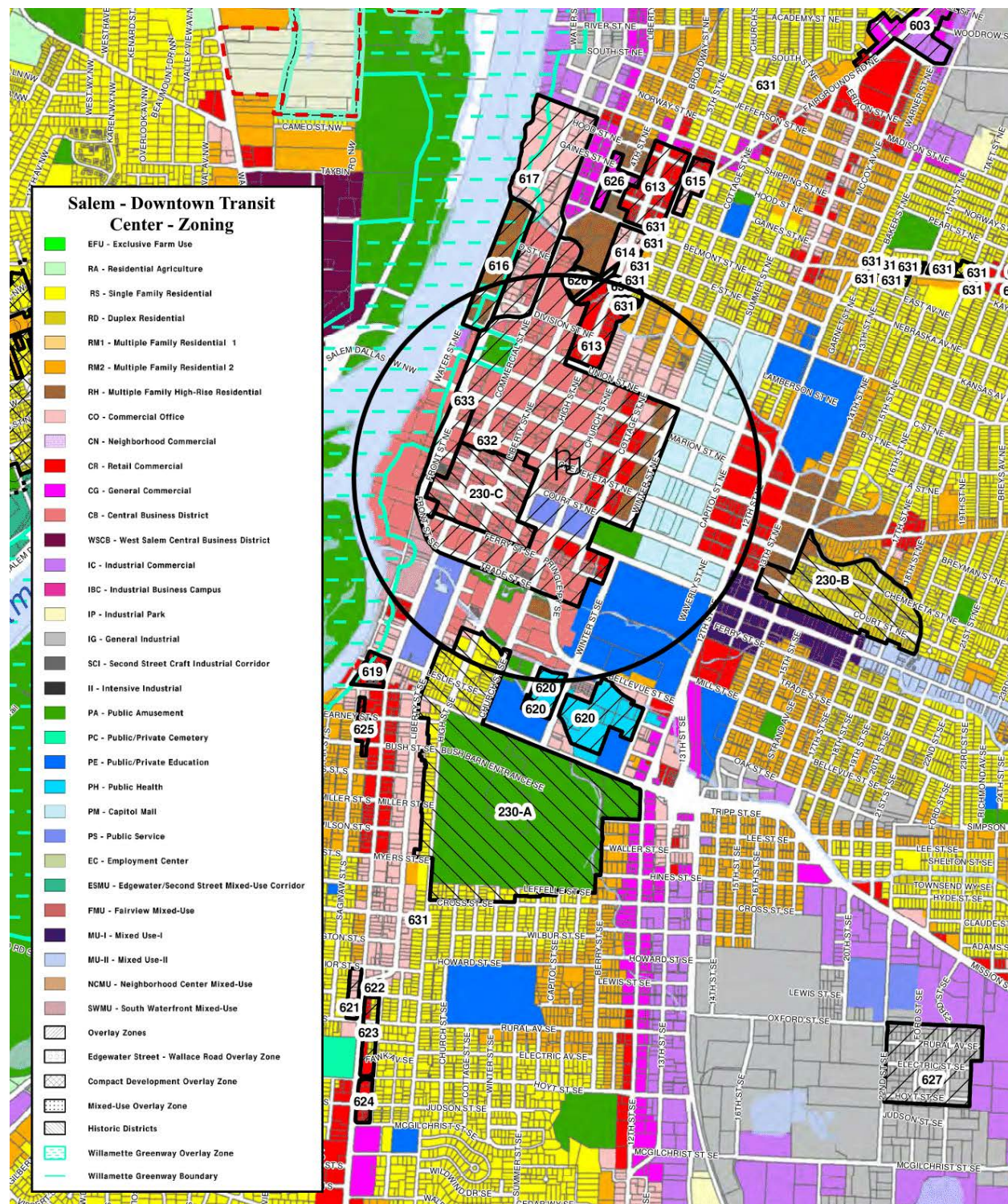
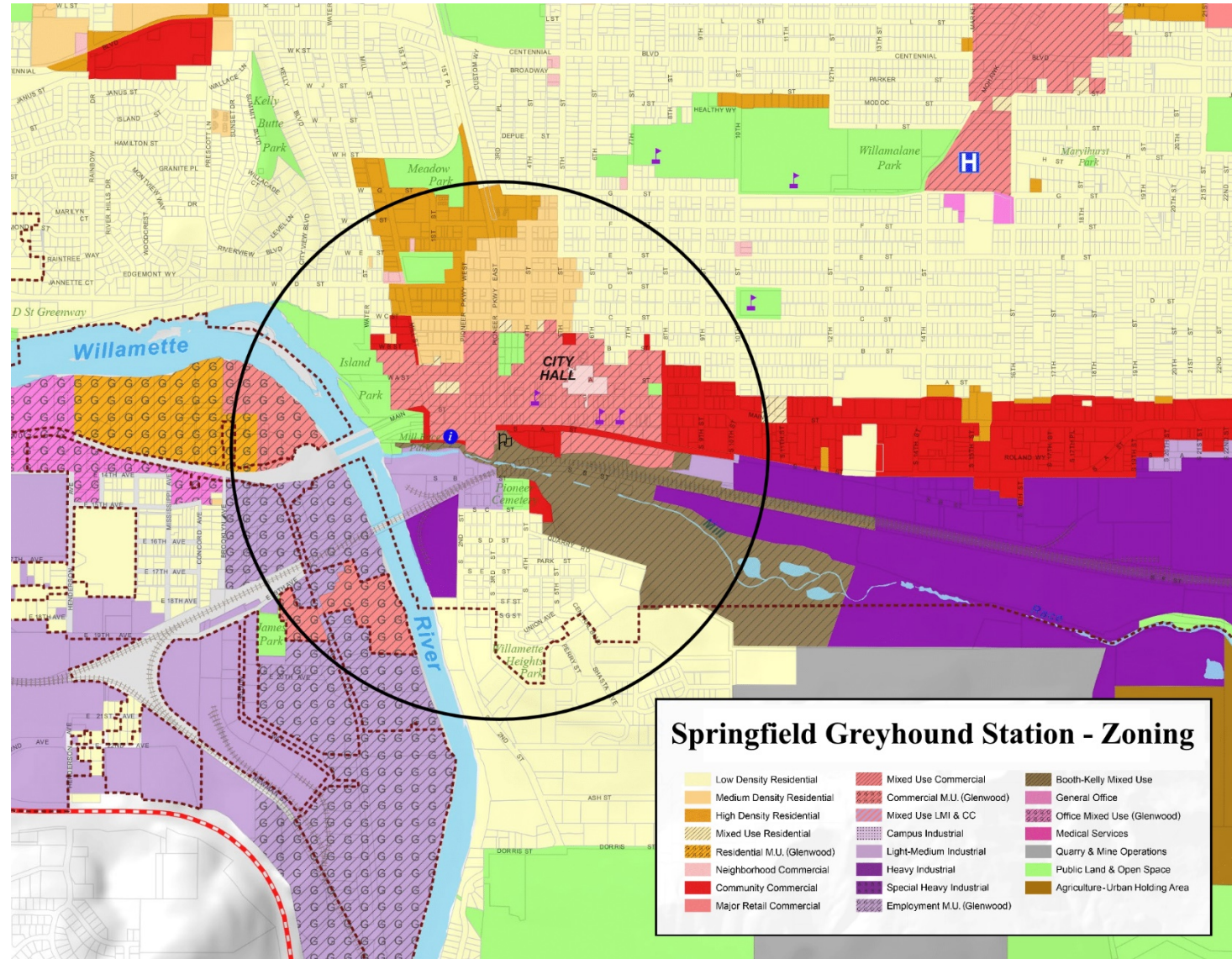
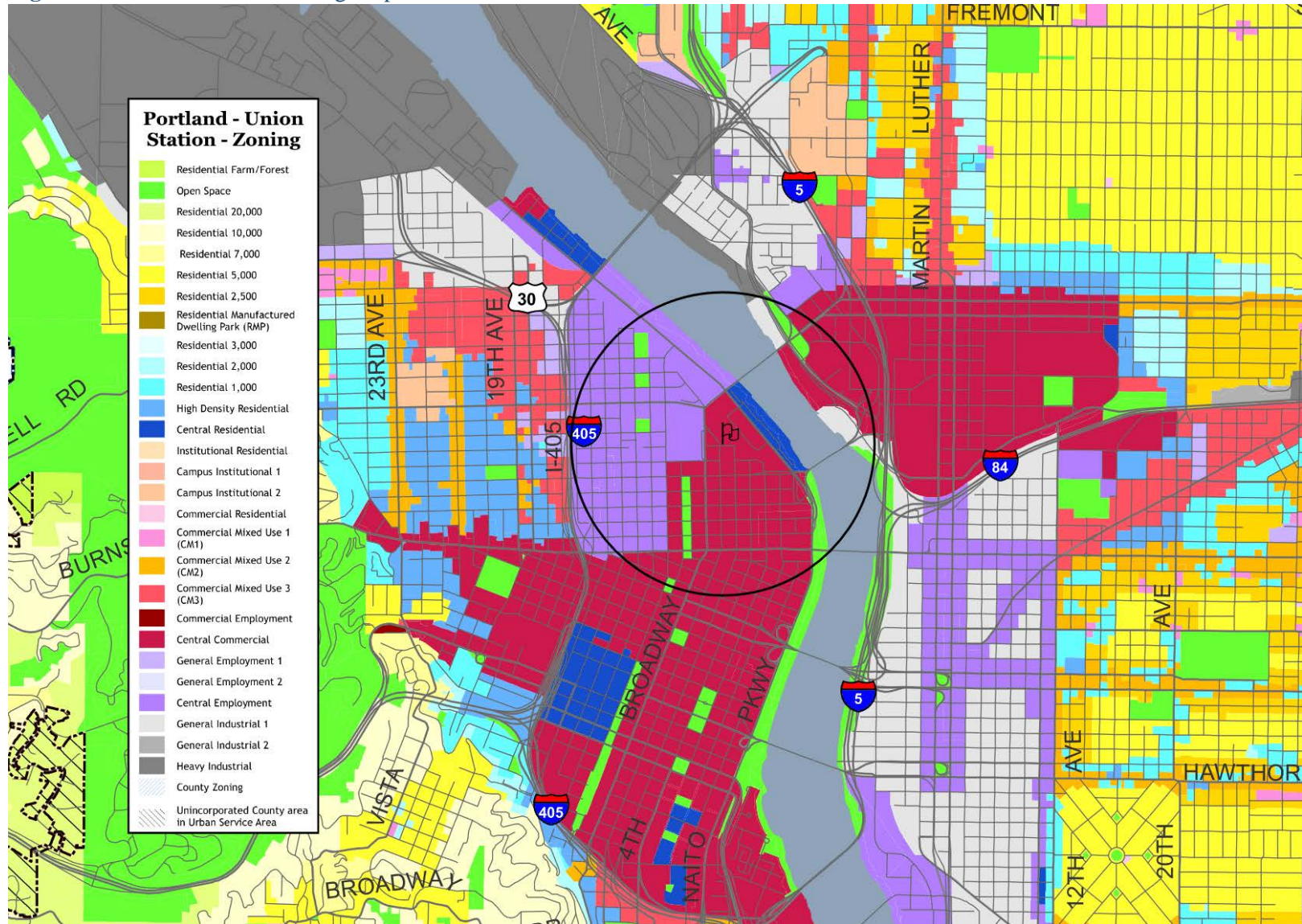


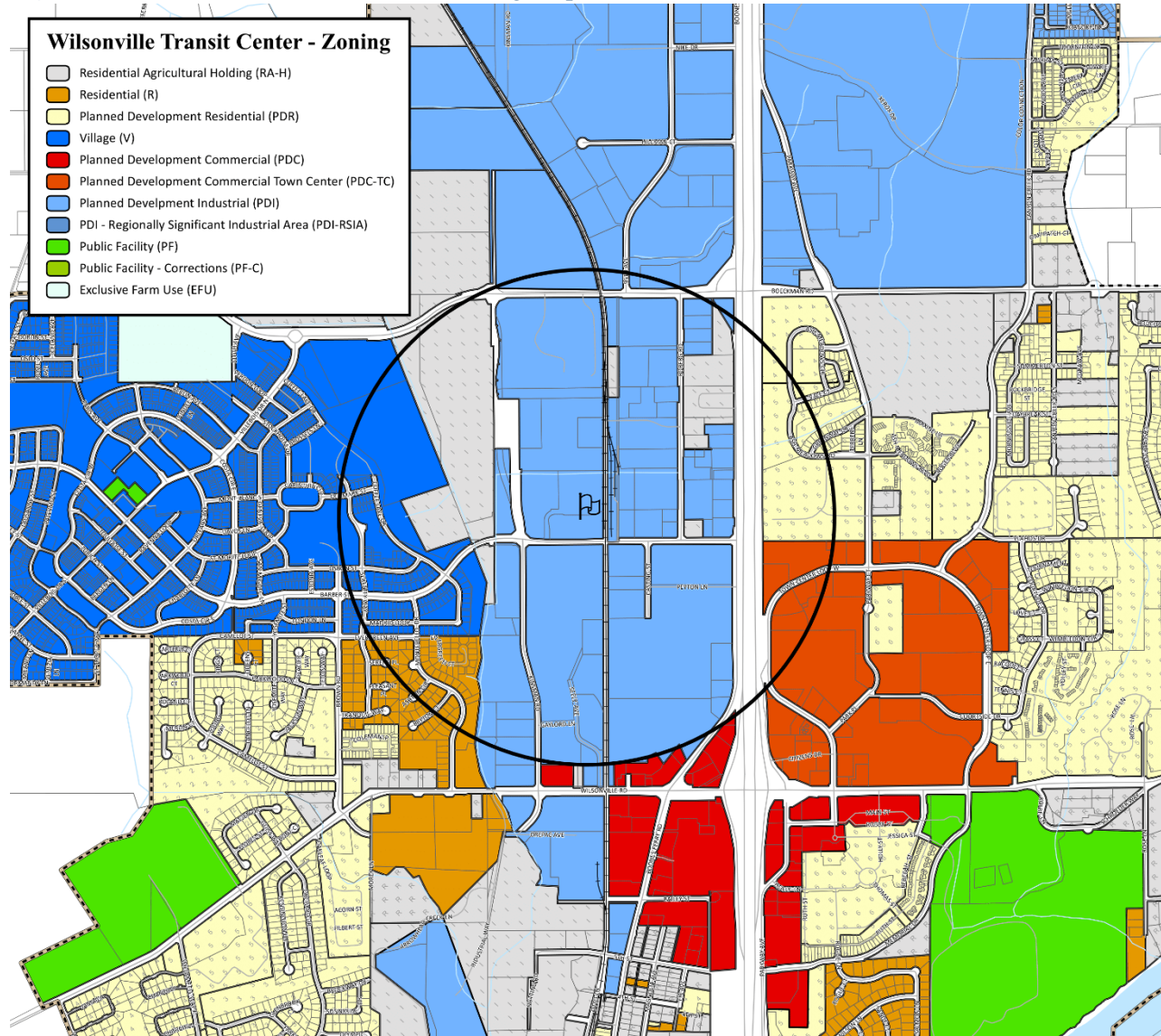
Figure F-37: Springfield Greyhound Station Zoning Map

Map data: City of Springfield

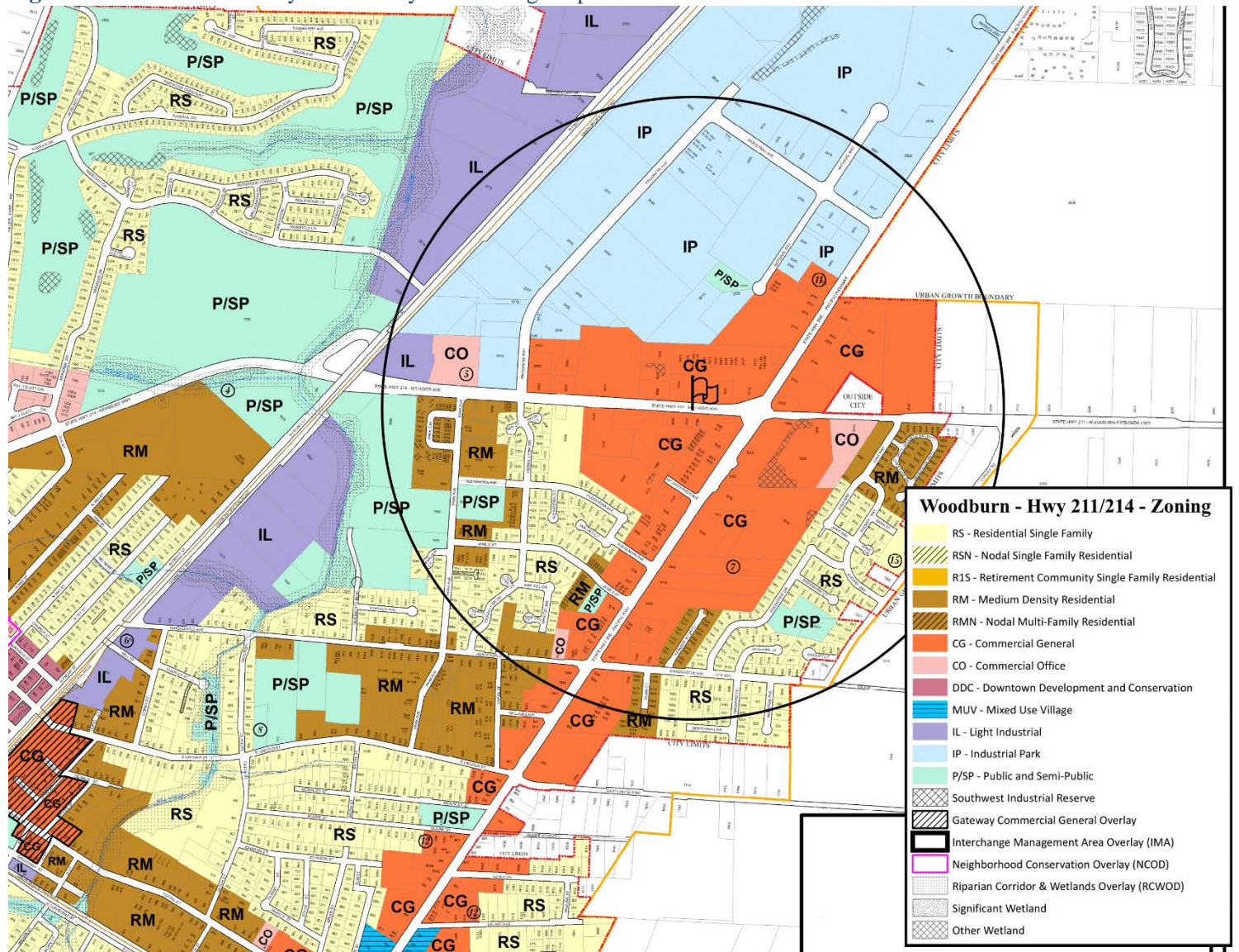
Figure F-38: Union Station Zoning Map



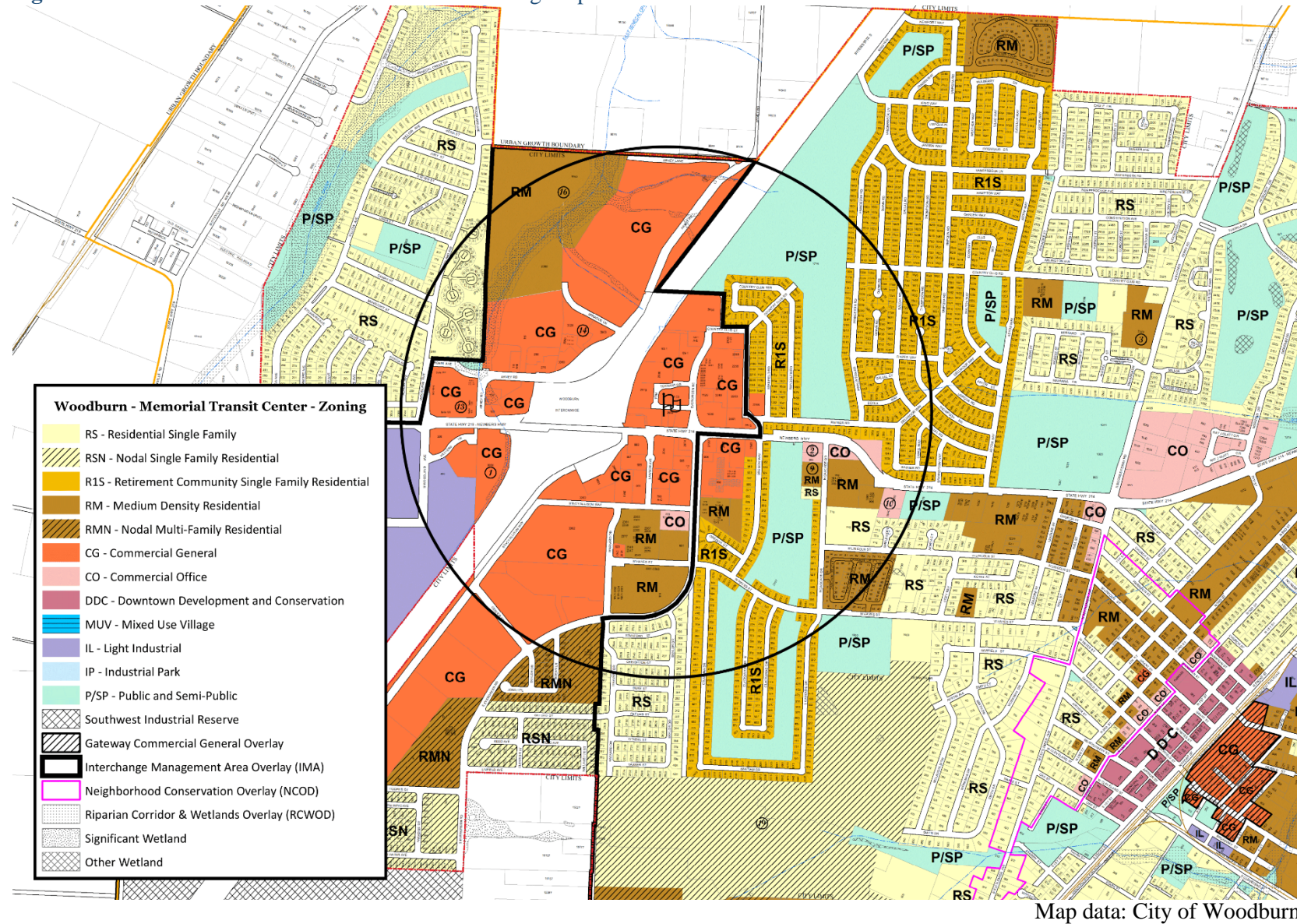
Map data: City of Portland

Figure F-39: Wilsonville Transit Center Zoning Map

Map data: City of Wilsonville

Figure F-40: Woodburn Hwy 211 & Hwy 214 Zoning Map

Map data: City of Woodburn

Figure F-41: Woodburn Memorial Transit Center Zoning Map

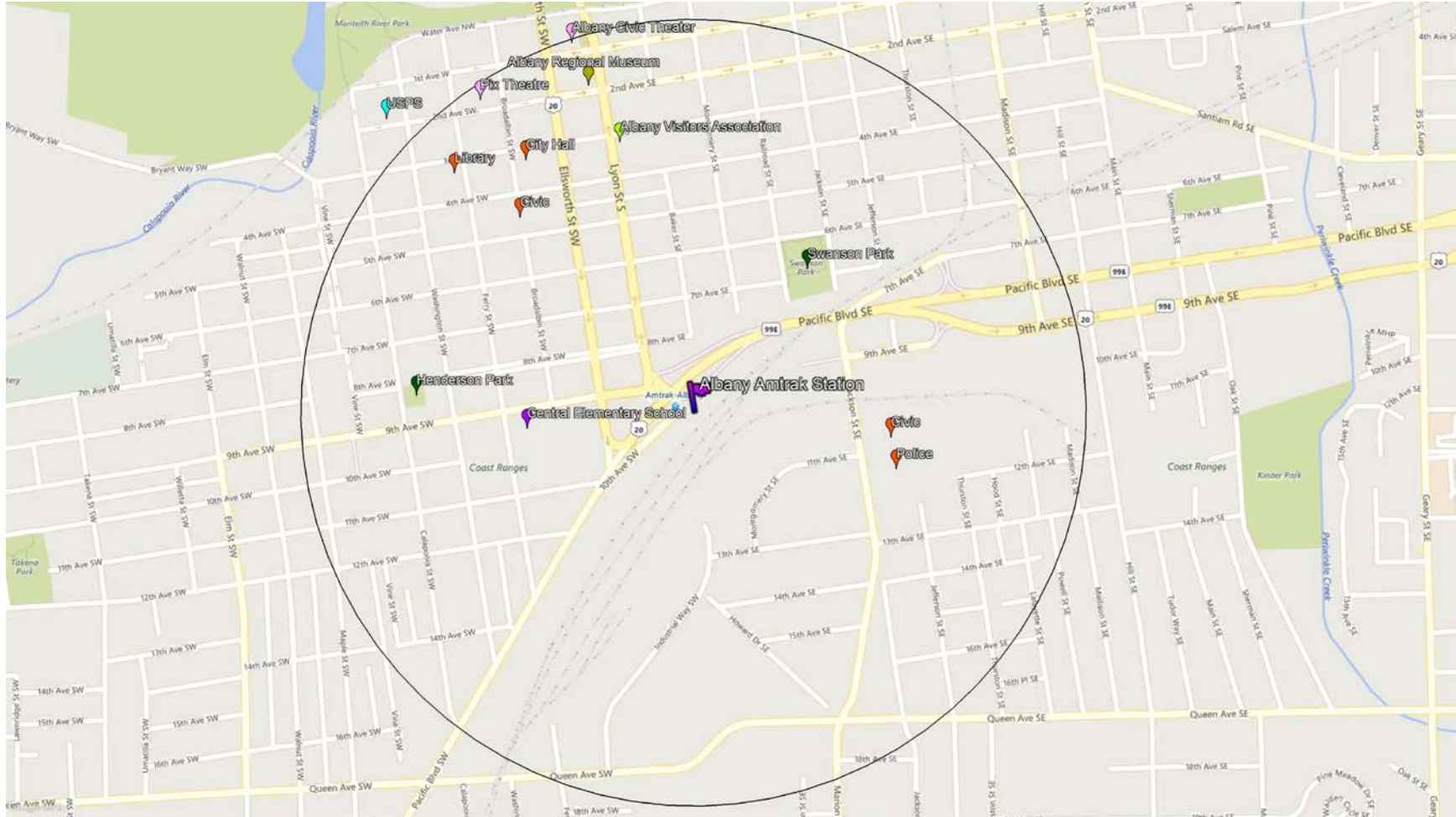
Appendix G: Points of Interest

These are the categories of destinations analyzed and what is and is not included in each:

- **School/University:** Includes elementary, middle and high schools, community colleges and universities. Primarily includes public schools with a few private schools included. Does NOT include church schools, preschool, daycare facilities or singularly-focused trade schools (beauty school).
- **Hospital/Health Care Facility:** Includes hospitals, urgent care, health clinics and community health centers. Business should offer a wide-range of health services. Does NOT include singularly-focused medical offices (dentist, chiropractor, psychiatrist, etc.).
- **Shopping Mall:** Includes indoor/outdoor shopping malls, outlet malls, town centers and strip malls with at least three major big box stores present. Does NOT include lone big box stores, city commercial corridors or community strip malls.
- **Museum/Historic Site:** Includes major museums of any subject matter, children's museums and historic landmarks.
- **Police:** Includes both small and large city police stations and state trooper offices. Does NOT include jails, corrections centers or parole and probation offices.
- **Civic Center:** Includes most public government buildings with each building counting as its own destination. Includes city halls, state/city departments, libraries, courts, veteran's services, employment offices and detention centers.
- **Park:** Includes city parks, regional parks, state parks, recreation centers, sports fields and public plazas. Does NOT include pocket parks.
- **Amusement Park/Zoo:** Includes amusement parks, zoos, aquariums and family fun centers.
- **Theater:** Includes movie theaters, live theaters, performing arts centers, concert halls and concert venues.
- **Sports Stadium:** Includes all major sports stadiums at the pro, college and high school levels.
- **Community Center:** Includes city/county community centers, public health/fitness centers, public pools, public banquet halls and public event spaces.
- **Grocery Store:** Includes grocery stores, supermarkets, big box stores with full-service grocery sections (Walmart, Target, Fred Meyer), health food stores, specialty and natural stores, warehouse clubs, discount stores, cooperatives and ethnic chains. Stores must offer a selection of fresh items such as meat, dairy, bread, fruits, vegetables, bulk foods, etc. Does NOT include convenience stores, liquor stores or stores that only offer pre-packaged, processed foods.
- **Senior Center/Nursing Home:** Includes nursing homes, retirement homes, assisted living facilities and senior centers.
- **Post Office:** Includes USPS offices.
- **Other:** Includes any other major destination that does not fit into any other category. Other destinations include a convention center, downtown transit center, tourist attraction, tourist office, fairgrounds and the Hewlett-Packard campus in Corvallis (a major job center).

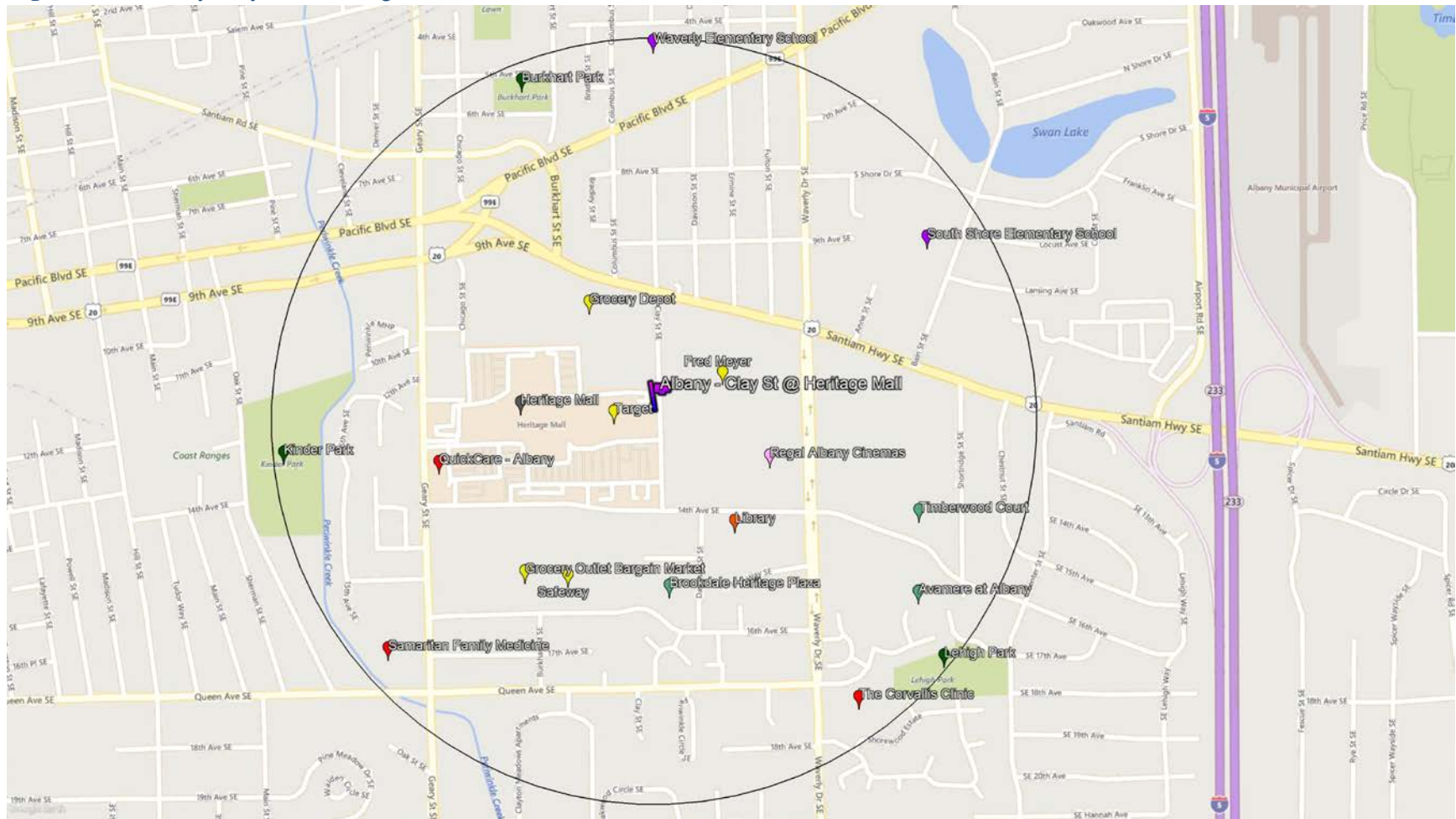
Points of Interest Maps

Figure G-1: Albany Amtrak Station Points of Interest



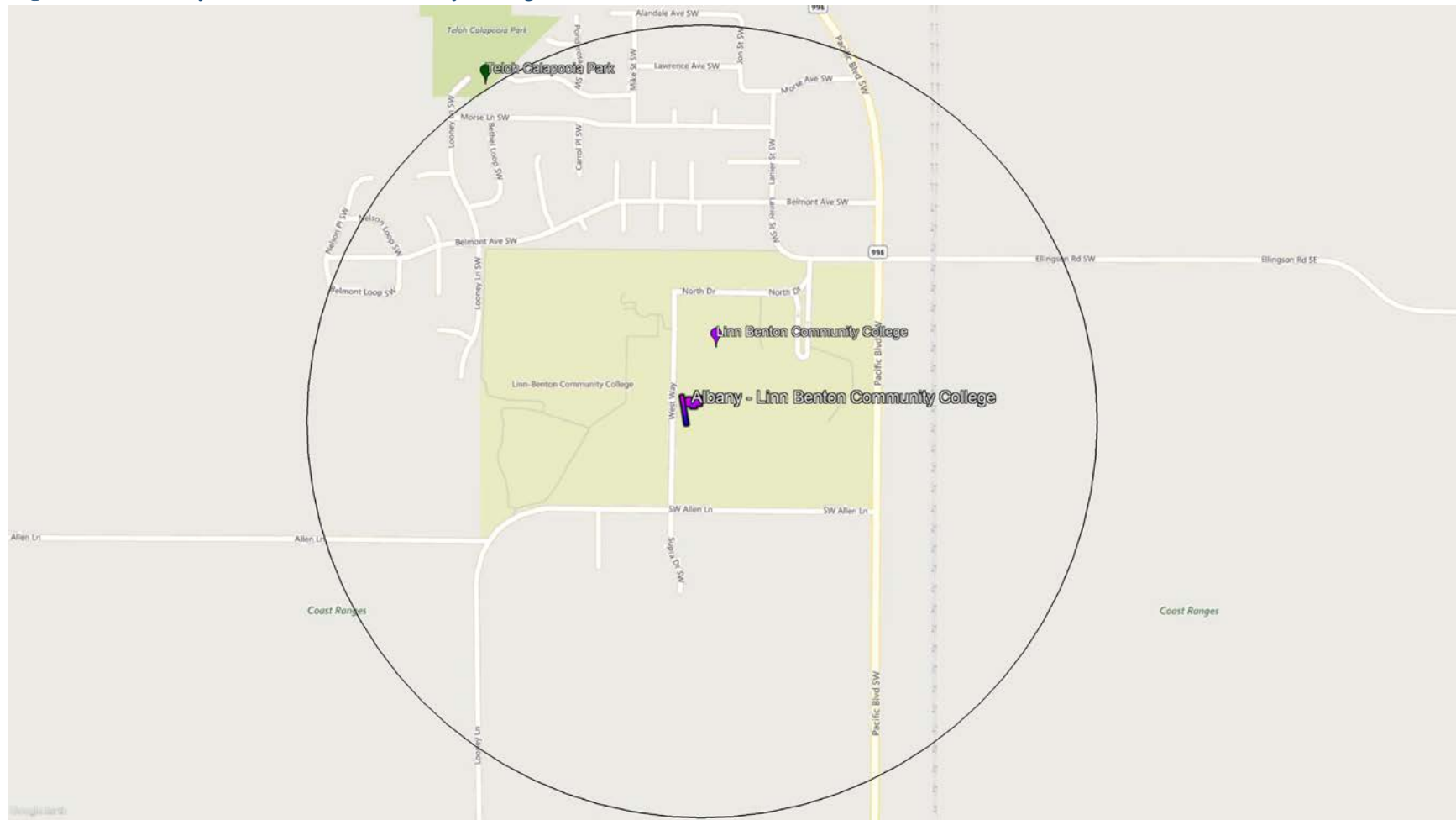
Map data: ©2019 Google, Microsoft

Figure G-2: Albany Clay St at Heritage Mall Points of Interest

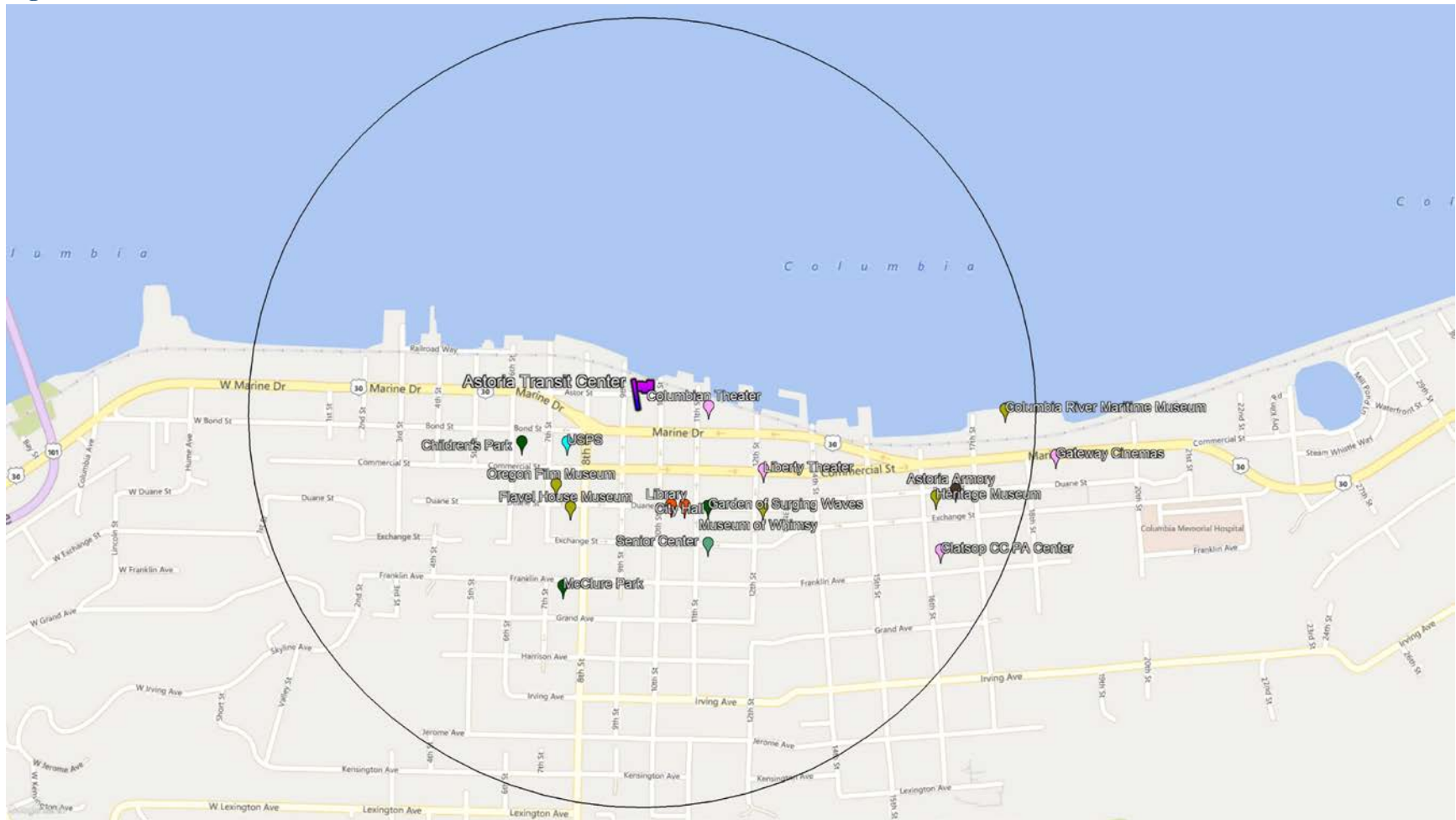


Map data: ©2019 Google, Microsoft

Figure G-3: Albany Linn Benton Community College Points of Interest

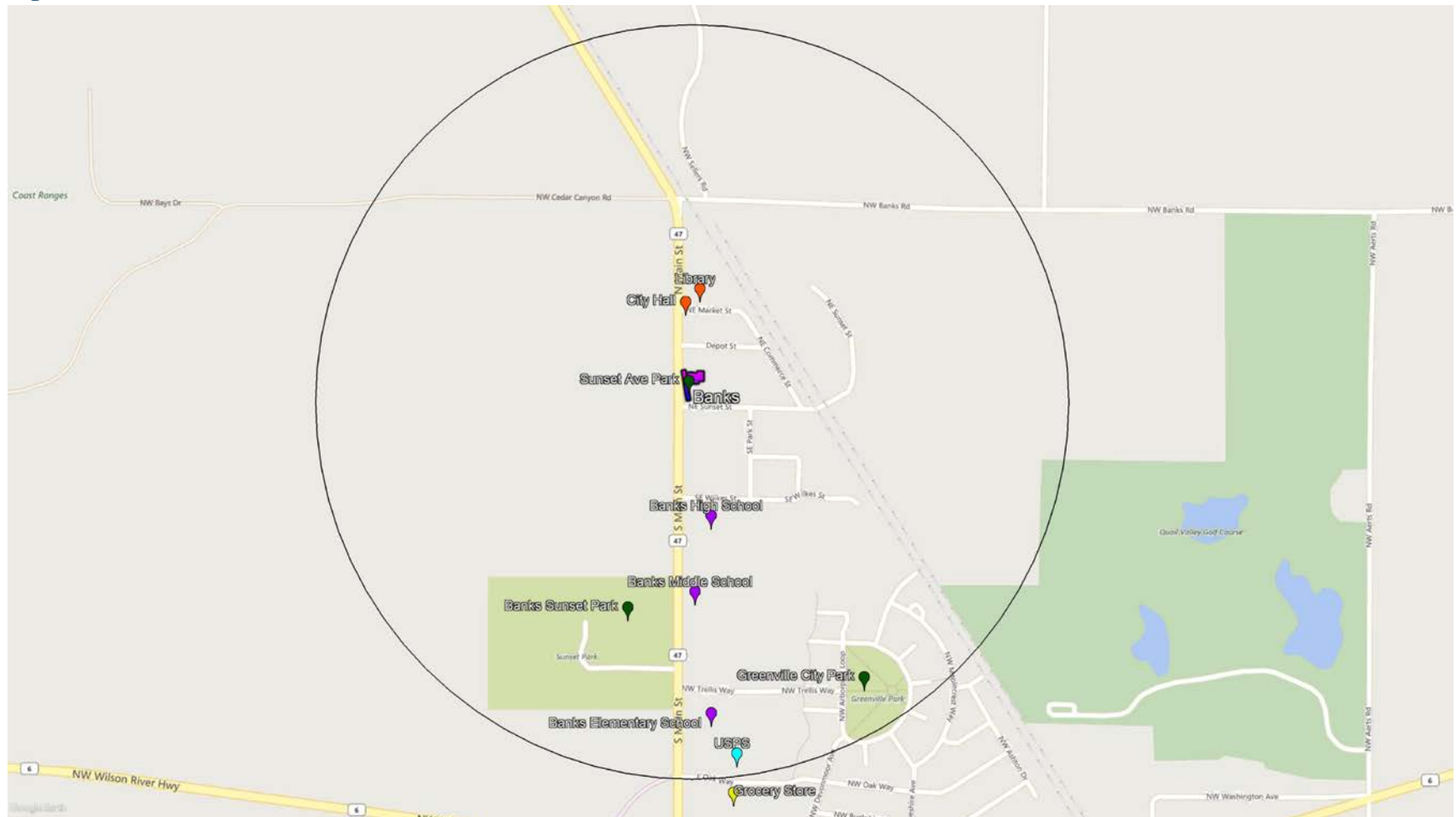


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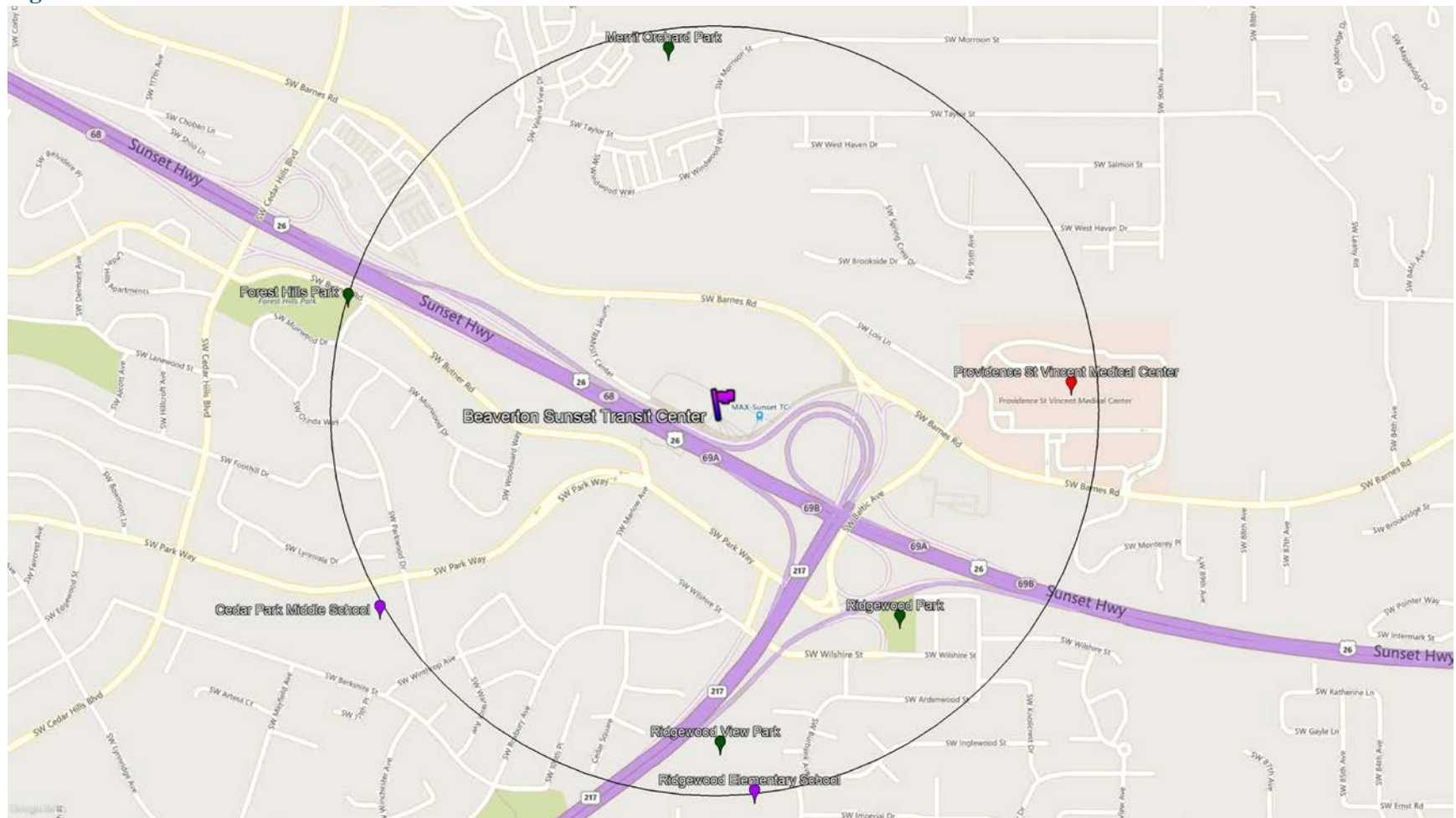
Figure G-4: Astoria Transit Center Points of Interest

Map data: ©2019 Google, Microsoft

Figure G-5: Banks Points of Interest

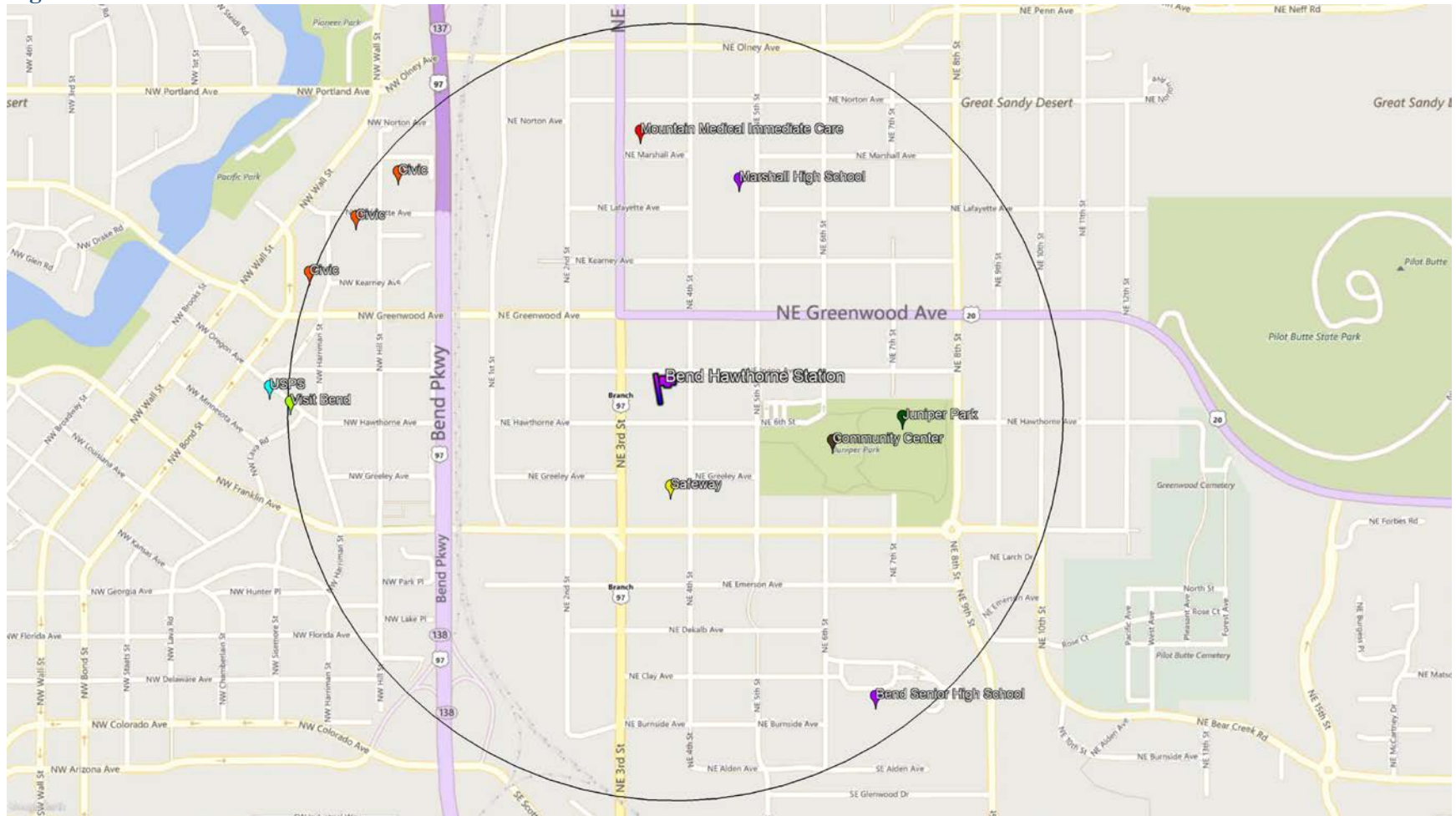


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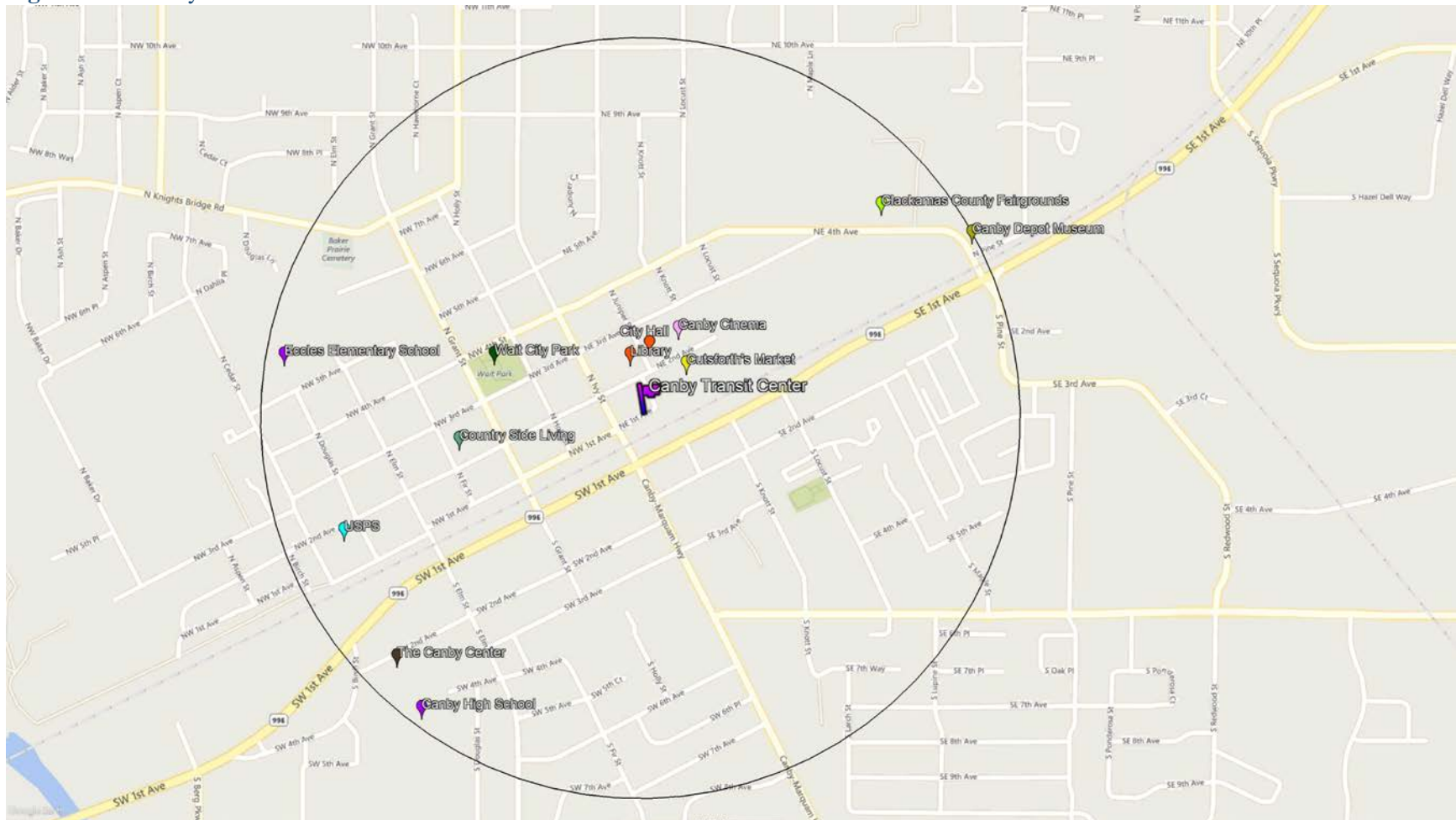
Figure G-6: Beaverton Sunset Transit Center Points of Interest

Map data: ©2019 Google, Microsoft

Figure G-7: Bend Hawthorne Station Points of Interest

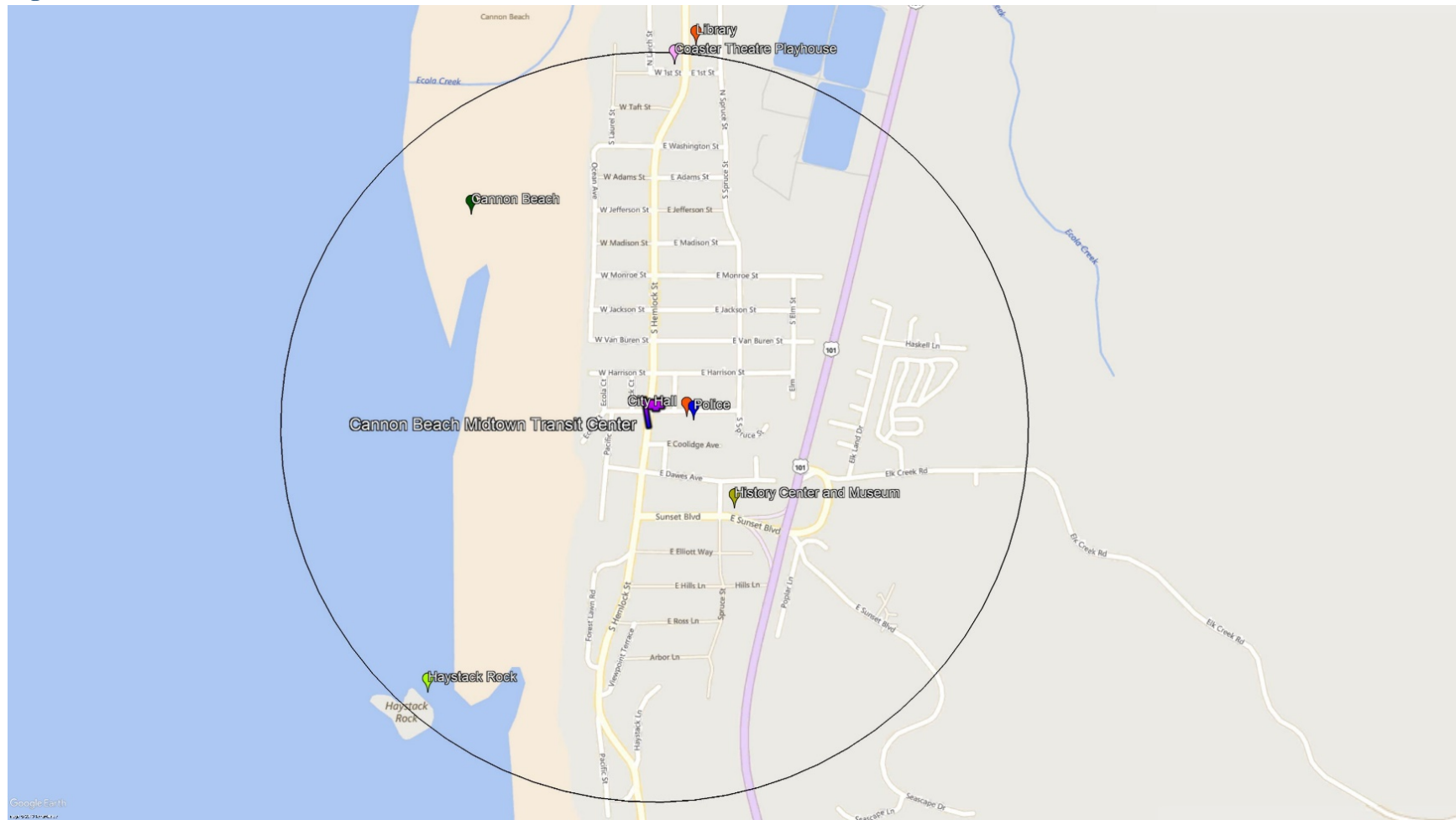


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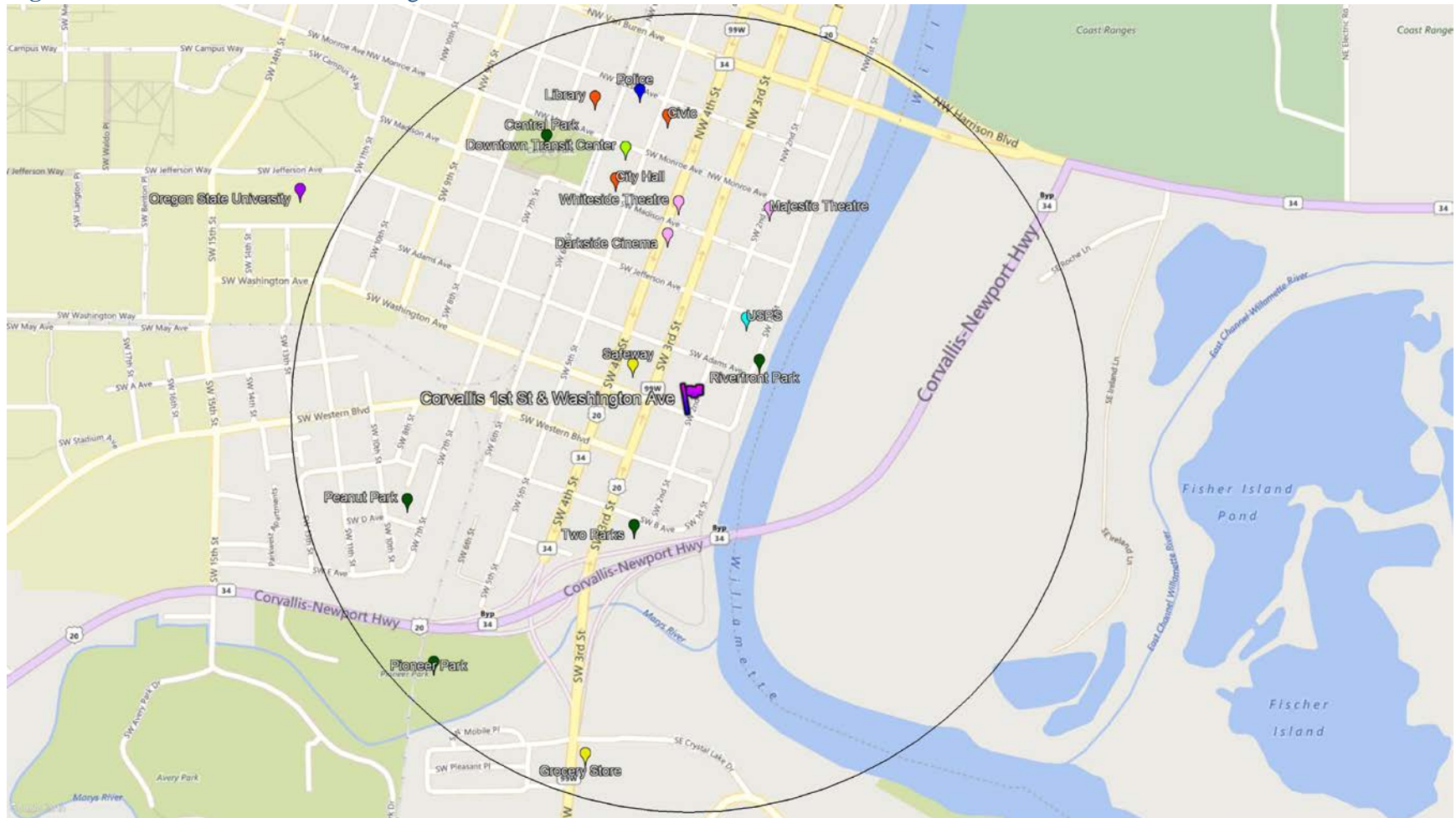
Figure G-8: Canby Transit Center Points of Interest

Map data: ©2019 Google, Microsoft

Figure G-9: Cannon Beach Midtown Transit Center Points of Interest

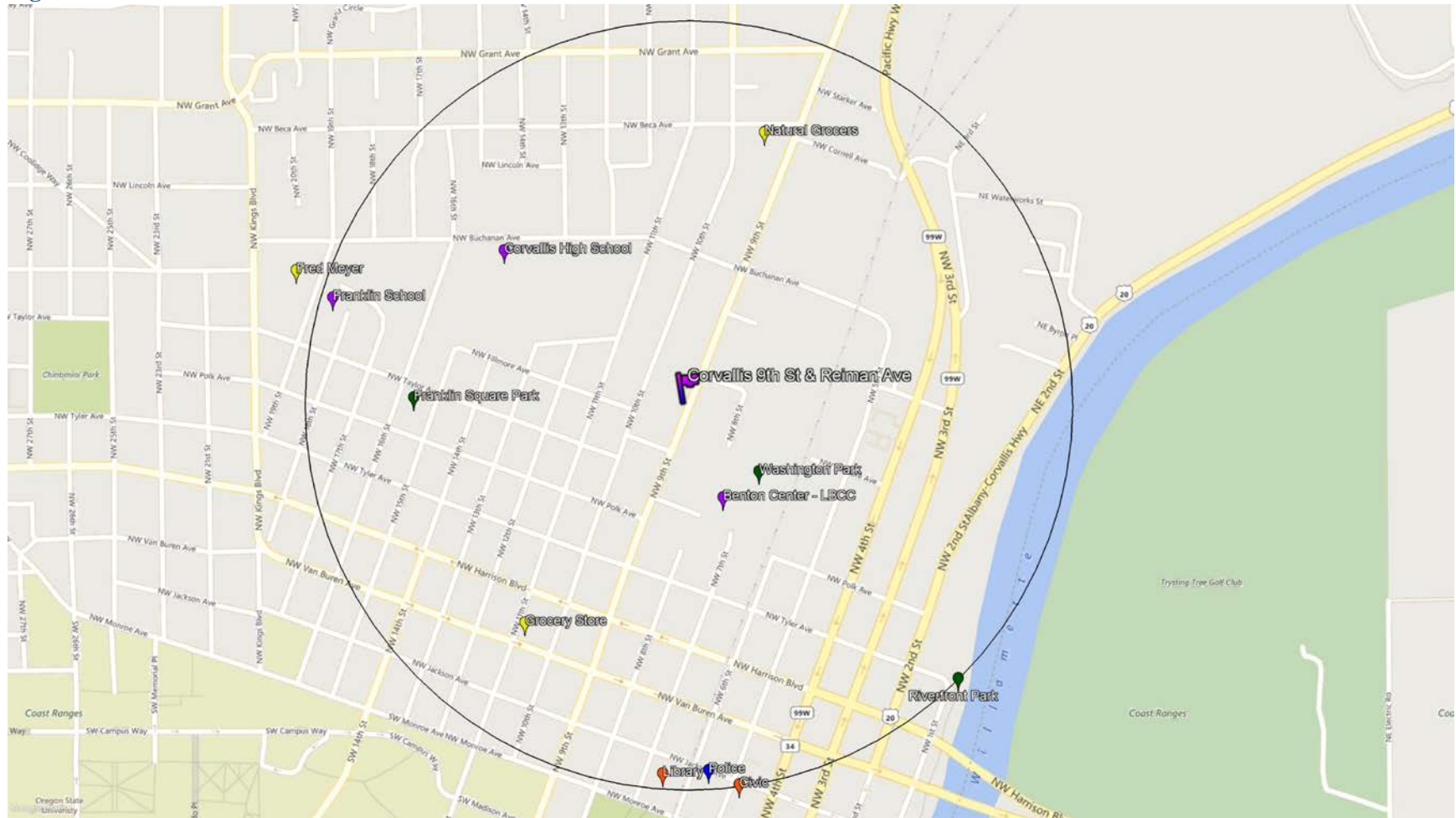


Map data: ©2019 Google, Microsoft

Figure G-10: Corvallis 1st St & Washington Ave Points of Interest

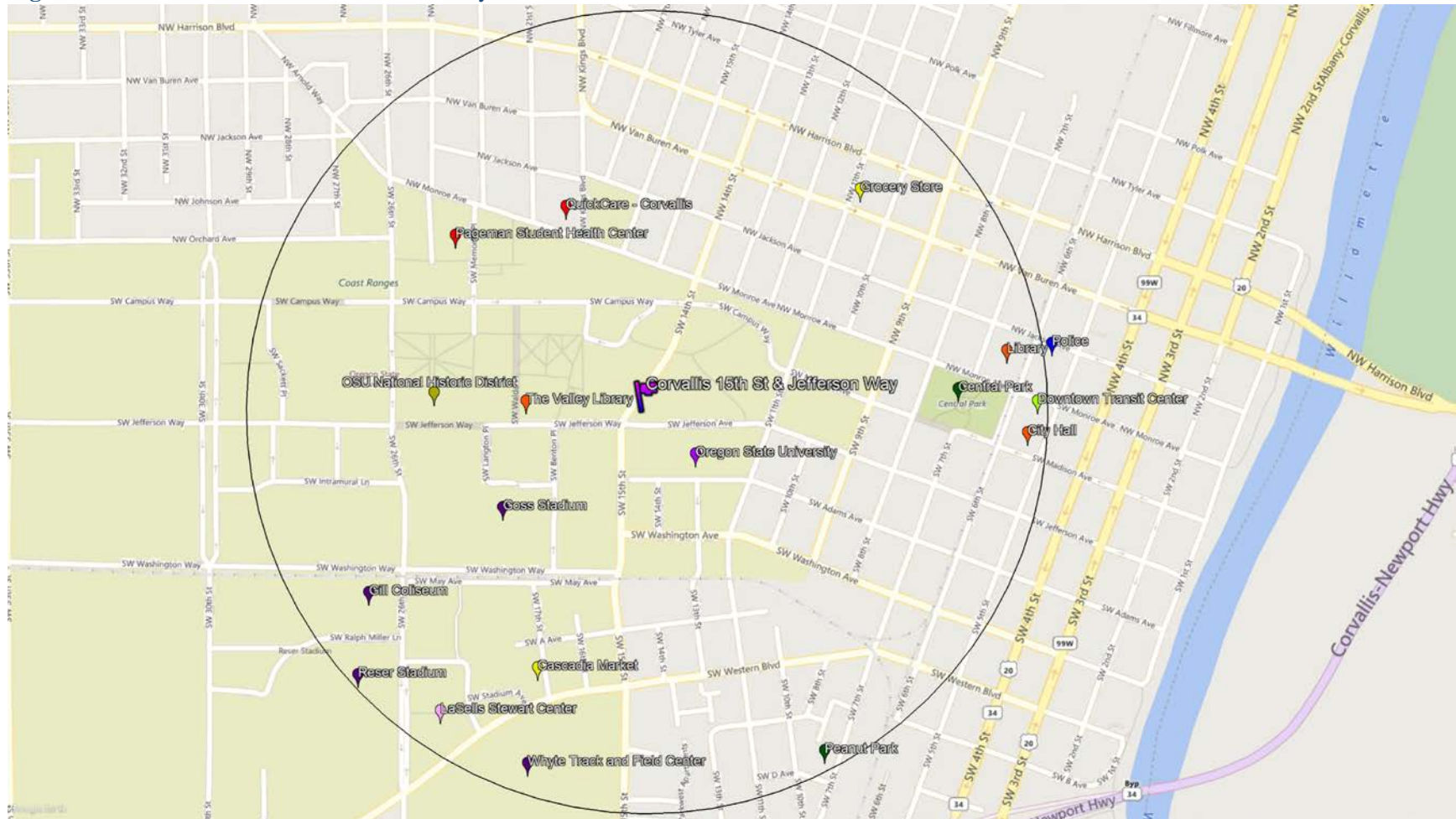
Map data: ©2019 Google, Microsoft

Figure G-11: Corvallis 9th St & Reiman Ave Points of Interest

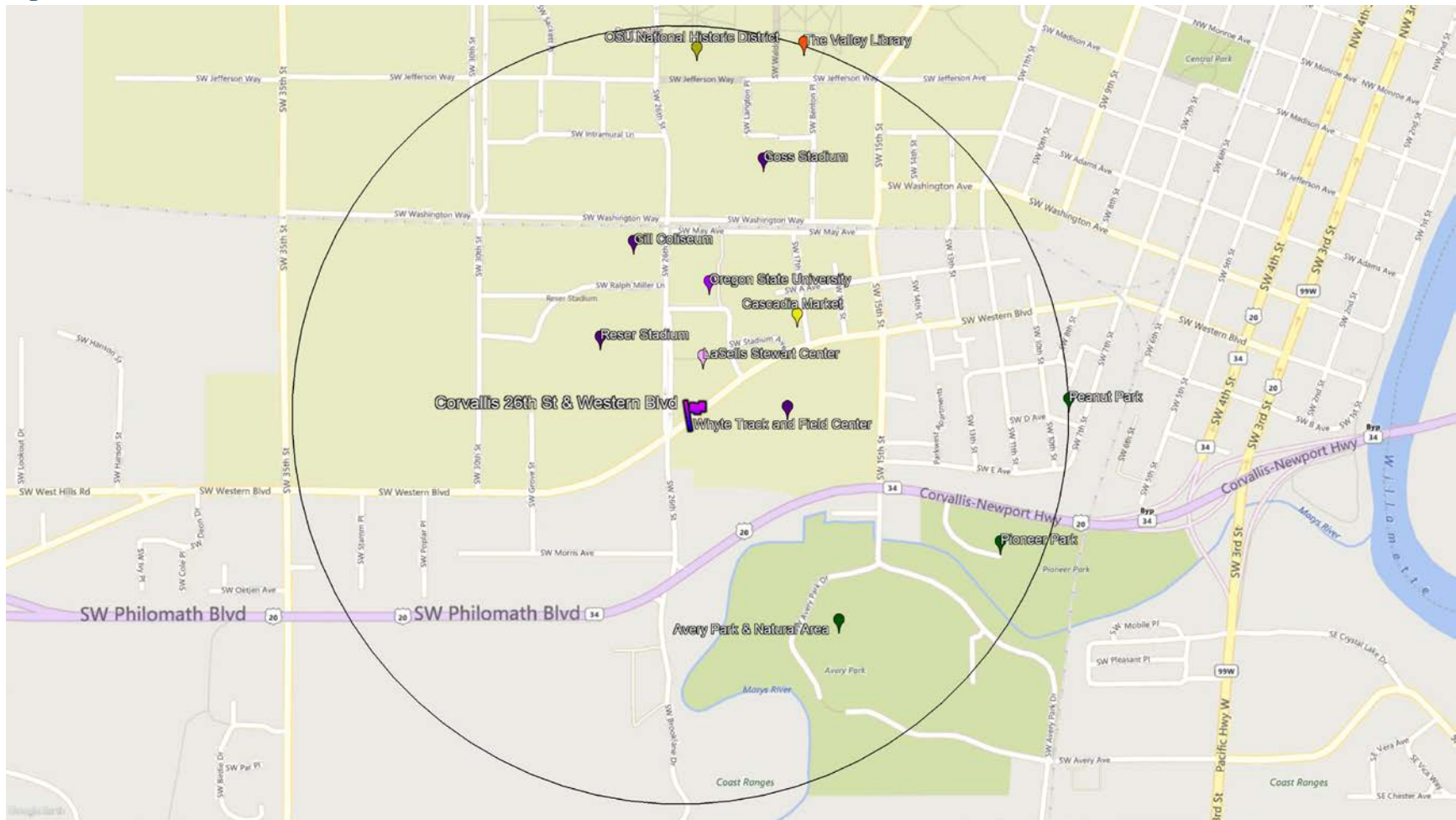


Map data: ©2019 Google, Microsoft

Figure G-12: Corvallis 15th St & Jefferson Way Points of Interest



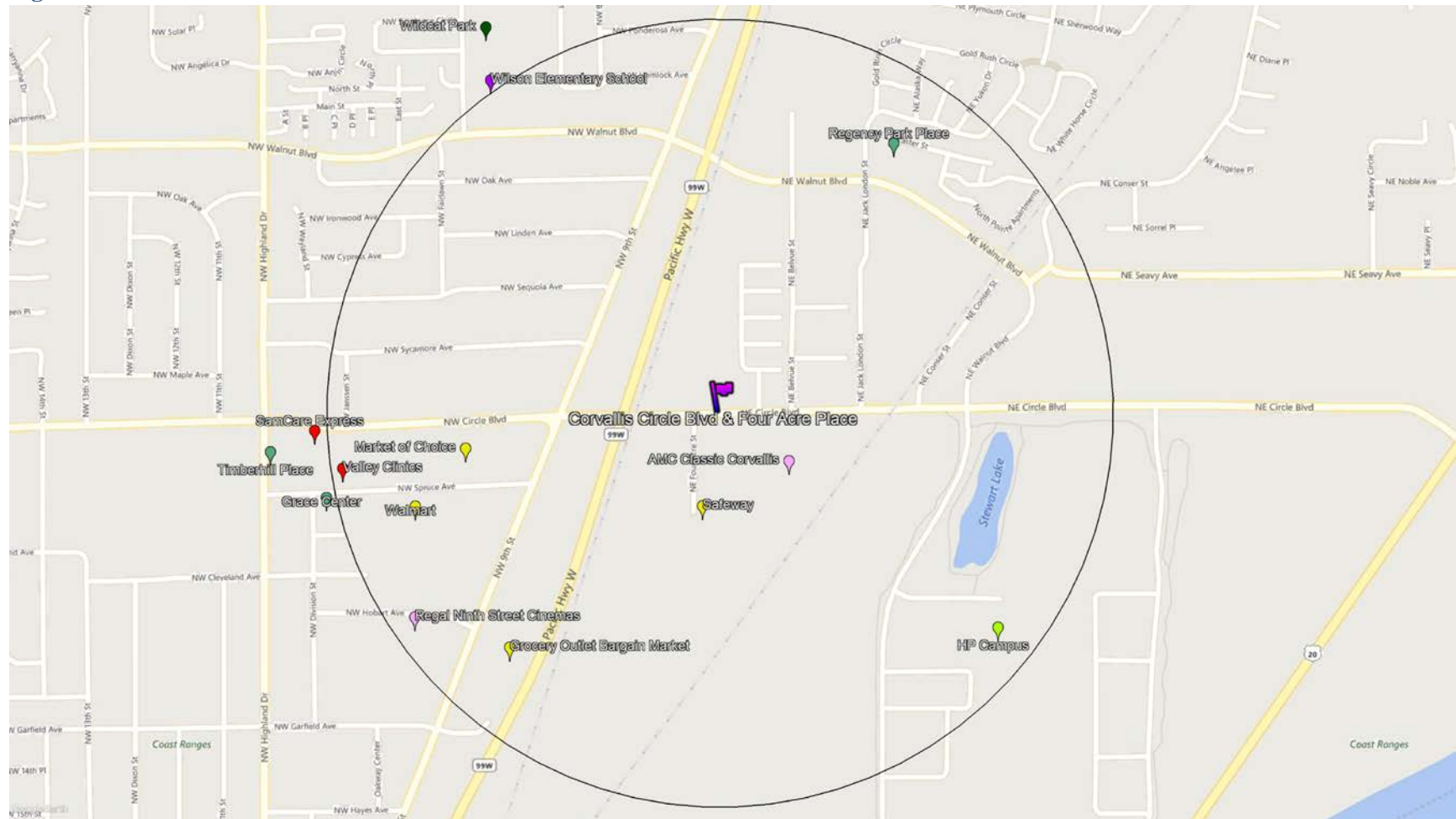
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Figure G-13: Corvallis 26th St & Western Blvd Points of Interest

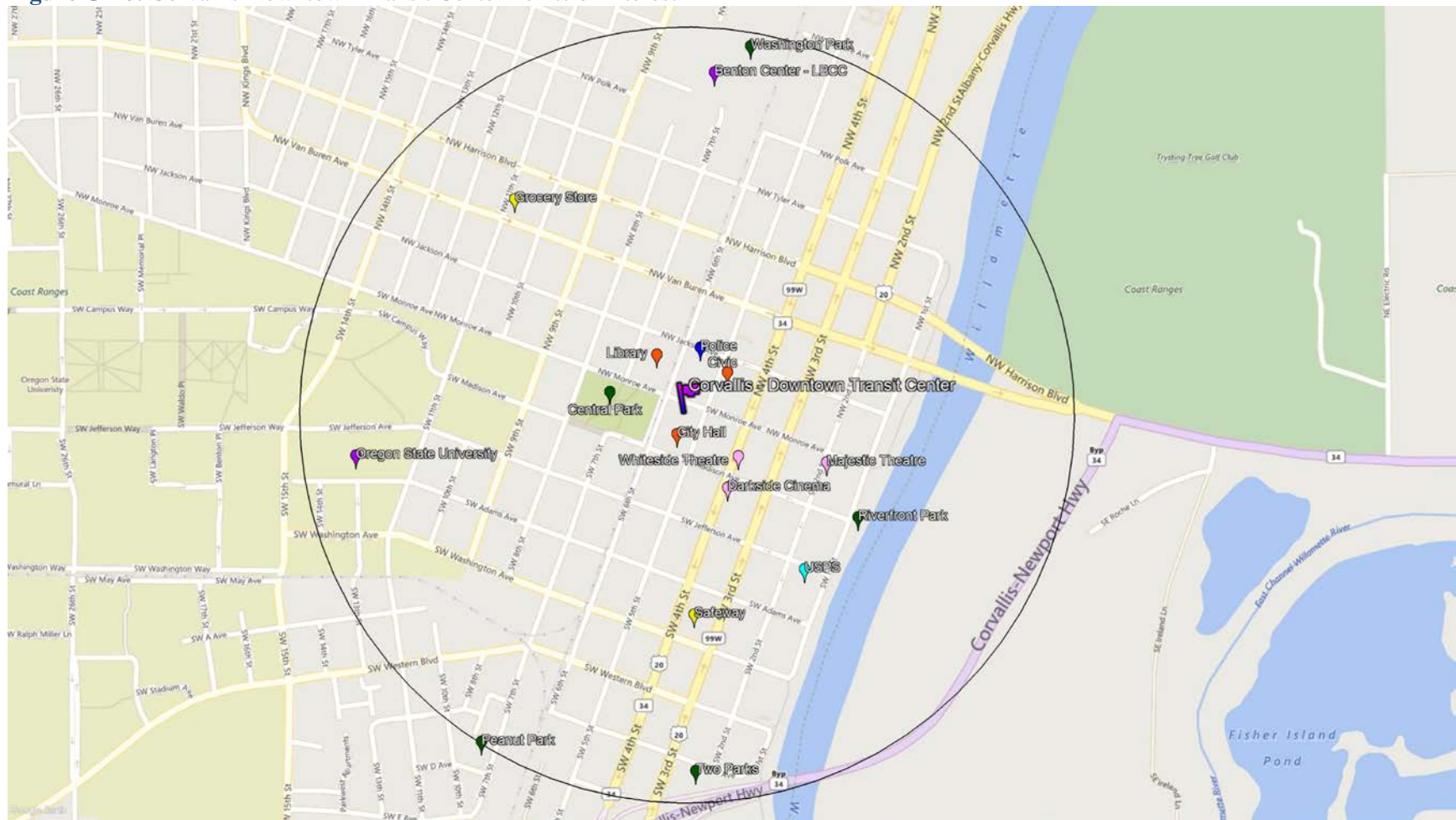
Map data: ©2019 Google, Microsoft

201

Figure G-15: Corvallis Circle Blvd & Four Acre Place Points of Interest

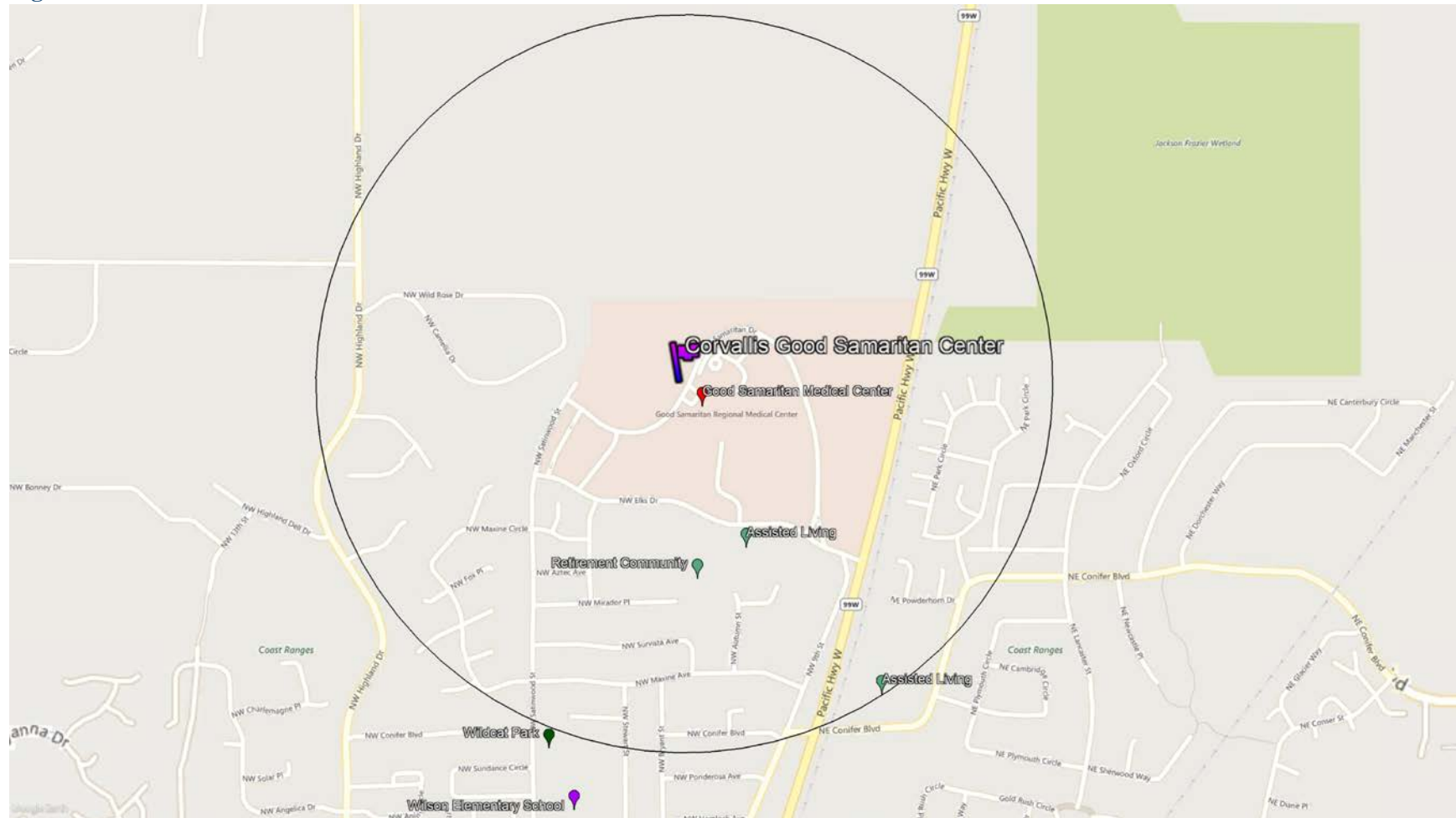


Map data: ©2019 Google, Microsoft

Figure G-16: Corvallis Downtown Transit Center Points of Interest

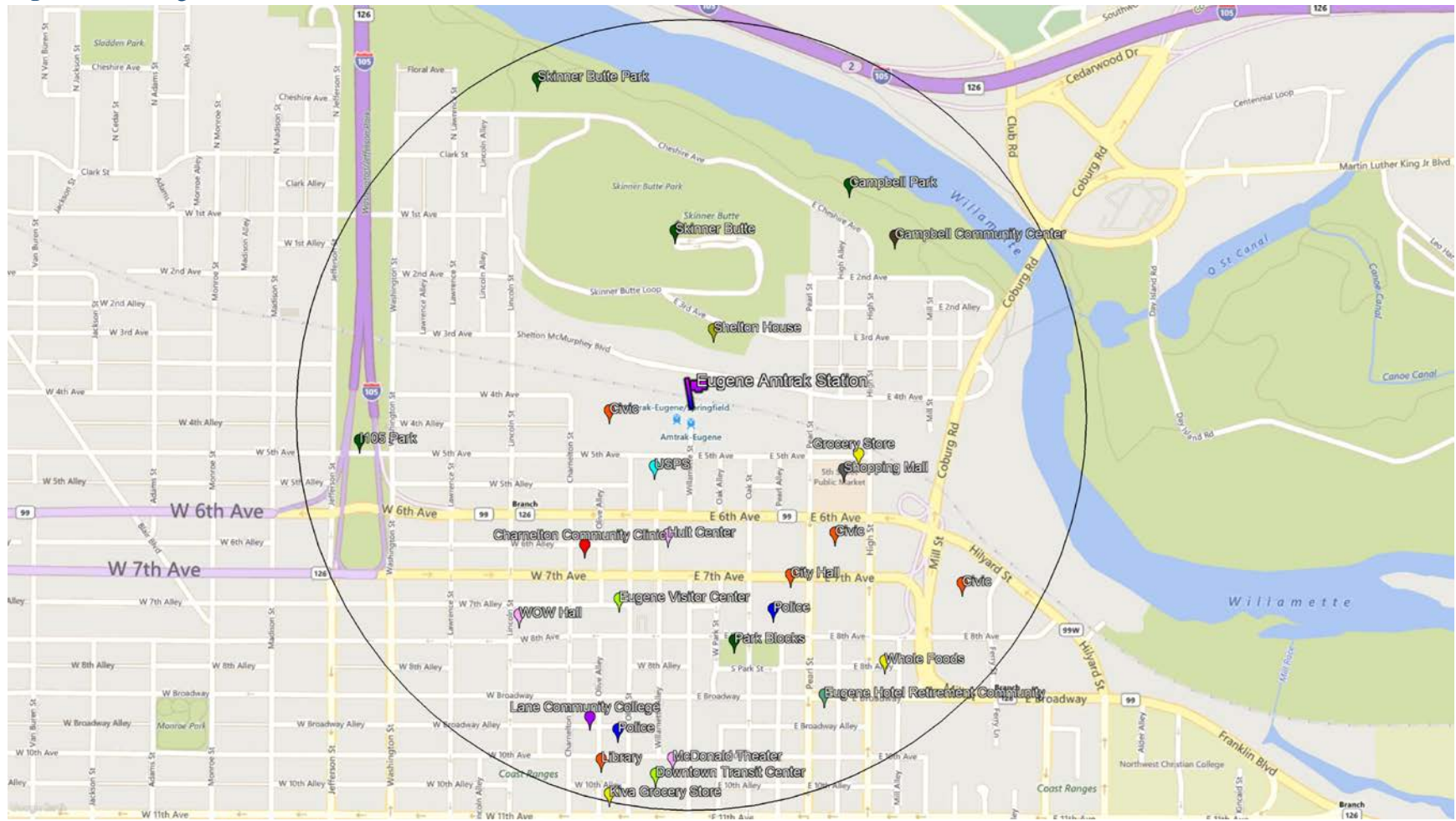
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Figure G-17: Corvallis Good Samaritan Center Points of Interest

