Metro

Preliminary Urban Growth Boundary Alternatives Analysis

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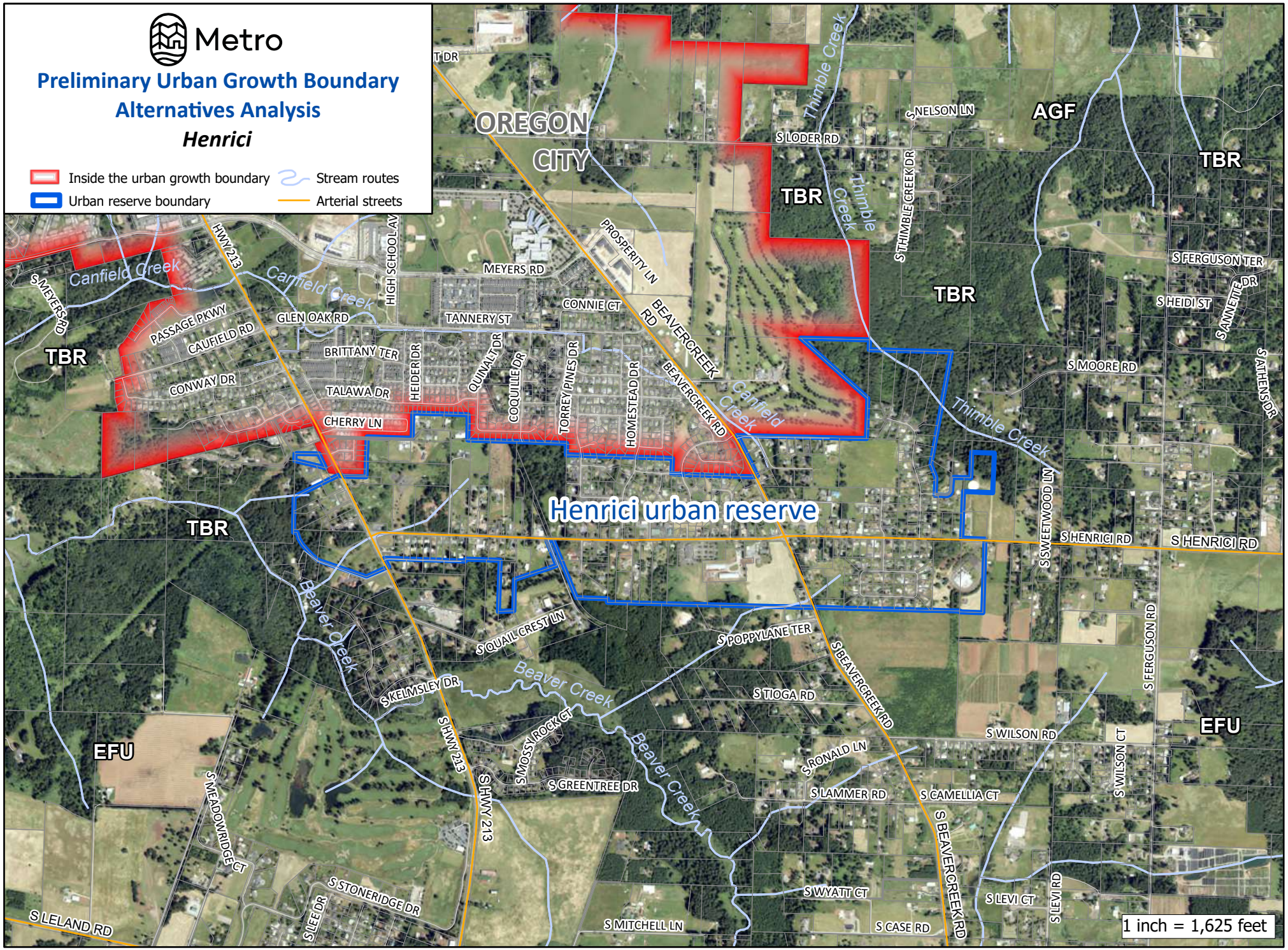
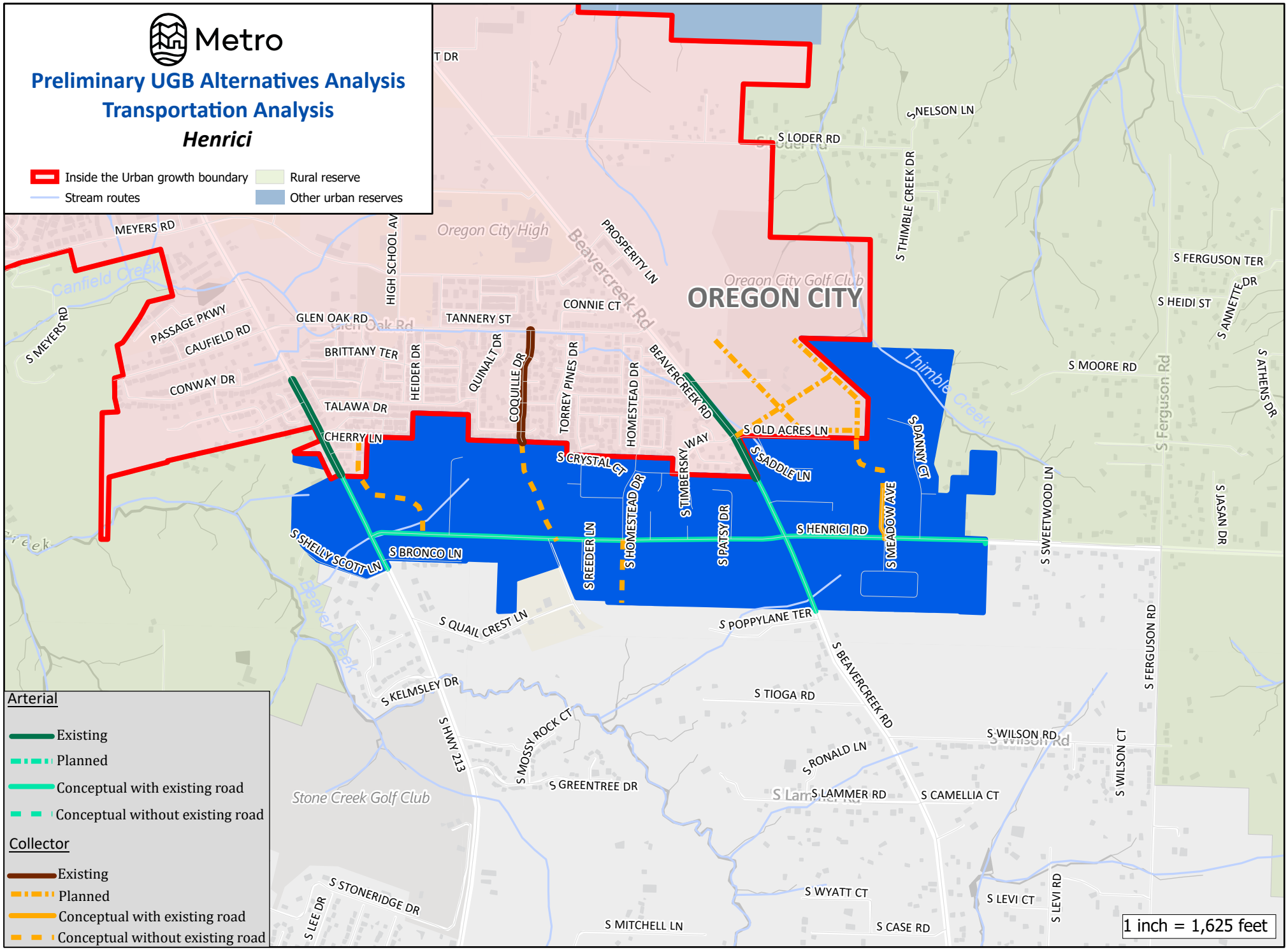
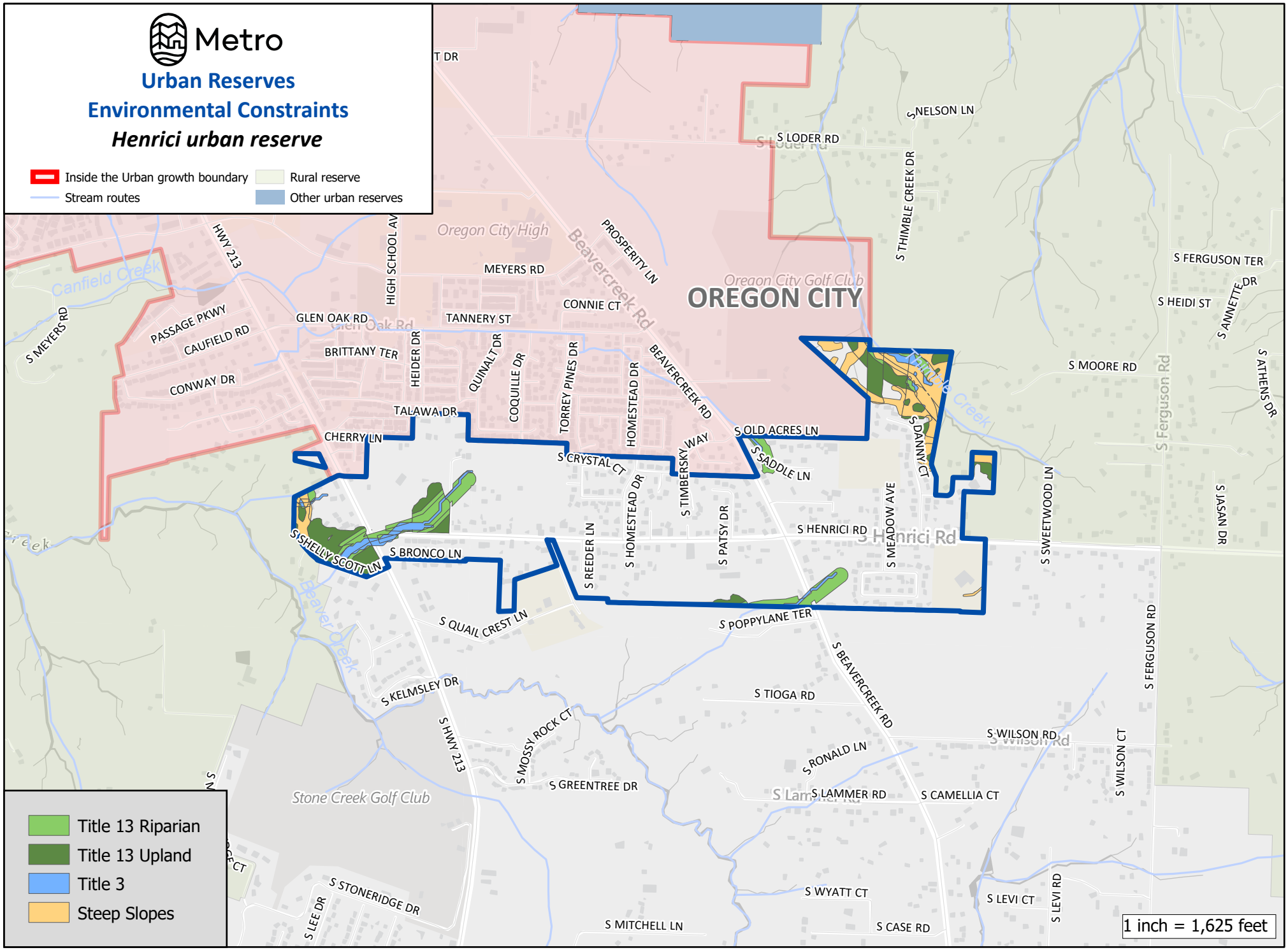
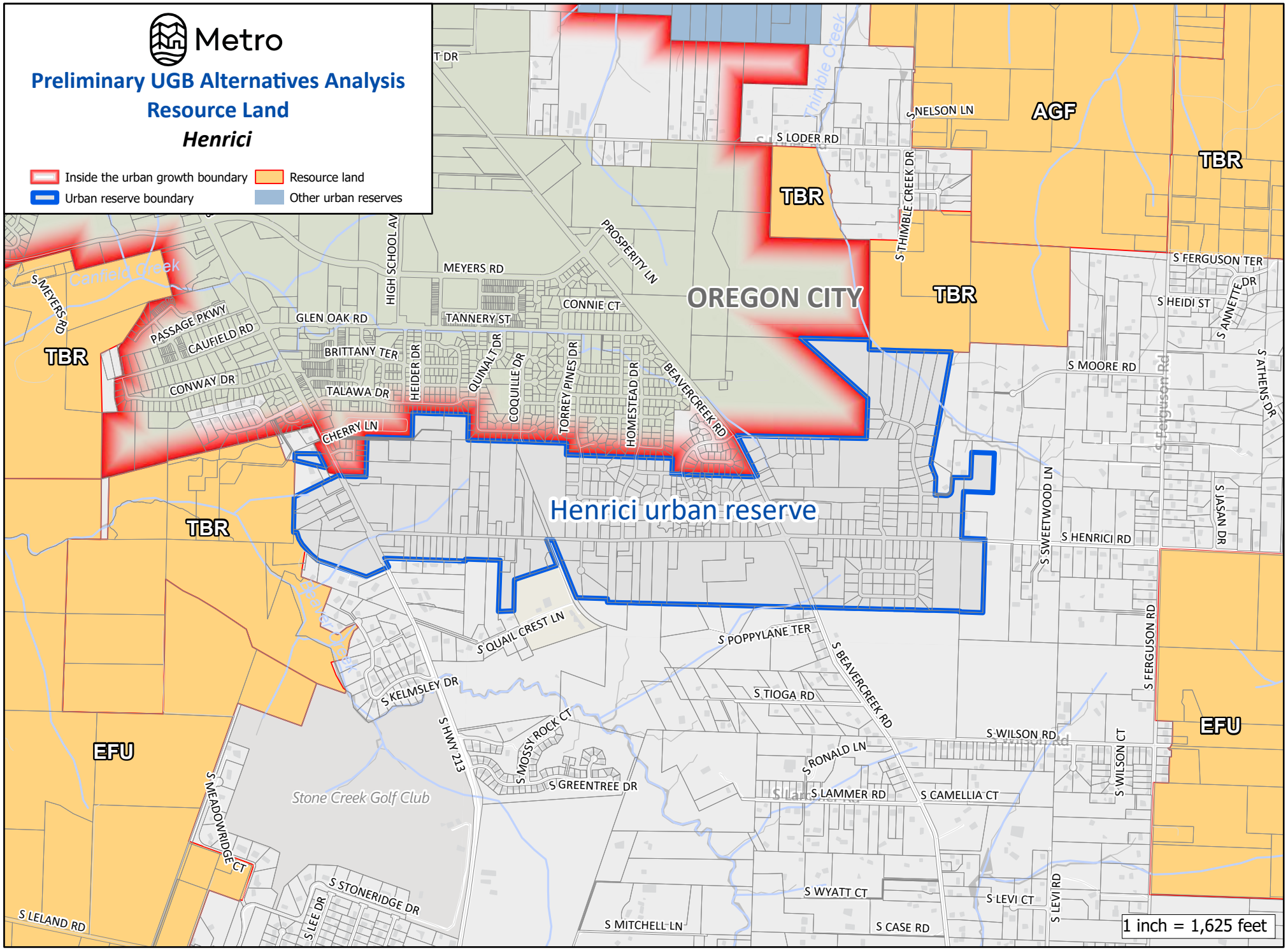
Inside the urban growth boundary
Urban reserve boundary
Stream routes
Arterial streets









HOLCOMB URBAN RESERVE

Total Reserve Area	321 acres
Total Tax Lot Area in Reserve (without Right-of-Way)	314 acres
Gross Vacant Buildable Area	215 acres
Net Vacant Buildable Area	**160 acres**

The Holcomb Urban Reserve is an irregularly shaped area adjacent to the east side of Oregon City. Its northern end is bisected by S Holcomb Boulevard. The northern end is also served by S Stoltz Road and S Hilltop Road, while its southern end is connected to S Kraeft Road. The reserve has a mix of forested tax lots, very minor agricultural activities, and rural residential development. The area north of S Holcomb Boulevard is generally flat and represents the high point, with the remainder dropping by about 350 feet in elevation from S Holcomb Boulevard down to the southern edge of the reserve. A tributary of Holcomb Creek flows south through the lower portion of the reserve, joining the creek south of S Redland Road.

GOAL 14 BOUNDARY LOCATION FACTORS

Factor 1: Efficient accommodation of identified land needs

The Holcomb Urban Reserve is comprised of 99 contiguous tax lots, which have a combined area of approximately 314 acres. All but four tax lots are entirely within the reserve. The portions of the reserves' tax lots that are in the reserve range in size from roughly a third of an acre to nearly 44 acres. Approximately 80 percent of the tax lots have area within the reserve equaling five acres or less in size; roughly half have portions in the reserve smaller than two acres and only two tax lots have portions in the reserve greater than 20 acres. As noted above, the entire reserve contains 215 gross vacant buildable acres and 160 net vacant buildable acres.

According to aerial imagery, the reserve is mainly composed of rural residential development and groves of trees, with some agricultural activity on the largest tax lots. Holcomb Outlook Water owns a nearly one-acre property with a water storage facility at the high point of the urban reserve, north of S Holcomb Boulevard. Clackamas County owns one 0.36-acre tax lot off of S Kraeft Road that may primarily serve as an access way for other adjacent developed properties. Overall, 91 of the 99 tax lots in the reserve have improvements, with a median assessed value of those tax lots' improvements exceeding $360,000.

The reserve is bisected by S Holcomb Boulevard. Several local roads within the UGB stub to the reserve, including S Barlow Drive, Jada Way, and S Wright Flyer Lane. The nearest interstate, I-205, is approximately two miles away. Upper Holcomb Creek Natural Area is only a third of a mile "as the crow flies" from the north end of the reserve, but not directly accessible to it. Holcomb Elementary School is less than a mile away via S Holcomb Boulevard. Tumwata Middle School is approximately 1.25 miles away via S Kraeft Road, S Redland Road, S Holy Lane, and S Donovan Road.

The portion of the reserve north of S Holcomb Boulevard contains the most flat and unconstrained land and is the high point of the area. This topography could accommodate both residential and employment uses; however, employment uses in this location would not be practical due to the somewhat isolated nature of the area up on the hill. There is also currently only one two-lane access point along S Holcomb Boulevard through an existing urban residential area and the reserve is relatively far from existing employment centers of Oregon City and I-205. A significant portion of the land south of S Holcomb Boulevard has slopes greater than 10 percent that would limit development opportunities for employment uses. Considering these conditions, the proximity of schools, and the fact that half of the tax lots are smaller than two acres, this area is best suited to accommodate residential land needs.

Factor 2: Orderly and economic provision of public facilities and services

Water Services

With regard to water services, the Holcomb Urban Reserve is given a "low" score in Attachment 3 for this Goal 14 boundary location factor, for the reasons detailed in (a)-(d) below.

a. Capacity of existing facilities to serve areas already inside the UGB

The City of Oregon City serves lands within their corporate boundary, while lands within the jurisdiction of Clackamas County are served by Clackamas River Water (CRW). Both Oregon City and the CRW South System receive water from the South Fork Water Board (SFWB). SFWB's water treatment process includes flocculation, sedimentation, filtration, and chlorination of raw water from the Clackamas River to remove harmful bacteria. There are currently no known major treatment system deficiencies.