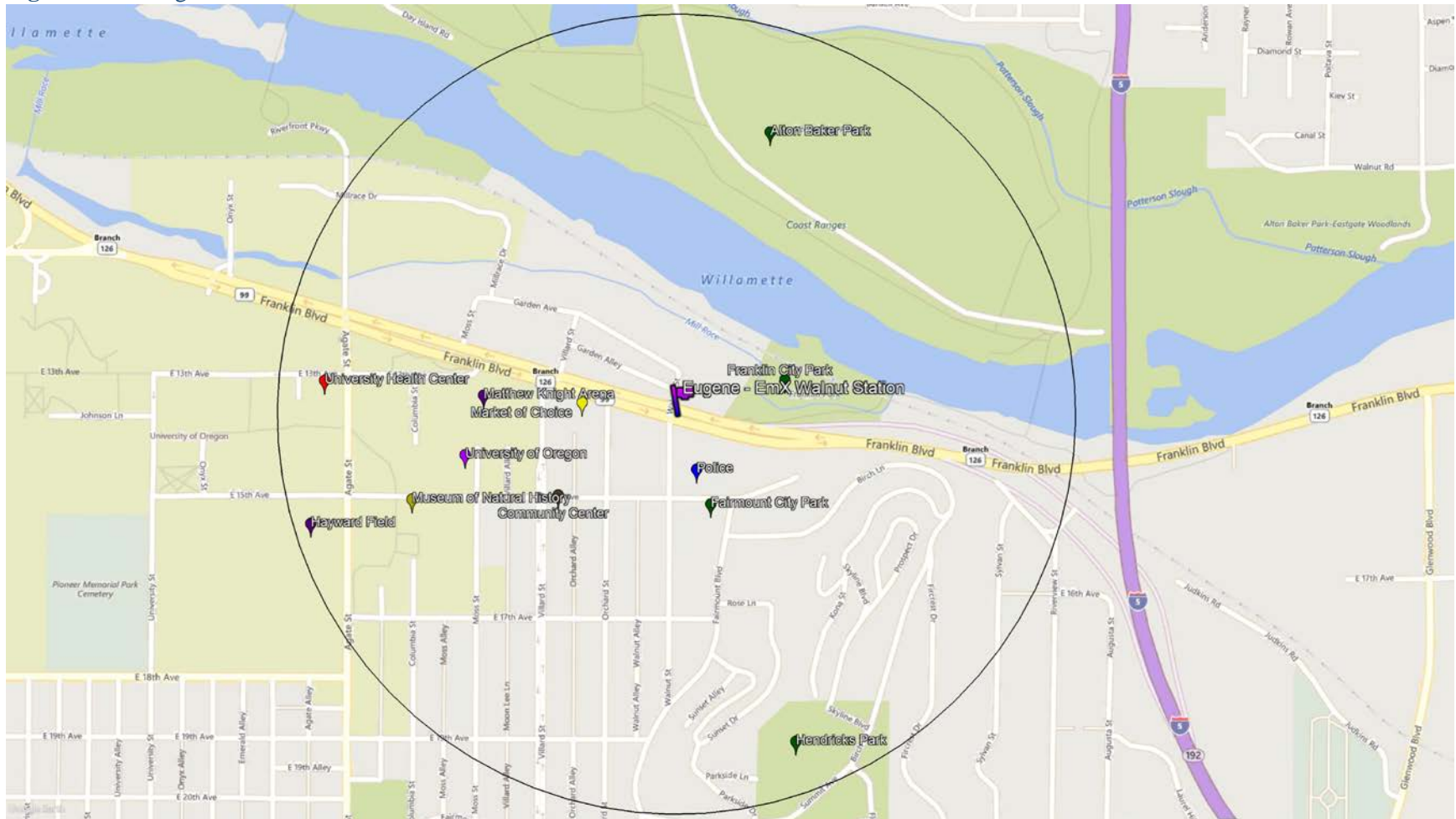


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Figure G-18: Eugene Amtrak Station Points of Interest

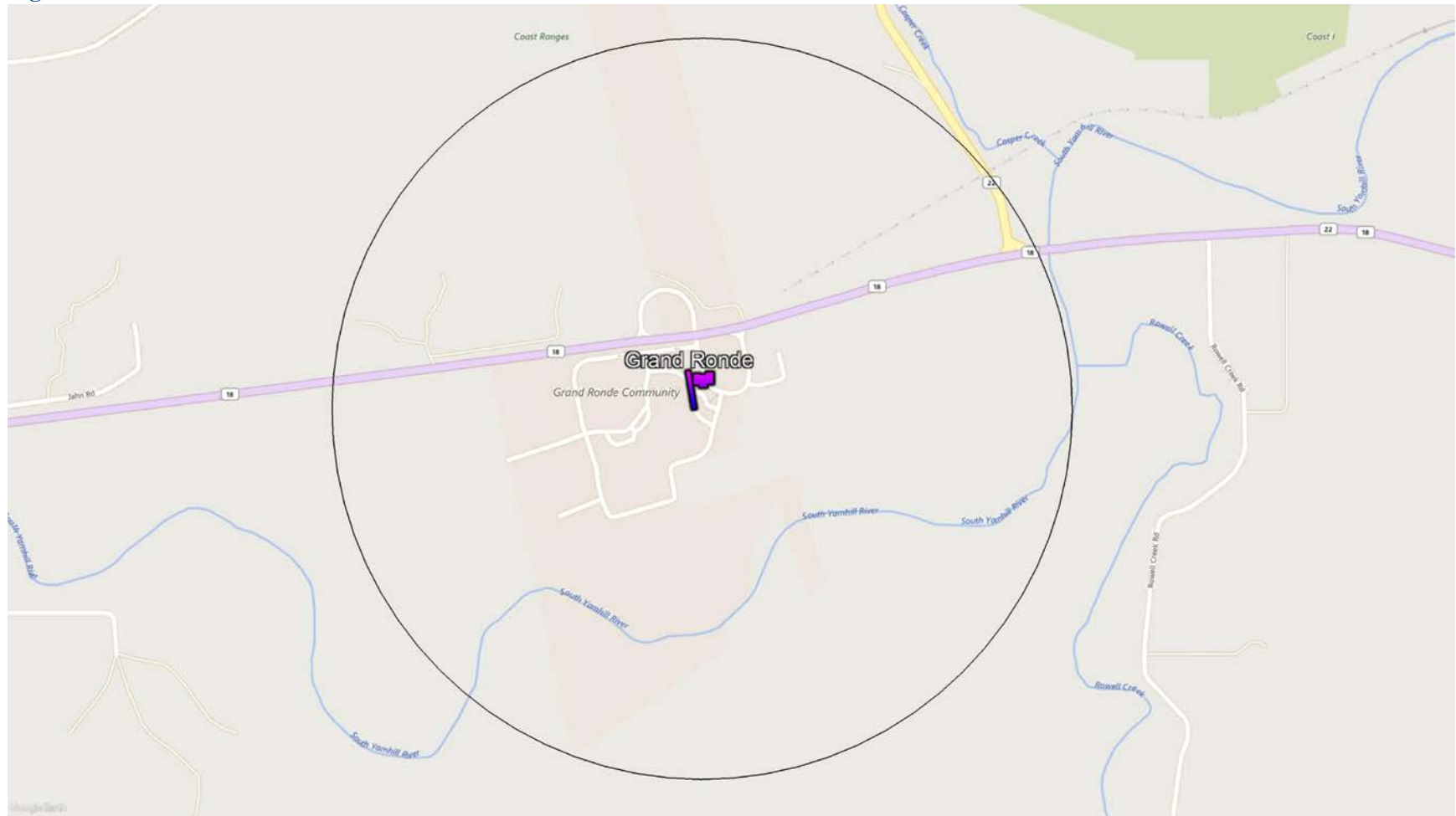


Map data: ©2019 Google, Microsoft

Figure G-19: Eugene EmX Walnut Station Points of Interest

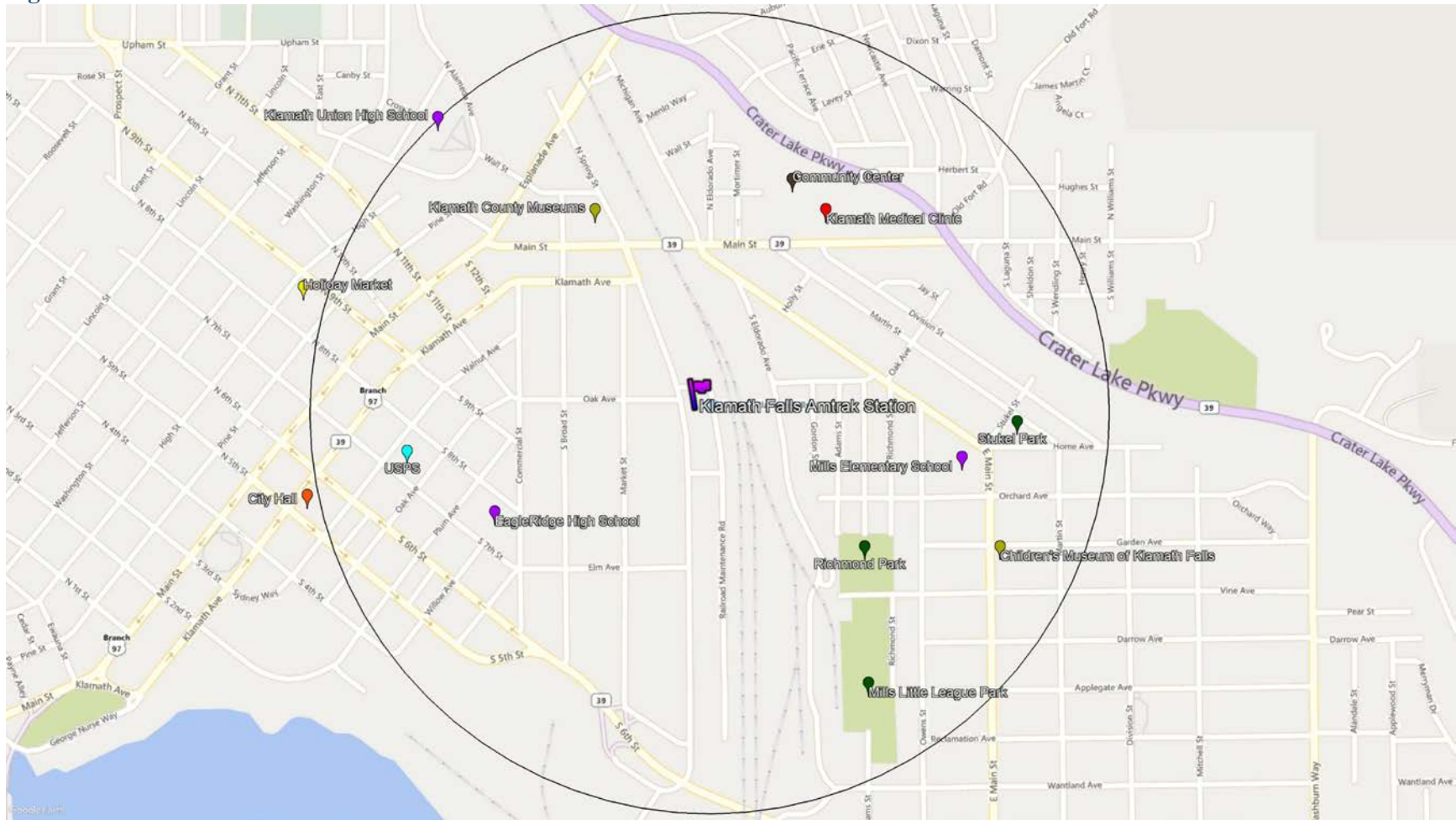
Map data: ©2019 Google, Microsoft

Figure G-20: Grand Ronde Points of Interest

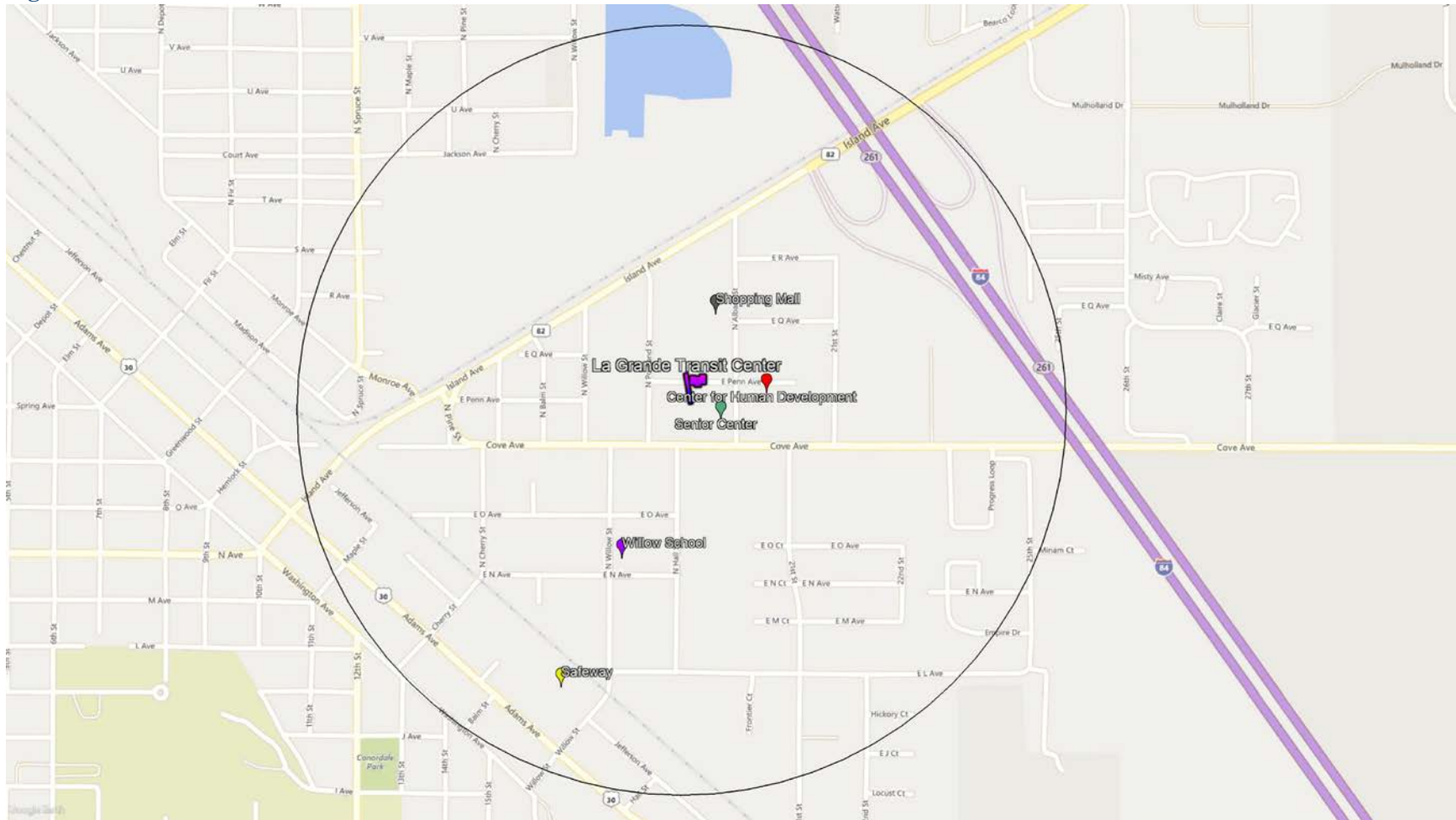


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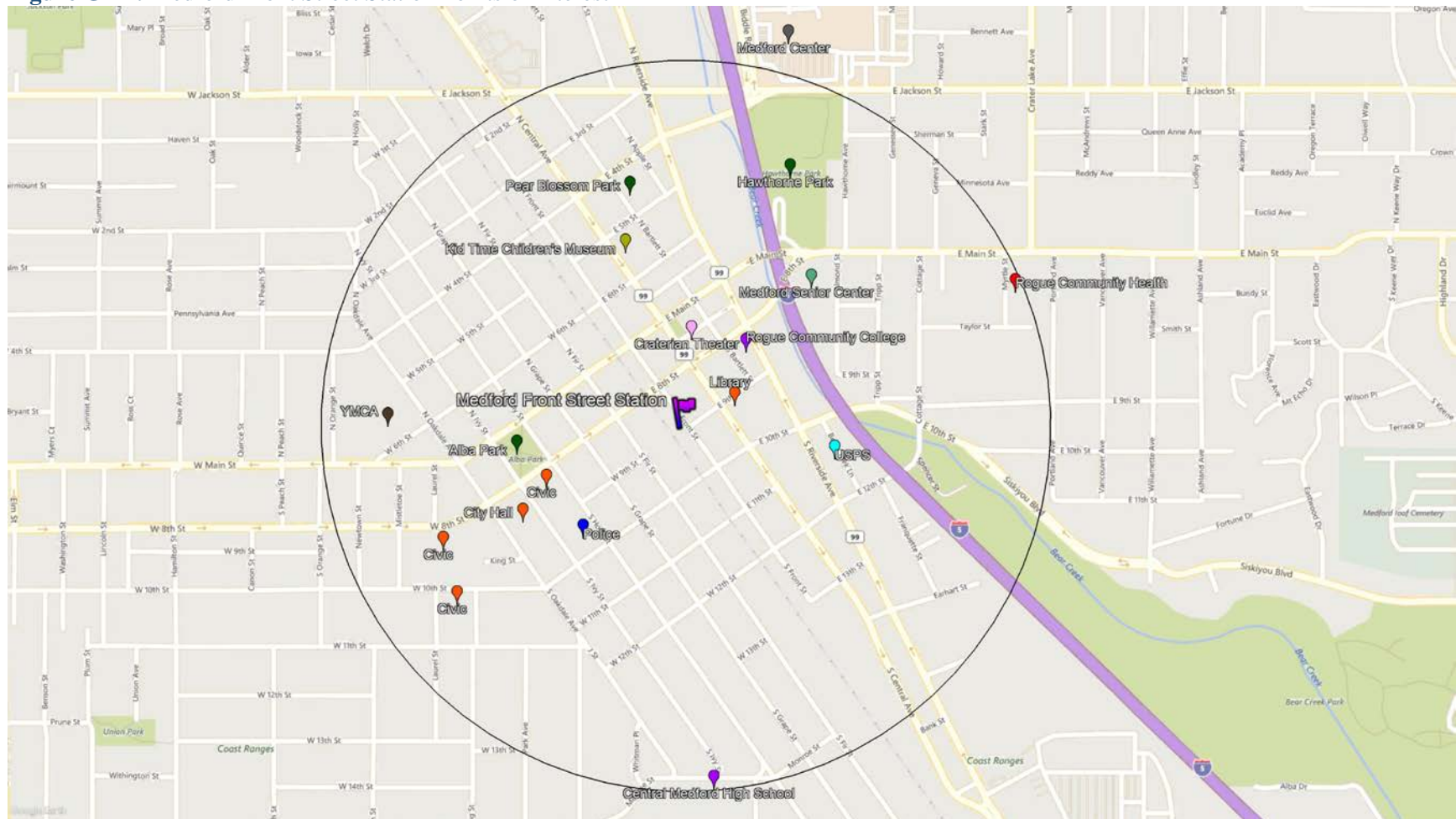
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Figure G-22: Klamath Falls Amtrak Station Points of Interest

Map data: ©2019 Google, Microsoft

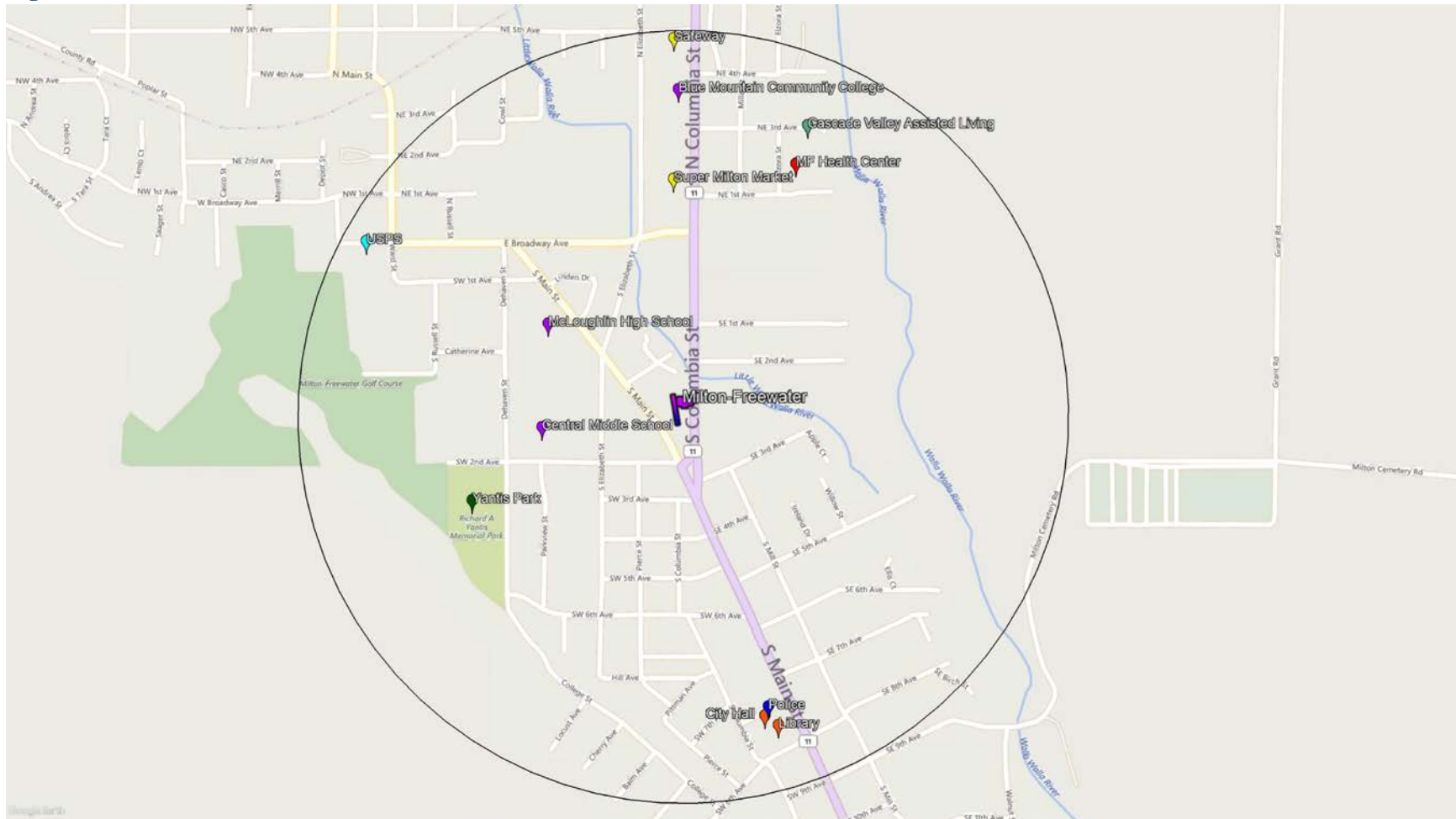
Figure G-23: La Grande Transit Center Points of Interest

Map data: ©2019 Google, Microsoft

Figure G-24: Medford Front Street Station Points of Interest

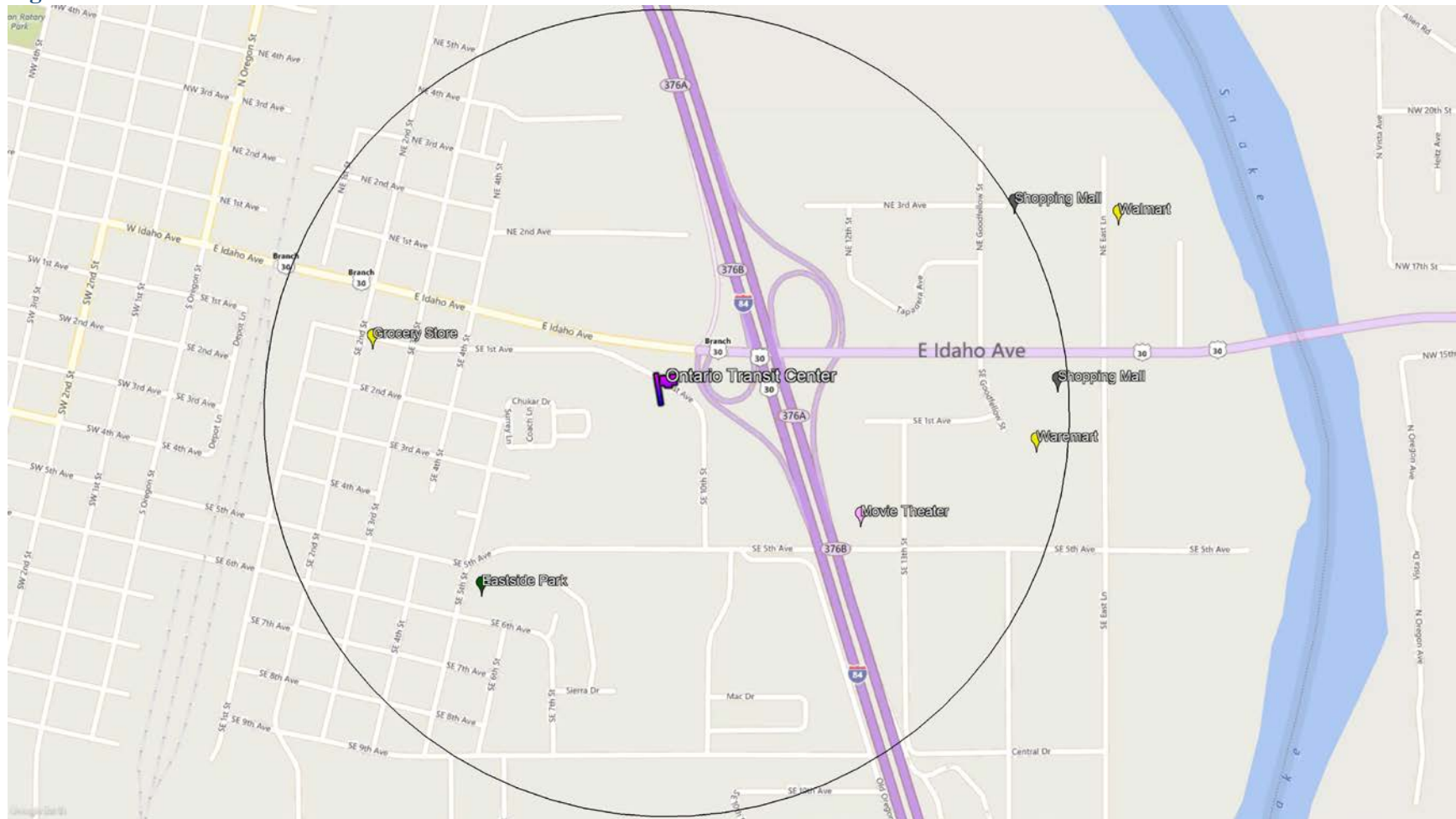
Map data: ©2019 Google, Microsoft

Figure G-25: Milton-Freewater Points of Interest



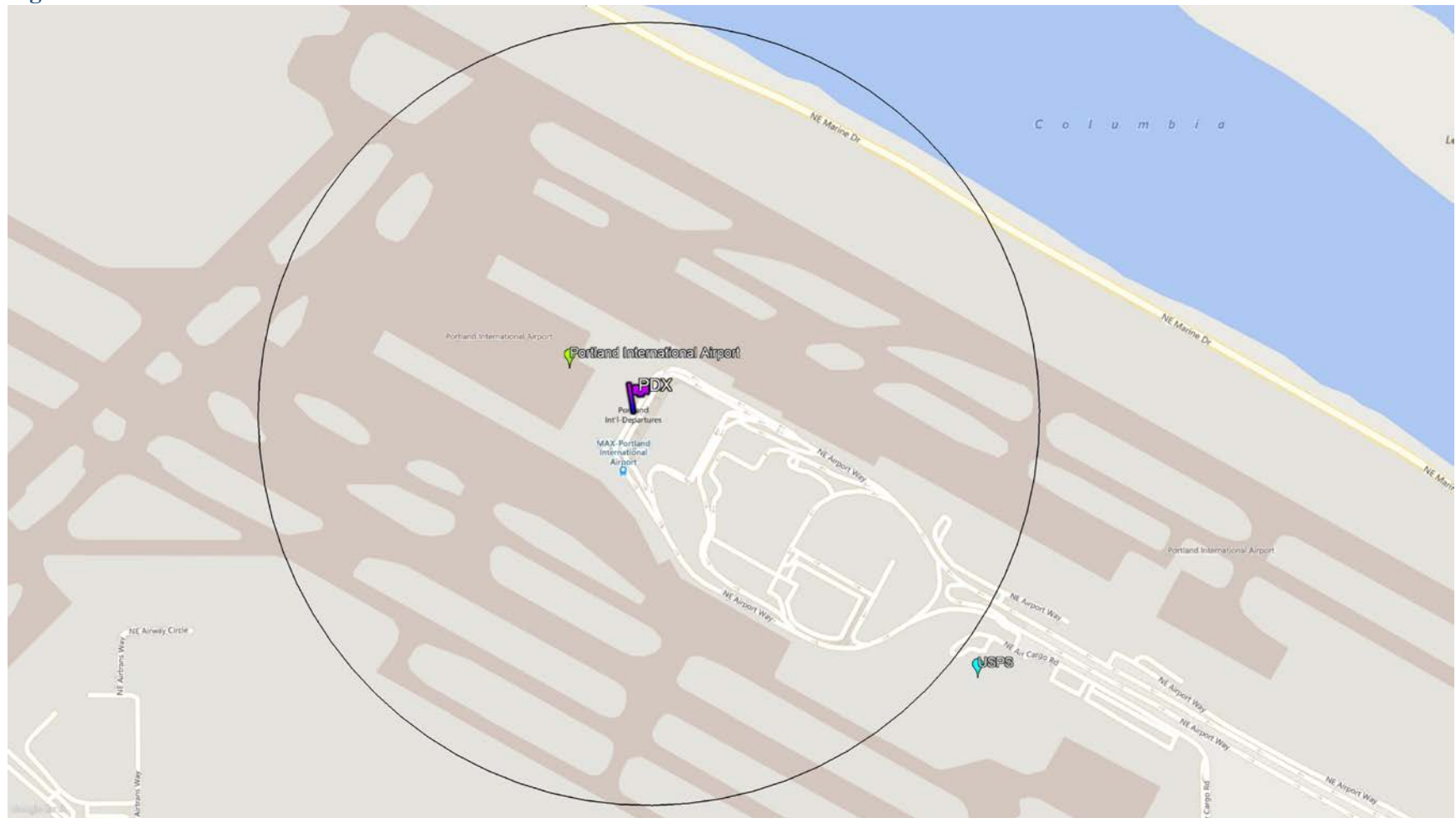
Map data: ©2019 Google, Microsoft

Figure G-26: Ontario Points of Interest



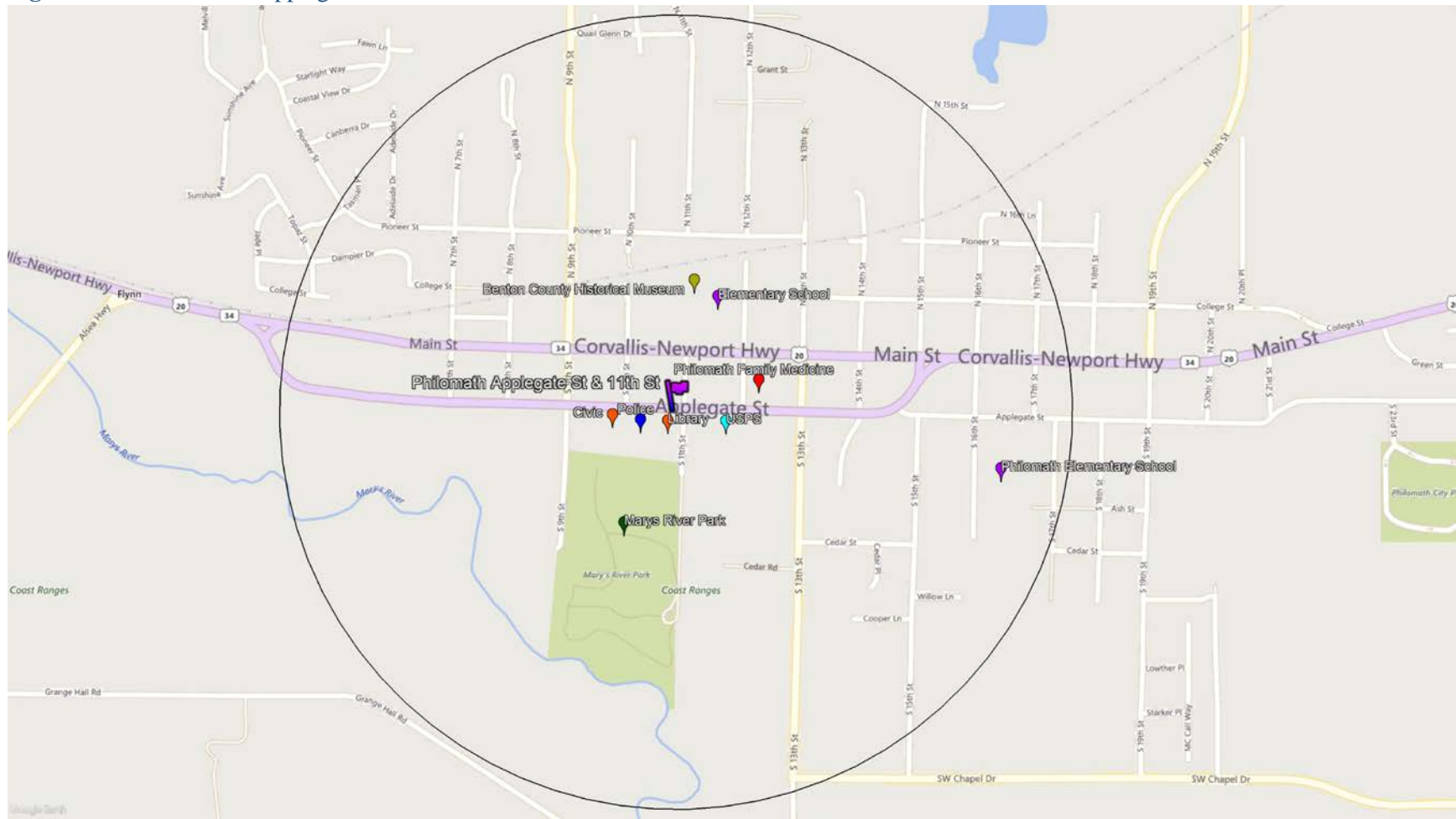
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Figure G-27: PDX Transit Center Points of Interest

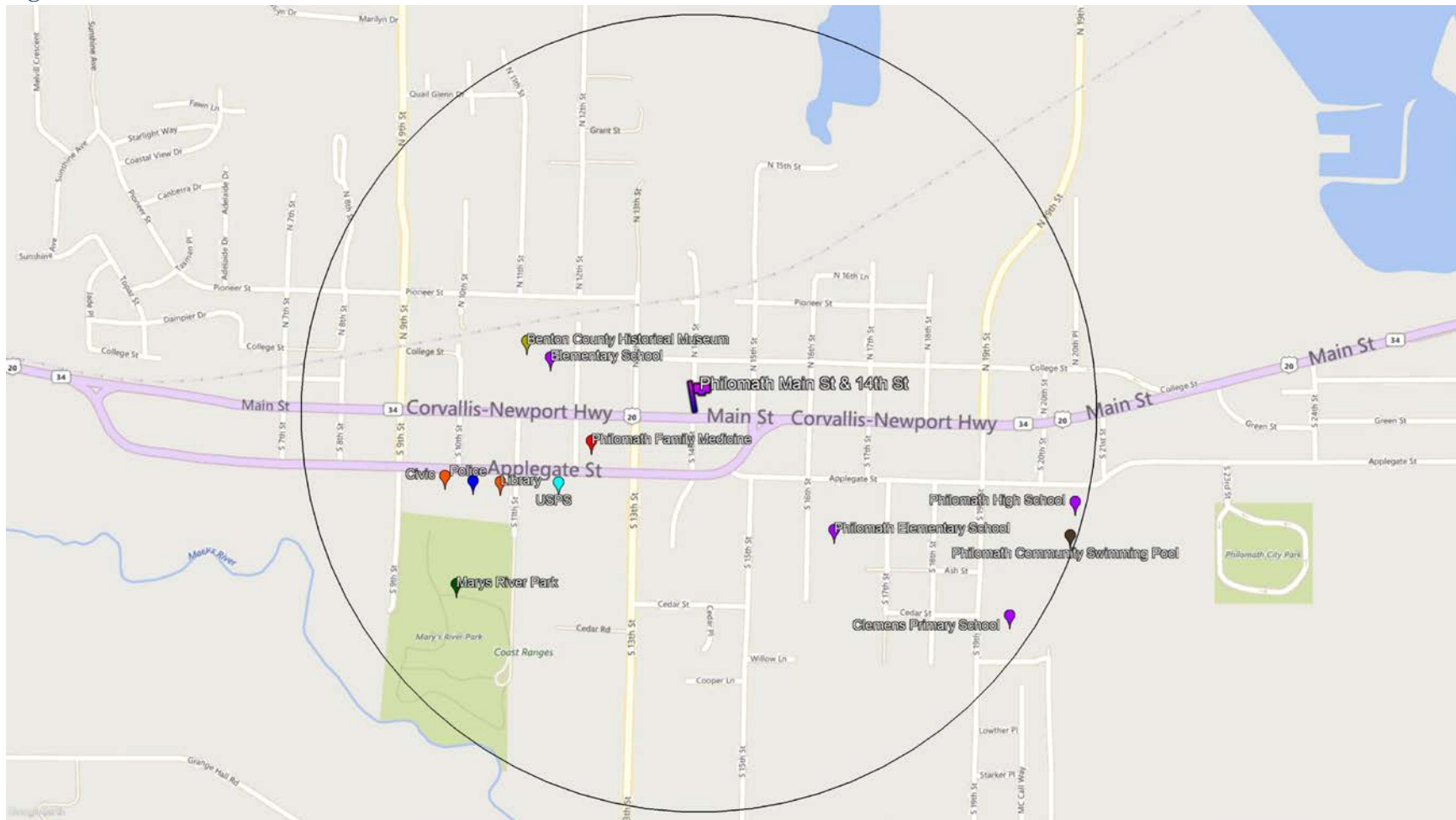


Map data: ©2019 Google, Microsoft

Figure G-28: Philomath Applegate St & 11th St Points of Interest

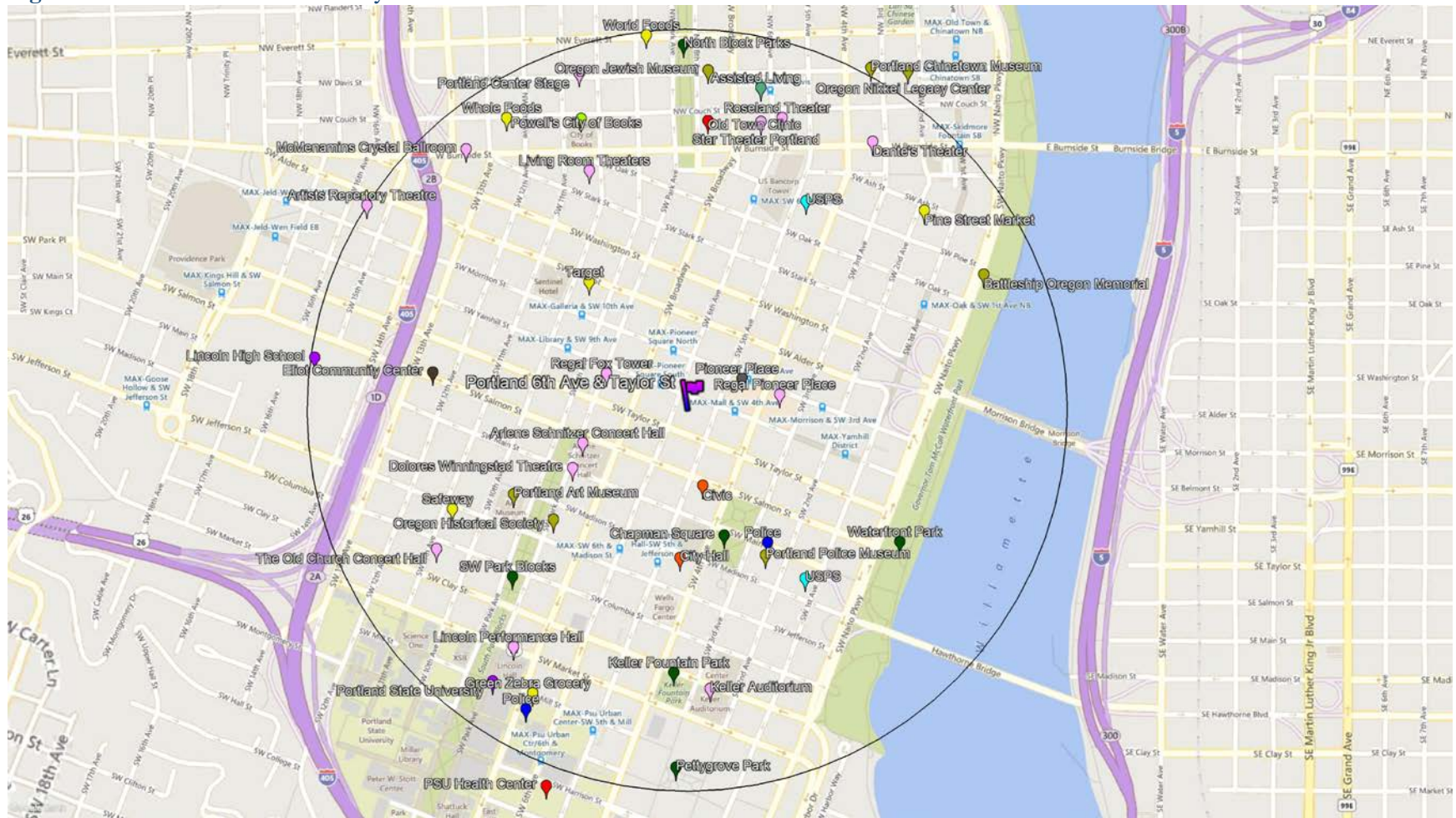


Map data: ©2019 Google, Microsoft

Figure G-29: Philomath Main St & 14th St Points of Interest

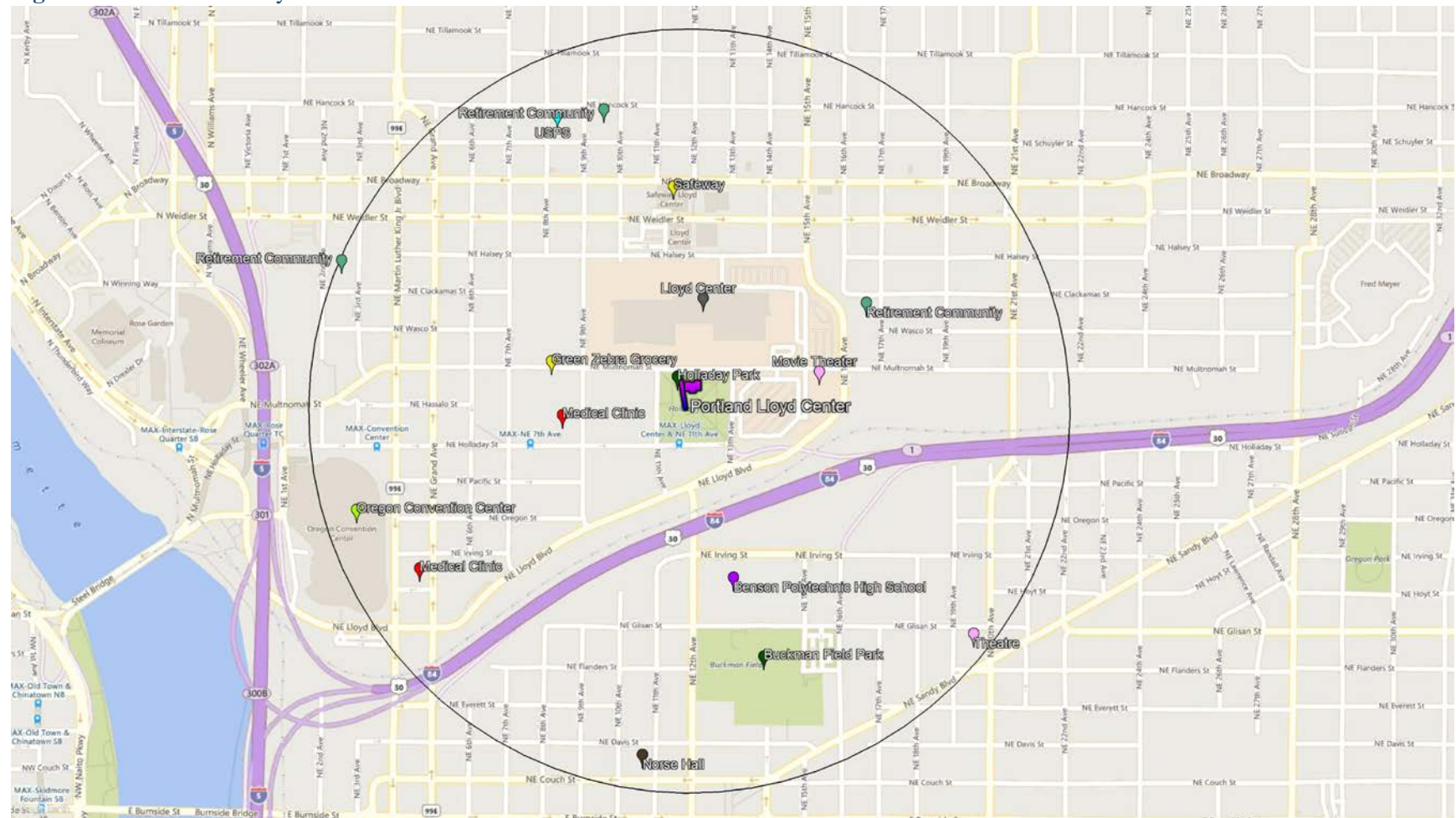
Map data: ©2019 Google, Microsoft

Figure G-30: Portland 6th Ave & Taylor St Points of Interest



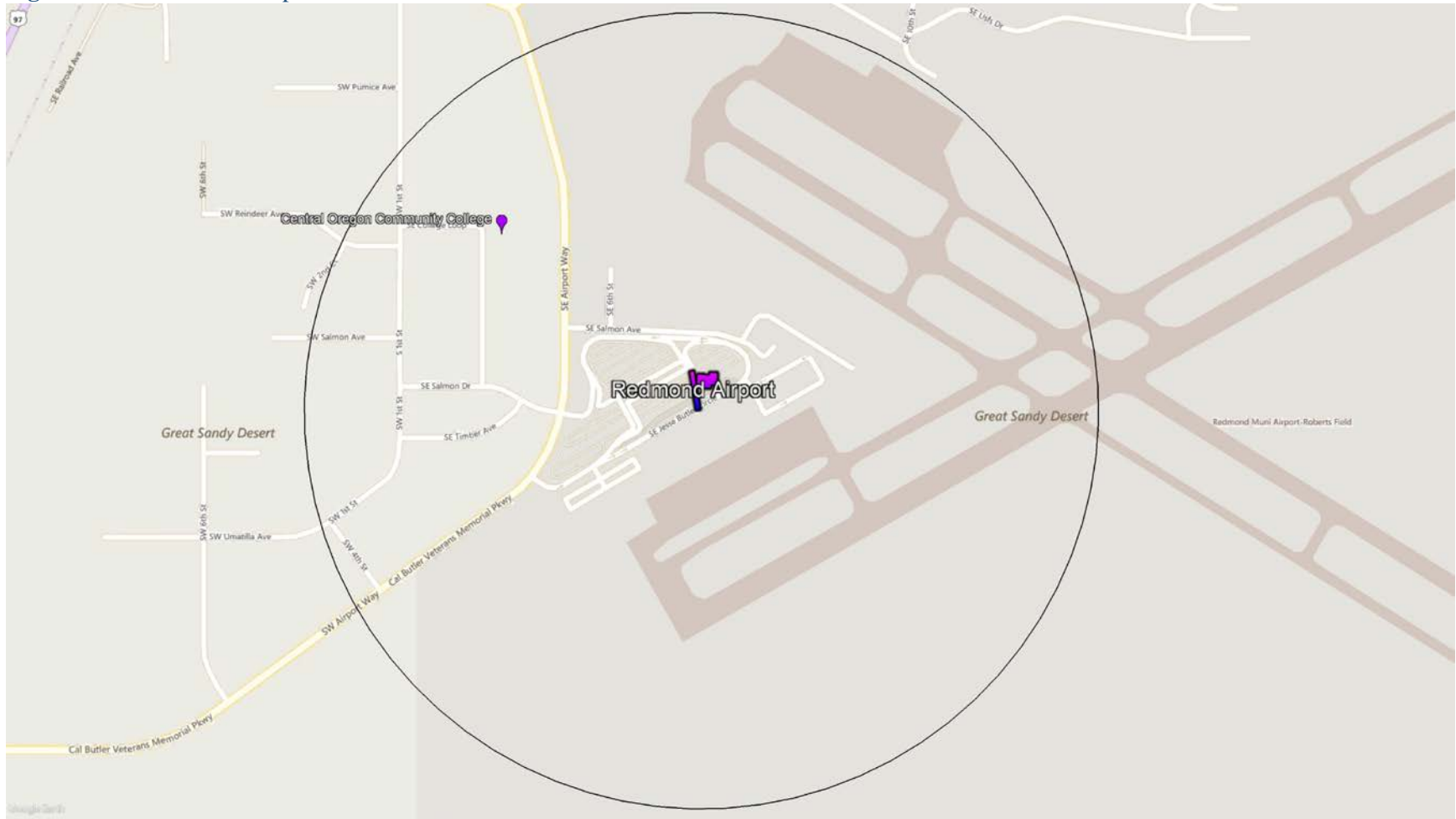
Map data: ©2019 Google, Microsoft

Figure G-31: Portland Lloyd Center Points of Interest



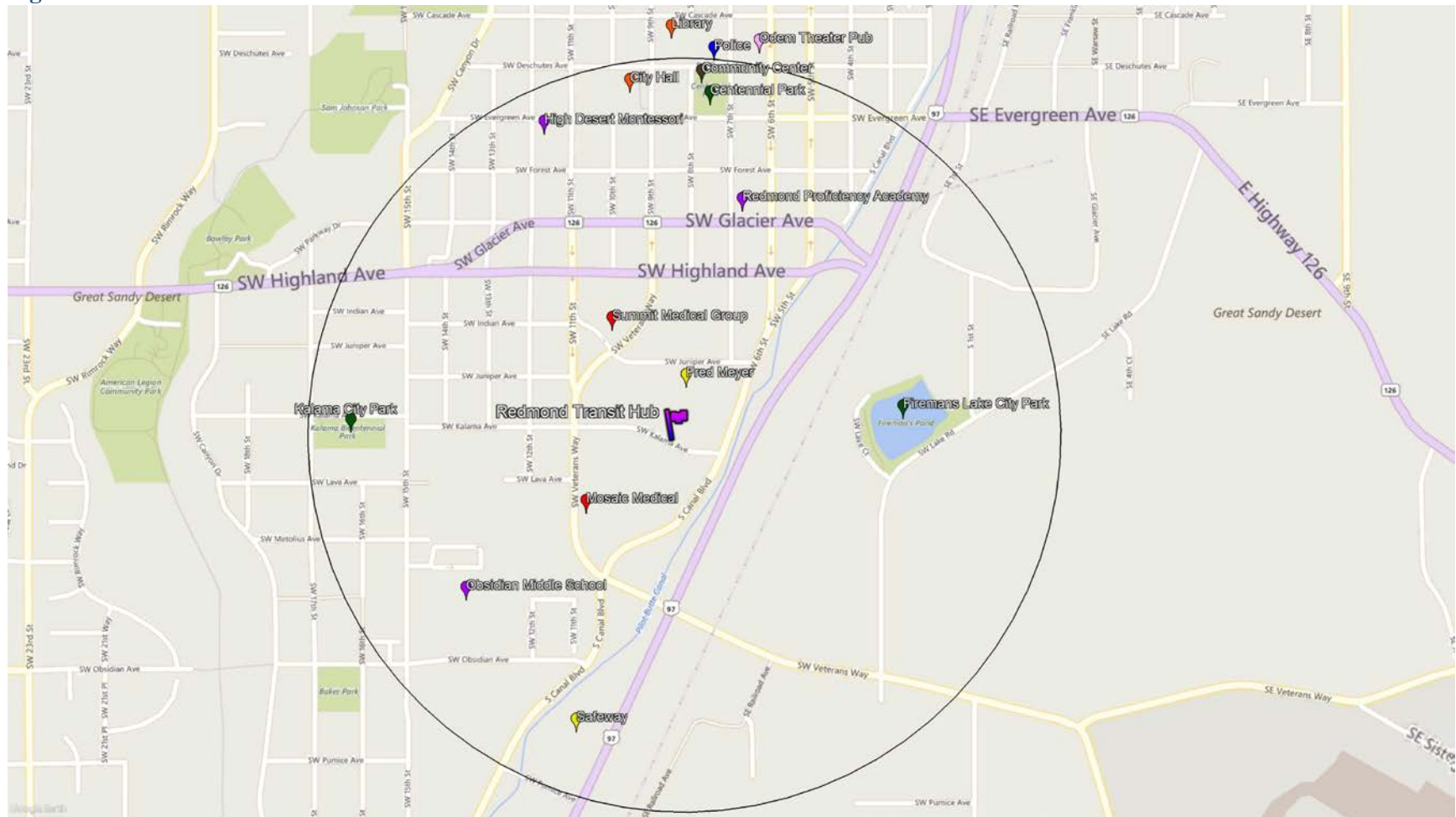
Map data: ©2019 Google, Microsoft

Figure G-32: Redmond Airport Points of Interest



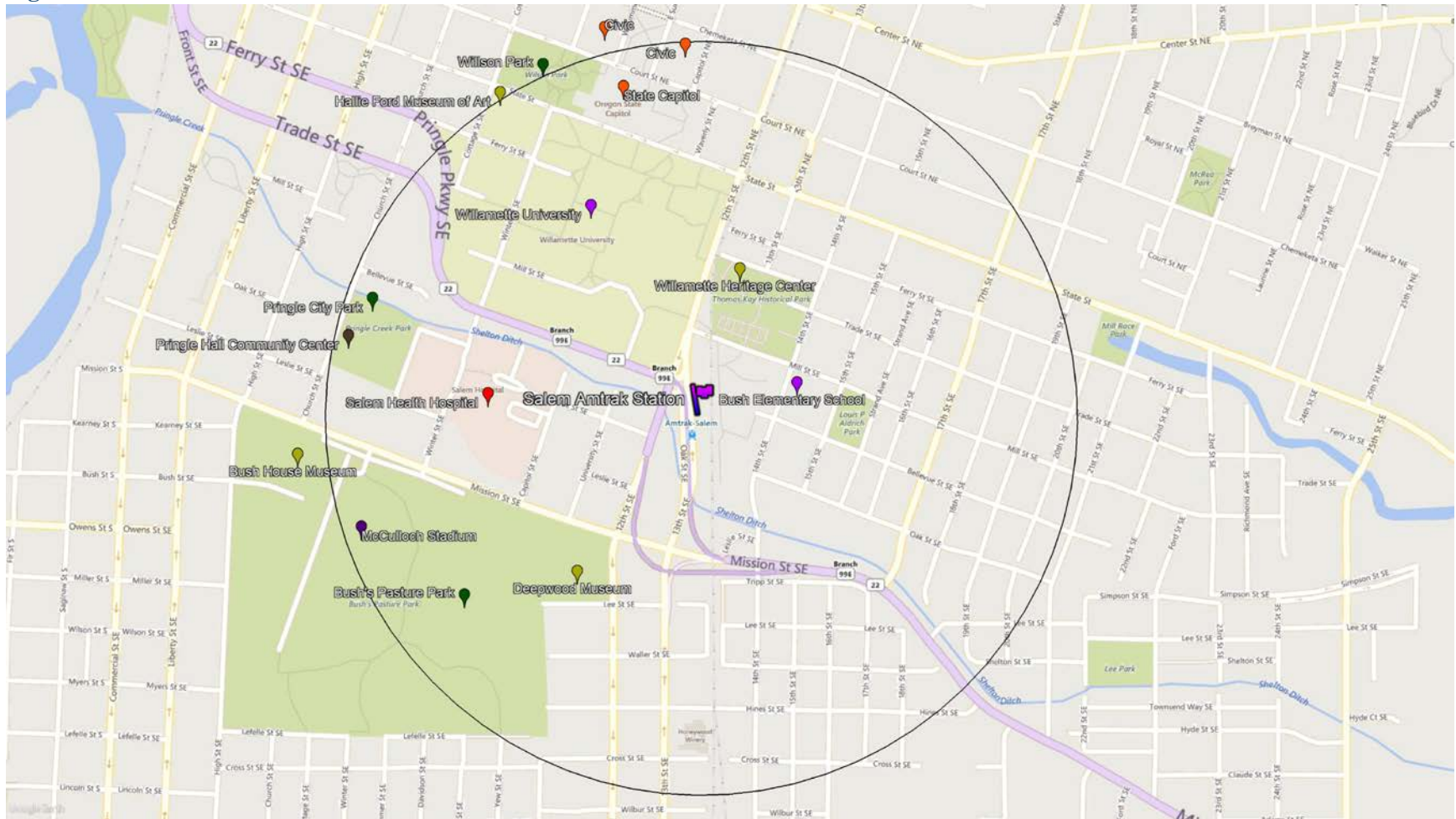
Map data: ©2019 Google, Microsoft

Figure G-33: Redmond Transit Hub Points of Interest

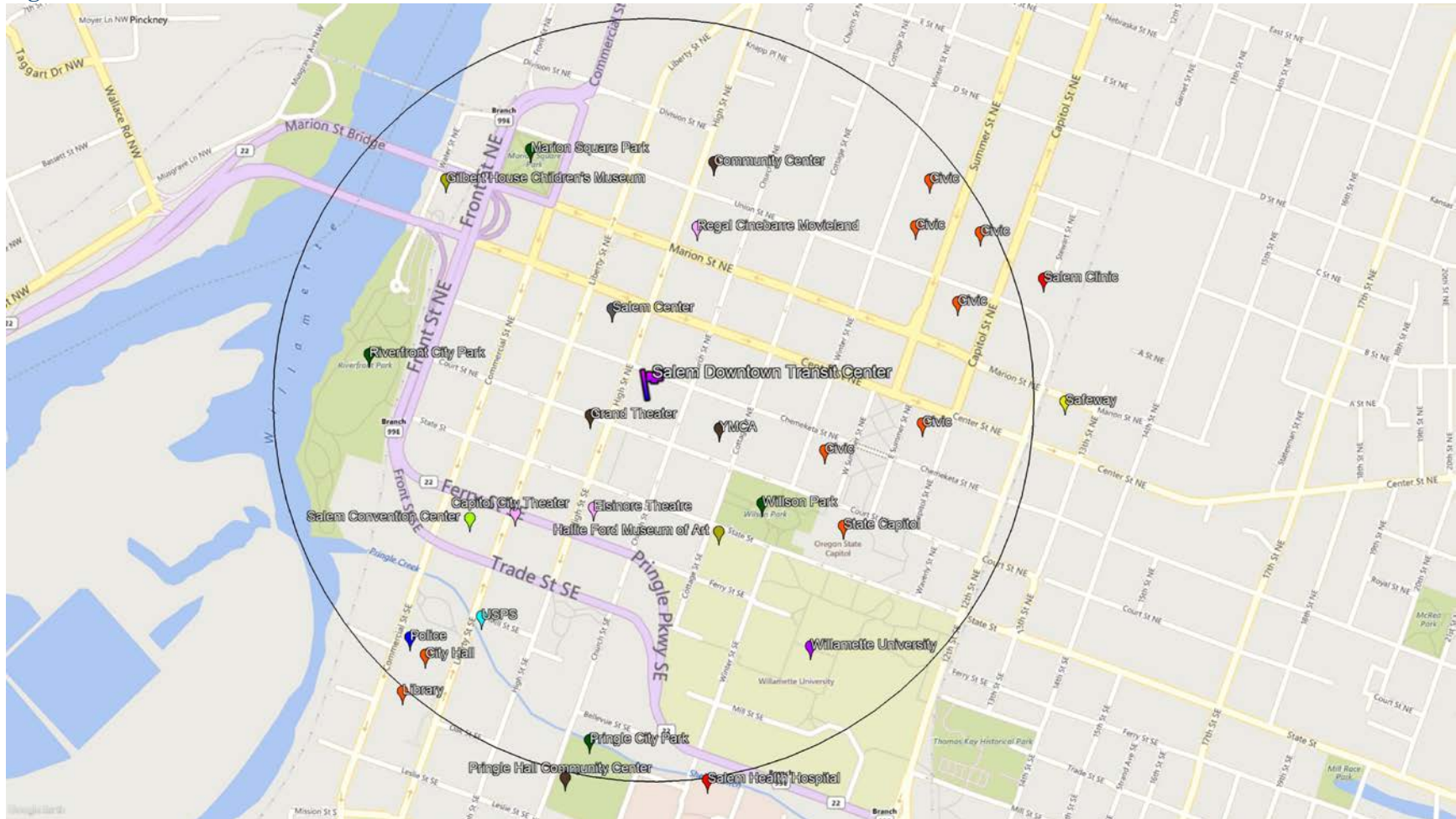


Map data: ©2019 Google, Microsoft

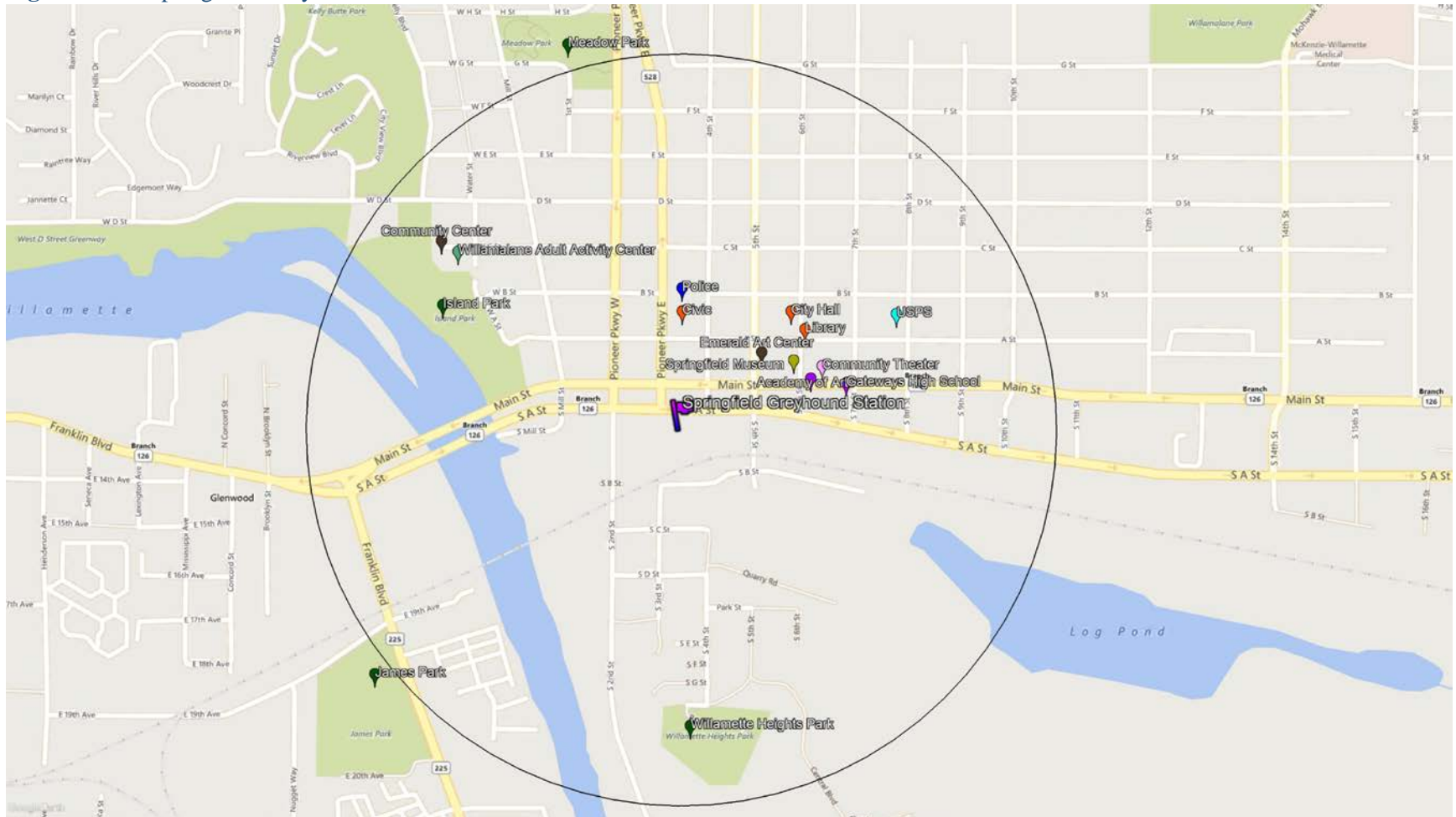
Figure G-34: Salem Amtrak Station Points of Interest



Map data: ©2019 Google, Microsoft

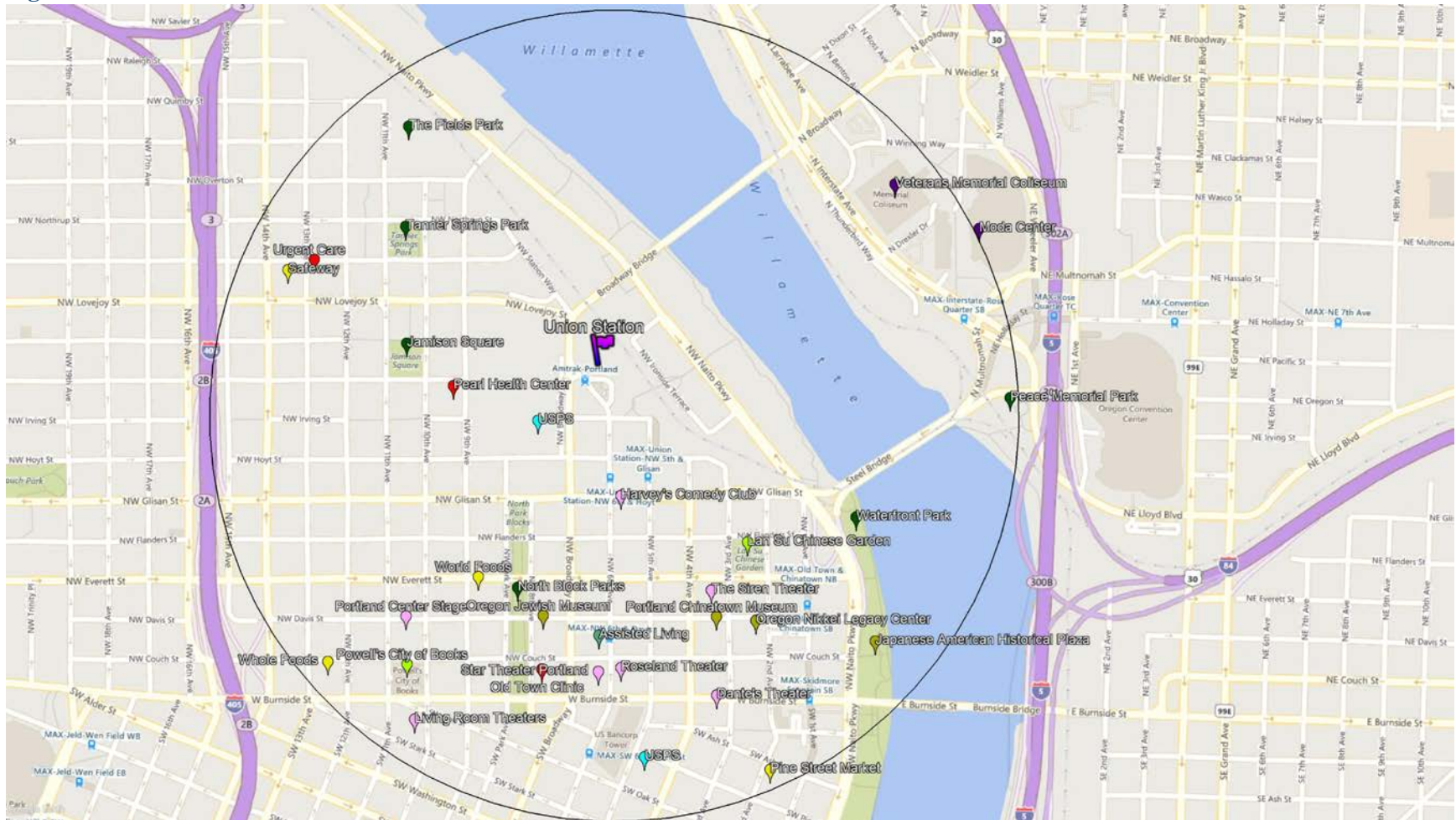
Figure G-35: Salem Downtown Transit Center Points of Interest

Map data: ©2019 Google, Microsoft

Figure G-36: Springfield Greyhound Station Points of Interest

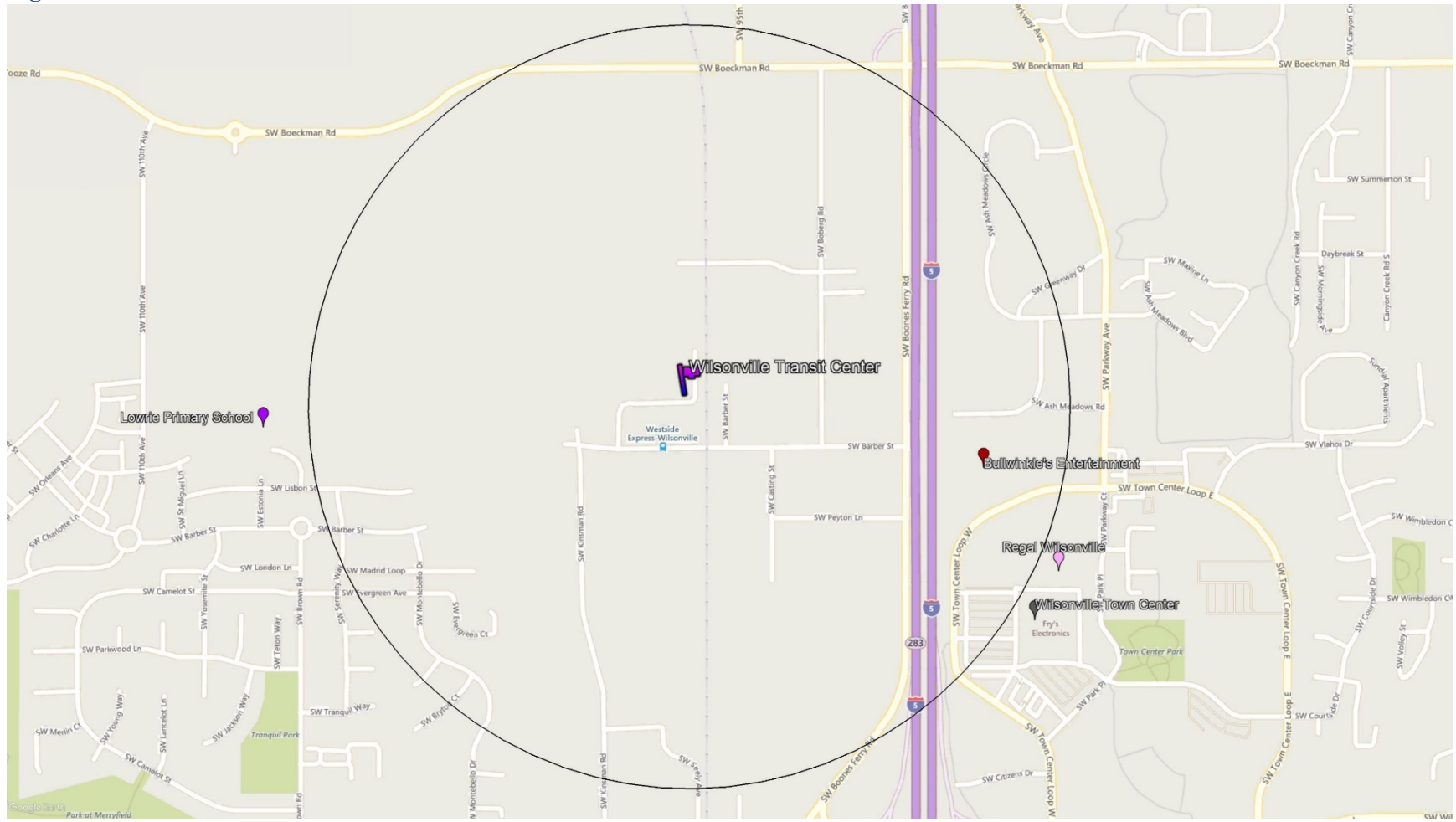
Map data: ©2019 Google, Microsoft

Figure G-37: Union Station Points of Interest

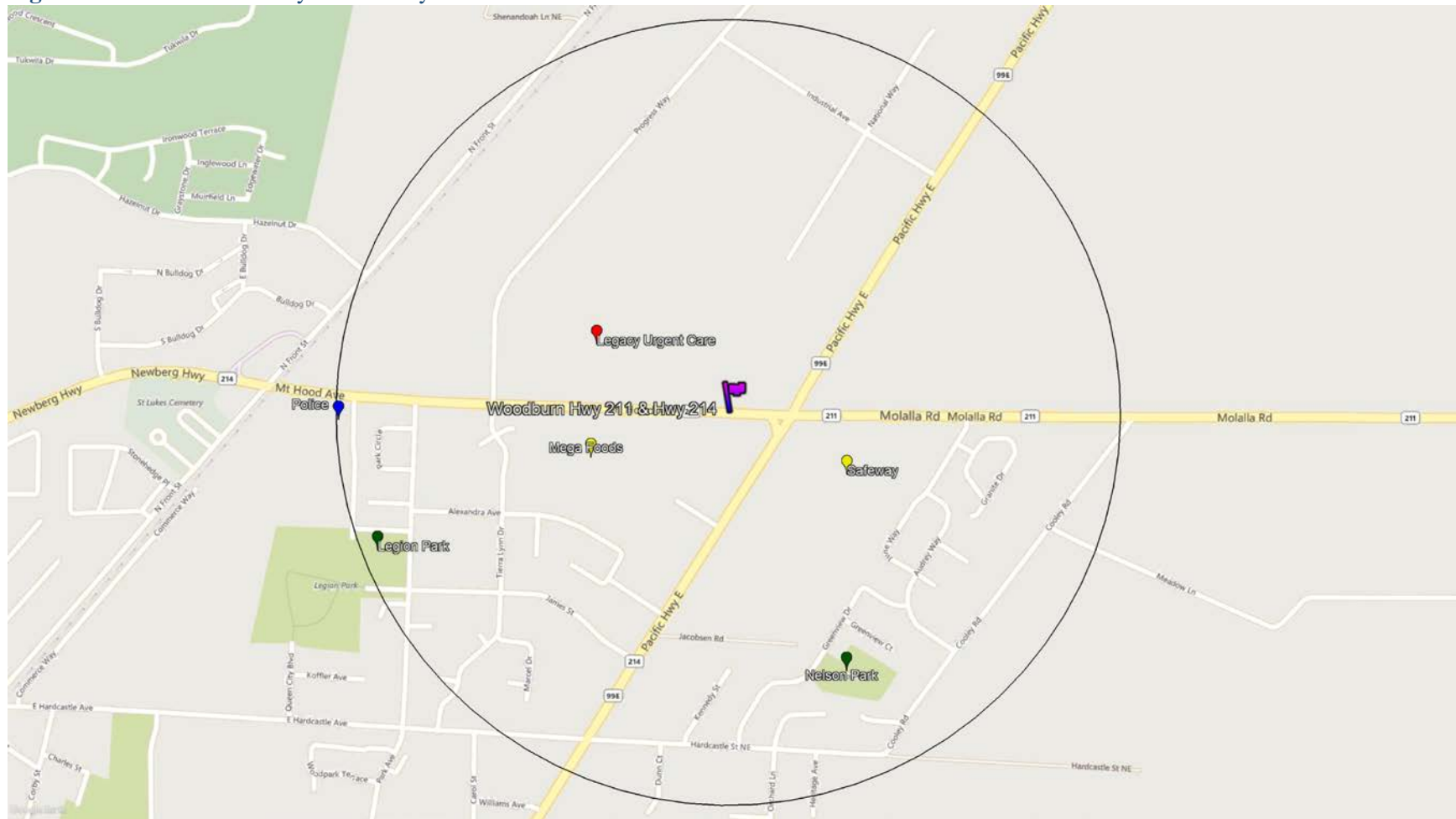


Map data: ©2019 Google, Microsoft

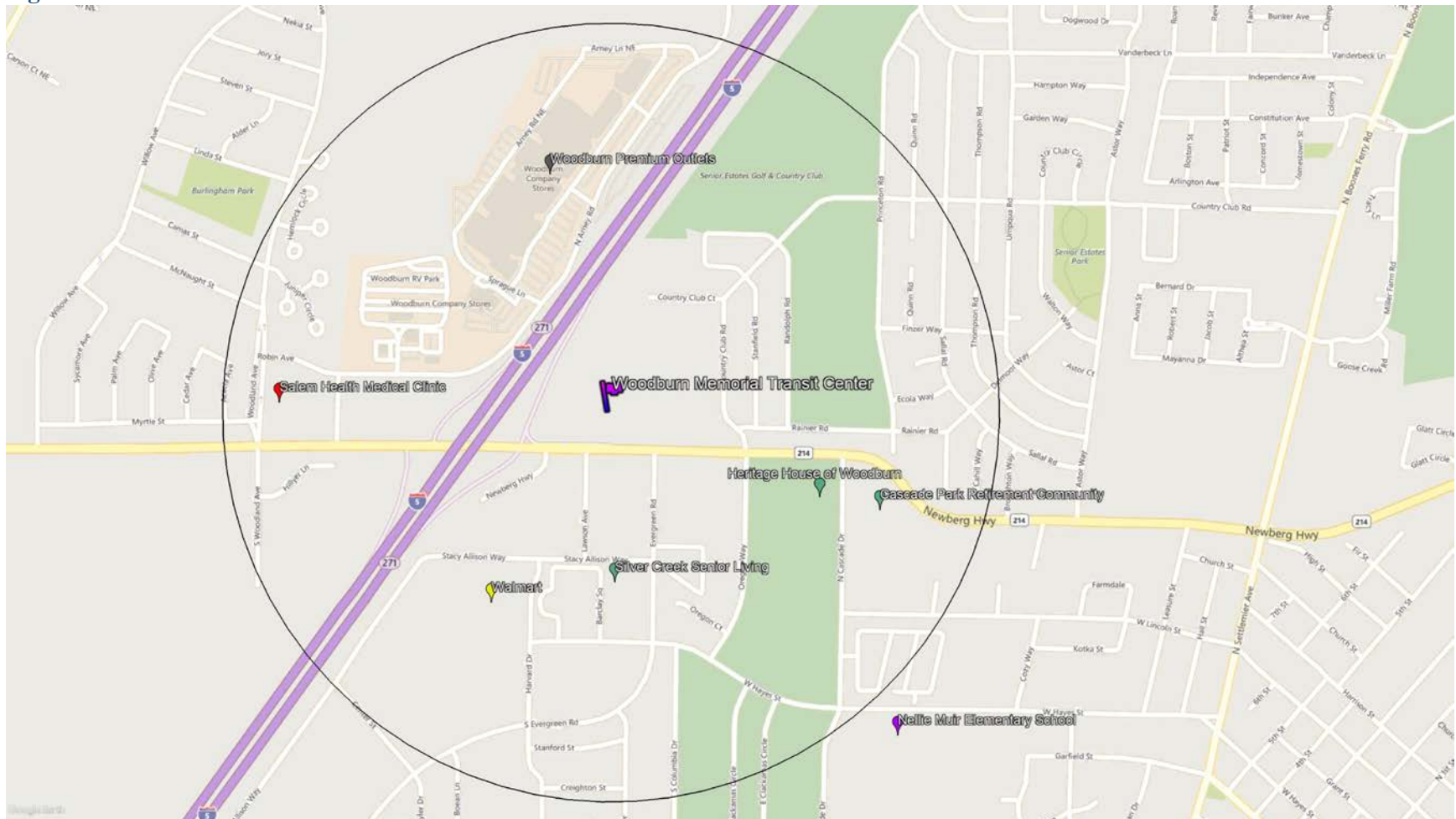
Figure G-38: Wilsonville Transit Center Points of Interest



Map data: ©2019 Google, Microsoft

Figure G-39: Woodburn Hwy 211 & Hwy 214 Points of Interest

Map data: ©2019 Google, Microsoft

Figure G-40: Woodburn Memorial Transit Center Points of Interest

Map data: ©2019 Google, Microsoft

Appendix H: Walkability Analysis

Figure H-1: Centers for Disease Control Walkability Audit Tool



Walkability Audit Tool

This tool will help you assess the walkability of your workplace. Directions and the tool follow.

1. Obtain (or create, if necessary) a map of the campus or area around your place of work that you wish to audit, including likely pedestrian destinations, such as parking lots, nearby restaurants, shops, parks, etc.
2. Decide, either by observation or inference, the most useful or likely pedestrian route between each location of interest on your map, eventually assembling a network of walking segments (link to glossary) that make up your most common walking routes. Label these segments 'A', 'B', 'C' or 1,2,3 to identify one from the other. See Sample Audit Report Map (link) for an example.
3. Take the attached audit tool to the location under study. Take as many copies as you have identified segments on your map—for example, if you have 10 segments on your map, take 10 copies. You will use a copy of the audit tool to assess each segment individually. The tool assesses factors related to safety, aesthetics, and recreational potential, (link to glossary) with safety being the most important.
4. Begin with your first segment, and use the attached audit to rank each feature, using the description provided on the audit. There are no right or wrong answers, just pick the number that most accurately represents your understanding of the segment. Also answer the questions at the bottom of the audit tool, noting potential dangers and improvements.
5. Repeat step 4 for each segment of your map. Some segments may be very different from each other, and some may be very similar.
6. Once you have completed the audit form for all the segments on your map, use the formula in the box halfway through the audit form to create a numerical score for each segment. This score makes safety considerations the most important, followed by things like accessibility and aesthetics (medium importance) and finally shade (least important), and should range from 0-100. Calculate scores for all segments of your map.
7. Now you can input the scores from each segment on your map, and generate a report. If you like, you can follow the format of our sample report. (link) We designated segments with scores of 0-39 points as high-risk and unattractive (red), scores of 40-69 as medium-risk and average or non-descript looking (yellow) and 70 and above as low-risk and pleasant. The questions you answered at the bottom of the audit tool can help you prioritize your needs and wants for improving the walking routes



U.S. Department of Health and Human Services
Centers for Disease Control and Prevention



Location: _____ Date: _____

A. Pedestrian Facilities (High): presence of a suitable walking surface, such as a sidewalk or path.

- 1 No permanent facilities; pedestrians walk in roadway or on dirt path
- 2
- 3 Continuous sidewalk on both sides of road, or completely away from roads
- 4
- 5 Sidewalk on one side of road; minor discontinuities that present no real obstacle to passage

B. Pedestrian Conflicts (High): potential for conflict with motor vehicle traffic due to driveway and loading dock crossings, speed and volume of traffic, large intersections, low pedestrian visibility.

- 1 High conflict potential
- 2
- 3
- 4
- 5 Low conflict potential

C. Crosswalks (High): presence and visibility of crosswalks on roads intersecting the segment. Traffic signals meet pedestrian needs with separate 'walk' lights that provide sufficient crossing time.

- 1 Crosswalks not present despite major intersections
- 2
- 3
- 4
- 5 No intersections, or crosswalks clearly marked

D. Maintenance (Medium): cracking, buckling, overgrown vegetation, standing water, etc. on or near walking path. Does not include temporary deficiencies likely to soon be resolved (e.g. tall grass).

- 1 Major or frequent problems
- 2
- 3
- 4
- 5 No problems

E. Path Size (Medium): measure of useful path width, accounting for barriers to passage along pathway.

- 1 No permanent facilities
- 2 < 3 feet wide, significant barriers
- 3
- 4
- 5 > 5 feet wide, barrier free

F. Buffer (Medium): space separating path from adjacent roadway.

- 1 No buffer from roadway
- 2
- 3
- 4 > 4 feet from roadway
- 5 Not adjacent to roadway

G. Universal Accessibility (Medium): ease of access for the mobility impaired. Look for ramps and handrails accompanying steps, curb cuts, etc.

- 1 Completely impassible for wheelchairs, or no permanent facilities
- 2 Difficult or dangerous for wheelchairs (e.g. no curb cuts)
- 3
- 4 Wheelchair accessible route available but inconvenient
- 5 Designed to facilitate wheelchair access

H. Aesthetics (Medium): includes proximity of construction zones, fences, buildings, noise pollution, quality of landscaping, and pedestrian-oriented features, such as benches and water fountains.

- 1 Uninviting
- 2
- 3
- 4
- 5 Pleasant

I. Shade (Low): amount of shade, accounting for different times of day.

- 1 No shade
- 2
- 3
- 4
- 5 Full shade

Sum of High importance (A-C): _____ x **3** = _____

Sum of Medium importance (D-H): _____ x **2** = _____

Sum of Low importance (I): _____ x **1** = _____

Total Score: _____ / 100

Observations

1. What is the most dangerous location along this segment?
2. What is the most unpleasant element of this segment?
3. What improvements would make this segment more appropriate for pedestrian use?
4. Would it be possible to design a more direct route to connect the ends of this segment?
5. Are the conditions of this segment appropriate and attractive for exercise or recreational use?

Walk Audit Scores

Table H-1: Key Transit Hub Walk Audit Scores

Key Transit Hub	Pedestrian Facilities	Pedestrian Conflicts	Crosswalks	Maintenance	Path Size	Buffer	Universal Accessibility	Aesthetics	Shade	Total Score
Albany Amtrak Station	5	3	4	2	3	3	4	2	2	66
	5	3	3	2	3	5	2	5	4	71
	5	4	5	5	4	5	5	4	3	91
Albany Clay St at Heritage Mall	5	1	2	1	3	2	2	2	2	46
	5	3	4	4	4	2	5	3	4	76
	4	3	4	4	4	2	5	3	3	72
Albany LBCC	5	5	3	4	3	2	3	5	3	76
Astoria Transit Center	5	2	3	3	4	1	3	1	1	55
	5	4	4	3	5	4	4	4	4	83
	5	4	4	2	3	4	2	5	4	72
Banks	5	4	4	4	4	5	5	5	4	89
	4	4	4	4	3	3	4	4	3	75
	4	4	4	4	3	4	4	5	4	80
Beaverton Sunset Transit Center	4	3	3	3	3	4	4	2	3	65
	5	5	5	5	5	4	3	5	5	94
	3	2	3	3	4	3	3	2	2	56
Bend Hawthorne Station	5	1	3	2	2	1	2	1	2	45
	5	3	3	2	3	3	3	2	3	62
	3	4	3	2	3	3	2	5	4	64
Canby Transit Center	2	1	3	1	2	2	1	2	2	36
	4	2	3	2	2	2	2	2	2	49
	5	5	5	4	4	4	5	5	3	92

Key Transit Hub	Pedestrian Facilities	Pedestrian Conflicts	Crosswalks	Maintenance	Path Size	Buffer	Universal Accessibility	Aesthetics	Shade	Total Score
Cannon Beach Midtown Transit Center	2	2	4	5	4	2	2	3	5	61
	5	5	4	5	4	2	5	5	5	89
	3	3	3	4	4	3	3	4	5	68
Corvallis 1st St & Washington Ave	5	4	4	2	4	3	4	3	3	74
	4	2	2	3	4	4	4	4	4	66
	5	4	5	4	5	5	5	4	5	93
Corvallis 9th St and Reiman Ave	5	2	3	4	4	2	4	2	2	64
	5	4	3	4	4	3	5	5	4	82
	5	3	4	4	4	5	5	4	4	84
Corvallis 15th St & Jefferson Way	5	4	3	4	4	5	5	5	4	86
	5	4	5	3	4	4	5	5	3	87
	5	5	5	4	5	4	5	5	5	96
Corvallis 26th St & Western Blvd	5	4	4	4	4	4	5	4	4	85
	5	5	3	4	4	4	5	5	5	88
	5	5	5	4	5	5	5	5	4	97
Corvallis Circle Blvd & 9th St	5	2	3	3	3	2	5	1	2	60
	5	3	3	3	4	4	5	2	2	71
	5	3	4	3	4	3	5	3	3	75
Corvallis Circle Blvd & Four Acre Place	3	4	1	3	3	2	3	3	3	55
	5	4	2	2	3	3	3	2	2	61
	5	4	3	4	4	4	4	4	3	79
Corvallis Downtown Transit Center	5	4	3	4	5	5	5	5	5	89
	5	4	3	4	5	5	5	5	5	89
	5	5	4	5	5	5	5	5	5	97
Corvallis Good Samaritan Center	4	4	3	4	4	4	4	4	3	76
	4	5	4	4	4	5	4	5	4	87
	4	4	3	4	4	3	4	5	4	77

Key Transit Hub	Pedestrian Facilities	Pedestrian Conflicts	Crosswalks	Maintenance	Path Size	Buffer	Universal Accessibility	Aesthetics	Shade	Total Score
Eugene Amtrak Station	5	3	2	2	3	4	4	4	5	69
	5	4	4	4	5	5	5	4	5	90
	4	3	4	3	3	4	4	4	4	73
Eugene EmX Walnut Station	5	4	5	4	5	5	5	3	3	85
	5	4	2	4	4	5	5	5	4	83
	5	4	2	2	4	5	4	5	4	77
Hillsboro Central Transit Center	5	5	5	4	5	5	5	5	5	98
	4	3	3	3	4	4	3	3	3	67
	5	3	3	3	4	4	5	3	4	75
Klamath Falls Amtrak Station	4	4	3	2	4	3	4	3	3	68
	3	2	3	3	4	3	3	2	2	56
	3	4	2	3	3	4	3	3	2	61
La Grande Station Transit Center	3	1	2	3	4	3	2	1	2	46
	4	3	2	2	3	4	3	2	2	57
	3	4	2	3	3	4	2	3	3	60
Medford Front Street Station	5	3	4	3	4	3	4	3	3	73
	5	4	5	5	5	5	5	5	4	96
	5	4	4	4	5	3	5	4	3	84
Milton-Freewater	5	2	2	3	4	3	3	1	1	56
	5	4	4	4	5	5	4	4	3	86
	3	4	3	3	4	4	2	4	3	67
Ontario	3	2	3	3	3	1	2	1	1	45
	3	1	2	2	3	1	1	2	1	37
	1	1	2	1	1	1	1	2	1	25
Philomath Applegate St & 11th St	4	3	2	3	3	2	3	3	3	58
	5	4	3	2	3	2	3	3	3	65
	4	3	4	3	3	2	2	4	3	64

Key Transit Hub	Pedestrian Facilities	Pedestrian Conflicts	Crosswalks	Maintenance	Path Size	Buffer	Universal Accessibility	Aesthetics	Shade	Total Score
Philomath Main St & 14th St	5	3	2	2	4	5	3	3	3	67
	5	1	3	3	4	2	4	1	2	57
	3	3	3	4	4	2	3	5	3	66
Portland 6th Ave & Taylor St	5	4	5	4	5	5	5	5	5	95
	5	4	4	4	5	5	5	5	5	92
	5	4	5	4	5	4	5	5	5	93
Portland Lloyd Center	5	3	3	3	5	4	4	3	4	75
	5	2	3	3	2	5	3	3	4	66
	5	3	4	3	4	4	4	4	5	79
Redmond Transit Hub	3	2	3	5	3	2	1	2	1	51
	5	3	4	5	4	3	4	3	3	77
	5	4	4	5	5	3	5	3	3	84
Salem Amtrak Station	5	4	4	4	4	4	5	3	4	83
	5	4	5	5	4	3	5	5	4	90
	5	4	4	4	4	4	4	5	5	86
Salem Downtown Transit Center	5	4	5	4	5	5	4	5	5	93
	5	5	5	4	5	5	5	5	5	98
	5	5	5	4	5	5	5	5	5	98
Springfield Greyhound Station	5	3	4	4	4	3	5	3	2	76
	5	3	3	3	3	3	4	3	4	69
	5	4	3	4	4	5	5	4	4	84
Union Station	5	4	4	4	5	4	5	4	4	87
	5	4	4	3	4	5	5	3	5	84
	5	5	5	4	4	4	5	4	4	91
Wilsonville Transit Center	3	3	3	4	4	4	4	2	3	66
	3	3	3	4	4	3	3	3	2	63
	5	4	5	5	5	4	5	4	3	91

Key Transit Hub	Pedestrian Facilities	Pedestrian Conflicts	Crosswalks	Maintenance	Path Size	Buffer	Universal Accessibility	Aesthetics	Shade	Total Score
Woodburn Hwy 211 & Hwy 214	3	2	3	3	3	1	2	2	2	48
	5	1	2	3	3	2	2	1	1	47
	3	2	2	2	3	1	2	3	3	46
Woodburn Memorial Transit Center	4	1	3	5	5	2	5	3	2	66
	5	3	4	5	4	3	4	3	3	77
	3	4	3	3	3	4	2	4	3	65

Grand Ronde, Redmond Airport and PDX were not subject to walk audits because there were no walk routes available. Grand Ronde is adjacent to a rural highway with no connecting roads or sidewalks leading to the site. Both airports are geographically isolated from the rest of the city and do not have viable walking routes with sidewalks leading to them. Albany Linn Benton Community College is located on the rural edge of town next to a highway. There is only one viable walking path north to a small residential housing tract.

Table H-2: Comparative Analysis of Walkability Scores

Key Transit Hub	Walk Score®	Mean Walk Audit Score	EPA National Walkability Index			
			CBG Mean (X5)	CBG Mean	CBG Minimum	CBG Maximum
Albany Amtrak Station	70	76	82	16.4	11.0	18.7
Albany Clay St at Heritage Mall	83	65	85	17.1	15.2	18.3
Albany Linn Benton Community College	12	76*	59	11.8	11.8	11.8
Astoria Transit Center	78	70	86	17.2	14.5	19.2
Banks	45	81	34	6.8	6.8	6.8
Beaverton Sunset Transit Center	52	72	64	12.7	8.2	16.7
Bend Hawthorne Station	78	57	78	15.6	8.7	19.3
Canby Transit Center	83	59	61	12.2	9.3	18.2
Cannon Beach Midtown Transit Center	54	73	42	8.3	3.8	14.0
Corvallis 1st St & Washington Ave	82	78	73	14.6	5.0	18.7
Corvallis 9th St & Reiman Ave	75	77	73	14.6	6.2	18.7
Corvallis 15th St & Jefferson Way	82	90	80	16.0	11.3	18.7
Corvallis 26th St & Western Blvd	69	90	73	14.5	11.3	18.5
Corvallis Circle Blvd & 9th St	79	69	78	15.5	12.5	19.0
Corvallis Circle Blvd & Four Acre Place	63	65	79	15.9	12.5	19.0
Corvallis Downtown Transit Center	91	92	71	14.3	5.0	18.7
Corvallis Good Samaritan Center	16	80	68	13.7	10.8	19.0
Eugene Amtrak Station	92	77	82	16.4	10.2	19.5
Eugene EmX Walnut Station	83	82	66	13.3	7.5	17.0
Grand Ronde	7	N/A	56	11.2	11.2	11.2

Data Source: Walk Score Management LLC, Redfin Real Estate, U.S. EPA

*: Albany LBCC only had one walk audit route available

CBG: Census Block Group

Key Transit Hub	Walk Score®	Mean Walk Audit Score	EPA National Walkability Index			
			CBG Mean (X5)	CBG Mean	CBG Minimum	CBG Maximum
Hillsboro Central Transit Center	87	80	71	14.2	10.2	17.0
Klamath Falls Amtrak Station	61	62	81	16.2	12.7	19.5
La Grande Transit Center	62	54	67	13.5	8.5	19.0
Medford Front Street Station	92	84	85	17.0	14.2	19.0
Milton-Freewater	69	70	69	13.9	3.5	18.8
Ontario	49	36	42	8.4	7.8	9.0
PDX Transit Center	38	N/A	41	8.2	8.2	8.2
Philomath Applegate St & 11th St	63	62	56	11.1	4.0	15.7
Philomath Main St & 14th St	64	63	56	11.1	4.0	15.7
Portland 6th Ave & Taylor St	99	93	92	18.3	14.2	20.0
Portland Lloyd Center	96	73	93	18.5	17.2	19.7
Redmond Airport	9	N/A	68	13.7	13.7	13.7
Redmond Transit Hub	70	71	66	13.2	8.3	17.2
Salem Amtrak Station	77	86	84	16.9	14.8	19.2
Salem Downtown Transit Center	90	96	74	14.8	8.0	18.3
Springfield Greyhound Station	70	76	70	14.0	7.2	18.3
Union Station	38	87	96	19.3	17.7	20.0
Wilsonville Transit Center	22	73	60	12.0	5.0	15.7
Woodburn Hwy 211 & Hwy 214	61	47	62	12.3	8.2	14.8
Woodburn Memorial Transit Center	53	69	53	10.6	4.0	15.5
Mean	64	73	69	13.9	9.6	16.9

Data Source: Walk Score Management LLC, Redfin Real Estate, U.S. EPA
CBG: Census Block Group

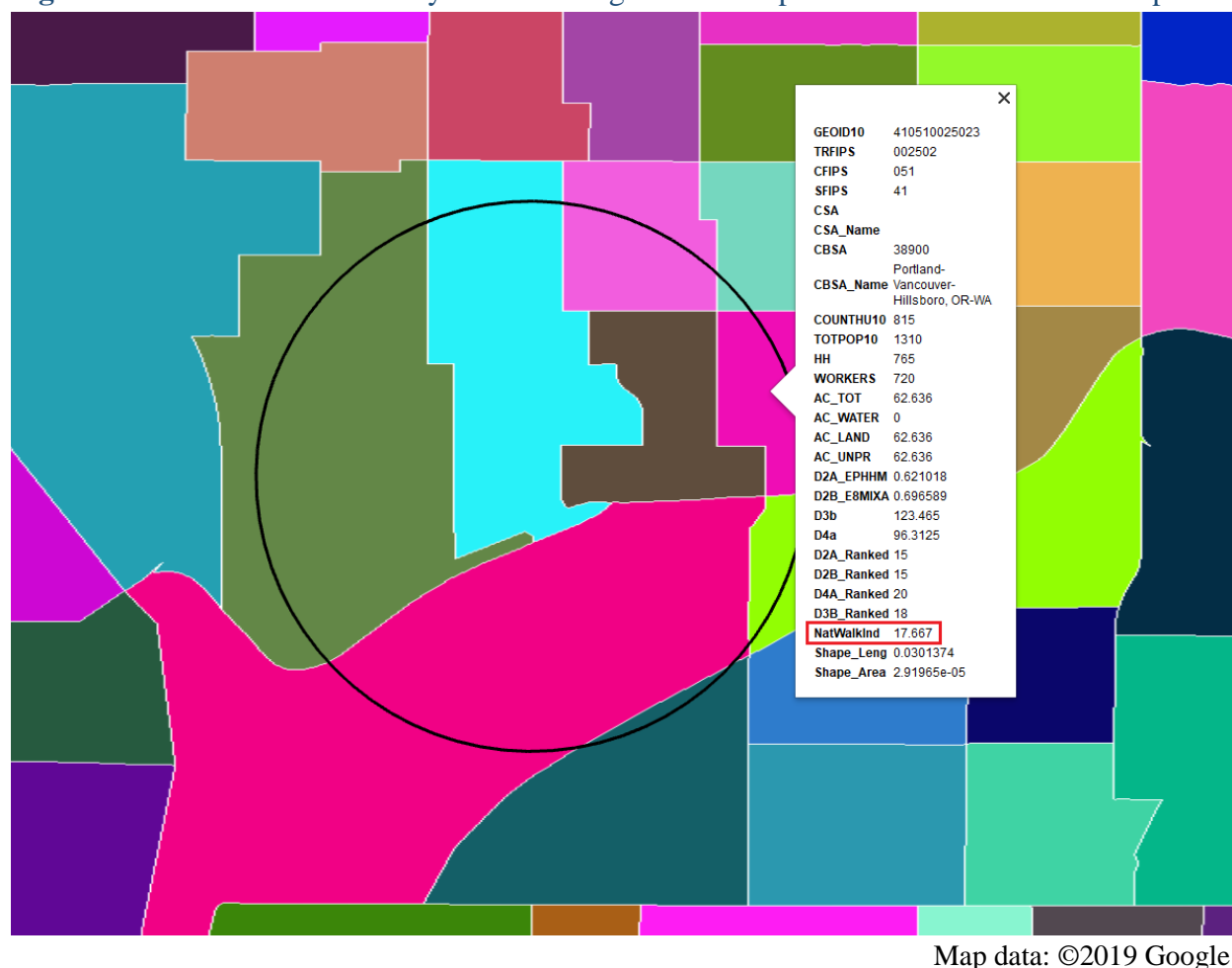
Comparative Analysis of Walkability Scores

Table H-2 shows different walkability scores for each KTH. Some score quite similarly across the board, but others have large variations depending on which data method is chosen. The first column shows a KTH's Walk Score® which is based on the latitude and longitude of the site and calculated using Walk Score Management's own internal algorithm. The second column shows the mean score of the three KTH walk audits gathered through ODOT field visits.

National Walkability Index Methodology

The final columns pull data from the U.S. Environmental Protection Agency's Smart Location Mapping database¹⁷. The "National Walkability Index" dataset provided shapefiles of every Census Block Group (CBG) in the U.S. Google Earth™ helps determine which CBGs are within a KTH radius. Each CBG contains its own "NatWalkInd" data point which estimates the walkability score of that specific block group. All data points within a KTH radius were then averaged.

Figure H-2: National Walkability Index – Google Earth Shapefiles of Census Block Groups



¹⁷ [EPA Smart Location Mapping - https://www.epa.gov/smartgrowth/smart-location-mapping](https://www.epa.gov/smartgrowth/smart-location-mapping)

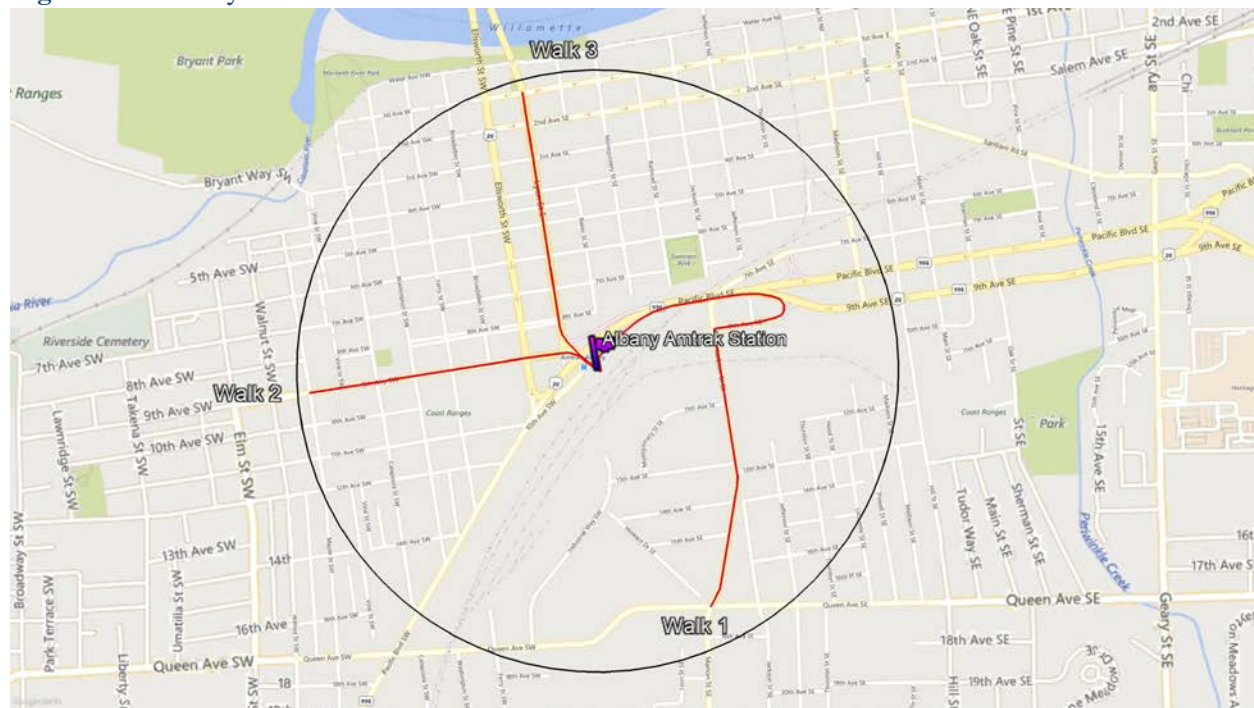
An important caveat is that block groups can extend far beyond a KTH's radius and even beyond the bounds of the city in which the site is located. Scores can be skewed if a block group contains both an urban portion and a rural portion. In **Figure H-2**, the large pink CBG in the south portion of the KTH radius is an example of how scores can potentially be skewed because a large portion of the block group is outside the KTH radius.

The Walk Score® and the surveyor walk audit score are based on a 100-point scale. The EPA's index is a 20-point scale with 1 being the least walkable and 20 being the most walkable. The EPA scores were multiplied by five so they could be compared to the other analyses.

As evidenced by the variation in scores of certain KTHs, no method is perfect. Scores often vary depending on how big or small the area under review is, whether it be a single walking route or several square miles of census block groups. Ultimately there is no substitute for visiting the site in-person and experiencing the built environment from the eyes of the pedestrian. For the purposes of the walkability analysis, the surveyor walk audits are the most recent and accurate dataset.

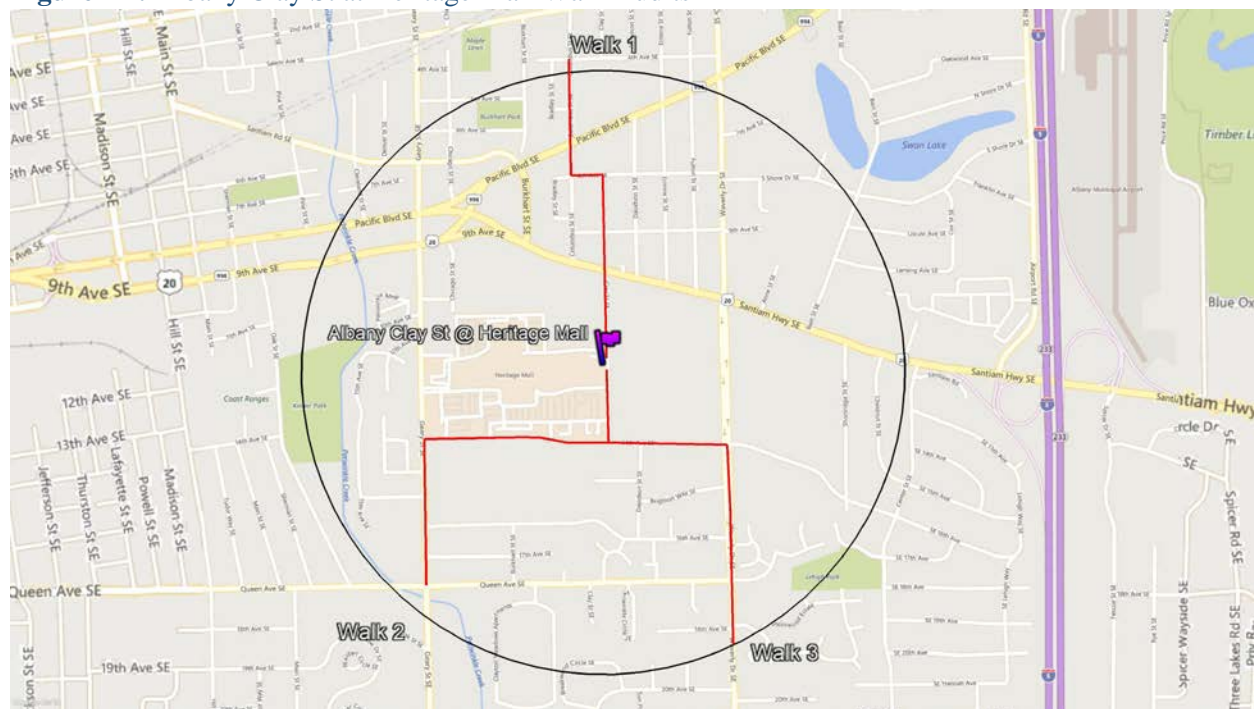
Appendix I: Walk Audit Maps

Figure I-1: Albany Amtrak Station Walk Audits

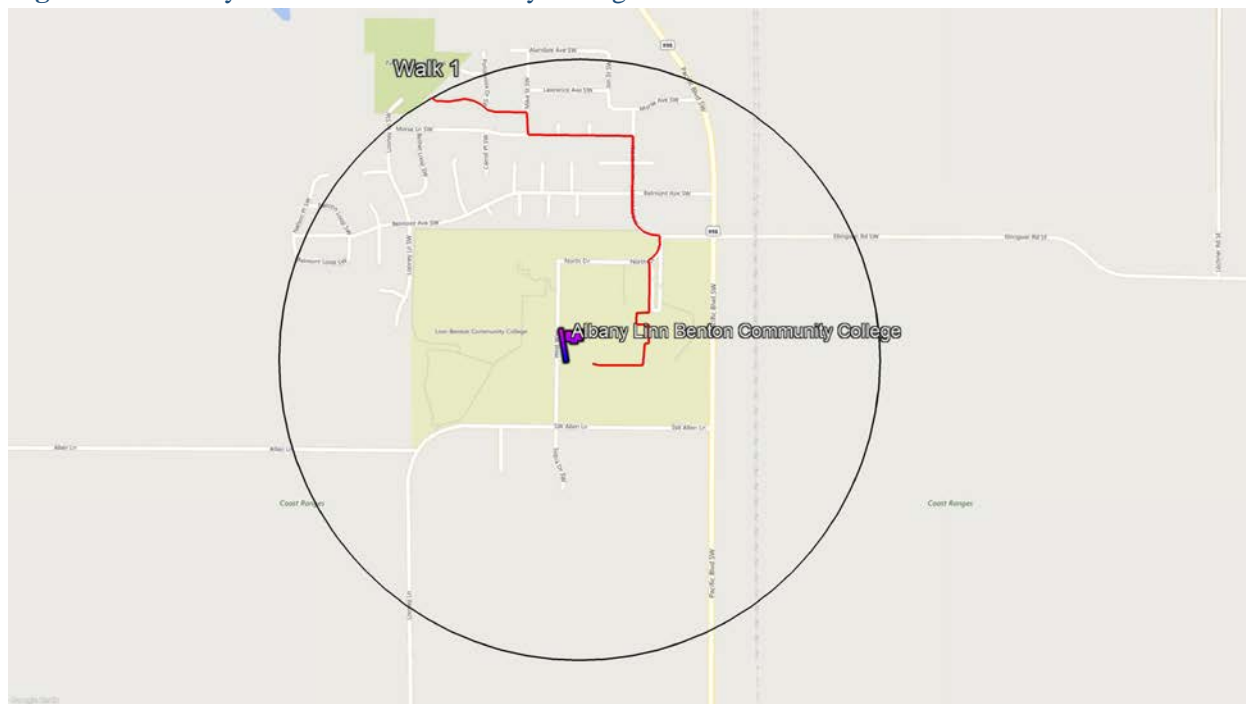


Map data: ©2019 Google, Microsoft

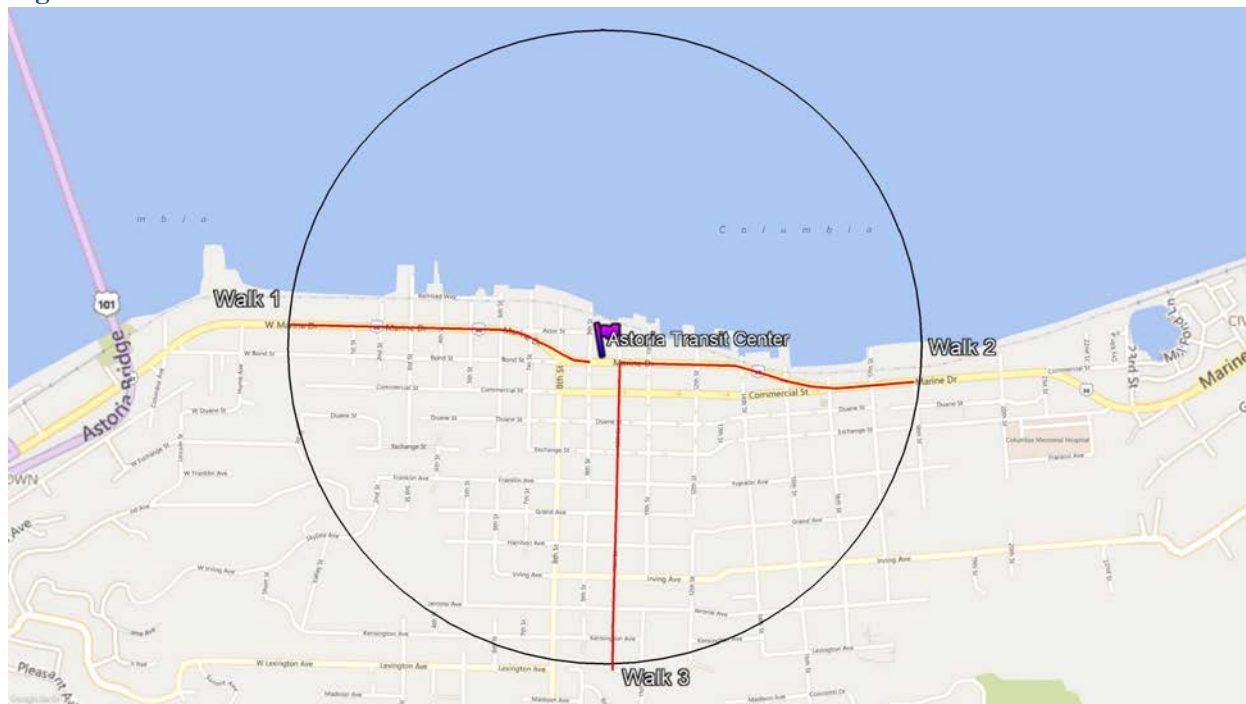
Figure I-2: Albany Clay St at Heritage Mall Walk Audits



Map data: ©2019 Google, Microsoft

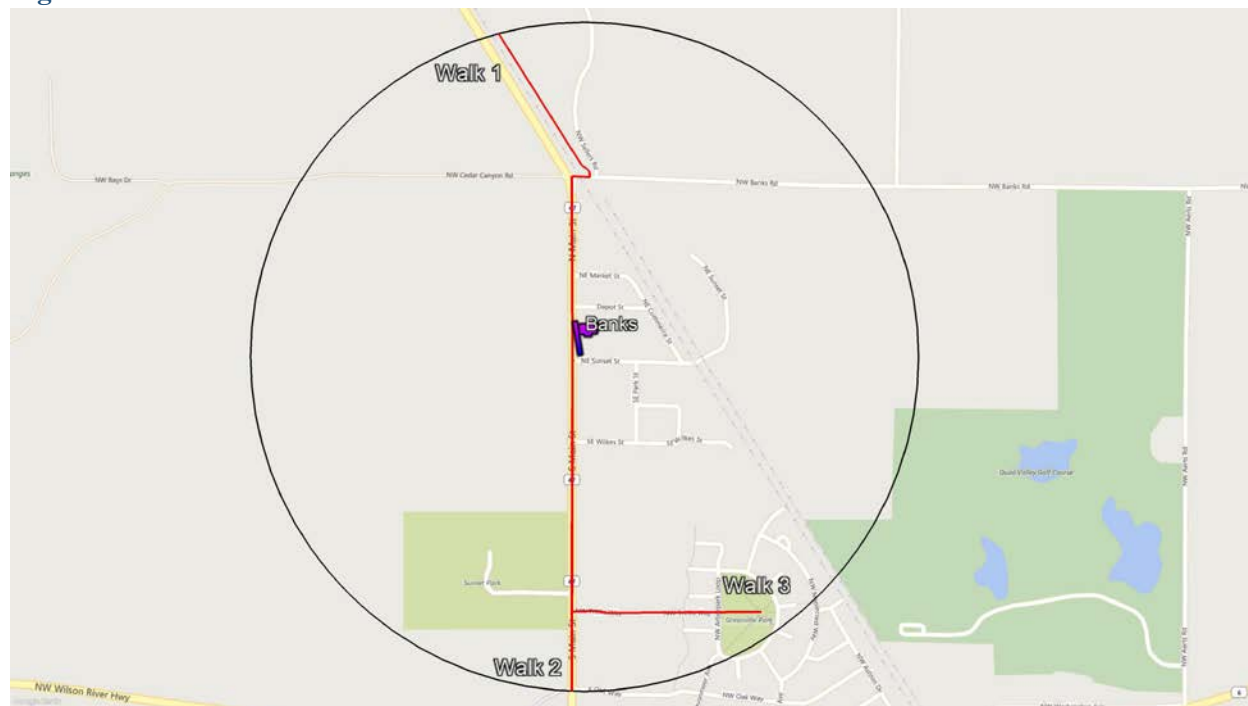
Figure I-3: Albany Linn Benton Community College Walk Audits

Map data: ©2019 Google, Microsoft

Figure I-4: Astoria Transit Center Walk Audits

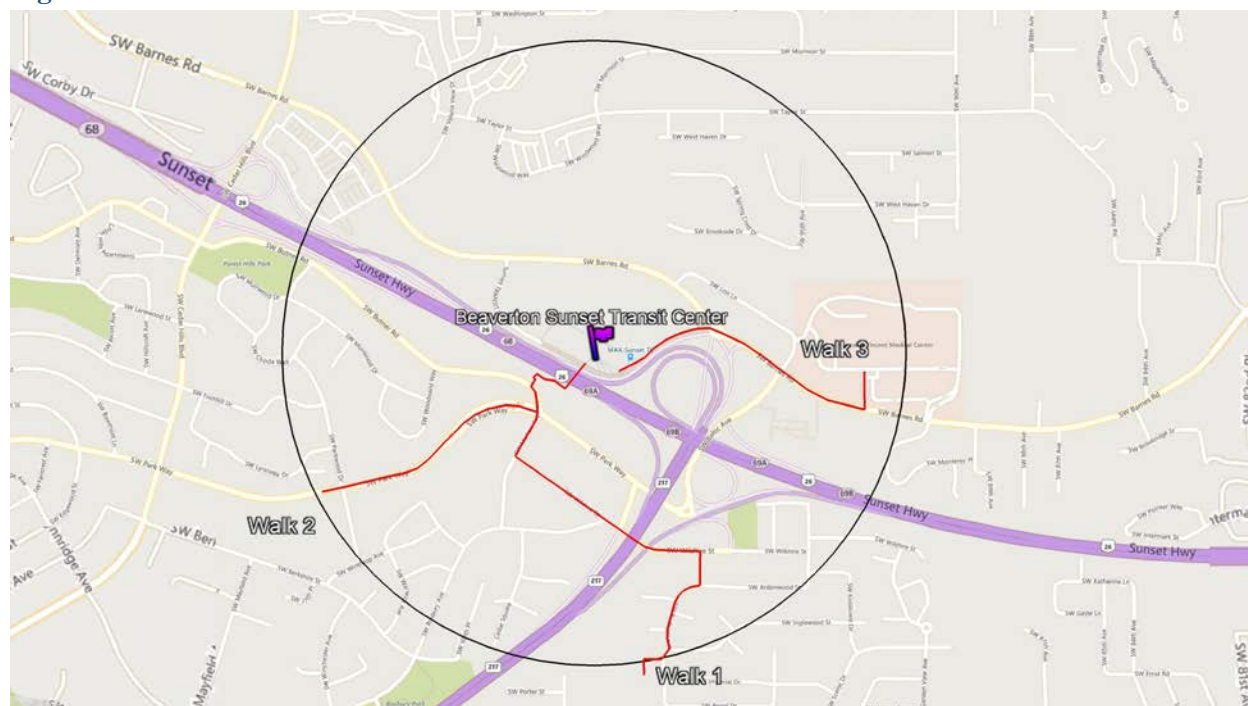
Map data: ©2019 Google, Microsoft

Figure I-5: Banks Walk Audits



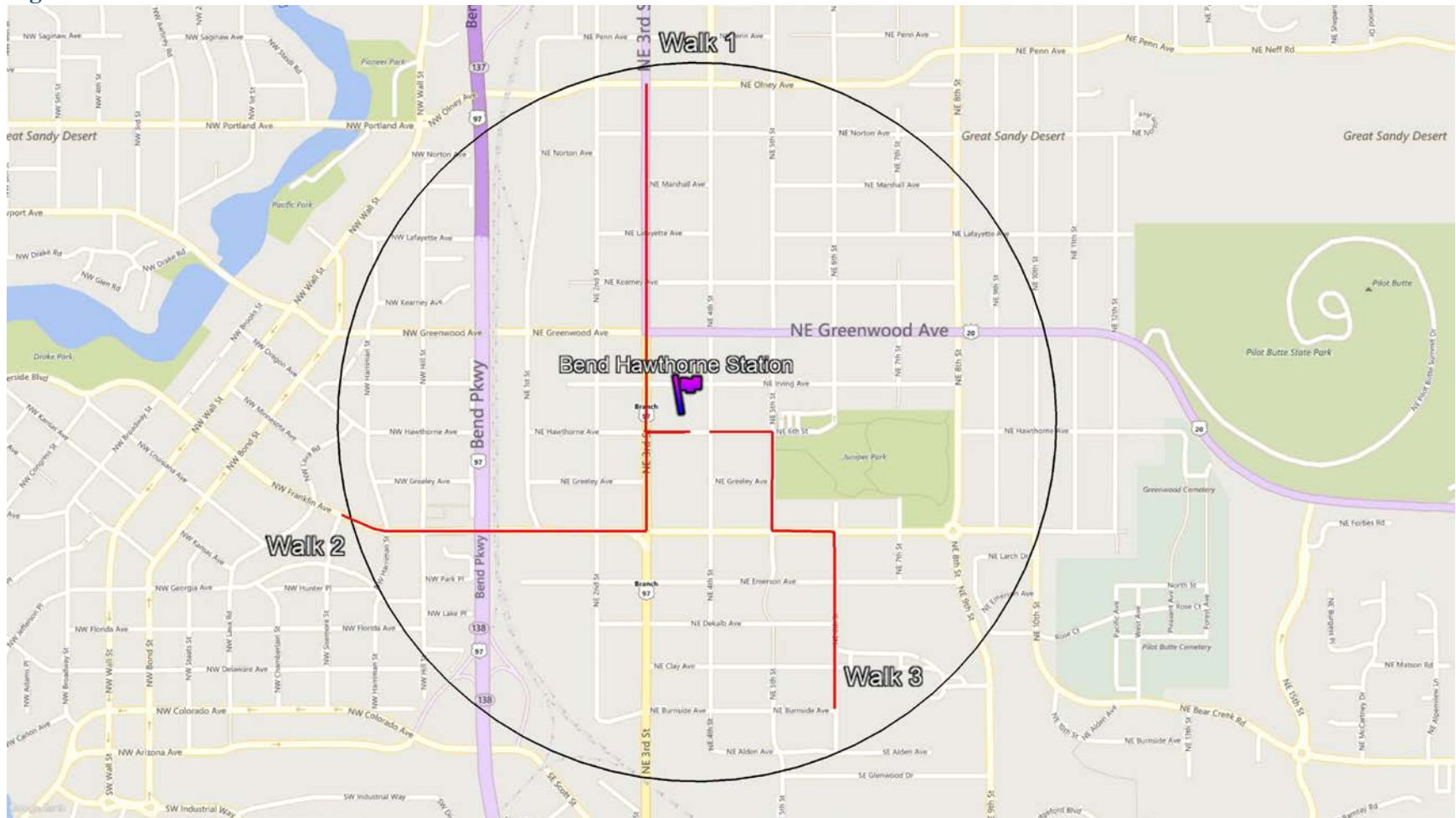
Map data: ©2019 Google, Microsoft

Figure I-6: Beaverton Sunset Transit Center Walk Audits



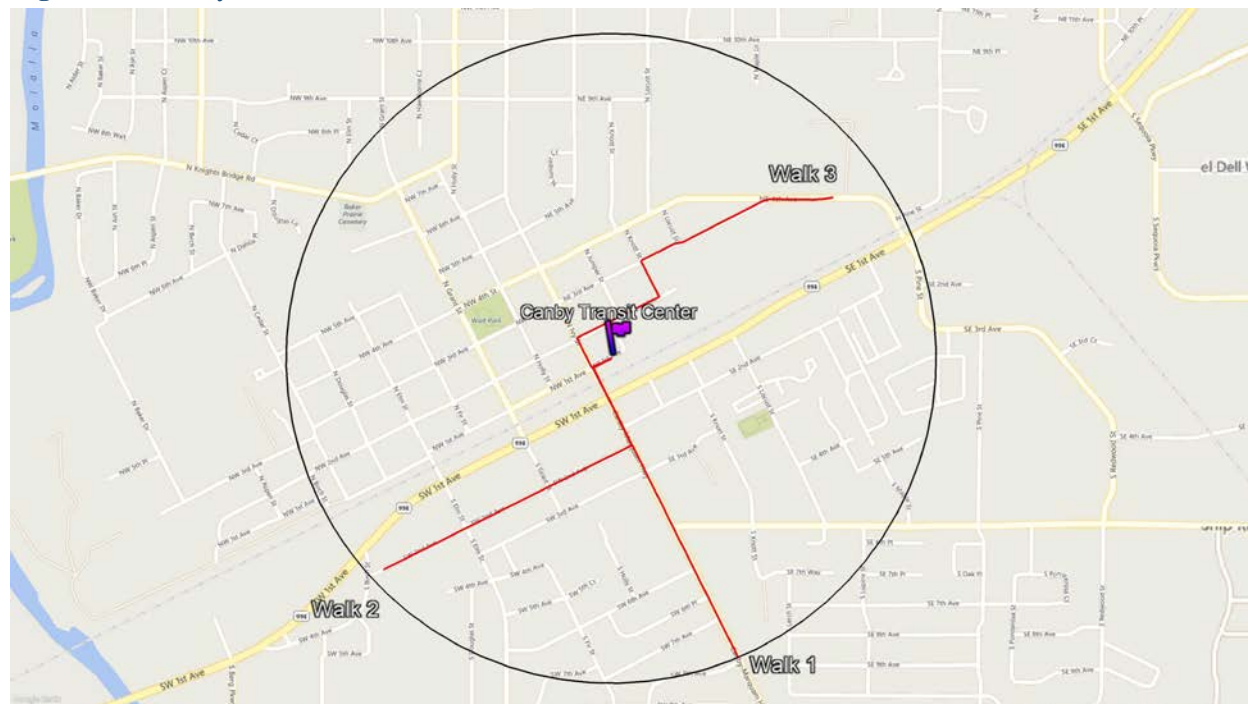
Map data: ©2019 Google, Microsoft

Figure I-7: Bend Hawthorne Station Walk Audits



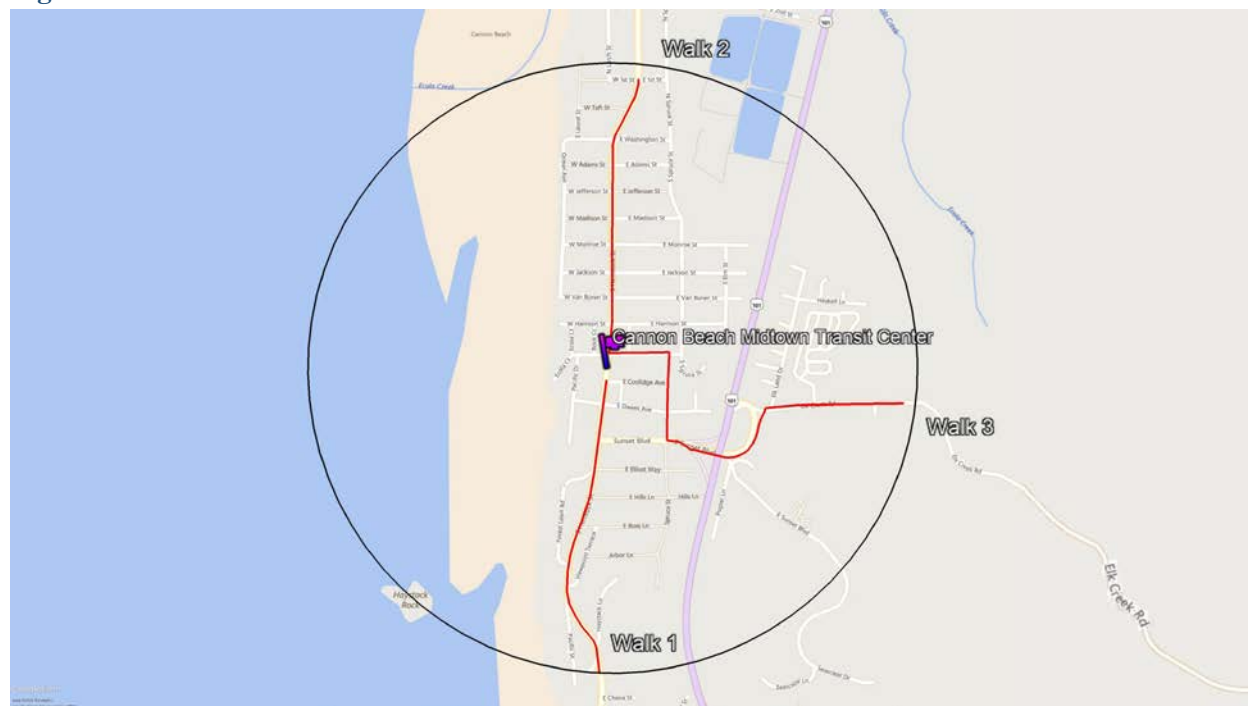
Map data: ©2019 Google, Microsoft

Figure I-8: Canby Transit Center Walk Audits

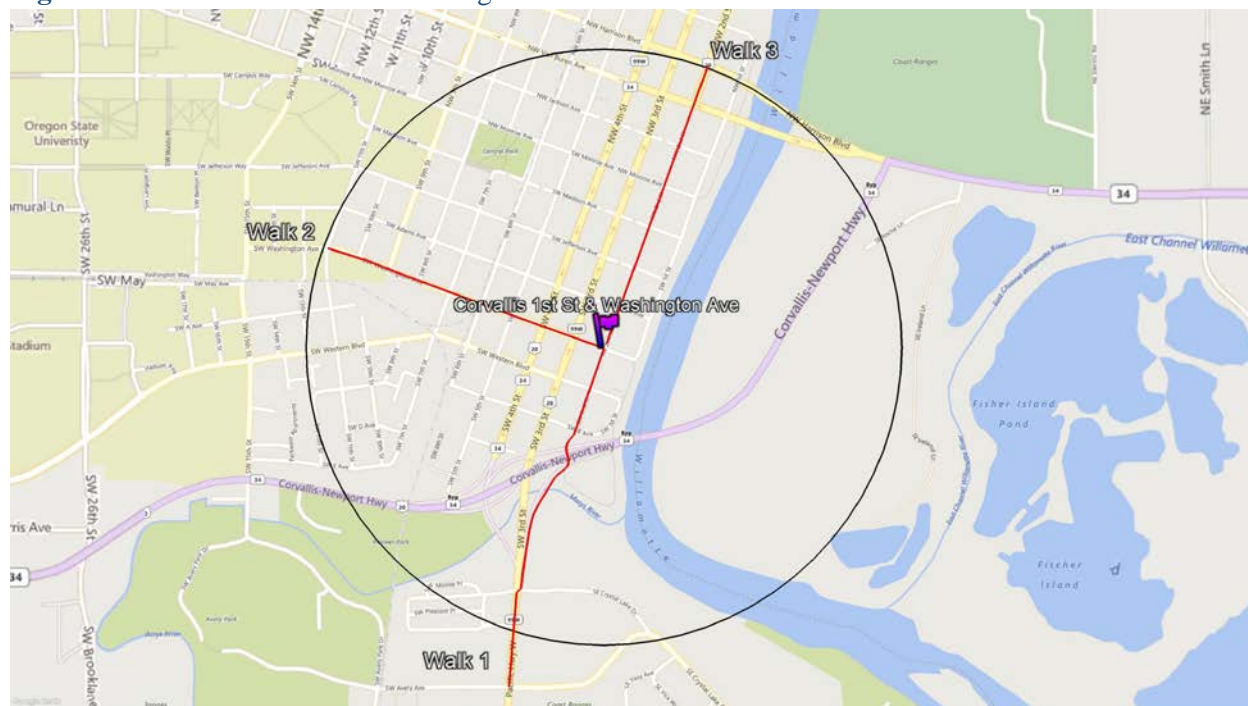


Map data: ©2019 Google, Microsoft

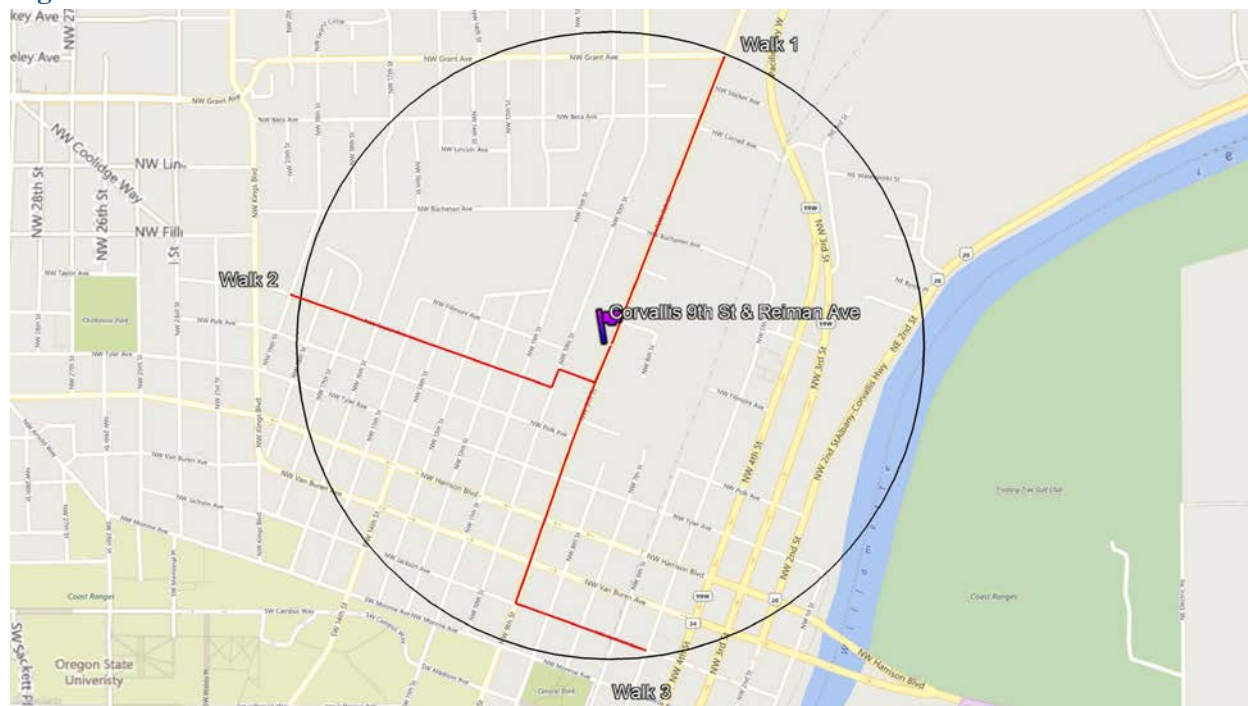
Figure I-9: Cannon Beach Midtown Transit Center Walk Audits



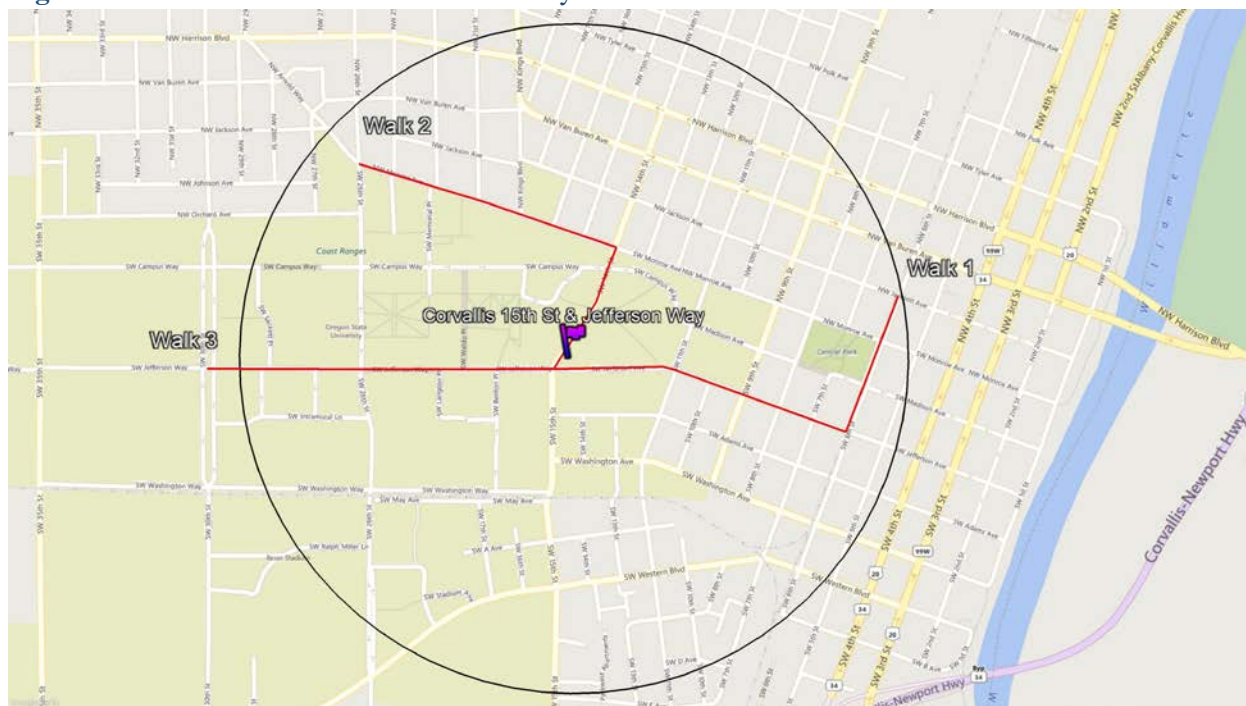
Map data: ©2019 Google, Microsoft

Figure I-10: Corvallis 1st St & Washington Ave Walk Audits

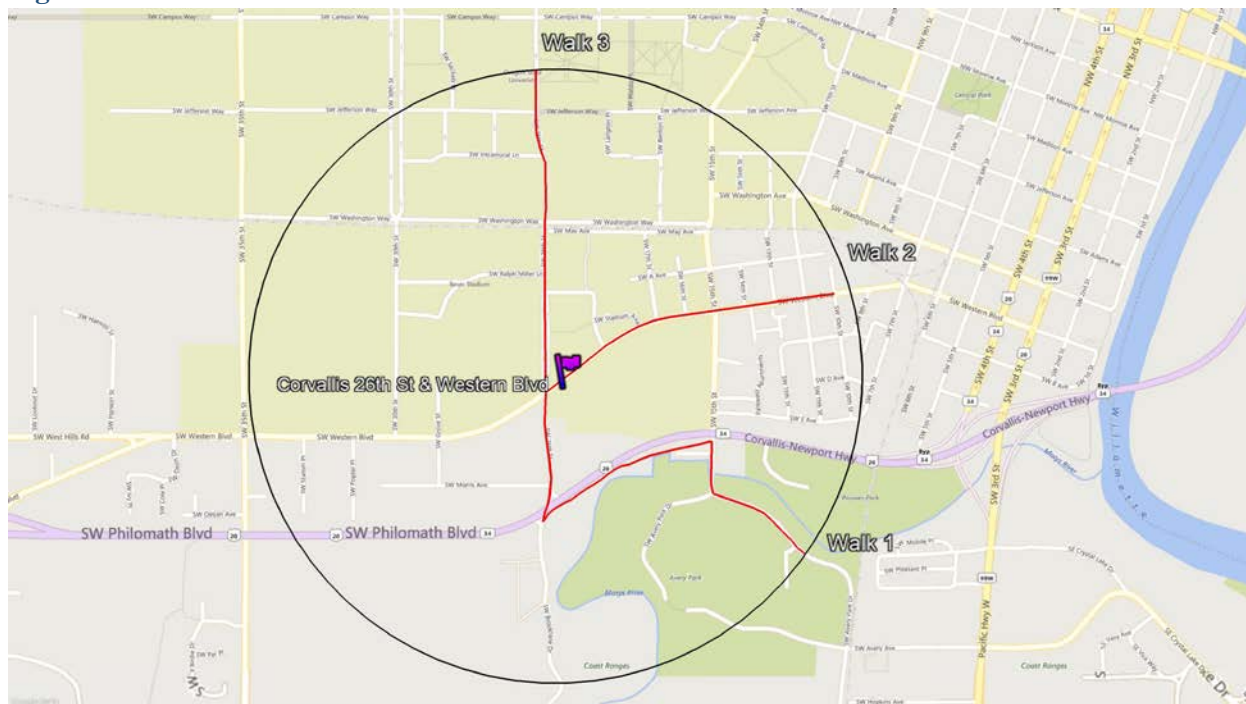
Map data: ©2019 Google, Microsoft

Figure I-11: Corvallis 9th St & Reiman Ave Walk Audits

Map data: ©2019 Google, Microsoft

Figure I-12: Corvallis 15th St & Jefferson Way Walk Audits

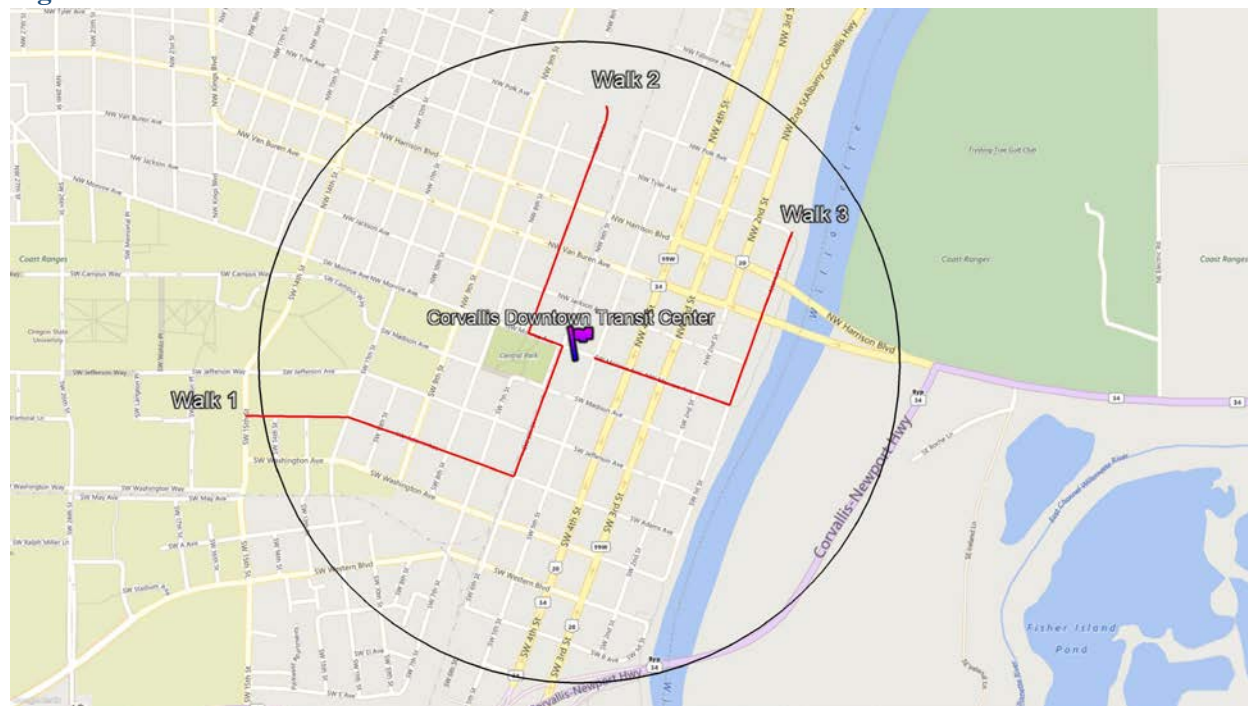
Map data: ©2019 Google, Microsoft

Figure I-13: Corvallis 26th St & Western Blvd Walk Audits

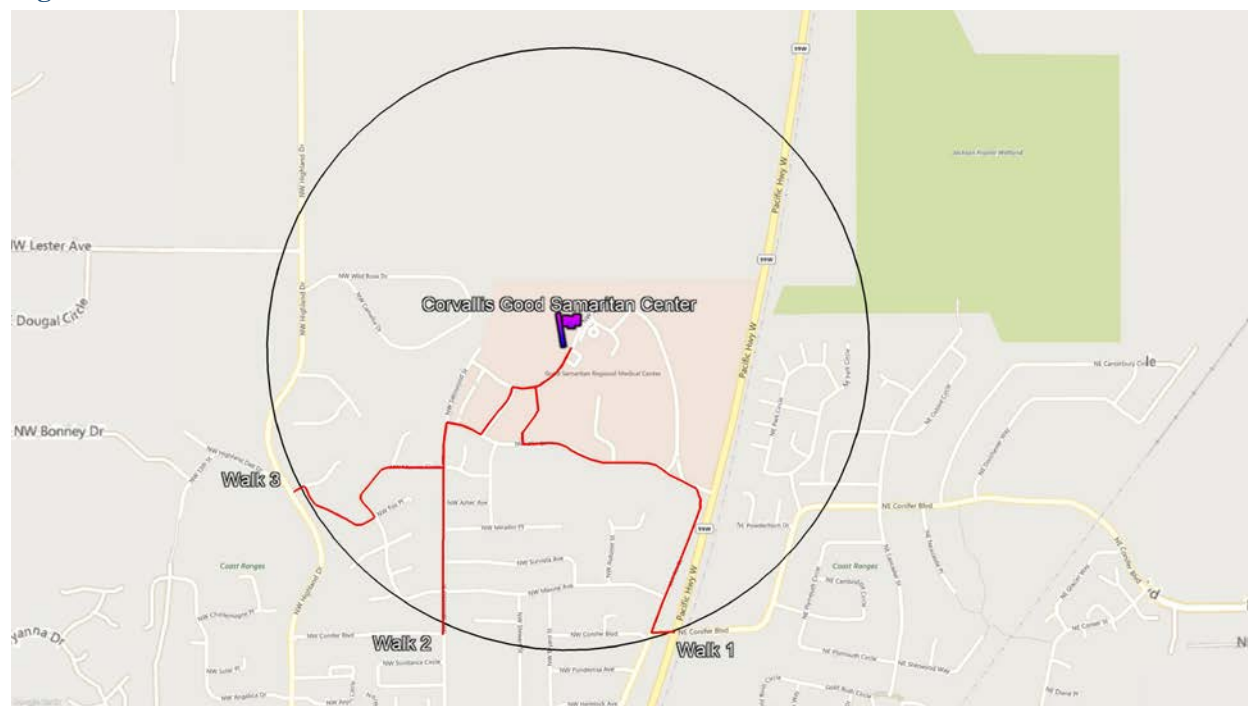
Map data: ©2019 Google, Microsoft

[illegible]

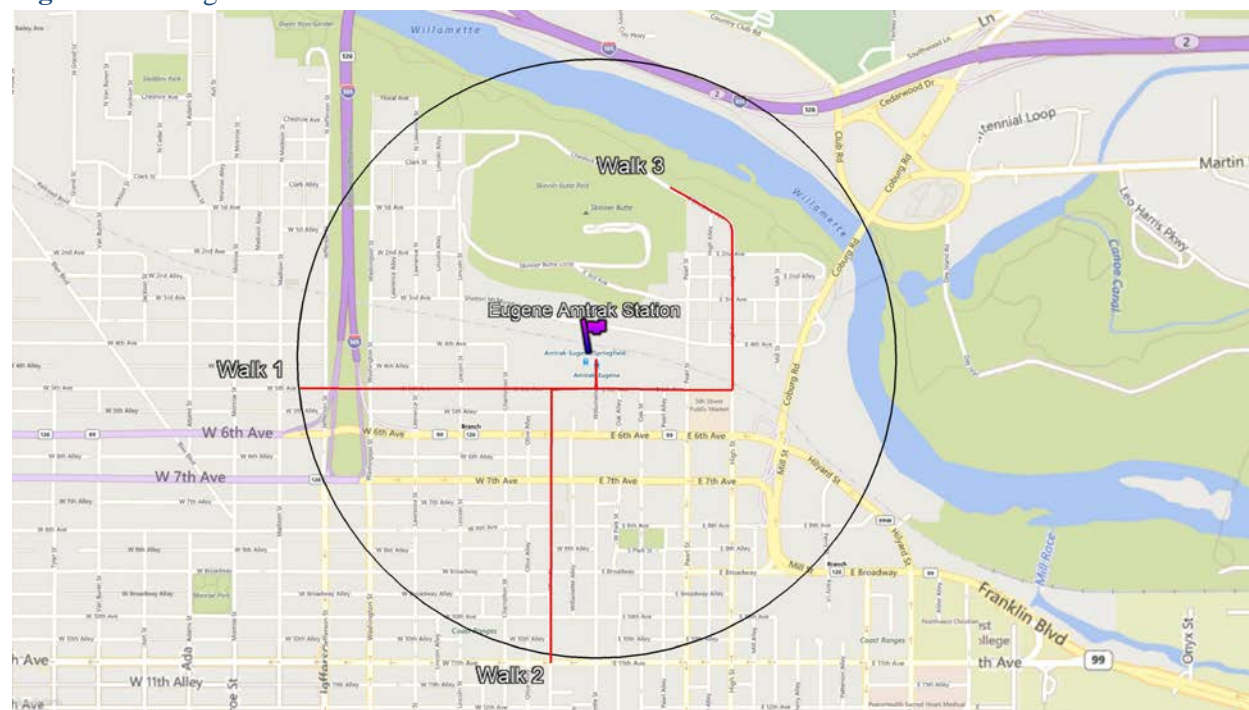
248

Figure I-16: Corvallis Downtown Transit Center Walk Audits

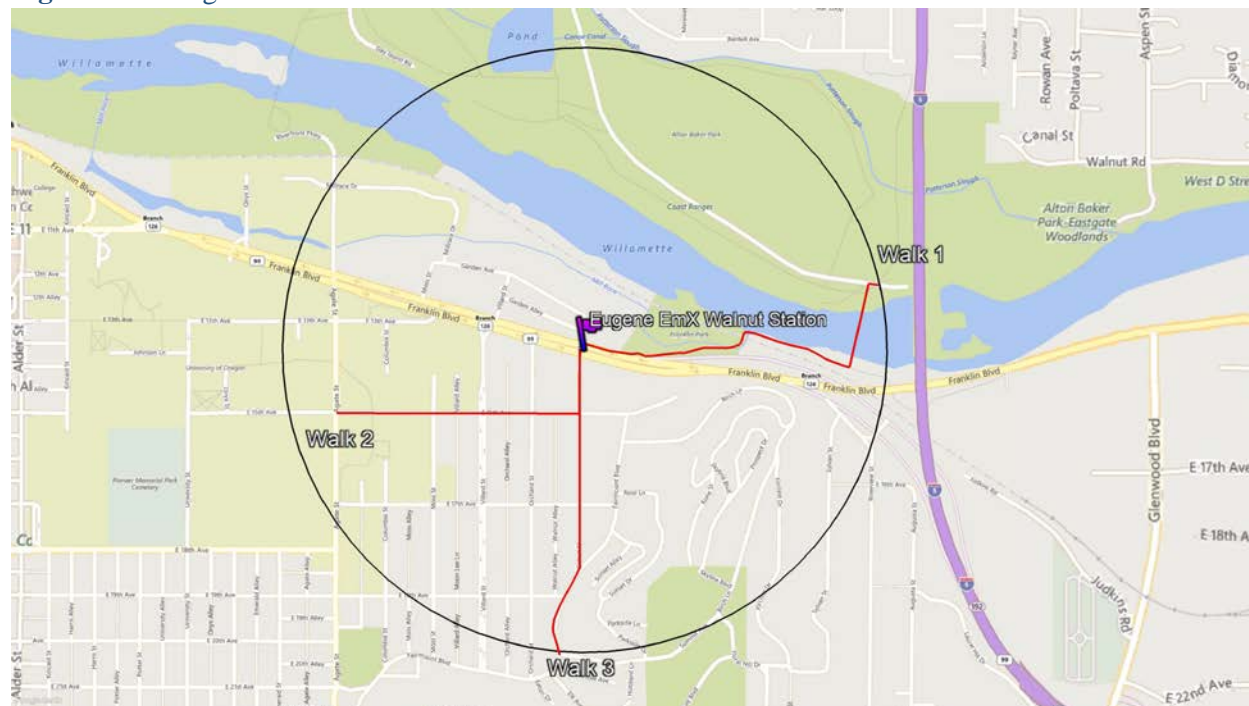
Map data: ©2019 Google, Microsoft

Figure I-17: Corvallis Good Samaritan Center Walk Audits

Map data: ©2019 Google, Microsoft

Figure I-18: Eugene Amtrak Station Walk Audits

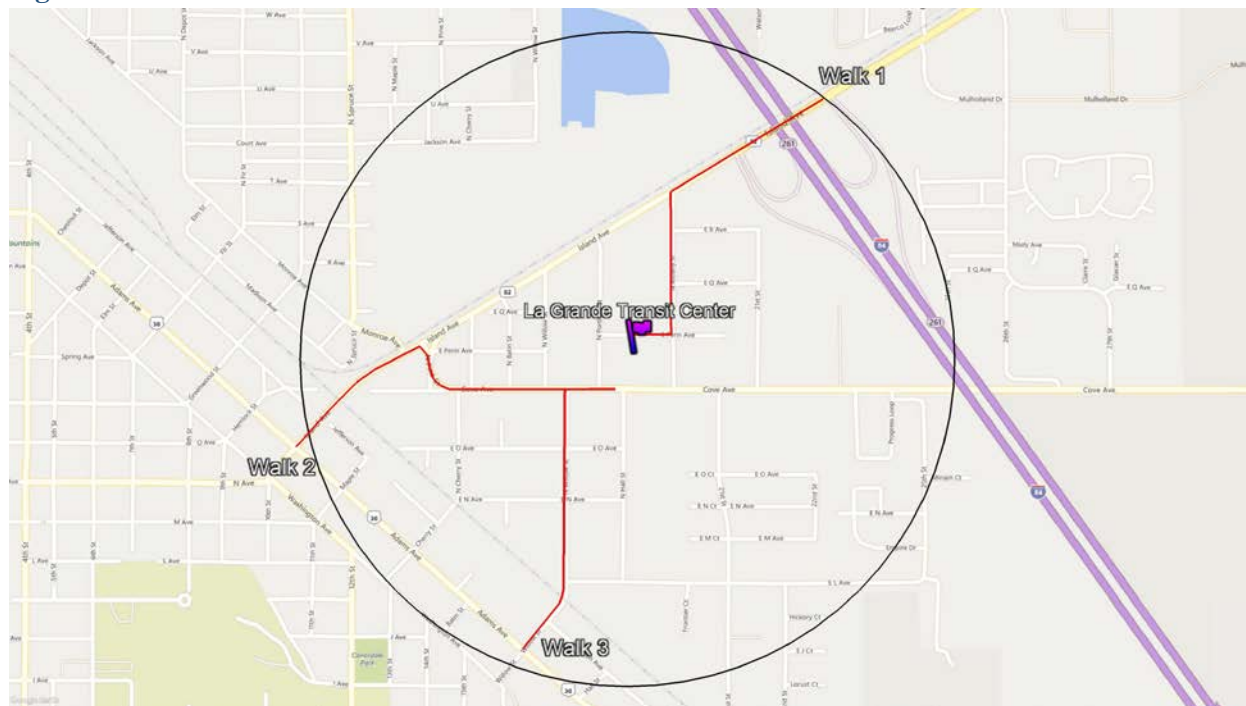
Map data: ©2019 Google, Microsoft

Figure I-19: Eugene EmX Walnut Station Walk Audits

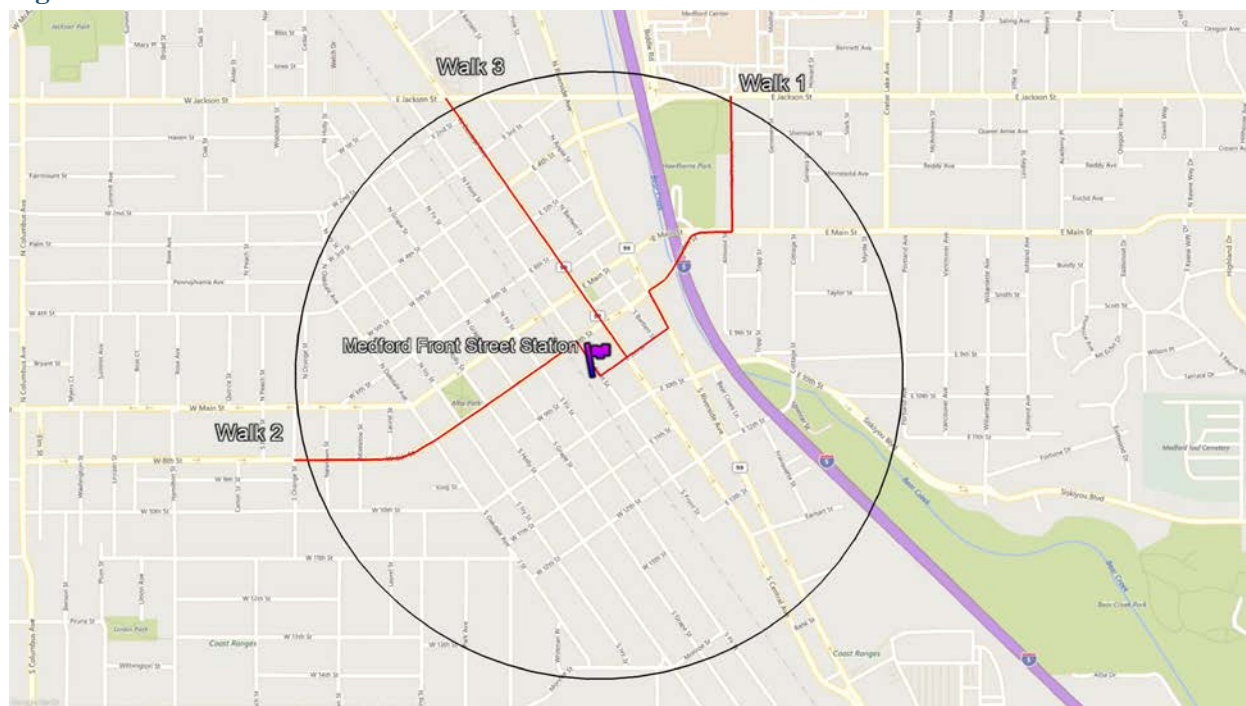
Map data: ©2019 Google, Microsoft

The map displays the Klamath Falls Amtrak Station, marked with a purple train icon, situated at the intersection of Main St and Klamath Ave. Three proposed walking routes are highlighted: Walk 1 (red line) extends south from the station towards the river; Walk 2 (blue line) extends north and east towards the city center; and Walk 3 (green line) extends west from the station. Major roads shown include Crater Lake Pkwy (US-99) and various city streets like Main St, Klamath Ave, and Commercial St. The map also shows the Klamath River to the south and the city of Klamath Falls, Oregon.