The city has annexed the Beavercreek UGB expansion area to the southwest. While the city is adequately served elsewhere, they may lack water storage necessary to fully serve urban development of these annexed areas. CRW is considered to have adequate storage and pumping capacity to serve lands still within the jurisdiction of Clackamas County in the vicinity of Holcomb Urban Reserve and other customers.

b. Capacity of existing facilities to serve areas proposed for addition to the UGB

CRW has done planning for service to the area of the urban reserve, and the Holcomb Urban Reserve is in CRW's service area. However, CRW will not likely be the service provider once the reserve is annexed to a city (i.e., Oregon City) and urbanized. Rather, when Oregon City annexes the reserve, the city will likely take ownership of any water related infrastructure within the area, except potentially for facilities that are needed to go beyond the annexed area, such as large-scale transmission lines. Accordingly, CRW, like many water service providers, may be cautious about investing in improvements for currently rural areas that may one day be annexed to cities. Under CRW's future (2038) projections, there is a storage capacity surplus of 0.59 MG in their Redland

Service Area, and a slight storage capacity deficit of 0.02 MG in their Holcomb Service Area. CRW's 2038 projections show a pumping capacity surplus of 301 GPM in their Redland Service Area, and a pumping capacity deficit of 619 GPM in their Holcomb Service Area. Therefore, additional pumping capacity may be needed to accommodate future growth in the area of the Holcomb Urban Reserve. Oregon City has plans to build reservoirs that could serve urban reserves, but no timeline information is available at this time.

c. Impacts to existing facilities that serve nearby areas already inside the UGB

As noted above, new facilities for storage and pumping may be needed to avoid system capacity deficits.

d. Estimated water service-related costs for reserve development

Water piping, pumping, and storage costs	Cost
10-inch pipe	$5.06 million
12-inch pipe	$0
15-inch pipe	$0
Pumping	$6.38 million
Storage	$0.22 million
Total:	**$11.66 million**
Per dwelling unit at 20 units per net vacant buildable acre:	**$3,640**

Sanitary Sewer Services

With regard to sanitary sewer services, the Holcomb Urban Reserve is given a "low" score in Attachment 3 for this Goal 14 boundary location factor, for the reasons detailed in (a)-(d) below.

a. Capacity of existing facilities to serve areas already inside the UGB

Oregon City provides sanitary sewer service to properties within its corporate limits, as well as to some properties that are already in the UGB but still in unincorporated Clackamas County. Wastewater flows to the Tri-City Sewer District (TCSD) trunks, interceptors, and, eventually, the Tri-City Water Resource Recovery Facility (WRRF), all of which are owned and operated by Water Environment Services (WES). Both the Oregon City Master Plan and the WES Master Plan identify segments of the conveyance system that are predicted to surcharge or flood during the design storm event. The Country Village Interceptor in Redland Road, however, does not appear to have any predicted surcharging or flooding under existing conditions, which indicates it has sufficient capacity to serve areas already inside the UGB near the Holcomb Urban Reserve. Moreover, Oregon City's Infrastructure Master Plan includes planned

improvements and funding necessary to support expected growth within the existing UGB.

b. Capacity of existing facilities to serve areas proposed for addition to the UGB

The Country Village Interceptor in Redland Road does not extend far enough to serve the Holcomb Urban Reserve, but the City of Oregon City Master Plan includes a capital improvement project to extend this interceptor east, far enough to serve the reserve. The area immediately west of Holcomb is currently undeveloped and identified in Oregon City Master Plan as the Park Place Concept Area; it is not clear whether the proposed Country Village Interceptor extension is sized with enough capacity to serve both the Park Place Concept Area and Holcomb Urban Reserve and increased capacity may be necessary. There are no pump stations required downstream of the reserve. Development in the reserve is nonetheless expected to require major infrastructure improvements and investments, in part due to topography.

c. Impacts to existing facilities that serve nearby areas already inside the UGB

Additional capacity of the Country Village Interceptor could be required in order to serve urban development of the Holcomb Urban Reserve while reducing impacts to areas already inside the UGB. System improvements could require major construction in landslide-prone areas.

d. Estimated sanitary sewer service-related costs for reserve development

Sanitary sewer piping and pumping costs	Cost
10-inch pipe	$2.97 million
12-inch pipe	$1.26 million
21-inch pipe	$1.62 million
Pump station	$0
Force mains	$0
Total:	**$5.85 million**
Per dwelling unit at 20 units per net vacant buildable acre:	**$1,825**

Stormwater Management Services

With regard to stormwater management services, the Holcomb Urban Reserve is given a "medium" score in Attachment 3 for this Goal 14 boundary location factor, for the reasons detailed in (a)-(d) below.

a. Capacity of existing facilities to serve areas already inside the UGB

The Oregon City Stormwater Master Plan identifies capacity issues within the modeled basins. Two of the modeled basins were determined to contain the most problem areas:

the John Adams Basin is described as generally undersized, and the South End Basin was described as an inefficient system with flooding during the two-year storm event. Capital improvement projects to address capacity issues described above are presented in the Master Plan.

b. Capacity of existing facilities to serve areas proposed for addition to the UGB

Stormwater will be conveyed, treated, and disposed of within the reserve (i.e., outfall to Holcomb Creek, which flows to Abernethy Creek); therefore, it is not anticipated that existing stormwater facilities would be utilized. Stormwater will nonetheless be complex, given this reserve's infrastructure would be at the upstream edge of the surrounding basins, but stormwater is expected to be manageable.

c. Impacts to existing facilities that serve nearby areas already inside the UGB

As noted above, stormwater will likely be detained and treated within the reserve and, based on topography, outfall directly to Holcomb Creek; therefore, no impacts to the existing stormwater infrastructure in the UGB are anticipated.

d. Estimated stormwater service-related costs for reserve development

Stormwater piping and water quality/detention	Cost
18-inch pipe	$2.8 million
24-inch pipe	$1.7 million
30-inch pipe	$0
Water quality/dentition	$2.96 million
Total:	**$7.46 million**
Per dwelling unit at 20 units per net vacant buildable acre:	**$2,330**

Transportation Services

With regard to transportation services, the Holcomb Urban Reserve is given a "low" score in Attachment 3 for this Goal 14 boundary location factor, for the reasons detailed in (a)-(e) below.

a. Capacity of existing facilities to serve areas already inside the UGB

Figure 4.36 in Chapter 4 of the 2023 Regional Transportation Plan (RTP) displays 2020 home-based vehicle miles traveled (VMT) per capita by Metro transportation analysis zone, with average VMT per capita considered 11.32. According to Figure 4.36 in Chapter 4, areas in the UGB adjacent to the Holcomb Urban Reserve had above average and significantly above average home-based VMT per capita in 2020.

Metro's adopted 2040 Growth Concept Map designates a regional center in the adjacent City of Oregon City. Regional centers are generally meant to: serve populations of hundreds of thousands of people; surround high-quality transit service and multi-modal street networks; and offer larger commercial uses, healthcare facilities, local government services, and public amenities. The Oregon City Regional Center aligns with the 2040 Growth Concept Map designation.

The City of Oregon City's plans for the Oregon City Regional Center include mixed-use development, enhancements to the main street, and the creation of new open spaces that will provide direct connections to the river. The regional center is also home to Willamette Falls and the Willamette Falls Legacy Project, a public/private partnership working to connect the Falls to Downtown Oregon City through the development of housing, public spaces, habitat restoration, education, and employment opportunities. The regional center currently has a drug store, restaurants, and other retail commercial uses, banks, medical/dental facilities, community centers, government offices, and auto-oriented uses. Metro's 2017 State of the Centers Atlas showed less than 400 people living in the regional center, as well as a low population density (5.2 people per acre), low total employees, and low dwelling unit density compared with other regional centers; in fact, the average population of all regional centers in 2017 was more than 6,000 people and the average population density was 22.8 people per acre. The city's vision to attract more housing and employees to the regional center will elevate it to the activity spectrum levels comparable to other regional centers in the region.

There are also employment uses, including industrial uses, grocery stores, and other commercial uses, as well as education and medical facilities, government offices, and parks in the Red Soils area near the intersection of Beavercreek Road and Molalla Avenue and between Highway 213 and Beavercreek Road.

Growth in and near the regional center and other employment areas will not necessarily cause a significant increase in home-based VMT per capita in the future, as area residents will be able to access some daily needs and find employment opportunities with relatively short trips. The transit service and bike and pedestrian facilities that serve these areas, described further below, can also help to ensure that additional growth nearby does not adversely impact home-based VMT per capita.

Four TriMet bus lines serve Oregon City, all of which generally focus on the regional center and the central portion of the city along Molalla Avenue. Service is provided to Clackamas Community College and the employment areas near the intersection of Beavercreek Road and Molalla Avenue and between Highway 213 and Beavercreek Road; however, large portions of the city lack TriMet service. Route 154 provides service along Abernethy Road and Holcomb Boulevard between the regional center and up to about S Longview Way. Some of this existing route is identified as part of the frequent regional transit network in Chapter 4, Figure 4.3 of the 2023 RTP, though there are also gaps in planned frequent transit service along certain routes in the UGB near the reserve and elsewhere in the city as well.

Oregon City has at least 29 miles of dedicated bike lanes and 3.5 miles of established bikeways, with most of them located in the "up-top" section (southern end) of the city. The Park Place neighborhood is also fairly well served, and Highway 213 has dedicated bike lanes. Most of the downtown streets are classified as "bike with caution" streets and the South End neighborhood has minimal bike facilities. There are dedicated bike facilities along most of Beavercreek Road and Molalla Avenue, as well as on much of Front Avenue, Holcomb Boulevard, S Redland Road, and Swan Avenue nearer to the reserve. Those existing bike facilities on Beavercreek Road, Holcomb Boulevard, Molalla Avenue, and S Redland Road are identified as part of the regional bike network on Figure 4.5 in Chapter 4 of the 2023 RTP. However, the figure also identifies a gap in the planned network along S Holly Lane nearer to the reserve and areas closer to the regional center.

The regional center is well served by sidewalks, as are employment areas near the intersection of Beavercreek Road and Molalla Avenue and between Highway 213 and Beavercreek Road. Much of the residential areas in the UGB adjacent to the reserve also have sidewalks. Holcomb Boulevard has sidewalks on at least one side most of the way from the inner edge of the UGB to the intersection of Abernethy Road and S Redland Road, though there are some sections without sidewalks. Chapter 4, Figure 4.4 of the 2023 RTP identifies gaps in the planned regional pedestrian network along Holcomb Boulevard and S Redland Road. There are also gaps in the planned regional trail network in the UGB near the reserve, as indicated in Chapter 4, Figure 4.6 of the 2023 RTP.

Figure 4.14 in Chapter of the 2023 RTP identifies Molalla Avenue inside the UGB as a high injury corridor.

The sections of Highway 99E, Highway 213, and I-5 in Oregon City are identified as a throughways Chapter 4, Figure 4.7 of the 2023 RTP. Figure 4.8 of that chapter indicates that these highway sections currently meet travel speed reliability performance thresholds, with no more than four hours per day when travel speeds fall below the identified minimum speed. RTP models indicate this reliability will continue at least to the year 2045.

b. Capacity of existing facilities to serve areas proposed for addition to the UGB

Highway 213 is the nearest RTP-designated throughway to the reserve, but is nearly two miles away. As noted above, the section of the highway in the city currently meets travel speed reliability performance thresholds. Considering the distance of the reserve to this highway and RTP reliability forecasts, development of the reserve is not expected to jeopardize the throughway reliability of the highway.

There is currently no TriMet bus service all of the way to the reserve. The nearest stop is for Route 154 just off Holcomb Boulevard, roughly three-quarters of a mile west of the north end of the reserve. There is no transit service near the south end of the reserve.

The adjacent residential subdivisions within the city that are north of Holcomb Boulevard have sidewalks that stub to the northwest of the reserve. Portions of Holcomb Boulevard also have sidewalks, including S Barlow Drive, Jada Way, and S Wright Flyer Lane, but there are gaps along Holcomb Boulevard and the southern end of the reserve is not connected to existing sidewalks. Sidewalks are lacking in the reserve itself. There are no trails that serve or connect to the reserve, either.

It was noted in response to Factor 1 that the reserve is not likely to be able to efficiently accommodate an employment land need, but could support a residential land need. The regional center is approximately two miles from the reserve via S Holcomb Boulevard and, as noted above, not fully connected to the reserve by transit, bike facilities, or pedestrian facilities. The employment uses along Beavercreek Road, Highway 213, and Molalla Avenue are even further away. It is therefore likely that future residents of the reserve would be particularly reliant on private motor vehicle transportation.

c. Impacts to existing facilities that serve nearby areas already inside the UGB

Holcomb Boulevard, S Kraeft Road, and S Redland Road would be expected to see additional private vehicle traffic from development of the reserve. Existing bike and pedestrian facilities nearby would also be expected to see additional use.

With the lack of direct transit service and complete bike facilities and sidewalks connecting to the reserve, future residents will likely rely primarily on private motor vehicle transportation to access their daily needs and employment opportunities more than two miles away, potentially impacting home-based VMT per capita. Development of the reserve is, however, not expected to jeopardize Highway 213's throughway reliability or necessarily cause additional motor vehicle traffic on Molalla Avenue that exacerbates its high-crash conditions.

d. Need for major transportation facility improvements and associated costs

To accommodate urban development, a 0.4-mile section of S Holcomb Boulevard would likely need to be improved to urban arterial standards, including acquisition of additional right-of-way. S Edenwild Lane and S Kraeft Road, which currently are private streets, would also likely need to become public streets and improved to urban collector standards with a combined length of slightly more than half a mile. It is assumed that a 0.32-mile section of S Hilltop Road will need to be improved to urban collector standards, with acquisition of additional right-of-way, and three new collectors with a combined length of about 1.09 miles would be needed to provide necessary street connectivity. An approximately 0.07-mile section of one of the new collectors is expected to have higher per-mile costs because of a stream crossing.

Facilities	Cost
Arterials, existing/improved full street	$19.32 million
Arterials, existing/improved half street	$0
Arterials, new	$0
Collectors, existing/improved full street	$9.66 million
Collectors, existing/improved half street	$0
Collectors, new	$67.94 million
Total:	**$96.92 million**
Per dwelling unit at 20 units per net vacant buildable acre:	**$30,259**

e. Provision of public transit service

TriMet evaluated the reserve for providing transit service. TriMet could provide services to the reserve, although there is no guarantee of service. Actual service depends on the level of development in the reserve and in the corridors leading to it. Potential service could be provided at 30-minute headways for weekdays, and 60-minute headways on weekends, by extending an existing route after "Forward Together 2.0" improvements are implemented, with no additional cost.

Prior to land being included in the UGB, a more detailed concept plan, consistent with the requirements of Metro's Urban Growth Management Functional Plan Title 11, will be required. This concept plan process will develop more refined public facility and service needs and cost estimates.

Factor 3: Comparative environmental, social, energy, and economic consequences

Environmental consequences

A tributary to Holcomb Creek flows south through the southern portion of the Holcomb Urban Reserve for just shy of half a mile, mostly through an intact riparian habitat corridor. The stream is located in a fairly steep portion of the reserve where most of the slopes are greater than 25 percent, limiting potential development near the stream. There are some significant locations of riparian and upland habitat identified in the southern portion of the reserve, although most of it is also located on slopes greater than 25 percent, which would limit the amount of urbanization that could occur and thereby limit adverse impacts of urbanization.

This analysis finds that urbanization of the reserve could occur with comparatively minimal impacts to the stream corridor and most of the upland habitat areas due to topography that limits development opportunities. Future east-west transportation connections in this southern area, however, could impact the natural resources, if extended across the stream corridor. Additional environmental consideration, specifically regarding avoidance of conflict between urban development and regionally significant fish and wildlife habitat, is provided in the Metro Code Factors Analysis (Appendix 7A).

Considering the comparative environmental consequences of urbanization, the Holcomb Urban Reserve is given a "high" score in Attachment 3 for this Goal 14 boundary location sub-factor.

Social, energy, and economic consequences

The Holcomb Urban Reserve already has numerous rural residences on smaller tax lots in certain in certain areas, as well as platted subdivisions, some of which are extensions of subdivisions in adjacent areas outside of the reserve. The north end of the reserve is also adjacent to urban residential development with urban local streets that stub directly to the reserve. Therefore, urbanization of the reserve is not expected to cause a significant change in sense of place or degradation of rural lifestyle for existing residents of these locations of the reserve. However, the southern end of the reserve is less developed, not adjacent to urban levels of development, and characterized by more rural land uses; urbanization here could happen more quickly and be more noticeable and socially impactful to the area's residents.

Nonetheless, the steep slopes that divide the area south of S Holcomb Boulevard are generally forested and could provide separation between different areas of the reserve that develop at different times. The existing rural residences along S Kraeft Road are all high-value homes that are unlikely to be removed quickly upon urbanization. These factors can slow the pace of noticeable change.

As detailed more fully in response to Factor 2, future residents of the reserve will likely rely primarily on private motor vehicle transportation to access their daily needs and employment opportunities more than two miles away. The resulting VMT could have adverse energy impacts.

There is minimal commercial agriculture occurring within the reserve and the economic consequences of a loss in farming activity in the reserve may be outweighed by the economic benefits of residential development.

Overall, there would be comparatively low to moderate social, energy, and economic consequences from urbanization of this reserve. The Holcomb Urban Reserve is given a "high" score in Attachment 3 for this Goal 14 boundary location sub-factor.

Factor 4: Compatibility of the proposed urban uses with nearby agricultural and forest activities occurring on farm and forest land outside the UGB

There are two locations where lands outside the UGB but contiguous to the Holcomb Urban Reserve have Goal 3 or 4 resource land zoning for agricultural and forest activities.