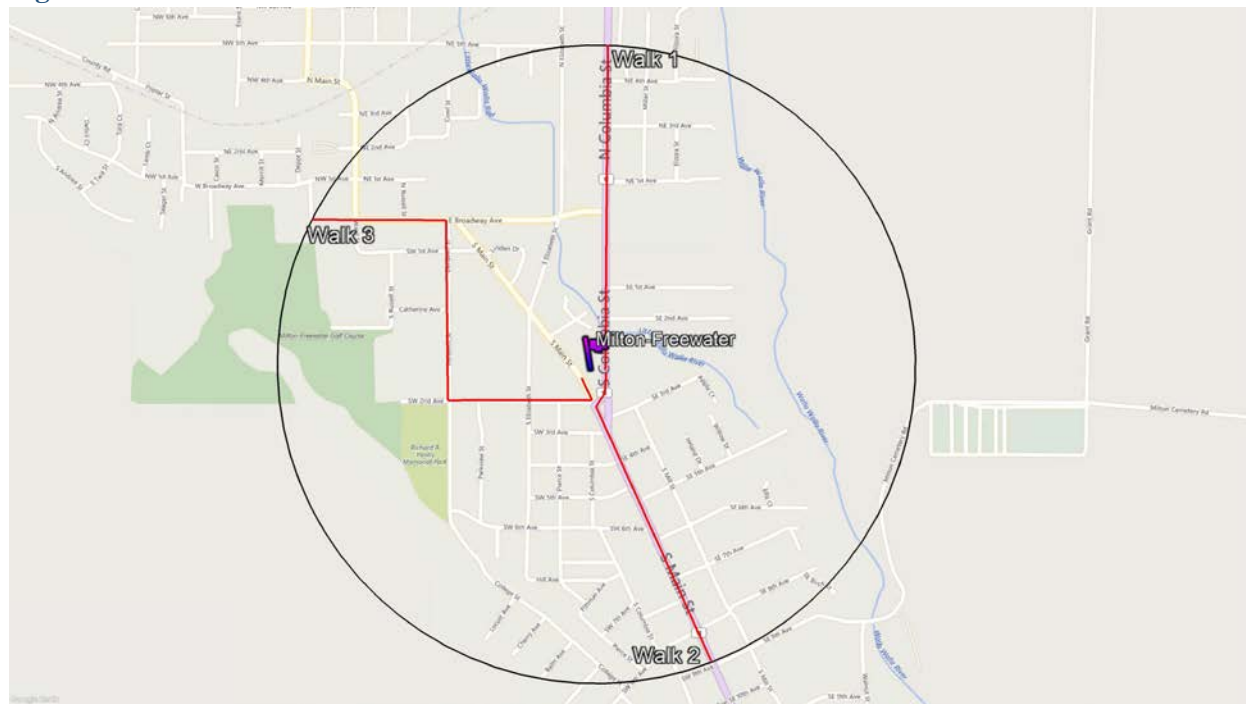
251

Figure I-22: La Grande Transit Center Walk Audits

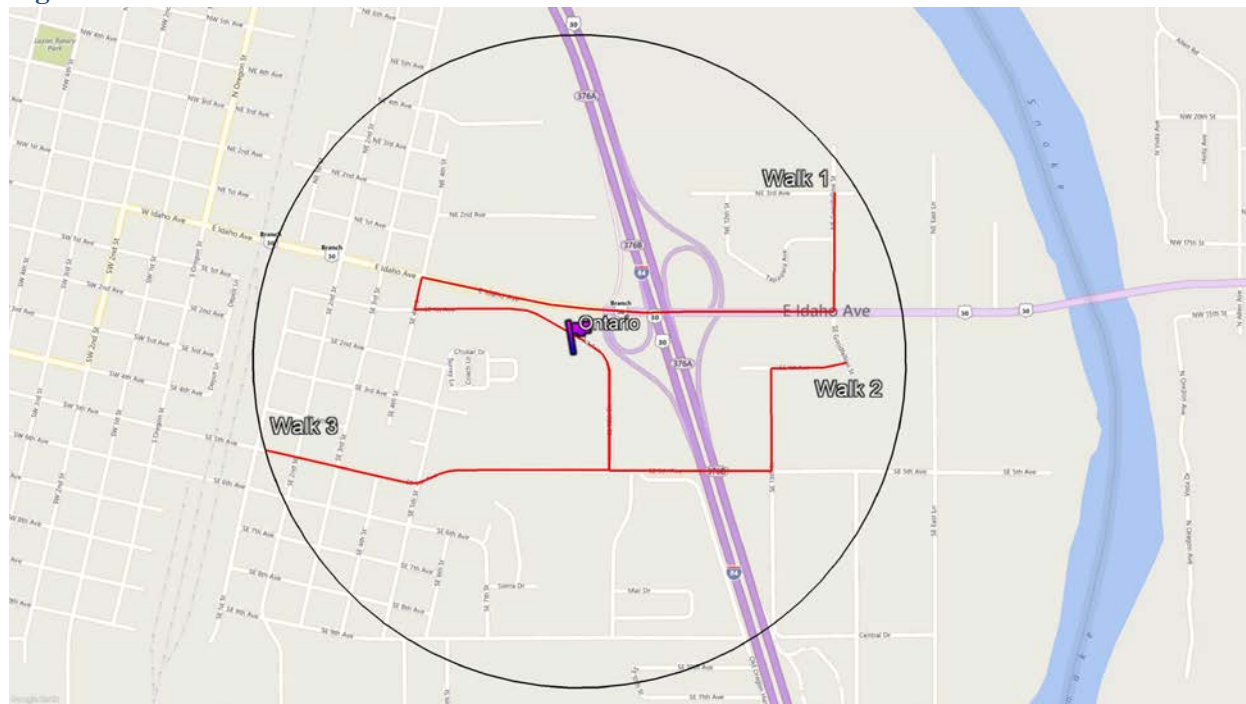
Map data: ©2019 Google, Microsoft

Figure I-23: Medford Front Street Station Walk Audits

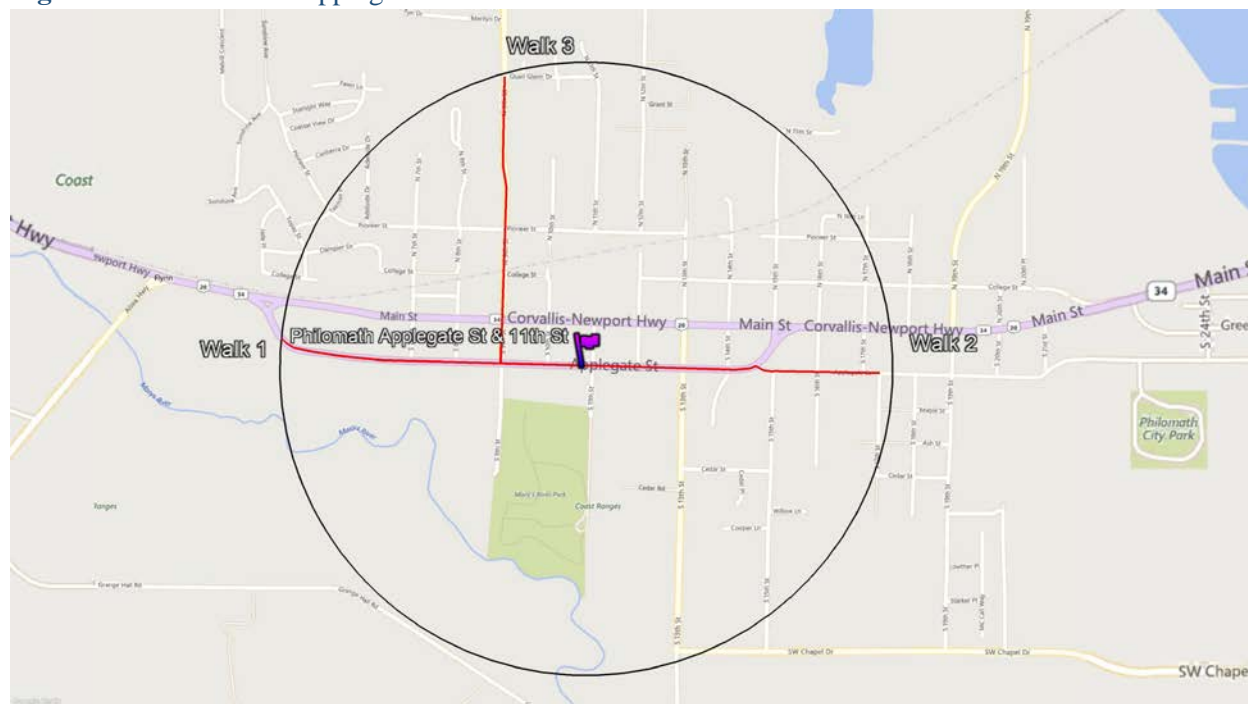
Map data: ©2019 Google, Microsoft

Figure I-24: Milton-Freewater Walk Audits

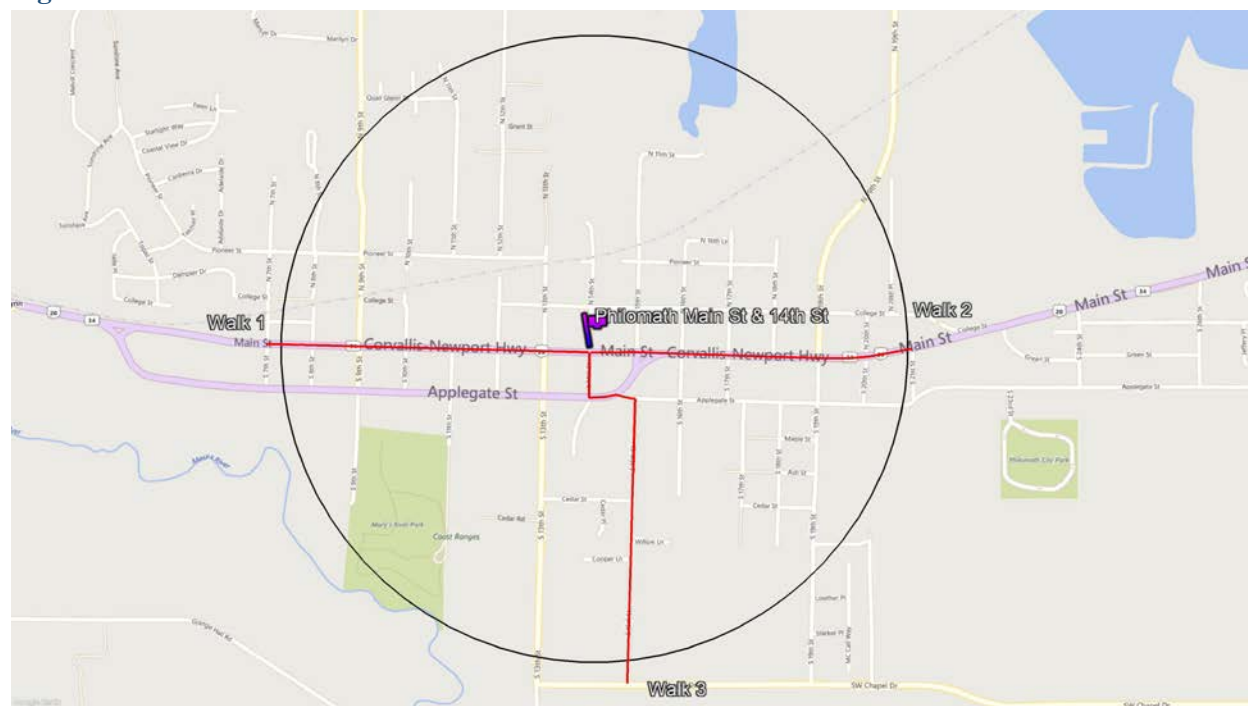
Map data: ©2019 Google, Microsoft

Figure I-25: Ontario Walk Audits

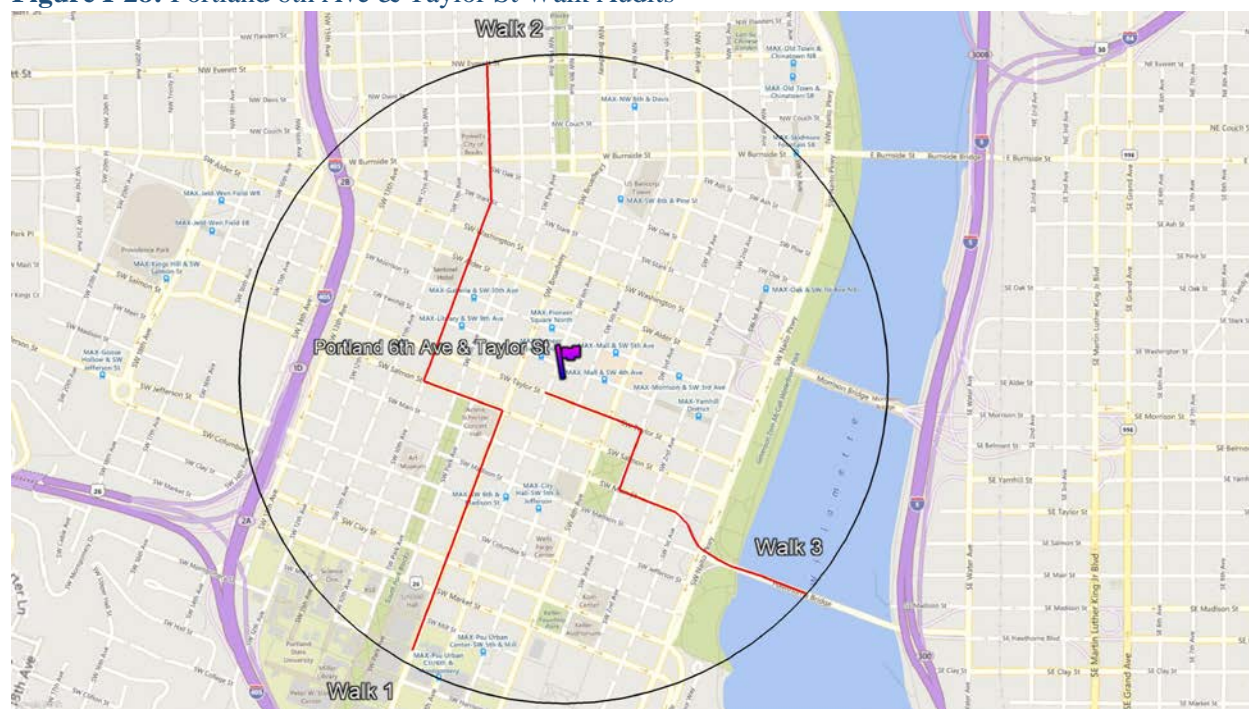
Map data: ©2019 Google, Microsoft

Figure I-26: Philomath Applegate St & 11th St Walk Audits

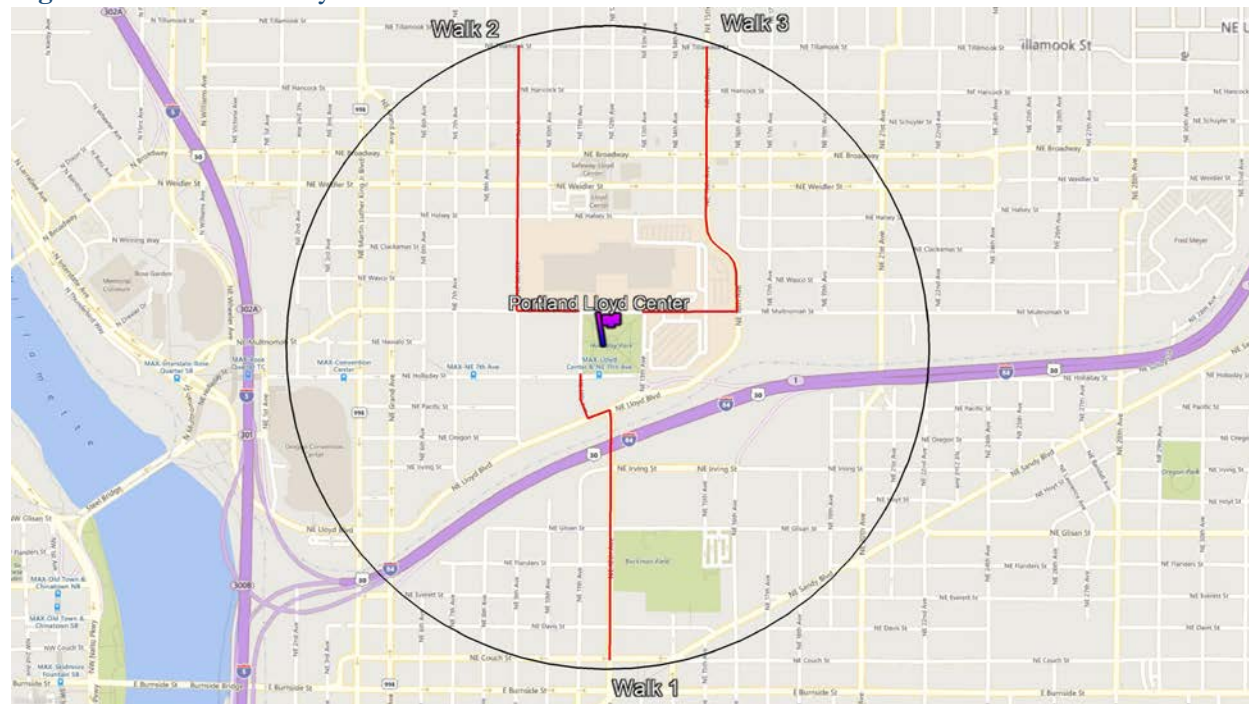
Map data: ©2019 Google, Microsoft

Figure I-27: Philomath Main St & 14th St Walk Audits

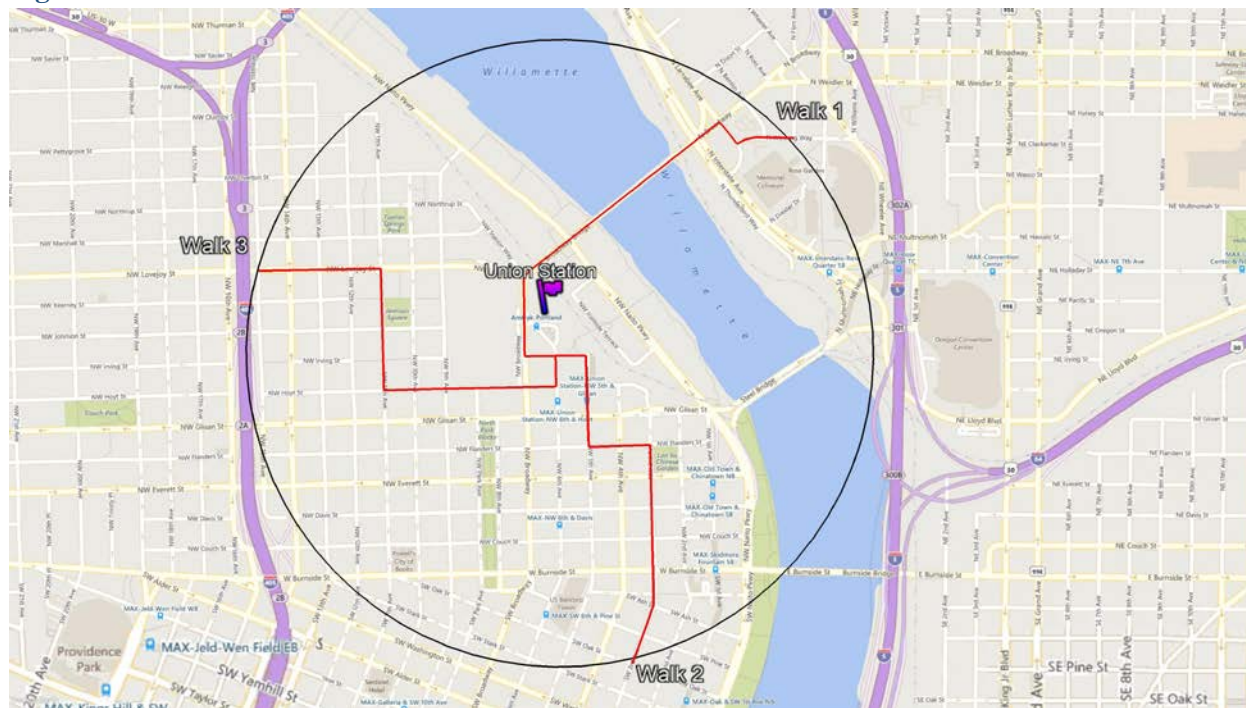
Map data: ©2019 Google, Microsoft

Figure I-28: Portland 6th Ave & Taylor St Walk Audits

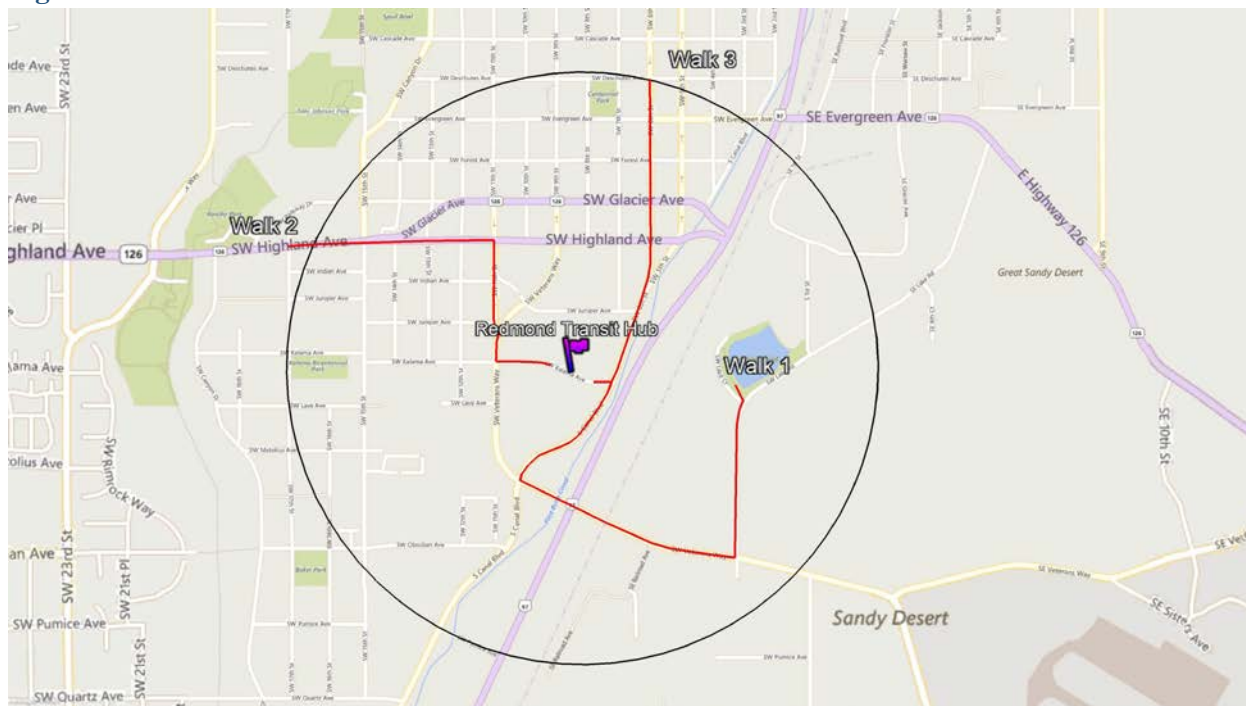
Map data: ©2019 Google, Microsoft

Figure I-29: Portland Lloyd Center Walk Audits

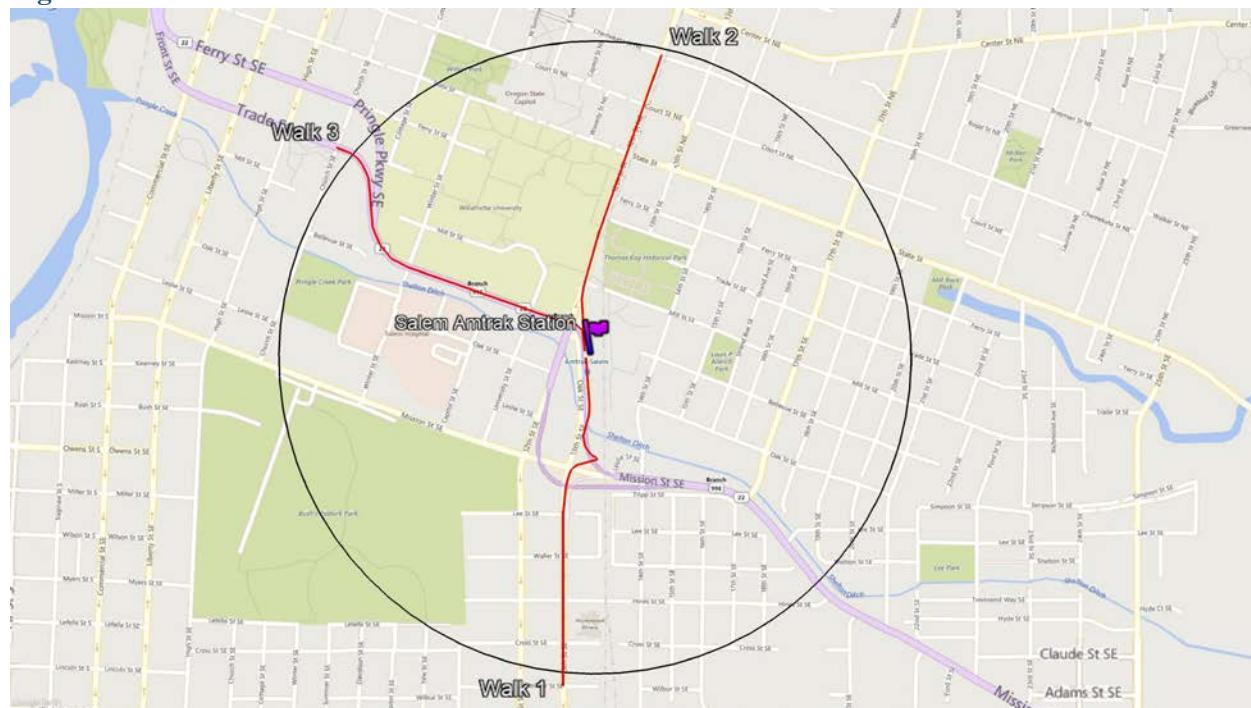
Map data: ©2019 Google, Microsoft

Figure I-30: Portland Union Station Walk Audits

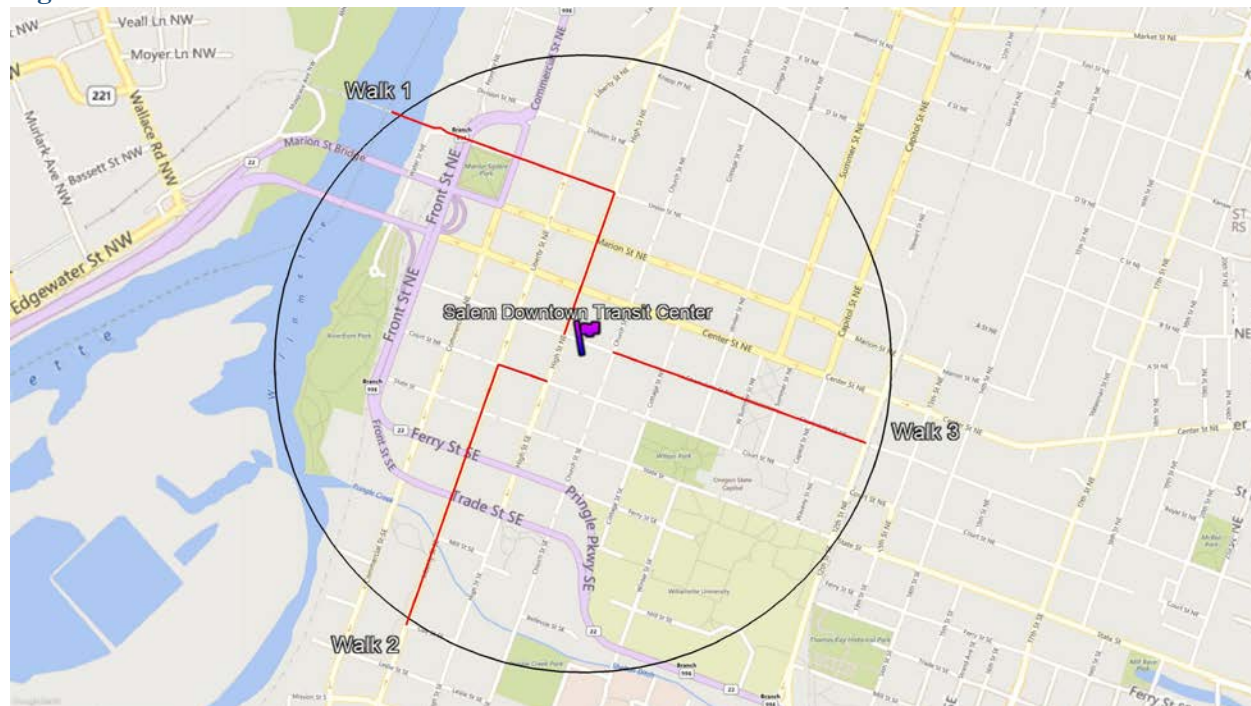
Map data: ©2019 Google, Microsoft

Figure I-31: Redmond Transit Hub Walk Audits

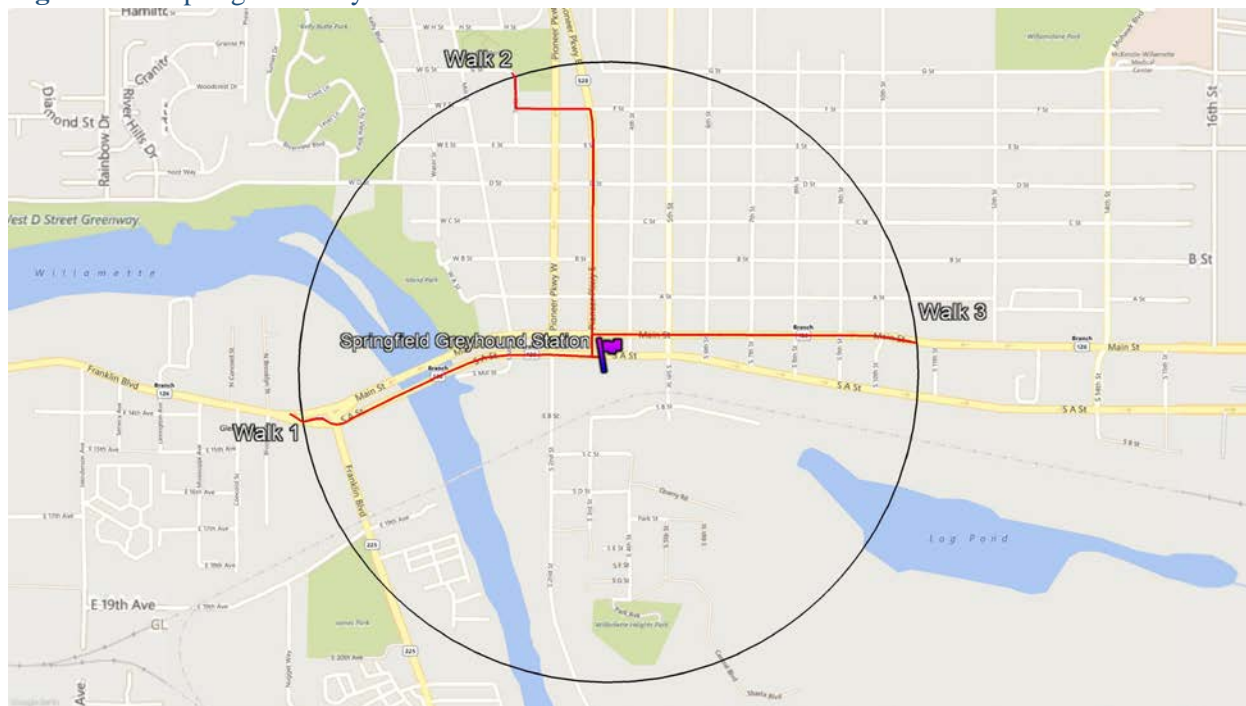
Map data: ©2019 Google, Microsoft

Figure I-32: Salem Amtrak Station Walk Audits

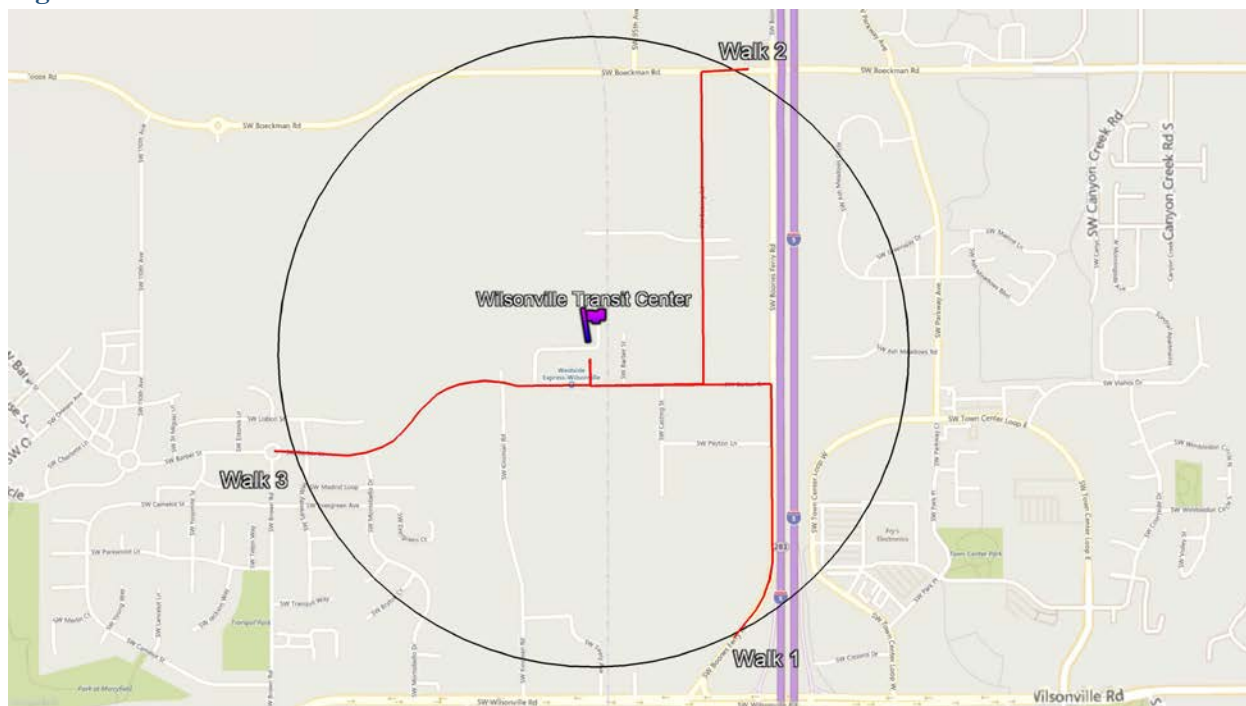
Map data: ©2019 Google, Microsoft

Figure I-33: Salem Downtown Transit Center Walk Audits

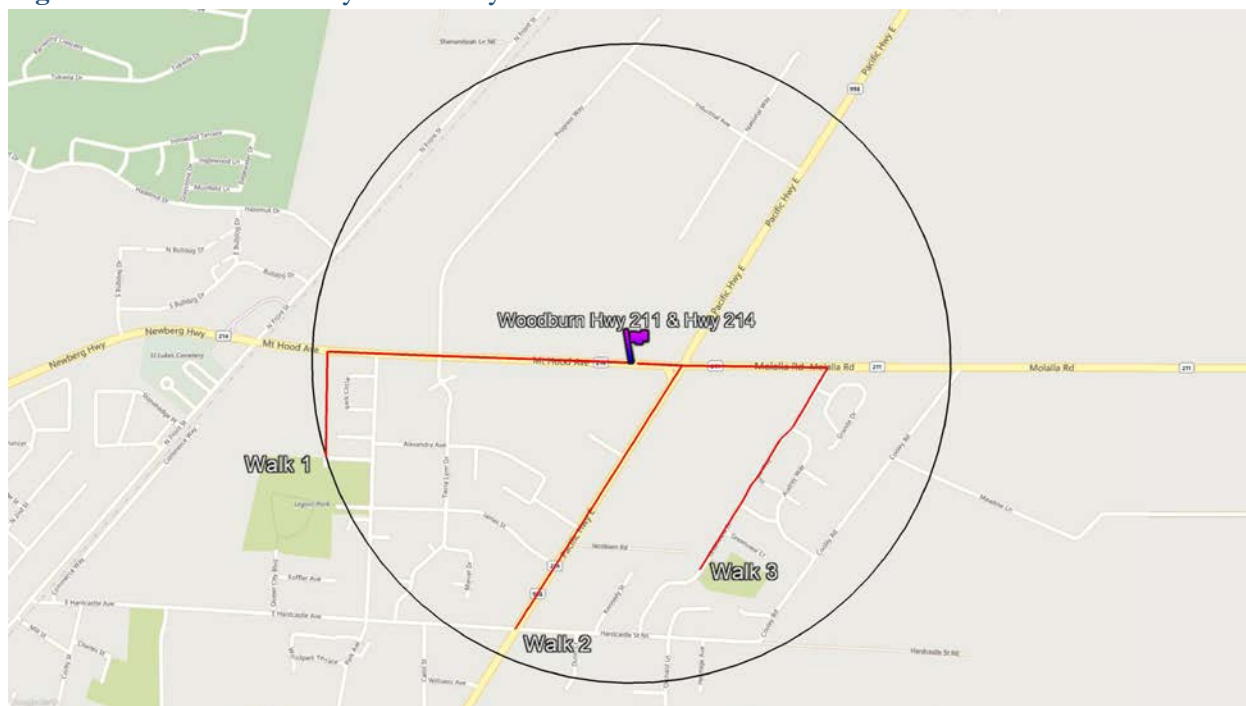
Map data: ©2019 Google, Microsoft

Figure I-34: Springfield Greyhound Station Walk Audits

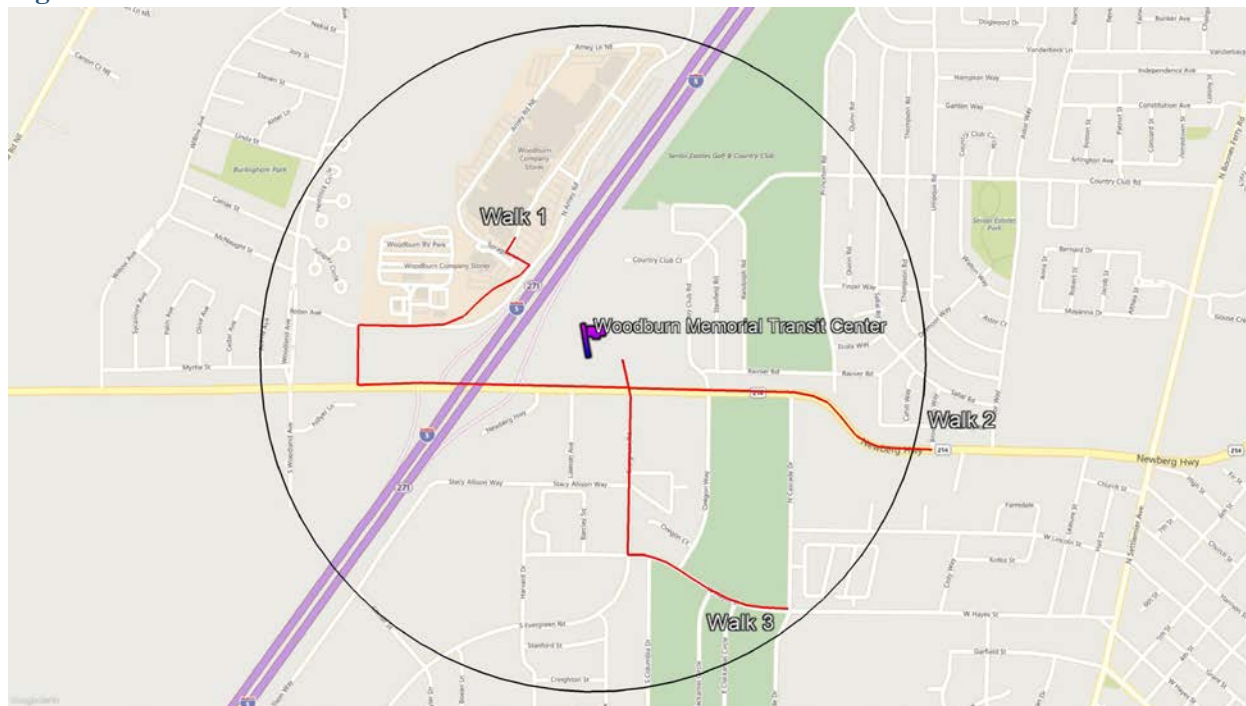
Map data: ©2019 Google, Microsoft

Figure I-35: Wilsonville Transit Center Walk Audits

Map data: ©2019 Google, Microsoft

Figure I-36: Woodburn Hwy 211 & Hwy 214 Walk Audits

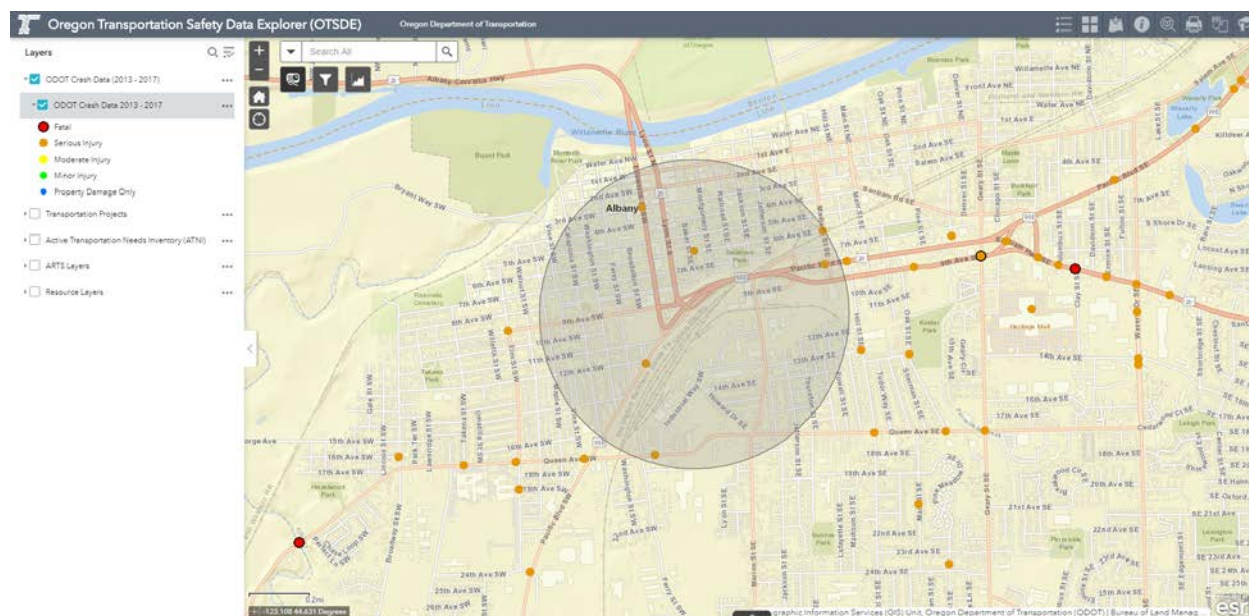
Map data: ©2019 Google, Microsoft

Figure I-37: Woodburn Memorial Transit Center Walk Audits

Map data: ©2019 Google, Microsoft

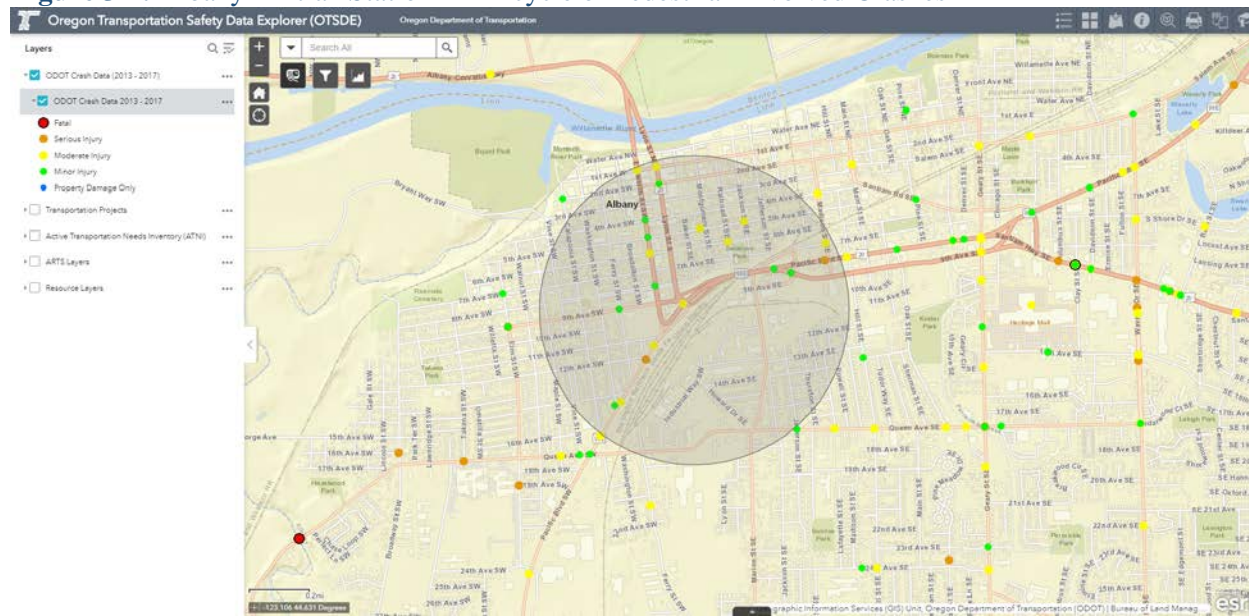
Appendix J: Crash Data Maps

Figure J-1: Albany Amtrak Station Severe Crashes for All Modes

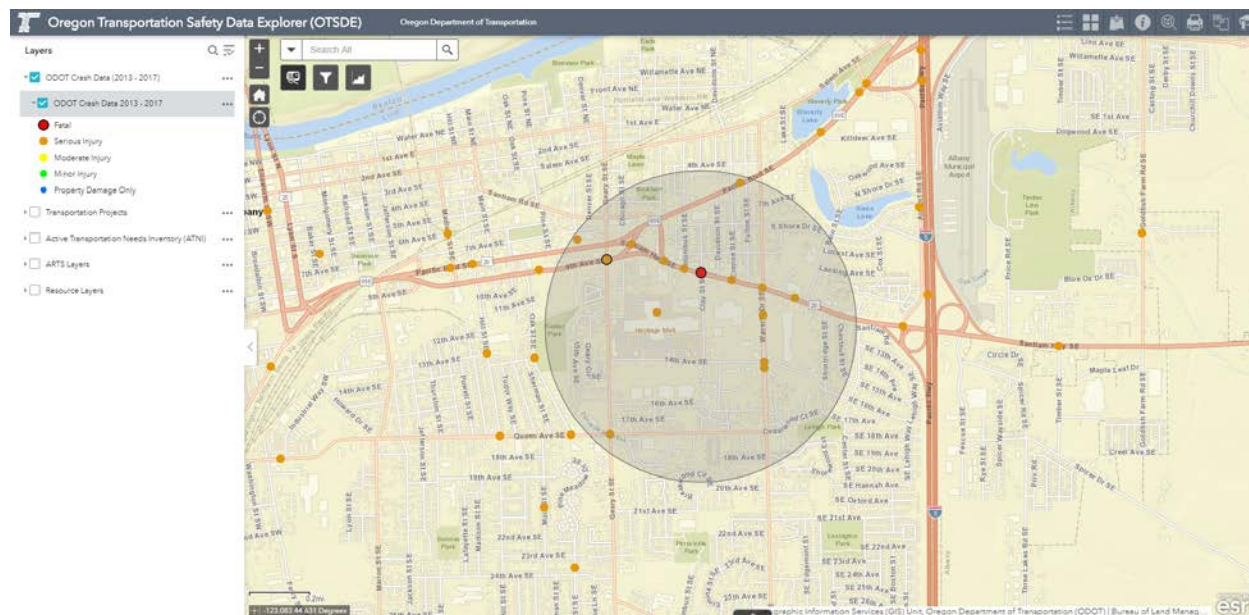


Map data: Esri, ODOT

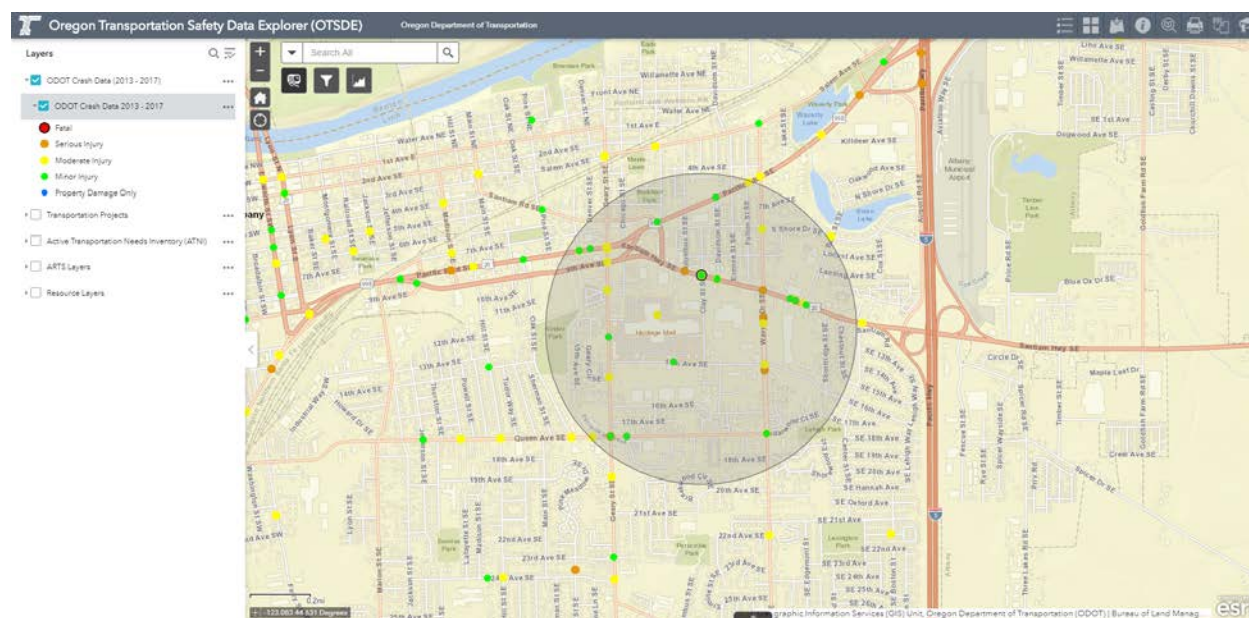
Figure J-2: Albany Amtrak Station All Bicycle or Pedestrian Involved Crashes



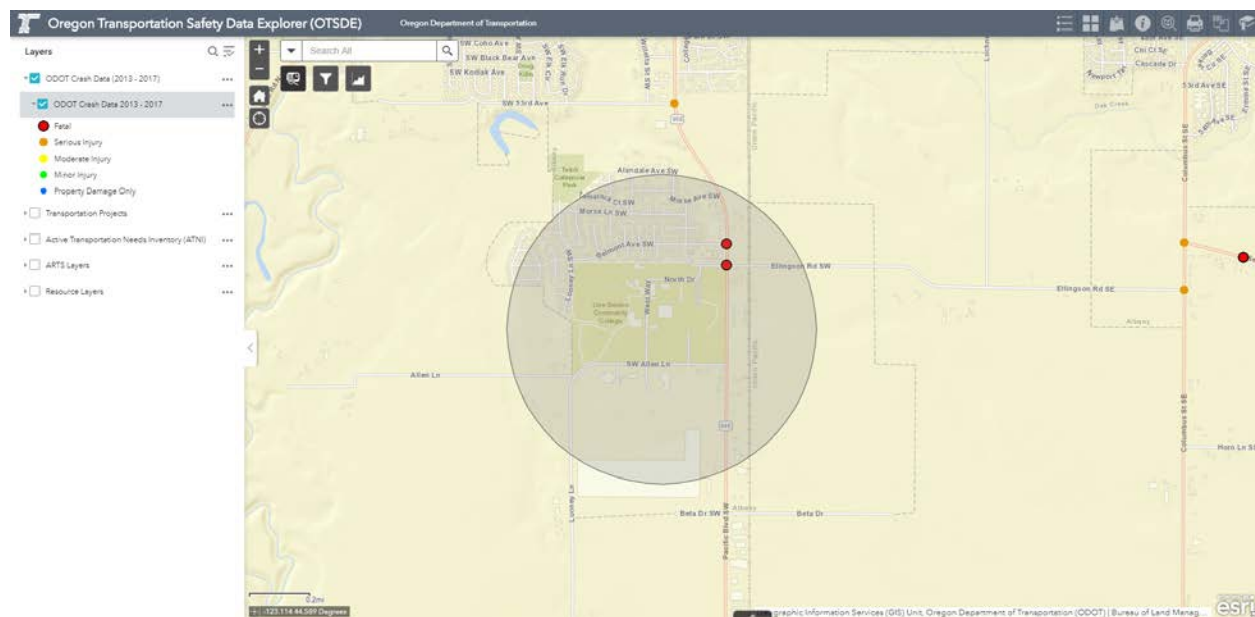
Map data: Esri, ODOT

Figure J-3: Albany Clay St at Heritage Mall Severe Crashes for All Modes

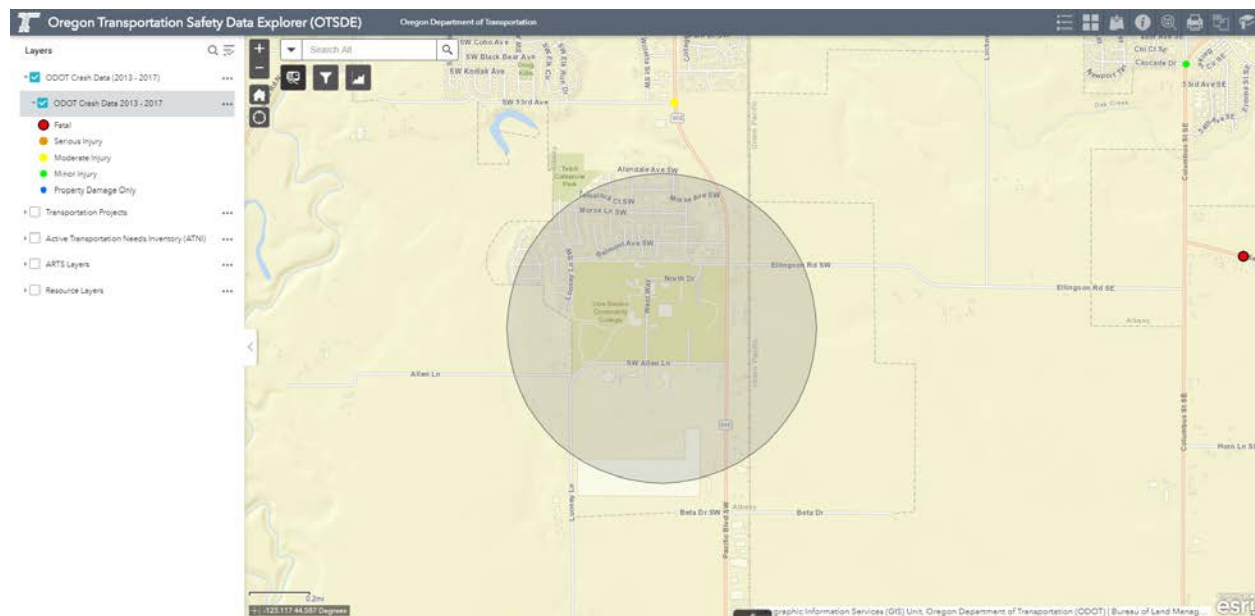
Map data: Esri, ODOT

Figure J-4: Albany Clay St at Heritage Mall All Bicycle or Pedestrian Involved Crashes

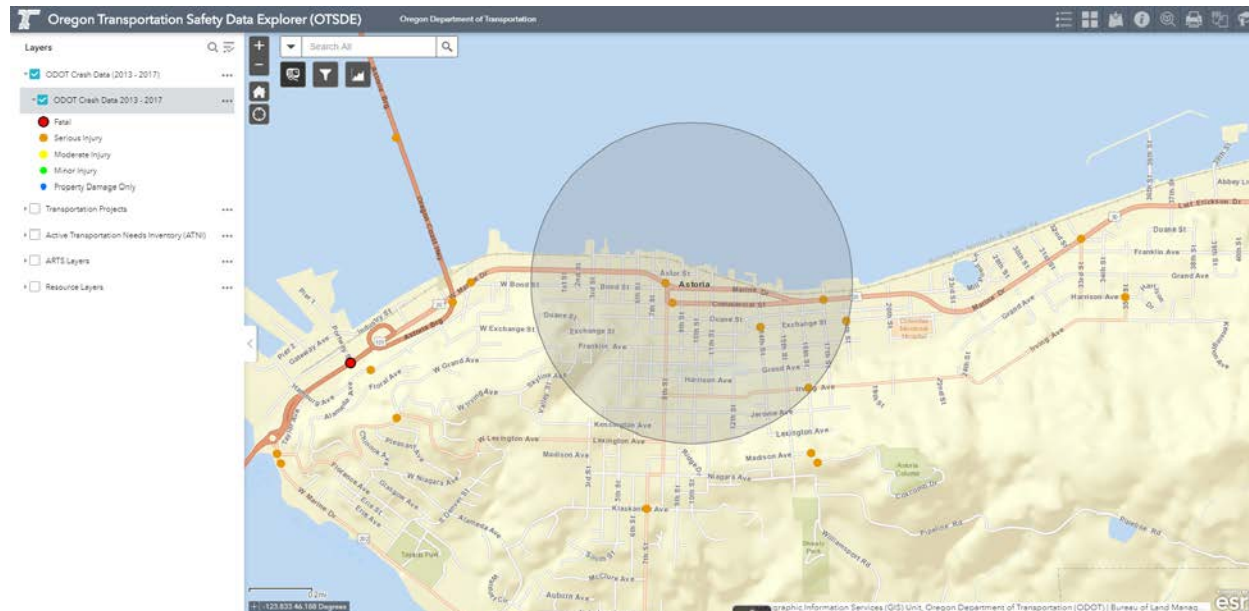
Map data: Esri, ODOT

Figure J-5: Albany Linn Benton Community College Severe Crashes for All Modes

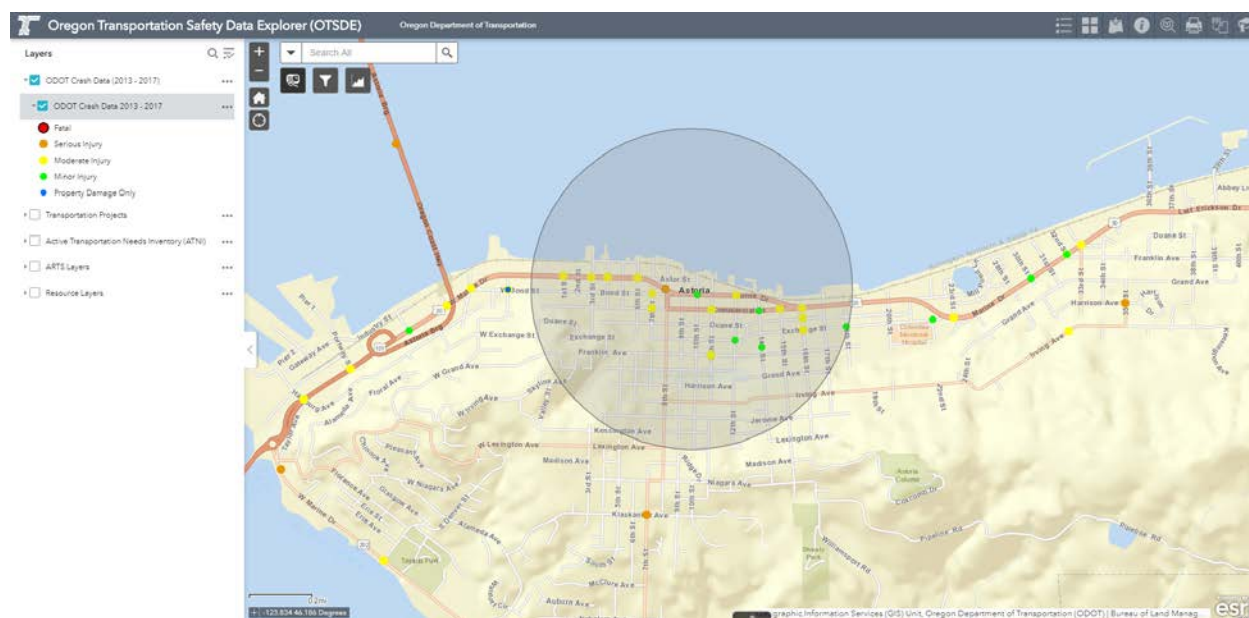
Map data: Esri, ODOT

Figure J-6: Albany Linn Benton Community College All Bicycle or Pedestrian Involved Crashes

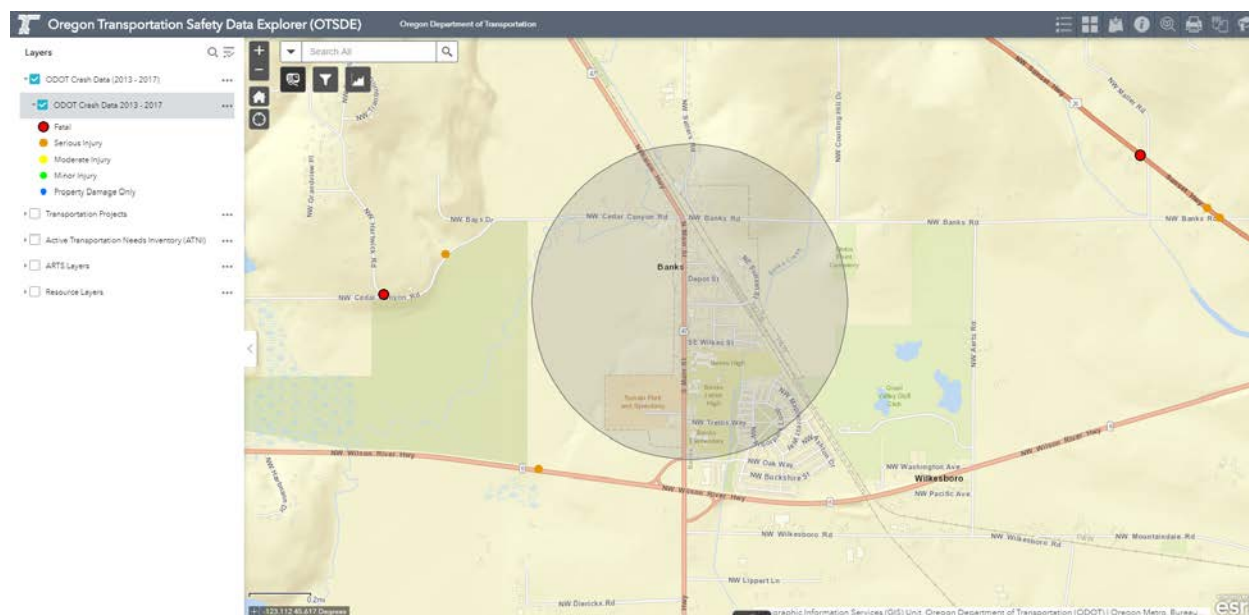
Map data: Esri, ODOT

Figure J-7: Astoria Transit Center Severe Crashes for All Modes

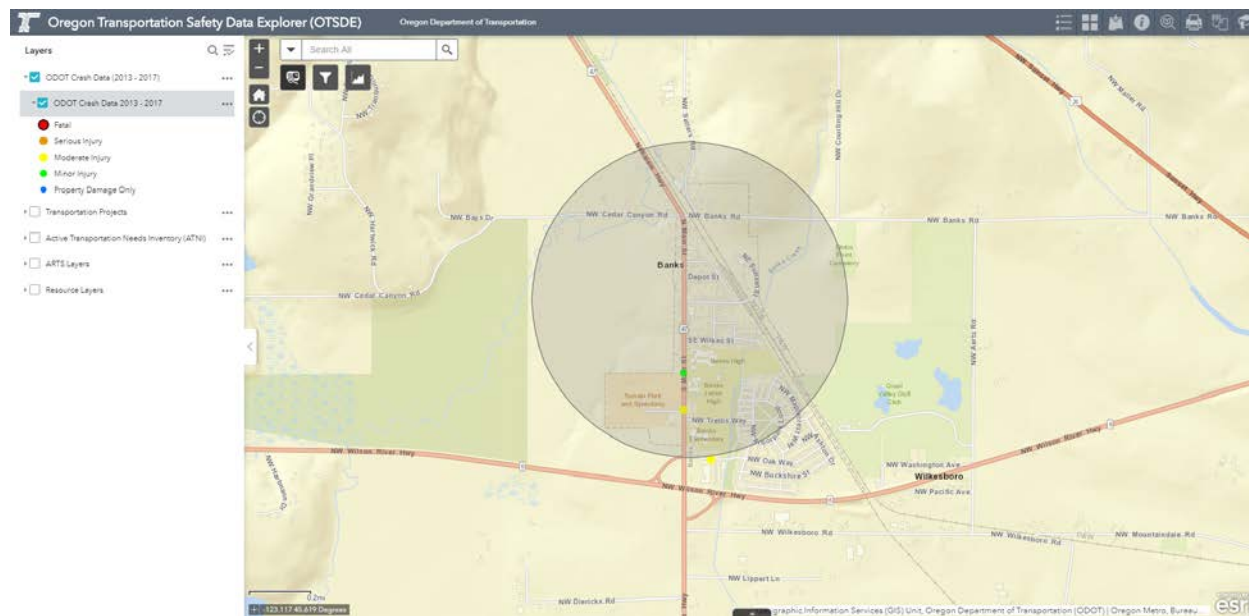
Map data: Esri, ODOT

Figure J-8: Astoria Transit Center All Bicycle or Pedestrian Involved Crashes

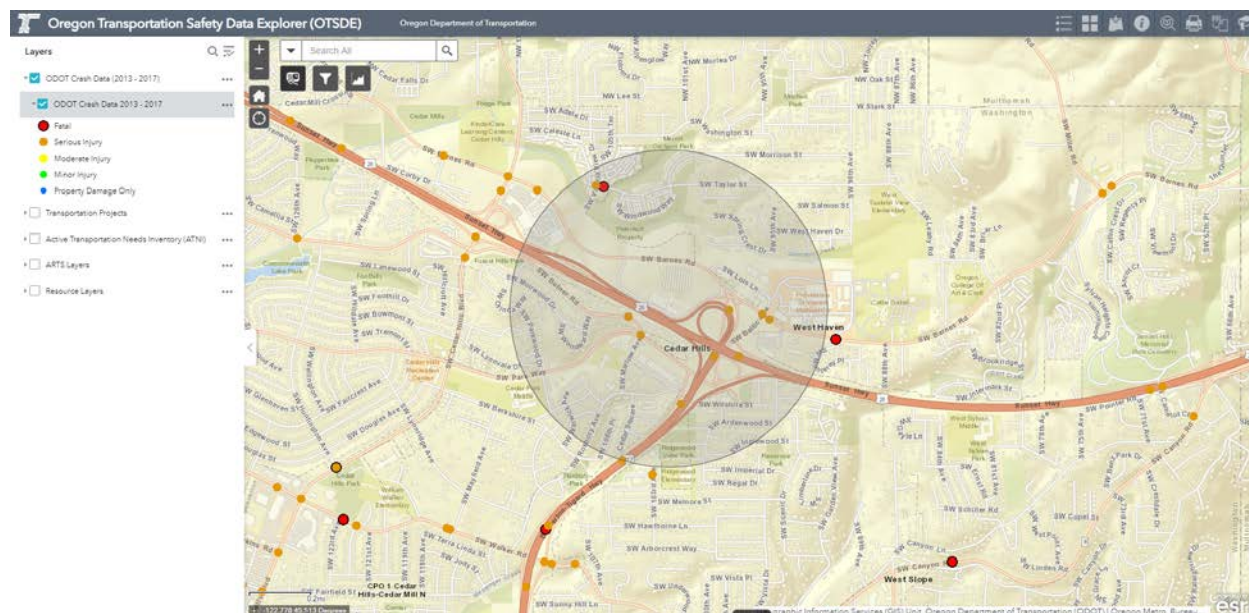
Map data: Esri, ODOT

Figure J-9: Banks Severe Crashes for All Modes

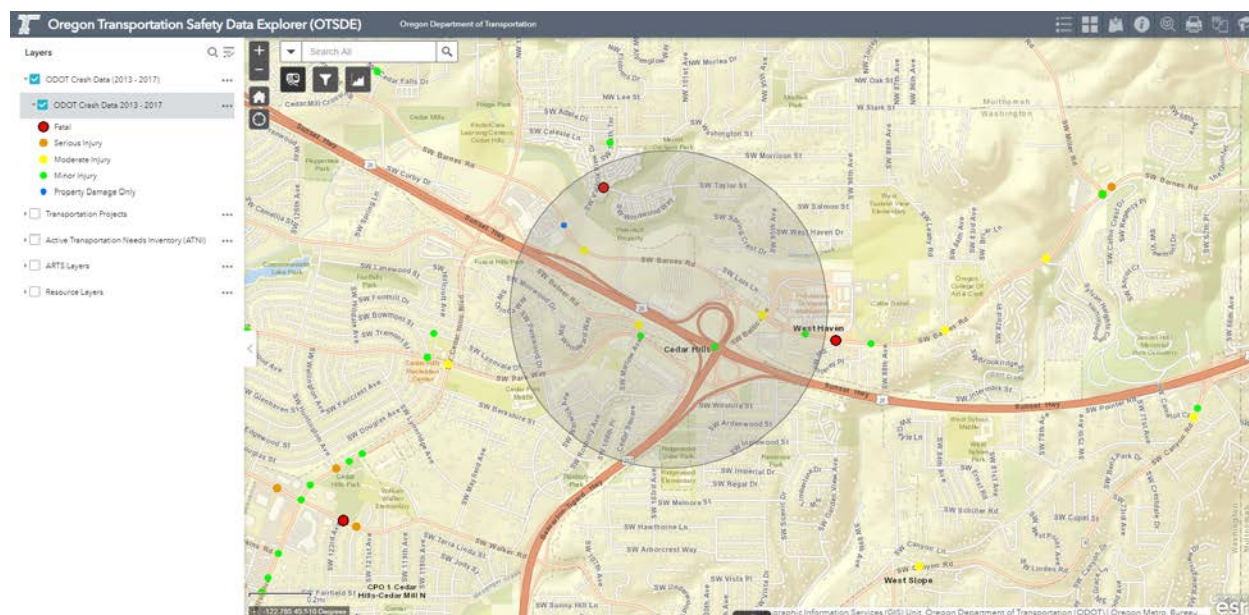
Map data: Esri, ODOT

Figure J-10: Banks All Bicycle or Pedestrian Involved Crashes

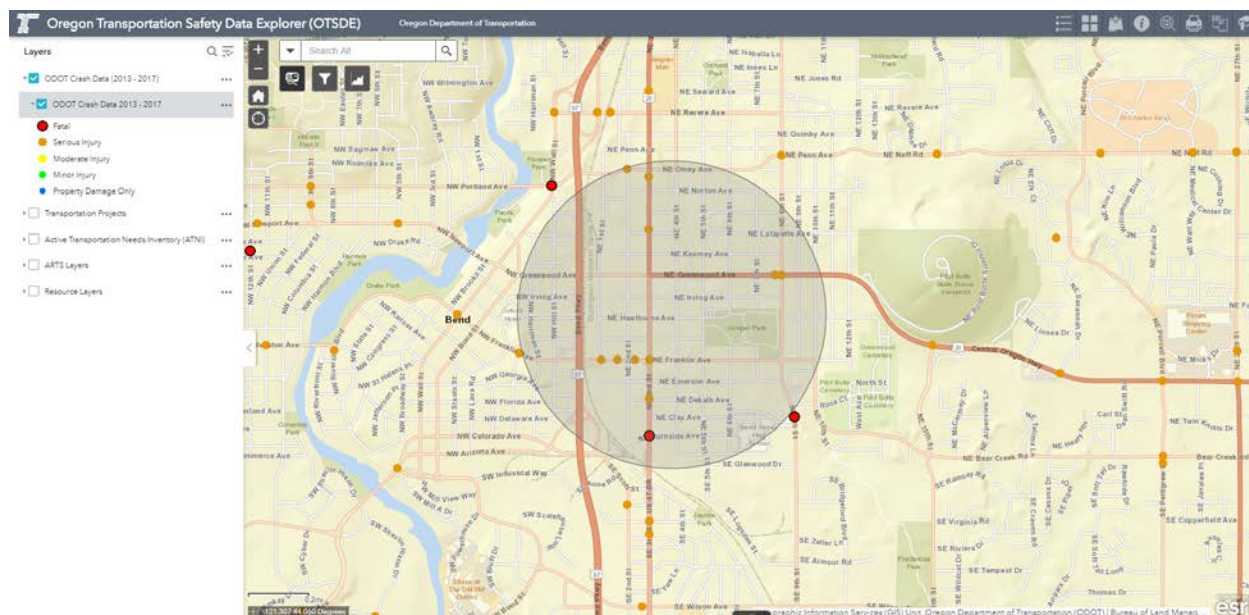
Map data: Esri, ODOT

Figure J-11: Beaverton Sunset Transit Center Severe Crashes for All Modes

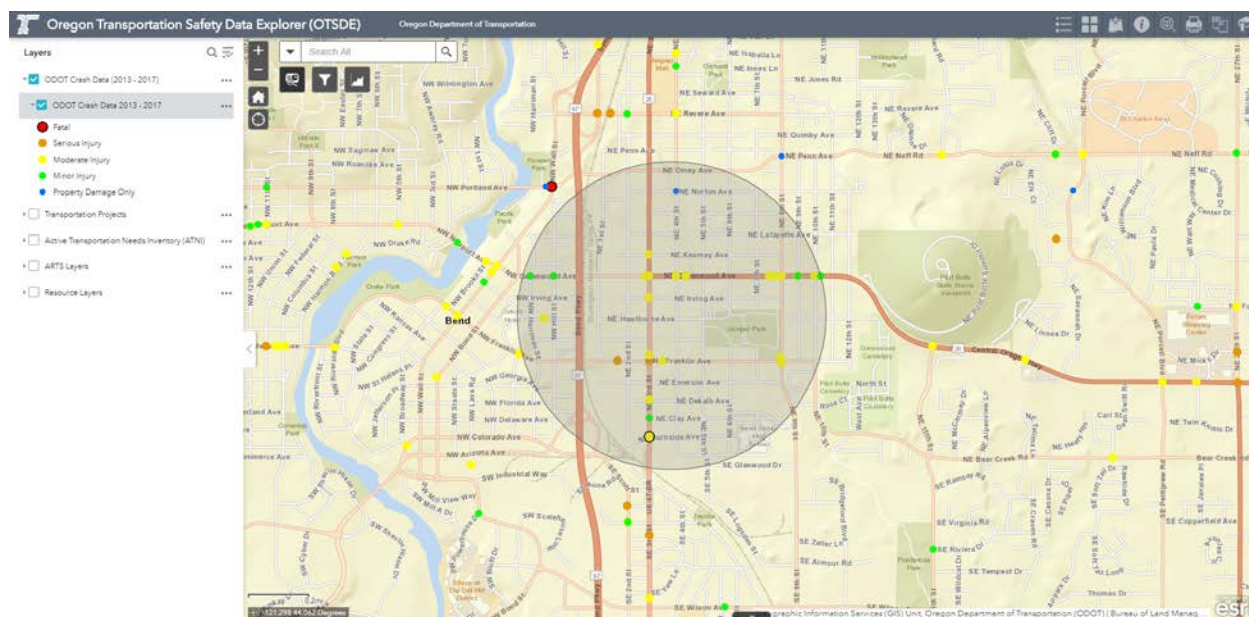
Map data: Esri, ODOT

Figure J-12: Beaverton Sunset Transit Center All Bicycle or Pedestrian Involved Crashes

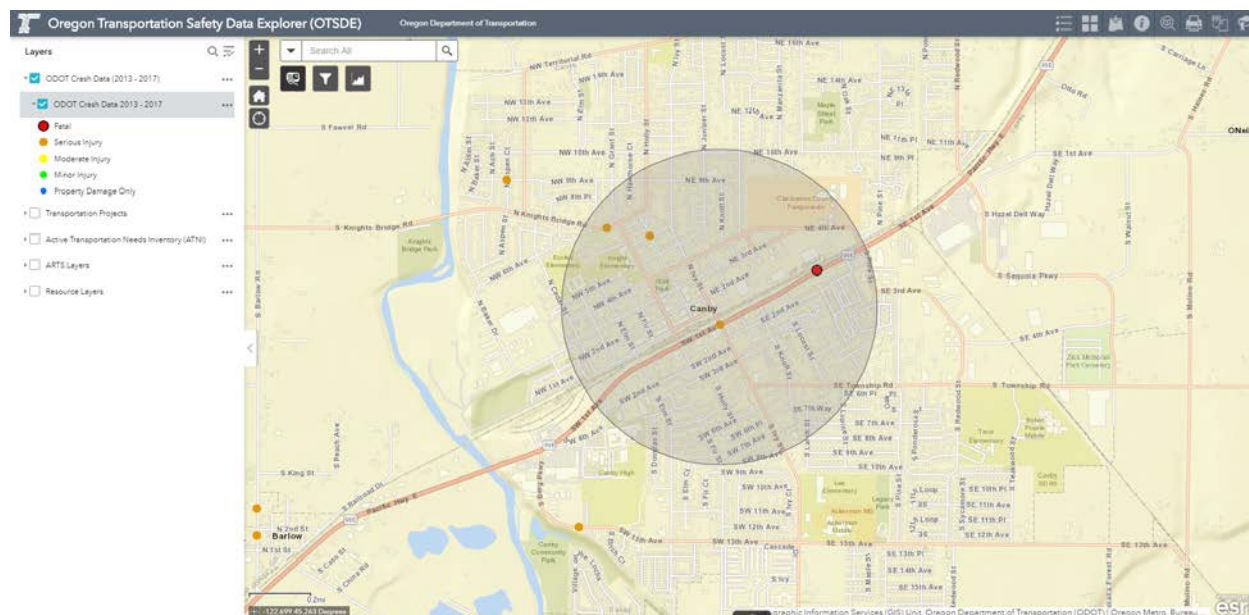
Map data: Esri, ODOT

Figure J-13: Bend Hawthorne Station Severe Crashes for All Modes

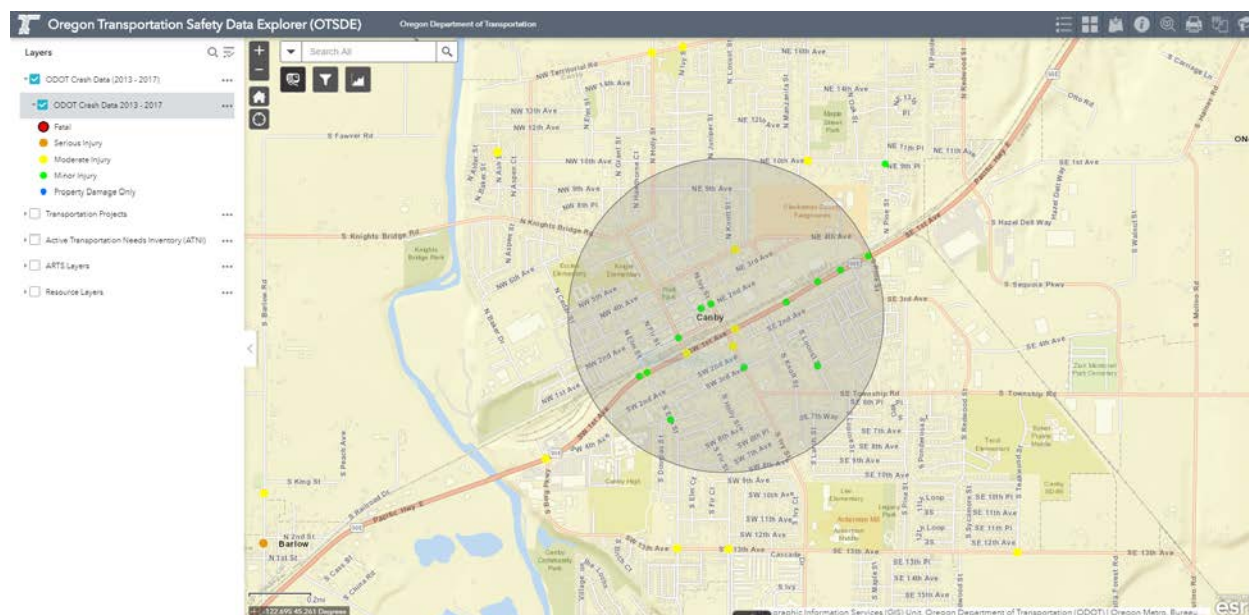
Map data: Esri, ODOT

Figure J-14: Bend Hawthorne Station All Bicycle or Pedestrian Involved Crashes

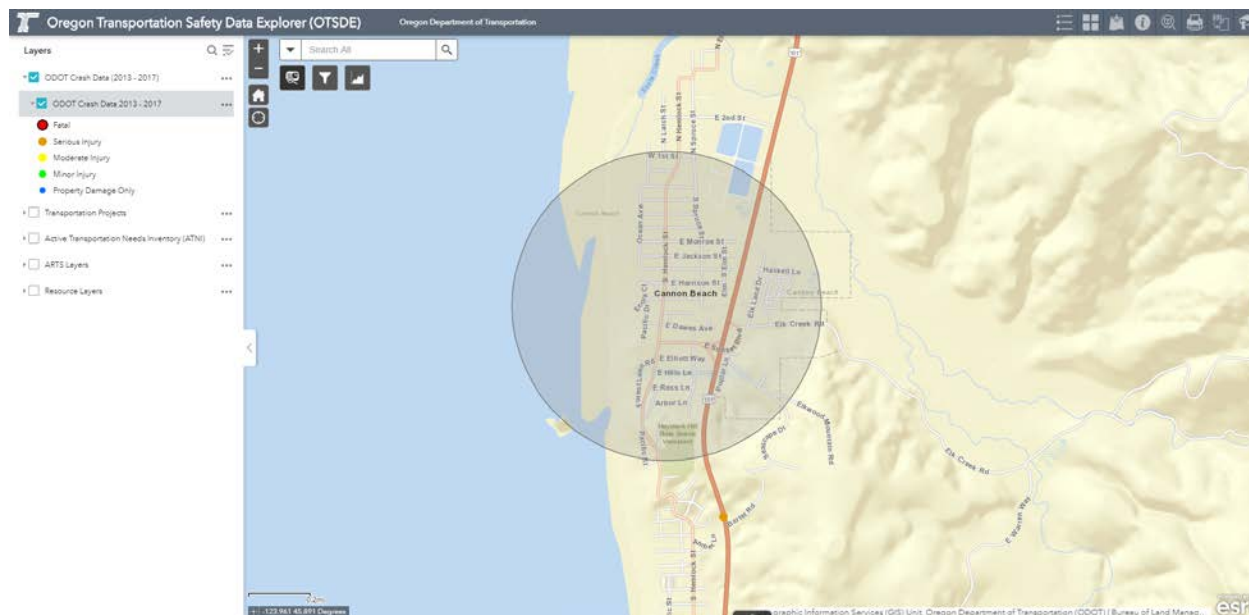
Map data: Esri, ODOT

Figure J-15: Canby Transit Center Severe Crashes for All Modes

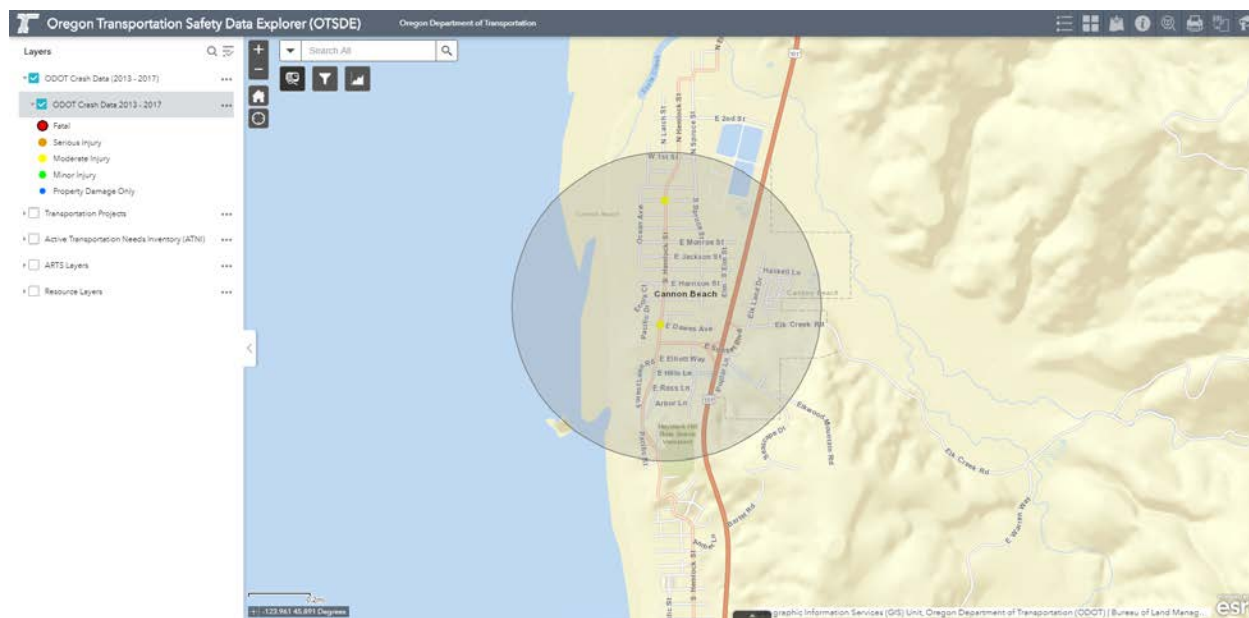
Map data: Esri, ODOT

Figure J-16: Canby Transit Center All Bicycle or Pedestrian Involved Crashes

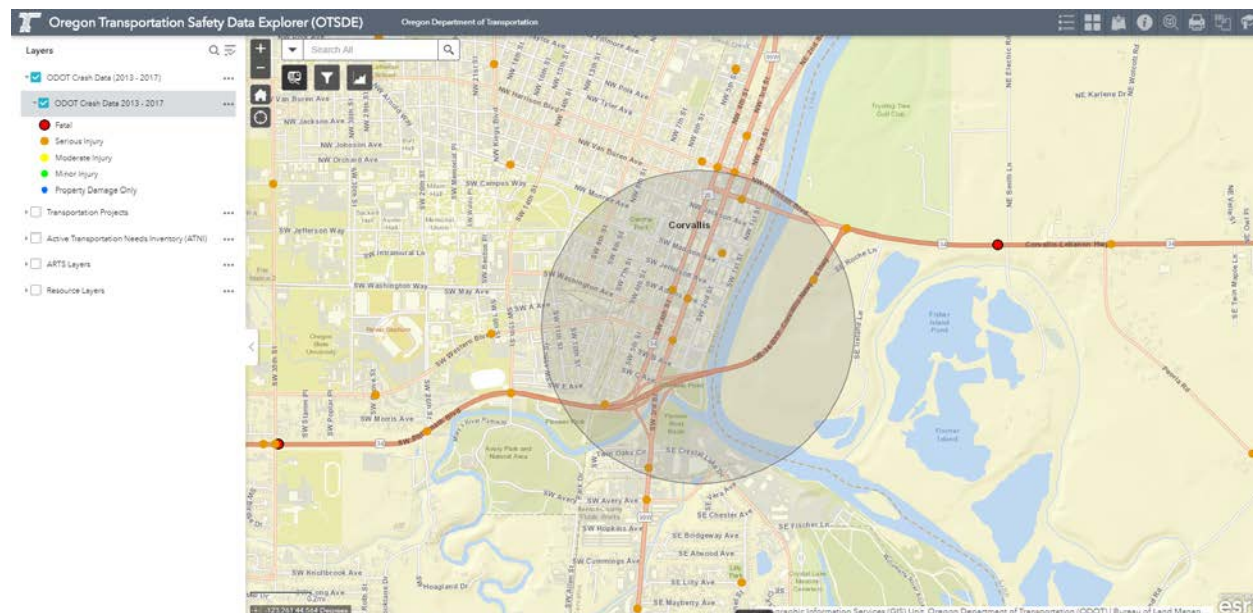
Map data: Esri, ODOT

Figure J-17: Cannon Beach Midtown Transit Center Severe Crashes for All Modes

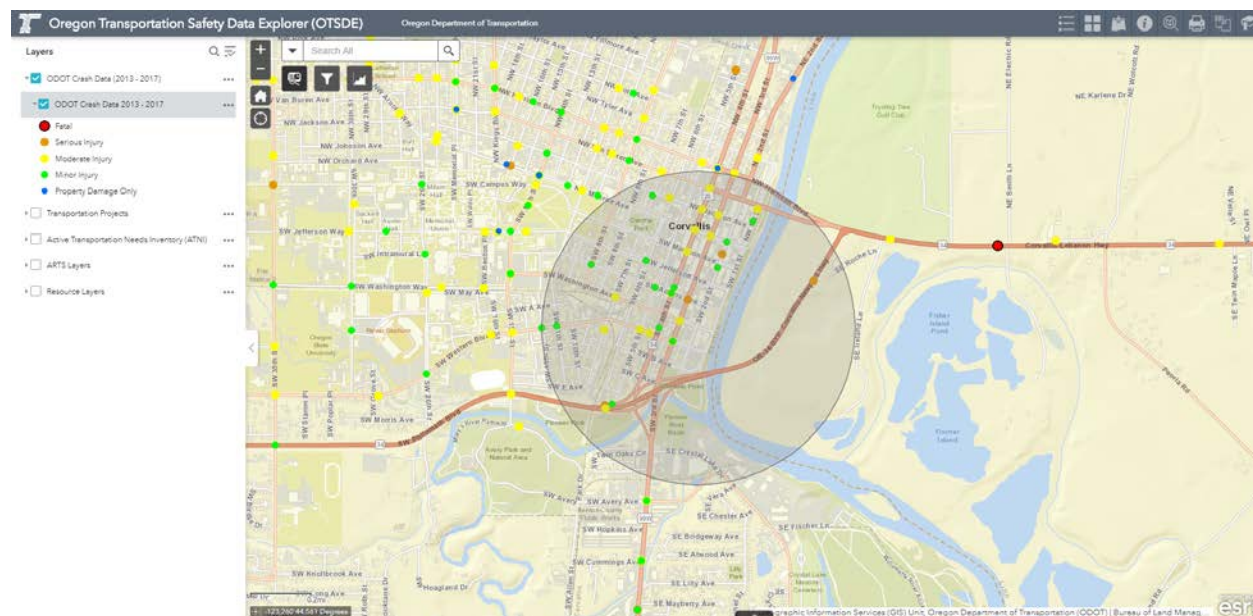
Map data: Esri, ODOT

Figure J-18: Cannon Beach Midtown Transit Center All Bicycle or Pedestrian Involved Crashes

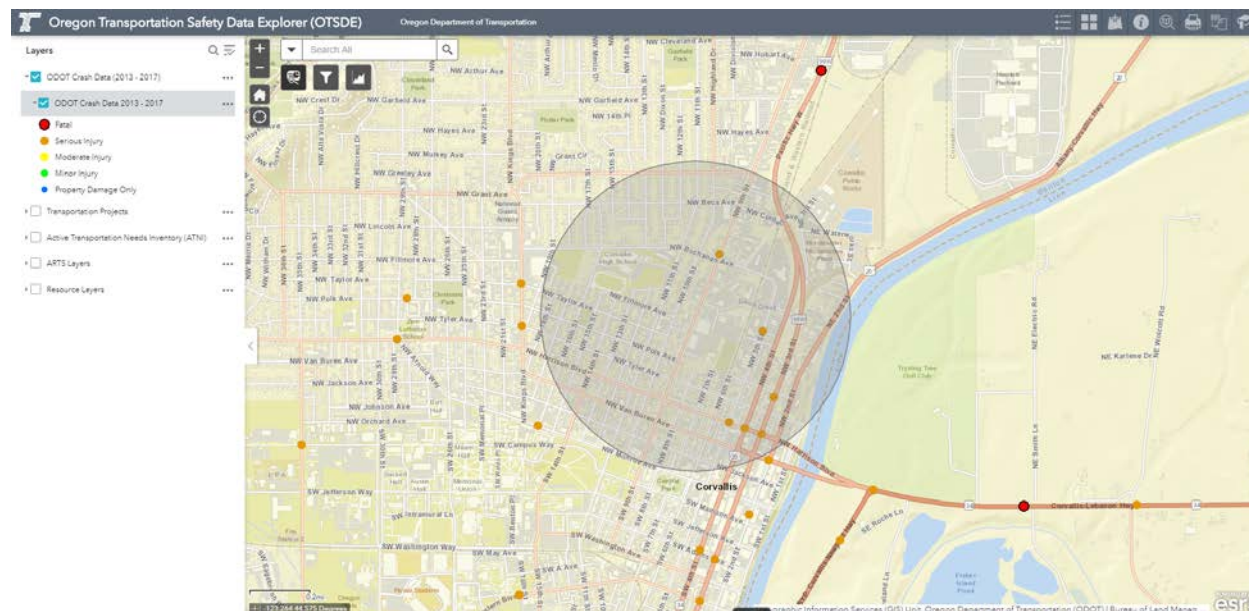
Map data: Esri, ODOT

Figure J-19: Corvallis 1st St & Washington Ave Severe Crashes for All Modes

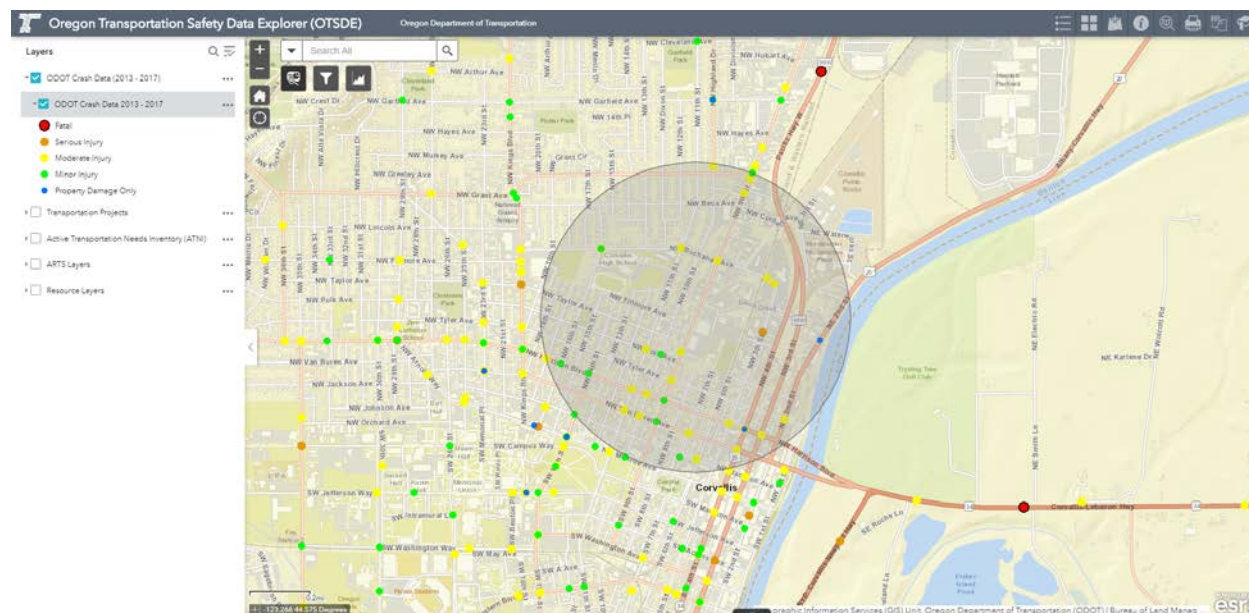
Map data: Esri, ODOT

Figure J-20: Corvallis 1st St & Washington Ave All Bicycle or Pedestrian Involved Crashes

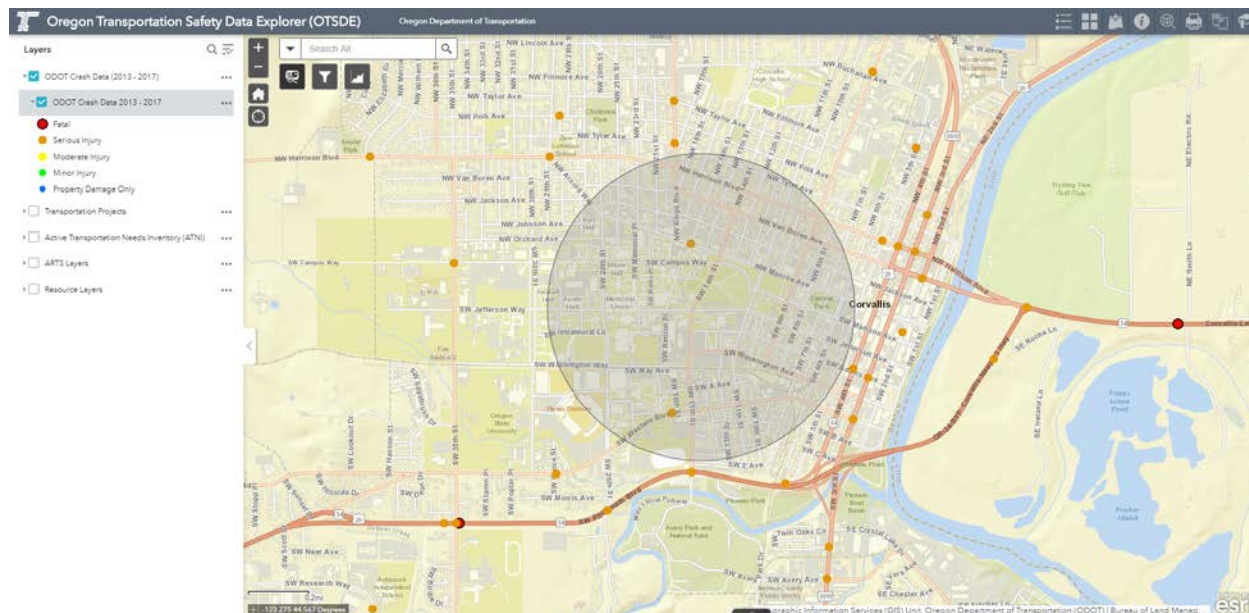
Map data: Esri, ODOT

Figure J-21: Corvallis 9th St & Reiman Ave Severe Crashes for All Modes

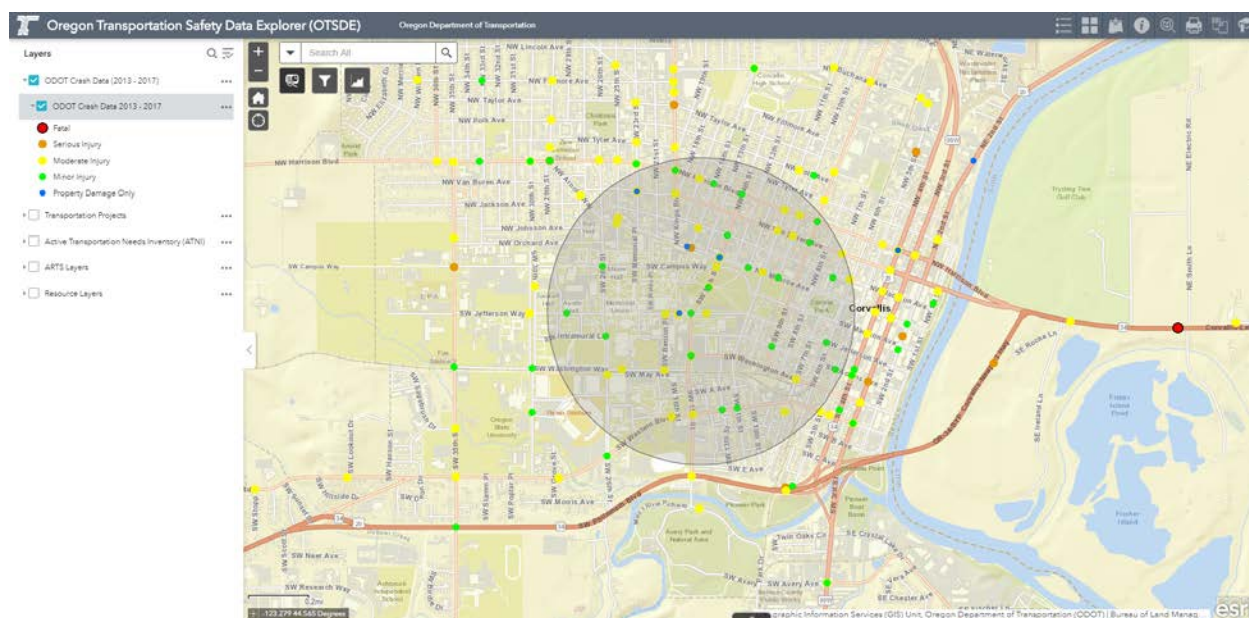
Map data: Esri, ODOT

Figure J-22: Corvallis 9th St & Reiman Ave All Bicycle or Pedestrian Involved Crashes

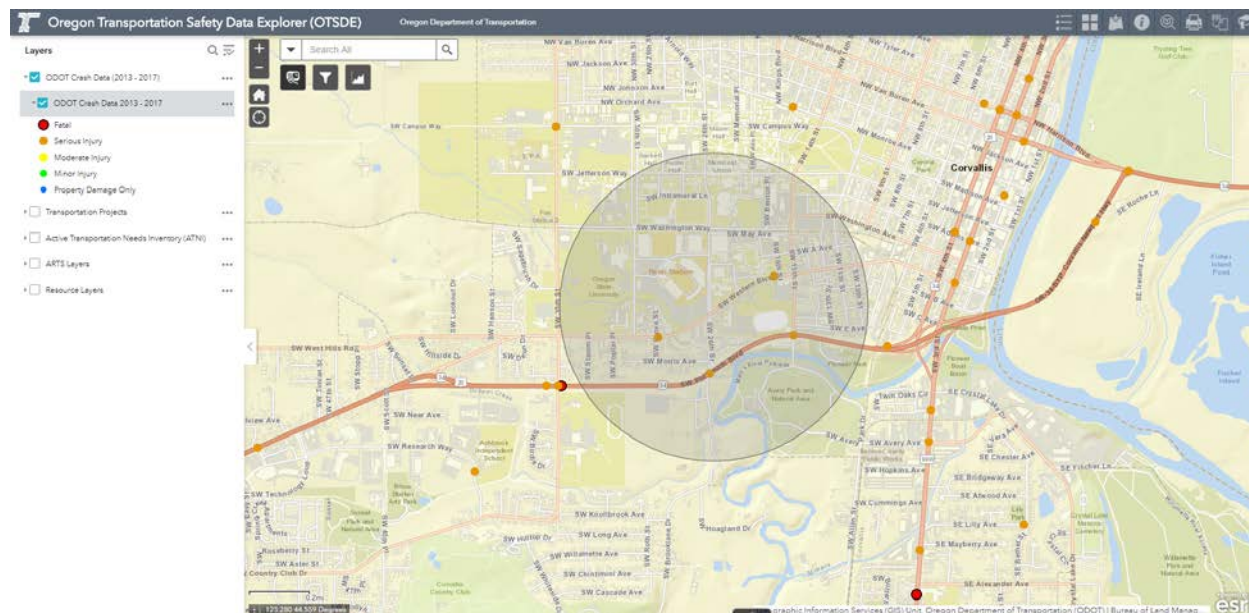
Map data: Esri, ODOT

Figure J-23: Corvallis 15th St & Jefferson Way Severe Crashes for All Modes

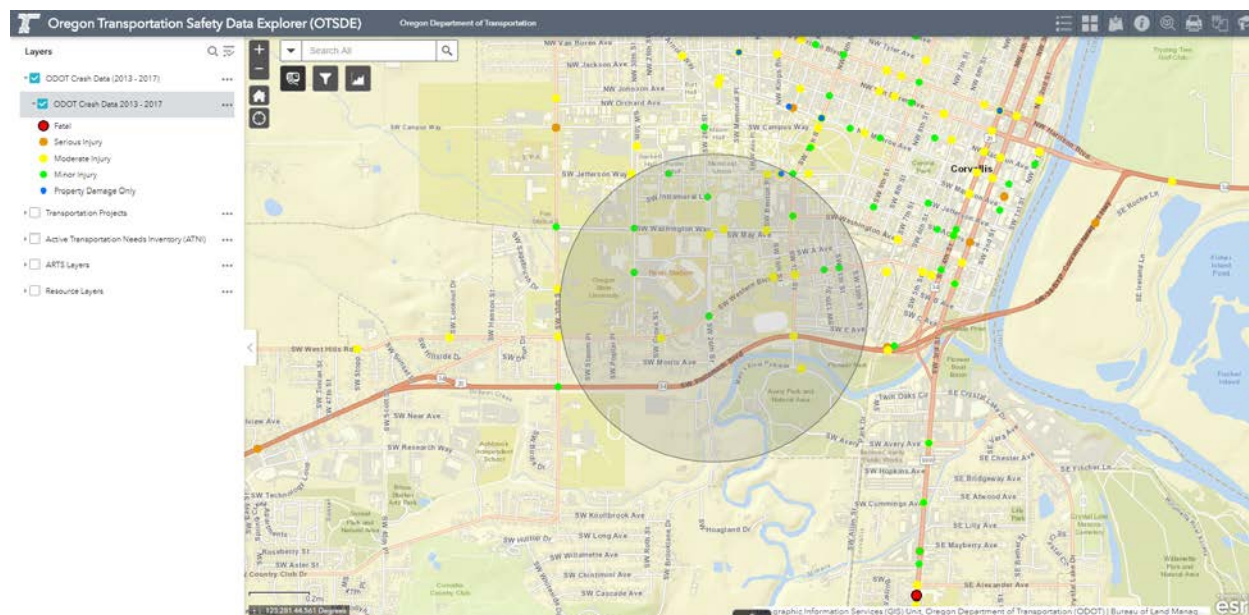
Map data: Esri, ODOT

Figure J-24: Corvallis 15th St & Jefferson Way All Bicycle or Pedestrian Involved Crashes

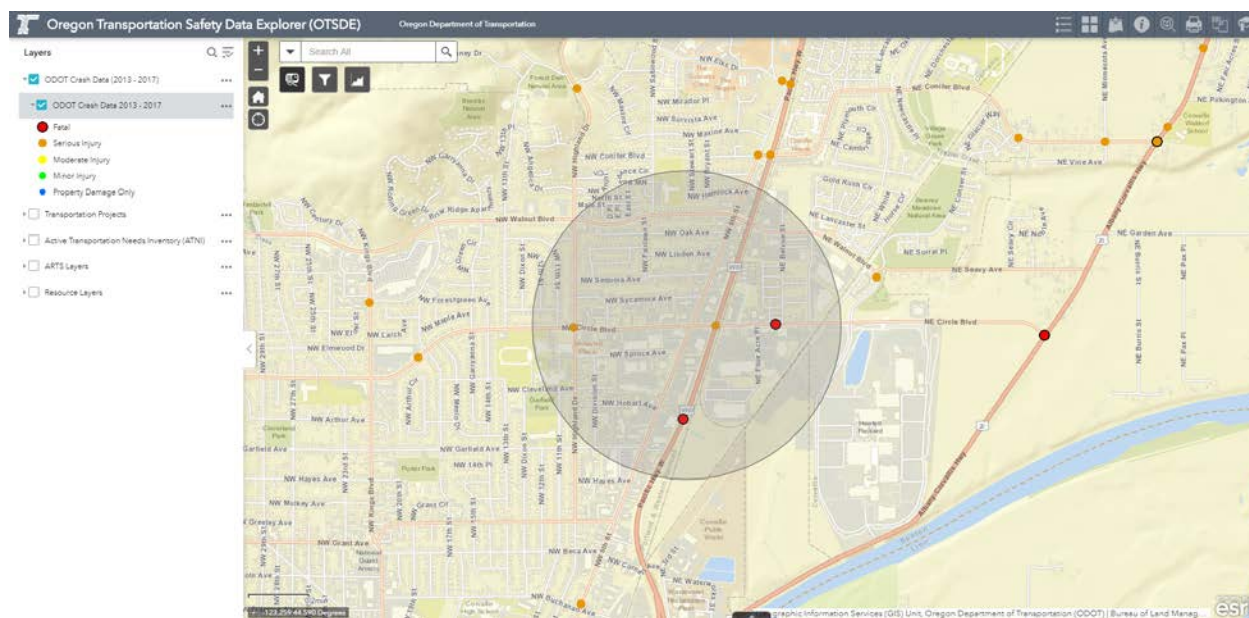
Map data: Esri, ODOT

Figure J-25: Corvallis 26th St & Western Blvd Severe Crashes for All Modes

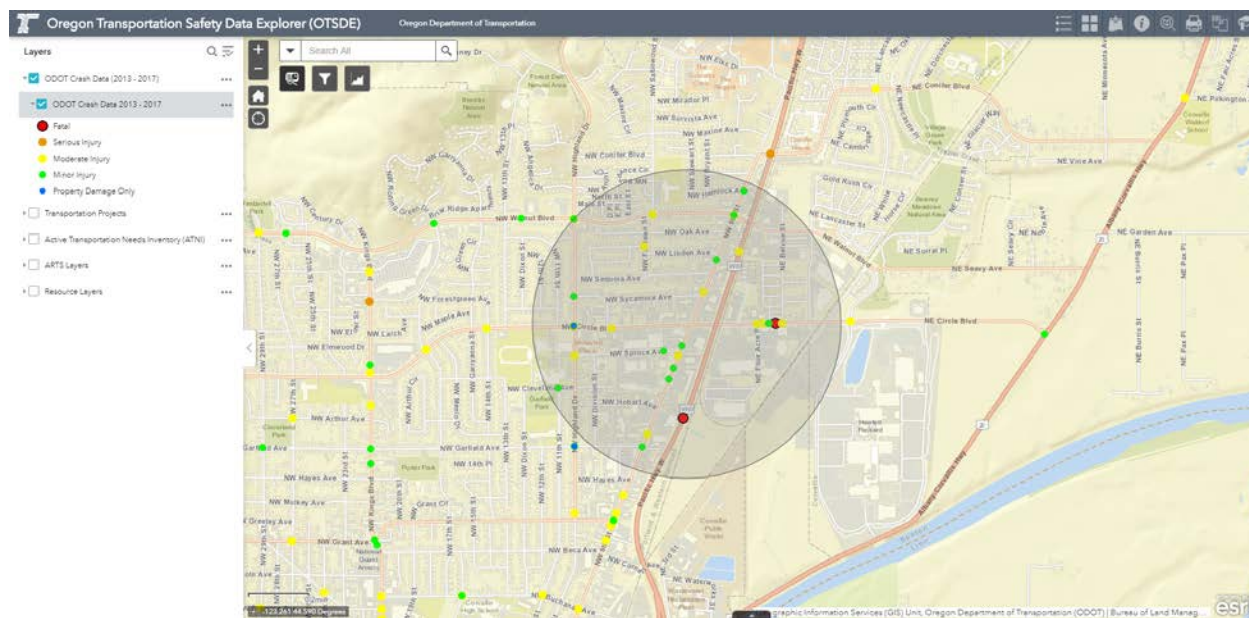
Map data: Esri, ODOT

Figure J-26: Corvallis 26th St & Western Blvd All Bicycle or Pedestrian Involved Crashes

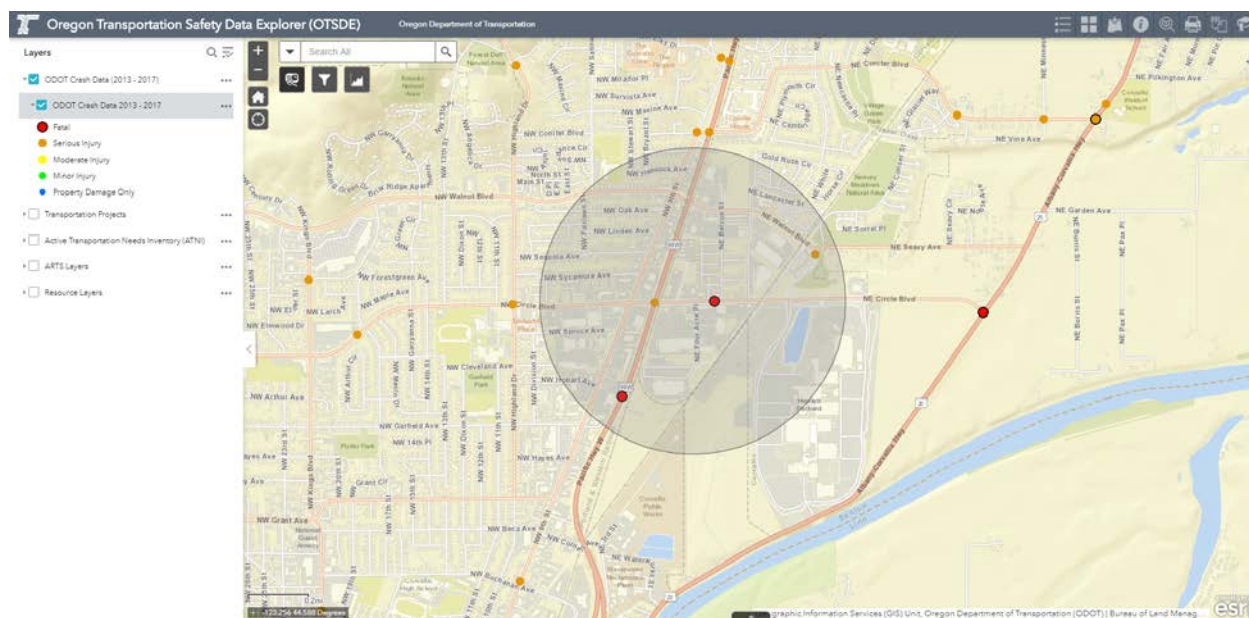
Map data: Esri, ODOT

Figure J-27: Corvallis Circle Blvd & 9th St Severe Crashes for All Modes

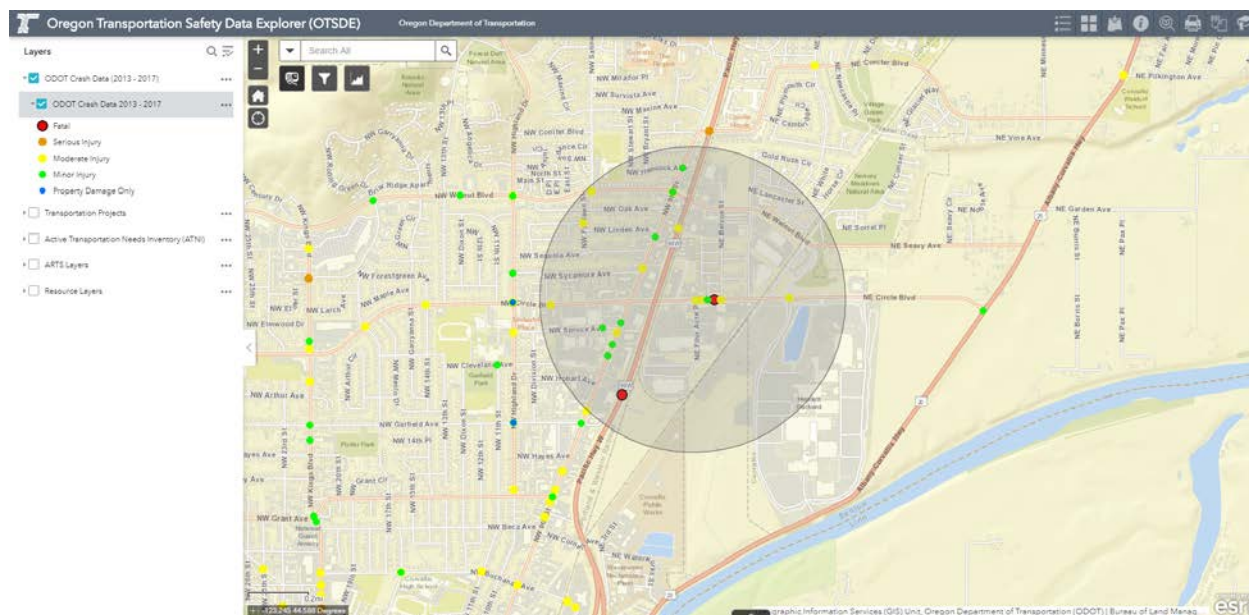
Map data: Esri, ODOT

Figure J-28: Corvallis Circle Blvd & 9th St All Bicycle or Pedestrian Involved Crashes

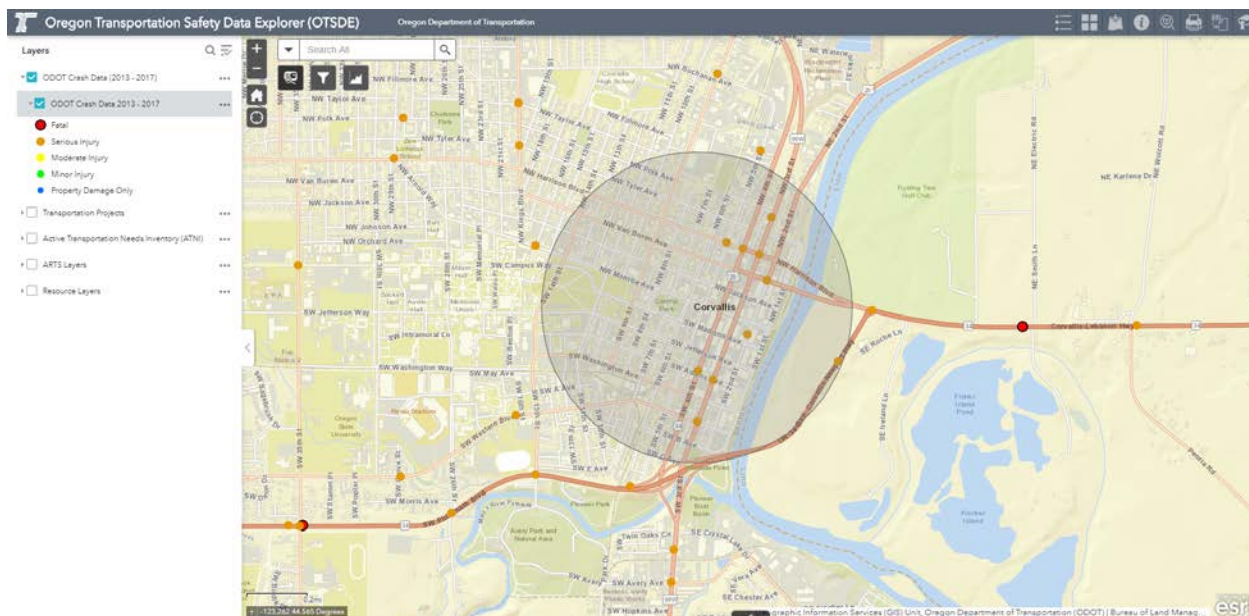
Map data: Esri, ODOT

Figure J-29: Corvallis Circle Blvd & Four Acre Place Severe Crashes for All Modes

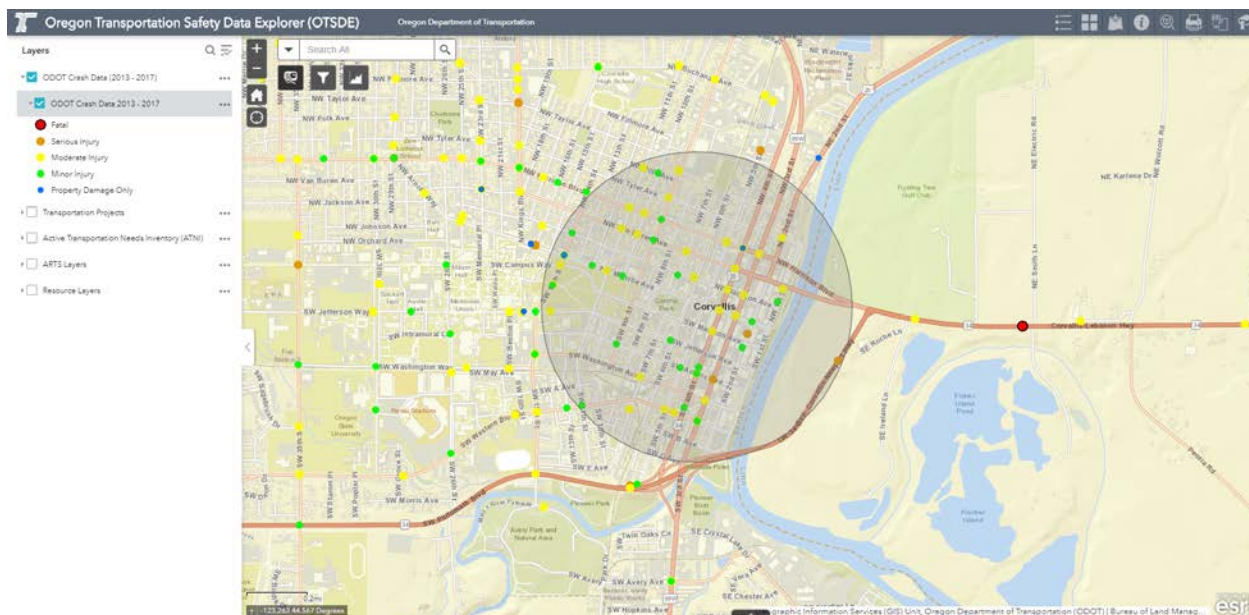
Map data: Esri, ODOT

Figure J-30: Corvallis Circle Blvd & Four Acre Place All Bicycle or Pedestrian Involved Crashes

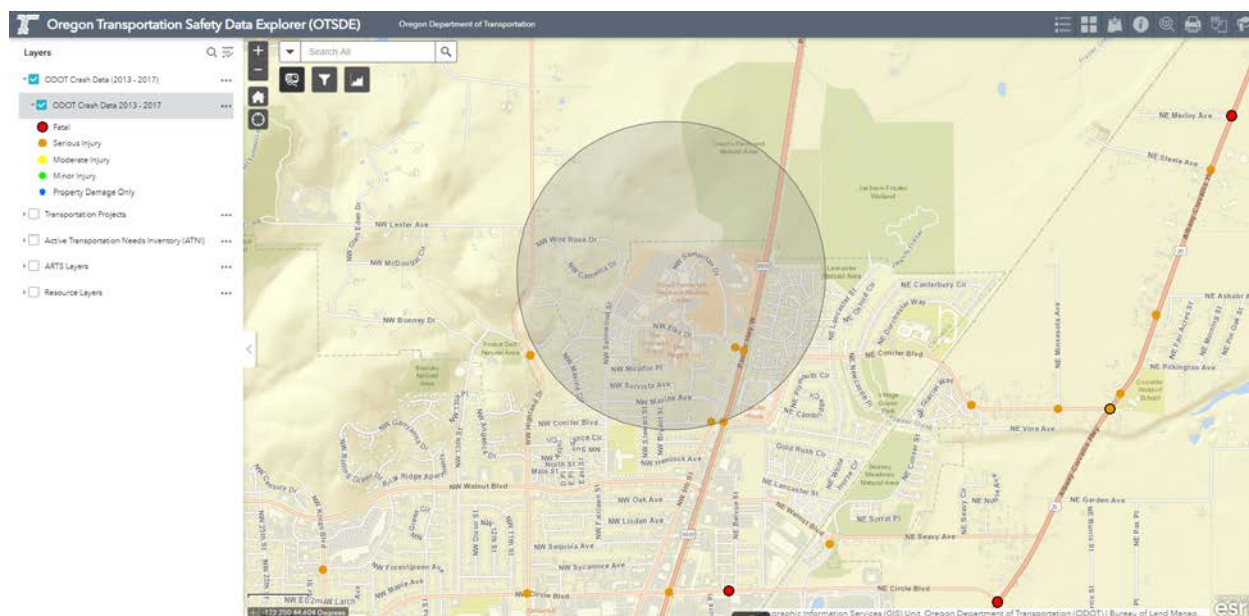
Map data: Esri, ODOT

Figure J-31: Corvallis Downtown Transit Center Severe Crashes for All Modes

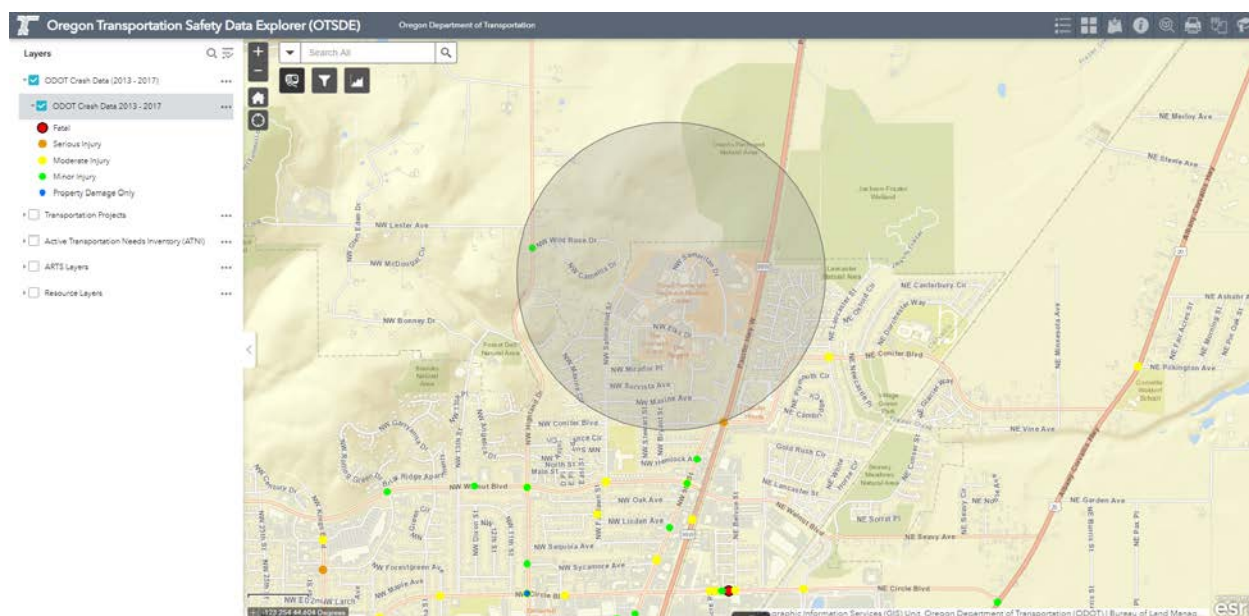
Map data: Esri, ODOT

Figure J-32: Corvallis Downtown Transit Center All Bicycle or Pedestrian Involved Crashes

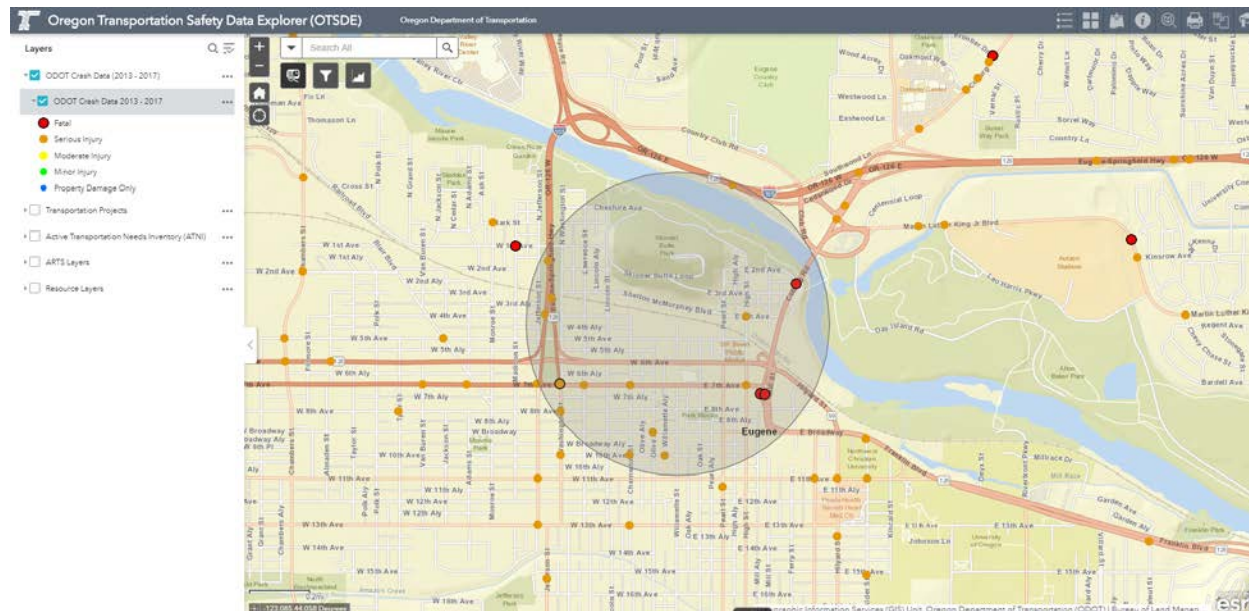
Map data: Esri, ODOT

Figure J-33: Corvallis Good Samaritan Center Severe Crashes for All Modes

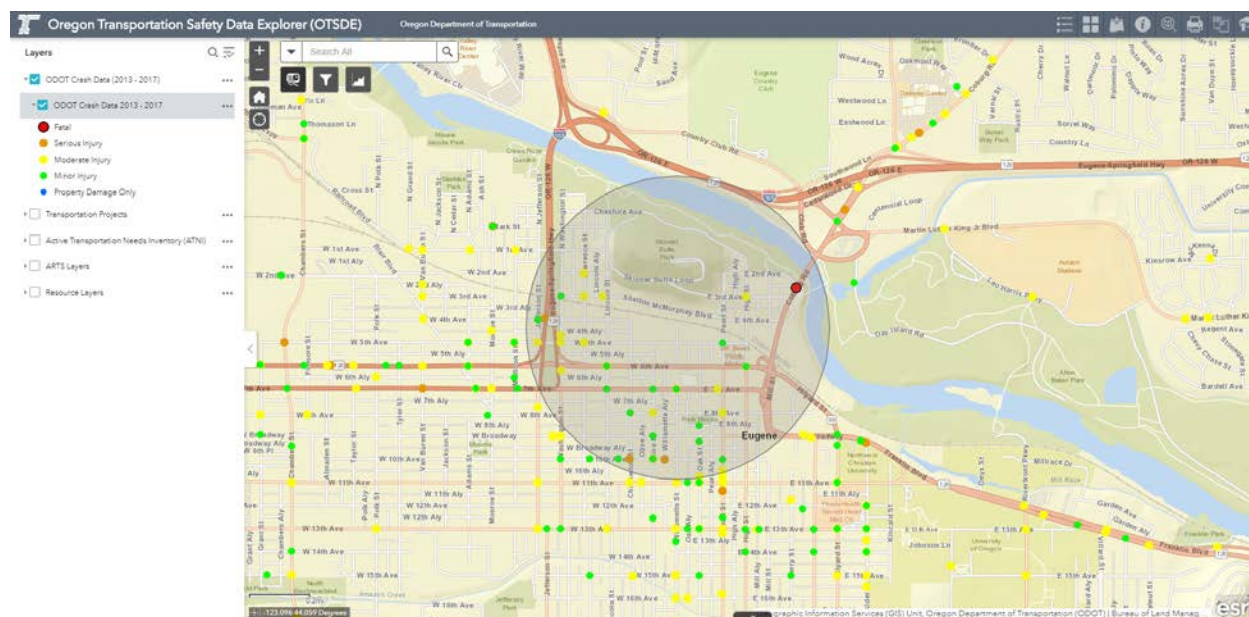
Map data: Esri, ODOT

Figure J-34: Corvallis Good Samaritan Center All Bicycle or Pedestrian Involved Crashes

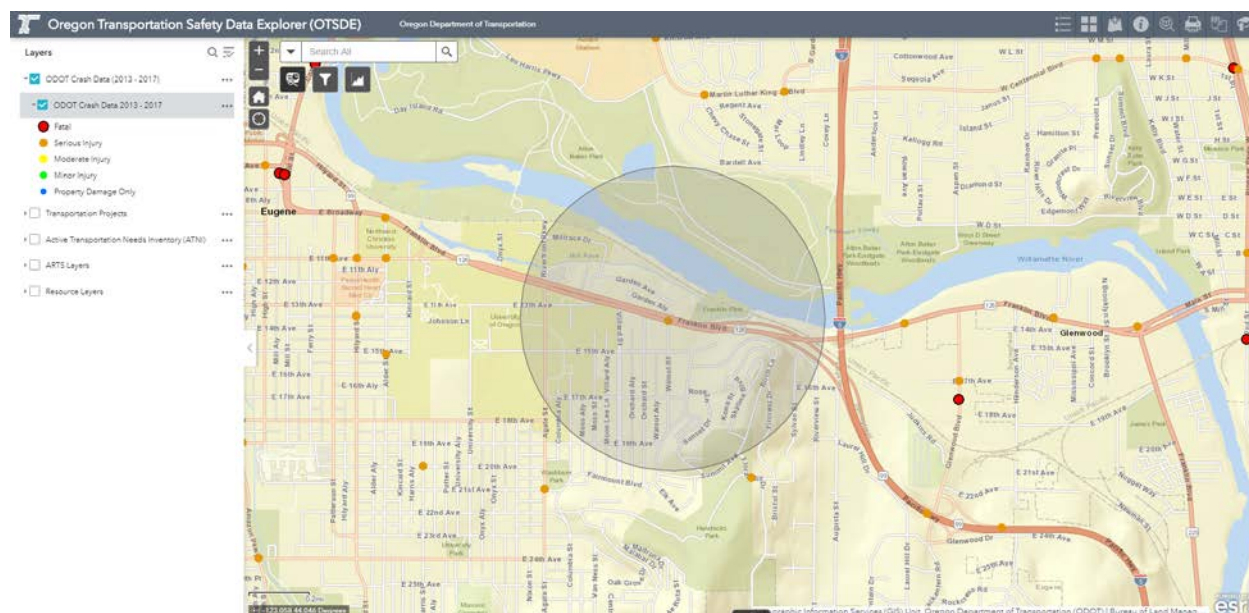
Map data: Esri, ODOT

Figure J-35: Eugene Amtrak Station Severe Crashes for All Modes

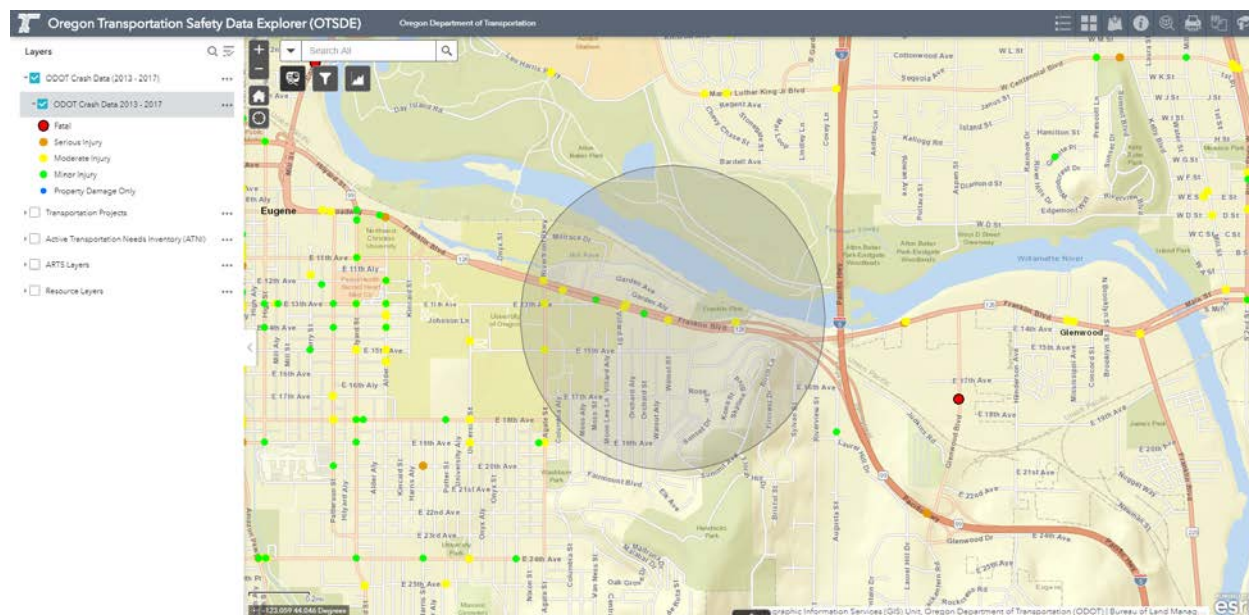
Map data: Esri, ODOT

Figure J-36: Eugene Amtrak Station All Bicycle or Pedestrian Involved Crashes

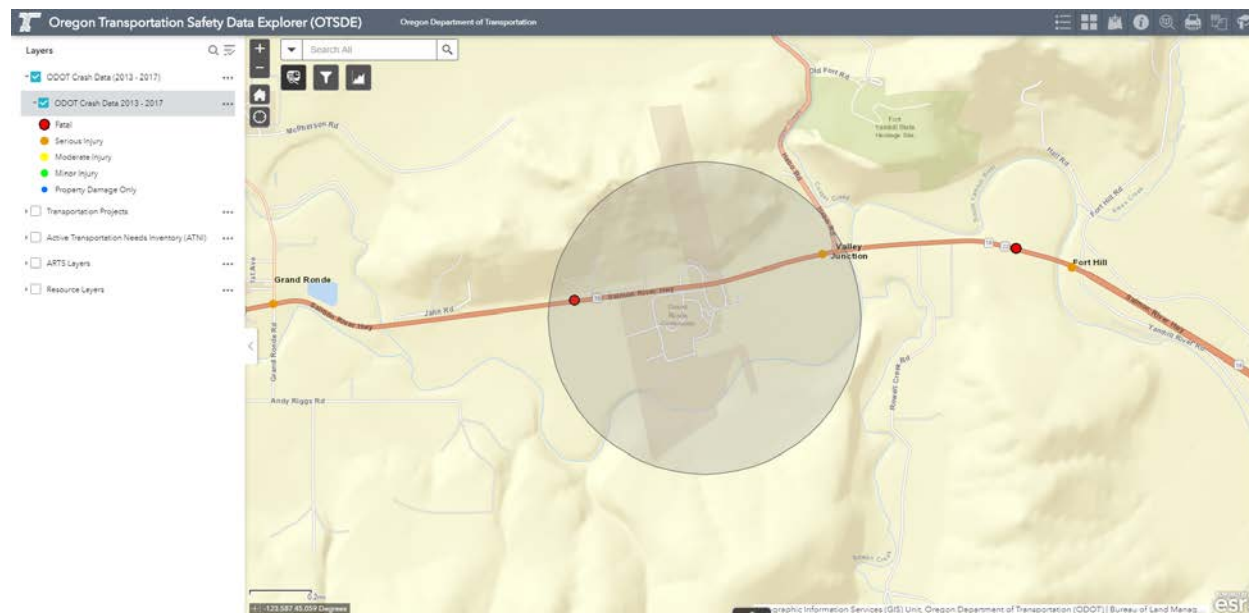
Map data: Esri, ODOT

Figure J-37: Eugene EmX Walnut Station Severe Crashes for All Modes

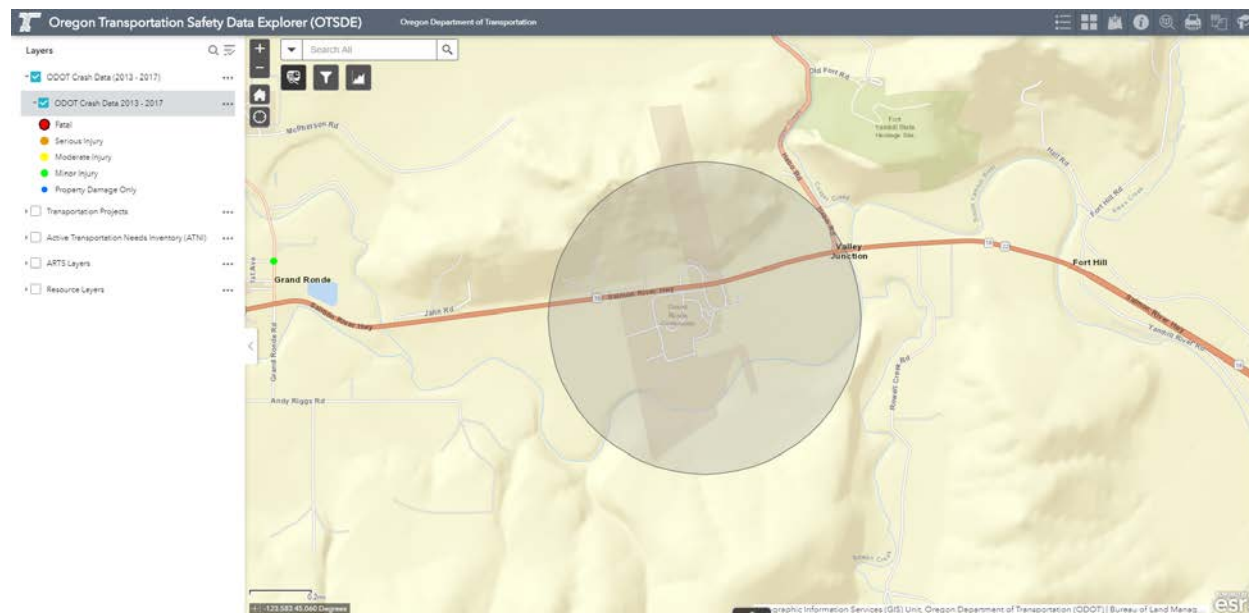
Map data: Esri, ODOT

Figure J-38: Eugene EmX Walnut Station All Bicycle or Pedestrian Involved Crashes

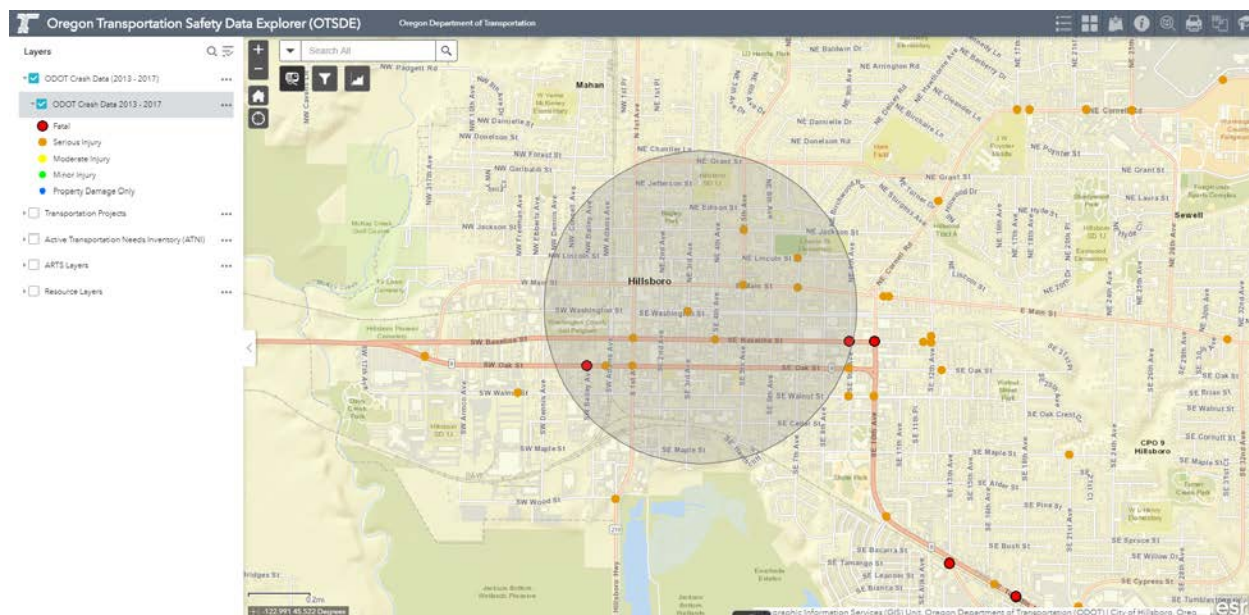
Map data: Esri, ODOT

Figure J-39: Grand Ronde Severe Crashes for All Modes

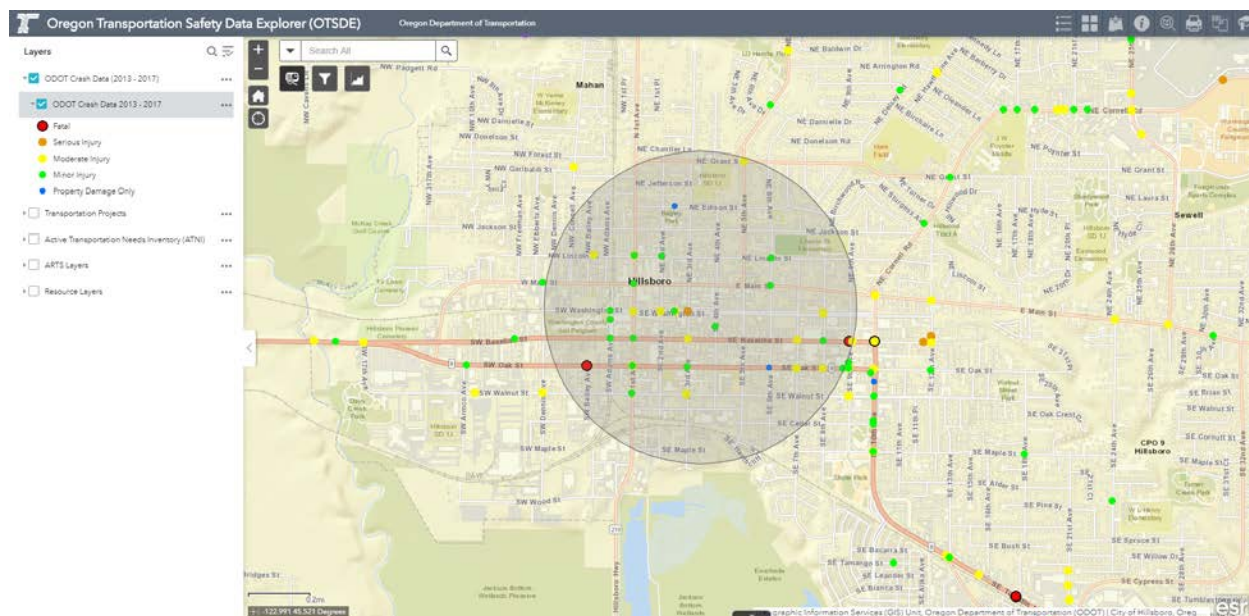
Map data: Esri, ODOT

Figure J-40: Grand Ronde All Bicycle or Pedestrian Involved Crashes

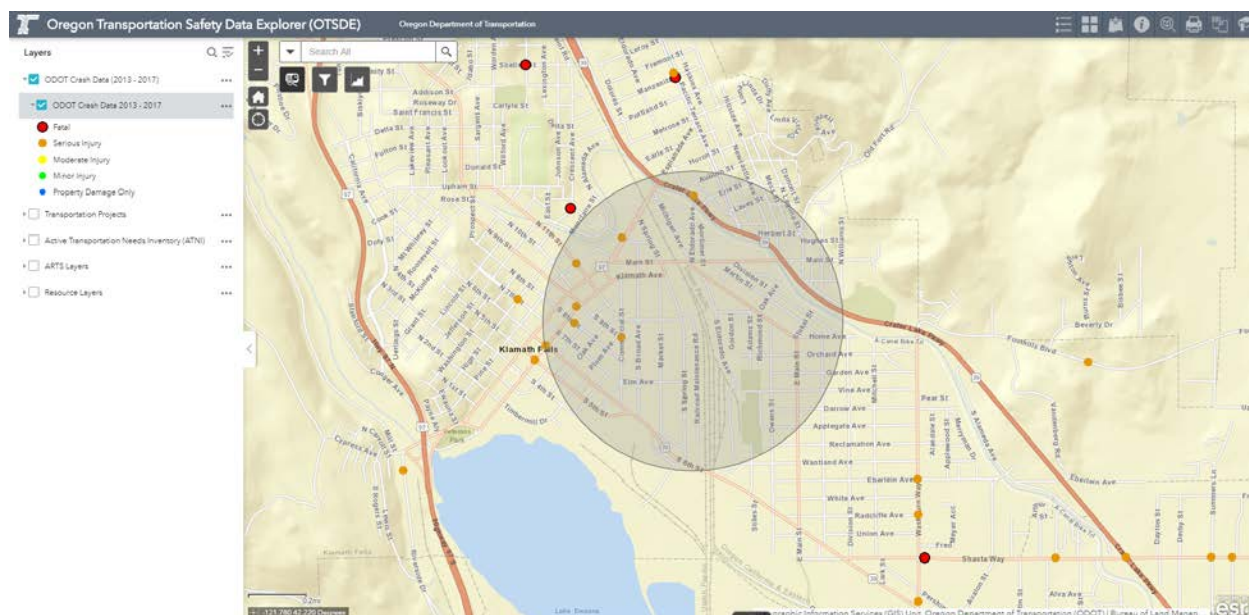
Map data: Esri, ODOT

Figure J-41: Hillsboro Central Transit Center Severe Crashes for All Modes

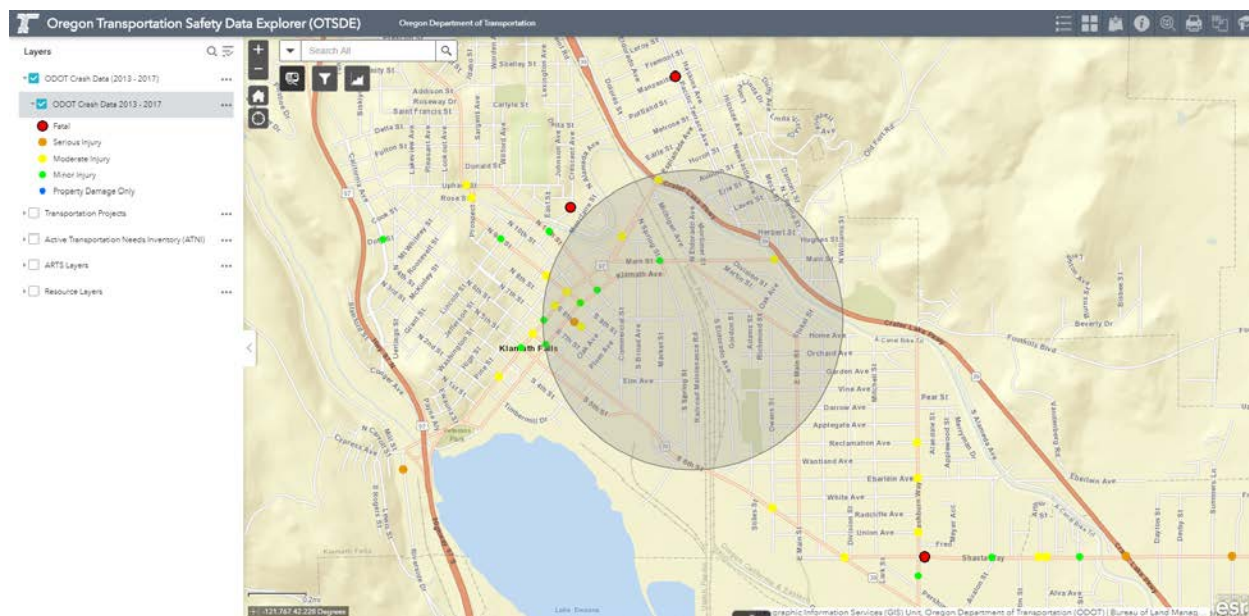
Map data: Esri, ODOT

Figure J-42: Hillsboro Central Transit Center All Bicycle or Pedestrian Involved Crashes

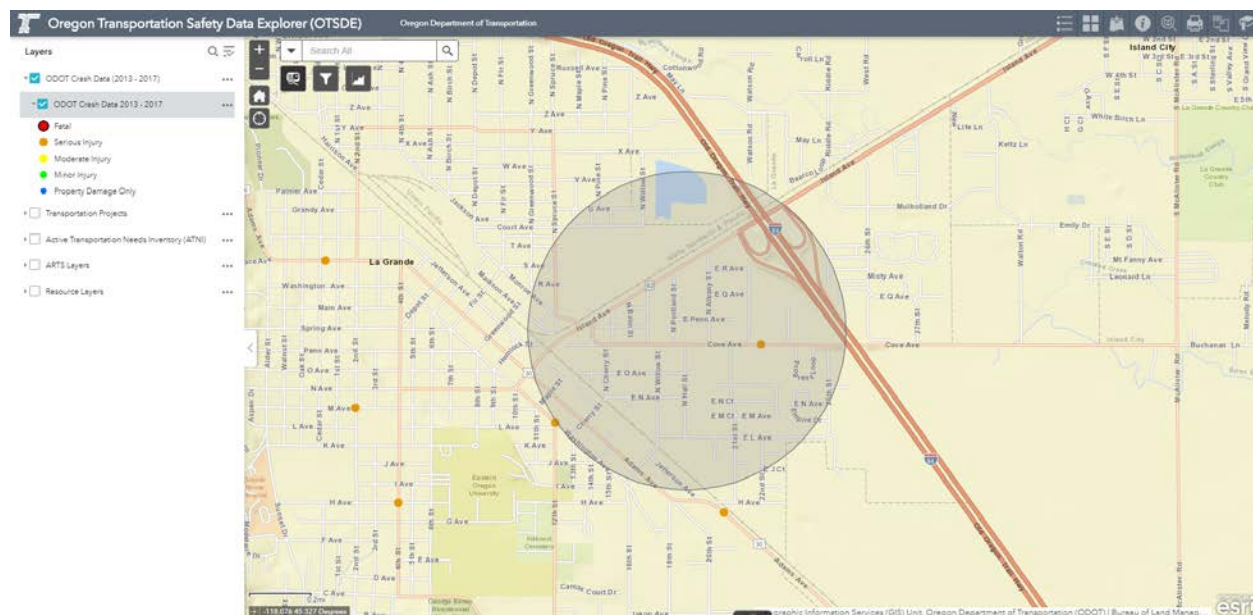
Map data: Esri, ODOT

Figure J-43: Klamath Falls Amtrak Station Severe Crashes for All Modes

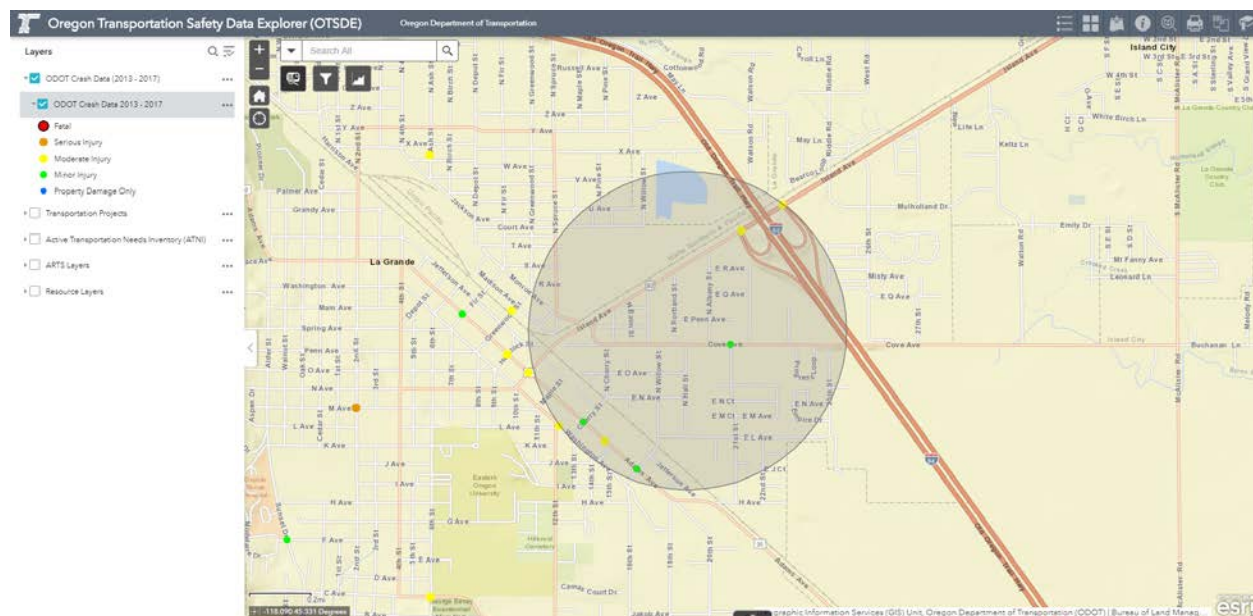
Map data: Esri, ODOT

Figure J-44: Klamath Falls Amtrak Station All Bicycle or Pedestrian Involved Crashes

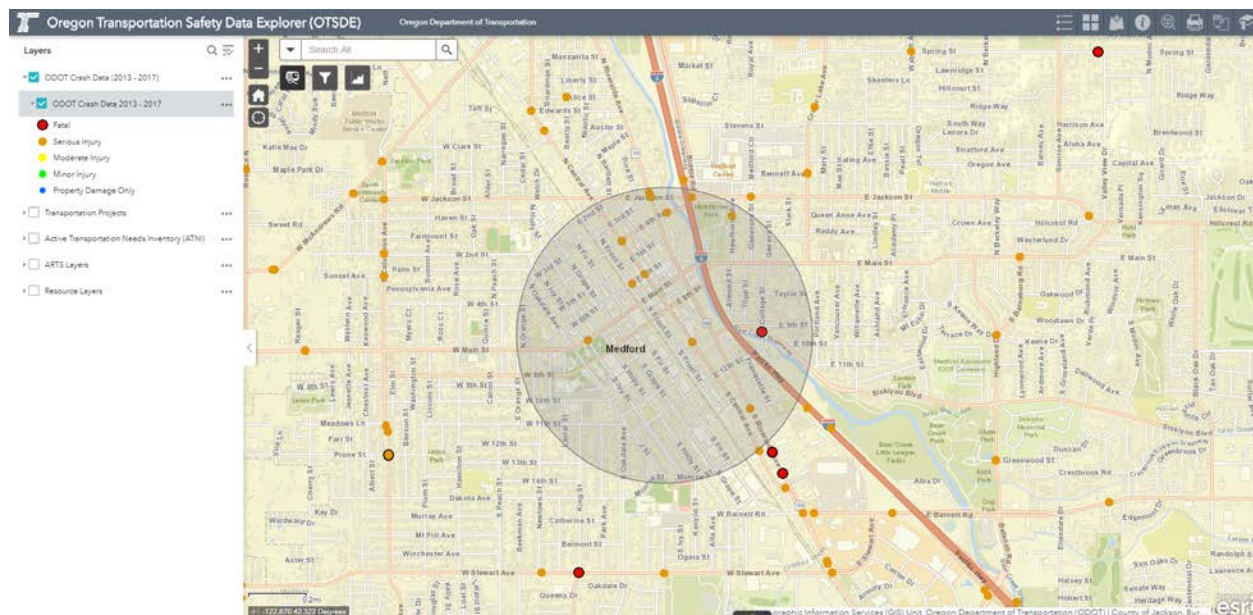
Map data: Esri, ODOT

Figure J-45: La Grande Transit Center Severe Crashes for All Modes

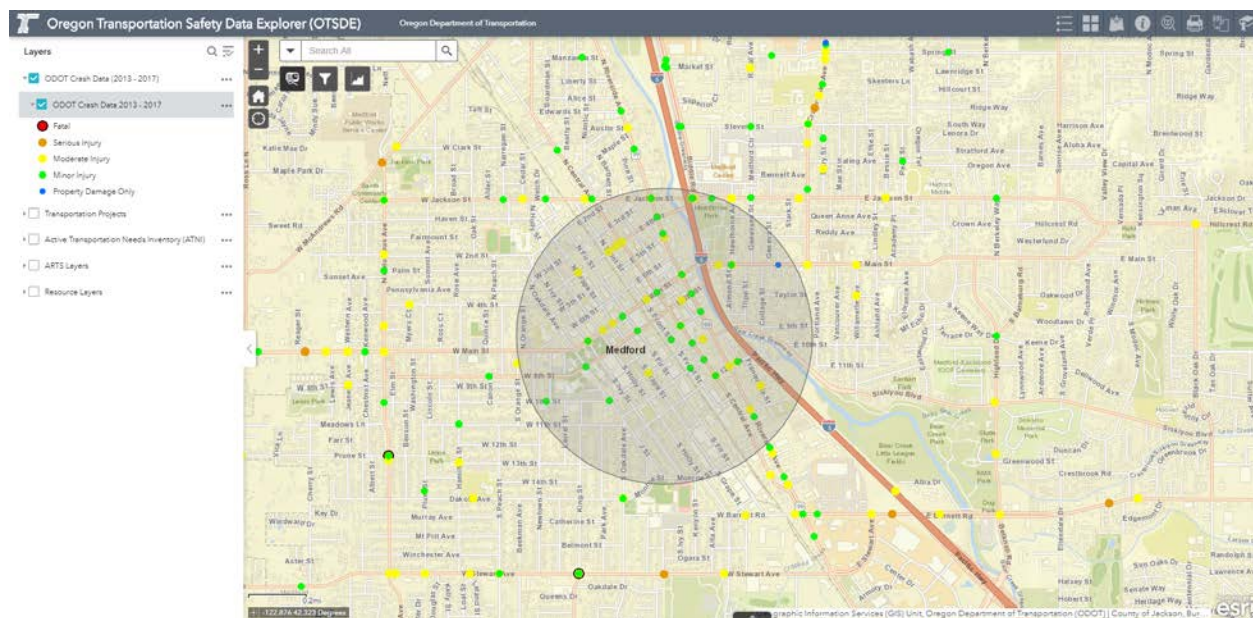
Map data: Esri, ODOT

Figure J-46: La Grande Transit Center All Bicycle or Pedestrian Involved Crashes

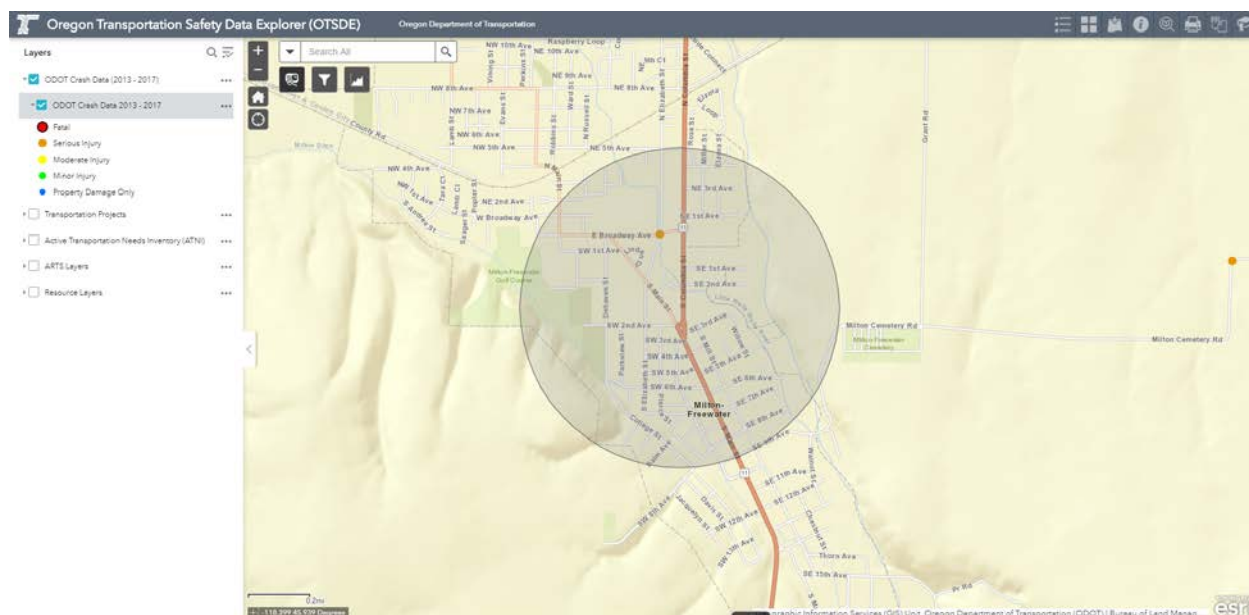
Map data: Esri, ODOT

Figure J-47: Medford Front Street Station Severe Crashes for All Modes

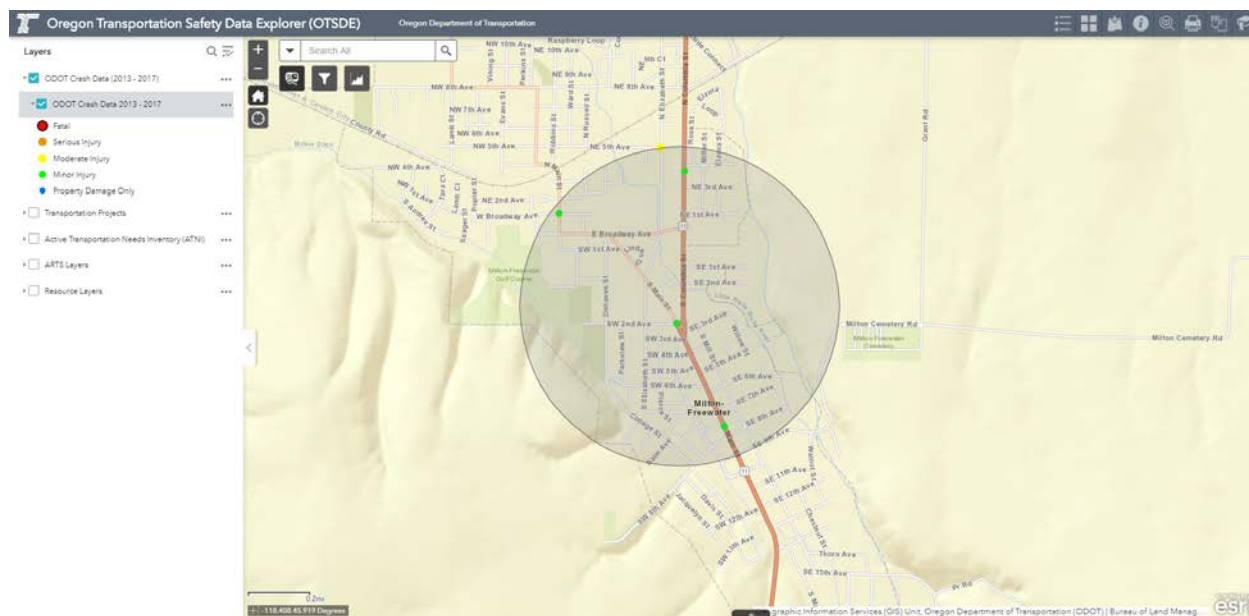
Map data: Esri, ODOT

Figure J-48: Medford Front Street Station All Bicycle or Pedestrian Involved Crashes

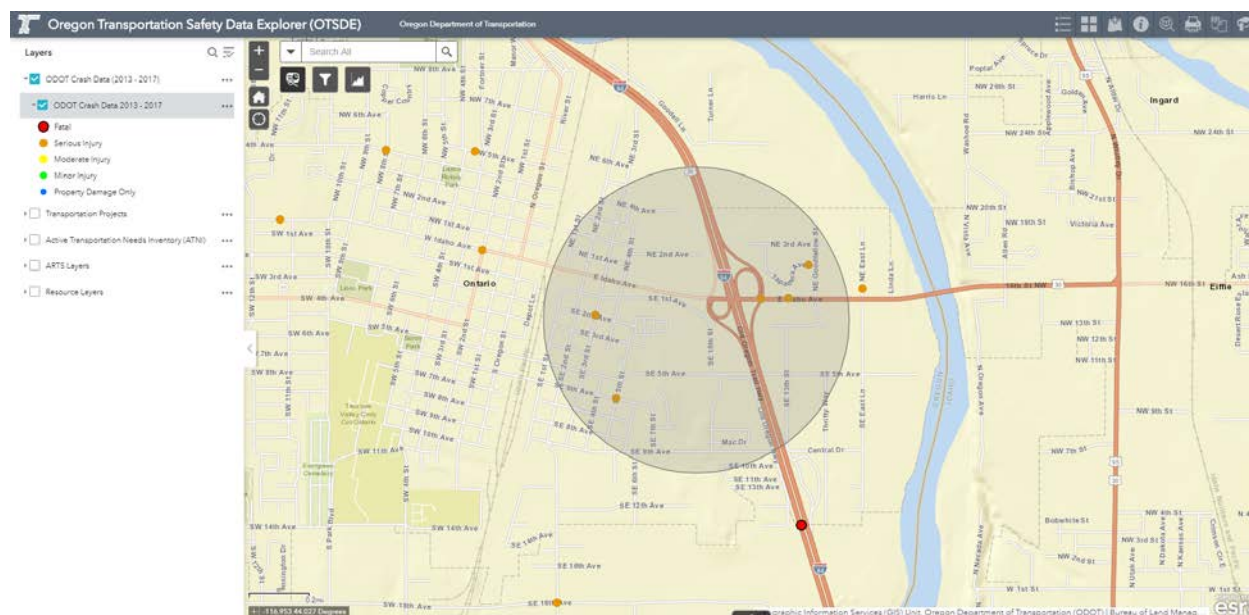
Map data: Esri, ODOT

Figure J-49: Milton-Freewater Severe Crashes for All Modes

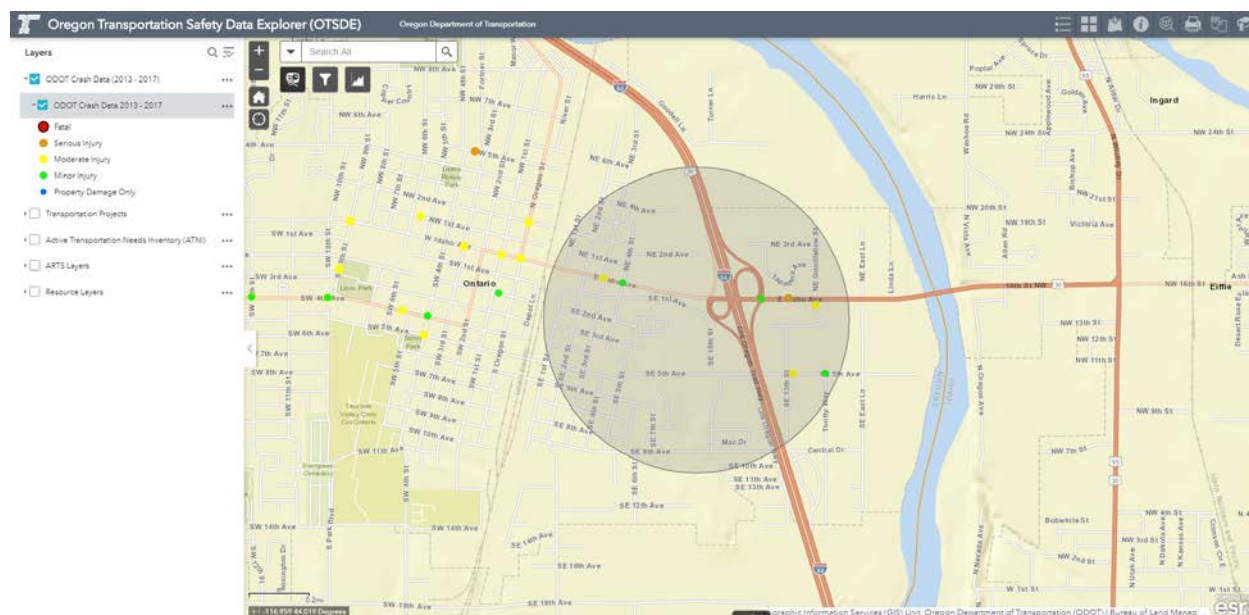
Map data: Esri, ODOT

Figure J-50: Milton-Freewater All Bicycle or Pedestrian Involved Crashes

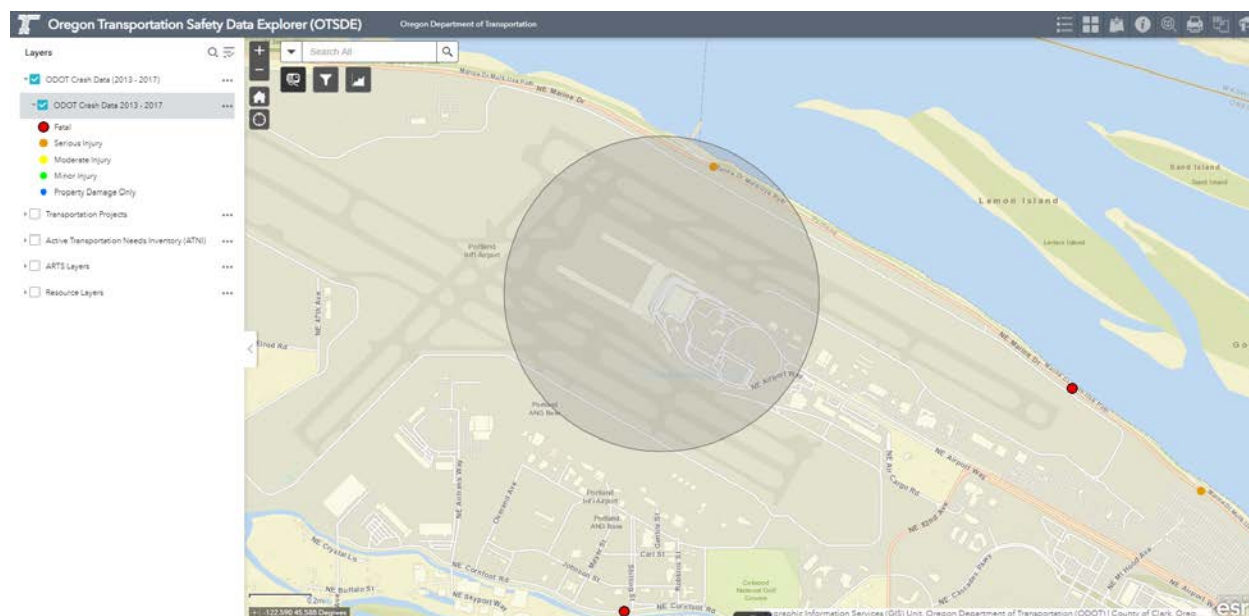
Map data: Esri, ODOT

Figure J-51: Ontario Severe Crashes for All Modes

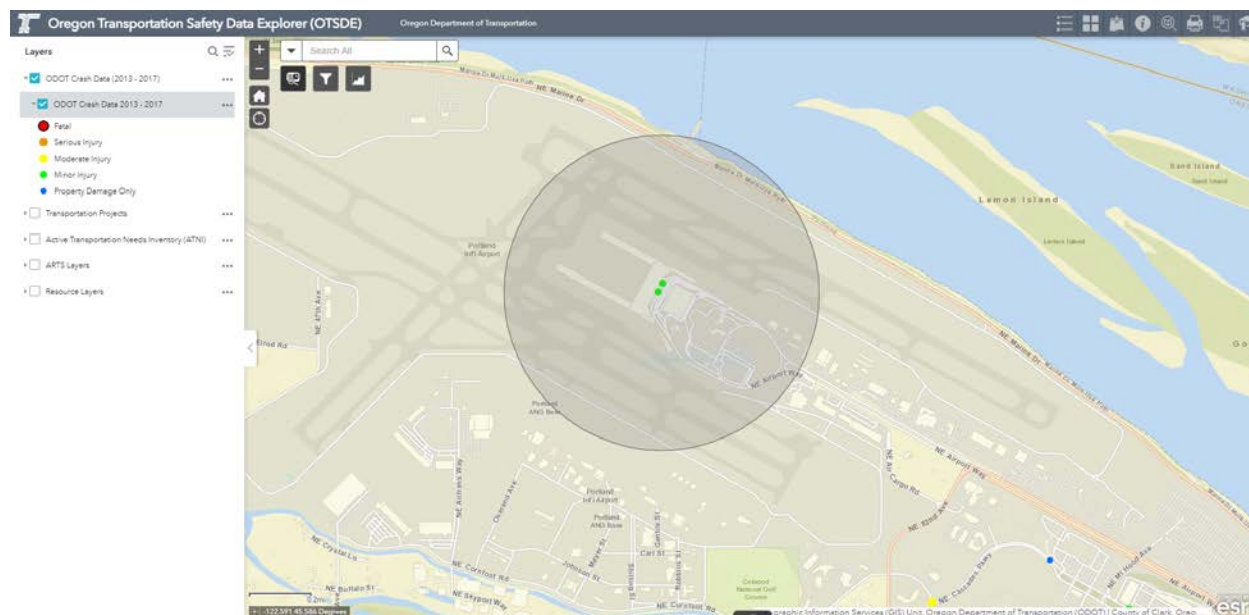
Map data: Esri, ODOT

Figure J-52: Ontario All Bicycle or Pedestrian Involved Crashes

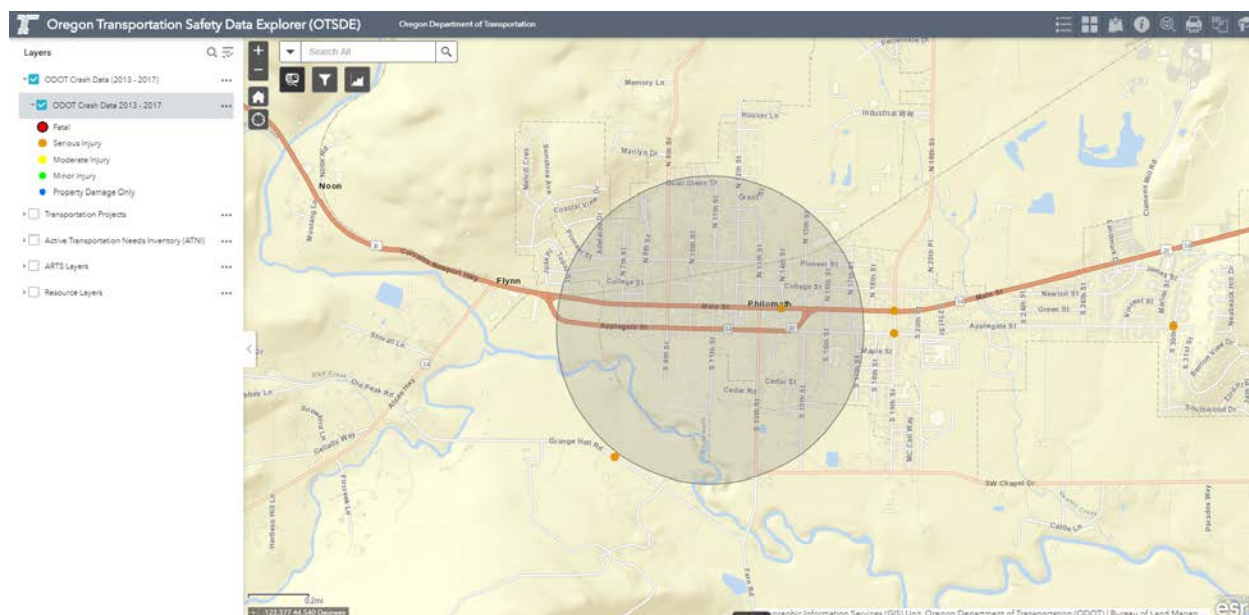
Map data: Esri, ODOT

Figure J-53: PDX Transit Center Severe Crashes for All Modes

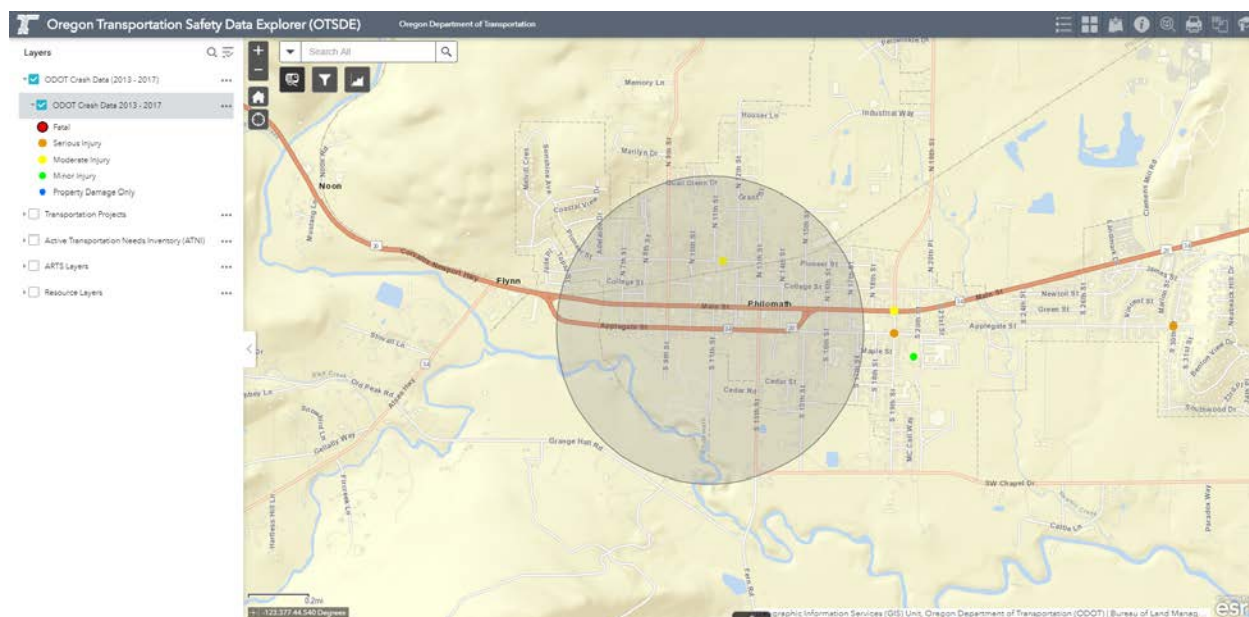
Map data: Esri, ODOT

Figure J-54: PDX Transit Center All Bicycle or Pedestrian Involved Crashes

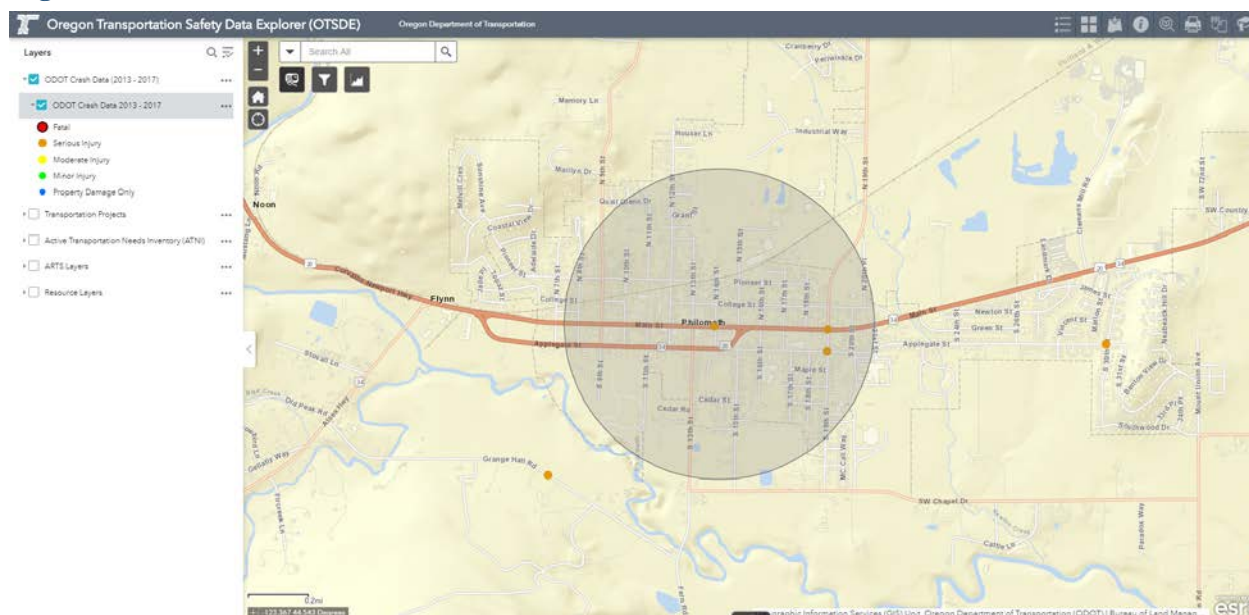
Map data: Esri, ODOT

Figure J-55: Philomath Applegate St & 11th St Severe Crashes for All Modes

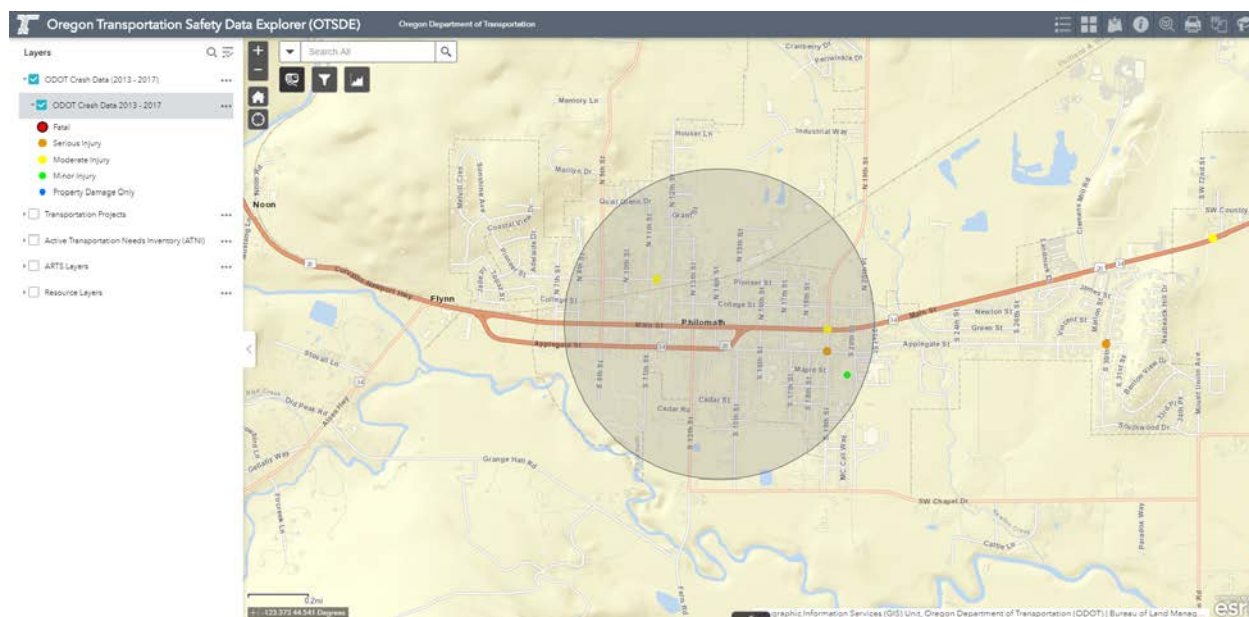
Map data: Esri, ODOT

Figure J-56: Philomath Applegate St & 11th St All Bicycle or Pedestrian Involved Crashes

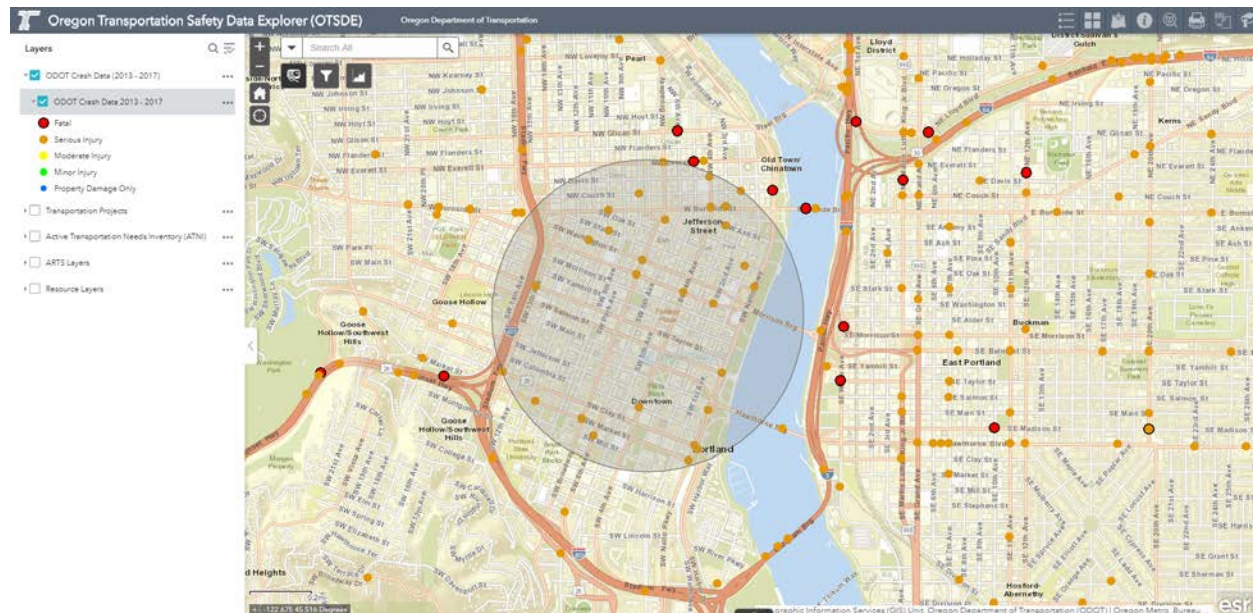
Map data: Esri, ODOT

Figure J-57: Philomath Main St & 14th St Severe Crashes for All Modes

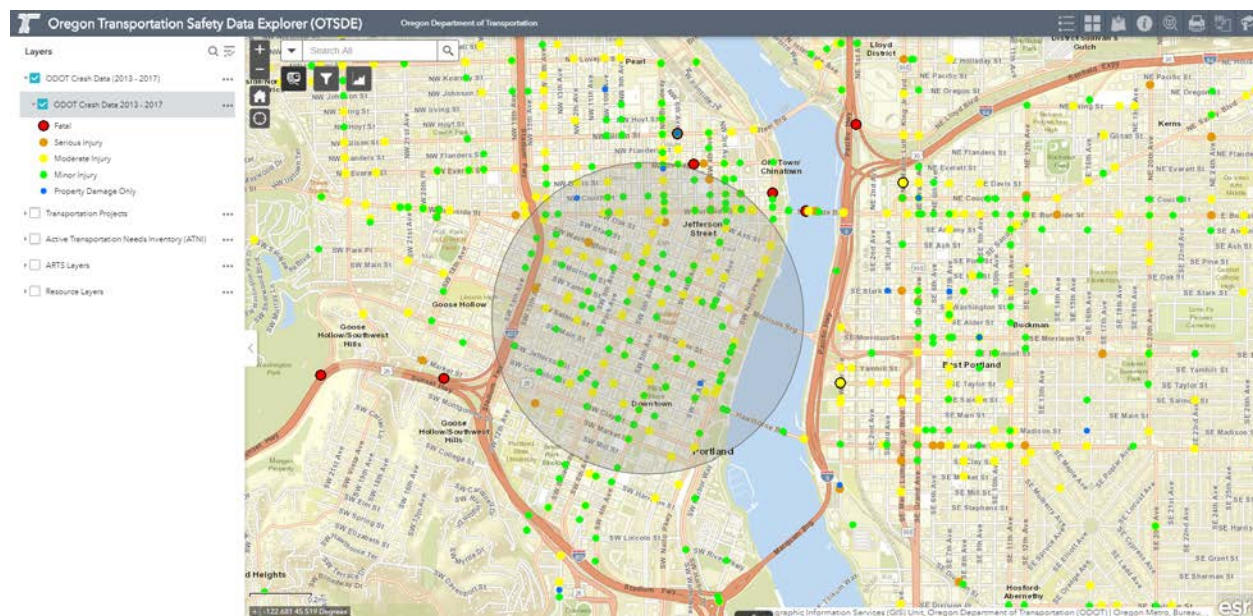
Map data: Esri, ODOT

Figure J-58: Philomath Main St & 14th St All Bicycle or Pedestrian Involved Crashes