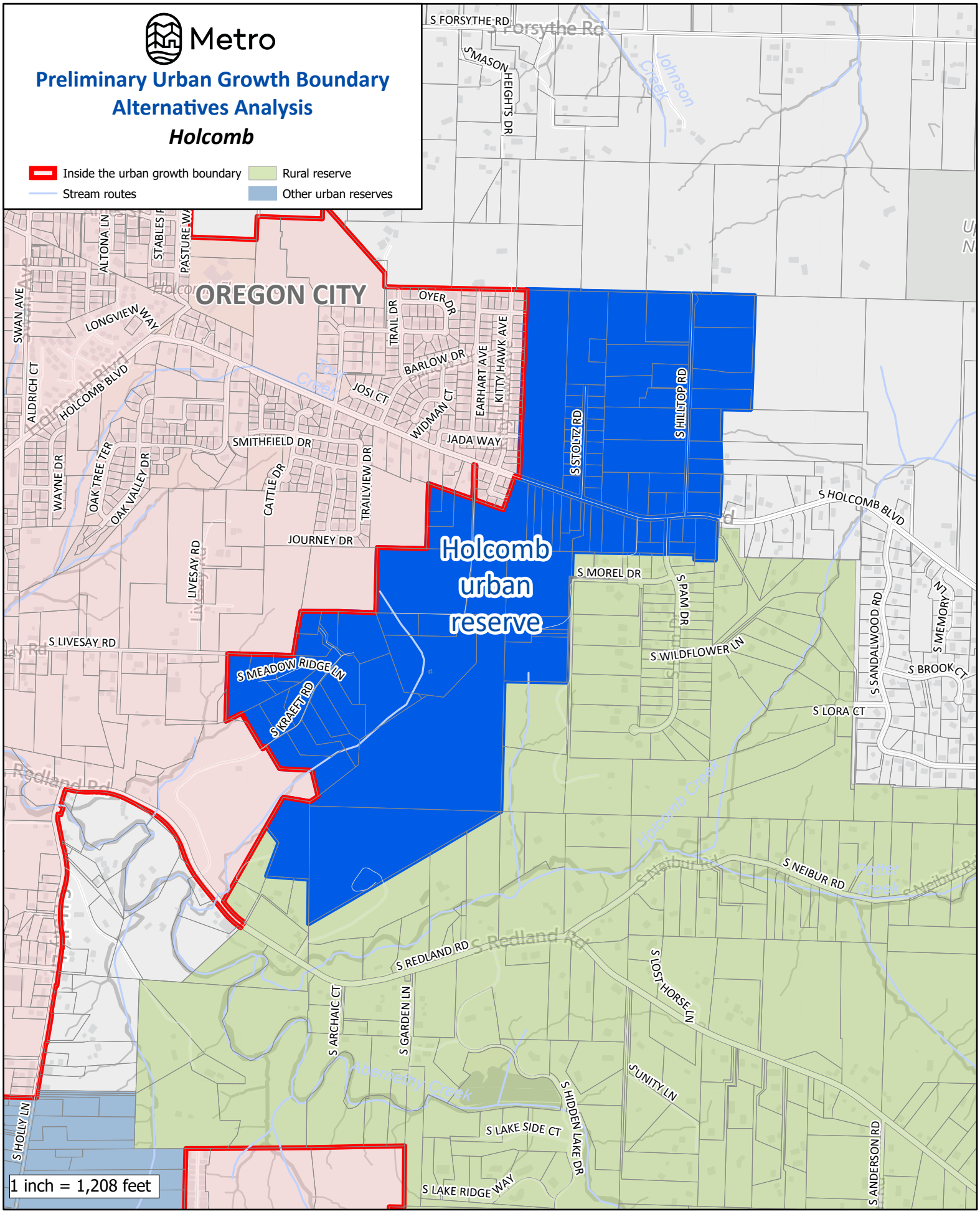
The first location is a small tract of land zoned Exclusive Farm Use (EFU) by Clackamas County at the northern edge of the reserve at the north end of S Hilltop Road. Aerial imagery indicates there are very minor agricultural activities occurring on one of these EFU-zoned tax lots, including pasture land and an orchard, but also a large residential use. This tax lot is accessed by S Hilltop

Road, which could see additional traffic if the reserve is urbanized, although the movement of farm equipment on S Hilltop Road from these limited agricultural activities would be minor and likely not impacted by such additional traffic. EFU-zoned tax lots adjoining the reserve in this location do have some trees, but there is no indication from aerial imagery that they are stands for commercial timber harvesting.

The second location is a small tract of land with three tax lots zoned Timber (TBR) by Clackamas County along the northeast corner of the reserve. Two of the tax lots contain fairly large homes surrounded by trees. Due to the location of the homes, the prospect of commercial forest activities occurring on them is small. The third TBR-zoned tax lot is 30 acres in size and slopes away from the reserve. It does not contain any structures, is divided by powerlines, and appears to have been cleared of trees somewhat recently, without evidence of re-planting. Urbanization of the reserve could generally be compatible with future forest activities occurring on this tax lot due to the change in elevation. However, access to this tax lot is by S Hilltop Road and urbanization of the reserve may make future access to the forest lands for machinery and trucks slightly more difficult, if trees were to be replanted and eventually harvested.

This analysis finds that the nearby agricultural and forest activities occurring on farm and forest land would not likely be significantly impacted by urbanization of the reserve. Therefore, the proposed urban uses (i.e., urban development of the reserve) is considered to have moderate to high compatibility with the nearby agricultural and forest activities occurring on farm and forest land.

The Holcomb Urban Reserve is given a “medium-high” score in Attachment 3 for this Goal 14 boundary location factor.



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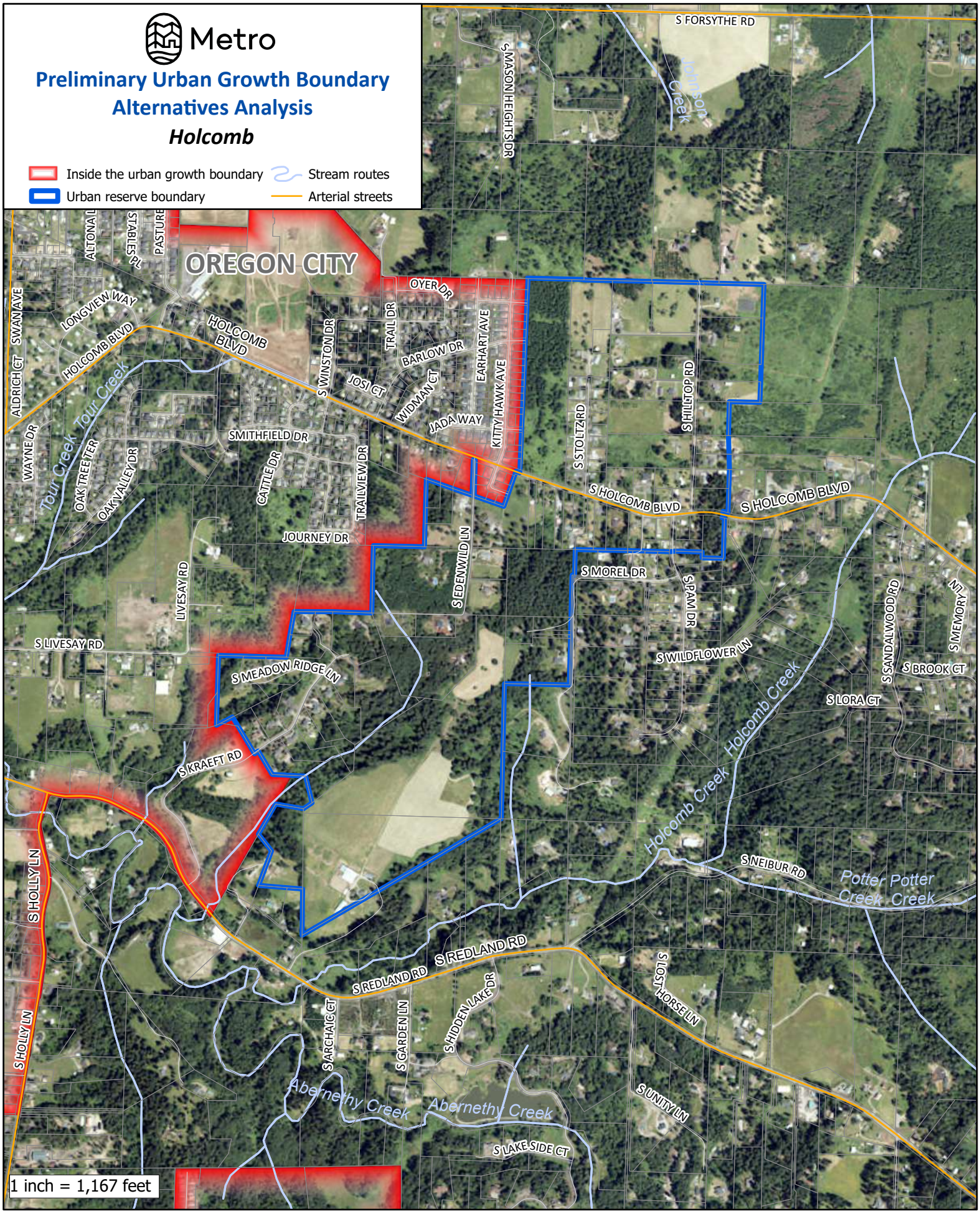

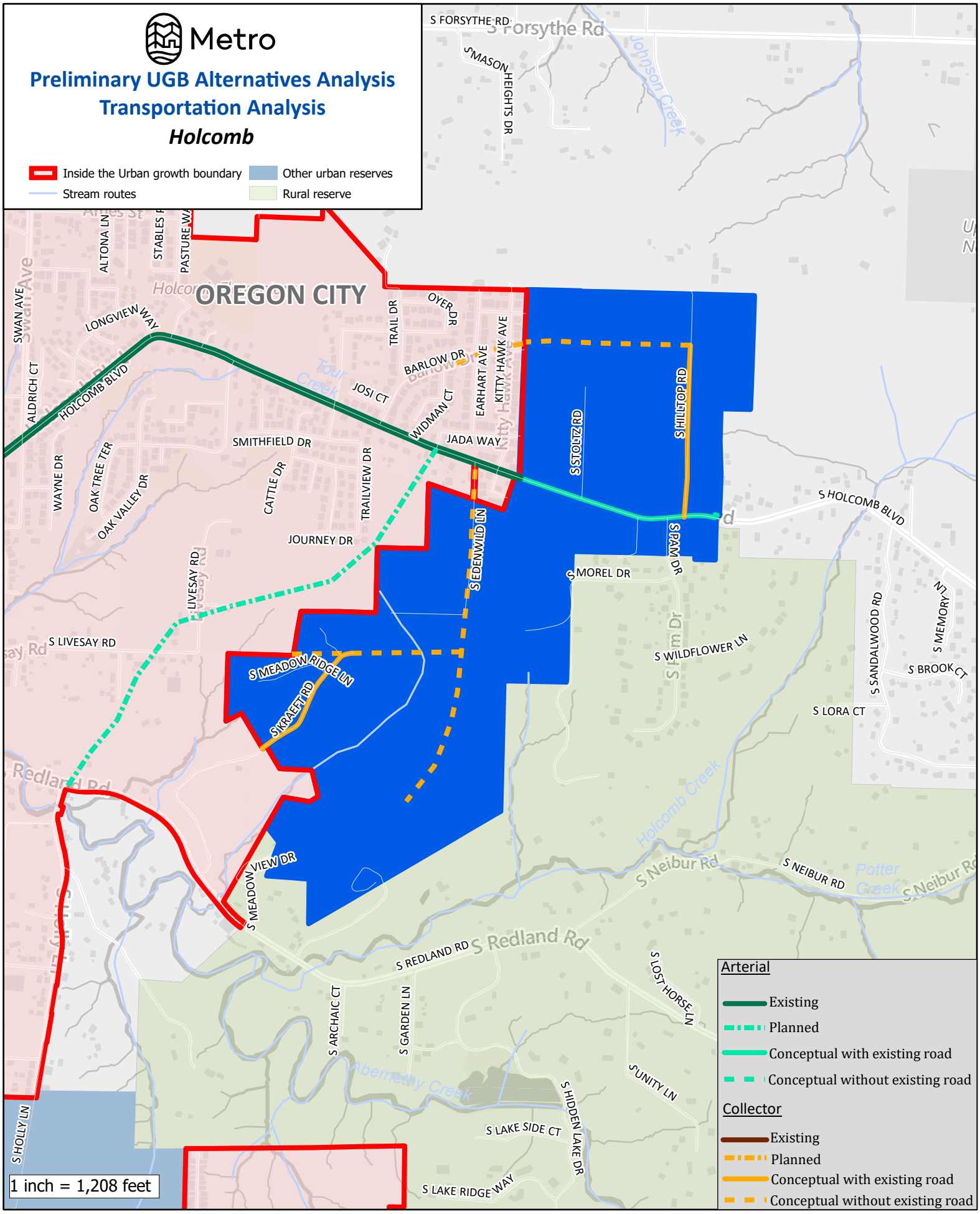

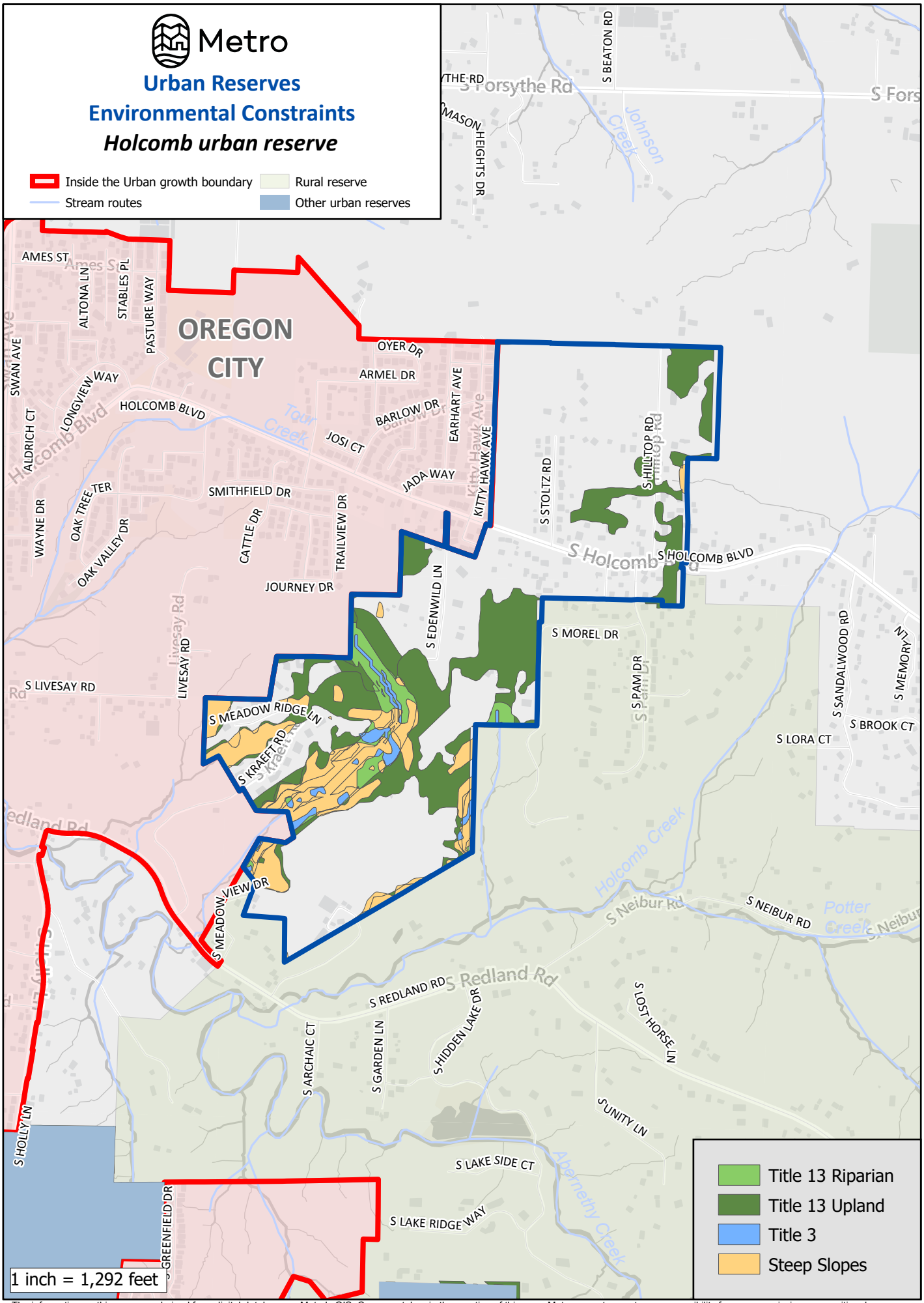

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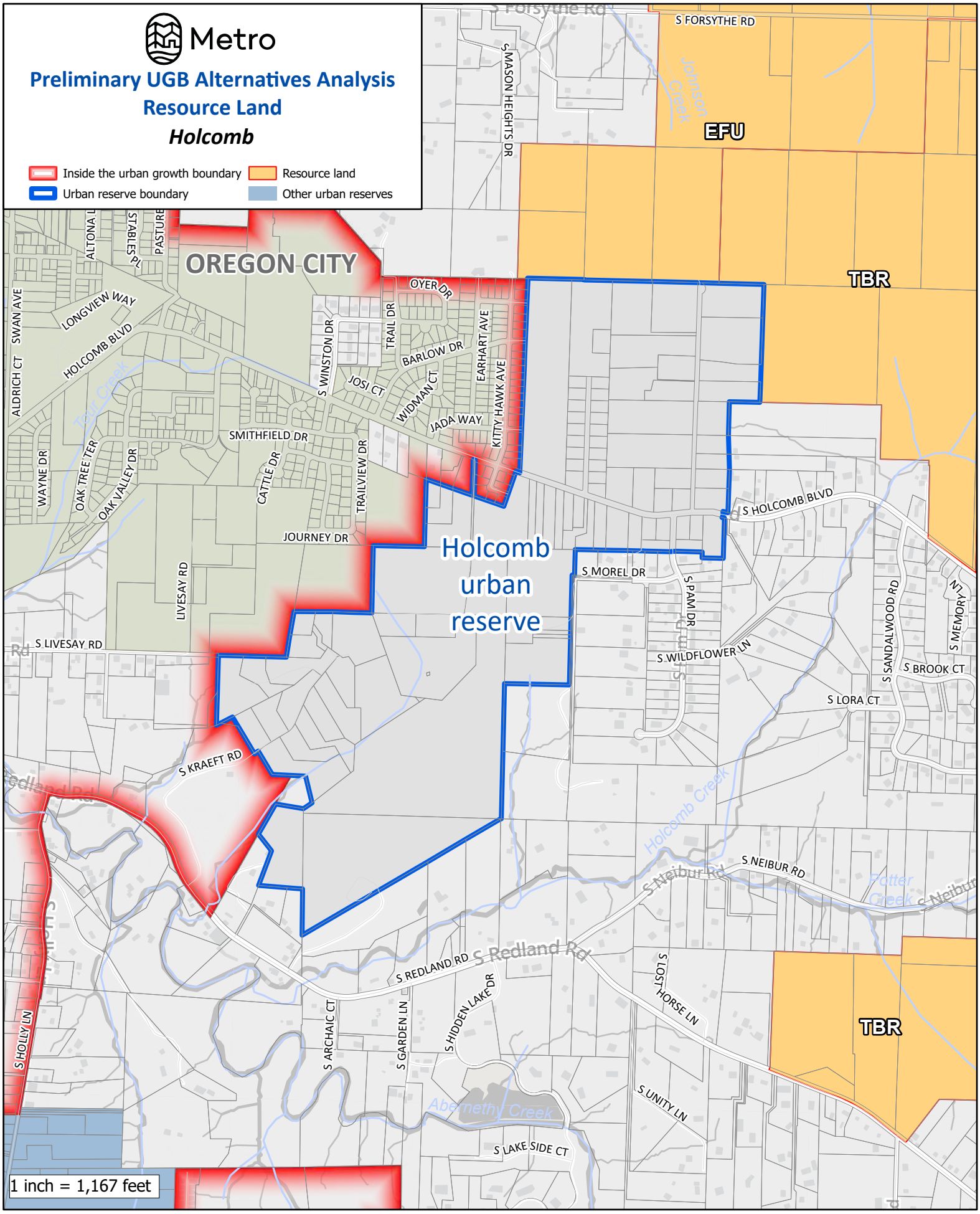


HOLLY LANE – NEWELL CREEK CANYON URBAN RESERVE

Total Reserve Area	695 acres
Total Tax Lot Area in Reserve (without Right-of-Way)	591 acres
Gross Vacant Buildable Area	175 acres
Net Vacant Buildable Area	**131 acres**

The Holly Lane – Newell Creek Canyon Urban Reserve is an irregularly shaped area adjacent to the east side of Oregon City. The reserve straddles Highway 213 between S Redland Road to its north and S Maplelane Road to its south. The reserve's eastern side is also largely bisected by S Holly Lane; its western side is connected to S Davis Road, S Morton Road, and unimproved right-of-way leading to S Division Street. The reserve is almost entirely surrounded by land inside the UGB, with only an approximately 370-yard border with a rural reserve and a 330-yard border with rural exception lands in its northeast corner.

The reserve is largely a mix of publicly owned forested tax lots along Highway 213 and private rural residences along S Holly Lane. Newell Creek flows northward through the reserve on both sides of Highway 213, joining Abernethy Creek at the reserve's northern boundary.

GOAL 14 BOUNDARY LOCATION FACTORS

Factor 1: Efficient accommodation of identified land needs

The Holly Lane – Newell Creek Canyon Urban Reserve is comprised of 157 contiguous tax lots, which have a combined area of approximately 591 acres. All but two of these tax lots are entirely within the reserve. More than 80 percent of the tax lots have area within the reserve that are five acres or less in size; more than half have area within the reserve smaller than two acres and only five tax lots have area within the reserve greater than 20 acres. As noted above, the entire reserve contains 175 gross vacant buildable acres and 131 net vacant buildable acres.

A significant portion of the area, 203 acres, is land owned by Metro that is part of the larger 236-acre Newell Creek Canyon Nature Park that opened in 2021. The remainder of the area is composed of highway and road right-of-way, rural residential development with a few locations of very small-scale agricultural activity, and one 61-acre tax lot of forested land owned by Earthscapes of Oregon, LLC. Three power lines cross through the southern portion of the urban reserve. Overall, 101 of the 157 tax lots have improvements, with a median assessed value of those tax lots' improvements exceeding $229,000.

The reserve is adjacent to Tumwata Middle School and is less than a mile from the Oregon City School District Jackson Campus and Pioneer Memorial Stadium. Clackamas Community College is less than one mile away. The reserve is divided by Highway 213 and S Holly Lane, and its north end is approximately one mile from I-205.

With nearly all of the reserve has slopes greater than 10 percent, except for portions of some along S Holly Lane, the reserve's topography is generally not suitable for new employment uses. The

lands east of S Holly Lane and in the vicinity of S Alden Street on the west side of the reserve have slopes greater than 25 percent, which limit residential development opportunities in this location as well. Roughly one-third of the land area of the reserve is in public ownership. Therefore, this reserve is likely able to accommodate a small residential land need.

Factor 2: Orderly and economic provision of public facilities and services

Water Services

With regard to water services, the Holly Lane – Newell Creek Canyon Urban Reserve is given a "medium" score in Attachment 3 for this Goal 14 boundary location factor, for the reasons detailed in (a)-(d) below.

a. Capacity of existing facilities to serve areas already inside the UGB

The City of Oregon City serves lands within their corporate boundary, while lands within the jurisdiction of Clackamas County are served by Clackamas River Water (CRW). Both Oregon City and the CRW South System receive water from the South Fork Water Board (SFWB). SFWB's water treatment process includes flocculation, sedimentation, filtration, and chlorination of raw water from the Clackamas River to remove harmful bacteria. There are currently no known major treatment system deficiencies.

The City has annexed the Beavercreek UGB expansion area to the southwest. While the City is adequately served elsewhere, they may lack water storage necessary to fully serve urban development of these annexed areas. CRW is considered to have adequate capacity to serve lands still within the jurisdiction of Clackamas County in this vicinity and other customers; though the Beavercreek service area showed a storage deficiency of 0.31 MG in 2019 in the interim of building the new Beavercreek reservoir, it is anticipated to bring on sufficient storage.

b. Capacity of existing facilities to serve areas proposed for addition to the UGB

CRW has done planning for service to the area of the urban reserve, and the Holly Lane – Newell Creek Canyon Urban Reserve is in CRW's service area. However, CRW will not likely be the service provider once the reserve is annexed to a city (i.e., Oregon City) and urbanized. Rather, when Oregon City annexes the reserve, the City will likely take ownership of any water related infrastructure within the area, except potentially for facilities that are needed to go beyond the annexed area, such as large-scale transmission lines. Accordingly, CRW, like many water service providers, may be cautious about investing in improvements for currently rural areas that may one day be annexed to cities. CRW is expected to build a new storage reservoir in the near future, which result in a storage surplus. Oregon City has plans to build reservoirs that could serve urban reserves, but no timeline is available at this time. While there is some projected surplus pumping and storage capacity that could be available to serve urban development of the reserve, once annexed to the City, those surpluses may be

insufficient and additional pumping and storage facilities may be necessary. The existing distribution system may also experience capacity challenges if it is determined to be undersized and not upgraded.

c. Impacts to existing facilities that serve nearby areas already inside the UGB

As noted above, new facilities for storage and pumping will likely be needed to avoid system capacity deficits. The distribution system in the area may also need to be upgraded.

d. Estimated water service-related costs for reserve development

Water piping, pumping, and storage costs	Cost
10-inch pipe	$0
12-inch pipe	$0
15-inch pipe	$0
Pumping	$2.32 million
Storage	$0.08 million
Total:	**$2.4 million**
Per dwelling unit at 20 units per net vacant buildable acre:	**$919**

Sanitary Sewer Services

With regard to sanitary sewer services, the Holly Lane – Newell Creek Canyon Urban Reserve is given a "medium" score in Attachment 3 for this Goal 14 boundary location factor, for the reasons detailed in (a)-(d) below.

a. Capacity of existing facilities to serve areas already inside the UGB

Oregon City provides sanitary sewer service to properties within its corporate limits, as well as to some properties that are already in the UGB but still in unincorporated Clackamas County. Wastewater flows to the Tri-City Sewer District (TCSD) trunks, interceptors, and, eventually, the Tri-City Water Resource Recovery Facility (WRRF), all of which are owned and operated by Water Environment Services (WES). Both the Oregon City Master Plan and the WES Master Plan identify segments of the conveyance system that are predicted to surcharge or flood during the design storm event. The Newell Creek Interceptor south of Redland Road has predicted surcharging or flooding under existing conditions, which indicates it does not necessarily have fully sufficient capacity to serve the nearby areas already inside the UGB. Relevant master plans include a capital improvement project to upside a portion of the Newell Creek Interceptor south of Redland Road, but it is not clear how much additional capacity this will provide.

b. Capacity of existing facilities to serve areas proposed for addition to the UGB

The Newell Creek Interceptor has capacity challenges and it is unknown whether a planned upsizing could accommodate urban development of the Holly Lane – Newell Creek Canyon Urban Reserve. However, no pump stations are likely needed downstream of the reserve to accommodate urban development.

c. Impacts to existing facilities that serve nearby areas already inside the UGB

Without sufficient upsizing of the Newell Creek Interceptor, urban development of the reserve could exacerbate existing capacity challenges.

d. Estimated sanitary sewer service-related costs for reserve development

Sanitary sewer piping and pumping costs	Cost
10-inch pipe	$2.89 million
12-inch pipe	$0
15-inch pipe	$0
Pump station	$0
Force mains	$0
Total:	**$2.89 million**
Per dwelling unit at 20 units per net vacant buildable acre:	**$1,105**

Stormwater Management Services

With regard to stormwater management services, the Holly Lane – Newell Creek Canyon Urban Reserve is given a "medium" score in Attachment 3 for this Goal 14 boundary location factor, for the reasons detailed in (a)-(d) below.

a. Capacity of existing facilities to serve areas already inside the UGB

The Oregon City Stormwater Master Plan identifies capacity issues within the modeled basins. Two of the modeled basins were determined to contain the most problem areas: the John Adams Basin is described as generally undersized, and the South End Basin was described as an inefficient system with flooding during the two-year storm event. Capital improvement projects to address capacity issues described above are presented in the Master Plan.

b. Capacity of existing facilities to serve areas proposed for addition to the UGB

Stormwater will be conveyed, treated, and disposed of within the reserve (i.e., outfall to Newell Creek); therefore, it is not anticipated that existing stormwater facilities would be utilized. Stormwater will nonetheless be complex, given this reserve's infrastructure would be at the upstream edge of the surrounding basins, but manageable.

c. Impacts to existing facilities that serve nearby areas already inside the UGB

As noted above, stormwater will likely be detained and treated within the reserve and, based on topography, outfall directly to Newell Creek; therefore, no impacts to the existing stormwater infrastructure in the UGB are anticipated.

d. Estimated stormwater service-related costs for reserve development

Stormwater piping and water quality/detention	Cost
18-inch pipe	$0
24-inch pipe	$0
30-inch pipe	$0
Water quality/dentition	$2.91 million
Total:	**$2.91 million**
Per dwelling unit at 20 units per net vacant buildable acre:	**$1,114**

Transportation Services

With regard to transportation services, the Holly Lane – Newell Creek Canyon Urban Reserve is given a "medium" score in Attachment 3 for this Goal 14 boundary location factor, for the reasons detailed in (a)-(e) below.

a. Capacity of existing facilities to serve areas already inside the UGB

Figure 4.36 in Chapter 4 of the 2023 Regional Transportation Plan (RTP) displays 2020 household-based vehicle miles traveled (VMT) per capita by Metro transportation analysis zone, with average VMT per capita considered 11.32. According to Figure 4.36 in Chapter 4, areas in the UGB adjacent to the Holly Lane – Newell Creek Canyon Urban Reserve had average, above average, and significantly above average household-based VMT per capita in 2020.

Metro's adopted 2040 Growth Concept Map designates a regional center in the adjacent City of Oregon City. Regional centers are generally meant to: serve populations of hundreds of thousands of people; surround high-quality transit service and multi-modal street networks; and offer larger commercial uses, healthcare facilities, local government services, and public amenities. The Oregon City Regional Center aligns with the 2040 Growth Concept Map designation.

The City of Oregon City's plans for the Oregon City Regional Center include mixed-use development, enhancements to the main street, and the creation of new open spaces that will provide direct connections to the river. The regional center is also home to Willamette Falls and the Willamette Falls Legacy Project, a public/private partnership working to connect the Falls to Downtown Oregon City through the development of

housing, public spaces, habitat restoration, education, and employment opportunities. The regional center currently has a drug store, restaurants, and other retail commercial uses, banks, medical/dental facilities, community centers, government offices, and auto-oriented uses. Metro's 2017 State of the Centers Atlas showed less than 400 people living in the regional center, as well as a low population density (5.2 people per acre), low total employees, and low dwelling unit density compared with other regional centers; in fact, the average population of all regional centers in 2017 was more than 6,000 people and the average population density was 22.8 people per acre. The City's vision to attract more housing and employees to the regional center will elevate it to the activity spectrum levels comparable to other regional centers in the region.

There are also employment uses, including industrial uses, grocery stores, and other commercial uses, as well as education and medical facilities, government offices, and parks in the Red Soils area near the intersection of Beavercreek Road and Molalla Avenue and between Highway 213 and Beavercreek Road. Additionally, there are major medical facilities and an assisted living facility east of S Division Street between Davis Road and Gilman Drive and employment uses around the intersection of Abernethy Road and S Redland Road.

Growth in and near the regional center and other employment and medical center areas will not necessarily cause a significant increase in household-based VMT per capita in the future, as area residents will be able to access some daily needs and find employment opportunities with relatively short trips. The transit service and bike and pedestrian facilities that serve these areas, described further below, can also help to ensure that additional growth nearby does not adversely impact household-based VMT per capita.

Four TriMet bus lines serve Oregon City, all of which generally focus on the regional center and the central portion of the city along Molalla Avenue. Service is provided to Clackamas Community College and the employment areas near the intersection of Beavercreek Road and Molalla Avenue and between Highway 213 and Beavercreek Road; however, large portions of the City lack TriMet service. Route 154 provides service along Abernethy Road and Holcomb Boulevard between the regional center and up to about S Longview Way. Route 32 provides service along S Division Street and along Beavercreek Road, connecting the regional center with employment uses along Beavercreek Road, Oregon City High School, and Clackamas Community College. Some of these existing routes are identified as part of the frequent regional transit network in Chapter 4, Figure 4.3 of the 2023 RTP, though there are also gaps in planned frequent transit service along certain routes in the UGB near the reserve and elsewhere in the City as well.

Oregon City has at least 29 miles of dedicated bike lanes and 3.5 miles of established bikeways, with most of them located in the "up-top" section (southern end) of the City. The Park Place neighborhood is also fairly well served and Highway 213 has dedicated bike lanes. Most of the downtown streets are classified as "bike with caution" streets

and the South End neighborhood has minimal bike facilities. There are dedicated bike facilities along most of Beavercreek Road and Molalla Avenue, as well as on much of Front Avenue, Holcomb Boulevard, S Redland Road, and Swan Avenue nearer to the reserve. Portions of S Anchor Way and S Division Street have bike facilities. The existing bike facilities on Beavercreek Road, Holcomb Boulevard, Molalla Avenue, and S Redland Road are identified as part of the regional bike network on Figure 4.5 in Chapter 4 of the 2023 RTP. However, the figure also identifies a gap in the planned network along S Holly Lane and areas closer to the regional center.

The regional center is well served by sidewalks, as are employment areas near the intersection of Beavercreek Road and Molalla Avenue and between Highway 213 and Beavercreek Road. The medical center complex on S Division Street and much of the residential areas in the UGB adjacent to the reserve also have sidewalks. Holcomb Boulevard has sidewalks on at least one side most of the way from the inner edge of the UGB to the intersection of Abernethy Road and S Redland Road, though there are some sections without sidewalks. The portions of S Maplelane Road and S Thayer Road in the UGB lack sidewalks on both sides and have lengths with no sidewalks at all, though there are painted pedestrian crossings at the intersection of S Maplelane Road and S Beavercreek Road. Chapter 4, Figure 4.4 of the 2023 RTP identifies gaps in the planned regional pedestrian network along Holcomb Boulevard and S Redland Road. There are also gaps in the planned regional trail network in the UGB near the reserve, as indicated in Chapter 4, Figure 4.6 of the 2023 RTP.

Figure 4.14 in Chapter of the 2023 RTP identifies Molalla Avenue inside the UGB as a high injury corridor.

The sections of Highway 99E, Highway 213, and I-5 in Oregon City are identified as a throughways Chapter 4, Figure 4.7 of the 2023 RTP. Figure 4.8 of that chapter indicates that these highway sections currently meet travel speed reliability performance thresholds, with no more than four hours per day when travel speeds fall below the identified minimum speed. RTP models indicate this reliability will continue at least to the year 2045.

b. Capacity of existing facilities to serve areas proposed for addition to the UGB

Highway 213 is the nearest RTP-designated throughway to the reserve. Indeed, the highway bisects the reserve, but does not include direct access to it; the closest accesses would be via S Redland Road, approximately half a mile from the north end of the reserve or via S Maplelane Road, approximately three-quarters of a mile from the south end of the reserve. As noted above, the section of the highway in the City currently meets travel speed reliability performance thresholds. Considering the relatively small buildable area of the reserve and RTP reliability forecasts, development of the reserve is not expected to jeopardize the throughway reliability of the highway.

TriMet Route 32 has stops on S Division Street, essentially adjacent to the northwest corner of the reserve. There are also Route 32 stops at the intersection of Beavercreek Road and Highway 213, approximately three-quarters of a mile from the southeast corner of the reserve. Route 32 provides access to the regional center, as well as to employment uses along Molalla Avenue and Beavercreek Road, as well as to Clackamas Community College and Oregon City High School. Route 154, which has stops at the intersection of Abernethy Road, Holcomb Boulevard, and S Redland Road, provides service between the City of West Linn and along Holcomb Boulevard, with stops in the regional center. There are no TriMet stops along S Holly Lane.

While there are no roads directly connecting to the reserve that have bike facilities, short sections of S Anchor Way and S Division Street near to the north of the reserve, as well as Abernethy Road and S Redland Road, have bike facilities. There are also bike facilities on S Maplelane Road, but they stop about 500 feet from the southeast corner of the reserve. There are no bike facilities along S Holly Lane.

The roads withing and along the residential neighborhoods and the medical facility complex adjacent to the northwest of the reserve mostly have sidewalks, as does much of the length of S Maplelane Rd adjacent to the south end of the reserve. There are no sidewalks along Morton Road or Willamette Street stubbing to the northwest of the reserve, along S Donovan Road between the reserve and Tumwata Middle School, or along S Holly Lane running through the reserve.

It was noted in response to Factor 1 that the reserve is not likely to be able to efficiently accommodate an employment land need, but could potentially support a small residential land need. The north and northwest of the reserve are relatively close and accessible to employment uses, school uses, medical facilities, and the regional center, has nearby transit service and bike and pedestrian facilities. Future residents of this portion of the reserve could access their daily needs and employment opportunities without significant travel by private motor vehicle. The east side of the reserve, however, is much further from employment, school uses, medical facilities, and the regional center, and is not as close to transit service, though the northeast of the reserve is adjacent to Tumwata Middle School. Future resents of the east side of the reserve will likely be more reliant on private motor vehicle transportation to access their daily needs and employment opportunities.

c. Impacts to existing facilities that serve nearby areas already inside the UGB

S Anchor Way, Davis Road, S Division Street, Gilman Drive, S Holly Lane, S Maplelane Road, Morton Road, S Redland Road, and Willamette Street would be expected to see additional private vehicle traffic from development of the reserve. Existing bike and pedestrian facilities nearby would also be expected to see additional use.

As noted above, future residents of the north and northwest of the reserve could access their daily needs and employment opportunities without significant travel by private

motor vehicle and, therefore, would not likely increase the area's household-based VMT per capita. The small buildable area of this portion of the reserve would also mean that additional traffic impacts on existing streets would be minimal. The east side of the reserve, however, could support more residential development and is further away from areas where future residents could access their daily needs and employment opportunities. The east side is also generally less well served by transit and bike and pedestrian facilities. Future residents of these areas will likely drive more often and farther on average than future residents in the northwest of the reserve, with greater traffic impacts on nearby roadways.

Development of the reserve is, however, not expected to jeopardize Highway 213's throughway reliability or necessarily cause additional motor vehicle traffic on Molalla Avenue that exacerbates its high-crash conditions.

d. Need for major transportation facility improvements and associated costs

Urbanization of the reserve is expected to warrant improvement of a 1.22-mile-long portion of S Holly Lane crossing through the reserve to urban arterial standards, which will require acquisition of additional right-of-way.

Facilities	Cost
Arterials, existing/improved full street	$64.50 million
Arterials, existing/improved half street	$0
Arterials, new	$0
Collectors, existing/improved full street	$0
Collectors, existing/improved half street	$0
Collectors, new	$0
Total:	**$64.50 million**
Per dwelling unit at 20 units per net vacant buildable acre:	**$24,694**

e. Provision of public transit service

TriMet evaluated the reserve for providing transit service. TriMet could provide services to the reserve, although there is no guarantee of service. Actual service depends on the level of development in the reserve and in the corridors leading to it. Conceptual road layouts for the reserve do not provide enough roadway network to make service feasible. However, potential services described within TriMet's "2045 Network Vision" could be rerouted with future roadway development at no additional cost.

Prior to land being included in the UGB, a more detailed concept plan, consistent with the requirements of Metro's Urban Growth Management Functional Plan Title 11, will be required. This concept plan process will develop more refined public facility and service needs and cost estimates.

Factor 3: Comparative environmental, social, energy, and economic consequences

Environmental consequences

Newell Creek flows north through the middle of the Holly Lane – Newell Creek Canyon Urban Reserve for approximately 1.9 miles. This stretch of the creek is on land owned by either Metro or Oregon Department of Transportation, and these lands are not likely to be urbanized.