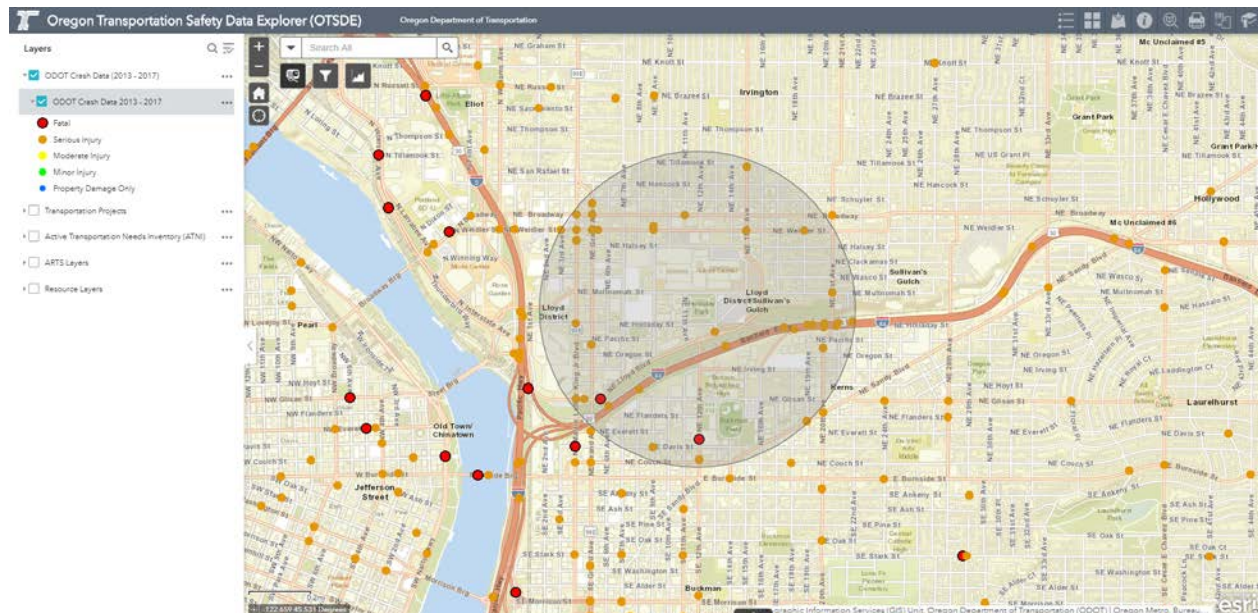
Map data: Esri, ODOT

Figure J-59: Portland 6th Ave & Taylor St Severe Crashes for All Modes

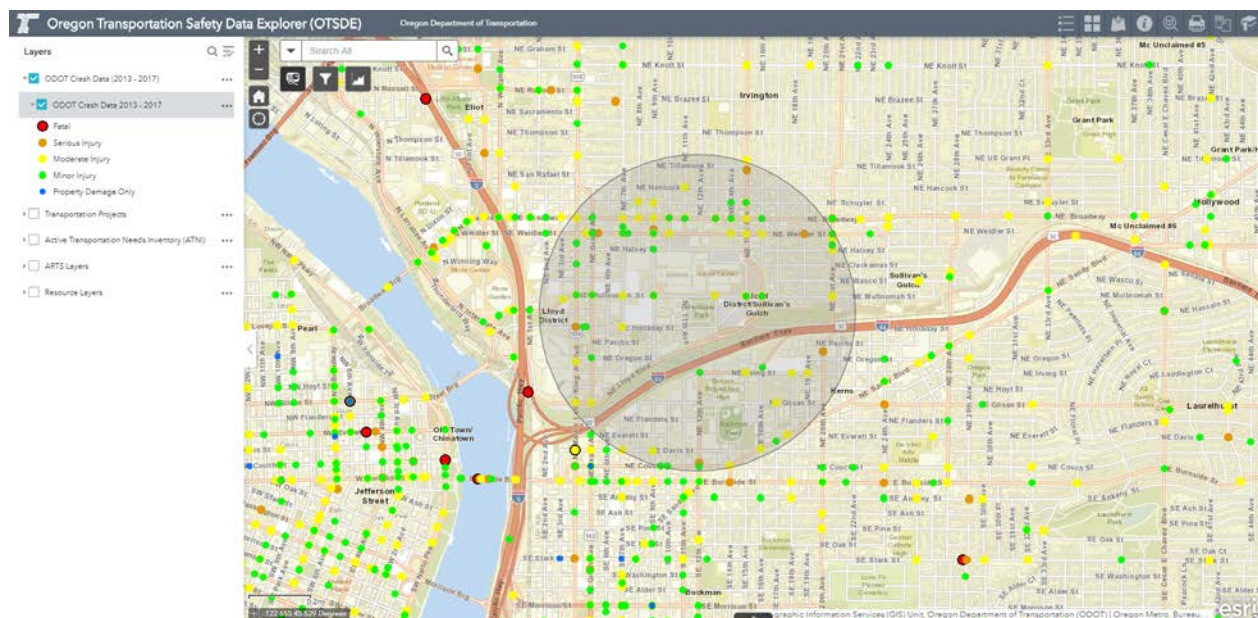
Map data: Esri, ODOT

Figure J-60: Portland 6th Ave & Taylor St All Bicycle or Pedestrian Involved Crashes

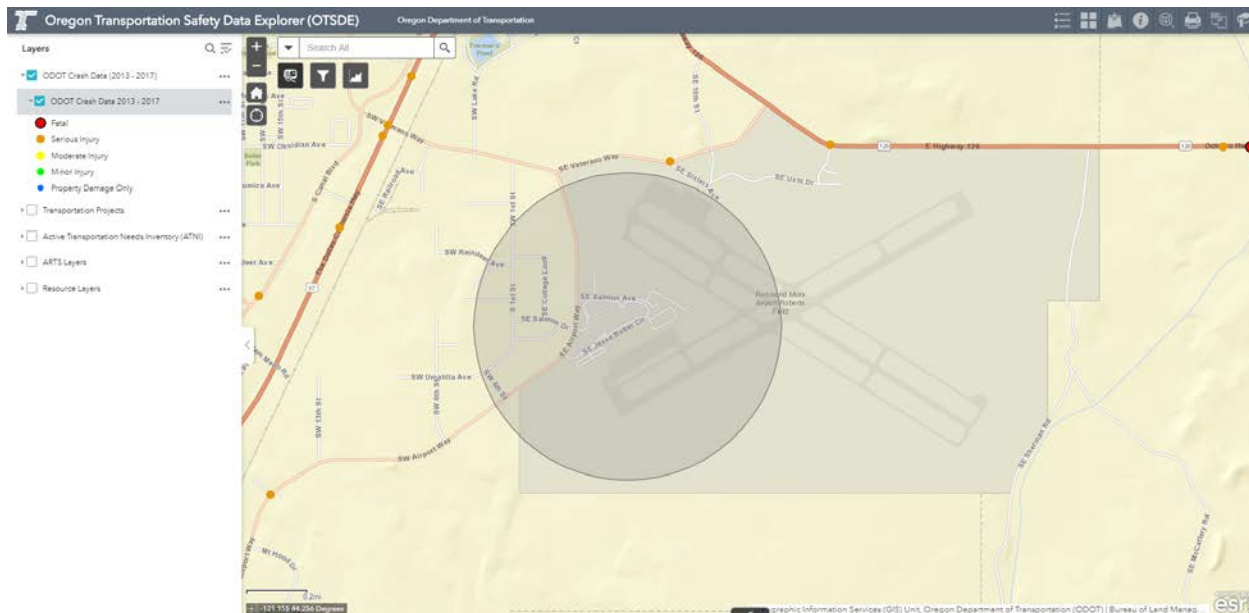
Map data: Esri, ODOT

Figure J-61: Portland Lloyd Center Severe Crashes for All Modes

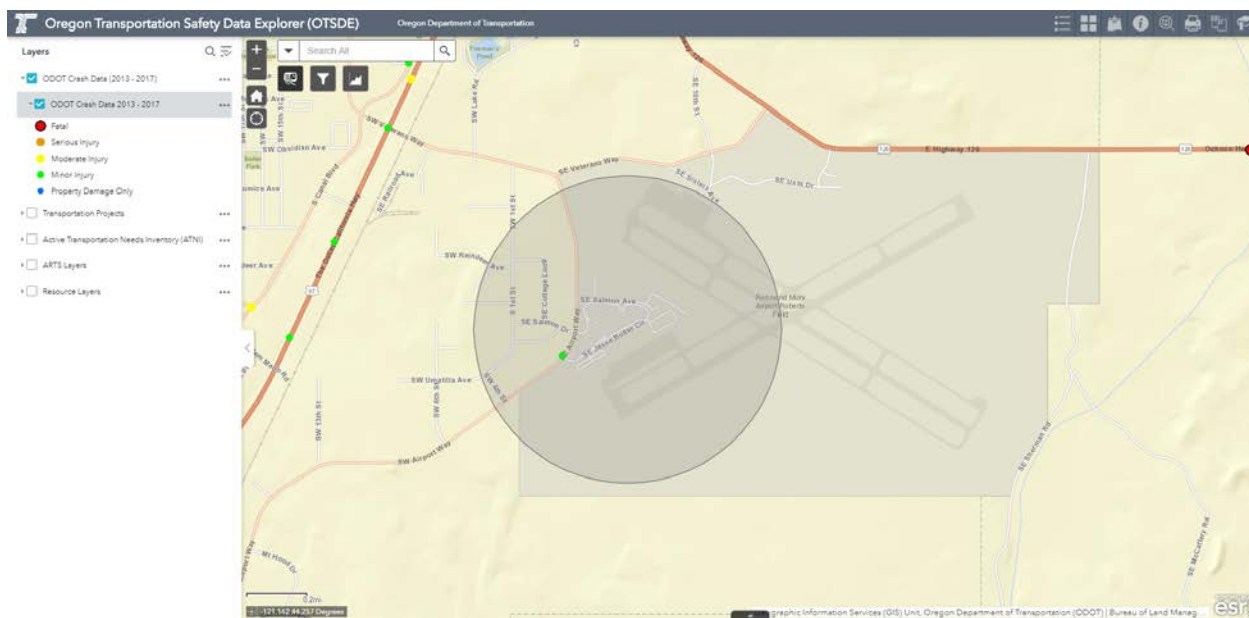
Map data: Esri, ODOT

Figure J-62: Portland Lloyd Center All Bicycle or Pedestrian Involved Crashes

Map data: Esri, ODOT

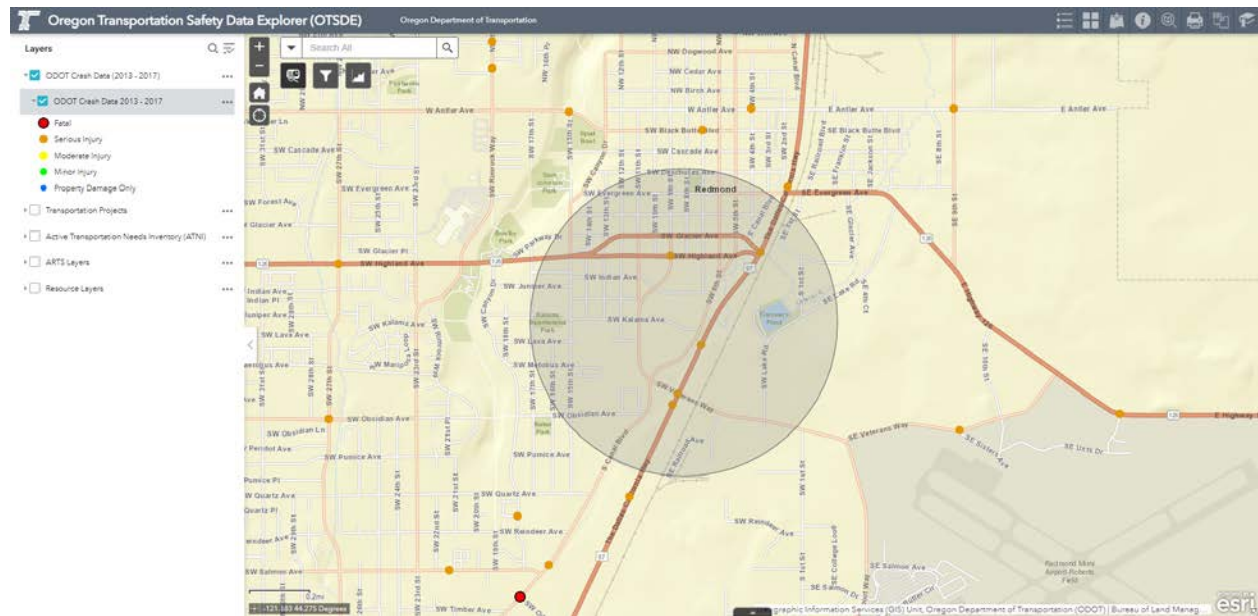
Figure J-63: Redmond Airport Severe Crashes for All Modes

Map data: Esri, ODOT

Figure J-64: Redmond Airport All Bicycle or Pedestrian Involved Crashes

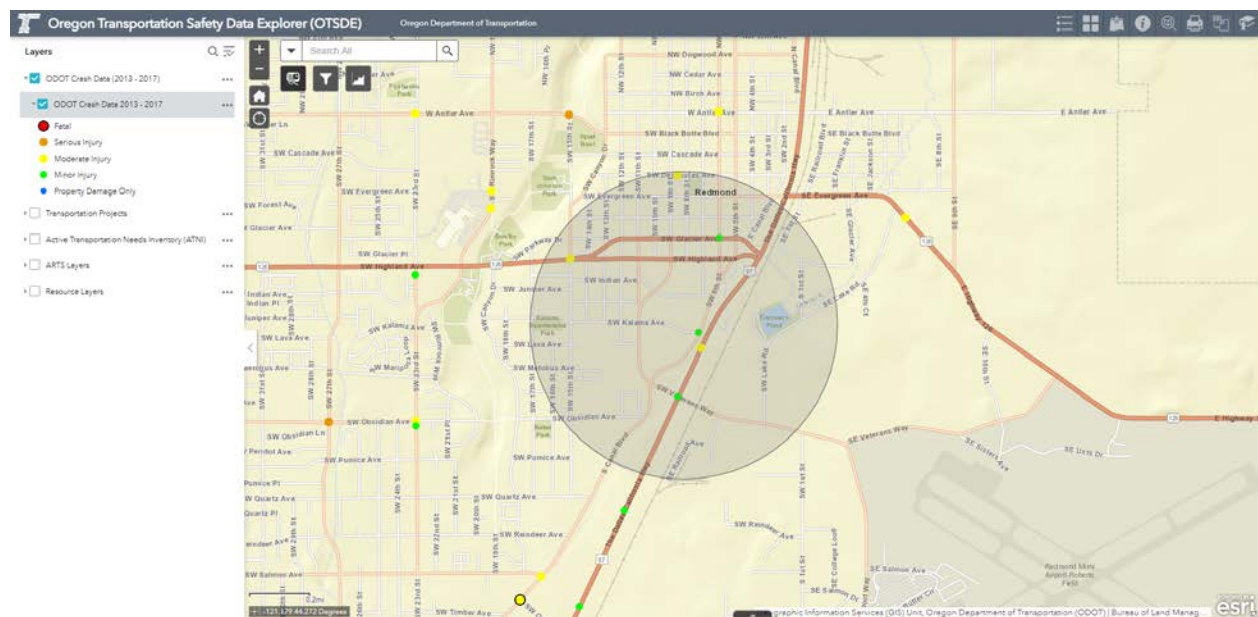
Map data: Esri, ODOT

Figure J-65: Redmond Transit Hub Severe Crashes for All Modes

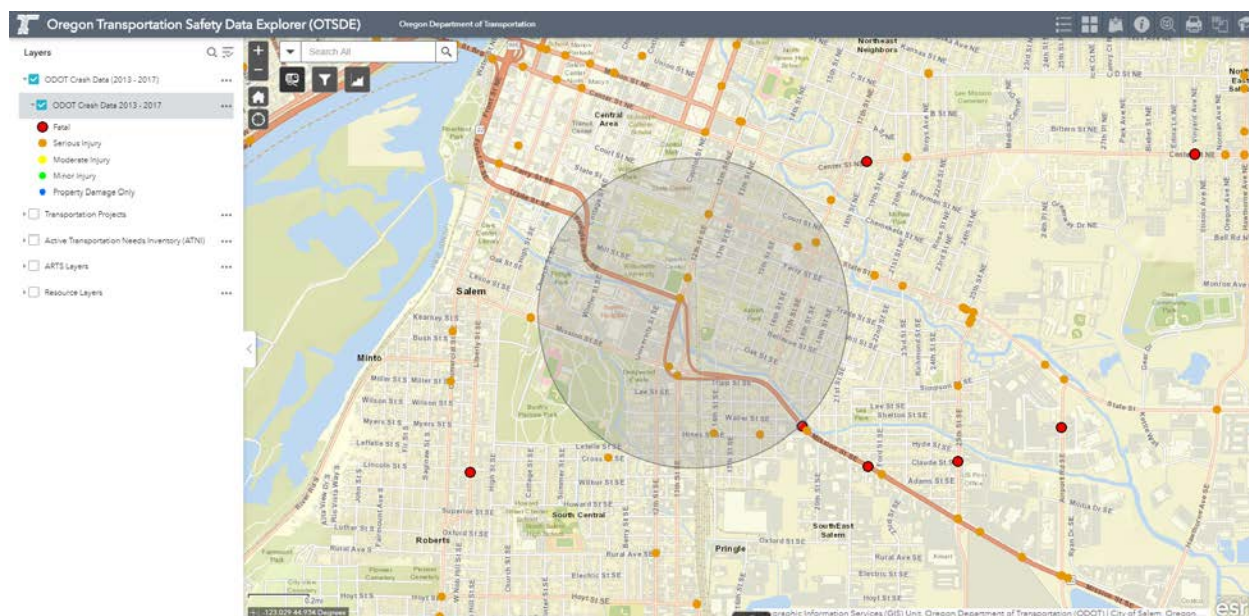


Map data: Esri, ODOT

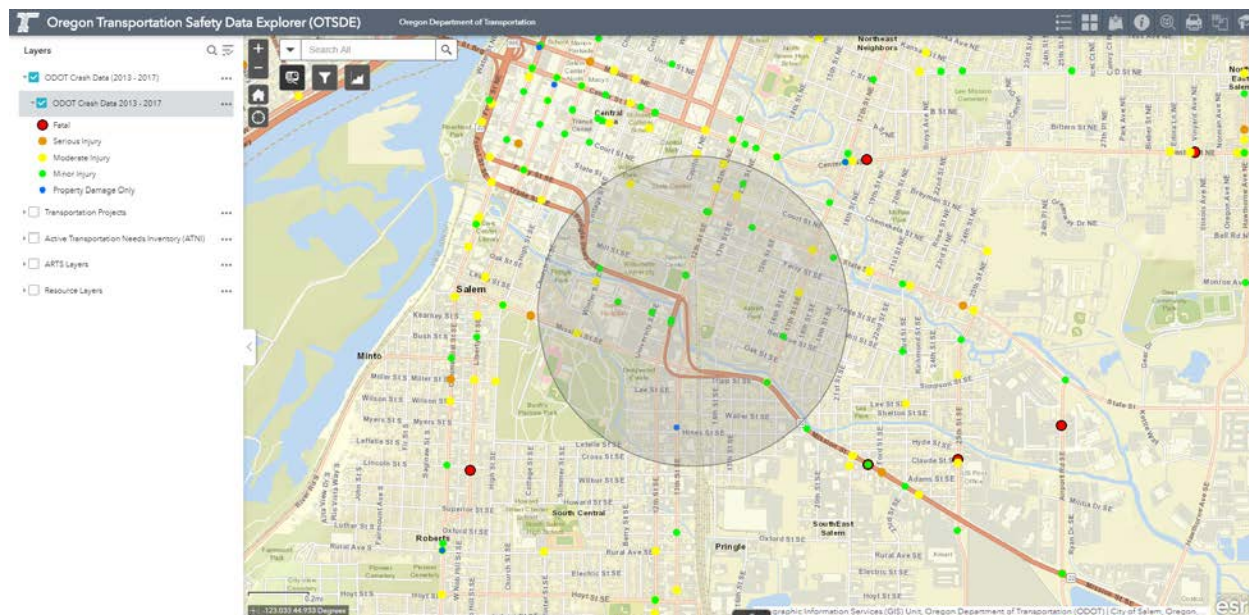
Figure J-66: Redmond Transit Hub All Bicycle or Pedestrian Involved Crashes



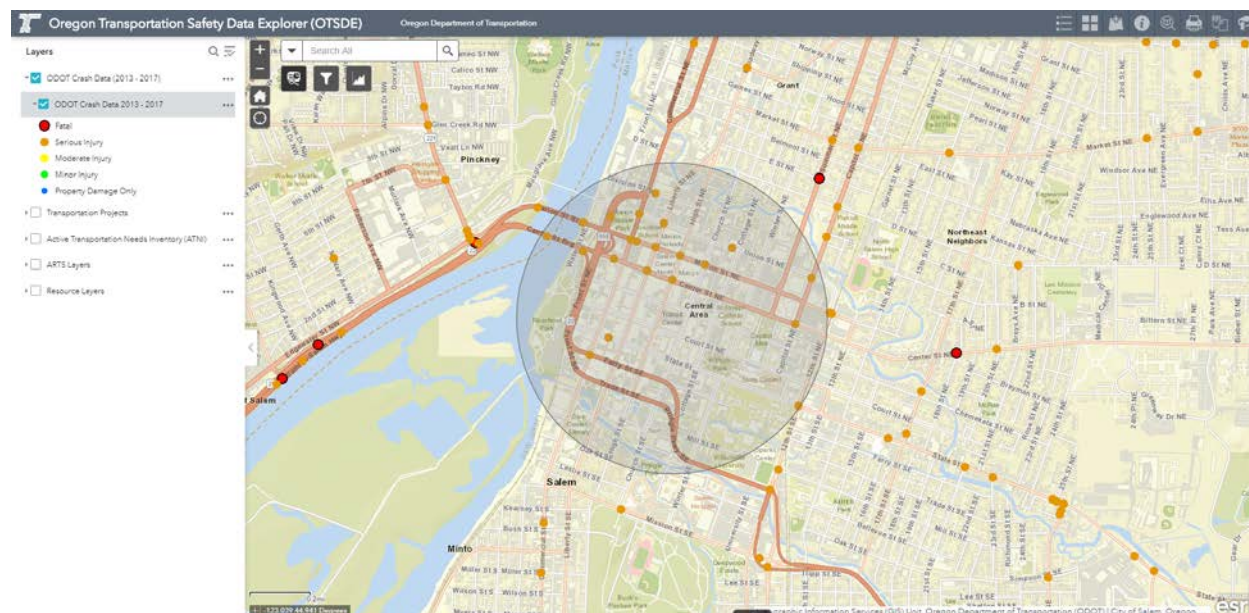
Map data: Esri, ODOT

Figure J-67: Salem Amtrak Station Severe Crashes for All Modes

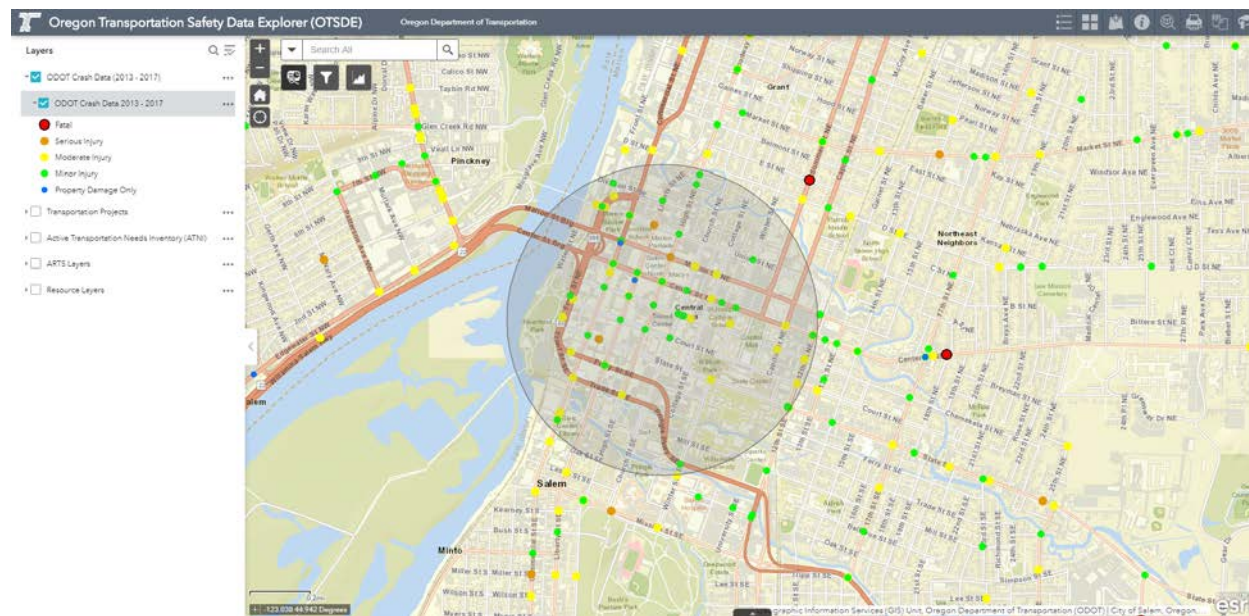
Map data: Esri, ODOT

Figure J-68: Salem Amtrak Station All Bicycle or Pedestrian Involved Crashes

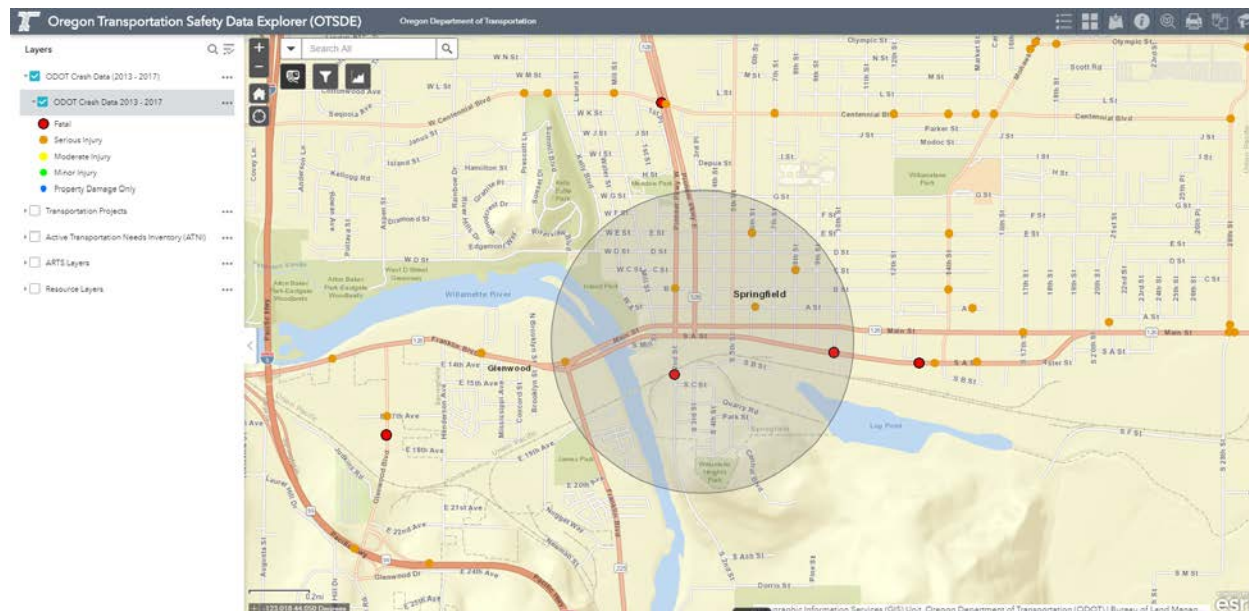
Map data: Esri, ODOT

Figure J-69: Salem Downtown Transit Center Severe Crashes for All Modes

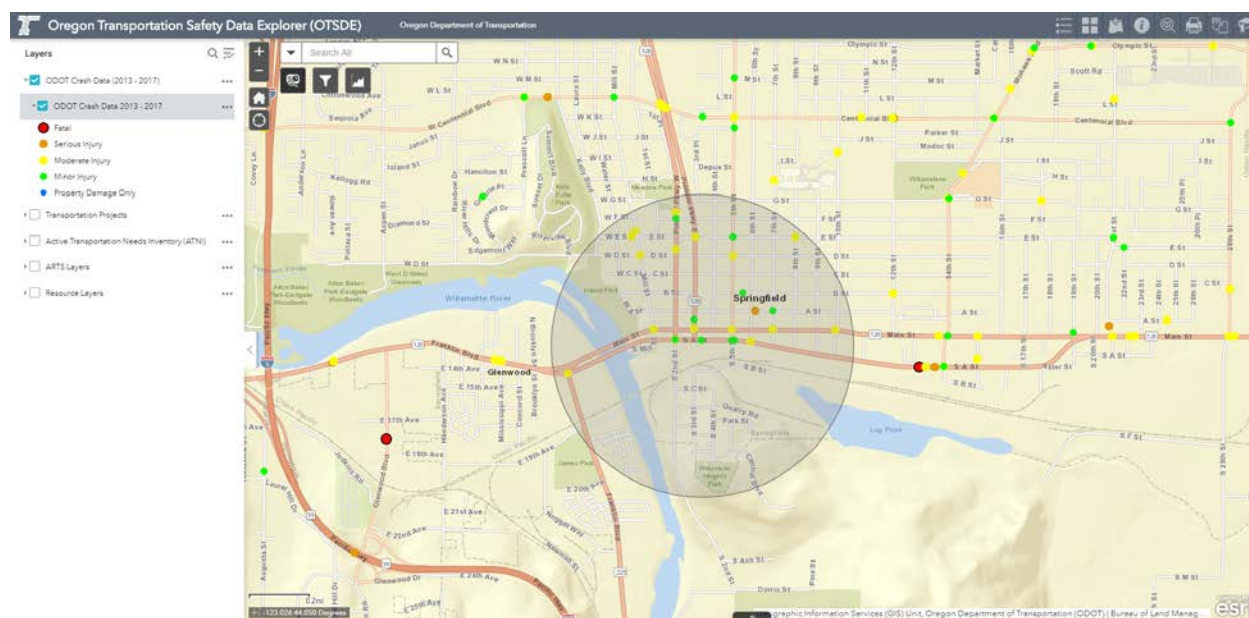
Map data: Esri, ODOT

Figure J-70: Salem Downtown Transit Center All Bicycle or Pedestrian Involved Crashes

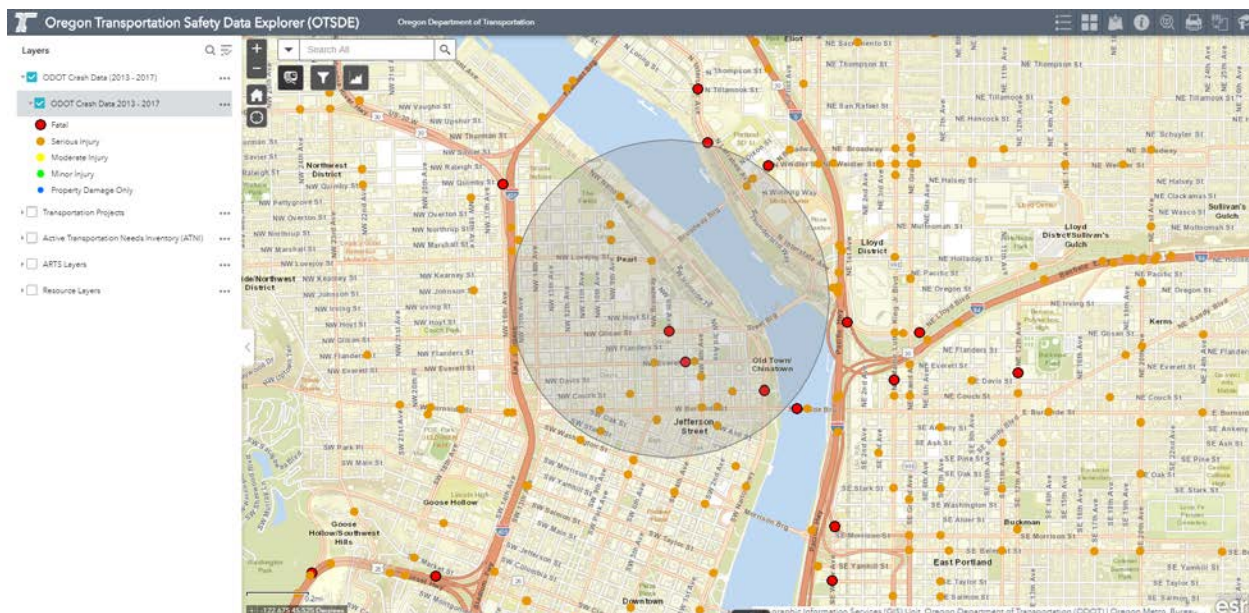
Map data: Esri, ODOT

Figure J-71: Springfield Greyhound Station Severe Crashes for All Modes

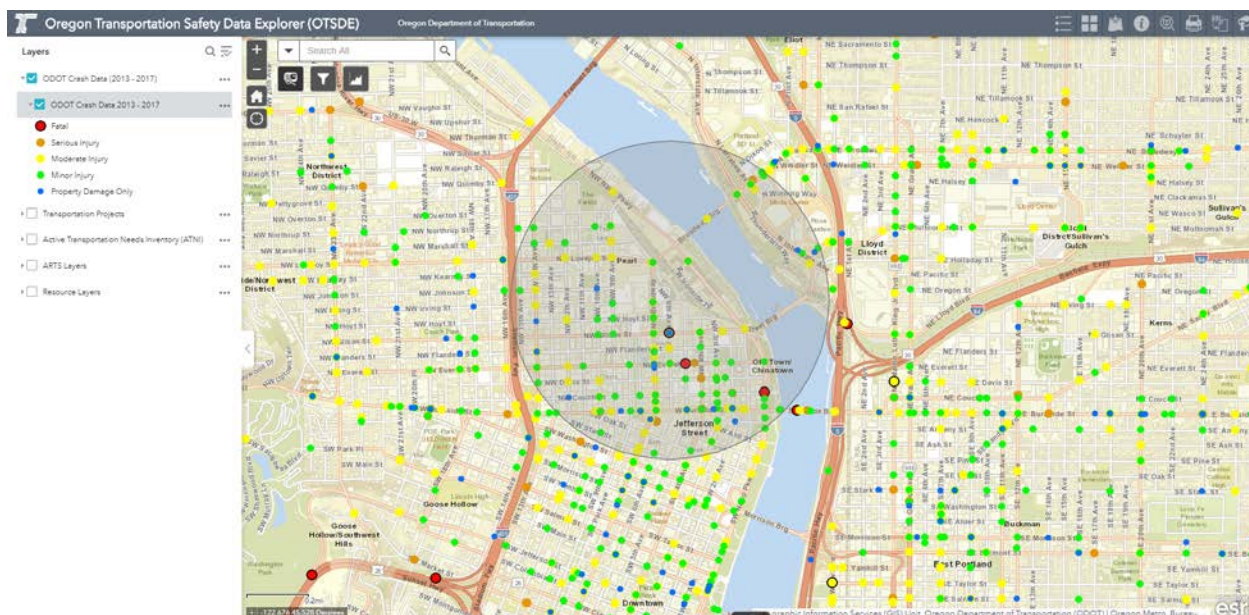
Map data: Esri, ODOT

Figure J-72: Springfield Greyhound Station All Bicycle or Pedestrian Involved Crashes

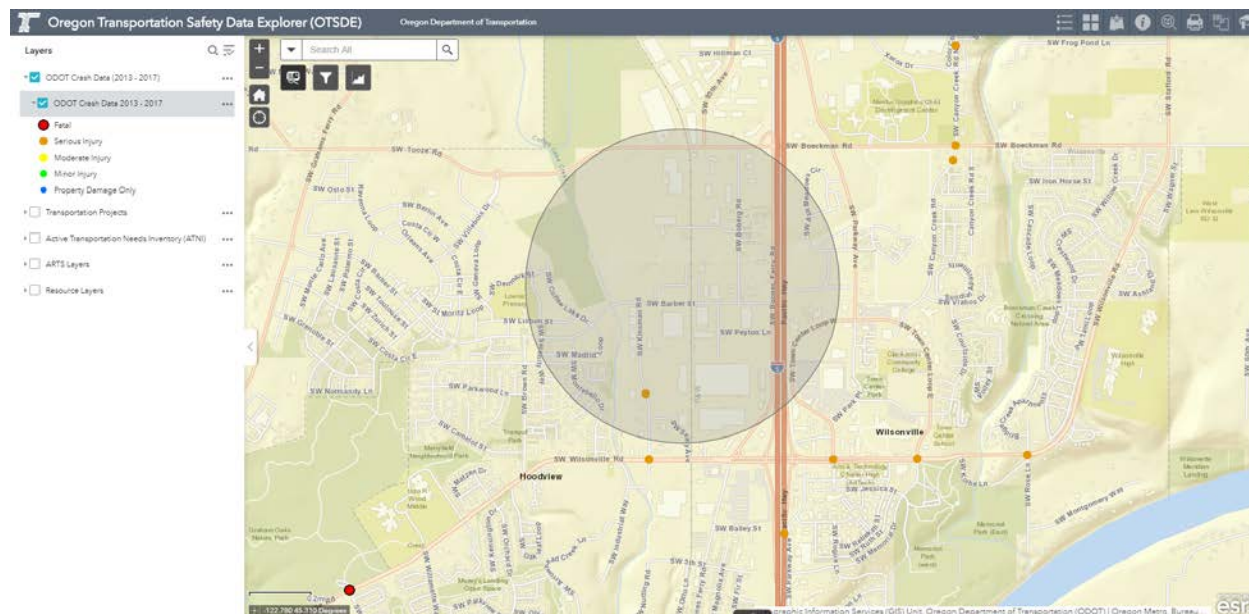
Map data: Esri, ODOT

Figure J-73: Union Station Severe Crashes for All Modes

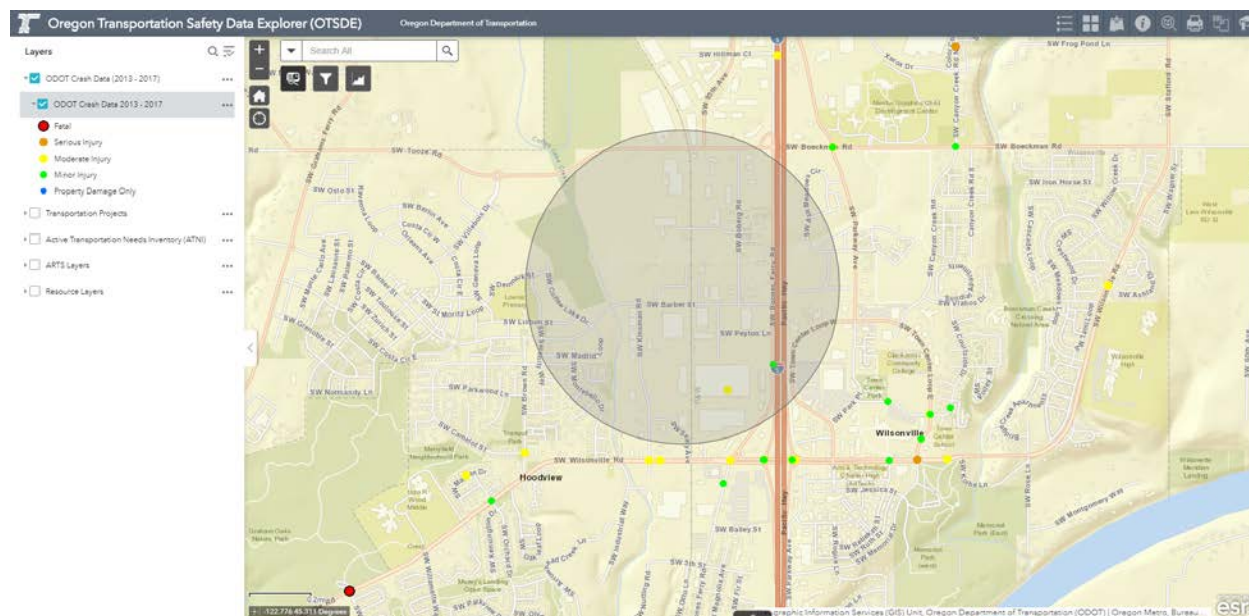
Map data: Esri, ODOT

Figure J-74: Union Station All Bicycle or Pedestrian Involved Crashes

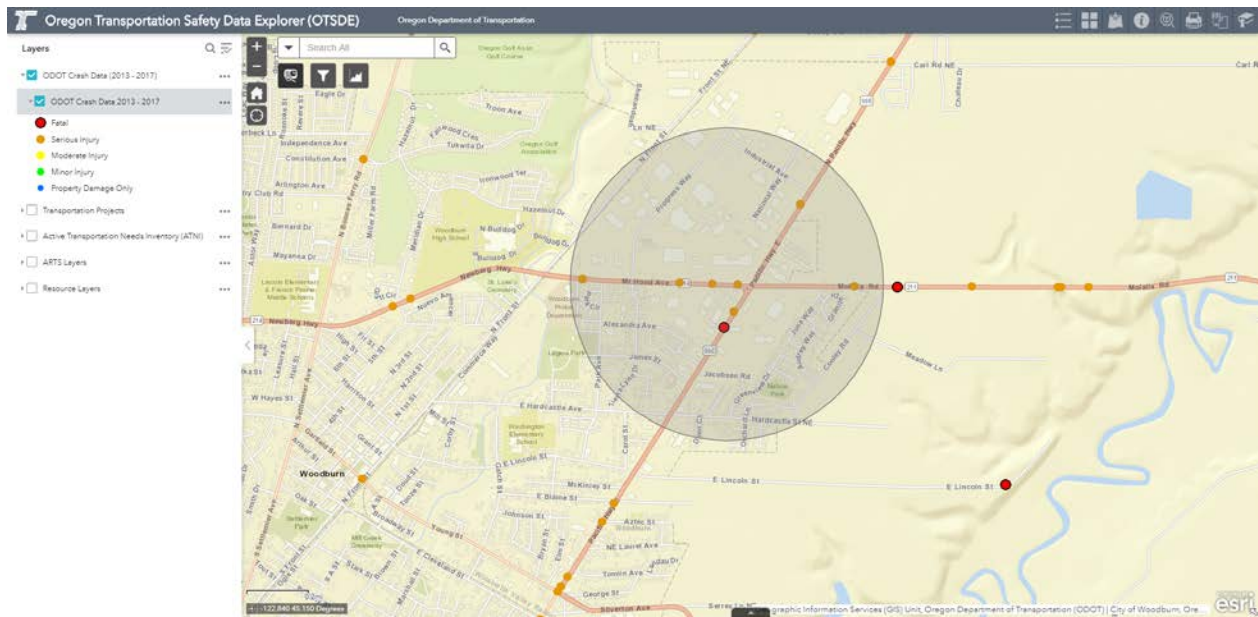
Map data: Esri, ODOT

Figure J-75: Wilsonville Transit Center Severe Crashes for All Modes

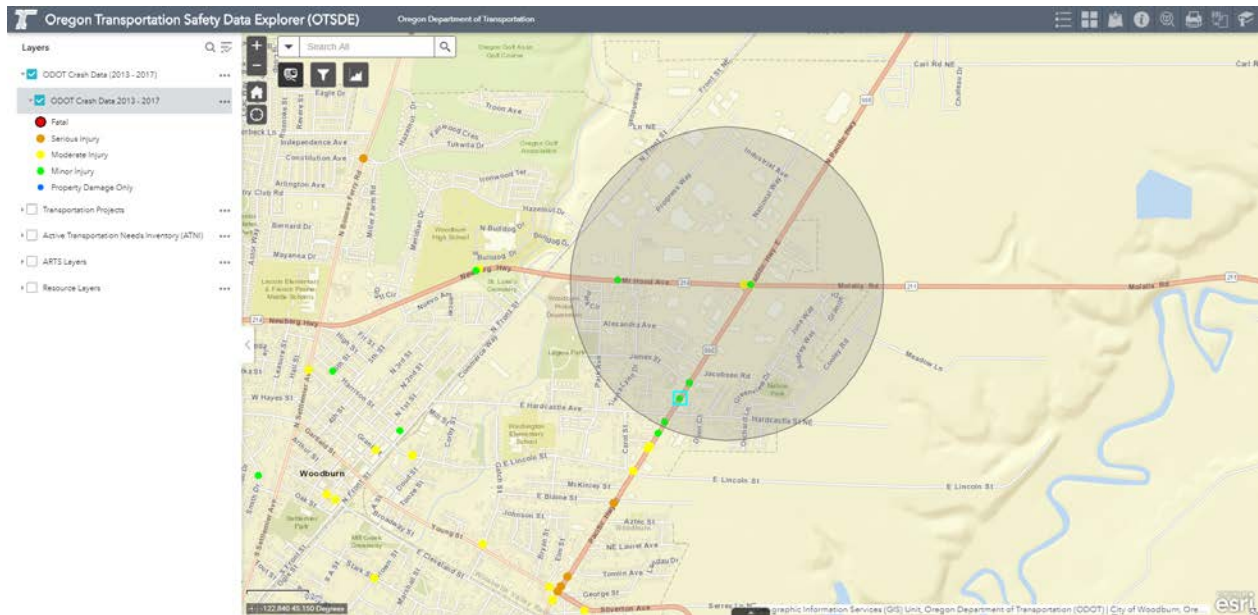
Map data: Esri, ODOT

Figure J-76: Wilsonville Transit Center All Bicycle or Pedestrian Involved Crashes

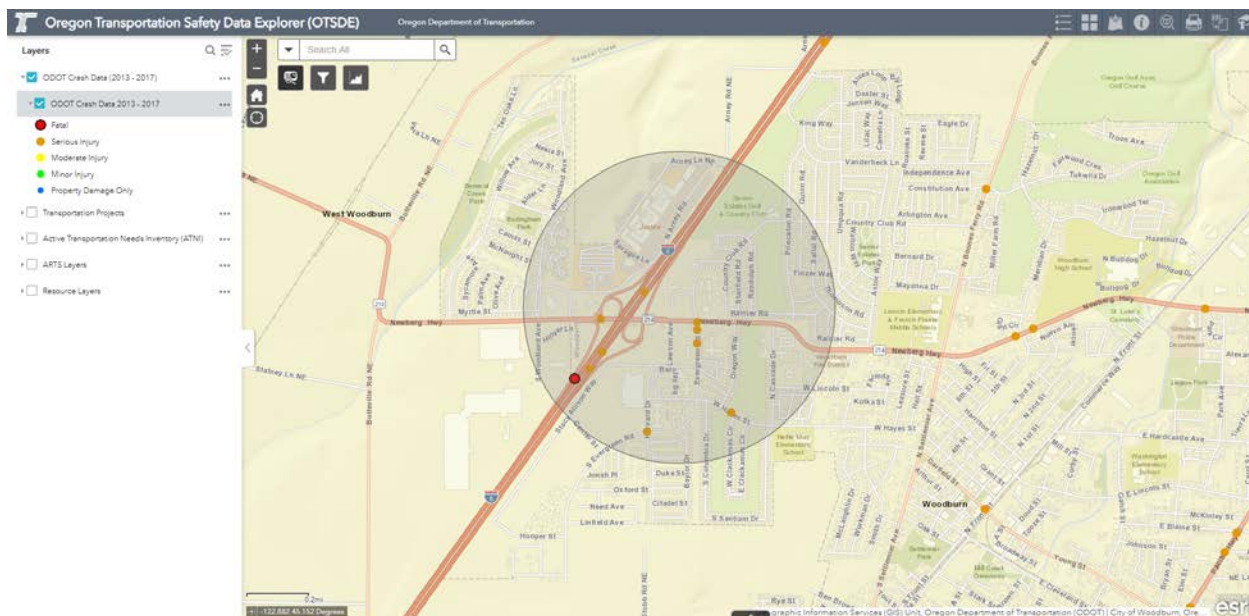
Map data: Esri, ODOT

Figure J-77: Woodburn Hwy 211 & Hwy 214 Severe Crashes for All Modes

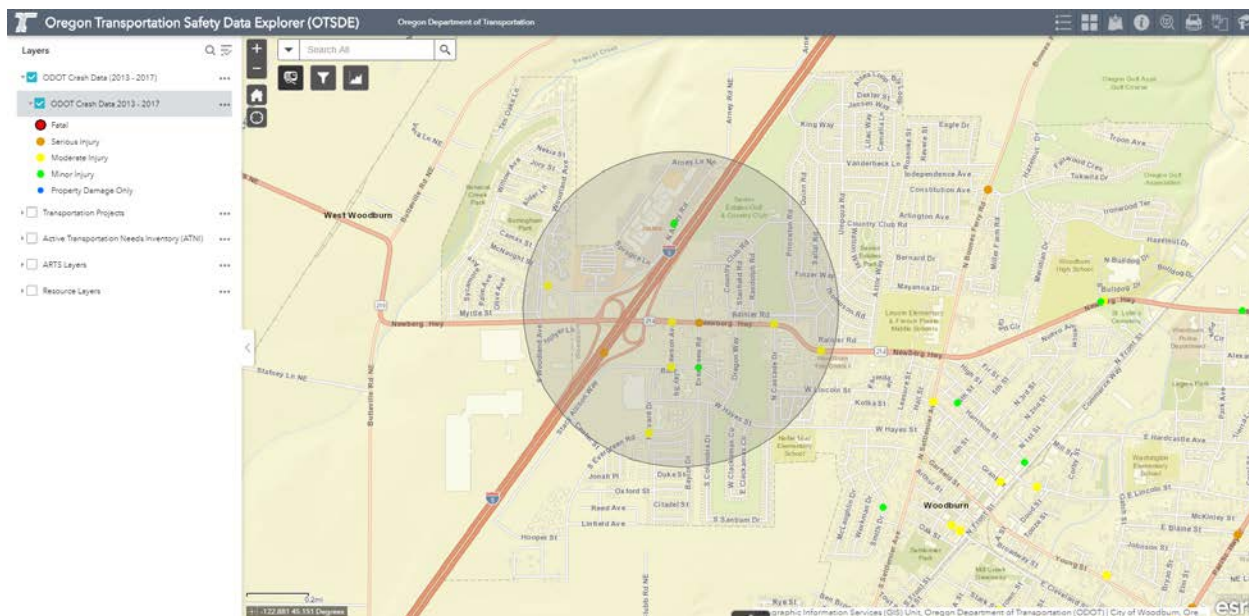
Map data: Esri, ODOT

Figure J-78: Woodburn Hwy 211 & Hwy 214 All Bicycle or Pedestrian Involved Crashes

Map data: Esri, ODOT

Figure J-79: Woodburn Memorial Transit Center Severe Crashes for All Modes

Map data: Esri, ODOT

Figure J-80: Woodburn Memorial Transit Center All Bicycle or Pedestrian Involved Crashes

Map data: Esri, ODOT

Appendix K: Site Survey Sheet

Figure K-1: Key Transit Hub Site Survey Sheet

Tab	Question	Hub:	Answer
Key Transit Hub Location	Latitude		
	Longitude		
	Street Bound - North		
	Street Bound - East		
	Street Bound - South		
	Street Bound - West		
	City Name		
Route Assignment	Transit Agency and Route Number/Name (All Routes)	Agency: Agency: Agency: Agency:	Route: Route: Route: Route:
	Regional Transit Route and Final Destinations (Regional Routes Only)	Agency + Route: Final Destinations: Agency + Route: Final Destinations: Agency + Route: Final Destinations: Agency + Route: Final Destinations:	
Site Fundamentals	What is the site's Transit Score®?		
	What type of site is it?	Check all that apply: ___ Transit center ___ Train station ___ Bus stops ___ Airport ___ Hotel ___ Other:	
	What is the site configuration?	___ One site ___ Multiple disconnected sites	
	If multiple sites are not connected how long does it take to walk between them?	_____min _____sec	
	What is the square footage of the site?	square feet	
	What is the square footage of the passenger waiting area?	square feet	
	Which park and ride facility is on site?	___ Parking lot ___ Parking structure ___ No parking facility	
	How many parking spaces are there?		
	How many motorcycle spaces are there?		

Site Fundamentals Continued	How many electric vehicle spaces are there?	
	How many handicap spaces are there?	
	Are the handicap spaces painted?	<input type="checkbox"/> Yes <input type="checkbox"/> Yes, but in need of repainting <input type="checkbox"/> Not painted
	Is there a wheelchair ramp from the handicap space to the pedestrian waiting area?	<input type="checkbox"/> No ramps <input type="checkbox"/> Ramps WITH truncated dome detectable warnings <input type="checkbox"/> Ramps WITHOUT truncated dome detectable warnings
	Comments on site fundamentals	
Transit Route Signage	How many route assignment signs are present?	
	What is the type and number of mounting fixtures?	<input type="checkbox"/> Post <input type="checkbox"/> Street Lamp <input type="checkbox"/> Traffic Light <input type="checkbox"/> Utility Pole <input type="checkbox"/> Shelter <input type="checkbox"/> Solar Panel <input type="checkbox"/> Affixed to facility structure <input type="checkbox"/> Other:
	Is the transit agency name/logo clearly displayed on the sign?	Agency: _____ ----- <input type="checkbox"/> Name <input type="checkbox"/> Logo <input type="checkbox"/> Both <input type="checkbox"/> None Agency: _____ ----- <input type="checkbox"/> Name <input type="checkbox"/> Logo <input type="checkbox"/> Both <input type="checkbox"/> None Agency: _____ ----- <input type="checkbox"/> Name <input type="checkbox"/> Logo <input type="checkbox"/> Both <input type="checkbox"/> None Agency: _____ ----- <input type="checkbox"/> Name <input type="checkbox"/> Logo <input type="checkbox"/> Both <input type="checkbox"/> None Agency: _____ ----- <input type="checkbox"/> Name <input type="checkbox"/> Logo <input type="checkbox"/> Both <input type="checkbox"/> None
	Is the route number/name clearly displayed on the sign?	Agency: _____ ----- <input type="checkbox"/> Yes <input type="checkbox"/> No Agency: _____ ----- <input type="checkbox"/> Yes <input type="checkbox"/> No Agency: _____ ----- <input type="checkbox"/> Yes <input type="checkbox"/> No Agency: _____ ----- <input type="checkbox"/> Yes <input type="checkbox"/> No Agency: _____ ----- <input type="checkbox"/> Yes <input type="checkbox"/> No Agency: _____ ----- <input type="checkbox"/> Yes <input type="checkbox"/> No
	What information does the sign provide about where the bus will go and what its destinations are?	Agency: _____ ----- <input type="checkbox"/> Local streets <input type="checkbox"/> Destinations <input type="checkbox"/> None Agency: _____ ----- <input type="checkbox"/> Local streets <input type="checkbox"/> Destinations <input type="checkbox"/> None Agency: _____ ----- <input type="checkbox"/> Local streets <input type="checkbox"/> Destinations <input type="checkbox"/> None

		Agency: _____ ----- <input type="checkbox"/> Local streets <input type="checkbox"/> Destinations <input type="checkbox"/> None Agency: _____ ----- <input type="checkbox"/> Local streets <input type="checkbox"/> Destinations <input type="checkbox"/> None Agency: _____ ----- <input type="checkbox"/> Local streets <input type="checkbox"/> Destinations <input type="checkbox"/> None
Transit Route Signage Continued	Is there anything else attached to this sign post or fixture or located immediately adjacent to the post?	Check all that apply: <input type="checkbox"/> Map <input type="checkbox"/> Timetable <input type="checkbox"/> Info Panel <input type="checkbox"/> Digital Signage <input type="checkbox"/> Cube <input type="checkbox"/> Solar Light <input type="checkbox"/> Nextrip <input type="checkbox"/> Braille Signage <input type="checkbox"/> Braille Button
	Comments on the transit route signage	
Transit Facility	How many bus bays are present?	
	How many roadway bus spots are present?	
	Does the key transit hub have any solar panels to power the facility?	<input type="checkbox"/> Yes, on the bus awnings <input type="checkbox"/> Yes, on the transit buildings <input type="checkbox"/> Yes, somewhere else <input type="checkbox"/> No, there are no facility solar panels
	Is there a designated bike/scooter share drop-off area on site?	<input type="checkbox"/> Yes, there is a sign designating the area <input type="checkbox"/> Yes, there is a painted corral on the ground <input type="checkbox"/> Yes, there is a physical, upstanding corral <input type="checkbox"/> No, there is no designated drop-off area
	Is there a designated passenger drop-off/loading area?	<input type="checkbox"/> Yes <input type="checkbox"/> No
	Is there a designated rideshare/taxi drop-off/waiting area?	<input type="checkbox"/> Yes <input type="checkbox"/> No
	Comments on the transit facility	
Passenger Amenities	How many and what type of restrooms are present?	<input type="checkbox"/> Male restrooms <input type="checkbox"/> Female restrooms <input type="checkbox"/> All gender restrooms <input type="checkbox"/> Family restrooms <input type="checkbox"/> Handicap restrooms <input type="checkbox"/> No restrooms present
	How many and what type of shelters are present?	<input type="checkbox"/> Individual bus stop shelters <input type="checkbox"/> Transit center shelters/awnings <input type="checkbox"/> No shelters
	Is there an indoor component to the key transit hub?	<input type="checkbox"/> Yes, there is a large indoor area <input type="checkbox"/> Yes, there is a small indoor area <input type="checkbox"/> No, there is no indoor area
	If there is an indoor component, is it climate controlled?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
	If there is indoor seating, how many and what type are available?	<input type="checkbox"/> Steel <input type="checkbox"/> Metal <input type="checkbox"/> Aluminum <input type="checkbox"/> Plastic <input type="checkbox"/> Wood <input type="checkbox"/> Individual chairs <input type="checkbox"/> Other:
	How many and what type of benches are present outside?	<input type="checkbox"/> Steel <input type="checkbox"/> Metal <input type="checkbox"/> Aluminum <input type="checkbox"/> Plastic <input type="checkbox"/> Wood <input type="checkbox"/> Leaning bar <input type="checkbox"/> Other:

Passenger Amenities Continued	Do the majority of the benches have arm rests (in the middle)?	<input type="checkbox"/> Yes <input type="checkbox"/> No
	Are the majority of these benches underneath shelters or awnings?	<input type="checkbox"/> Yes <input type="checkbox"/> No
	How many trash receptacles are present?	<input type="checkbox"/> 0 receptacles <input type="checkbox"/> 1-3 receptacles <input type="checkbox"/> 4-6 receptacles <input type="checkbox"/> 7-12 receptacles <input type="checkbox"/> 13-18 receptacles <input type="checkbox"/> 19+ receptacles
	How many recycling receptacles are present?	
	How many and what type of maps are present?	<input type="checkbox"/> Route maps <input type="checkbox"/> Connection maps <input type="checkbox"/> System maps <input type="checkbox"/> Surrounding area maps <input type="checkbox"/> Transit facility maps <input type="checkbox"/> No maps
	How many timetables/route information displays are present?	<input type="checkbox"/> 0 displays <input type="checkbox"/> 1-3 displays <input type="checkbox"/> 4-6 displays <input type="checkbox"/> 7-9 displays <input type="checkbox"/> 10-12 displays <input type="checkbox"/> 13+ displays
	How many digital signs or real-time transit displays are present?	<input type="checkbox"/> 0 digital signs <input type="checkbox"/> 1-3 digital signs <input type="checkbox"/> 4-6 digital signs <input type="checkbox"/> 7-9 digital signs <input type="checkbox"/> 10-12 digital signs <input type="checkbox"/> 13+ digital signs
	Is there a customer service center with a live person?	<input type="checkbox"/> Yes <input type="checkbox"/> No
	Are there any interactive information kiosks?	<input type="checkbox"/> Yes <input type="checkbox"/> No
	Are there any paper route/timetable pamphlets/brochures available for passengers at the facility?	<input type="checkbox"/> Yes, all or most of the agencies have paper pamphlets <input type="checkbox"/> Yes, but only a few agencies have paper pamphlets <input type="checkbox"/> No, there are no paper pamphlets available
	Hotel sites only: Are there any paper route/timetable pamphlets/brochures available for passengers in the reception area?	<input type="checkbox"/> Yes, all or most of the agencies have paper pamphlets <input type="checkbox"/> Yes, but only a few agencies have paper pamphlets <input type="checkbox"/> No, there are no paper pamphlets available <input type="checkbox"/> N/A
	Is there signage directing riders to a website or app where they can find additional information?	<input type="checkbox"/> Yes, there are numerous signs displaying this information <input type="checkbox"/> Yes, but there are only a couple signs displaying this information <input type="checkbox"/> No, there are no signs displaying this information
	Are there any verbal announcements for the visually impaired? (Not coming from the buses)	<input type="checkbox"/> Yes, live announcements <input type="checkbox"/> Yes, pre-recorded announcements <input type="checkbox"/> No
	Are any of the signs, maps, displays or announcements in another language?	<input type="checkbox"/> Yes, Spanish <input type="checkbox"/> Yes, Other: _____ <input type="checkbox"/> No

Passenger Amenities Continued	If so, what items are available in another language?	Language:_____ Items:_____ Language:_____ Items:_____
	Are there any clocks present?	___Yes, digital ___Yes, analog ___Yes, both ___No
	Are there any drinking fountains present?	___Yes ___No
	Are there any vending machines present?	___Yes, drink machines only ___Yes, food machines only ___Yes, both food and drink machines ___No machines present
	Is there a snack bar or restaurant on site?	___Yes ___No
	Comments on the passenger amenities	
Passenger Experience	Is there a specific webpage or website section that contains information about the transit site?	___Yes ___No
	Which agencies have their own mobile app?	Agencies: ___No agencies have a mobile app
	Does the mobile app have a static map of the key transit hub?	___Yes ___No ___N/A
	Does the mobile app have an interactive map of the transit hub with real-time boarding information?	___Yes ___No ___N/A
	How user-friendly is the mobile app?	___Very user-friendly ___Somewhat user-friendly ___Not very user-friendly ___Broken/constantly crashes ___N/A
	How would you rate the cleanliness of the key transit hub?	___Excellent ___Good ___Fair ___Poor
	How would you rate the overall appearance of the key transit hub in regard to normal wear-and-tear (paint, rust, stains, etc.)?	___Excellent ___Good ___Fair ___Poor
	How many pedestrian lights specific to the key transit hub are there (Excluding street lights)?	___No lights ___1-5 lights ___6-10 lights ___11-15 lights ___16-20 lights ___21-25 lights ___26+ lights
	Is there a transit provider intercom to contact a live-person for transit help?	___Yes ___No

Passenger Experience Continued	What is the volume of pedestrian traffic adjacent to the site?	___Heavy ___Moderate ___Light
	If a passenger wishes to transfer, do they have to walk across the street to reach the next bus?	___Yes ___No
	If there are connecting services off-site, how far must a passenger walk to reach them?	___3 or less blocks ___More than 4 blocks ___There are numerous connecting services scattered all around the site
	How would you rate the “transfer stress” of a passenger trying to make a connection?	___Very low ___Low ___Medium ___High ___Very high
	How would you describe the comfort level of this site?	___Very comfortable ___Somewhat comfortable ___Neutral ___Somewhat uncomfortable ___Very uncomfortable
	Comments on the passenger experience:	
Safety and Security	Is there an emergency phone box, speakerphone, or panic button that would connect passengers to emergency services?	___Yes ___No
	Is there signage displaying special emergency/crime hotlines (excluding 911)?	___Yes ___No
	How many security cameras are present?	___No cameras ___1-5 cameras ___6-10 cameras ___11-15 cameras ___16-20 cameras ___21-25 cameras ___26+ cameras
	Are there any state/local law enforcement present?	___Yes ___No
	Are there any transit/private security guards present?	___Yes ___No
	What is the overall feeling of safety and security at this site?	___Very safe ___Somewhat safe ___Neutral ___Somewhat unsafe ___Very unsafe
	How many and what kind of special emergency devices/kiosks are present (defibrillator, fire extinguisher, med sled, etc.)?	Device: _____ Quantity: _____ Device: _____ Quantity: _____
	Comments on safety and security:	

Walkability	What is the site's Walk Score®?	
	Is there a special pedestrian plaza, pathway or access route connected to the site?	___ Yes ___ No
	Do the sidewalks continue or do they end fairly quickly?	___ The sidewalks continue for some way ___ The sidewalks come to an end fairly quickly
	Are there crosswalks connected to the site?	___ Yes ___ Yes, but in need of repainting ___ No
	How many lanes of traffic are on the surrounding streets? Are they one-way or two-way streets?	Street North: _____ lanes ___ OW ___ TW Street East: _____ lanes ___ OW ___ TW Street South: _____ lanes ___ OW ___ TW Street West: _____ lanes ___ OW ___ TW
	What is the volume of traffic on the surrounding streets? (Light, moderate or heavy) Is it calm, mild or dangerous?	Street North: _____ Street East: _____ Street South: _____ Street West: _____
	Are there any large open lots a pedestrian would need to cross to access the site?	___ Yes, a parking lot ___ Yes, a vacant lot ___ No
	Is there a pedestrian path through the site (boarding area, parking lot, etc)	___ Yes ___ No
	What is the condition of the surrounding roadway asphalt?	___ Excellent ___ Good ___ Fair ___ Poor
	What is the condition of the bus area asphalt/concrete?	___ Excellent ___ Good ___ Fair ___ Poor
	What is the condition of the sidewalks and pedestrian plazas?	___ Excellent ___ Good ___ Fair ___ Poor
	How many sidewalk defects are present? (Cracks, chips, holes larger than ½ inch)	___ Little to none (Excellent condition) ___ A few (Good condition) ___ Several (Fair condition) ___ An abundance (Poor condition)
	How many sidewalk vertical changes are present (Elevation changes greater than ½ inch)	___ Little to none (Excellent condition) ___ A few (Good condition) ___ Several (Fair condition) ___ An abundance (Poor condition)
	Comments on walkability	

Bicycling Infrastructure	What is the site's Bike Score™?	
	How many bike racks are present?	<input type="checkbox"/> No racks <input type="checkbox"/> 1-3 racks <input type="checkbox"/> 4-6 racks <input type="checkbox"/> 7+ racks
	How many bike lockers are present?	<input type="checkbox"/> No lockers <input type="checkbox"/> 1-4 lockers <input type="checkbox"/> 5-8 lockers <input type="checkbox"/> 9+ lockers
	Are there any bicycle maintenance amenities (inflation station, tool keyring, etc)?	<input type="checkbox"/> Yes <input type="checkbox"/> No
	What kind of bicycle routes connect to the site?	Check all that apply: <input type="checkbox"/> Trails <input type="checkbox"/> Dedicated lanes (Protected) <input type="checkbox"/> Dedicated lanes (Painted) <input type="checkbox"/> Bicycle-friendly roads <input type="checkbox"/> No bicycle routes present
	Comments on bicycling infrastructure	
Surrounding Area	What type of developed environment is the site located in?	<input type="checkbox"/> Urban <input type="checkbox"/> Suburban <input type="checkbox"/> Rural
	What type of land uses are established within a ½ mile radius of the site?	Check all that apply: <input type="checkbox"/> Urban core/mixed use <input type="checkbox"/> Single-use commercial <input type="checkbox"/> Multi-family residential <input type="checkbox"/> Single-family residential <input type="checkbox"/> Public/government <input type="checkbox"/> Specialized institutions <input type="checkbox"/> Office/corporate <input type="checkbox"/> Industrial <input type="checkbox"/> Agricultural <input type="checkbox"/> Vacant
	What type and how many major destinations are located within a ½ mile radius of the site?	Check all that apply: <input type="checkbox"/> School/university <input type="checkbox"/> Hospital/health care facility <input type="checkbox"/> Shopping mall <input type="checkbox"/> Museum/historic site <input type="checkbox"/> Police <input type="checkbox"/> Civic center <input type="checkbox"/> Park <input type="checkbox"/> Amusement park/zoo <input type="checkbox"/> Theater <input type="checkbox"/> Sports stadium <input type="checkbox"/> Community center <input type="checkbox"/> Grocery store <input type="checkbox"/> Senior center/nursing home <input type="checkbox"/> Post office <input type="checkbox"/> Other:
	What is the concentration of restaurants, cafes, small retail stores, etc. that surround the immediate site? (A few blocks)	<input type="checkbox"/> High concentration <input type="checkbox"/> Medium concentration <input type="checkbox"/> Low concentration <input type="checkbox"/> None
	Is the site centrally located in a dense, downtown area?	<input type="checkbox"/> The site is centrally located <input type="checkbox"/> The site is on the periphery <input type="checkbox"/> The site is not near a downtown area
	Comments on surrounding area	

Question Methodology

The following provides a detailed look at each category of the site survey including context and explanation where necessary.

Survey Section 1: Key Transit Hub Location

- Street Bounds (North, East, South, West)
 - The streets bordering the KTH. Not all directions have adjacent streets.

Survey Section 2: Route Assignment

- Transit Agency and Route Number or Name (All Routes)
 - All of the transit agencies and routes that serve the KTH.
- Regional Transit Route and Final Destinations (Regional Routes Only)
 - Only the regional and intercity routes that serve the KTH. Includes the origin and destination of each service.

Survey Section 3: Site Fundamentals

- What is the site's Transit Score®?
 - Ranking data provided by Walk Score Management LLC¹⁸¹⁹
- What is the square footage of the site?
 - An estimate of the entire area including transit buildings, plazas, bus bays, bus spots, sidewalks, parking lots, train platforms, etc., but does not include the additional square footage of buildings with multiple floors. Calculated using Google Earth™.
- What is the square footage of the passenger waiting area?
 - An estimate of the usable passenger space at the KTH. Only includes areas that could be occupied by a passenger waiting for a bus or train including sidewalks, plazas, indoor areas, train platforms, etc. (This is part of the total square footage).

¹⁸ [Walk Score - http://www.walkscore.com](http://www.walkscore.com).

¹⁹ Walk Score Management is a private company which created an index to measure the walkability of any address. Scores provide insight about walking, bicycling, transit use, crime and access to amenities.

- What is the site configuration?
 - **‘One site’** is a KTH that is physically continuous and interconnected. For example, a pedestrian plaza between a train station and a transit center would be considered to be one site. The transition from one part of the site to another appears seamless for riders.
 - **‘Multiple disconnected sites’** is a KTH that has two or more parts that are not adjacent and separated by a road. At these sites, travelers must cross between services only at specific points, such as crosswalks.
 - [Appendix M](#) contains detailed maps of each KTH’s site configuration and features.
- If multiple sites are not connected, how long does it take to walk between them?
 - Multiple sites at a KTH, with significant distance between them, were evaluated for maximum transfer time. The evaluations were done walking slowly to reflect the maximum amount of time needed to consider potential patterns of seniors, individuals with disabilities or using wheelchairs.



One Site vs Multiple Disconnected Sites
Square Footage Calculation

- Which park and ride facilities are on site?
 - Only parking areas and spots designated for transit use were counted. Adjacent parking not specifically labeled for transit riders were not counted. This measurement is important when a transit rider drives to a KTH, leaving their car for several hours or days while traveling on public transit.

Survey Section 4: Transit Route Signage

Only transit route signage at the KTH was evaluated. Signage on the transit vehicles was not evaluated.

- What information does the sign provide about where the bus will go and what its destinations are?
 - Local transit routes often use **‘local street’** designations on signs to provide information on where buses travel and which route they take. For example, a sign might display 15th/Main to indicate the local terminus of the route.
 - **‘Destination’** information is often used on signs for regional or intercity routes, noting the endpoints as other cities or locations. For example, signs for Cascades POINT could list “Portland to Eugene.” It could be particularly helpful for a rider boarding a POINT bus in Salem – the middle of the route – to understand the start and end points of the service.



Route Information: Local Streets versus Destination

- Is there anything else attached to this sign post or fixture, or located immediately adjacent to the post?
 - A **‘cube’** is a four-sided block that can display different information on each face. **‘Nextrip’** is an interactive device where a passenger can push a button to hear or see when the next bus arrives. Other sign post items include **maps, timetables, information panels, digital signage** and **braille signage**. Informational kiosks and amenities located more than a few feet away from the route signage are not counted here.

Survey Section 5: Transit Facility

- Is there a designated passenger drop-off/loading area?
 - This requires a sign labeling the specific area.
- Is there a designated rideshare or taxi drop-off/waiting area?
 - This requires a sign labeling the specific area.



- How many bus bays are present?
 - A bay must be completely removed from the roadway and any vehicular traffic, and must be a separate transit facility terminal or bus turn-a-round. Bays are often built in the ‘saw-tooth’ design arrangement.
- How many roadway bus spots are present?
 - Such bus spots mix with vehicular traffic. Only transit spots designated by bus lanes, roadway paint, loading signs, curb cut-ins, etc. qualify. This includes where a stopping bus would impede the flow of traffic without any designated pavement area.

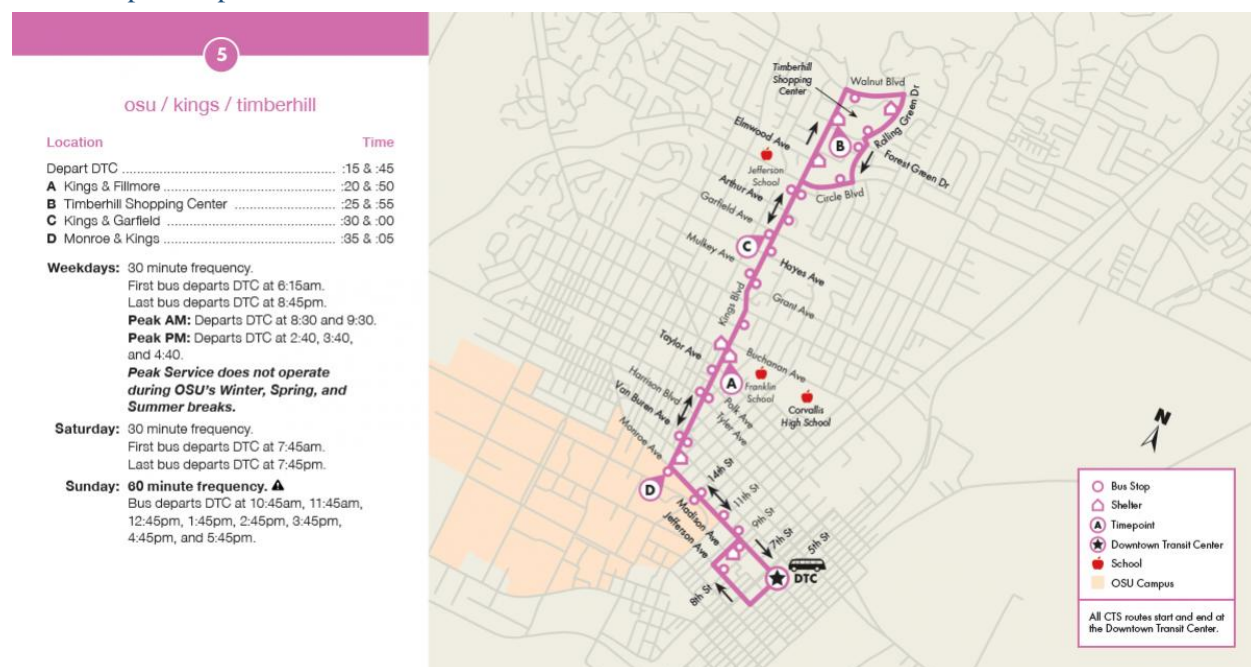
Survey Section 6: Passenger Amenities

Generally, passenger amenities qualify only if they are located on transit property and are directly connected to the transit facility and the hub. If a passenger has to leave the hub area or cross a street to reach an amenity, it is not included. For example: Public restrooms or drinking fountains at a park next to a hub would not be considered hub amenities.

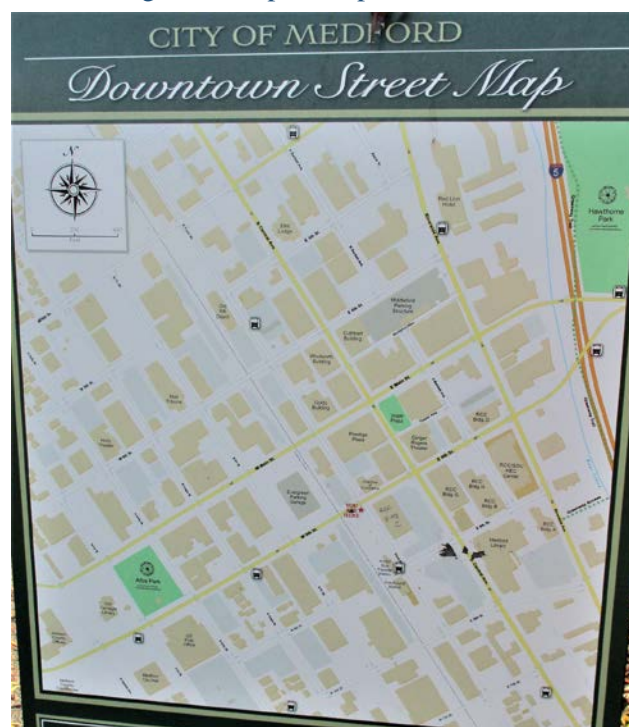
- How many and what type of restrooms are present?
 - When available, male/female restrooms with handicap placards are counted as **‘handicapped restrooms’** rather than non-handicapped restrooms. Restrooms must be part of the transit facility and can be inside or outside. Restrooms must be for transit riders. Restrooms for transit operators are not counted.
- If there is indoor seating, how many and what type are available?
 - KTHs are considered to have adequate indoor seating if there are twenty or more seats. These are typically provided as **‘individual chairs’**.
- How many and what type of maps are present?
 - **‘Route maps’** show the path of a single transit service. A **“Connection Map”** shows the area around a hub and the services that travel on the surrounding streets. These maps can help passengers locate connections within walking distance from a KTH. **‘System maps’** provide a general, complete overview of all bus and train routes of a particular transit agency. **‘Surrounding area maps’** show the neighborhoods and destinations around a hub. These maps may list transit facilities but they are intended for general wayfinding and to provide information on points of interest to the general public. **‘Transit facility maps’** show the details of the hub to help passengers find the correct bus bay, stop or terminal.
 - See [Figure K-2](#) for examples of these maps.

Figure K-2: Types of Transit Maps

Route Map Example



Surrounding Area Map Example



Connection Map Example



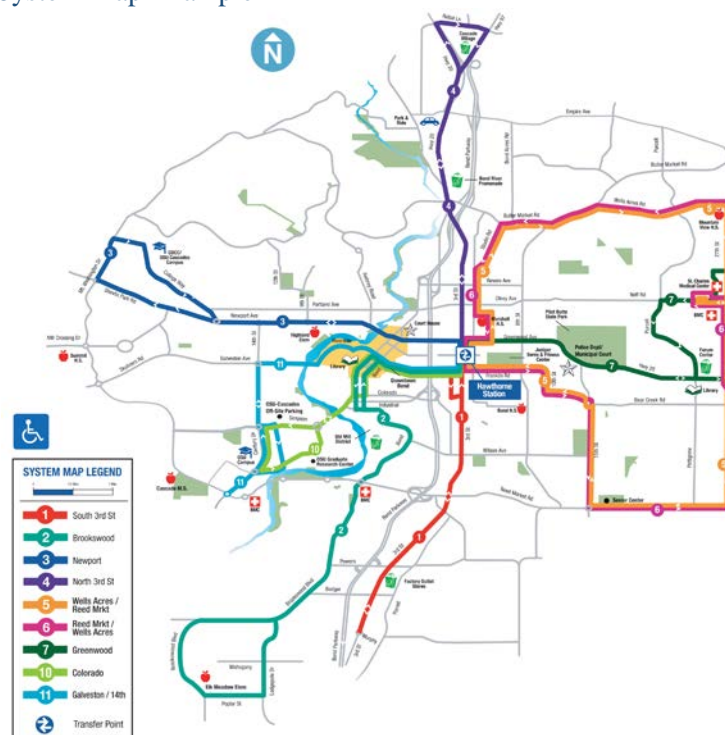
Transit Facility Map Example



Map data: South Metro Area Regional Transit

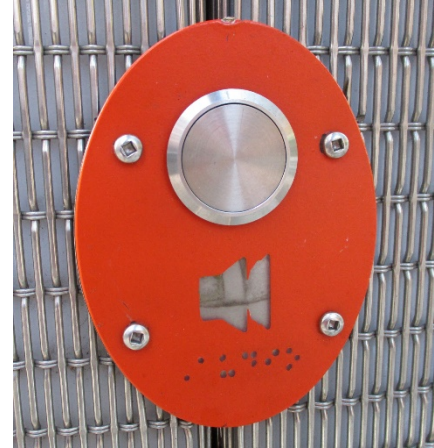
Map data: TriMet

System Map Example



Map data: Cascades East Transit

- Is there a customer service center with a live person?
 - The center must be transit specific with staff available to help answer transit questions.
- Are there any verbal announcements for the visually impaired (Not coming from the buses)?
 - Announcements must come directly from the transit facility. Announcements that come directly from the transit vehicles are not counted because they do not occur when the vehicle is not present. Most buses and trains will audibly declare what line or route is arriving and what stop it is (Example: “Line 2 to downtown, 15th and Jefferson”). The focus here are environmental announcements of a general nature.



Bus Shelter Push Button and Speaker

- Is there a snack bar or restaurant on site?
 - These must be part of the transit facility.

Survey Section 7: Passenger Experience

- Is there a specific webpage or website section that contains information about the transit site?
 - This only includes webpages with information that assists potential passengers such as lines and routes served, maps, nearby connections and destinations, parking, directions, hours, amenities, etc.
- How would you rate the cleanliness of the transit hub?
 - Considerations include litter, personal belongings, spills, standing water, vegetation, food waste, vermin and ease of access to facilities (as a result of clear pathways). Focuses on short-term conditions.
- How would you rate the overall appearance of the transit hub in regard to normal wear-and-tear (paint, rust, stains, etc.)?
 - Considerations include paint (facility, roadway, curbs and brightness, chips), rust, stains, scrapes, smudges, oil puddles, tire marks, exhaust fumes, brake dust, weather damage, broken glass, broken benches or shelters, etc. Focuses on long-term conditions under the control of facilities and maintenance personnel.
- What is the volume of pedestrian traffic adjacent to the site?
 - Some KTHs can have substantial volume changes throughout the day. Results can be anecdotal.

- How would you rate the transfer stress of a passenger trying to make a connection?
 - This measures the experience of a passenger arriving at a hub on one transit service and navigating the site to connect to another service. It also considers situations when a passenger who is new to the hub has only a short time to catch a connecting bus. Components include hub layout and design, wayfinding and transit route signage, maps, digital display boards, a staffed customer service center, access to other passengers (to ask for information), the proximity of connecting services (e.g. need to cross a road and wait for a walk signal), lines of sight, clearance space and sidewalk conditions for wheelchair users, access to fare kiosks and others.
- How would you describe the comfort level of this site?
 - This evaluates the environment during the time a passenger has to wait for a bus or train. Items that contribute to passenger comfort level include an indoor area with climate control, shelters or awnings for protection from rain or sun, adequate seating, restrooms, drinking fountains, food and drink options, passenger volume, location of the hub within the city, maintenance of facilities, artwork, vehicle pollution, noise pollution and others.

Survey Section 8: Safety and Security

- Are there any state/local law enforcement present? -- Are there any transit/private security guards present?
 - Security personnel are not always on site and their presence can vary greatly day-by-day and hour-by-hour so evaluation is based on a single site visit.
- What is the overall feeling of safety and security at this site?
 - If a passenger has to wait a significant amount of time at the hub, these features can be more important. Safety and security can include law enforcement or transit security, security cameras, lighting, time of day and day of the week, volume of pedestrian traffic in and around the hub (safety in numbers), lines of sight, and the location of the hub within the city.

Survey Section 9: Walkability

- What is the site's Walk Score®?
 - Ranking data provided by Walk Score Management LLC²⁰.
- Is there a pedestrian plaza, pathway or access route connected to the site?
 - If a passenger exits the transit hub is there a special pedestrian plaza or path they can immediately enter to continue their journey? Regular city sidewalks do not count. This question looks for multi-use/bike paths, pedestrian plazas, pedestrian malls, parks, riverfront boardwalks, pedestrian zones (such as at a university), etc.

²⁰ [Walk Score - http://www.walkscore.com](http://www.walkscore.com)

- How many lanes of traffic are on the surrounding streets? Are they one-way or two-way streets?
 - Only thru-traffic lanes are counted. Turn lanes, parking lanes and center turn lanes are not counted although they do contribute to the width of the street and the time it takes for a pedestrian to cross.
- Are there any large open lots a pedestrian would need to cross to access the site?
 - This question asks whether or not there are any large lots that separate the hub from the surrounding streetscape and neighborhood. The presence of such lots might force pedestrians to walk around them to access the hub.
- Is there a pedestrian path through the site (boarding area, parking lot, etc.)
 - When a transit hub includes a parking lot, there is typically a special pedestrian path through the lot for passengers to walk from their cars to the transit area. Such paths are designed with crosswalks, paint, signage or surfaces such as brick or asphalt. For transit facilities and bus terminals, there are frequently crosswalks to direct passengers to safely reach other parts of the facility.



Pedestrian Paths through Site

Survey Section 10: Bicycling Infrastructure

- What is the site's Bike Score™?
 - Ranking data provided by Walk Score Management LLC²¹.
- What kind of bicycle routes connect to the site?
 - Google Maps'™ 'Bicycling' tool provides some information about the location of such routes, though it does not identify whether it is wide, comfortable or safe.

²¹ [Walk Score - http://www.walkscore.com](http://www.walkscore.com)

Survey Section 11: Surrounding Area

- What type of land uses are established within a ½ mile radius of the site?
 - This question asks whether a “significant portion” of a hub’s catchment area contains a particular land use. **‘Specialized institutions’** are any large campuses that serve a single specific purpose. This includes hospitals, universities, airports, shopping malls, etc. These campuses are often officially zoned under an existing code per the discretion of the governing city or county. (For example: A university could be zoned “Public land” and a shopping mall could be zoned “Commercial”).
- What is the concentration of restaurants, cafes, small retail stores, etc. that surround the immediate site? (A few blocks)
 - This question imagines a scenario where a passenger misses their bus and has to wait an hour or so for the next one. Are there any restaurants nearby for them to grab a bite to eat or any small shops they can browse to pass the time while waiting for their ride?