Three tributaries of Newell Creek also flow through Metro-owned land for approximately 0.7 miles. Two of these tributaries first flow through undeveloped private land that contains numerous areas of steep slopes for approximately 0.6 miles. Urbanization of these steep slope areas will be difficult and likely minimal and therefore may not have significant impacts on these stream corridors.

A tributary to Abernethy Creek flows north in a ravine along the eastern edge of the reserve for approximately half a mile. The stream is about 100–200 feet below the main developable portions of the tax lots along S Holly Lane and, therefore, would not be impacted by future development occurring on the flatter portions of the area. A half-acre wetland identified on the National Wetland Inventory (NWI) is located in the southern portion of the area within the powerline easement. Limitations for residential development in powerline easements will provide their own protections on the wetlands from development.

There are some significant locations of upland habitat adjacent to both stream corridors and the tributaries. Again, due to the public ownership pattern and slopes greater than 25 percent that limit the amount of the residential development that can occur, urbanization of the area will have minimal impacts on the identified upland habitat.

Overall, urbanization of the area could occur with comparatively minimal impacts to the stream corridors, wetlands, and upland habitat due to topography and public ownership. Additional environmental consideration, specifically regarding avoidance of conflict between urban development and regionally significant fish and wildlife habitat, is provided in the Metro Code Factors Analysis (Appendix 7A).

Considering the comparative environmental consequences of urbanization, the Holly Lane – Newell Creek Canyon Urban Reserve is given a “high” score in Attachment 3 for this Goal 14 boundary location sub-factor.

Social, energy, and economic consequences

There is not a lot of developable land in the Holly Lane – Newell Creek Canyon Urban Reserve when considering the amount of vacant lands that are in public ownership or are constrained by topography or natural features. There are only a few rural residences west of Highway 213 and they are adjacent to and practically a part of the urban development of Oregon City, so urbanization of this area is unlikely to result in a significant change in sense of place or degradation of a more rural lifestyle for these residents. There are also already

numerous residences along S Holly Lane on the east side of Highway 213, and they are proximate to urban subdivisions, large manufactured home parks, commercial areas, and public school complexes; urbanization of this area is therefore also unlikely to result in a significant change in sense of place or degradation of a more rural lifestyle for these residents either.

As detailed more fully in response to Factor 2, the proximity of a variety or urban land uses and modes of transportation, as well as the relatively small amount of buildable area, could help limit significant increases in VMT and related energy impacts from urbanization of the north and northwest of the reserve. Urbanization of the east side of the reserve could have higher rates of VMT, but, given the amount of parcelization and existing development in this area, new development here would occur slowly. The larger and less developed tax lots in the southeast of the reserve may be developed sooner, and they are closer to existing urban services and other modes of transportation.

There is minimal commercial agriculture occurring within the reserve and the economic consequences of a loss in farming activity in the reserve may be outweighed by the economic benefits of residential development.

This analysis finds that there would be comparatively low social, energy, and economic consequences from urbanization of this reserve. The Holly Lane – Newell Creek Canyon Urban Reserve is given a "high" score in Attachment 3 for this Goal 14 boundary location sub-factor.

Factor 4: Compatibility of the proposed urban uses with nearby agricultural and forest activities occurring on farm and forest land outside the UGB

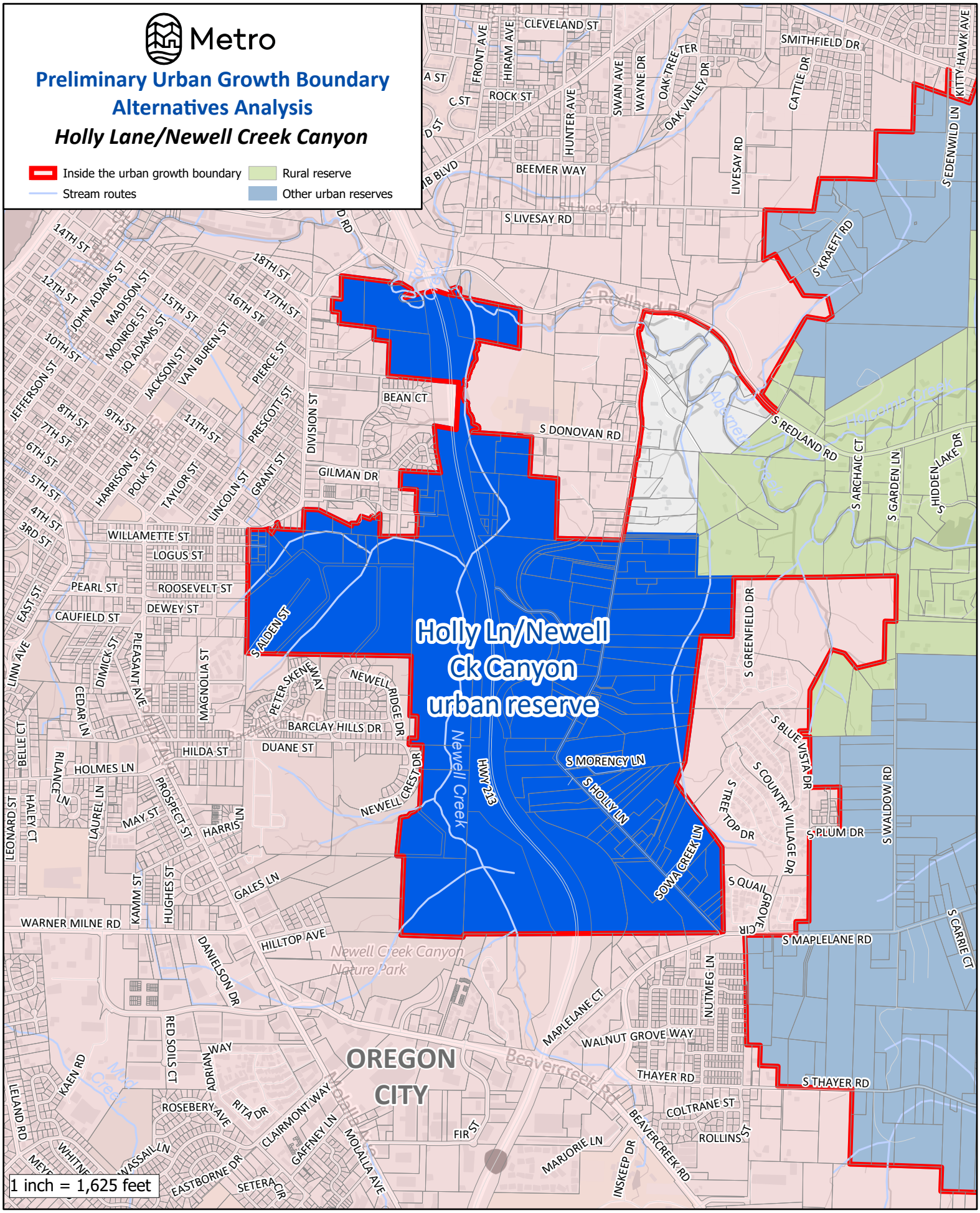
There are no locations where lands outside the UGB but contiguous with the Holly Lane – Newell Creek Canyon Urban Reserve have Goal 3 or 4 resource land zoning for agricultural or forest activities. Therefore, the proposed urban uses are considered to have high compatibility with the nearby agricultural and forest activities occurring on farm and forest land. The reserve is given a "high" score in Attachment 3 for this Goal 14 boundary location factor.

Metro

Preliminary Urban Growth Boundary Alternatives Analysis

Holly Lane/Newell Creek Canyon

Inside the urban growth boundary
Stream routes
Rural reserve
Other urban reserves

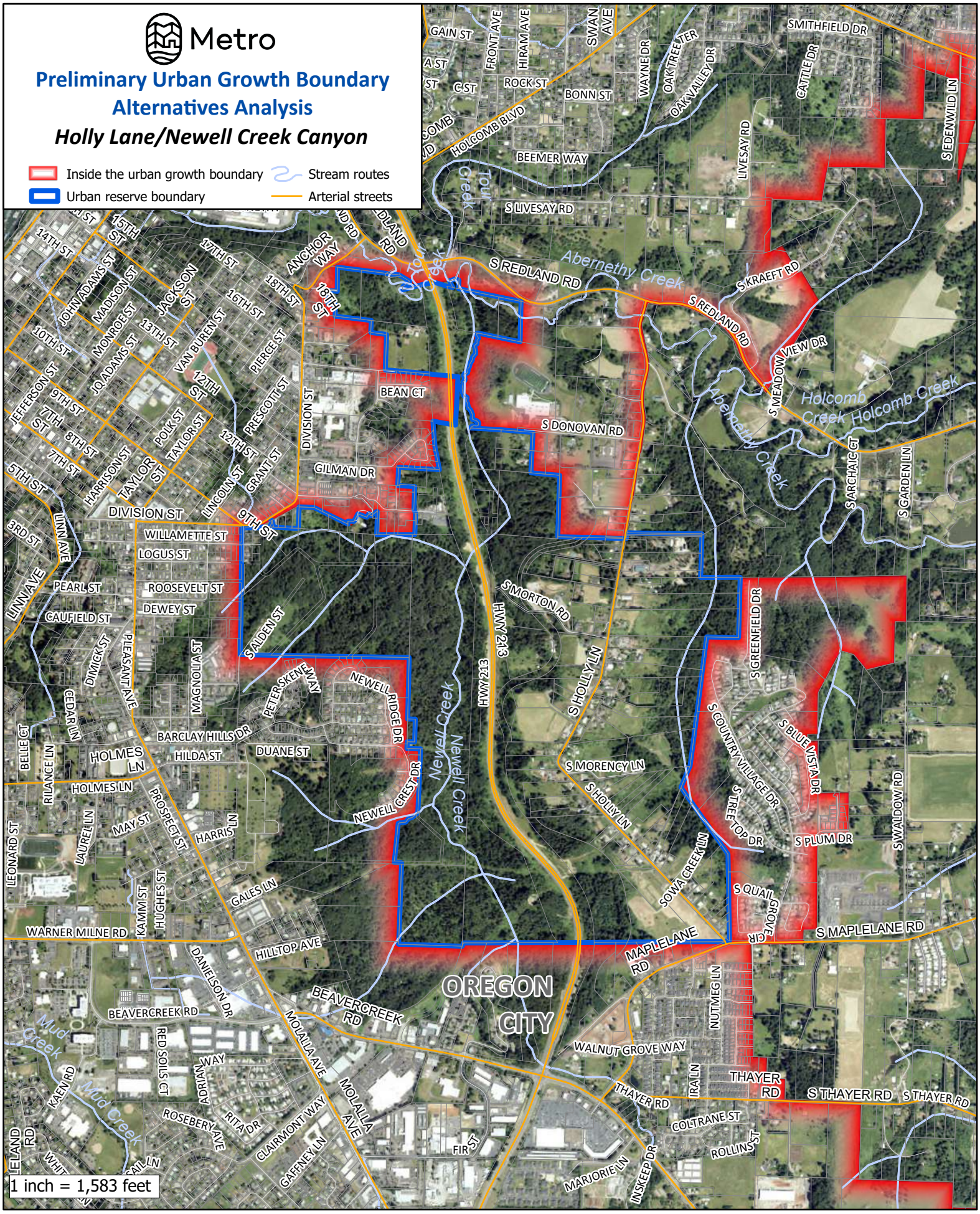


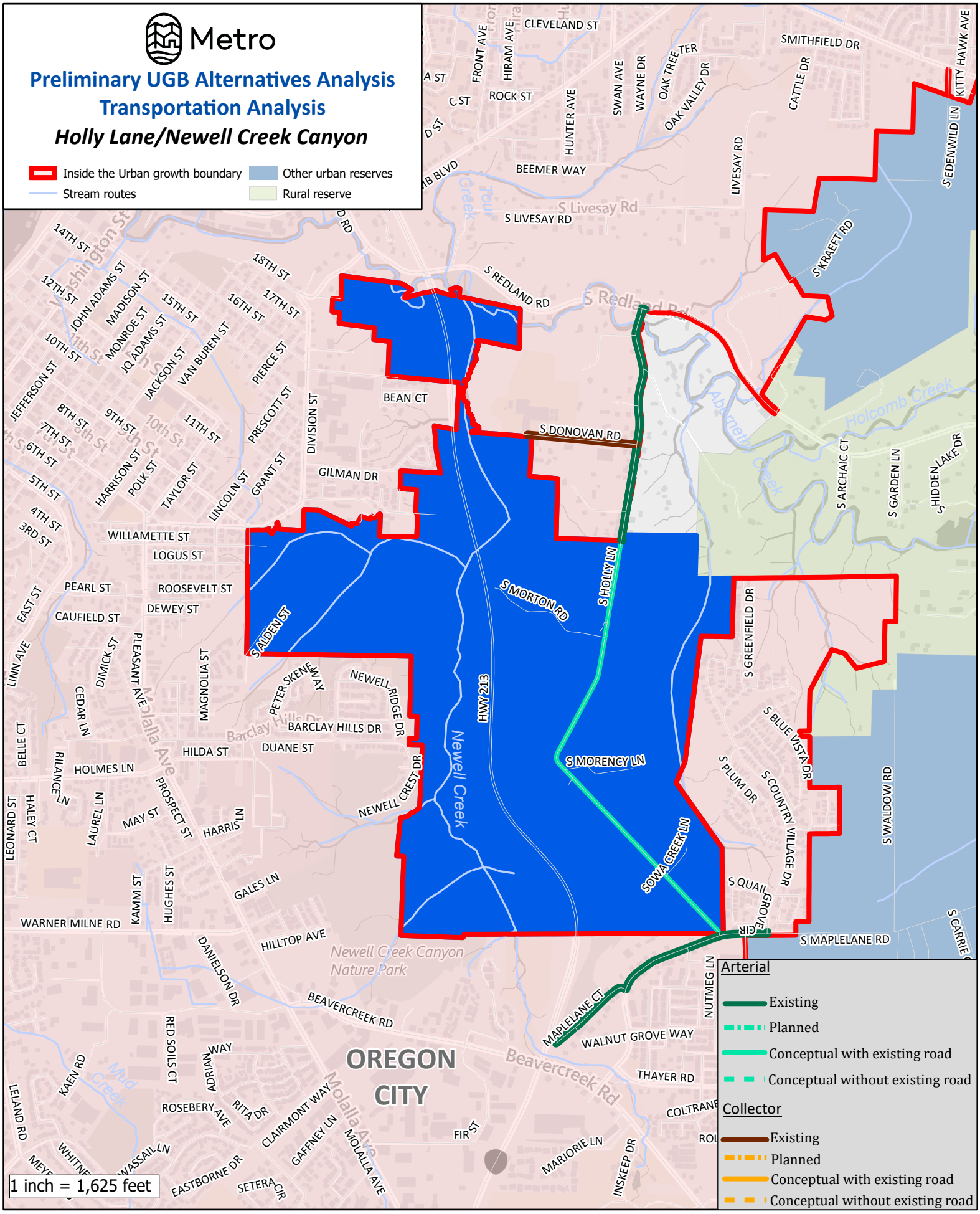
Metro

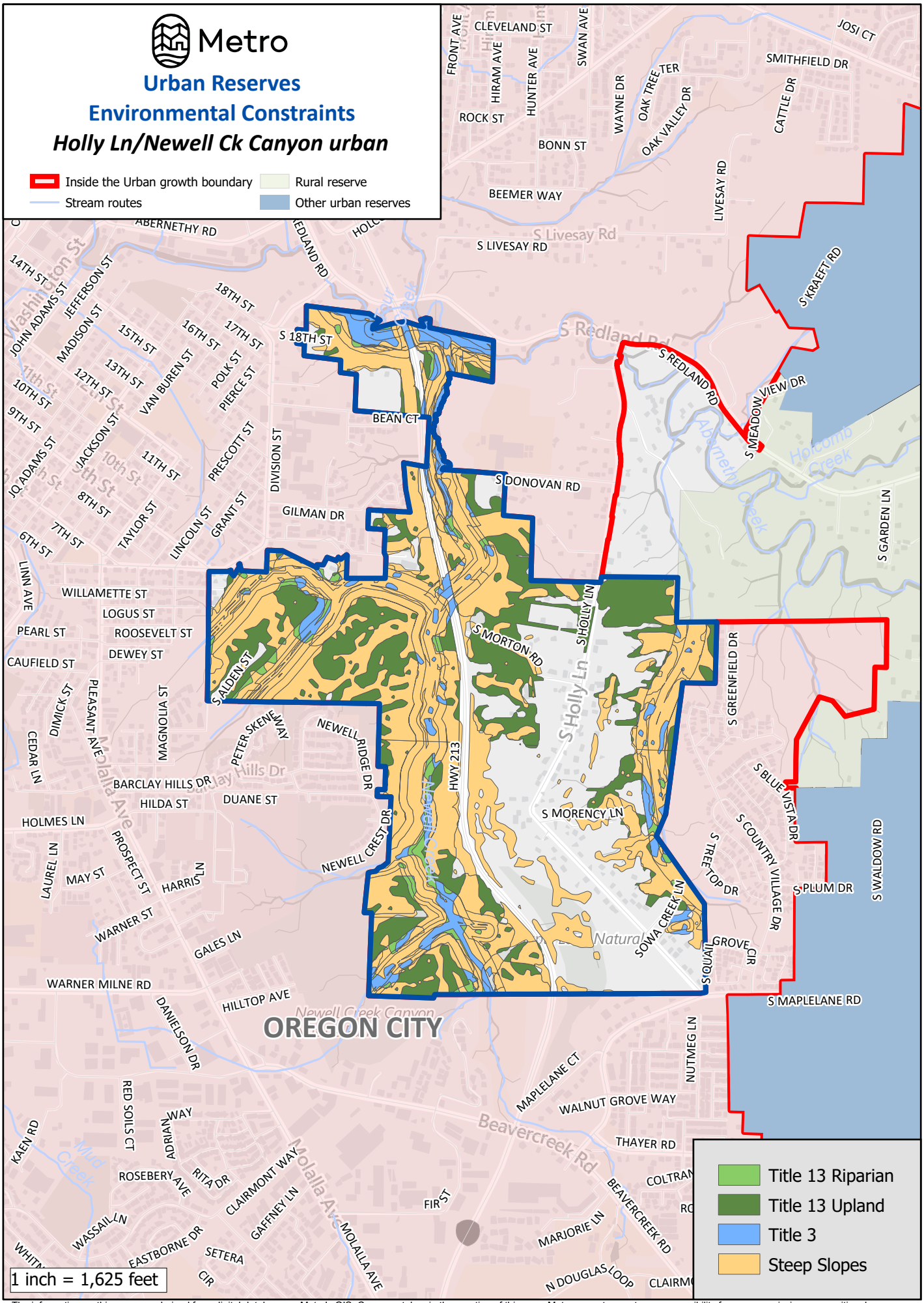
Preliminary Urban Growth Boundary Alternatives Analysis

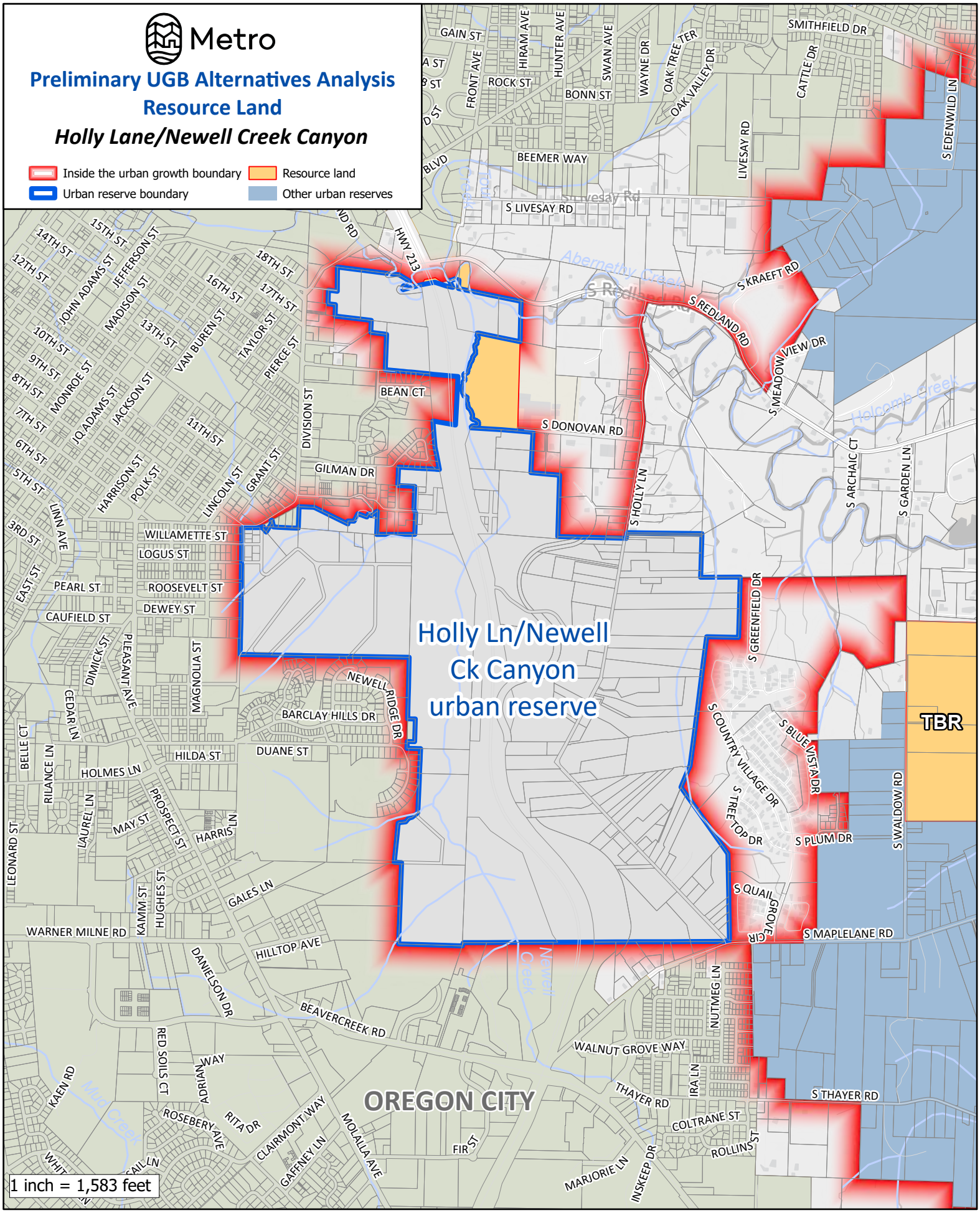
Holly Lane/Newell Creek Canyon

Inside the urban growth boundary
Urban reserve boundary
Stream routes
Arterial streets









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I-5 EAST – WASHINGTON COUNTY URBAN RESERVE

Total Reserve Area	851 acres
Total Tax Lot Area in Reserve (without Right-of-Way)	740 acres
Gross Vacant Buildable Area	500 acres
Net Vacant Buildable Area	**372 acres**

The I-5 East – Washington County Urban Reserve is a somewhat rectangularly shaped area on the east side of I-5, south of I-205, north of SW Frobase Road, and west of SW 65th Avenue. The UGB, which more or less follows I-5 and I-205, forms the western and northern boundaries of the reserve, while the Norwood Urban Reserve and the Elligsen Road North Urban reserve bound it to the east and south, respectively. Saum Creek flows north through the center of the reserve and several tributaries join the creek prior to it crossing under I-205. The south end of the reserve is approximately 270 feet higher than its north end and there are numerous slopes greater than 10 percent throughout the reserve, primarily along Saum Creek and its tributaries. Access to the area is provided by SW Frobase Road, SW Norwood Road, SW 65th Avenue, and SW 82nd Avenue.

GOAL 14 BOUNDARY LOCATION FACTORS

Factor 1: Efficient accommodation of identified land needs

The I-5 East – Washington County Urban Reserve is comprised of 160 contiguous tax lots entirely within the reserve. The combined area of these tax lots is approximately 740 acres. More than 70 percent of the tax lots are smaller than five acres; five are larger than 10 acres, with two larger than 60 acres. As noted above, the entire reserve contains 500 gross vacant buildable acres and 372 net vacant buildable acres.

According to aerial imagery, the 160 tax lots are predominantly in agricultural and rural residential use and 142 have assessed improvements. The median assessed value of these tax lots' improvements is more than $330,000.

While the reserve is adjacent to – indeed, includes portions of – I-5 and I-205, the nearest interchanges to both highways are more than a mile away via existing roads. Tualatin High School and Horizon Christian High School are both within a mile of the reserve, and the nearest TriMet bus stop is approximately half a mile away, though these facilities are on the opposite side of I-5 from the developable portions of the reserve. The Chieftain/Dakota Greenway Trailhead is also on the opposite side of I-5. The nearest 2040 Growth Concept designated corridor is more than a mile away.

There are slopes greater than 10 percent dispersed throughout the middle of the reserve, mainly along the numerous stream corridors that divide the reserve into smaller potentially-developable sections. Given the considerable number of tax lots under five acres with existing residences, the natural features that divide the reserve into smaller sections, and the distance to highway interchanges, this area is not considered appropriate for employment land needs. However, it is able to accommodate a residential land need.

Factor 2: Orderly and economic provision of public facilities and services

Water Services

With regard to water services, the I-5 East – Washington County Urban Reserve is given a "low" score in Attachment 3 for this Goal 14 boundary location factor, for the reasons detailed in (a)-(d) below.

a. Capacity of existing facilities to serve areas already inside the UGB

Adjacent lands inside the UGB are served by the City of Tualatin. The city's sole source of water is treated water purchased from Portland Water Bureau. Water is delivered through a 36-inch supply line from the Washington County Supply Line. There are two pressure zones that would likely serve the I-5 East – Washington County Urban Reserve, Pressure Zones B and C. According to the city's March 2023 Water System Master Plan, both zones have storage surpluses under current conditions, but may have storage deficits under UGB buildout conditions. Under normal pumping conditions, the Norwood Pump Station serving Zone C has surplus capacity, though the Martinazzi and Boones Ferry Pump Stations previously serving Zone B have reached the end of their usable lives and do not currently operate, so Zone B is now served by the Boones Ferry flow control valve/pressure reducing valve. There are existing industrial deficiencies in Zone B and residential deficiencies in Zone C. Existing transmission line capacity is deficient in both zones.

b. Capacity of existing facilities to serve areas proposed for addition to the UGB

Assuming the I-5 East – Washington County Urban Reserve is added to the UGB after full buildout of the areas already within the UGB, and assuming storage facilities are not expanded, development of the reserve would cause a greater storage capacity deficit. Projected surpluses of the Norwood Pump Station could serve the reserve, but the Martinazzi and Boones Ferry Pump Stations both require upgrades to be operational. Transmission line improvements are identified in the Master Plan capital improvement projects. These improvements would provide resiliency to the existing water system as well as additional capacity to serve future growth in the reserve.

c. Impacts to existing facilities that serve nearby areas already inside the UGB

Additional storage capacity, as well as potentially pump station upgrades, will be needed to avoid negative impacts to service in the UGB.

d. Estimated water service-related costs for reserve development

Water piping, pumping, and storage costs	Cost
10-inch pipe	$6.76 million
12-inch pipe	$0 million
16-inch pipe	$0
Pumping	$14.5 million
Storage	$0.50 million
Total:	**$21.76 million**
Per dwelling unit at 20 units per net vacant buildable acre:	**$2,922**

Sanitary Sewer Services

With regard to sanitary sewer services, the I-5 East – Washington County Urban Reserve is given a "medium" score in Attachment 3 for this Goal 14 boundary location factor, for the reasons detailed in (a)-(d) below.

a. Capacity of existing facilities to serve areas already inside the UGB

Wastewater from adjacent lands in the City of Tualatin is treated at the Durham Advanced Wastewater Treatment Facility (AWWTF), which is owned and operated by Clean Water Services (CWS). CWS is also responsible for the system's gravity sewers over 24 inches in size, pump stations, and force mains. Eight of the nine CWS-owned pump stations have surplus capacity under existing conditions. While there may be some pipe capacity issues in the Teton and Tualatin Reservoir Basins, these capacity issues they may not be significant.

b. Capacity of existing facilities to serve areas proposed for addition to the UGB

It is unclear whether a capacity increase to the Saum Creek Pump Station proposed in the Master Plan would have the capacity to also serve the reserve. Current and planned piping is likely to be insufficient to serve development of the reserve. The treatment plant is a large facility with a broad service area; however, the cumulative addition of multiple urban reserves to the UGB could result in a need for some expansion in order to handle additional load.

c. Impacts to existing facilities that serve nearby areas already inside the UGB

Additional pumping and piping capacity are potentially needed to serve urban development of the reserve while avoiding negative impacts to service within the existing UGB. Additionally, and as noted above, cumulative addition of multiple urban reserves to the UGB could result in a need for some treatment plant expansion in order

to handle additional load while avoiding negative impacts to service within the existing UGB.

d. Estimated sanitary sewer service-related costs for reserve development

Sanitary sewer piping and pumping costs	Cost
10-inch pipe	$3.91 million
12-inch pipe	$4.20 million
15-inch pipe	$0
Pump station	$4.50 million
Force mains	$0
Total:	**$12.61 million**
Per dwelling unit at 20 units per net vacant buildable acre:	**$1,693**

Stormwater Management Services

With regard to stormwater management services, the I-5 East – Washington County Urban Reserve is given a "high" score in Attachment 3 for this Goal 14 boundary location factor, for the reasons detailed in (a)-(d) below.

a. Capacity of existing facilities to serve areas already inside the UGB

There is no indication of major capacity issues with existing stormwater facilities that serve the adjacent land inside the UGB. Based on topography, stormwater from development of the I-5 East – Washington County Urban Reserve would discharge directly to Saum Creek; the city's 2019 Stormwater Master Plan did not identify the Saum Creek Basin as currently facing capacity challenges.

b. Capacity of existing facilities to serve areas proposed for addition to the UGB

Stormwater will be conveyed, treated, and disposed of within the reserve and discharge to Saum Creek, rather than connecting to existing facilities in the UGB. Saum Creek is believed to have sufficient capacity to serve development of the reserve.

c. Impacts to existing facilities that serve nearby areas already inside the UGB

As noted above, stormwater will be conveyed, treated, and disposed of within the reserve and discharge to Saum Creek, rather than connecting to existing facilities in the UGB. Saum Creek is believed to have sufficient capacity. Therefore, no adverse impacts to existing facilities are anticipated.

d. Estimated stormwater service-related costs for reserve development

Stormwater piping and water quality/detention	Cost
18-inch pipe	$1.80 million
24-inch pipe	$0
30-inch pipe	$0
Water quality/dentition	$2.65 million
Total:	**$4.45 million**
Per dwelling unit at 20 units per net vacant buildable acre:	**$597**

Transportation Services

With regard to transportation services, the I-5 East – Washington County Urban Reserve is given a "low-medium" score in Attachment 3 for this Goal 14 boundary location factor, for the reasons detailed in (a)-(e) below.

a. Capacity of existing facilities to serve areas already inside the UGB

Figure 4.36 in Chapter 4 of the 2023 Regional Transportation Plan (RTP) displays 2020 home-based vehicle miles traveled (VMT) per capita by Metro transportation analysis zone, with average VMT per capita considered 11.32. According to Figure 4.36, areas in the UGB adjacent to the I-5 East – Washington County Urban Reserve had below average, average, and above average home-based VMT per capita in 2020.

Metro's adopted 2040 Growth Concept Map designates a town center in the adjoining City of Tualatin. Town centers are meant to: serve populations of tens of thousands of people; offer more locally-focused retail uses and public amenities; and be well served by transit. The roughly 300-acre Tualatin Town Center aligns with this 2040 Growth Concept Map area. The city's Tualatin Town Center Plan envisions a mixed-use live, work, and play center that integrates natural resources, like the Tualatin River, with civic, social, economic, and cultural functions in a walkable community. Metro's 2017 State of the Centers Atlas shows that the Tualatin Town Center has a low number of dwelling units per acre and a much higher total number of employees compared with other town centers in the region. The town center has a very high "access to parks" score in the atlas, due in part to the numerous open space/natural areas and the Tualatin Community Park along the Tualatin River nearby. The town center also includes grocery stores and other retail commercial uses, medical/dental facilities, a post office, and multi-family housing, but also storage facilities, auto-oriented uses, and large parking lots. Within the UGB and adjoining the town center are Title 4 designated Industrial Area and Employment Area lands, as well as low- and medium-density residential uses.

Seven TriMet bus lines and the Westside Express Service (WES) Commuter Rail serve Tualatin. The routes are spread out along the major roadways including Highway 99W, SW Tualatin-Sherwood Road, and SW Boones Ferry Road, providing service to the town center and employment areas. WES connects the town center with Beaverton to the north and Wilsonville to the south. Figure 4.3 in Chapter 4 of the 2023 RTP does identify gaps in the planned regional transit network along SW Boones Ferry Road, SW Tualatin – Sherwood Road, and elsewhere in the city.

Nonetheless, the town center's existing land uses and transit service, and some availability for new development in and near the town center, demonstrate that growth in the current UGB near the town center will not necessarily cause a significant increase in home-based VMT per capita in the future, as residents will be able to access some daily needs through modes other than private motor vehicle transport. Growth in other areas of the city where residential uses surround schools and parks are is also unlikely to significantly impact home-based VMT per capita in the future.

The town center is less than half a mile away from areas in the UGB adjacent to the reserve, but these areas are on the opposite side of I-5 and I-205 from the reserve. I-5 also separates residential uses in the UGB to the north of the reserve from the town center to the west; there are just two overpasses that connect these residential uses to the town center, limiting connectivity. Residents of these areas, where there are also fewer bus routes, may be more reliant on private motor vehicle transportation to get to the town center and areas to the west.

Tualatin has a fairly well-established bike route system, with approximately 25 miles of dedicated bike lanes, seven miles of established bikeways, and local trails that connect the employment areas and town center to the residential areas. There are two bike lane connections across I-5 to provide access to the eastern portion of the city. Figure 4.5 in Chapter 4 of the 2023 RTP shows several existing bike facilities in Tualatin as a part of the planned regional bike network, including facilities on SW Boones Ferry Road, SW Nyberg Street, and SW Tualatin-Sherwood Road. There are identified gaps in planned regional bike facilities in the southwest and east of the city.

The town center has a well-established pedestrian network that also includes access to some trails. Most of the residential areas of Tualatin also have sidewalks, but there are fewer exiting pedestrian facilities in employment areas outside of the town center. The Tualatin River Greenway Trail connects the town center to parks in Durham and Tigard to the north, as well as to Browns Ferry Park along the Tualatin River on the east side of I-5. Figure 4.4 in Chapter 4 of the 2023 RTP shows a number of existing streets in Tualatin as in the regional pedestrian network, including sections of SW Boones Ferry Road, SW Borland Road, and SW Tualatin – Sherwood Road. The figure identifies gaps in the future regional pedestrian network, however, in the south and east of the city.

Figure 4.14 in Chapter 4 of the 2023 RTP identifies the SW Tualatin-Sherwood Road in the UGB as a high injury corridor. The intersection of SW Tualatin-Sherwood Road and

SW Boones Ferry Road, as well as the intersection of SW Martinazzi Avenue and SW Boones Ferry Road, are identified in Figure 4.14 as top five percent high injury intersections. There are no other high injury corridors or high injury intersections in Tualatin's portion of the UGB identified on Figure 4.14.

The portions of I-5 and I-205 that cross through Tualatin are identified as throughways in Figure 4.7 in Chapter 4 of the 2023 RTP. Figure 4.8 of the chapter indicates that these portions of both interstates currently meet travel speed reliability performance thresholds, with no more than four hours per day when travel speeds fall below the identified minimum speed. RTP models indicate this reliability will continue at least to the year 2045.

b. Capacity of existing facilities to serve areas proposed for addition to the UGB

While the reserve is adjacent to – indeed, includes portions of – I-5 and I-205, the nearest interchanges to both highways are more than a mile away via existing roads. As noted above, the portions of these highways in Tualatin currently meet travel speed reliability performance thresholds. Given the proximity of the town center and other commercial/employment areas to the reserve, the reserve's size, and the distance between highway interchanges and the reserve, urban development of the reserve is unlikely to generate sufficient traffic on either interstate to cause them to no longer meet those performance thresholds.

Currently, there is no transit service to the reserve. TriMet Route 76, which provides access to the town center, is approximately a third of a mile from the reserve via SW 65th Avenue, on the opposite side of I-205. TriMet Route 96, which also provides access to the town center, as well as to Portland and Wilsonville, is approximately two-thirds of a mile from the reserve via SW Norwood Road, on the opposite side of I-5.

There is a dedicated bike lane on SW 65th Avenue that is approximately one-tenth of a mile north of the reserve, on the opposite side of I-205. This bike lane connects to a bike lane on SW Sagert Street, which provides a connection to the west side of I-5, the town center, and employment areas. The small gap on SW 65th Avenue needs to be completed to connect to the reserve. There is an established bikeway and dedicated bike lane on SW Norwood Road that connects to the reserve and provides access to Horizon Christian School. This bikeway connects to another bikeway on SW Boones Ferry Road that extends south to the bike facility network in Wilsonville. It also connects to a bike lane that extends north on SW Boones Ferry Road to the bike facility network in Tualatin and Tualatin High School. There are no other existing bike facilities connected to or within the reserve.

The Saum Creek Greenway Trail is approximately 800 feet north of the reserve on the opposite side of I-205 via SW 65th Avenue; the trail connects to sidewalks on SW 65th Avenue and SW Sagert Street. The 800-foot gap needs to be completed in order to directly connect to reserve. The Norwood Trail is approximately 500 feet from the

reserve along SW Norwood Road. This trail connects to sidewalks in the residential area located just west of I-5 and extends quite some distance to the north through the residential neighborhoods and to Tualatin High School. The 500-foot gap needs to be completed to connect to the reserve. There are no sidewalks along SW 65th Avenue adjacent to the reserve, or on any existing streets within the reserve.

There are no urban residential or employment uses within a mile of the reserve and on the same side of I-5 or I-205 and, as noted above, there are only two nearby interstate crossings with gaps in bike and pedestrian facilities. There is also no existing transit service to the reserve. Therefore, without facility improvements and service extensions, and unless the reserve itself is developed with a mixture of uses, future residents of the reserve will likely be reliant on private motor vehicle transport to access their daily needs and employment, and employees of future employment uses in the reserve will need to commute by private motor vehicle from their homes located elsewhere. The analysis in Factor 1 indicated that the reserve would not be able to efficiently accommodate an employment land need.

c. Impacts to existing facilities that serve nearby areas already inside the UGB

SW 65th Avenue and SW Norwood Road would see additional private motor vehicle traffic as a result of urbanization of the reserve. However, if the reserve were to be developed with a mix of residential and employment uses, if transit service were to be extended to the reserve, and if gaps in bike and pedestrian facility connections were to be completed, there would be less additional traffic on these roadways. Providing the bike and pedestrian facility connections would lead to more use of the existing facilities within the UGB.