Appendix L: Additional Survey Results

Table L-1: Key Transit Hub Locations

Transit Hub	Date Surveyed	Latitude	Longitude	Street Bound - North	Street Bound - East	Street Bound - South	Street Bound - West
Albany Amtrak Station	9/5/2019	44.63040	-123.103	Pacific Blvd SE	N/A	N/A	N/A
Albany Clay St at Heritage Mall	8/30/2019	44.63034	-123.077	Hwy 20	SE Clay St	14th Ave SE	N/A
Albany Linn Benton Community College	8/30/2019	44.58616	-123.115	Ellingson Rd SW	Pacific Blvd SW	Allen Ln	Ellingson Rd SW
Astoria Transit Center	11/20/2019	46.19026	-123.833	Astor St	10th St	Marine Dr	9th St
Banks	10/2/2019	45.61786	-123.114	Depot St	NE Commerce St	NW Sunset Ave	NW Main St (State Route 47)
Beaverton Sunset Transit Center	8/13/2019	45.51012	-122.782	SW Barnes Rd	N/A	Sunset Transit Center	N/A
Bend Hawthorne Station	12/10/2019	44.05811	-121.301	NE Irving Ave	NE 4th St	NE Hawthorne Ave	NE 3rd St
Canby Transit Center	8/9/2019	45.26320	-122.692	NE 3rd Ave	N/A	SE 1st Ave	N Ivy St
Cannon Beach Midtown Transit Center	11/21/2019	45.88949	-123.962	E Gower St	N/A	Coolidge Ave	S Hemlock St
Corvallis 1st St & Washington Ave	9/20/2019	44.55990	-123.262	SW Washington Ave	SW 1st St	N/A	SW 2nd St
Corvallis 9th St & Reiman Ave	9/25/2019	44.57284	-123.264	NW Reiman Ave	N/A	N/A	NW 9th St
Corvallis 15th St & Jefferson Way	9/20/2019	44.56463	-123.273	SW Campus Way	SW 11th St	SW Jefferson Way	SW 14th St
Corvallis 26th St & Western Blvd	9/12/2019	44.55853	-123.279	SW Stadium Ave	SW Stadium Ave	SW Western Blvd	SW 26th St
Corvallis Circle Blvd & 9th St	9/4/2019	44.58871	-123.255	Circle Blvd	NW 9th St	N/A	N/A
Corvallis Circle Blvd & Four Acre Place	9/4/2019	44.58888	-123.249	NE Circle Blvd	NE Jack London St	N/A	Four Acre Place

Transit Hub	Date Surveyed	Latitude	Longitude	Street Bound - North	Street Bound - East	Street Bound - South	Street Bound - West
Corvallis Downtown Transit Center	9/11/2019	44.56484	-123.264	NW Monroe St	SW 5th St	SW Madison Ave	SW 6th St
Corvallis Good Samaritan Center	9/25/2019	44.60365	-123.253	NW Samaritan Dr	NW Samaritan Dr	NW Elks Dr	NW Satinwood St
Eugene Amtrak Station	8/20/2019	44.05468	-123.093	Shelton Mcmurphay Blvd	Pearl St	E 5th Ave	Willamette St
Eugene EmX Walnut Station	8/21/2019	44.04472	-123.062	Franklin Blvd	N/A	Franklin Blvd	Walnut St
Grand Ronde	12/2/2019	45.05862	-123.581	State Route 18	N/A	N/A	N/A
Hillsboro Central Transit Center	8/14/2019	45.52174	-122.985	E Main St	SE 4th Ave	SE Washington St	SE 3rd Ave
Klamath Falls Amtrak Station	11/7/2019	42.22539	-121.772	Oak Ave	N/A	Hood St	S Spring St
La Grande Transit Center	7/18/2019	45.32667	-118.077	E Penn Ave	N Albany St	Cove Ave	N Portland St
Medford Front Street Station	11/6/2019	42.32417	-122.871	E 8th St	S Front St	E 10th St	S Fir St
Milton-Freewater	7/17/2019	45.93380	-118.388	N/A	S Columbia St	SW 2nd Ave	S Main St
Ontario	7/18/2019	44.02388	-116.951	SE 10th St	SE 10th St	SE 5th Ave	N/A
PDX Transit Center	11/14/2019	45.58878	-122.593	N/A	N/A	N/A	NE Airport Way
Philomath Applegate St & 11th St	9/27/2019	44.53905	-123.371	Philomath Blvd (US Route 20)	S 11th St	N/A	S 10th St
Philomath Main St & 14th St	9/27/2019	44.54016	-123.366	College St	N 15th St	Philomath Blvd (US Route 20)	N 14th St
Portland 6th Ave & Taylor St	11/13/2019	45.51748	-122.68	SW Morrison St	SW 5th Ave	SW Main St	SW Broadway
Portland Lloyd Center	12/5/2019	45.53066	-122.654	NE Multnomah St	NE 13th Ave	NE Holladay St	NE 11th Ave
Redmond Airport	12/11/2019	44.25346	-121.161	SE Salmon Ave	N/A	N/A	SE Airport Way
Redmond Transit Hub	12/11/2019	44.26652	-121.177	N/A	SW 6th St	SW Kalama Ave	SW Veterans Way
Salem Amtrak Station	10/11/2019	44.93274	-123.028	Mill St SE	N/A	Mission St SE	13th SE

Transit Hub	Date Surveyed	Latitude	Longitude	Street Bound - North	Street Bound - East	Street Bound - South	Street Bound - West
Salem Downtown Transit Center	10/15/2019	44.94110	-123.036	Chemeketa St NE	Church St NE	Court St NE	High St NE
Springfield Greyhound Station	8/16/2019	44.04525	-123.021	S A St	S 5th St	S B St	S 2nd St
Union Station	12/17/2019	45.52819	-122.677	NW Broadway Bridge	N/A	NW Glisan St	NW Broadway
Wilsonville Transit Center	8/7/2019	45.31120	-122.776	N/A	N/A	SW Barber St	SW Kingsman Rd
Woodburn Hwy 211 & Hwy 214	8/2/2019	45.15135	-122.834	Mt Hood Ave - State Route 214	S Pacific Hwy - State Route 214/99E	N/A	N/A
Woodburn Memorial Transit Center	8/2/2019	45.15184	-122.877	N/A	Evergreen Rd	Hillsboro-Silverton Hwy NE, Newberg Hwy - State Route 214	Interstate 5

Additional Visuals

Figure L-1: Mounting Fixtures for Route Assignment Signs

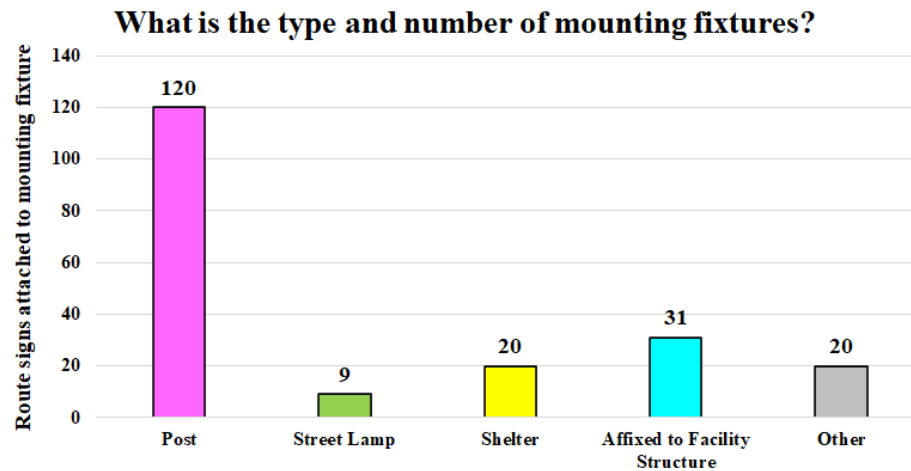


Figure L-2: Park and Ride Facilities

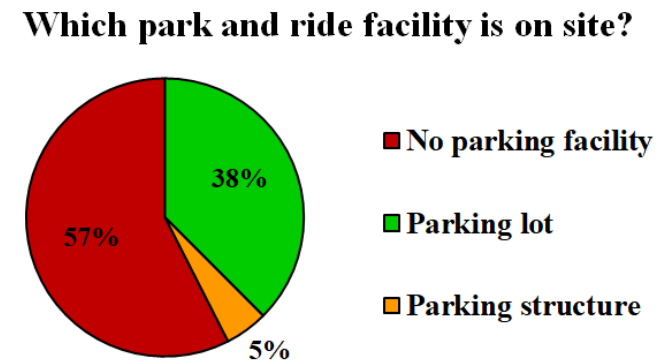


Figure L-3: Indoor Seating

If there is an indoor component, what type of benches are present?

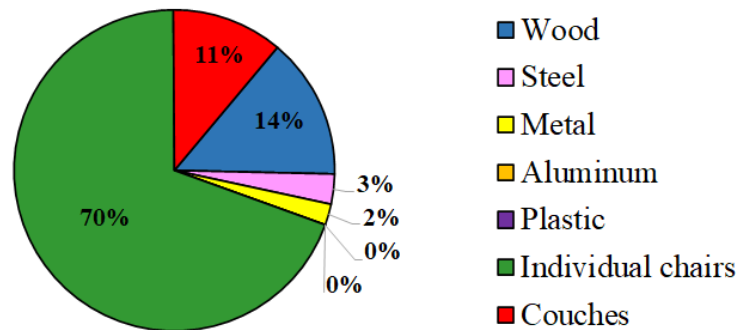


Figure L-4: Outdoor Seating

What type of benches are present outside?

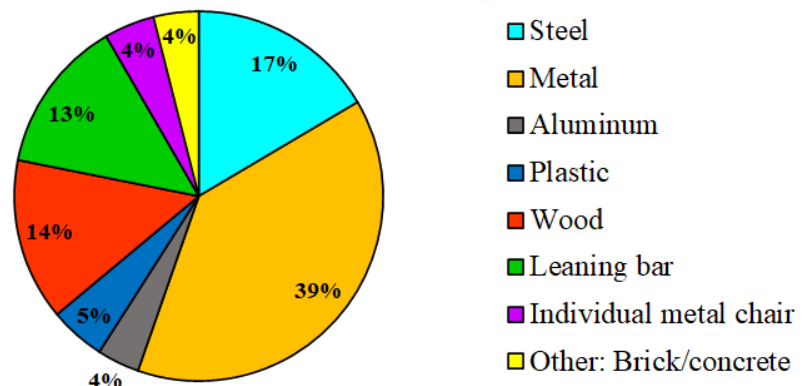
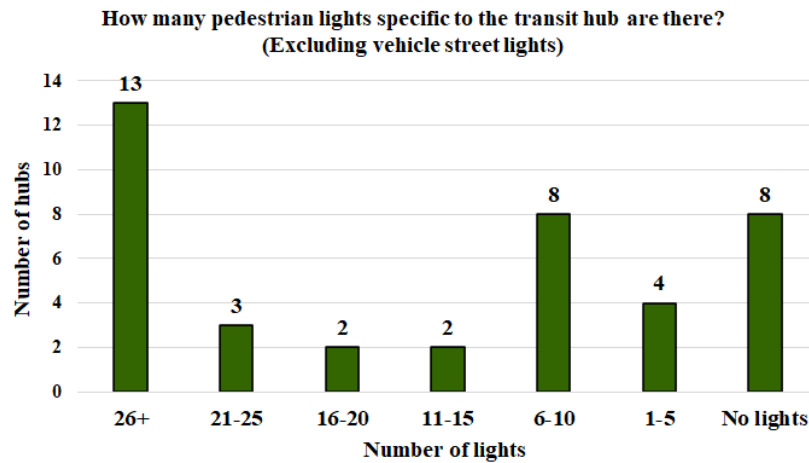
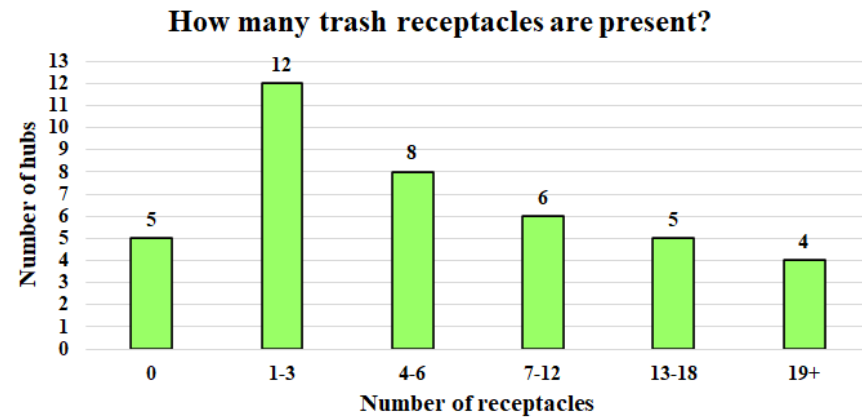
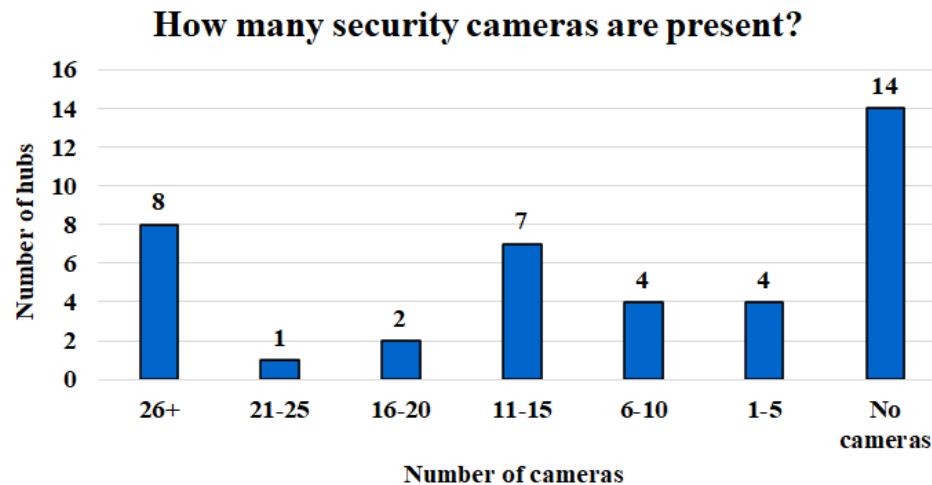


Figure L-5: Number of Pedestrian Lights**Figure L-6: Number of Trash Receptacles****Figure L-7: Number of Security Cameras****Figure L-8: Volume of Pedestrian Traffic**

What is the volume of pedestrian traffic adjacent to the site?

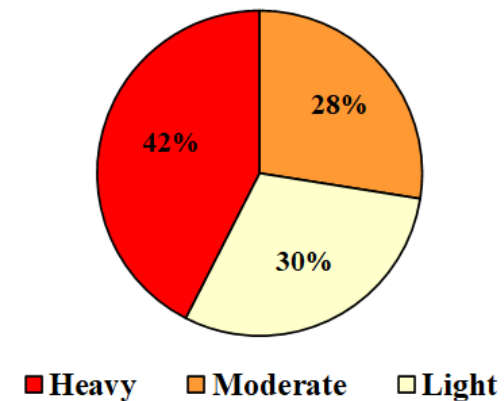
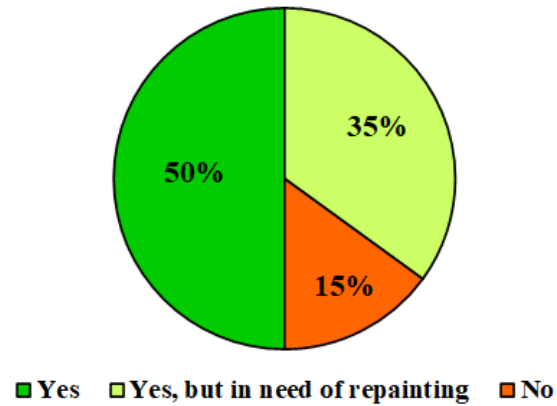
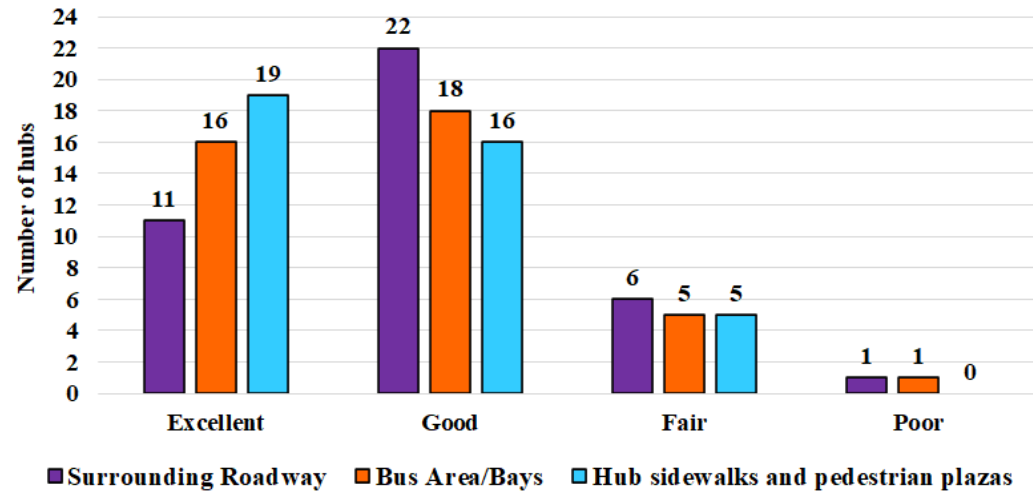


Figure L-9: Crosswalk Connection to Site

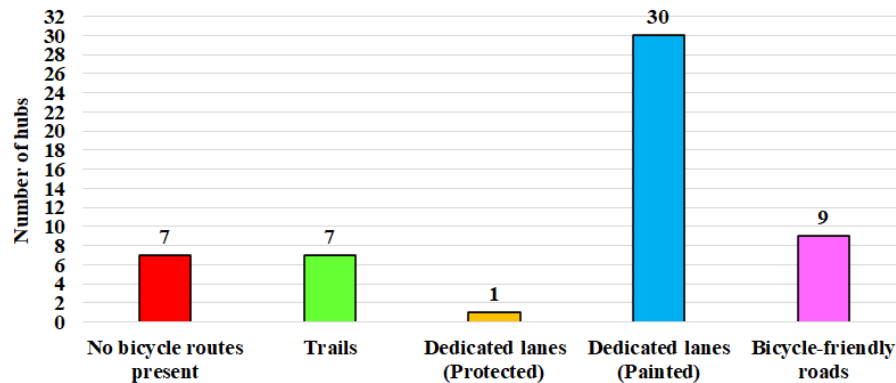
Are there crosswalks connected to the transit hub?

**Figure L-10: Condition of Surrounding Roadways and Sidewalks**

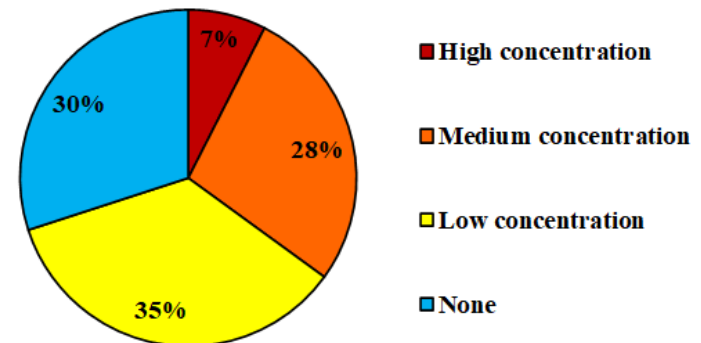
What is the condition of the roadways and sidewalks?

**Figure L-11: Bicycle Routes that Connect to the Site**

What kind of bicycle routes connect to the site?
(Check all that apply)

**Figure L-12: Cafe/Retail Store Concentration around Site**

What is the concentration of restaurants, cafes, small retail stores, etc. that surround the immediate site? (A few blocks)



Additional Totals and Averages

- How many parking spaces are there?
 - Mean: 107 spaces
 - Median: 51 spaces
- How many motorcycle spaces are there?
 - Out of the 17 KTHs with parking facilities, only 3 (17.7 percent) had designated motorcycle parking
 - Mean of 10 spaces
- How many electric vehicle spaces are there?
 - Out of the 17 KTHs with parking facilities, only 4 (23.5 percent) had electric vehicle parking and charging stations
 - Mean of 2 spaces
- How many handicap spaces are there?
 - All 17 KTHs with parking facilities had designated handicap parking
 - Mean of 5 spaces
- Is there anything else attached to this sign post or fixture or located immediately adjacent to the post?
 - KTHs with extra attachments on its sign posts: 25 (62.5 percent)
- How many route assignment signs are present?
 - Mean number of signs: 5
 - Median number of signs: 3
- What is the type and number of mounting fixtures?
 - Freestanding transit posts make up 60 percent of all mounting fixtures
- How many bus bays are present?
 - KTHs with bus bays: 19 (47.5 percent)
 - KTHs without bus bays: 21 (52.5 percent)
 - For the KTHs with bus bays: Mean of 7 bus bays



Electric Vehicle Parking Spaces



Bus Bays

- How many roadway bus spots are present?
 - KTHs with roadway bus spots: 20 (50 percent)
 - KTHs without roadway bus spots: 20 (50 percent)
 - For the KTHs with roadway bus spots: Mean of 4 bus spots
- Is there a designated passenger drop-off/loading area?
 - KTHs with a passenger drop-off area: 12 (30 percent)
- Is there a designated rideshare/taxi drop-off/waiting area?
 - KTHs with a rideshare area: 6 (15 percent)
- How many recycling receptacles are present?
 - KTHs with recycling receptacles: 7 (17.5 percent)
- Are there any verbal announcements for the visually impaired (that are coming from the buses)?
 - KTHs with verbal announcements: 6 (15 percent)
 - Verbal announcements were only made at Amtrak stations and Portland 6th Ave & Taylor St where the bus shelters with push button verbal route announcements.
- Are there any vending machines present?
 - KTHs with no vending machines: 28 (70 percent)
 - KTHs with both food and drink machines: 11 (27.5 percent)
- Is there a snack bar or restaurant on site?
 - KTHs with a snack bar: 10 (25 percent)
- Please list which agencies have their own mobile app
 - KTHs served by an agency with a mobile app: 15 (37.5 percent)



On-Site Snack Bar

- How many pedestrian lights specific to the transit hub are there? (Excluding street lights)
 - KTHs with pedestrian lights: 32 (80 percent)
- How many security cameras are present?
 - KTHs with security cameras: 26 (65 percent)
- Are there any state/local law enforcement present?
 - KTHs with law enforcement present: 5 (12.5 percent)

- Are there any transit/private security guards present?
 - KTHs with transit security present: 9 (22.5 percent)
- What is the overall feeling of safety and security at this site?
 - 30 KTHs (75 percent) had a safety and security feeling of somewhat safe or very safe
 - 10 KTHs (25 percent) had a neutral feeling of safety and security
- How many lanes of traffic are on the surrounding streets? Are they one-way or two-way streets?
 - Mean number of lanes on surrounding streets: 2.5
 - 23.7 percent of surrounding streets are one-way
 - 76.3 percent of surrounding streets are two-way
- Are there any bicycle maintenance amenities (inflation station, tool keyring, etc)?
 - KTHs with bicycle maintenance amenities: 3 (7.5 percent)
- What kind of bicycle routes connect to the site?
 - KTHs with no bicycle routes: 7 (17.5 percent)
 - Out of the 33 KTHs that had a bicycle route connected to it, 90.9 percent of them had dedicated painted lanes.

Bicycle Routes Connecting to a KTH



Map data: ©2019 Google

Additional Comments

Table L-2: Additional Notes and Comments for Key Transit Hub Site Survey

Transit Hub	Site Fundamentals	Transit Route Signage	Transit Facility	Passenger Amenities
Albany Amtrak Station		No Benton Amtrak Connector sign. No Cascades POINT sign. Multiple bus bays. Signs clumped together. Braille signage on Amtrak station sign.	Some bus bays unassigned/unused	Maps and timetables on bulletin board. Paper pamphlets in Albany Transit office waiting area. Vending machines in Amtrak indoor area. Drinking fountains inside and outside.
Albany Clay St at Heritage Mall	Free parking available at shopping center but no designated transit parking	Albany Transit uses acronym only (ATS). Both services have timetables attached to route sign. No sign for Linn Shuttle.	Bus spots in roadway will hinder flow of traffic. No designated space.	
Albany Linn Benton Community College	All services stop in front of Tadena Hall. Plentiful paid parking for college including handicap spots. No designated transit parking.	All three services have timetables attached to route signage. Linn Shuttle is paper taped to shelter.	Bus bay is inward curb cut. Roadway bus spots are in bus only lanes for loading.	Indoor area, restrooms, vending machines present and available but part of college, not transit facility. Riders could wait in Tadena Hall if desired.
Astoria Transit Center	Six designated parking spots for transit riders. All other spots reserved for permit holders. Riverfront trolley stop located one block east.	No other transit route signage present. No indication of where other bus routes stop.		System maps only. Plenty of timetable/route information signs. Indoor waiting area has informational bulletin boards and paper pamphlets.

Transit Hub	Site Fundamentals	Transit Route Signage	Transit Facility	Passenger Amenities
Banks	No designated transit parking	NW Connector sign does not specify Columbia County/Tillamook County routes	Solar panel with passenger light on shelter	NW Connector info display only has info/timetables for routes 1-5. Columbia County Rider 6 is new but not represented at site.
Beaverton Sunset Transit Center		TriMet signs have limited info. MAX train destinations could be more prominently displayed. TriMet buses have freestanding info boards with timetables/route maps but separated from route post.	Passenger drop-off area consists of individual parking stalls with sign.	
Bend Hawthorne Station	Small parking lot in front of transit center. COIC parking lot around back. Commercial parking adjacent to site.	No Shuttle Oregon signage. Detailed signage for Pacific Crest routes located inside.		
Canby Transit Center		South Clackamas on information panel but not on route posts.	Approximately three bus bays, two with signs, one unmarked	Wooden gazebo with brick bench on site
Cannon Beach Midtown Transit Center	Free park and ride facility adjacent to site	Route signage merely says "bus stop" with no detailed, identifying text		Public restrooms and drinking fountains available across the street but not part of transit hub
Corvallis 1st St & Washington Ave	On-street city parking and hotel guest parking but no designated transit parking.	No signage for Groome or Amtrak Connector	Two bus bay spots available in Marriot guest loading zone turn-a-round. Buses could load here.	Hotel features indoor area with sofas, snack bar, restrooms and drinking fountain.

Transit Hub	Site Fundamentals	Transit Route Signage	Transit Facility	Passenger Amenities
Corvallis 9th St & Reiman Ave	Parking available at strip malls but no designated transit parking		Bus stop with Zagster bike-share corral	
Corvallis 15th St & Jefferson Way	No designated transit parking. OSU campus parking only.	Signs are paper/stickers affixed to shelters. No route posts. No Amtrak Connector, CTS local or CTS Philomath Connection signage.		Indoor area with restrooms, drinking fountain and vending machines present but part of OSU campus. Not specific to transit.
Corvallis 26th St & Western Blvd	Paid campus parking only. No designated transit parking.	No signage for Groome or Benton/Lincoln Coast to Valley Express. CTS Philomath Connection sign is paper taped to shelter.	Roadway bus spot is curb cut-in along SW 26th St.	Indoor area at Hilton with sofas, snack bar. Groome pamphlets behind front desk but not visible. Restrooms available in campus buildings but not transit specific.
Corvallis Circle Blvd & 9th St	Four separate stops. Parking available in shopping center but not designated for transit.	Corvallis Transit signs on shelter have route maps and timetables. CTS has two posts. Every other sign is paper/sticker affixed to shelter.	No curb cut-ins for buses. Bus loading will disrupt flow of traffic. No designated roadway bus spots.	
Corvallis Circle Blvd & Four Acre Place	Three separate stops. Parking available in shopping center but no designated transit parking.	No signage for Amtrak connector	No designated roadway bus spots or curb cut-ins. Loading buses disrupt flow of traffic.	
Corvallis Downtown Transit Center	No designated transit parking. Adjacent lot for city or 2-hour use. 3 min 30 sec walk to Greyhound station.	No signage for Amtrak connector	Roadway bus spots on north side of facility. Site features Zagster bike-share corral.	

Transit Hub	Site Fundamentals	Transit Route Signage	Transit Facility	Passenger Amenities
Corvallis Good Samaritan Center	Plentiful hospital parking available with handicap spots but not designated for transit. Numerous bus stops scattered around site. Second stop across street has been removed, only one stop remains.	CTS and Coast to Valley on separate transit post. 99 Express sticker affixed to shelter.	Passenger loading area present but for hospital guests. Not designated for transit.	Hospital features indoor waiting area, restrooms, drinking fountain, snack bar, etc. but not specifically designated for transit.
Eugene Amtrak Station	Two LTD bus stops one block away on West 5th Ave. LTD provides local connections. No signage for POINT, Diamond Express or Pacific Crest.		Two parking lots next to site building. Regional bus stop zone in front of station building.	
Eugene EmX Walnut Station	Three roadway LTD bus stops. EmX Walnut Station in center median. Groome stops at apartment complex across the street.	No Groome sign present	Two roadway bus spots on LTD eastbound, one on LTD westbound, one on LTD northbound. Two roadway bus spots for EmX, one in each direction.	
Grand Ronde	Plentiful on-site parking and handicap spaces but for casino/hotel only. No transit designated parking.	Casino courtesy shuttle sign only. No signage for public transit services.	Bus/shuttle and visitor drop-off areas are separate.	Multiple restrooms and chairs located indoors. Multiple snack bars/restaurants available. Customer service agents available but not transit specific.

Transit Hub	Site Fundamentals	Transit Route Signage	Transit Facility	Passenger Amenities
Hillsboro Central Transit Center	Adjacent parking lot not owned by TriMet. Stalls are for 2-hour parking only, not transit parking.	TriMet signs have limited info. TriMet buses have freestanding info boards with timetables, route maps. RideConnection sign not present.		City of Hillsboro has two digital info boards with surrounding area map and real-time boarding information.
Klamath Falls Amtrak Station	Paved designated parking spaces in front of Amtrak station. More unpaved spots around Amtrak/POINT buildings.	SouthWest POINT and Klamath Shuttle signs on top of lobby building over the entrance	No designated, paved bus spots. Plenty of bus parking available on gravel.	Amtrak and SouthWest POINT both separate indoor areas with seating, restrooms, vending machines, clocks, etc.
La Grande Transit Center	Non-descript parking lot, no designated transit spaces. Handicap spots being repaved, contain new concrete, ramps, domes, etc.	Signs could be more prominently displayed		
Medford Front Street Station	Two paid lots adjacent to site. No designated transit parking.		Two roadway bus spots with shelters across the street. Solar panels for shelter lights.	Greyhound ticket office with vending machines, second set of restrooms, benches, etc.
Milton-Freewater	Public parking lot, no designated parking spaces	Signs are paper pamphlets taped to shelter. No info on City of MF or People Mover	Loading zone inward facing in active parking lot next to active driveway and adjacent to active Dutch Bros drive-through	
Ontario		No POINT sign		

Transit Hub	Site Fundamentals	Transit Route Signage	Transit Facility	Passenger Amenities
PDX Transit Center	Plentiful parking available but for air travel only. No designated transit (train/bus) parking.	MAX Red Line signage is free-standing info board	All loading/waiting areas separated. Private vehicle, rideshare, and scheduled buses/shuttles. Shuttles on Island 3 of Arrivals section.	
Philomath Applegate St & 11th St	No designated transit parking	Philomath Connection sign attached to local traffic post; not bus stop transit post.	Roadway bus spots stop in bicycle lane	
Philomath Main St & 14th St	No designated transit parking	Coast to Valley route not specified, no mention of operators.		
Portland 6th Ave & Taylor St	Multiple on-street parking stalls, parking garages and hotel parking available. No transit designated parking.	CC Rider sign is a sandwich board - not permanent	Passenger loading area and taxi area in front of hotels adjacent to site. Not transit specific.	Hilton and Heathman hotels feature large indoor areas with plentiful seating, snack bar, restrooms, drinking fountain and interactive info board. TriMet customer service center next to MAX Blue/Red Line station with paper pamphlets and live help. TriMet shelters have verbal announcement push buttons for the visually impaired.
Portland Lloyd Center	Parking structures adjacent to site but no transit designated parking	TriMet MAX light rail signs are informational kiosks		
Redmond Airport	Plentiful airport parking available with handicap spots but not designated for public transit usage.	Signage is only non-specific "bus" area sign. No agency specific signage or route information.	Bus loading zone in separate roadway next to regular passenger loading zone. Features separate pedestrian island.	Airport lobby features seating, restrooms, snack bar, drinking fountain, clocks, etc. No pamphlets or signage anywhere with public transit information.

Transit Hub	Site Fundamentals	Transit Route Signage	Transit Facility	Passenger Amenities
Redmond Transit Hub		No signage for Central Oregon Breeze, People Mover or Shuttle Oregon		
Salem Amtrak Station	Cherriots local buses stop in roadway adjacent to site. Northbound next to site, southbound across the street.	No Cascades POINT signage. Tillamook 60X/70X sign is collapsible sandwich board, not permanent.	No designated roadway bus spots or curb cut-ins. Loading buses disrupt flow of traffic.	One men and one women bathroom are ADA compliant. Family restroom is also ADA compliant.
Salem Downtown Transit Center	On-street city parking available but not designated for transit	Route signage designates assigned bus bay and route info		Maps and route pamphlet kiosk located indoors, none outside. No permanent timetables-route info signs present. Verbal announcements come from buses only, not transit facility. Announce what bus bay the bus is located at and where the bus goes.
Springfield Greyhound Station	Additional parking at Booth Kelly lot across railroad tracks south of site	Additional posts for Greyhound and LTD Events. LTD local and EmX sign posts are info boards with maps, timetables, etc. EmX with digital real-time sign. No Pacific Crest sign.	There is a passenger loading area at the turn-a-round but there is no sign designating it as such.	Two indoor areas 1) Greyhound ticket office, 2) Small waiting area with restrooms. Digital clocks above every bus bay.

Transit Hub	Site Fundamentals	Transit Route Signage	Transit Facility	Passenger Amenities
Union Station	Parking lot across the street and on-street parking. Designated Amtrak parking structure two blocks away. Site consists of Amtrak train station and transit center, two MAX light rail stations and three TriMet bus stops.	POINT signs listed as Amtrak Thruway only. No Shuttle Oregon signage. No designated Amtrak signage.	Bus loading zone next to passenger loading zone and taxi area.	
Wilsonville Transit Center		All bus bays have separate post with route banner (color-coded with route number). Big and helpful. SMART signs have fare info, phone # and website. No signage for Cherriots 1X, SMART 1X only, could be point of confusion.	Two good crosswalks through bus area	Classical music playing at clock tower creates pleasant atmosphere. All shelters contain system map, timetable and route map.
Woodburn Hwy 211 & Hwy 214			Bus spots in roadway hinder flow of traffic. Other bus spots in active parking lot.	
Woodburn Memorial Transit Center		Two assigned and two unassigned route sign posts.	Two active bus bays, two empty bus bays. One roadway bus spot in parking lot at Best Western	Leaning bars underneath shelters, metal benches are not. Indoor area is Best Western lobby for Groome only. Clocks, drinking fountain, vending machines at hotel only.

Transit Hub	Passenger Experience	Safety and Security	Walkability	Bicycling Infrastructure
Albany Amtrak Station	Route signage could be more prominently displayed to reduce transfer stress. Map of station area could be helpful.	Local police appear to use site parking lot as waystation	North bounding street includes Pacific Blvd SW/State Route 99E and Pacific Blvd/Lyon Street off-ramp. Off-ramp is at-grade and requires crossing. Pacific Blvd is overpass, walk route underneath.	26 bike lockers
Albany Clay St at Heritage Mall	Limited signage and passenger information could cause high transfer stress.			
Albany Linn Benton Community College	Heavy traffic during school session	Just one camera. Law enforcement would be present during school session.		
Astoria Transit Center	Lack of signage could cause high transfer stress but live customer service center is quite helpful.			
Banks	More signage and info boards could help reduce transfer stress			
Beaverton Sunset Transit Center		Abundance of security cameras		Site with bike cage, bike-and-ride
Bend Hawthorne Station	Transit courtesy phone located inside		Lack of sidewalks in immediate surrounding area	

Transit Hub	Passenger Experience	Safety and Security	Walkability	Bicycling Infrastructure
Canby Transit Center	One small site, plenty of info/signage for transfer	Site adjacent to grocery store parking lot with heavy pedestrian traffic	Sidewalk and roadway changes substantially south of the railroad tracks	
Cannon Beach Midtown Transit Center	No lights in the parking lot	Police station adjacent to site	Sidewalks not present on several of the surrounding minor streets	
Corvallis 1st St & Washington Ave	Hotel site is spotless and very comfortable. CTS post site is in fair condition, somewhat uncomfortable. Transfer requires walk around the corner and down the street. Limited signage could lead to higher stress.	Hotel site feels very safe.	Hotel sidewalk in excellent condition. CTS post site sidewalk in good to fair condition.	
Corvallis 9th St & Reiman Ave	Limited signage. Connecting services are across busy four lane street, crossing is necessary, difficult and hazardous. Heavy noise pollution.			
Corvallis 15th St & Jefferson Way	Numerous bus stops scattered around the site. Limited signage could make for confusing, stressful transfer.	Emergency phone box and law enforcement present but intended for OSU. Not transit specific.		
Corvallis 26th St & Western Blvd	Lack of signage could make for somewhat stressful transfer	Emergency phone box available for campus safety.		

Transit Hub	Passenger Experience	Safety and Security	Walkability	Bicycling Infrastructure
Corvallis Circle Blvd & 9th St	Must cross wide, hazardous intersection to transfer. Limited signage			
Corvallis Circle Blvd & Four Acre Place	Connecting services are across busy arterial with limited intersections-crosswalks. Quite far away. Limited signage could make for stressful transfer.			
Corvallis Downtown Transit Center	Transit facility map with labeled bus bays, and more signage could help reduce transfer stress.			
Corvallis Good Samaritan Center	More detailed signage could help lower transfer stress.			Bike racks/lockers available for hospital use but not transit specific
Eugene Amtrak Station	Limited signage for connecting services but live-person available for assistance			
Eugene EmX Walnut Station	Heavy traffic and noise pollution at stops			
Grand Ronde	Buses stop in the same location but no information about transit could lead to confusing transfer.	Large security desk with many personnel present	Site is surrounded by parking lots and highway. No possible walk routes to other areas.	

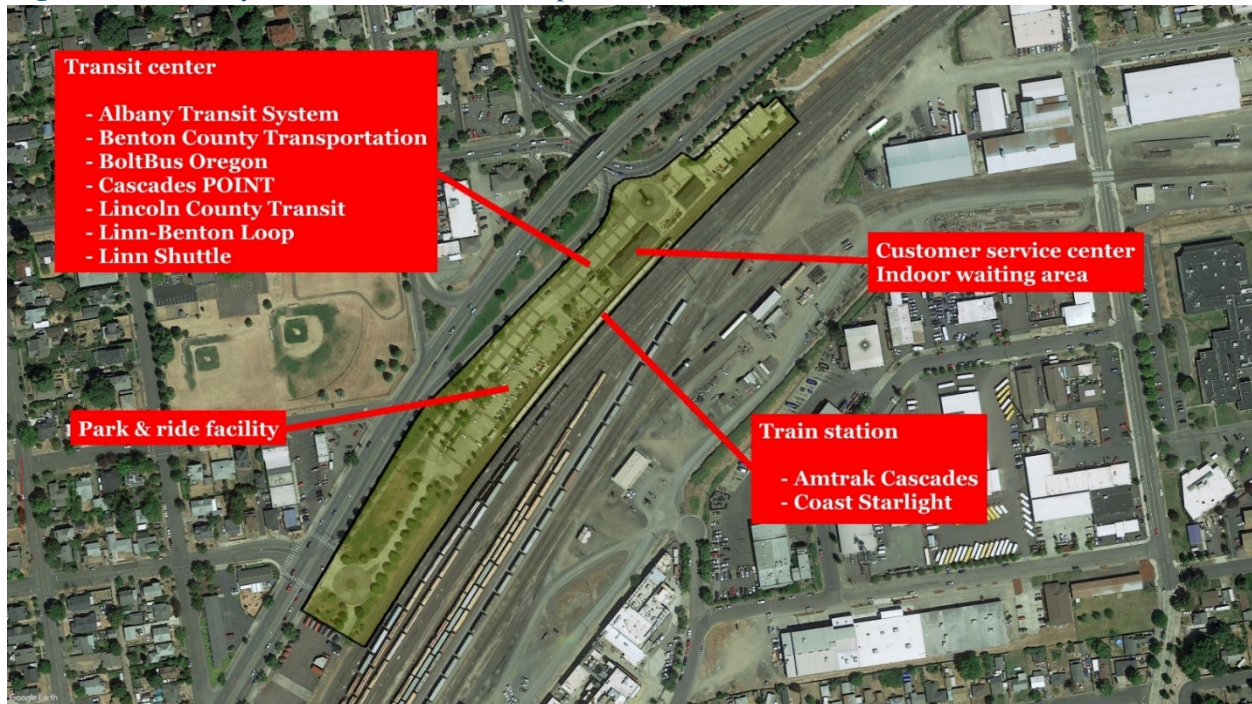
Transit Hub	Passenger Experience	Safety and Security	Walkability	Bicycling Infrastructure
Hillsboro Central Transit Center		Possible security office in facility transit building.	Good pedestrian islands and walk buttons adjacent to site but no painted crosswalks. Calm traffic on narrow streets make for pleasant walk.	
Klamath Falls Amtrak Station	SouthWest POINT building does not face Amtrak building. Plenty of staff on-hand to assist with transfer and connection.			
La Grande Transit Center				
Medford Front Street Station				
Milton-Freewater	Parking lot needs repaving, Limited lighting, no light within 150 feet of shelter, No other transit signs, transfer is ambiguous, Heavy vehicle traffic, no amenities			
Ontario	Lack of signage for connections			
PDX Transit Center		TriMet security booth on MAX station platform		Designated bike assembly and maintenance area

Transit Hub	Passenger Experience	Safety and Security	Walkability	Bicycling Infrastructure
Philomath Applegate St & 11th St	Limited signage could increase transfer stress. Busy roadway could reduce comfort level.			
Philomath Main St & 14th St	Limited signage available. Heavy noise pollution could reduce comfort level.			
Portland 6th Ave & Taylor St	Transfer stress is high due to the layout of the hub. Multiple bus lines criss-cross on multiple streets. Distance between, lack of line of sight. Everything is well-labeled.	Roaming city police on bikes and TriMet security	Hub located in very walkable downtown area	
Portland Lloyd Center				All bike racks in front of Lloyd Center shopping mall
Redmond Airport	No signage or transit info could make for a stressful transfer despite the fact that the hub has a good layout and is in one location	Airport lobby contains police/security office		
Redmond Transit Hub	Lack of signage for connecting services contributes to some transfer stress	Site located on lightly-trafficked back street between two big box stores. Site can be somewhat empty.		

Transit Hub	Passenger Experience	Safety and Security	Walkability	Bicycling Infrastructure
Salem Amtrak Station	Transfer stress is low for all services except Cherriots. Cherriots transfer stress is high for southbound buses. 5+ minute walk across the street.			
Salem Downtown Transit Center	No timetables/route info/maps/transit facility maps located outside. Increases transfer stress for passengers.	Transit security and law enforcement present		
Springfield Greyhound Station	Good site design with plentiful signage makes for an easy transfer		Transit center with adjacent public plaza featuring waiting area, chairs, restaurant, etc.	20 individual bicycle racks
Union Station	Connecting TriMet services across the street some 5 minutes away. Limited signage for bus transit area.	Emergency hotline information shown on Amtrak digital video displays.		
Wilsonville Transit Center	Well-designed site with plentiful route signs/info panels make for an easy transfer		The site needs crosswalks leading from the hub to the sidewalk on the opposite side of the street	
Woodburn Hwy 211 & Hwy 214	One small solar light in shelter		Sidewalks have no buffer to roadway	Narrow, hazardous bike lanes
Woodburn Memorial Transit Center	Transfer stress is low for transit center but high for hotel		New facility, concrete in excellent condition	Bike racks are individual

Appendix M: Site Footprint Maps

Figure M-1: Albany Amtrak Station Site Footprint

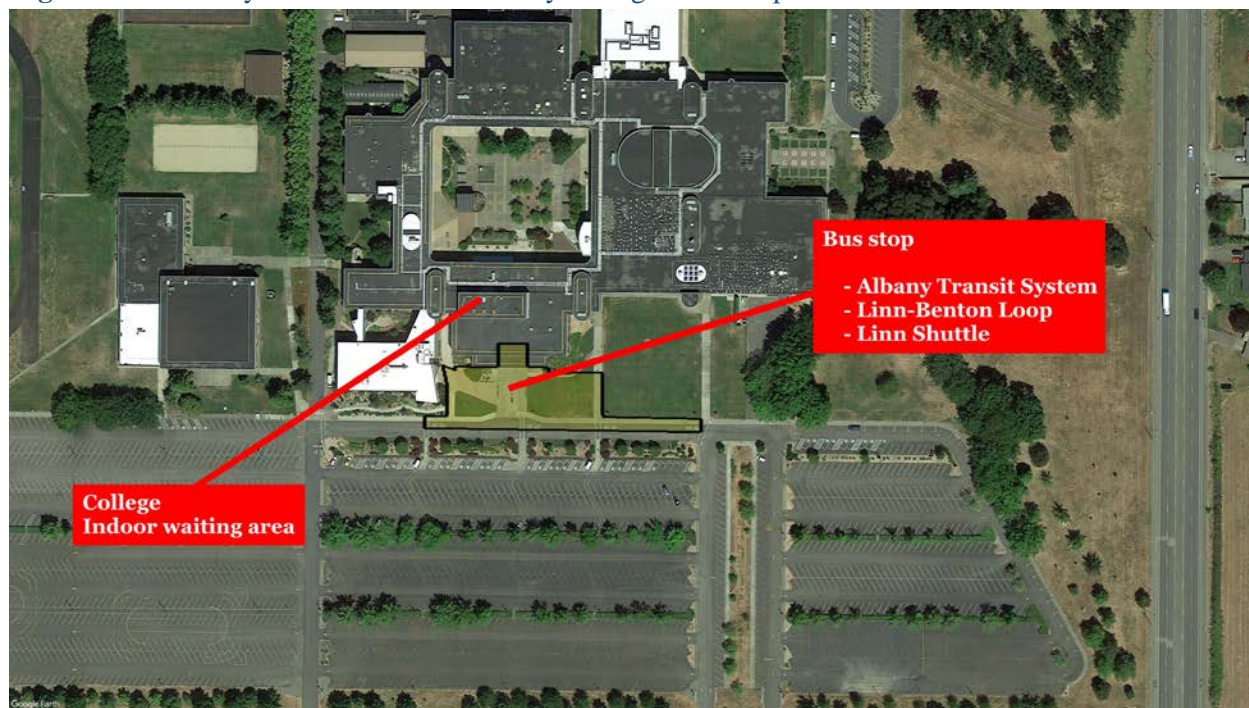


Map data: ©2019 Google

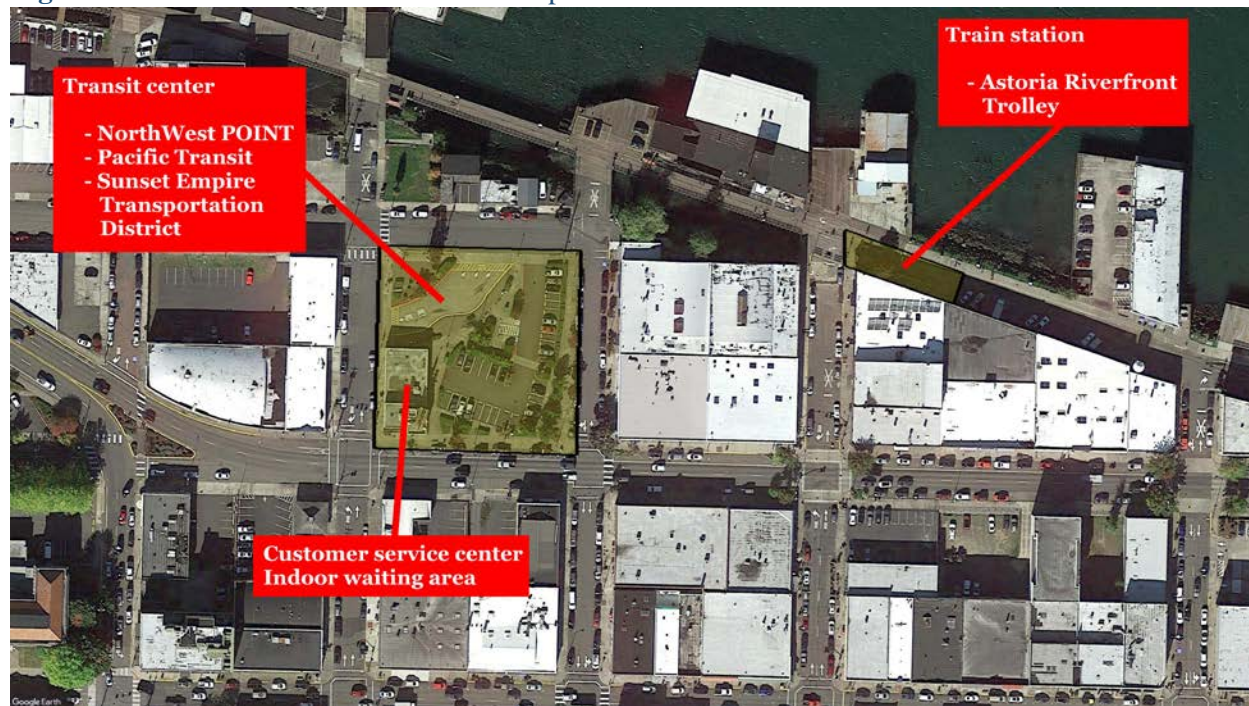
Figure M-2: Albany Clay St at Heritage Mall Site Footprint



Map data: ©2019 Google

Figure M-3: Albany Linn Benton Community College Site Footprint

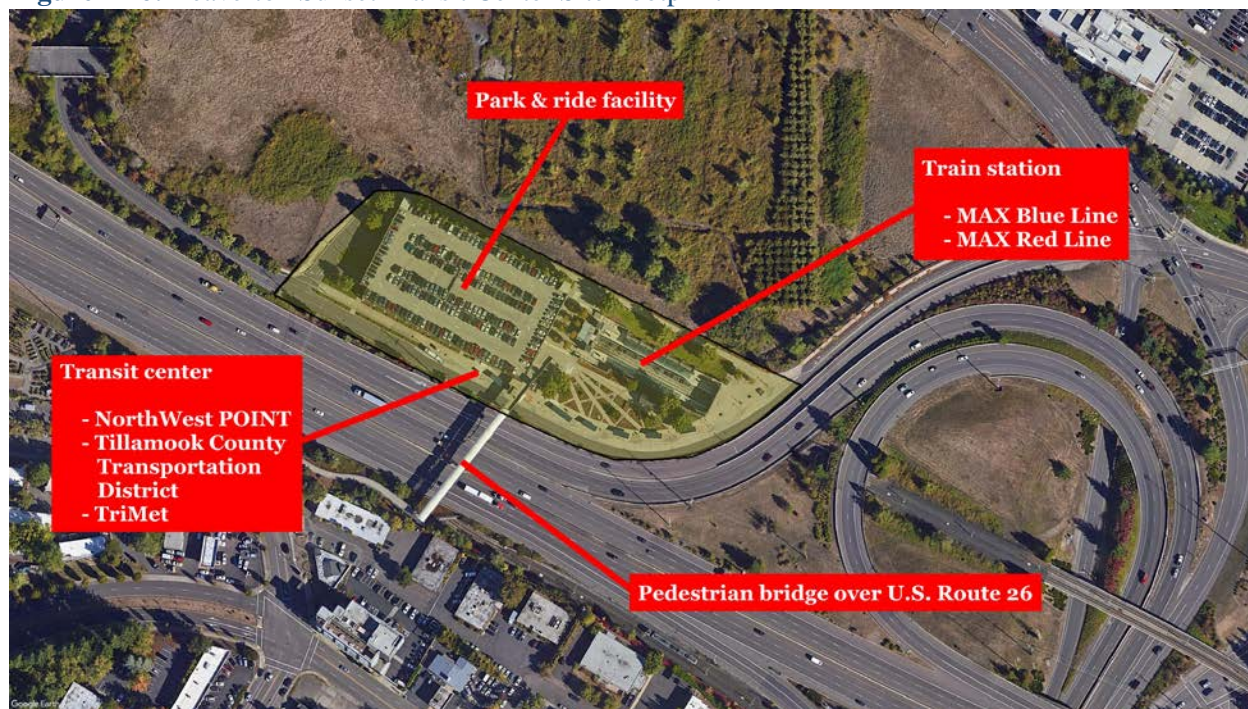
Map data: ©2019 Google

Figure M-4: Astoria Transit Center Site Footprint

Map data: ©2019 Google

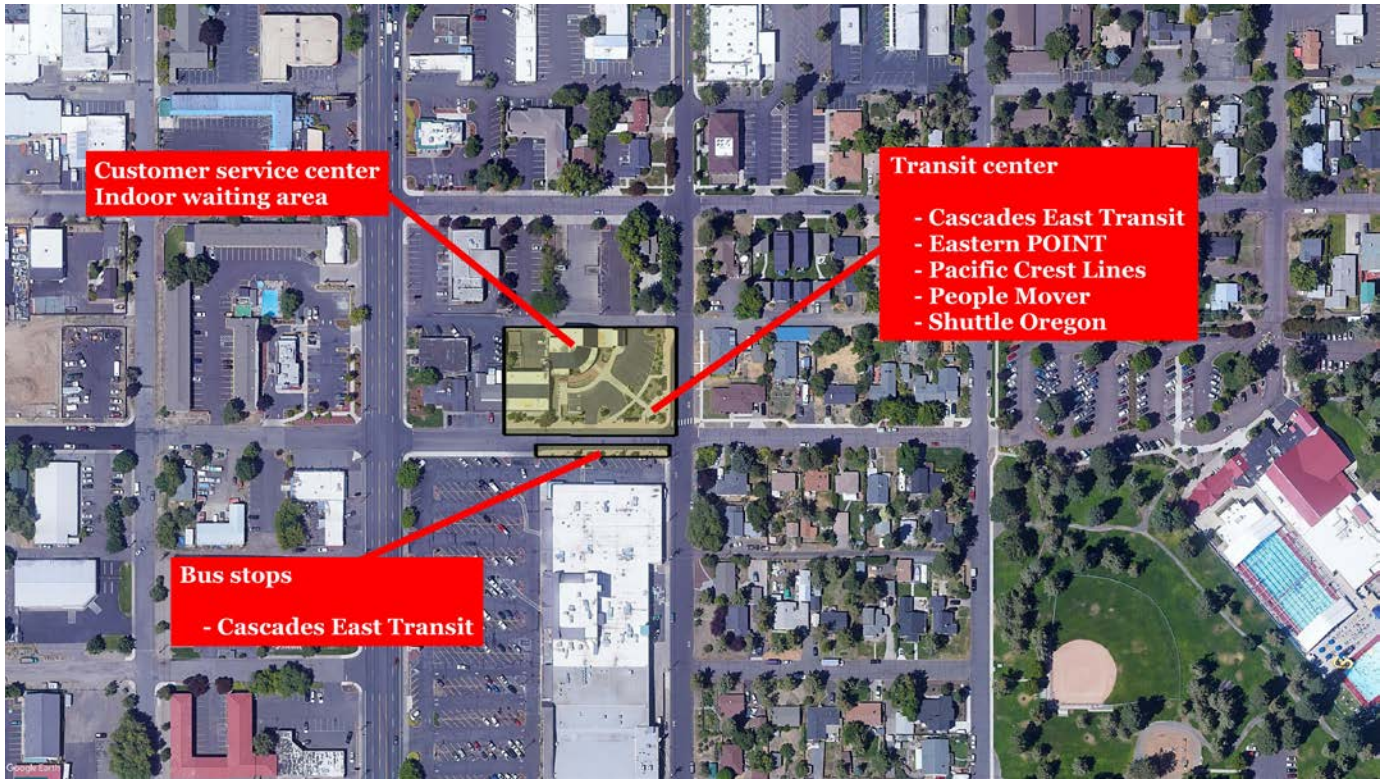
Figure M-5: Banks Site Footprint

Map data: ©2019 Google

Figure M-6: Beaverton Sunset Transit Center Site Footprint

Map data: ©2019 Google

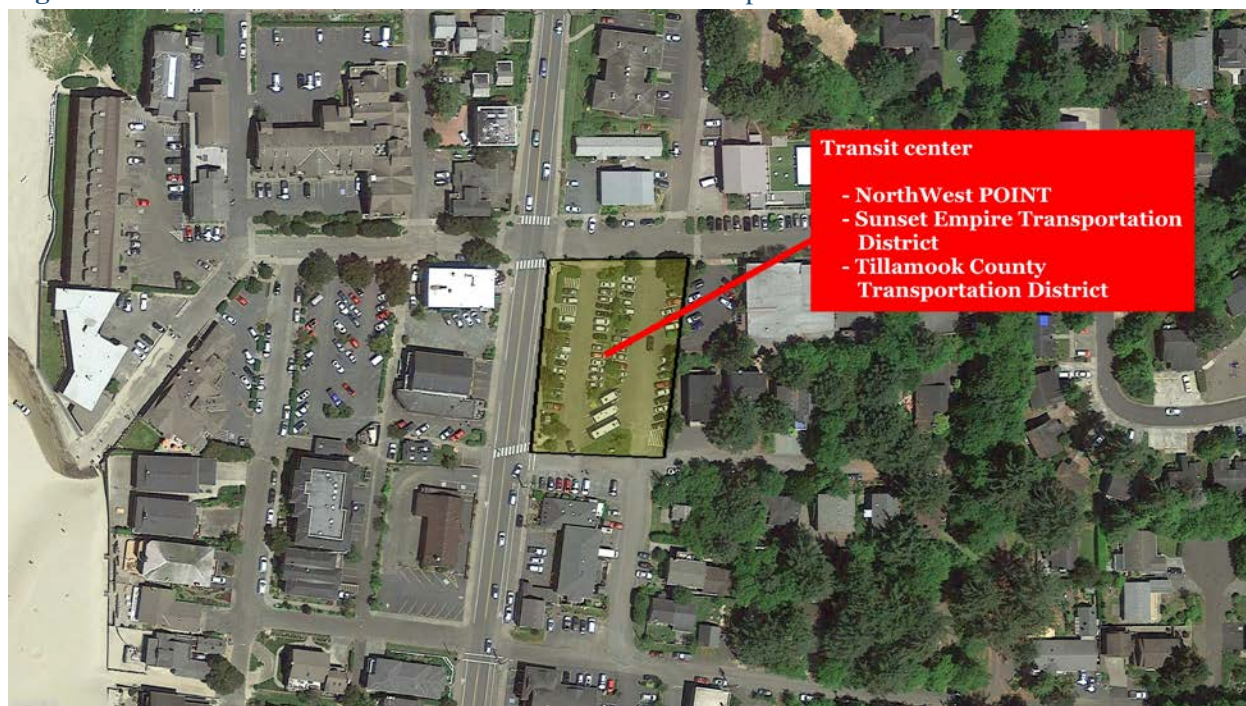
Figure M-7: Bend Hawthorne Station Site Footprint



Map data: ©2019 Google

Figure M-8: Canby Transit Center Site Footprint

Map data: ©2019 Google

Figure M-9: Cannon Beach Midtown Transit Center Site Footprint

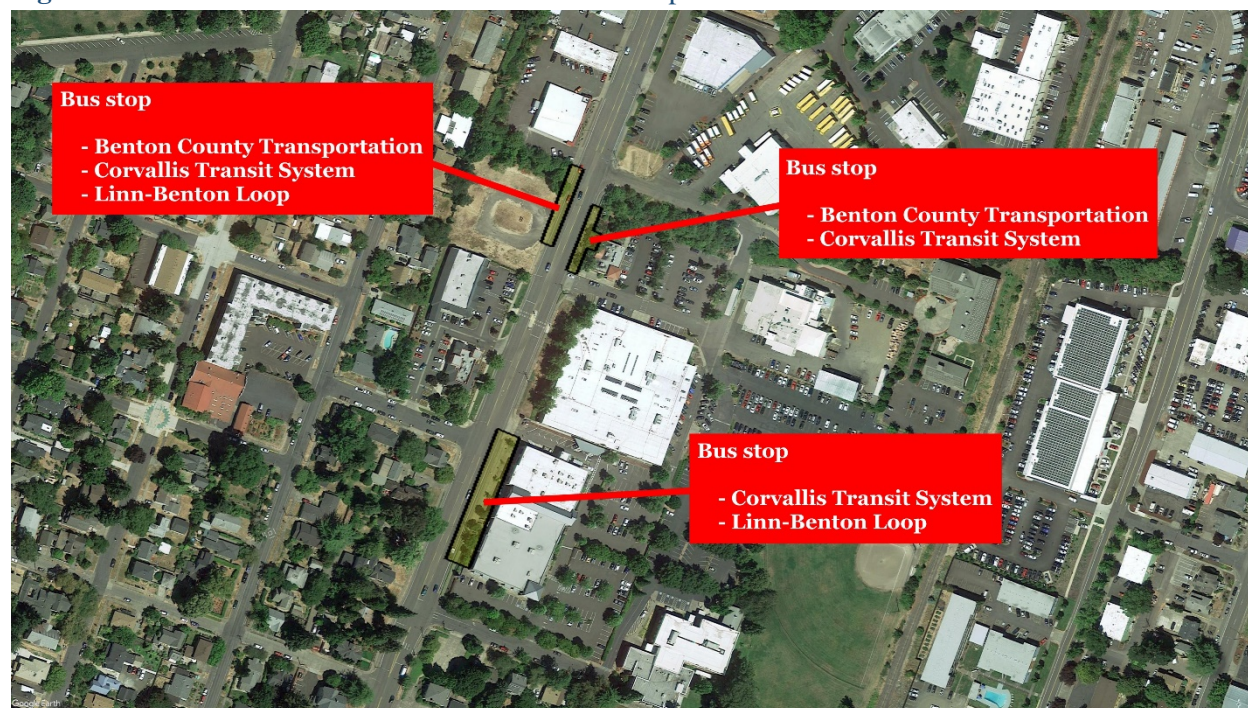
Map data: ©2019 Google

Figure M-10: Corvallis 1st St & Washington Ave Site Footprint

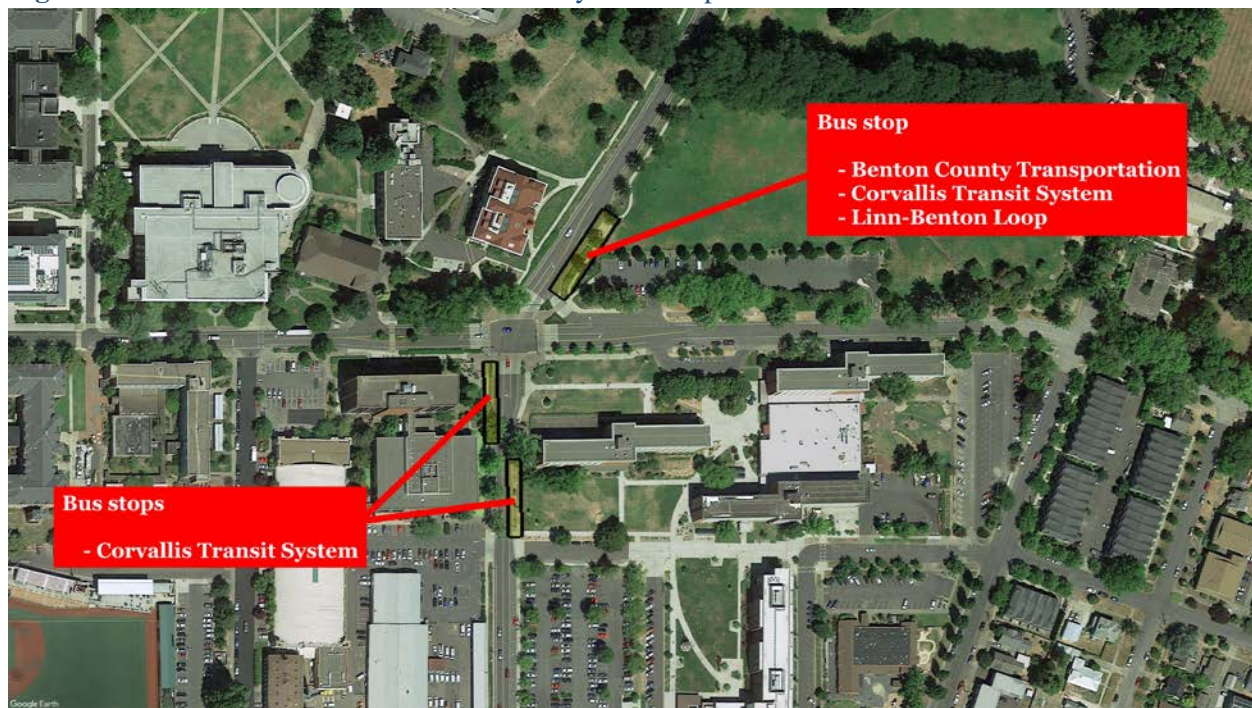


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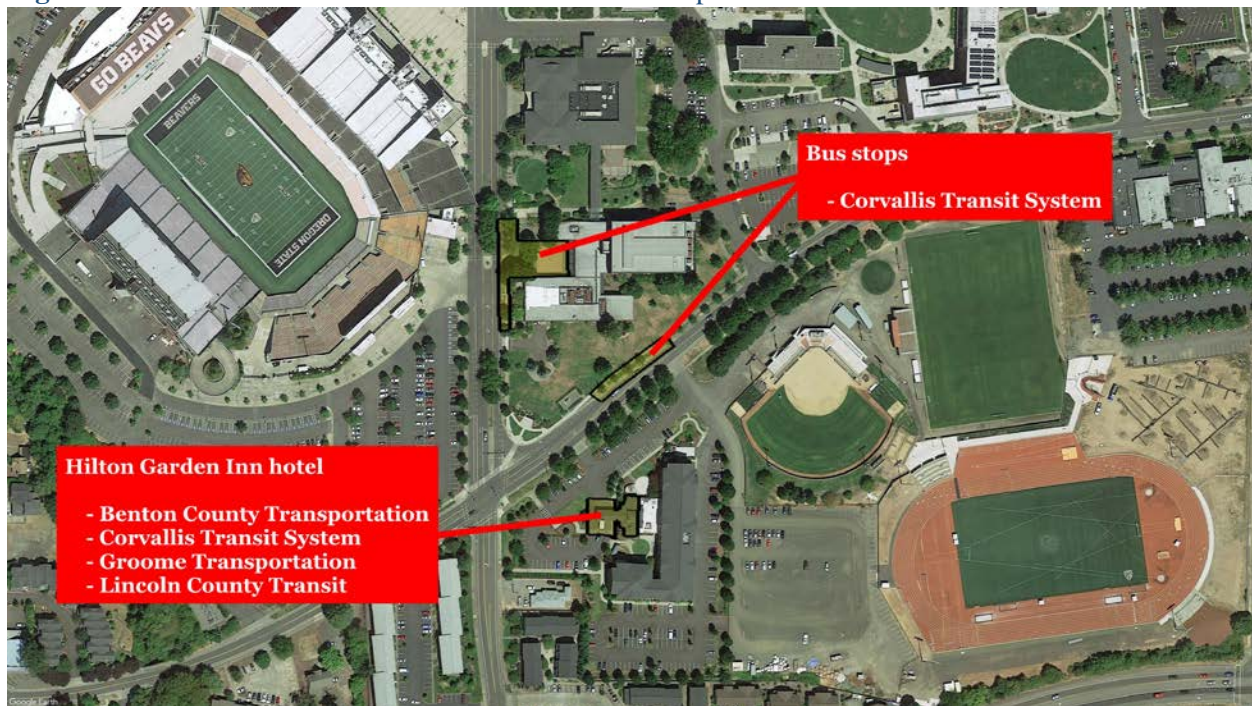
Figure M-11: Corvallis 9th St & Reiman Ave Site Footprint



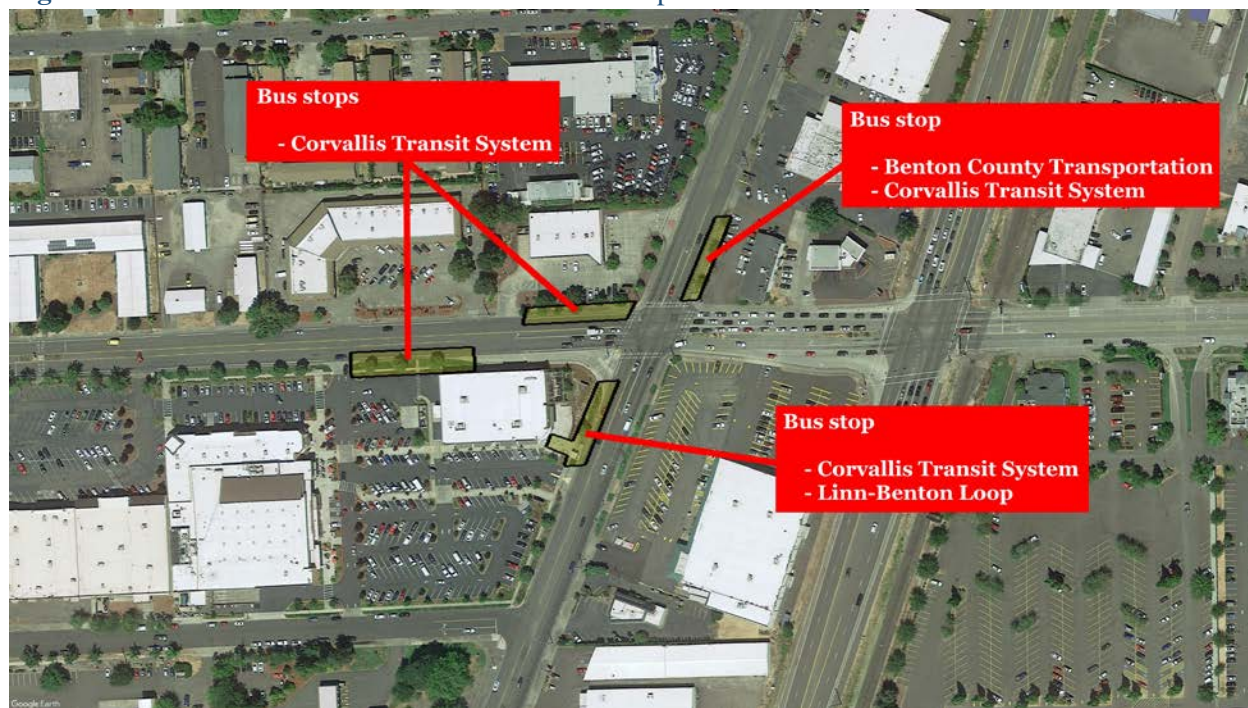
Map data: ©2019 Google

Figure M-12: Corvallis 15th St & Jefferson Way Site Footprint

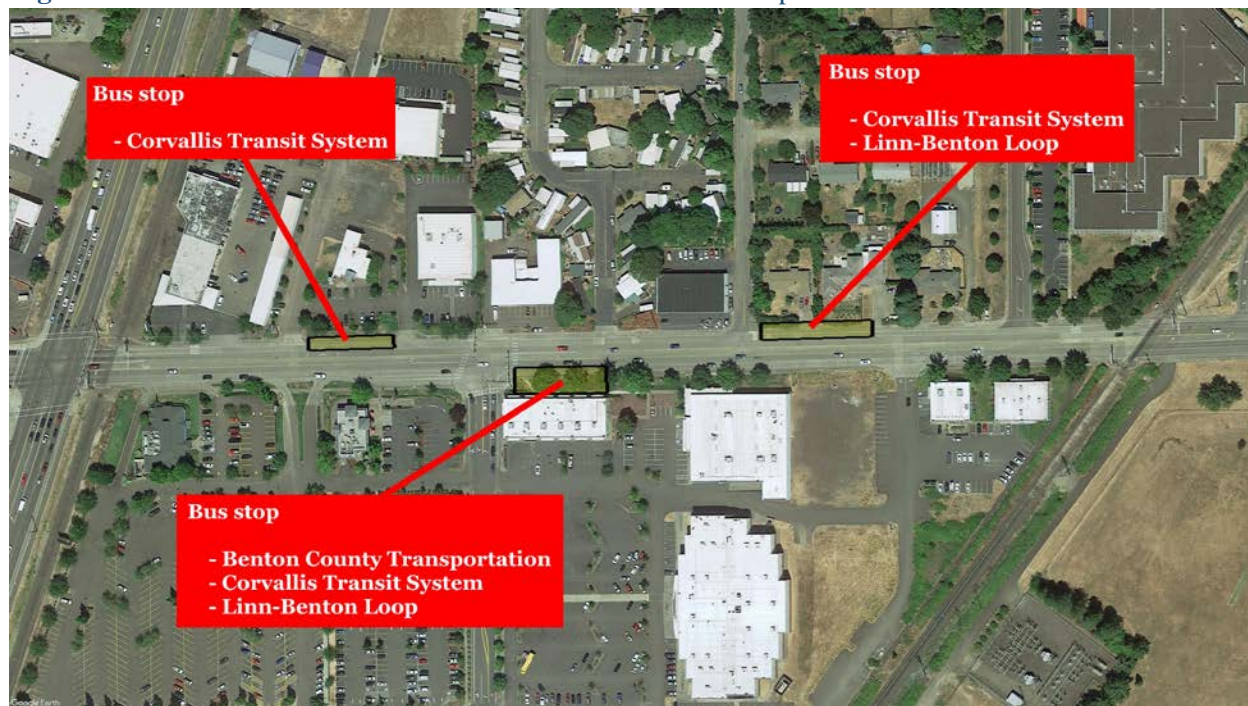
Map data: ©2019 Google

Figure M-13: Corvallis 26th St & Western Blvd Site Footprint

Map data: ©2019 Google

Figure M-14: Corvallis Circle Blvd & 9th St Site Footprint

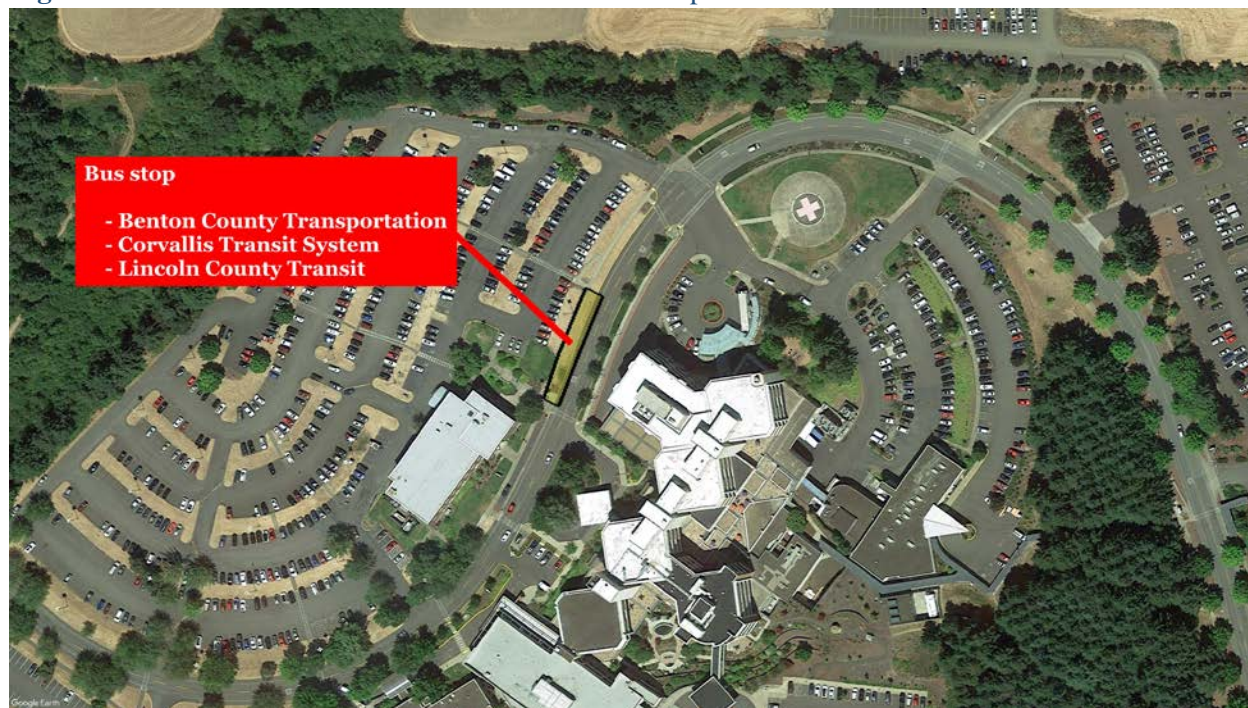
Map data: ©2019 Google

Figure M-15: Corvallis Circle Blvd & Four Acre Place Site Footprint

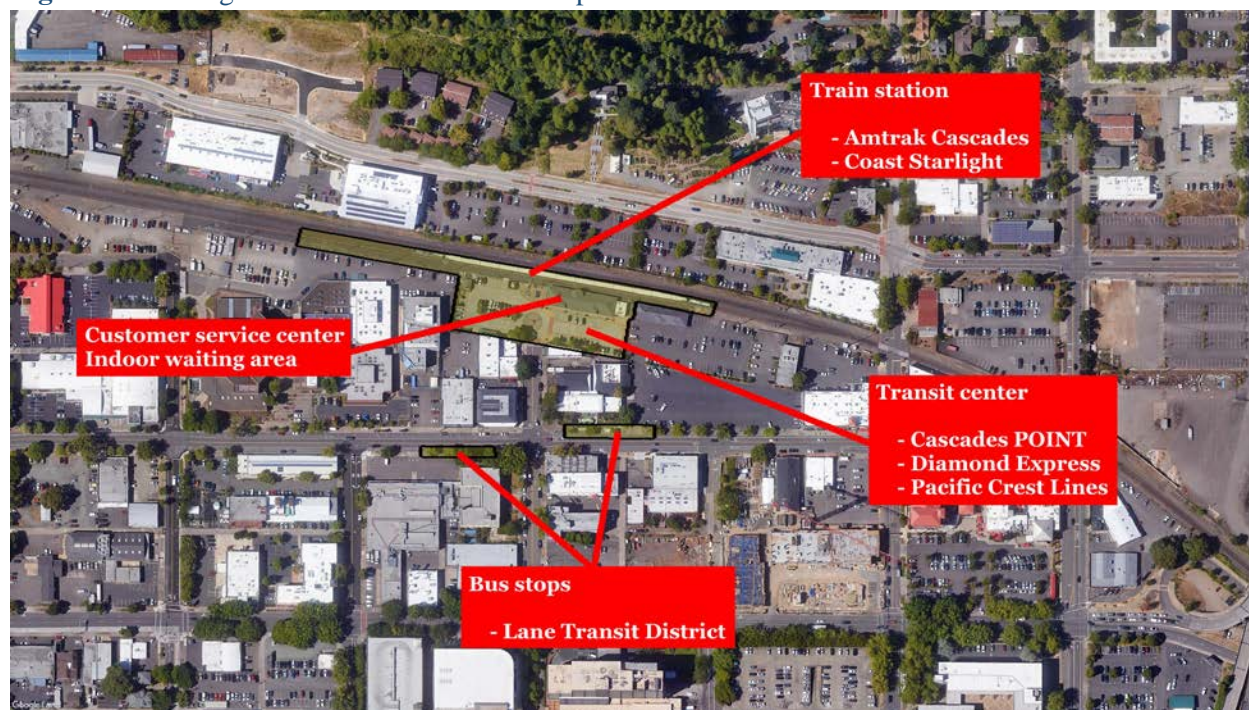
Map data: ©2019 Google

Figure M-16: Corvallis Downtown Transit Center Site Footprint

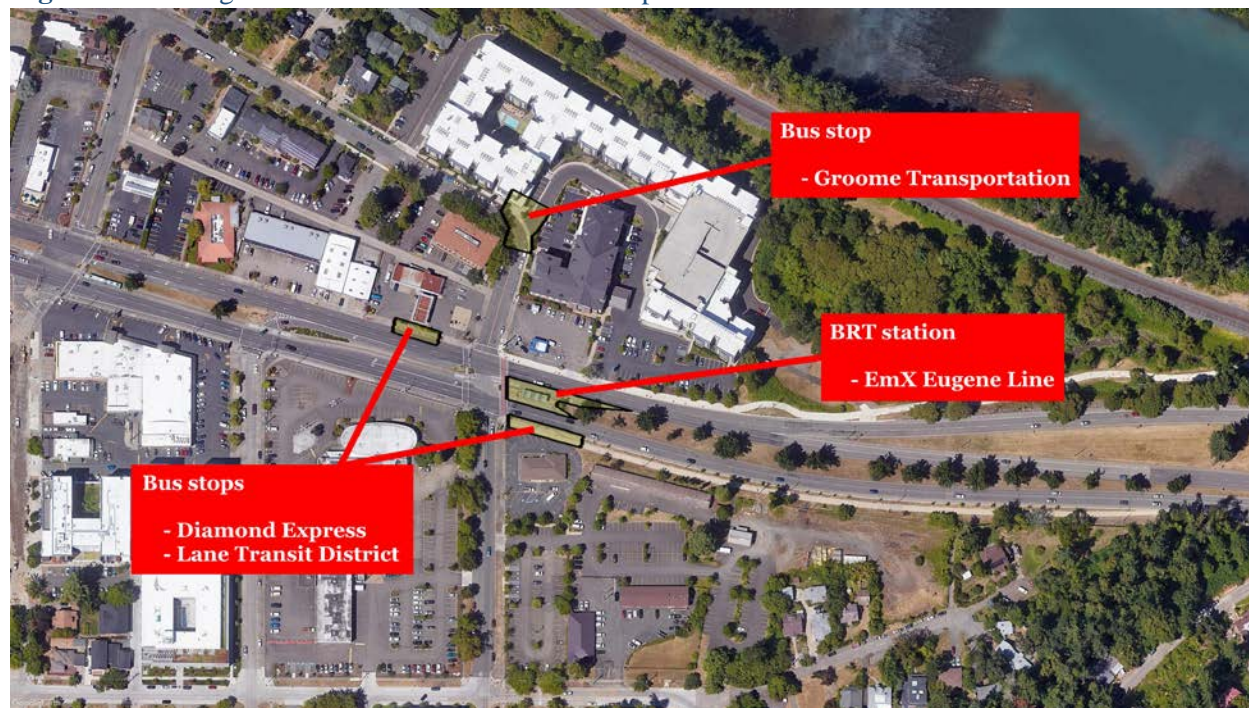
Map data: ©2019 Google

Figure M-17: Corvallis Good Samaritan Center Site Footprint

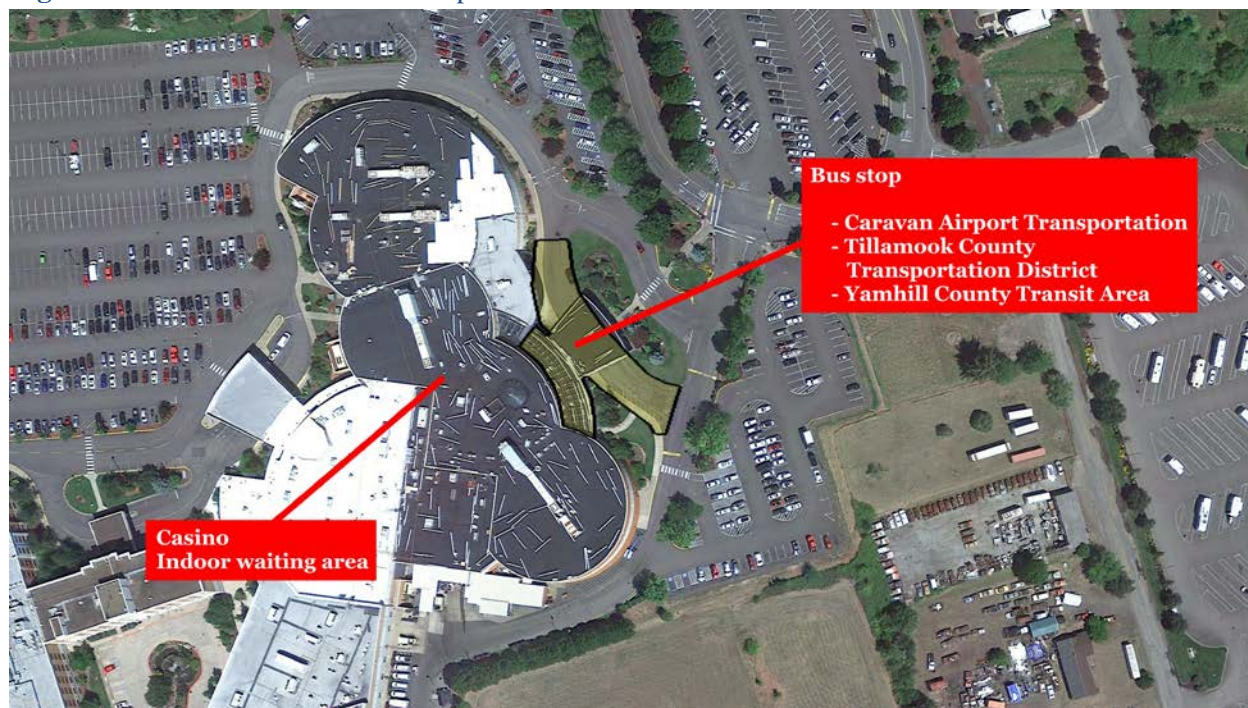
Map data: ©2019 Google

Figure M-18: Eugene Amtrak Station Site Footprint

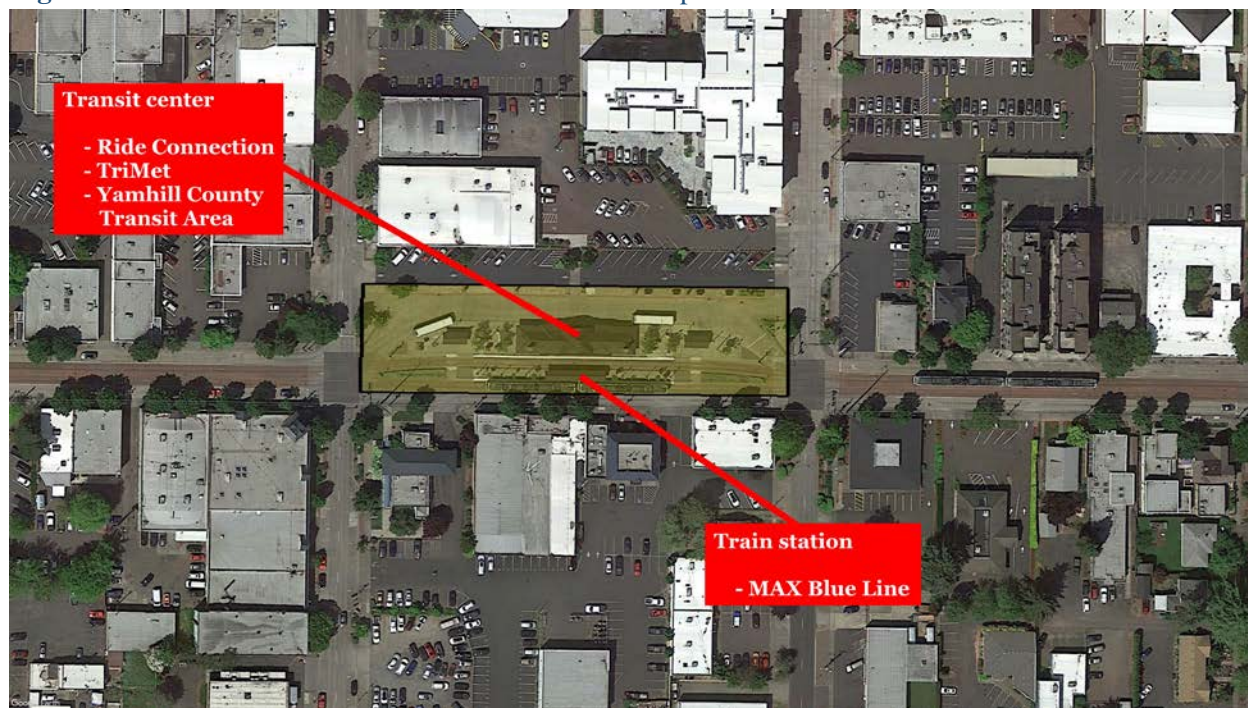
Map data: ©2019 Google

Figure M-19: Eugene EmX Walnut Station Site Footprint

Map data: ©2019 Google

Figure M-20: Grand Ronde Site Footprint

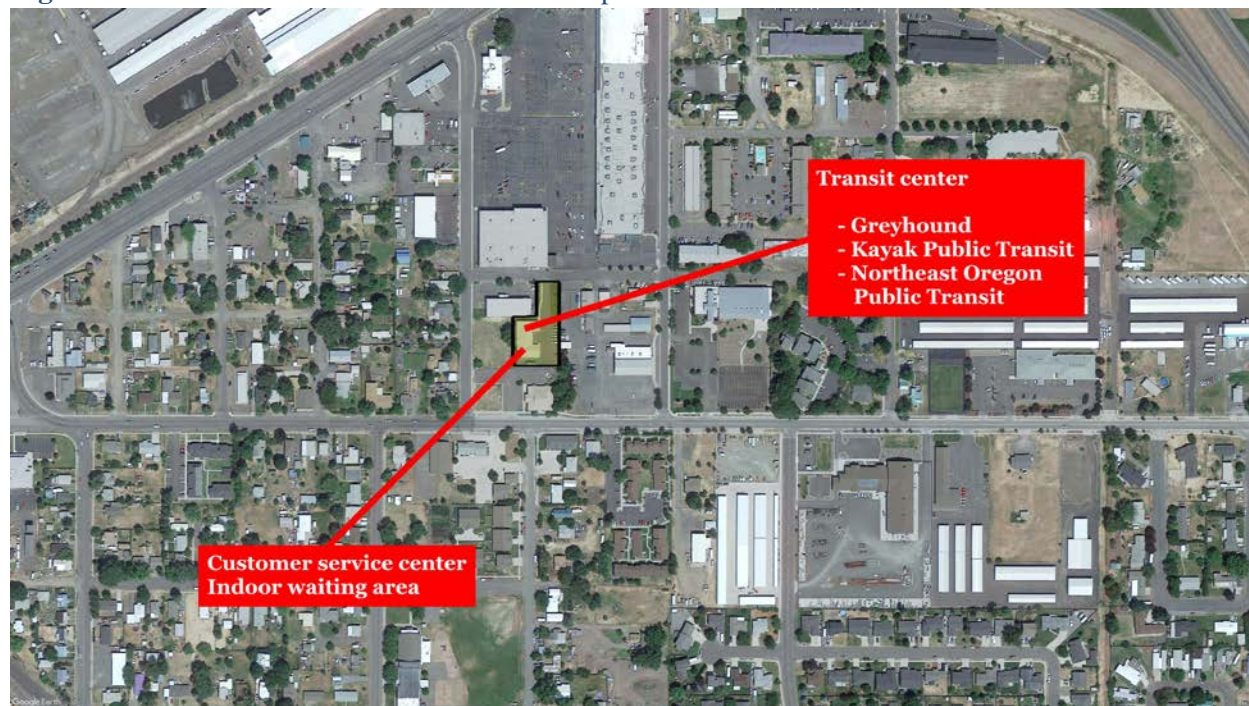
Map data: ©2019 Google

Figure M-21: Hillsboro Central Transit Center Site Footprint

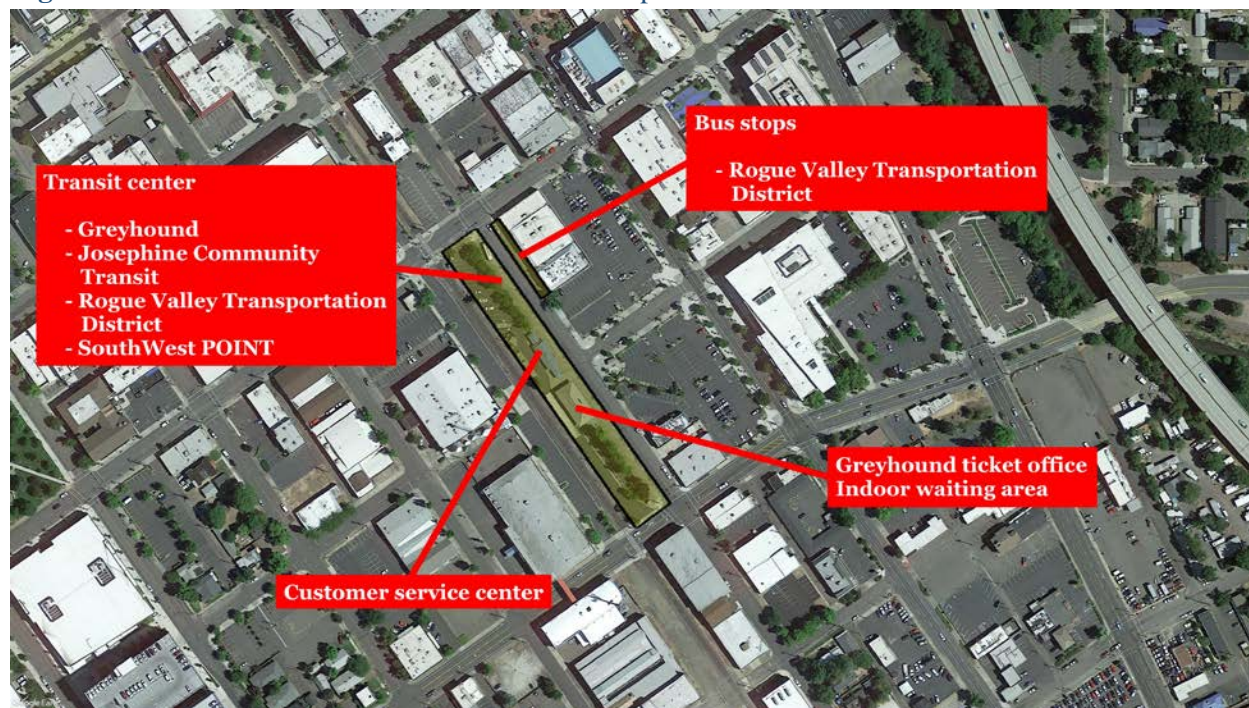
Map data: ©2019 Google

Figure M-22: Klamath Falls Amtrak Station Site Footprint

Map data: ©2019 Google

Figure M-23: La Grande Transit Center Site Footprint

Map data: ©2019 Google

Figure M-24: Medford Front Street Station Site Footprint

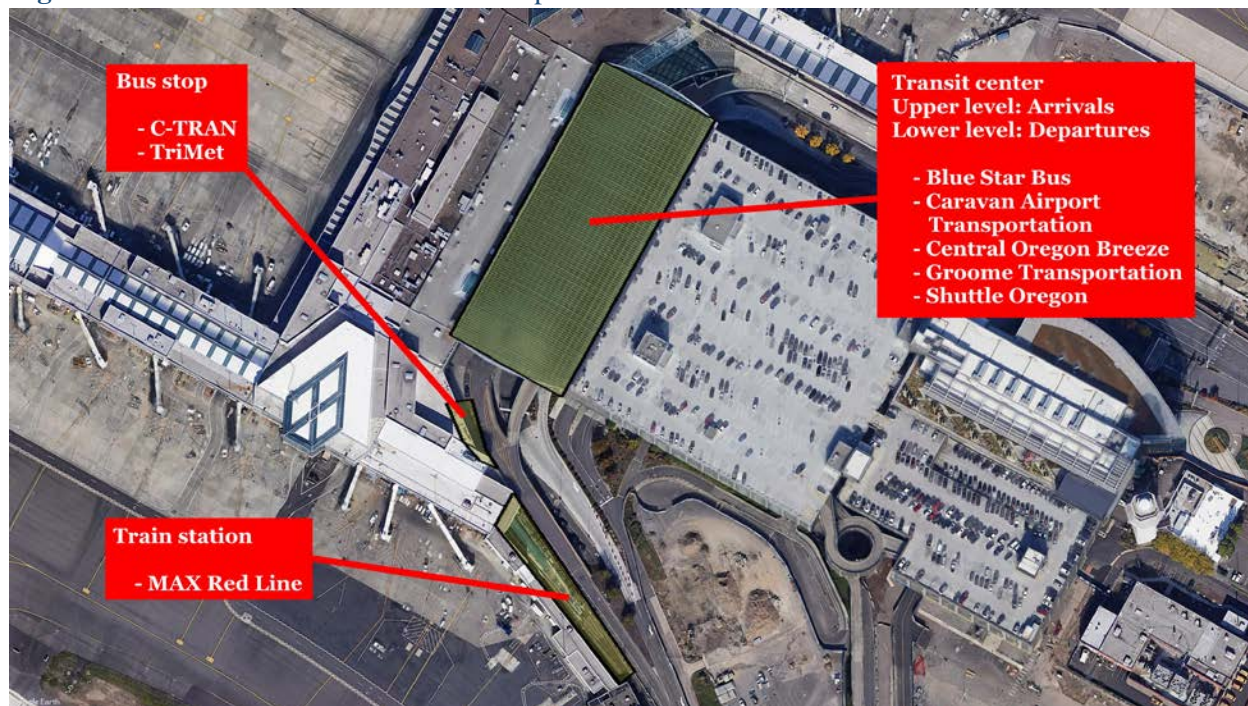
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Figure M-25: Milton-Freewater Site Footprint