Given the proximity of the town center and other employment areas to the reserve, and given the distance of highway interchanges, development of the reserve is unlikely to jeopardize the throughway reliability of I-5 or I-205. Any additional motor vehicle traffic on SW Tualatin-Sherwood Road resulting from development of the reserve, however, may exacerbate the road's high-crash conditions.

d. Need for major transportation facility improvements and associated costs

SW 65th Avenue would likely need to be improved to urban arterial standards, but its improvements are considered a half-street improvements in this analysis, as the eastern half would be attributable to the urban development of the Norwood Urban Reserve. SW Frobase Road, SW 82nd Avenue, and SW Norwood Road would likely need to be improved to urban collector standards. The improvements to SW Frobase Road are considered half-street improvements in this analysis, as the southern half would be attributable to the Elligsen Road North Urban Reserve. Additional right-of-way would be required to develop each of these roads to their respective urban standards. In most cases, per-mile costs are expected to be normal, given the topography of the reserve land the roadways cross.

Facilities	Cost
Arterials, existing/improved full street	$0
Arterials, existing/improved half street	$43.83 million
Arterials, new	$0
Collectors, existing/improved full street	$47.08 million
Collectors, existing/improved half street	$13.11 million
Collectors, new	$0
Total:	**$104.02 million**
Per dwelling unit at 20 units per net vacant buildable acre:	**$13,972**

e. Provision of public transit service

Though the I-5 East – Washington County Urban Reserve is within the TriMet Service District, when TriMet evaluated the reserve for providing transit service for this analysis, it determined service to the reserve is unlikely to occur.

Prior to land being included in the UGB, a more detailed concept plan, consistent with the requirements of Metro's Urban Growth Management Functional Plan Title 11, is required. This concept plan process will develop more refined public facility and service needs and cost estimates.

Factor 3: Comparative environmental, social, energy, and economic consequences

Environmental consequences

Saum Creek flows north through the middle of the I-5 East – Washington County Urban Reserve for nearly two miles. Seven tributaries, with approximately three miles in combined length, join the creek. The vast majority of these water bodies are within established riparian buffers, some with adjacent steep slopes that would limit nearby future development. Five wetlands on the National Wetland Inventory (NWI) are located along the tributaries, ranging in size from 0.4 to 1.4 acres each, and with a total area of approximately 4.7 acres. Seven additional ponds not identified as wetlands on the inventory are located along the tributary stream corridors. There are significant areas of riparian and upland habitat identified along all the stream corridors. The stream corridors and habitat areas divide the reserve into numerous small sections of developable land. As a result, some of the land areas are isolated from one another and transportation connections between them could potentially have adverse impacts on the stream corridors and habitat areas. However, the increased protection levels on streams, wetlands, and habitat areas within the UGB will lessen the potential impacts.

Still, urbanization of the reserve could occur with comparatively moderate to significant impacts to the natural resources, depending on the level of transportation connectivity and general urban design factors. Additional environmental consideration, specifically

regarding avoidance of conflict between urban development and regionally significant fish and wildlife habitat, is provided in the Metro Code Factors Analysis (Appendix 7A).

Considering the comparative environmental consequences of urbanization, the I-5 East – Washington County Urban Reserve is given a "low" score in Attachment 3 for this Goal 14 boundary location sub-factor.

Social, energy, and economic consequences

There are a number of rural residences throughout the I-5 East – Washington County Urban Reserve, but somewhat dispersed by stream corridors, habitat areas, and the agricultural uses described below. As noted in response to Factor 1, the vast majority of the reserve's tax lots have assessed improvements. Land uses in the reserve are somewhat separated from existing urban development by I-5, I-205, agricultural uses, stream corridors, and habitat areas, so urban development in the reserve may be more impactful on the current sense of place and rural lifestyle. However, existing development, parcelization, and the natural resources will likely slow urbanization and lead it to develop in more isolated sections, reducing the pace of change. Moreover, urbanization of the reserve could bring new social, educational, and recreational opportunities for existing residents.

As detailed more fully in response to Factor 2, future residents of the reserve are expected to be fairly reliant of private motor vehicle transportation, which could lead to VMT levels with adverse energy consequences. However, VMT could be limited under certain circumstances, including if the reserve were to be developed with a mix of land uses that allows future residents to access their daily needs closer by.

There is both small- and larger-scale agricultural activity occurring the reserve, including field and row crops, pastureland, and Christmas tree farms and Lee Farms, which hosts farm-related events and activities. While there would be economic consequences from urbanization in terms of a loss in farming activity in the reserve, that loss may be outweighed by the economic benefits of residential and/or employment development.

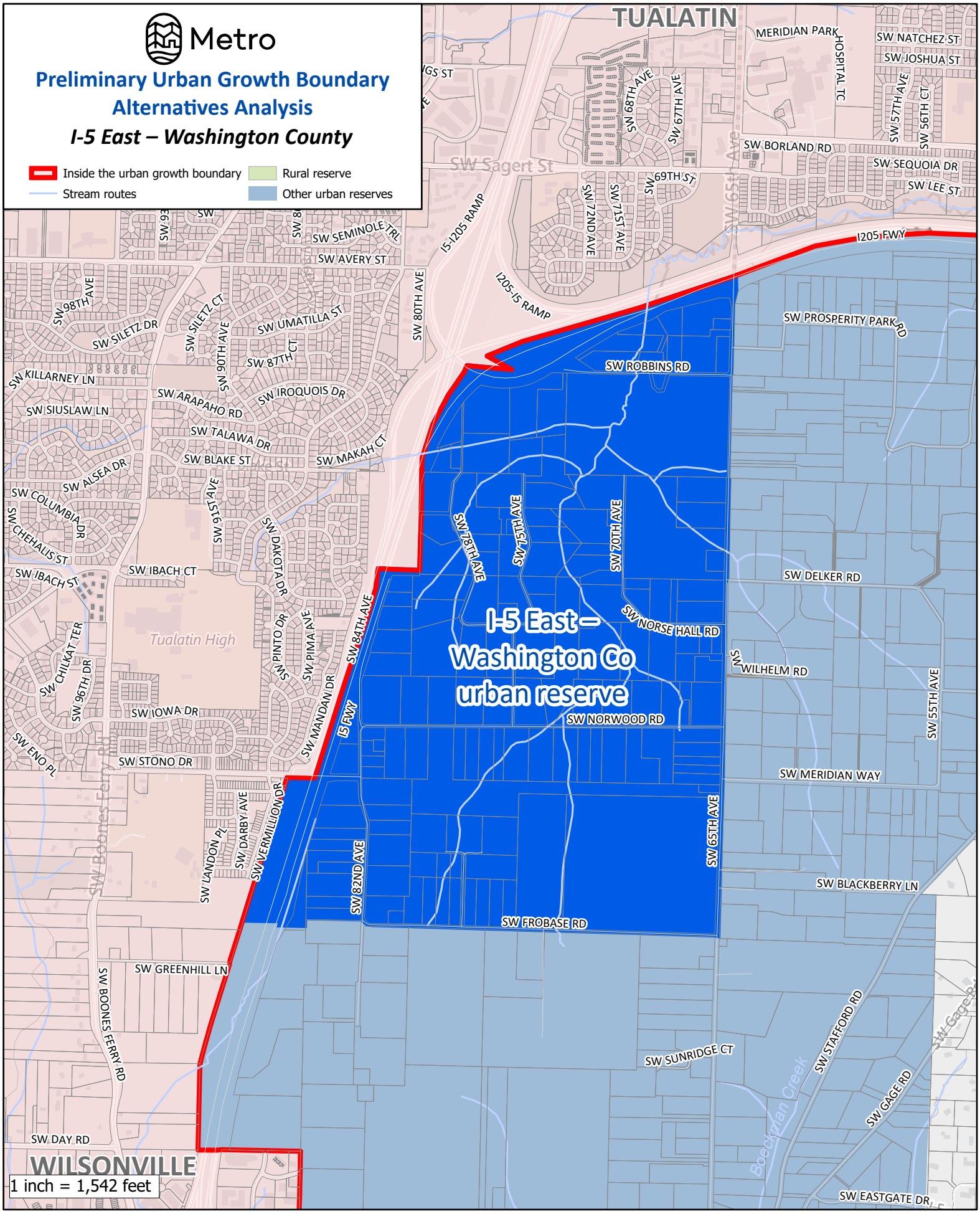
Overall, there would be comparatively moderate social, energy, and economic consequences from urbanization of this reserve. The I-5 East – Washington County Urban Reserve is given a "medium" score in Attachment 3 for this Goal 14 boundary location sub-factor.

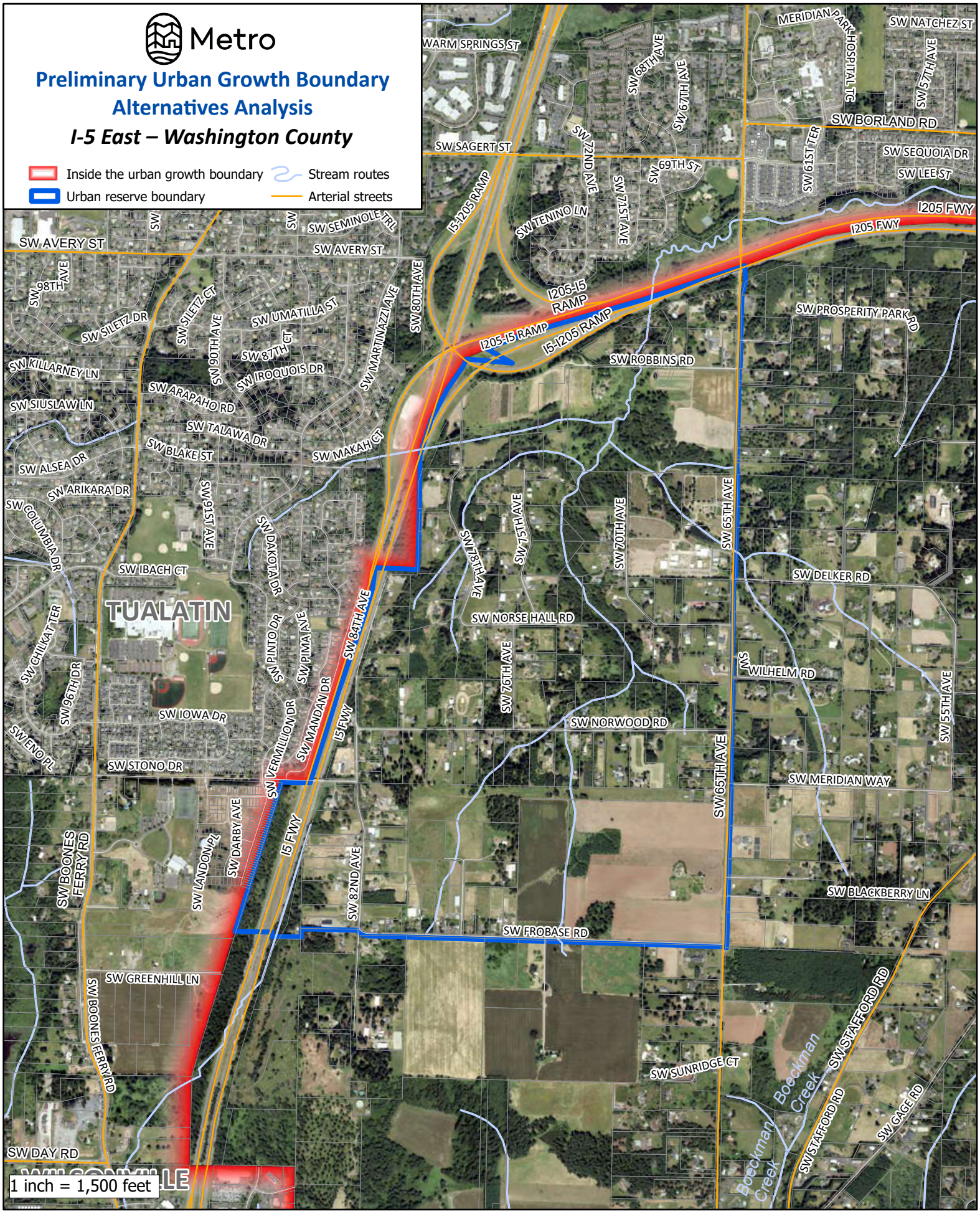
Factor 4: Compatibility of the proposed urban uses with nearby agricultural and forest activities occurring on farm and forest land outside the UGB

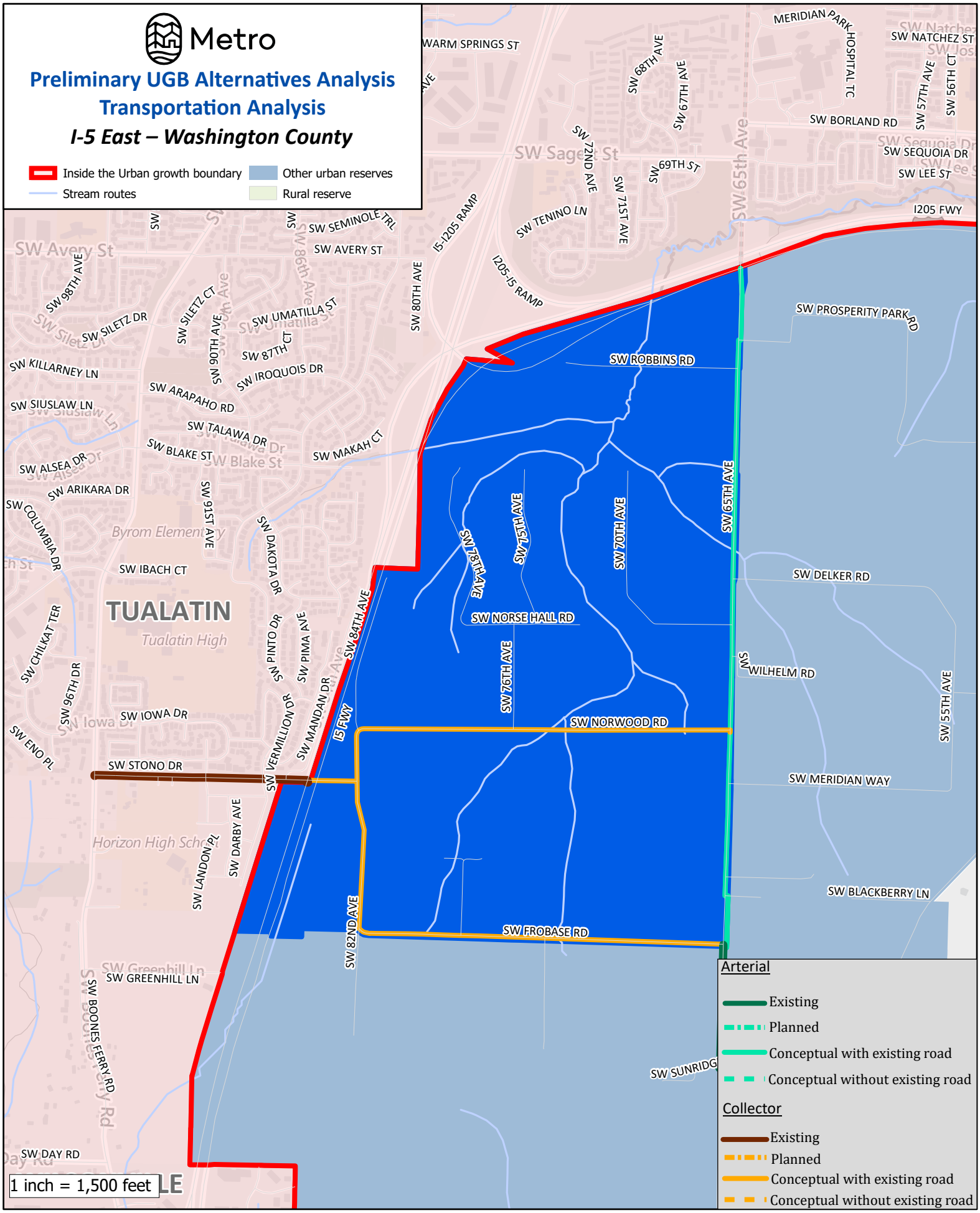
Goal 3 agricultural lands, specifically lands zoned Exclusive Farm Use (EFU) by Washington County, border the I-5 East – Washington County Urban Reserve in areas outside the UGB to south, on the opposite side of SW Frobase Road. These EFU-zoned lands have agricultural activity, including field crops, Christmas tree farms, and pasture land. There are also patches of forest, but generally in stream riparian areas, which may limit harvesting potential. The EFU-zoned lands also contact some small amounts of rural residential development. SW Frobase Road separates the reserve from these EFU-zoned lands, but the road itself would not provide an adequate buffer between urban

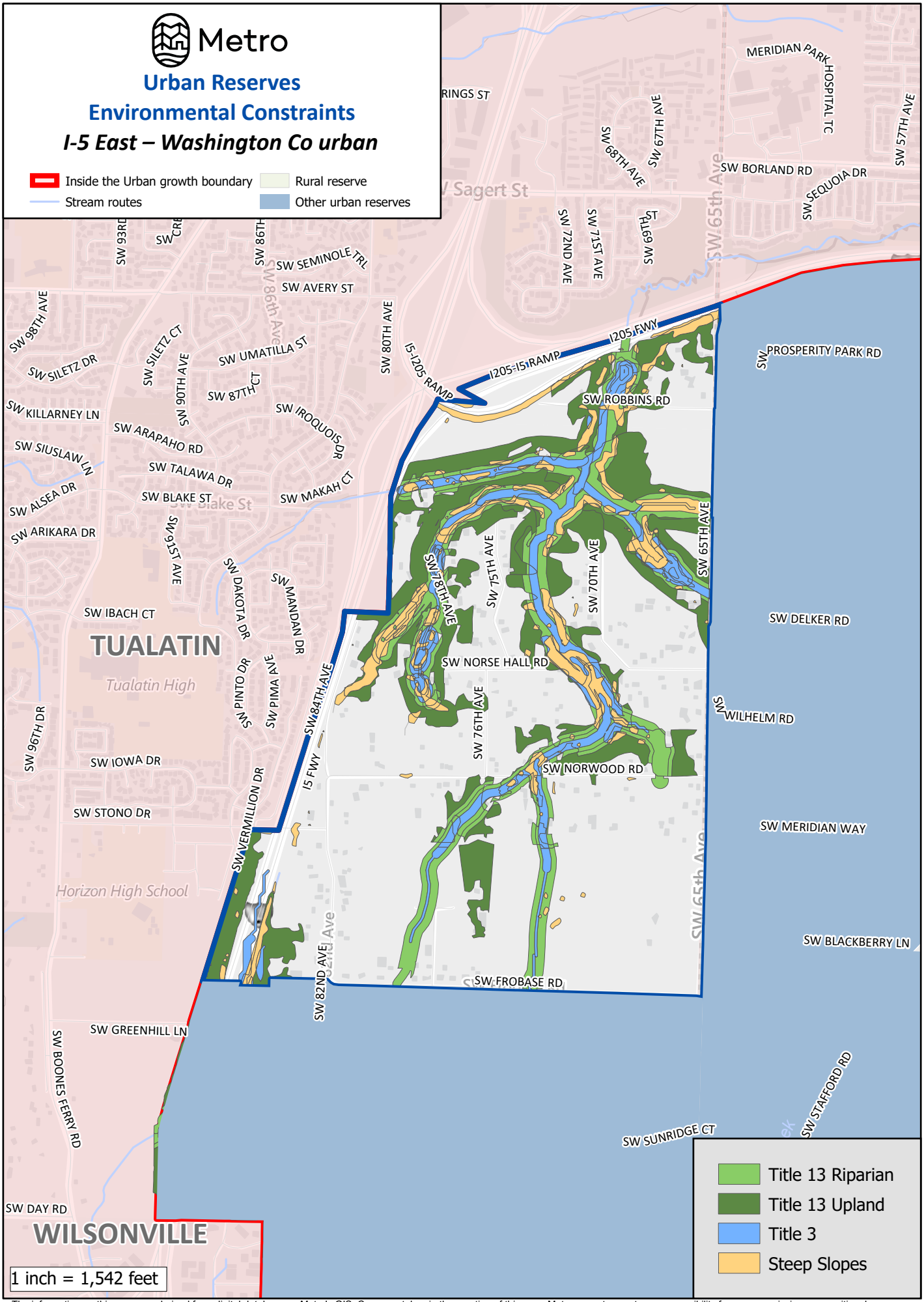
development and agricultural activity. Development of the reserve could lead to land use conflicts related to safety, liability, and vandalism and complaints due to noise, odor, dust, and the use of pesticides and fertilizer. The improvement of SW Frobase Road to urban standards, and associated street light illumination and bicycle and pedestrian movements, may further jeopardize the compatibility of the two uses, though the impacts of urban roadways on adjacent agricultural activity may be minimized through road design. Urbanization of the reserve would increase traffic on SW Frobase Road and SW 65th Avenue, which could impact the movement of both farm equipment and goods. Therefore, proposed urban uses are considered incompatible with the nearby agricultural activities occurring on the EFU-zoned land to the south.