Map data: ©2019 Google

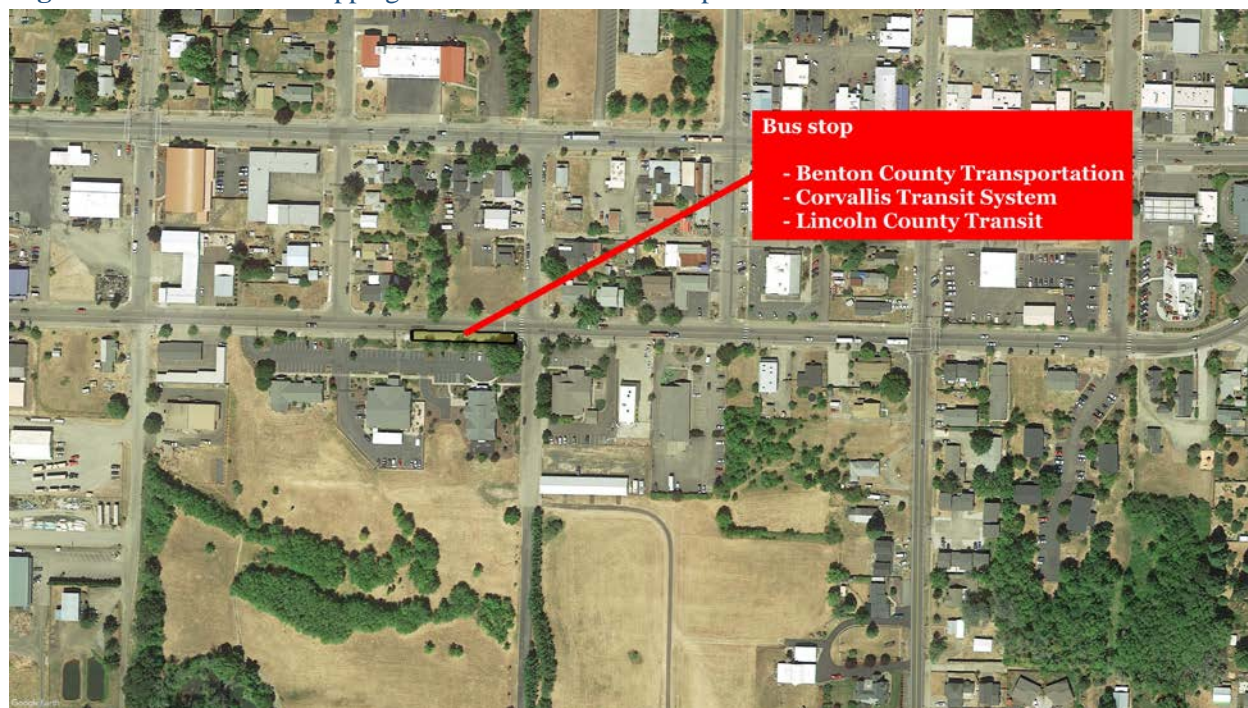
Figure M-26: Ontario Transit Center Site Footprint

Map data: ©2019 Google

Figure M-27: PDX Transit Center Site Footprint

Map data: ©2019 Google

Figure M-28: Philomath Applegate St & 11th St Site Footprint

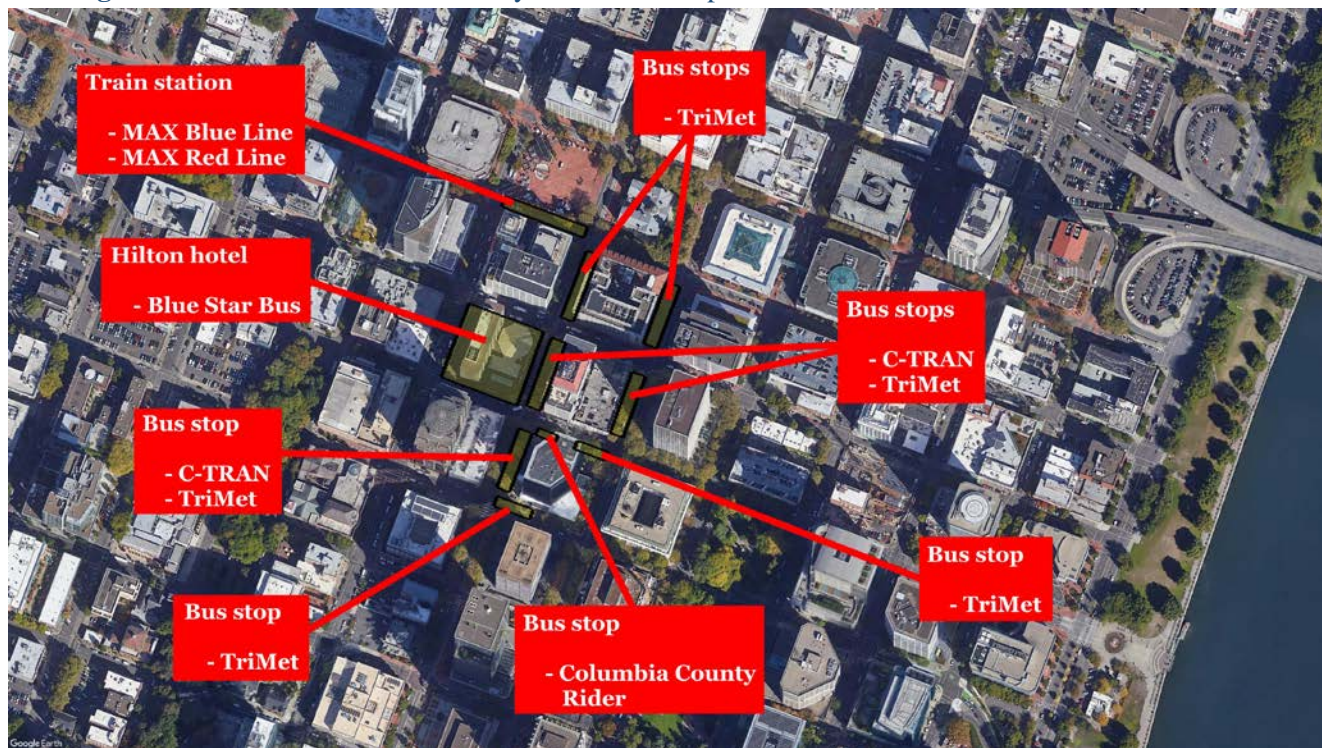


Map data: ©2019 Google

Figure M-29: Philomath Main St & 14th St Site Footprint



Map data: ©2019 Google

Figure M-30: Portland 6th Ave & Taylor St Site Footprint

Map data: ©2019 Google

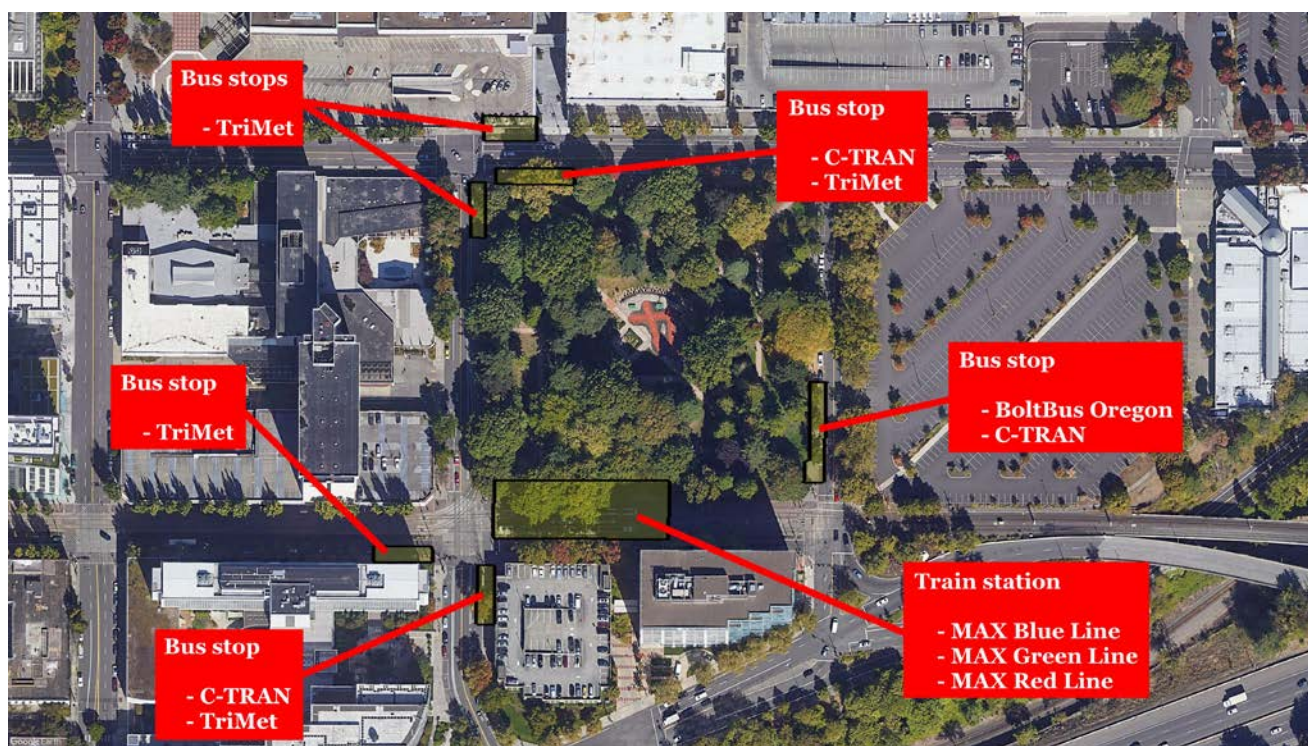
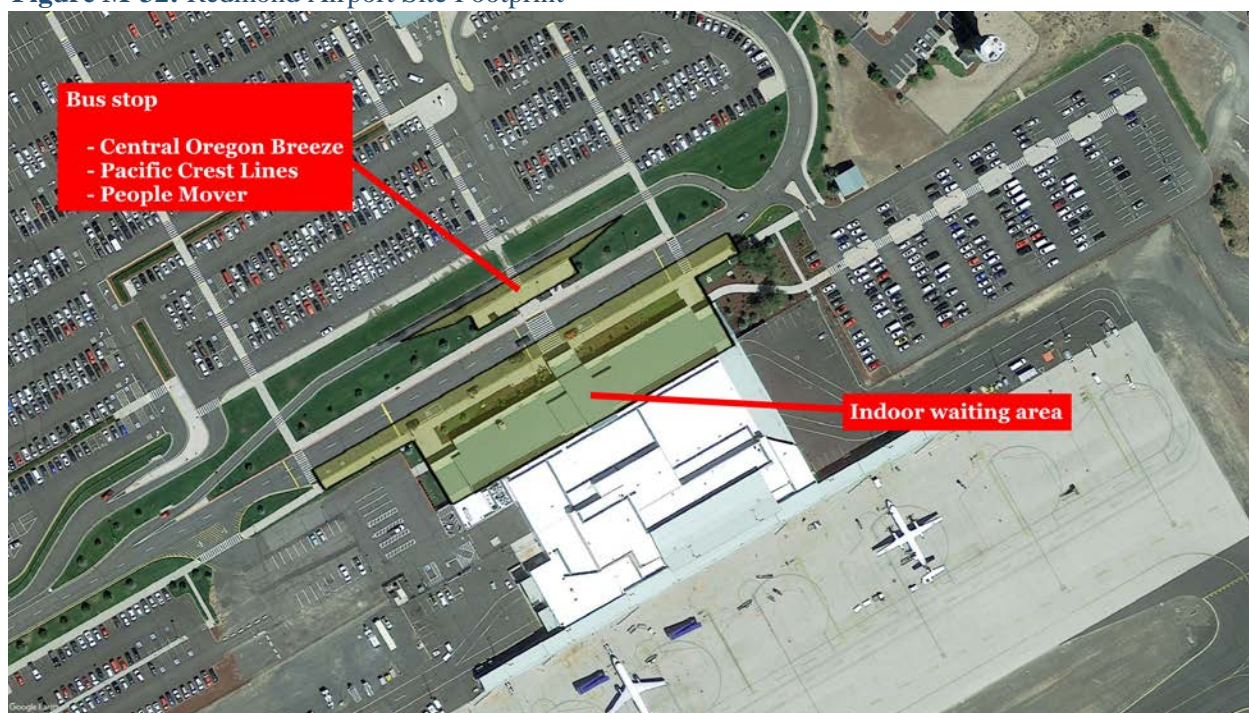
Figure M-31: Portland Lloyd Center Site Footprint

Figure M-32: Redmond Airport Site Footprint

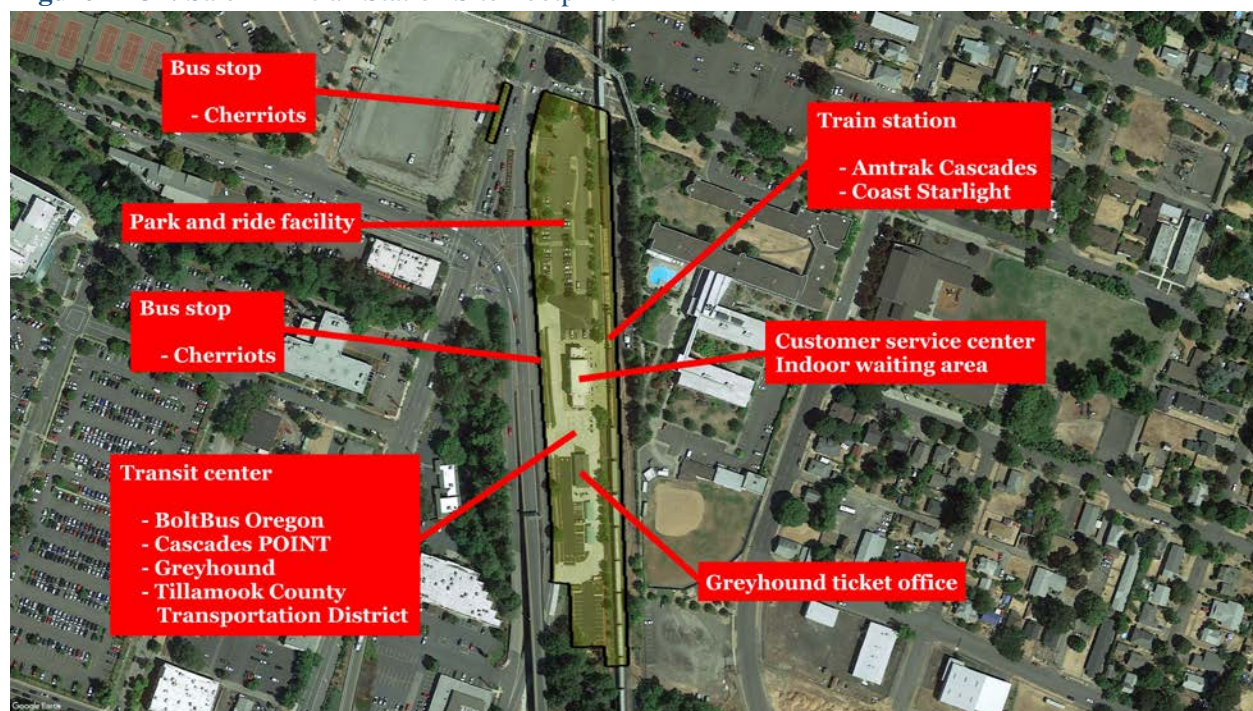


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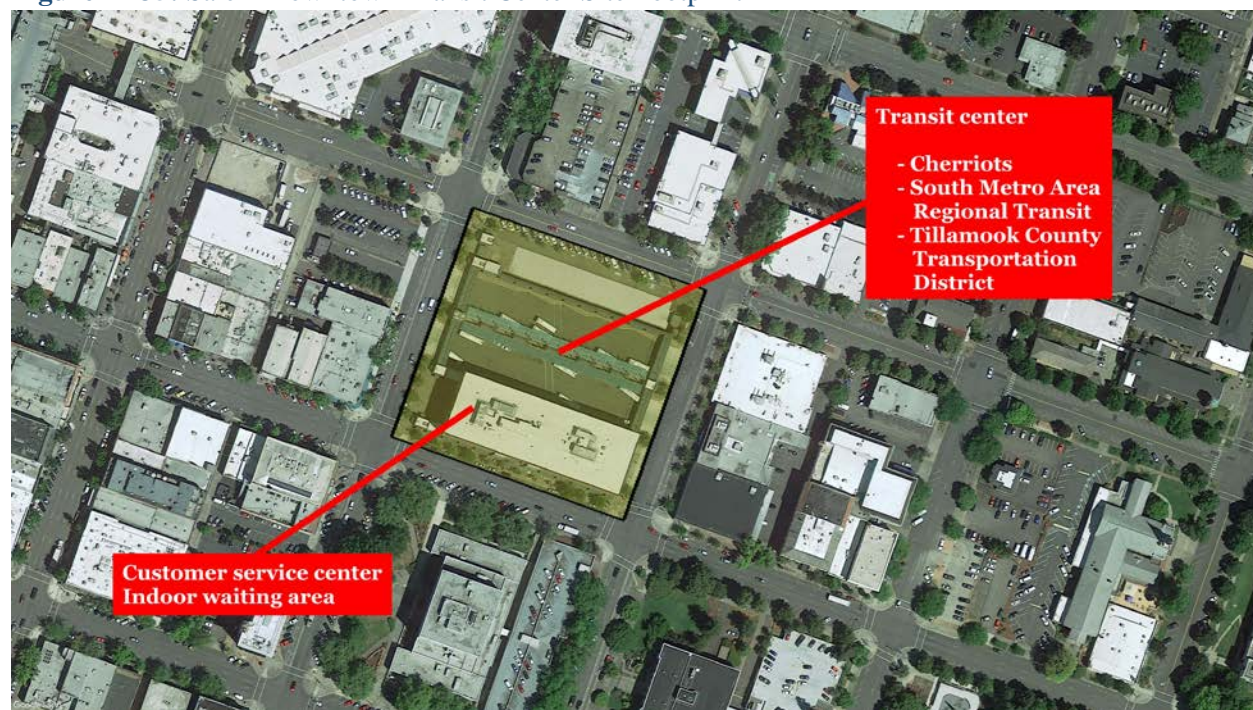
Figure M-33: Redmond Transit Hub Site Footprint



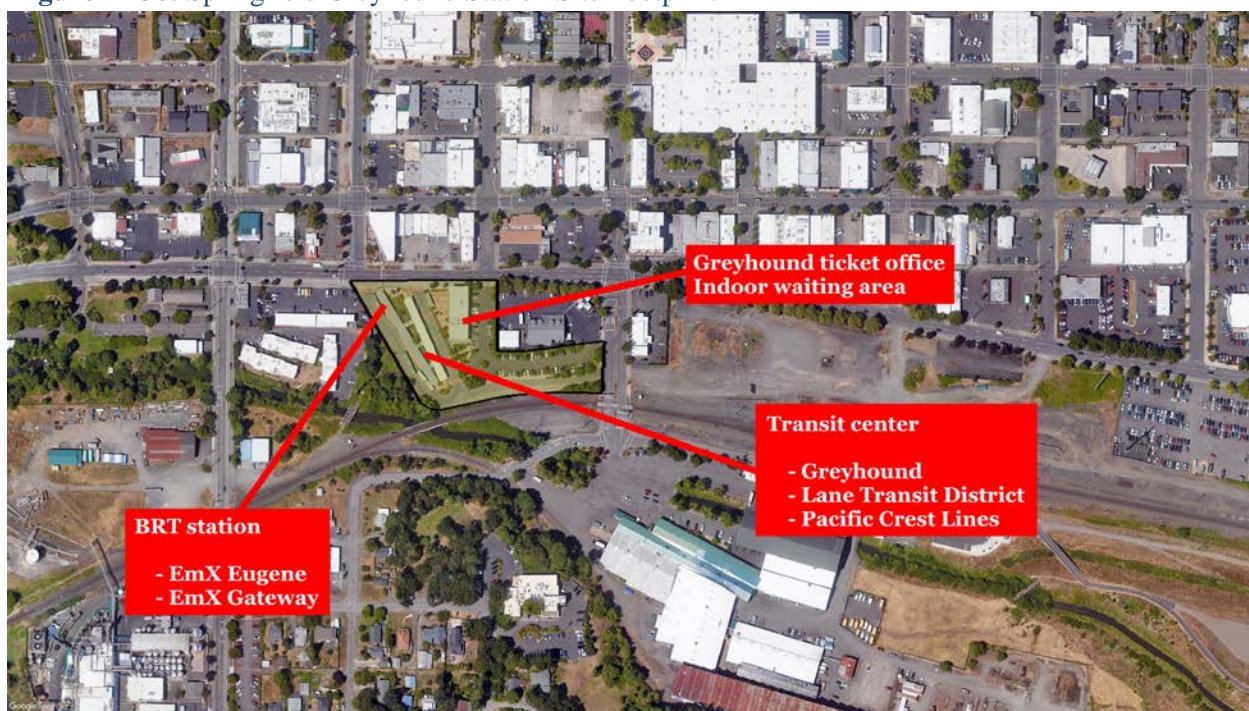
Map data: ©2019 Google

Figure M-34: Salem Amtrak Station Site Footprint

Map data: ©2019 Google

Figure M-35: Salem Downtown Transit Center Site Footprint

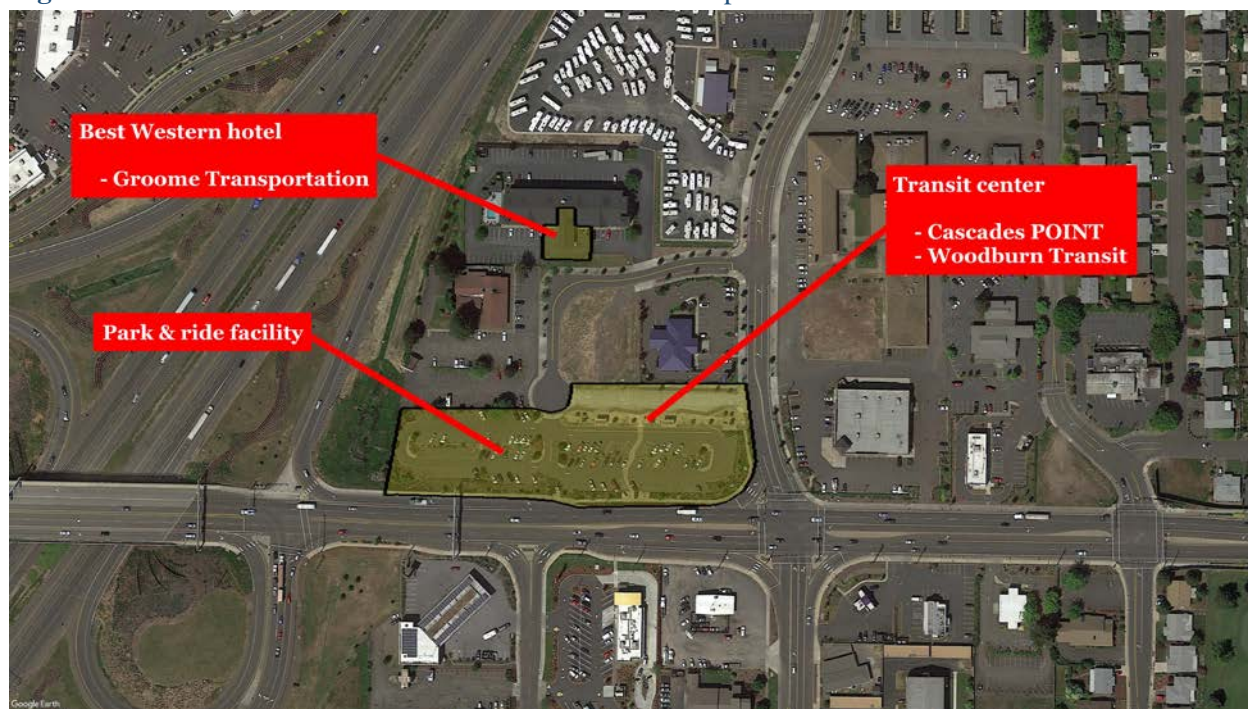
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Figure M-36: Springfield Greyhound Station Site Footprint

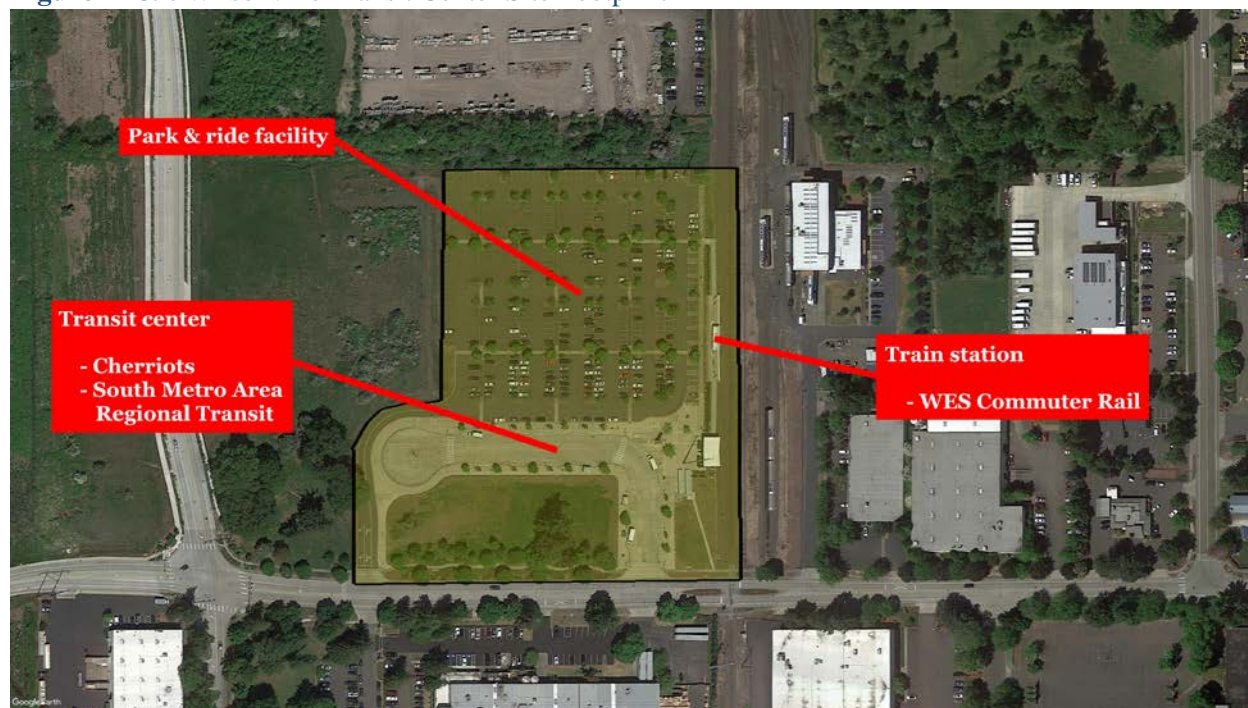
Map data: ©2019 Google

Figure M-37: Woodburn Hwy 211 & Hwy 214 Site Footprint

Map data: ©2019 Google

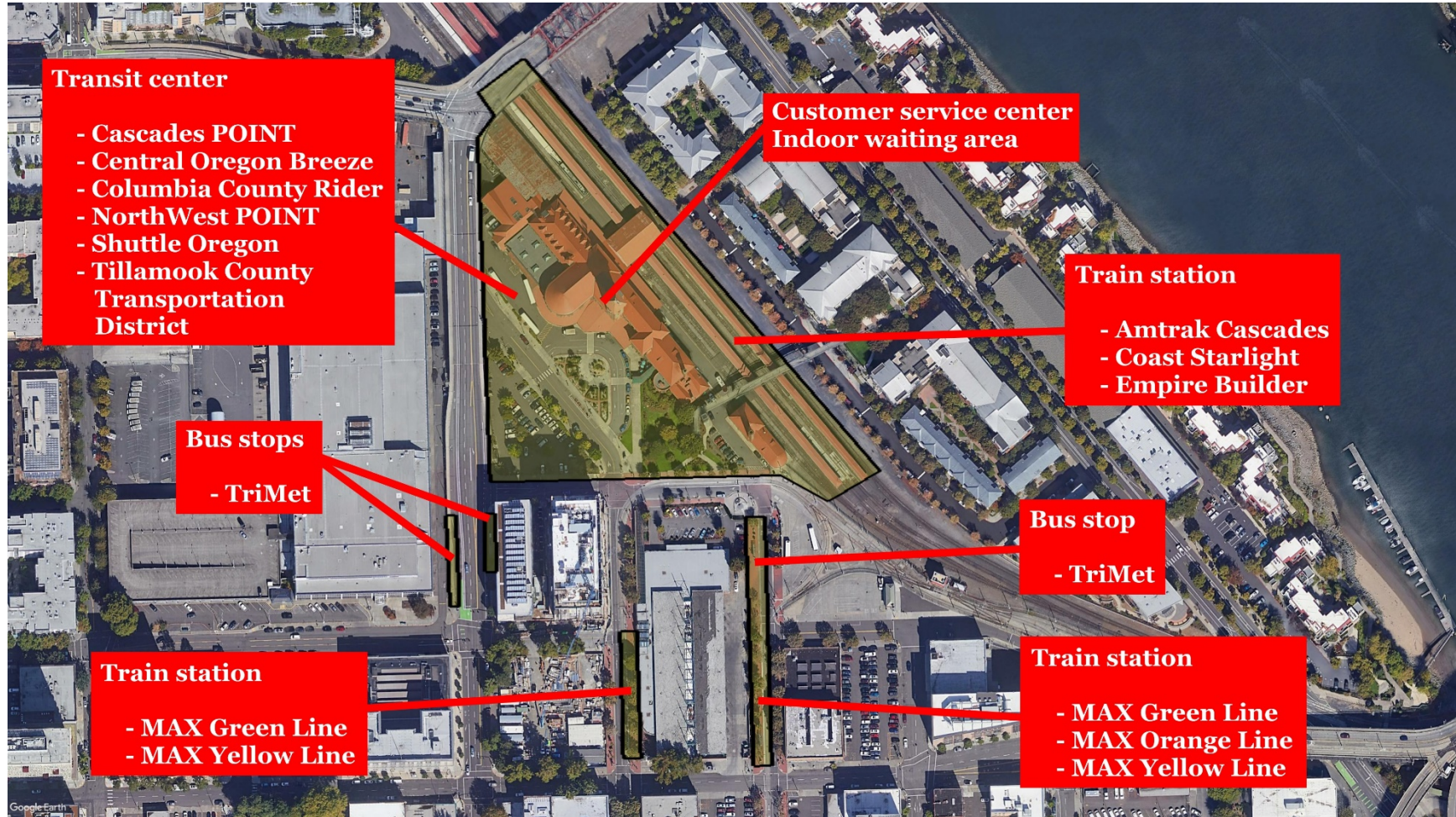
Figure M-38: Woodburn Memorial Transit Center Site Footprint

Map data: ©2019 Google

Figure M-39: Wilsonville Transit Center Site Footprint

Map data: ©2019 Google

Figure M-40: Union Station Site Footprint



Map data: ©2019 Google

Appendix N: Daily Regional Trips

Table N-1: Key Transit Hub Scheduling - Daily Regional Trips

Name	Agency	Route	Maximum Number of Daily Trips ²²
Albany Amtrak Station	Amtrak Cascades	Cascades	4
	Bolt Bus Oregon	Full Route	8
	Cascades POINT	Cascades	12
	Coast Starlight	Coast Starlight	2
	Lincoln County Transit	Coast to Valley Express	4
	Linn-Benton Loop	N/A	6
	Linn Shuttle	N/A	10
	Total		46
Albany Clay St at Heritage Mall	Linn-Benton Loop	Saturday Service	7
	Linn Shuttle	N/A	10
	Total		17
Albany Linn Benton Community College	Linn-Benton Loop	N/A	17
	Linn Shuttle	N/A	12
	Total		29
Astoria Transit Center	NorthWest POINT	NorthWest	2
	Pacific Transit	24	4
	Pacific Transit	50	4
	Sunset Empire Transportation District	10	17
	Sunset Empire Transportation District	15	2
	Sunset Empire Transportation District	101	12
	Sunset Empire Transportation District	Lower Columbia Connector	2
	Sunset Empire Transportation District	Pacific Connector	5
	Total		48

²² These figures represent the maximum number of daily trips, on the busiest day of the week, for each transit service. This table does not show the reduction in trips on different days of the week. Also, not all services operate their maximum number of trips on the same day of the week as their peers.

Name	Agency	Route	Maximum Number of Daily Trips
Banks	Columbia County Rider	6	4
	Ride Connection	WestLink	4
	Tillamook County Transportation District	5	4
	Total		12
Beaverton Sunset Transit Center	NorthWest POINT	NorthWest	4
	Tillamook County Transportation District	5	4
	TriMet	20	143
	TriMet	48	42
	TriMet	MAX Blue Line	200
	TriMet	MAX Red Line	144
	Total		537
Canby Transit Center	Canby Area Transit	99X	40
	South Clackamas Transportation District	Molalla to Canby	10
	South Metro Area Regional Transit	3X	12
	Total		62
Bend Hawthorne Station	Cascades East Transit	Commuter 24	9
	Cascades East Transit	Commuter 29	3
	Cascades East Transit	Commuter 30	3
	Eastern POINT	Eastern	1
	Pacific Crest Lines	Coos Bay to Bend	1
	Pacific Crest Lines	Redmond-Chemult	4
	People Mover	Monument to Bend	1
	People Mover	Prairie City to Bend	1
	Shuttle Oregon	N/A	1
	Total		24
Cannon Beach Midtown Transit Center	NorthWest POINT	NorthWest	4
	Sunset Empire Transportation District	20	30
	Sunset Empire Transportation District	21	16
	Sunset Empire Transportation District	Pacific Connector	5
	Tillamook County Transportation District	3	4
	Total		59

Name	Agency	Route	Maximum Number of Daily Trips
Corvallis 1st St and Washington Ave	Groome Transportation	N/A	42
	Total		42
Corvallis 9th St and Reiman Ave	Benton County Transportation	99 Express	6
	Linn-Benton Loop	N/A	7
	Total		13
Corvallis 15th St and Jefferson Way	Corvallis Transit System	Philomath Connection	8
	Linn-Benton Loop	N/A	16
	Total		24
Corvallis 26th St and Western Blvd	Benton County Transportation	Coast to Valley Express	1
	Corvallis Transit System	Philomath Connection	8
	Groome Transportation	N/A	42
	Lincoln County Transit	Coast to Valley Express	7
	Total		58
Corvallis Circle Blvd and 9th St	Benton County Transportation	99 Express	6
	Linn-Benton Loop	N/A	7
	Total		13
Corvallis Circle Blvd and Four Acre Place	Linn-Benton Loop	N/A	7
	Total		7
Corvallis Downtown Transit Center	Benton County Transportation	99 Express	3
	Benton County Transportation	Coast to Valley Express	3
	BoltBus Oregon	Short Line	2
	Corvallis Transit System	Philomath Connection	8
	Lincoln County Transit	Coast to Valley Express	7
	Linn-Benton Loop	N/A	18
	Total		41
Corvallis Good Samaritan Center	Benton County Transportation	99 Express	6
	Benton County Transportation	Coast to Valley Express	1
	Lincoln County Transit	Coast to Valley Express	2
	Total		9

Name	Agency	Route	Maximum Number of Daily Trips
Eugene Amtrak Station	Amtrak Cascades	Cascades	2
	Cascades POINT	Cascades	6
	Coast Starlight	Coast Starlight	2
	Diamond Express	N/A	3
	Pacific Crest Lines	Coos Bay to Bend	2
	Total		15
Eugene EmX Walnut Station	Diamond Express	N/A	6
	Groome Transportation	N/A	42
	Lane Transit District	91	2
	Lane Transit District	98	17
	Total		67
Grand Ronde	Caravan Airport Transportation	N/A	2
	Tillamook County Transportation District	60X	6
	Tillamook County Transportation District	70X	7
	Yamhill County Transit Area	22	14
	Total		29
Hillsboro Central Transit Center	Ride Connection	WestLink	2
	TriMet	48	31
	TriMet	57	152
	TriMet	MAX Blue Line	90
	Yamhill County Transit Area	33	5
	Total		280
Klamath Falls Amtrak Station	Coast Starlight	Coast Starlight	2
	Klamath Shuttle	Klamath Shuttle	2
	Sage Stage	Klamath Falls	1
	SouthWest POINT	Klamath Falls to Medford	1
	Total		6
La Grande Transit Center	Greyhound	Portland to Boise	1
	Kayak Public Transit	Arrow	3
	Northeast Oregon Public Transit	Baker Connector	1
	Northeast Oregon Public Transit	Wallowa Link	1
	Total		6

Name	Agency	Route	Maximum Number of Daily Trips
Milton-Freewater	City of Milton-Freewater	N/A	6
	Kayak Public Transit	Walla Walla Whistler	12
	People Mover	Monument to Walla Walla	2
	People Mover	Prairie City to Walla Walla	2
	Total		22
Medford Front Street Station	Greyhound	Redding to Seattle	6
	Josephine Community Transit	Commuter 100	5
	Rogue Valley Transportation District	1X	15
	Rogue Valley Transportation District	10	42
	Rogue Valley Transportation District	30	14
	SouthWest POINT	Medford to Brookings	1
	SouthWest POINT	Medford to Klamath Falls	1
	Total		84
Ontario	Eastern POINT	Eastern	1
	Greyhound	Portland to Boise	1
	People Mover	John Day to Ontario	1
	Total		3
PDX Transit Center	Blue Star Bus	N/A	28
	C-TRAN	67	8
	Caravan Airport Transportation	N/A	1
	Central Oregon Breeze	N/A	2
	Groome Transportation	N/A	21
	Shuttle Oregon	N/A	1
	TriMet	MAX Red Line	75
	Total		136
Philomath Applegate St and 11th St	Benton County Transportation	Coast to Valley Express	1
	Corvallis Transit System	Philomath Connection	8
	Lincoln County Transit	Coast to Valley Express	7
	Total		16

Name	Agency	Route	Maximum Number of Daily Trips
Philomath Main St and 14th St	Benton County Transportation	Coast to Valley Express	1
	Corvallis Transit System	Philomath Connection	8
	Lincoln County Transit	Coast to Valley Express	7
	Total		16
Portland Lloyd Center	BoltBus Oregon	Short Line	2
	BoltBus Oregon	Full Route	8
	C-TRAN	157	10
	TriMet	70	100
	TriMet	MAX Blue Line	219
	TriMet	MAX Green Line	156
	TriMet	MAX Red Line	147
	Total		642
Portland 6th Ave and Taylor St	Blue Star Bus	N/A	28
	Columbia County Rider	1	9
	C-TRAN	105	52
	C-TRAN	134	22
	C-TRAN	164	49
	C-TRAN	177	8
	C-TRAN	199	23
	TriMet	2	175
	TriMet	9	168
	TriMet	12	149
	TriMet	30	2
	TriMet	35	87
	TriMet	36	5
	TriMet	54	73
	TriMet	56	74
	TriMet	94	68
	TriMet	99	31
	TriMet	MAX Blue Line	199
	TriMet	MAX Red Line	144
	Total		1366

Name	Agency	Route	Maximum Number of Daily Trips
Redmond Airport	Central Oregon Breeze	N/A	2
	Pacific Crest Lines	Redmond-Chemult	2
	People Mover	Monument to Bend	2
	People Mover	Prairie City to Bend	2
	Total		8
Redmond Transit Hub	Cascades East Transit	Commuter 22	5
	Cascades East Transit	Commuter 24	9
	Cascades East Transit	Commuter 26	5
	Cascades East Transit	Commuter 28	3
	Central Oregon Breeze	N/A	2
	People Mover	Monument to Bend	2
	People Mover	Prairie City to Bend	2
	Shuttle Oregon	N/A	1
	Total		29
Salem Amtrak Station	Amtrak Cascades	Cascades	4
	BoltBus Oregon	Short Line	4
	Cascades POINT	Cascades	12
	Coast Starlight	Coast Starlight	2
	Greyhound	Redding to Seattle	6
	Tillamook County Transportation District	60X	6
	Total		34
Salem Downtown Transit Center	Cherriots	1X	6
	Cherriots	10X	8
	Cherriots	20X	5
	Cherriots	30X	4
	Cherriots	40X	8
	Cherriots	50X	4
	South Metro Area Regional Transit	1X	10
	Tillamook County Transportation District	60X	3
	Tillamook County Transportation District	70X	4
	Total		52

Name	Agency	Route	Maximum Number of Daily Trips
Springfield Greyhound Station	Greyhound	Redding to Seattle	6
	Lane Transit District	91	2
	Pacific Crest Lines	Coos Bay to Bend	2
	Total		10
Union Station	Amtrak Cascades	Cascades	6
	Cascades POINT	Cascades	6
	Central Oregon Breeze	N/A	1
	Coast Starlight	Coast Starlight	2
	Columbia County Rider	1	2
	Empire Builder	Empire Builder	1
	NorthWest POINT	NorthWest	2
	Shuttle Oregon	N/A	2
	Tillamook County Transportation District	5	4
	TriMet	291	2
	TriMet	MAX Green Line	153
	TriMet	MAX Orange Line	78
	Total		259
Wilsonville Transit Center	Cherriots	1X	6
	South Metro Area Regional Transit	1X	10
	South Metro Area Regional Transit	2X	26
	South Metro Area Regional Transit	3X	12
	WES Commuter Rail	N/A	16
	Total		70
Woodburn Hwy 211 & Hwy 214	Canby Area Transit	99X	14
	Cherriots	10X	8
	Cherriots	20X	5
	Total		27
Woodburn Memorial Transit Center	Cascades POINT	Cascades	9
	Groome Transportation	N/A	42
	Total		51

Reduced Service Days

Table N-2: Key Transit Hubs with Reduced Service Days

Hub	Reduced Service	No Service
Albany Amtrak Station	Sunday	
Albany Clay St at Heritage Mall	Monday-Friday	Sunday
Albany Linn Benton Community College	Saturday	Sunday
Astoria Transit Center	Saturday, Sunday	
Banks	Saturday, Sunday	
Bend Hawthorne Station	Sunday	
Canby Transit Center	Saturday	Sunday
Cannon Beach Midtown Transit Center	Monday-Friday	
Corvallis 9th St & Reiman Ave	Saturday	Sunday
Corvallis 15th St & Jefferson Way	Saturday	Sunday
Corvallis Circle Blvd & 9th St	Saturday	Sunday
Corvallis Circle Blvd & Four Acre Place		Sunday
Corvallis Downtown Transit Center	Sunday	
Corvallis Good Samaritan Center	Saturday, Sunday	
Eugene EmX Walnut Station	Saturday, Sunday	
Grand Ronde	Saturday, Sunday	
Hillsboro Central Transit Center	Saturday, Sunday	
La Grande Transit Center	Saturday, Sunday	
Medford Front Street Station	Saturday, Sunday	
Milton-Freewater	Monday, Wednesday-Saturday	Sunday
Ontario	Monday-Thursday, Saturday, Sunday	
Philomath Applegate St & 11th St	Sunday	
Philomath Main St & 14th St	Sunday	
Portland 6th Ave & Taylor St	Saturday, Sunday	
Redmond Airport	Tuesday, Thursday, Saturday, Sunday	
Redmond Transit Hub	Saturday, Sunday	
Salem Downtown Transit Center	Saturday, Sunday	
Wilsonville Transit Center		Saturday, Sunday
Woodburn Hwy 211 & Hwy 214		Sunday
KTHs with Reduced Service Days	26	
KTHs with No Service Days		10

As the chart indicates, weekdays generally have more services operating and more daily regional trips than weekends. Reduced and no service days are typically on Saturday or Sunday. Out of the 40 KTHs, only 11 of them (27.5 percent) have consistent levels of service throughout the week. 26 KTHs (65 percent) have at least one day with reduced service levels. 10 KTHs (25 percent) have a day with absolutely no transit service.

Appendix O: AllTransit™ Data

Table O-1: AllTransit™ Scores

Hub	Economy	Health		Transit Quality		
	Transportation Costs	Commute by Walking	Commute by Biking	Transit Performance Score (0-10)	Transit Connectivity Index (0-100)	Households Underserved by Transit
Albany Amtrak Station	25.8%	2.3%	1.8%	5.8	4	31.6%
Albany Clay St at Heritage Mall	25.1%	9.3%	1.5%	3.0	2	31.6%
Albany Linn Benton Community College	29.9%	5.2%	0.7%	1.9	1	31.6%
Astoria Transit Center	24.0%	45.0%	0%	3.9	3	No data ²³
Banks	27.9%	1.3%	0%	0.7	0	No data
Beaverton Sunset Transit Center	19.3%	0%	0.8%	9.5	24	17.3%
Bend Hawthorne Station	22.9%	8.2%	3.1%	7.3	6	10.1%
Canby Transit Center	22.7%	9.3%	5.0%	3.5	2	13.2%
Cannon Beach Midtown Transit Center	27.9%	28.9%	0%	3.2	2	No data
Corvallis 1st St & Washington Ave	21.0%	20.8%	17.1%	6.5	5	21.9%
Corvallis 9th St & Reiman Ave	24.2%	22.4%	29.5%	5.0	4	21.9%
Corvallis 15th St & Jefferson Way	19.8%	54.2%	11.3%	7.0	6	21.9%
Corvallis 26th St & Western Blvd	19.8%	54.2%	11.3%	7.0	6	21.9%
Corvallis Circle Blvd & 9th St	20.3%	4.4%	7.8%	5.7	4	21.9%
Corvallis Circle Blvd & Four Acre Place	25.3%	1.5%	0%	3.8	2	21.9%
Corvallis Downtown Transit Center	21.0%	20.8%	17.1%	6.5	5	21.9%
Corvallis Good Samaritan Center	26.9%	4.5%	18.3%	3.9	2	21.9%
Eugene Amtrak Station	19.3%	34.1%	10.2%	9.1	16	16.2%
Eugene EmX Walnut Station	22.2%	28.0%	15.1%	8.3	9	16.2%
Grand Ronde	30.2%	0.7%	0.60%	0.9	0	No data

²³ For several metrics, including “Households Underserved by Transit”, limited or no data is available. AllTransit’s focus is on “all major agencies in regions with populations greater than 100,000 as well as a large number of smaller regions and agencies.” Data for smaller, less urban cities and regions in Oregon, though available, may not be as accurate as larger urban areas with more data sources.

Hub	Economy	Health		Transit Quality		
	Transportation Costs	Commute by Walking	Commute by Biking	Transit Performance Score (0-10)	Transit Connectivity Index (0-100)	Households Underserved by Transit
Hillsboro Central Transit Center	19.5%	3.9%	0%	9.4	23	5.8%
Klamath Falls Amtrak Station	25.2%	5.0%	0%	5.6	4	No data
La Grande Transit Center	25.4%	19.8%	0%	3.2	2	No data
Medford Front Street Station	21.4%	29.6%	0%	7.7	8	22.8%
Milton-Freewater	25.5%	9.0%	0%	1.7	1	No data
Ontario	30.9%	0%	0%	1.9	1	No data
PDX Transit Center	21.7%	30.5%	0%	8.9	12	3.2%
Philomath Applegate St & 11th St	27.7%	5.3%	6.0%	1.8	1	No data
Philomath Main St & 14th St	27.7%	5.3%	6.0%	1.8	1	No data
Portland 6th Ave & Taylor St	12.7%	37.4%	5.2%	10.0	64	3.2%
Portland Lloyd Center	16.1%	15.2%	16.0%	9.9	42	3.2%
Redmond Airport	22.6%	1.3%	0%	1.6	1	No data
Redmond Transit Hub	22.6%	1.3%	0%	1.6	1	No data
Salem Amtrak Station	21.6%	14.6%	0%	8.0	9	1.2%
Salem Downtown Transit Center	18.5%	23.5%	3.5%	9.2	18	1.2%
Springfield Greyhound Station	29.2%	2.0%	0%	5.9	4	0%
Union Station	13.2%	27.5%	10.7%	9.9	49	3.2%
Wilsonville Transit Center	22.9%	1.4%	2.3%	7.7	8	6.4%
Woodburn Hwy 211 & Hwy 214	26.3%	2.8%	3.4%	3.4	2	13.9%
Woodburn Memorial Transit Center	29.1%	0%	0%	4.3	3	13.9%
Mean	23.4%	14.8%	5.0%	5.4	8.9	15.0%
Median	22.9%	8.6%	2.0%	5.7	4.0	16.2%

Data Source: Center for Neighborhood Technology 2019, AllTransit™, alltransit.cnt.org

AllTransit™ is a database of stop, route and frequency information for over 900 transit agencies across the country. Its purpose is to increase understanding of the value of transit by analyzing the social benefits of quality transit service through health, equity and economic development. It is created using publicly-available GTFS data.

Table O-1 displays the results of some of these metrics and includes several interesting findings.

Average transportation costs for individuals who live around the KTHs is 23.4 percent of their budget. Transportation costs for KTHs with more service frequency and more available routes are lower than those with less frequency and fewer routes. When more transit options are available, it is easier for individuals to travel without a car, which is a more expensive option than transit fares.

Health data in the table shows the number of individuals commuting to work by walking or biking. The variance between KTH peers and between mode is quite significant. The location of the KTH, both within the state and within a city, and the amount of useful and safe transportation infrastructure plays a substantial role in how many people walk and bike to work. Across all KTHs, the median number of people who walk to work is 8.6 percent, the median number who bike is 2 percent.

Transit quality is a measurement of not just the presence of transit, but the frequency of service and connections to key activity centers. On average, the KTHs have a transit performance score of 5.4 (on a scale of 1 to 10).

The transit connectivity index is a national ranking of all transit stops in the U.S. Any hub that scores highly is significant on a national scale and is comparable to other high-quality transit hubs around the country. The last metric finds the number of households that are underserved by transit, where transit supply does not meet demand. The average number of households underserved by transit is 15 percent.

Methodology

All Transit™ and its parent company, Center for Neighborhood Technology (CNT), assemble their dataset from GTFS data and U.S. census data. Each metric is based on the census block group in which the KTH is located, designated by street address (excluding “Households Underserved by Transit”). The primary data source is AllTransit’s internal database. Supplementary sources are:

- **Transportation Costs:** Percent of income for average transportation costs for block groups within one-half mile of transit.
 - **Supplementary Data Source:** CNT’s Housing + Transportation Affordability Index, American Community Survey 5-year Estimate (2017)

- **Commute by Walking:** Workers who live within one-half mile of transit and commute by walking.
 - **Supplementary Data Source:** American Community Survey 5-year Estimate (2017)
- **Commute by Biking:** Workers who live within one-half mile of transit and commute by biking.
 - **Supplementary Data Source:** American Community Survey 5-year Estimate (2017)
- **Transit Performance Score (0-10):** Overall transit score that looks at connectivity, access to land area and jobs, and frequency of service.
- **Transit Connectivity Index (0-100):** Based on the number of bus routes and train stations within walking distance for households in a given block group scaled by the frequency of service.
 - National statistic for every block group in the U.S. Zero is assigned to block groups that have no connectivity to transit. The most-connected block group in the country is given a score of 100.
- **Households Underserved by Transit:** Percent of households underserved by transit.
 - **Data Source:** AllTransit™ data: Gap Finder tool. Based on the city in which the KTH is located. City broken down into transit areas where service meets the standard and areas where transit service is below the standard (market does not meet demand). “No data” indicates that the city in question has a very low transit market therefore AllTransit™ does not calculate whether it underserved or not.
- **Note:** The first five data points come from AllTransit™ Metrics and are based on the census block group of the input address. Although they are comparable, they do not represent the same one-half mile KTH radius that has been used elsewhere in this report. The last data point, “Households Underserved by Transit” is a citywide metric.

See [AllTransit](#) for additional information about methodology and data.

Appendix P: Zero-Car Household Data

Note: There is no distinction between households that *cannot* own a car, either through income, age or ability, and discretionary households that *choose* not to.

Question Methodology

- What is the percentage of zero-car households citywide?
 - Data obtained from the U.S. Census Bureau.²⁴²⁵ The table contains citywide data on the total number of households and the number of households with no vehicle available. The 2017 dataset was used.
- What is the percentage of zero-car households of the surrounding area (Census block groups)?
 - The methodology for this question is nearly identical to the National Walkability Index question in [Appendix H](#). Data obtained from the U.S. Environmental Protection Agency’s “Smart Location Mapping” database²⁶. The “Smart Location Database” was used which provided shapefiles of every Census Block Group (CBG) in the U.S. Google Earth is then used to determine which CBGs are within a KTH radius. Each CBG provided its own “PCT_AO0” data point which estimated the percentage of households in the block that own zero automobiles. The data points were collected and an average was calculated to answer this question. This average can be compared with the citywide statistic from the previous question.
 - However, two important caveats exist for this method. First, like the National Walkability Index, a block group can contain both an urban portion and a rural portion which can skew the data.
 - Second, some block groups, particularly rural ones, have a 0 percent entry for households with no cars. This may not be entirely accurate and could be due to a low sample size or statistical error. Nevertheless, blocks with 0 percent will skew the average lower.

²⁴ [Census Data - https://data.census.gov/cedsci/](https://data.census.gov/cedsci/)

²⁵ “Household Size by Vehicles Available. Table ID B08201.

²⁶ [EPA Smart Location Mapping - https://www.epa.gov/smartgrowth/smart-location-mapping](https://www.epa.gov/smartgrowth/smart-location-mapping)

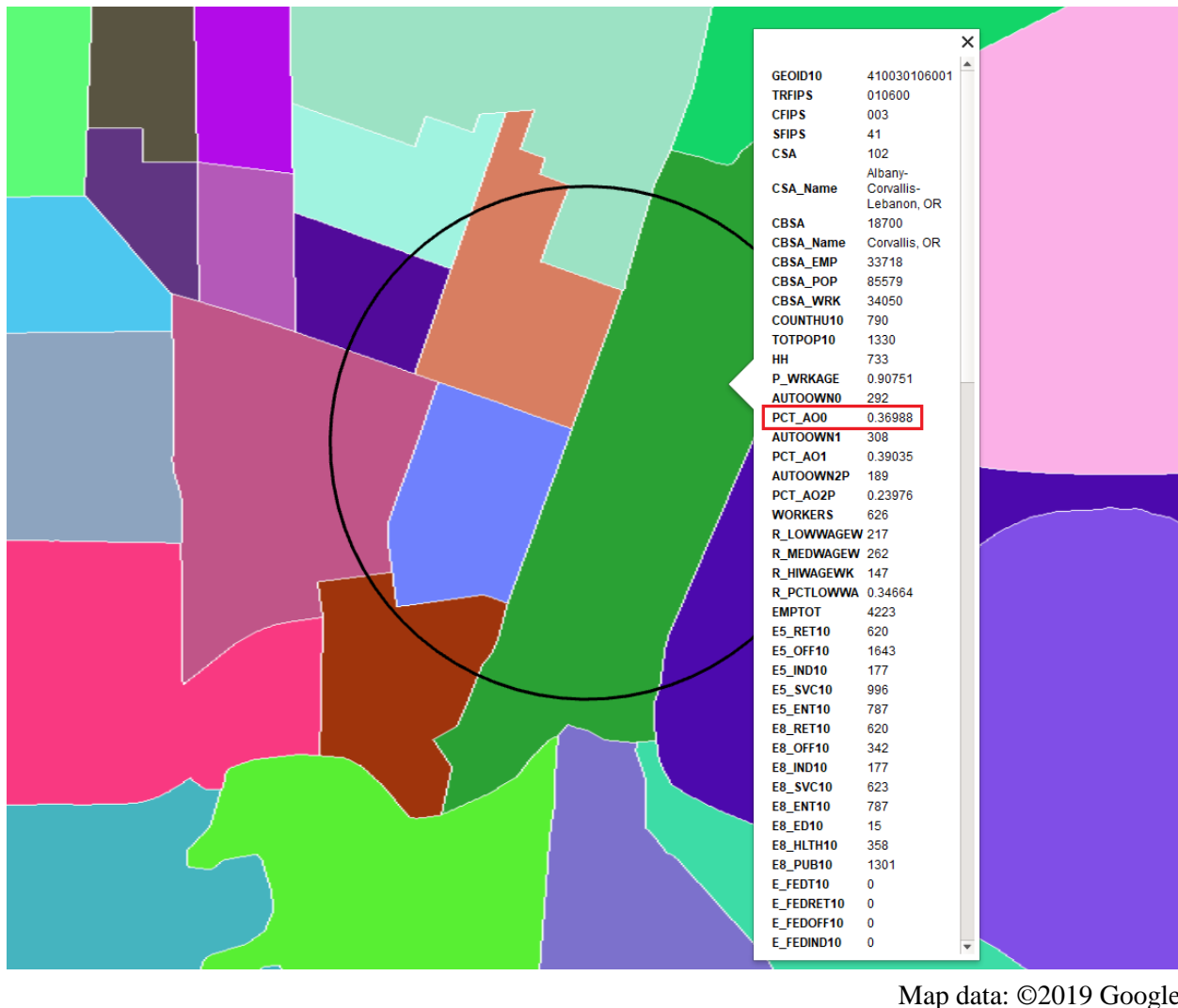
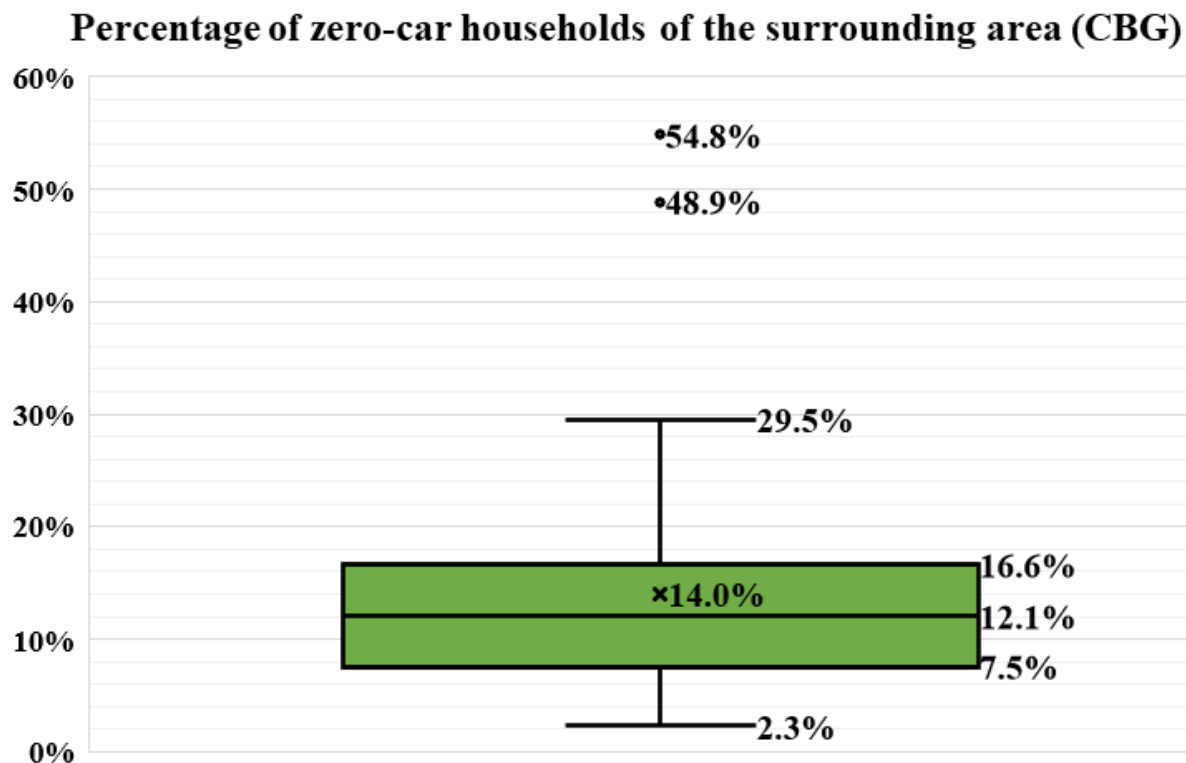
Figure P-1: Zero-Car Household Census Block Group Example

Figure P-1 shows the CBGs in the Corvallis Downtown Transit Center radius. There are 10 blocks in the radius (the tenth block is the pink one to the far right behind the pop-up window). The zero-car household data point for the middle green block is 37 percent. The average of all 10 blocks is 17 percent.

- What is the zero-car household concentration of the surrounding area (Census block groups)?
 - Using the estimates from the previous question, a box and whisker plot was created to group and rank the data. Figure P-2 displays the concentration categories and values. Zero-car households is in itself a low value data point so it makes sense that most of the observations are between 2.29 and 29.55 percent. The two outliers of approximately 50 percent come from the Portland metropolitan area, downtown specifically. They are not statistically significant and any other city or place in Oregon can be expected to have a value between quartiles 1-4.

Figure P-2: Zero-Car Household Box Plot Legend

Zero-Car Ownership	Concentration	Summary
2.3%-7.5%	Very Low	Minimum to Q1 - 25%
7.6%-12.1%	Low	Q1 to Median - 25%
12.2%-16.6%	Medium	Median to Q3 - 25%
16.7%-29.6%	High	Q3 to Maximum - 25%
29.7% <	Very High	Outliers

Figure P-3: Percentage of Zero-Car Households of the Surrounding Area (CBGs)

Data Results

The citywide and CBG datasets for zero-car households are compared in the table below.

Table P-1: Key Transit Hub Zero-Car Household Data

Hub	Citywide	CBG Mean	CBG Minimum	CBG Maximum	Number of CBGs
Albany Amtrak Station	6.2%	8.7%	0%	21.5%	10
Albany Clay St at Heritage Mall	6.2%	13.6%	6.7%	20.9%	6
Albany Linn Benton Community College	6.2%	6.3%	6.1%	6.5%	2
Astoria Transit Center	10.9%	11.3%	1.5%	27.1%	6
Banks	1.6%	4.4%	4.4%	4.4%	1
Beaverton Sunset Transit Center	9.2%	6.5%	0%	11.9%	5
Bend Hawthorne Station	3.9%	13.6%	4.0%	45.7%	6
Canby Transit Center	5.3%	6.7%	0%	27.7%	8
Cannon Beach Midtown Transit Center	6.7%	10.7%	4.0%	15.7%	3
Corvallis 1st St & Washington Ave	9.9%	16.4%	0%	46.5%	9
Corvallis 9th St & Reiman Ave	9.9%	17.9%	0%	46.1%	9
Corvallis 15th St & Jefferson Way	9.9%	22.5%	3.2%	46.5%	11
Corvallis 26th St & Western Blvd	9.9%	13.7%	2.1%	46.5%	6
Corvallis Circle Blvd & 9th St	9.9%	15.0%	3.2%	46.1%	5
Corvallis Circle Blvd & Four Acre Pl.	9.9%	17.9%	4.2%	46.1%	4
Corvallis Downtown Transit Center	9.9%	17.0%	0%	46.5%	10
Corvallis Good Samaritan Center	9.9%	5.6%	1.3%	9.7%	4
Eugene Amtrak Station	11.5%	22.8%	4.5%	40.9%	12
Eugene EmX Walnut Station	11.5%	16.8%	0%	66.9%	6
Grand Ronde	5.3%	7.3%	7.3%	7.3%	1
Hillsboro Central Transit Center	6.7%	9.1%	0%	34.5%	8
Klamath Falls Amtrak Station	12.0%	12.9%	0%	39.7%	9
La Grande Transit Center	9.0%	16.5%	3.8%	40.8%	8
Medford Front Street Station	9.7%	14.0%	0%	28.2%	11
Milton-Freewater	14.8%	9.3%	0%	19.0%	5
Ontario	16.4%	11.3%	7.0%	15.5%	2
PDX Transit Center	14.0%	10.7%	10.7%	10.7%	1
Philomath Applegate St & 11th St	6.1%	8.1%	0%	16.0%	4
Philomath Main St & 14th St	6.1%	8.1%	0%	16.0%	4
Portland 6th Ave & Taylor St	14.0%	54.8%	6.0%	87.4%	16
Portland Lloyd Center	14.0%	29.6%	5.7%	47.8%	9
Redmond Airport	5.1%	2.3%	2.3%	2.3%	1
Redmond Transit Hub	5.1%	5.7%	0%	12.8%	6

Data Source: U.S. Environmental Protection Agency
Citywide: 2017 American Community Survey - CBG: 2010 American Community Survey

Hub	Citywide	CBG Mean	CBG Minimum	CBG Maximum	Number of CBGs
Salem Amtrak Station	8.0%	16.7%	0%	32.9%	10
Salem Downtown Transit Center	8.0%	14.6%	1.2%	32.9%	8
Springfield Greyhound Station	9.3%	12.9%	4.5%	27.9%	7
Union Station	14.0%	48.9%	10.3%	87.4%	9
Wilsonville Transit Center	5.4%	9.5%	0%	15.8%	3
Woodburn Hwy 211 & Hwy 214	6.4%	2.6%	0%	5.6%	5
Woodburn Memorial Transit Center	6.4%	5.9%	0%	29.4%	7
Mean	8.8%	14.0%	2.6%	30.8%	6.4
Median	9.2%	12.1%	1.4%	28.0%	6

Data Source: U.S. Environmental Protection Agency
Citywide: 2017 American Community Survey - CBG: 2010 American Community Survey

The first column of Table P-1 shows the percentage of households within a city who do not own a vehicle. This is a citywide statistic. On average, 9 percent of households do not own a car in cities with KTHs. The next columns pull data from the EPA's census block groups and represent statistics in and around KTH radiuses. On average, there are 6 block groups within a radius. Some KTHs have only a single block group compared to a dense area like downtown Portland can have 16.

Significant discrepancies emerge when the CBG means are compared against the citywide figures. For example, in Portland, the citywide statistic is 14 percent compared to 30 to 55 percent in the area around Portland's KTH. The minimum and maximum columns show the substantial changes that can occur within a small 1-mile area.

According to the CBG dataset and ignoring the two Portland outliers of 50 percent, the area around a hub can expect between 2 to 30 percent of households to be car-free. Across Oregon, an average of 14 percent of households near KTHs do not own a vehicle.

Appendix Q: Title VI Data

Title VI and demographic information helps understand the population that lives and works around Oregon's KTHs²⁷. This data was obtained from the TNEXT on-map report and the U.S. Census Bureau. Box plots are used extensively – they are a statistical method for graphically depicting groups of numerical data through quartiles. The “concentration” of any metric is relative to Oregon data.

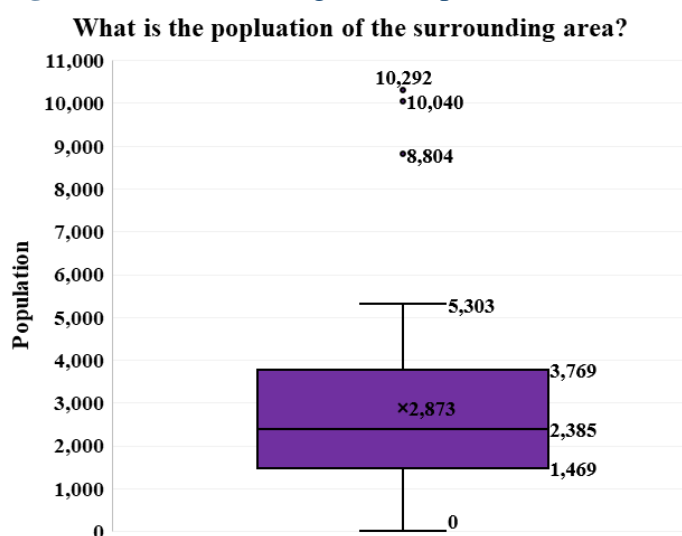
The first questions look at the population and population concentration of the surrounding area using the standard one-half mile radius catchment area.

On average, **2,873 persons** live within one-half mile of an Oregon KTH. However, each hub is different, so depending on the hub, there may be as few as zero persons living within walking distance or as many as 5,300. The three outliers are all located in the Portland Metropolitan Area but are not directly comparable to other population concentrations in the state.

Figure Q-1: Population of Surrounding Area Box Plot Legend

Population	Concentration	Summary
0-1,469	Very Low	Minimum to Q1 ²⁸ - 25%
1,470-2,385	Low	Q1 to Median - 25%
2,386-3,769	Medium	Median to Q3 - 25%
3,770-5,303	High	Q3 to Maximum - 25%
5,304<	Very High	Outliers

Figure Q-2: Surrounding Area Population



²⁷ Results are based on 39 of the 40 KTHs. Data was unavailable for Portland Lloyd Center. Because of its location in a dense area of downtown Portland, if this hub was included in the analysis it would substantially skew the results.

²⁸ Q1: Quartile 1, Q3: Quartile 3

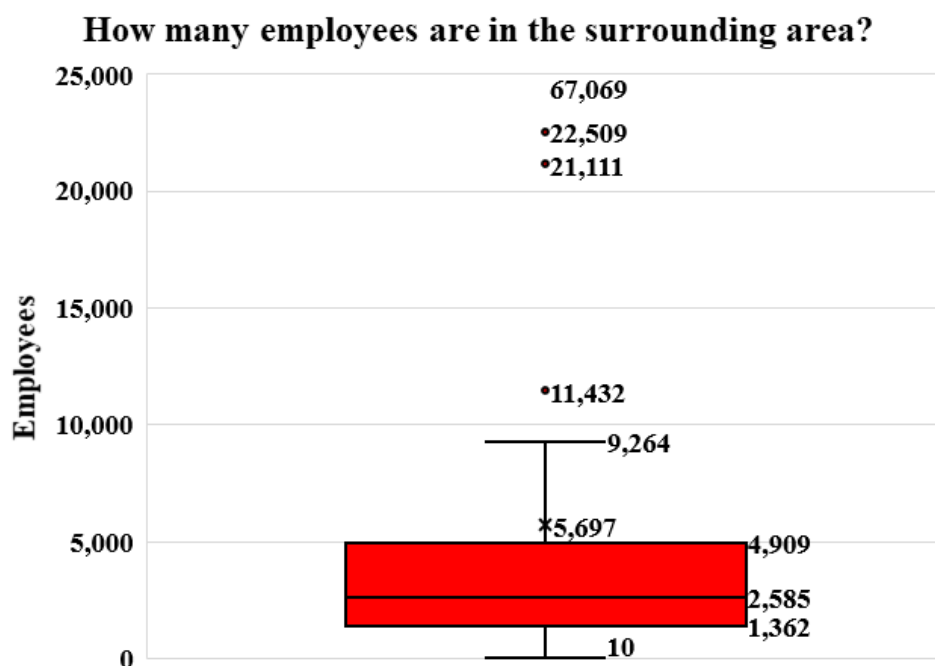
The next questions use data from the Census Bureau's Commuting Flows and Residence-Workplace dataset²⁹. Initially, this shows information about the employee population and concentration. This contains information about workers' residence location.

On average there are **5,697 employees** living within a one-half mile radius of a KTH. However, the median number is only **2,585 employees**, with a low of 10 and a high of 9,264. Four outliers skew the data, and the average, much higher. These outliers represent the downtown areas of Portland, Salem and Eugene.

Figure Q-3: Employees in Surrounding Area Box Plot Legend

Employees	Concentration	Summary
10-1,362	Very Low	Minimum to Q1 - 25%
1,363-2,585	Low	Q1 to Median - 25%
2,586-4,909	Medium	Median to Q3 - 25%
4,910-9,264	High	Q3 to Maximum - 25%
9,265<	Very High	Outliers

Figure Q-4: Employees in Surrounding Area



²⁹ [United State Census Bureau Commuting Flows.](https://www.census.gov/topics/employment/commuting/guidance/flows.html)

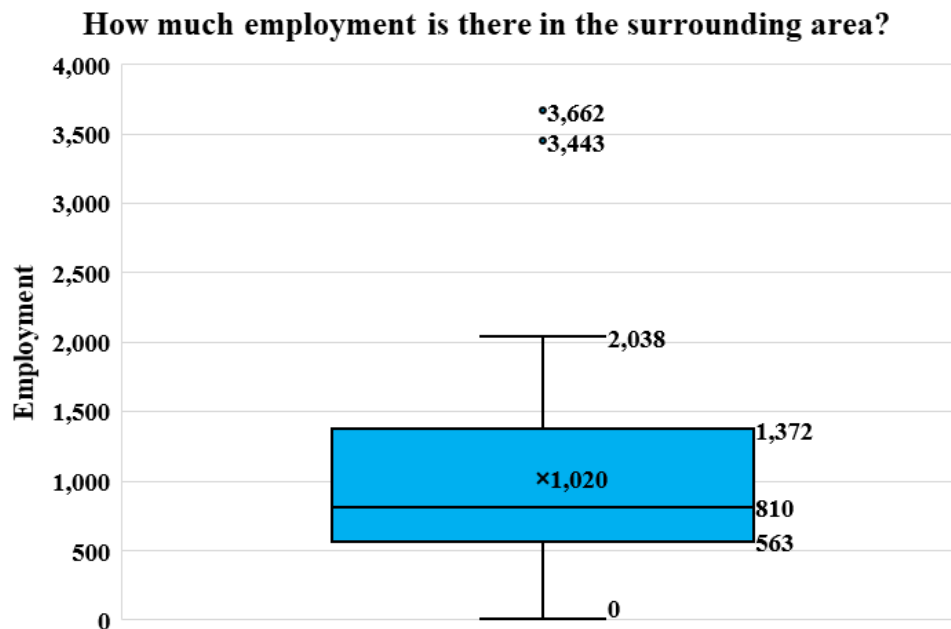
<https://www.census.gov/topics/employment/commuting/guidance/flows.html>

The amount of employment in the surrounding area contains information on workers' workplace location. On average, there are **1,020 workers** at their workplace location around the KTHs. The median count is slightly lower at **810 workers**. The two outliers represent the downtown Portland area.

Figure Q-5: Employment in Surrounding Area Box Plot Legend

Employment	Concentration	Summary
0-563	Very Low	Minimum to Q1 - 25%
564-810	Low	Q1 to Median - 25%
811-1,372	Medium	Median to Q3 - 25%
1,373-2,038	High	Q3 to Maximum - 25%
2,039<	Very High	Outliers

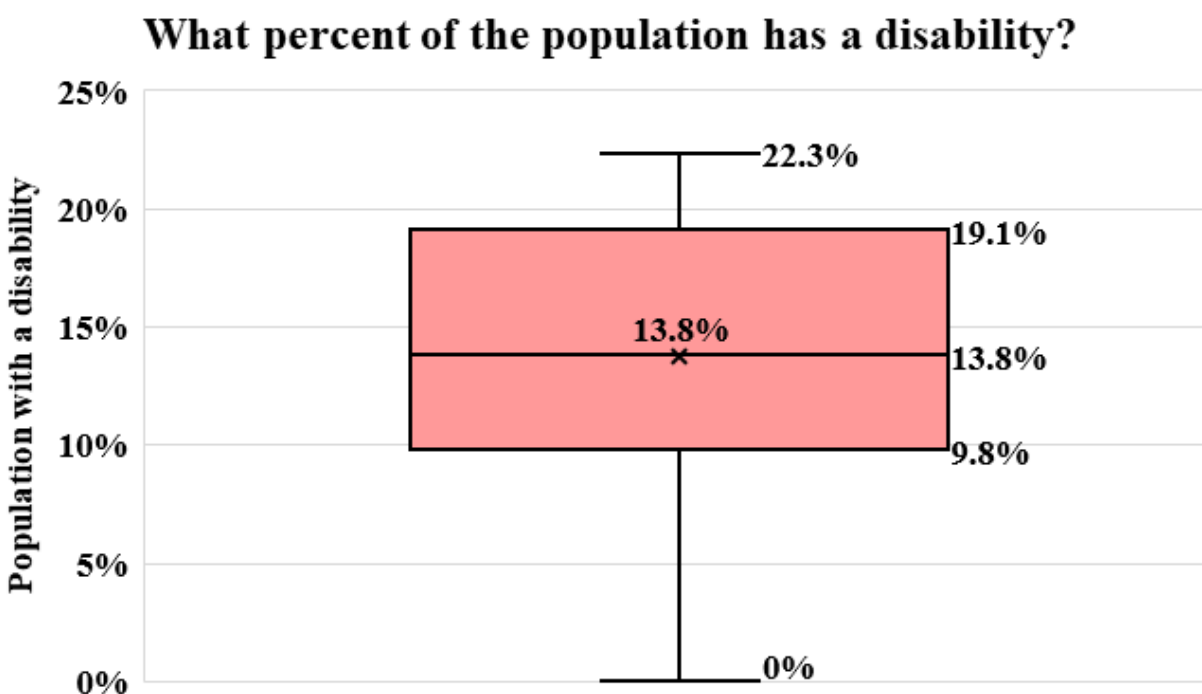
Figure Q-6: Employment in Surrounding Area



The last datasets³⁰ show the percentage of the population with a disability, living below the poverty line, or 65 years old and above. Any one of these conditions can greatly influence how much a person relies on public transit for most or all of their transportation needs. If these people live within a one-half mile of a KTH, they can more easily access transit services.

On average, **14.5 percent** of the population around a KTH has a disability. As the box plot shows, 75 percent of the KTHs have a nearby population of persons with a disability of anywhere between 9.8 percent and 22.3 percent. In other words, most of the time, one in ten or two in ten persons around a KTH has a disability.

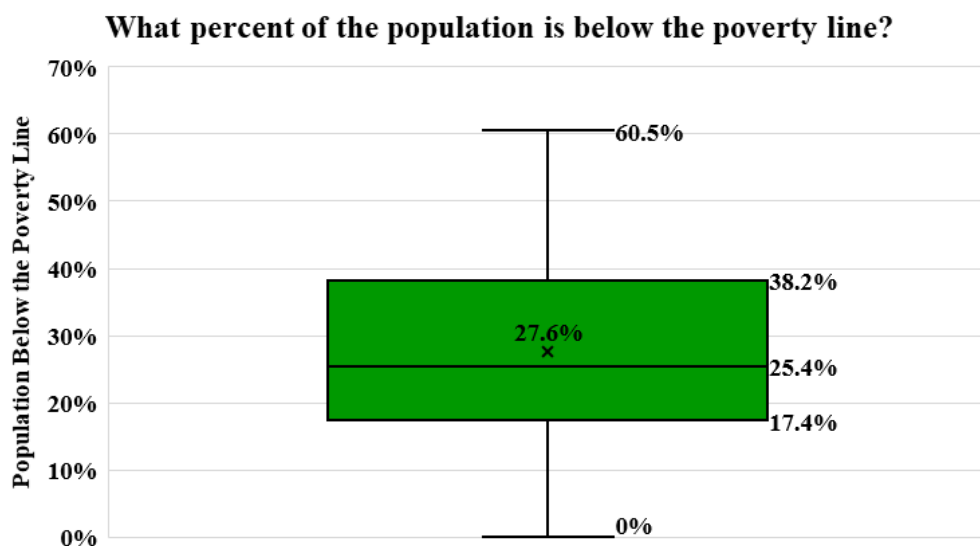
Figure Q-7: Individuals with Disabilities



³⁰ These analyses contain data from 37 of the 40 KTHs. Data for Portland Lloyd Center was not available. In addition, PDX Transit Center and Redmond Airport are excluded since there is no population within a one-half mile radius of these locations.

To measure income, an average of **29.1 percent** of persons around KTHs live below the federal poverty line. This varies greatly across the state because the region, city, or neighborhood of a KTH plays a huge role in the amount of people living in poverty. A caveat is that the box plot is skewed higher due to the number of KTHs in Corvallis near Oregon State University. Nearly half of the population around these locations, most of them probably students, are below the poverty line.

Figure Q-8: Population Below the Poverty Line



On average, **12.5 percent** of the population around a KTH is 65 years old and above. The senior population is anywhere between 8.3 and 22.7 percent 75 percent of the time. Most of the time, one in ten or two in ten people around KTHs is a senior. The sole outlier (27.5 percent) is for Woodburn Memorial Transit Center which includes several retirement homes within its catchment area.

Figure Q-9: Population of Seniors