The proposed urban uses would not be compatible with nearby agricultural and forest activities occurring on farm and forest land outside the UGB to the south. Land use conflict mitigation measures would be warranted. The I-5 East – Washington County Urban Reserve is given a "low" score in Attachment 3 for this Goal 14 boundary location factor.





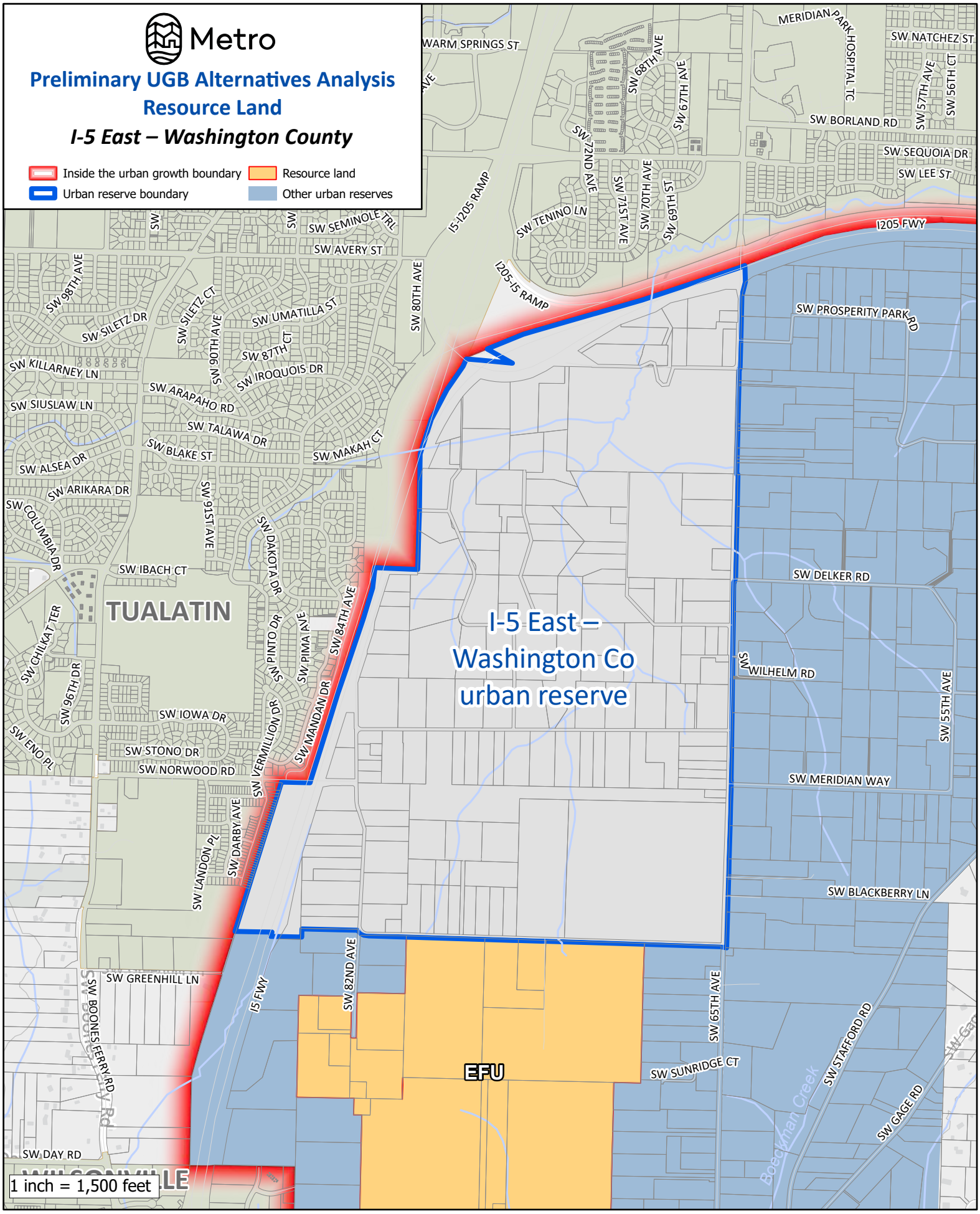




Metro

Preliminary UGB Alternatives Analysis
Resource Land
I-5 East – Washington County

Inside the urban growth boundary
Urban reserve boundary
Resource land
Other urban reserves



MAPLELANE URBAN RESERVE

Total Reserve Area	569 acres
Total Tax Lot Area in Reserve (without Right-of-Way)	556 acres
Gross Vacant Buildable Area	341 acres
Net Vacant Buildable Area	**254 acres**

The Maplelane Urban Reserve is an irregularly shaped area adjacent to the east side of Oregon City. The reserve is roughly divided between north and south by S Maplelane Road. In addition to S Maplelane Road, the reserve is connected to S Waldow Road and S Thayer Road. The UGB forms the reserve's western and southern boundaries. The reserve is primarily flat, with the exception of some small areas of steep slopes along the stream corridors and within the forested northeastern corner of the reserve. Abernethy Creek flows northward, just outside of the reserve to the east. A tributary to Abernethy Creek flows eastward through the northern portion of the reserve, and three tributaries to Thimble Creek flow eastward through the southern portion.

GOAL 14 BOUNDARY LOCATION FACTORS

Factor 1: Efficient accommodation of identified land needs

The Maplelane Urban Reserve is comprised of 167 contiguous tax lots, which have a combined area of approximately 556 acres. All but one tax lot is entirely in the reserve. Of those tax lots that are entirely in the reserve, more than 40 percent are less than one acre in size, 80 percent are smaller than five acres, and only four are larger than 10 acres. As noted above, the entire reserve contains 341 gross vacant buildable acres and 254 net vacant buildable acres.

According to aerial imagery, most of the reserve's tax lots are developed with rural residential uses, though some larger tax lots appear to have agricultural uses and/or groves of trees. Oregon City School District owns a 57-acre tax lot in the northern portion of the reserve. Portland General Electric (PGE) and the federal government also together own about 50 acres of land in the reserve, including tax lots occupied by electrical substations and large powerlines. Overall, 148 of the reserve's tax lots have improvements, with a median assessed value of those tax lots' improvements exceeding $315,000.

S Maplelane Road and S Thayer Road run roughly east-west through the reserve. S Plumb Drive, a local residential street within the UGB, stubs to the west side of the north end of the reserve. The nearest bus stop is on S Beavercreek Road, approximately half a mile away via S Thayer Road. The nearest interstate, I-205, is more than two miles from the north end of the reserve. Clackamas Community College and Oregon City High School are about half a mile away from the south end of the reserve.

The reserve is generally flat with only a few locations, mainly at the edges of the reserve and along stream corridors, having slopes greater than 10 percent. While flatter topography would be easier for development of employment uses, the number of small parcels and the distance of the reserve from I-205 reduce the attractiveness for employment uses. In addition, there is an existing

employment and commercial node at Highway 213 and S Beavercreek Road, and additional vacant industrial-zoned land inside the UGB nearby, further reducing the need for additional employment land in this location. New residential development would be more cohesive with the existing rural residential development pattern and the school district's property could provide a focal point for residential neighborhoods once a school was built there. Therefore, this area is considered best able to accommodate a residential land need and not an employment land need.

Factor 2: Orderly and economic provision of public facilities and services

Water Services

With regard to water services, the Maplelane Urban Reserve is given a "medium" score in Attachment 3 for this Goal 14 boundary location factor, for the reasons detailed in (a)-(d) below.

a. Capacity of existing facilities to serve areas already inside the UGB

The City of Oregon City serves lands within their corporate boundary, while lands within the jurisdiction of Clackamas County are served by Clackamas River Water (CRW). Both Oregon City and the CRW South System receive water from the South Fork Water Board (SFWB). SFWB's water treatment process includes flocculation, sedimentation, filtration, and chlorination of raw water from the Clackamas River to remove harmful bacteria. There are currently no known major treatment system deficiencies.

The city has annexed the Beavercreek UGB expansion area to the southwest. While the city is adequately served elsewhere, they may lack water storage necessary to fully serve urban development of these annexed areas. CRW is considered to have adequate capacity to serve lands still within the jurisdiction of Clackamas County in this vicinity and other customers; though the Beavercreek service area showed a storage deficiency of 0.31 MG in 2019 in the interim of building the new Beavercreek reservoir, it is anticipated to bring on sufficient storage. The Henrici reservoirs are understood to have capacity surpluses.

b. Capacity of existing facilities to serve areas proposed for addition to the UGB

CRW has done planning for service to the area of the urban reserve, and the Maplelane Urban Reserve is in CRW's service area. However, CRW will not likely be the service provider once the reserve is annexed to a city (i.e., Oregon City) and urbanized. Rather, when Oregon City annexes the reserve, the city will likely take ownership of any water related infrastructure within the area, except potentially for facilities that are needed to go beyond the annexed area, such as large-scale transmission lines. Accordingly, CRW, like many water service providers, may be cautious about investing in improvements for currently rural areas that may one day be annexed to cities. While there is some surplus storage capacity that could be available to serve urban development of the

reserve, once annexed to the city, that surplus may be insufficient for full urbanization of the reserve and addition storage facilities may be necessary.

c. Impacts to existing facilities that serve nearby areas already inside the UGB

As noted above, new storage facilities will likely be needed to avoid system capacity deficits.

d. Estimated water service-related costs for reserve development

Water piping, pumping, and storage costs	Cost
10-inch pipe	$3.64 million
12-inch pipe	$0
15-inch pipe	$0
Pumping	$0
Storage	$0.34 million
Total:	**$3.98 million**
Per dwelling unit at 20 units per net vacant buildable acre:	**$784**

Sanitary Sewer Services

With regard to sanitary sewer services, the Maplelane Urban Reserve is given a "low" score in Attachment 3 for this Goal 14 boundary location factor, for the reasons detailed in (a)-(d) below.

a. Capacity of existing facilities to serve areas already inside the UGB

Oregon City provides sanitary sewer service to properties within its corporate limits, as well as to some properties that are already in the UGB but still in unincorporated Clackamas County. Wastewater flows to the Tri-City Sewer District (TCSD) trunks, interceptors, and, eventually, the Tri-City Water Resource Recovery Facility (WRRF), all of which are owned and operated by Water Environment Services (WES). Surcharging, ranging from minor to severe, exists throughout the xity collection system. There are also capacity deficiencies in several locations in WES portions of the system. The Newell Creek Interceptor, which may need to serve the Maplelane Urban Reserve, has existing capacity issues. Relevant master plans include a capital improvement project to upside a portion of the Newell Creek Interceptor south of Redland Road, but it is not clear how much additional capacity this will provide.

b. Capacity of existing facilities to serve areas proposed for addition to the UGB

The Newell Creek Interceptor has capacity challenges and it is unknown whether a planned upsizing could accommodate urban development of the Maplelane Urban Reserve.

c. Impacts to existing facilities that serve nearby areas already inside the UGB

Without sufficient upsizing of the Newell Creek Interceptor, urban development of the reserve could exacerbate existing capacity challenges.

d. Estimated sanitary sewer service-related costs for reserve development

Sanitary sewer piping and pumping costs	Cost
10-inch pipe	$0
12-inch pipe	$5.43 million
15-inch pipe	$0
Pump station	$3.06 million
Force mains	$2.64 million
Total:	**$11.13 million**
Per dwelling unit at 20 units per net vacant buildable acre:	**$2,190**

Stormwater Management Services

With regard to stormwater management services, the Maplelane Urban Reserve is given a "medium" score in Attachment 3 for this Goal 14 boundary location factor, for the reasons detailed in (a)-(d) below.

a. Capacity of existing facilities to serve areas already inside the UGB

The Oregon City Stormwater Master Plan identifies capacity issues within the modeled basins. Two of the modeled basins were determined to contain the most problem areas: the John Adams Basin is described as generally undersized, and the South End Basin was described as an inefficient system with flooding during the two-year storm event. Capital improvement projects to address capacity issues described above are presented in the Master Plan.

b. Capacity of existing facilities to serve areas proposed for addition to the UGB

Stormwater will be conveyed, treated, and disposed of within the reserve (i.e., outfall to Abernethy Creek); therefore, it is not anticipated that existing stormwater facilities would be utilized.

c. Impacts to existing facilities that serve nearby areas already inside the UGB

As noted above, stormwater will likely be detained and treated within the reserve and, based on topography, outfall directly to Abernethy Creek; therefore, no impacts to the existing stormwater infrastructure in the UGB are anticipated.

d. Estimated stormwater service-related costs for reserve development

Stormwater piping and water quality/detention	Cost
18-inch pipe	$4.88 million
24-inch pipe	$0
30-inch pipe	$0
Water quality/dentition	$4.84 million
Total:	**$9.72 million**
Per dwelling unit at 20 units per net vacant buildable acre:	**$1,914**

Transportation Services

With regard to transportation services, the Maplelane Urban Reserve is given a "low-medium" score in Attachment 3 for this Goal 14 boundary location factor, for the reasons detailed in (a)-(e) below.

a. Capacity of existing facilities to serve areas already inside the UGB

Figure 4.36 in Chapter 4 of the 2023 Regional Transportation Plan (RTP) displays 2020 home-based vehicle miles traveled (VMT) per capita by Metro transportation analysis zone, with average VMT per capita considered 11.32. According to Figure 4.36 in Chapter 4, areas in the UGB adjacent to the Maplelane Urban Reserve had an above average home-based VMT per capita in 2020.

Metro's adopted 2040 Growth Concept Map designates a regional center in the adjacent City of Oregon City. Regional centers are generally meant to: serve populations of hundreds of thousands of people; surround high-quality transit service and multi-modal street networks; and offer larger commercial uses, healthcare facilities, local government services, and public amenities. The Oregon City Regional Center aligns with the 2040 Growth Concept Map designation.

The City of Oregon City's plans for the Oregon City Regional Center include mixed-use development, enhancements to the main street, and the creation of new open spaces that will provide direct connections to the river. The regional center is also home to Willamette Falls and the Willamette Falls Legacy Project, a public/private partnership working to connect the Falls to Downtown Oregon City through the development of housing, public spaces, habitat restoration, education, and employment opportunities. The regional center currently has a drug store, restaurants, and other retail commercial uses, banks, medical/dental facilities, community centers, government offices, and auto-oriented uses. Metro's 2017 State of the Centers Atlas showed less than 400 people living in the regional center, as well as a low population density (5.2 people per acre), low total employees, and low dwelling unit density compared with other regional

centers; in fact, the average population of all regional centers in 2017 was more than 6,000 people and the average population density was 22.8 people per acre. The city's vision to attract more housing and employees to the regional center will elevate it to the activity spectrum levels comparable to other regional centers in the region.

There are also employment uses, including industrial uses, grocery stores, and other commercial uses, as well as education and medical facilities, government offices, and parks, in the Red Soils area near the intersection of Beavercreek Road and Molalla Avenue and between Highway 213 and Beavercreek Road.

Growth in and near the regional center and other employment areas will not necessarily cause a significant increase in home-based VMT per capita in the future, as area residents will be able to access some daily needs and find employment opportunities with relatively short trips. The transit service and bike and pedestrian facilities that serve these areas, described further below, can also help to ensure that additional growth nearby does not adversely impact home-based VMT per capita.

Four TriMet bus lines serve Oregon City, all of which generally focus on the regional center and the central portion of the city along Molalla Avenue. Service is provided to Clackamas Community College and the employment areas near the intersection of Beavercreek Road and Molalla Avenue and between Highway 213 and Beavercreek Road; however, large portions of the city lack TriMet service. Route 32 provides service along Beavercreek Road, connecting the regional center with employment uses along Beavercreek Road, Oregon City High School, and Clackamas Community College. Some of this existing route is identified as part of the frequent regional transit network in Chapter 4, Figure 4.3 of the 2023 RTP, though there are also gaps in planned frequent transit service along certain routes in the UGB near the reserve and elsewhere in the city as well.

Oregon City has at least 29 miles of dedicated bike lanes and 3.5 miles of established bikeways, with most of them located in the "up-top" section (southern end) of the city. The Park Place neighborhood is also fairly well served and Highway 213 has dedicated bike lanes. Most of the downtown streets are classified as "bike with caution" streets and the South End neighborhood has minimal bike facilities. There are dedicated bike facilities along most of Beavercreek Road and Molalla Avenue, as well as a roughly half-mile section of S Maplelane Road in the UGB extending from those on S Beavercreek Road. A painted shoulder serves as a bike facility on one side of S Country Village Drive, in the UGB across S Maplelane Road from the reserve. The existing bike facilities on S Beavercreek Road, S Maplelane Road, and Molalla Avenue are identified as part of the regional bike network on Figure 4.5 in Chapter 4 of the 2023 RTP. However, the figure also identifies a gap in the planned network along S Thayer Road in the UGB near to the reserve and along roadways closer to the regional center.

The regional center is well served by sidewalks, as are employment areas near the intersection of Beavercreek Road and Molalla Avenue and between Highway 213 and

Beavercreek Road. A residential area in the UGB adjacent to the reserve's west also has sidewalks, but not the Country Village Estates manufactured home park also adjacent to the reserve. The portions of S Maplelane Road and S Thayer Road in the UGB lack sidewalks on both sides and have lengths with no sidewalks at all, though there are painted pedestrian crossings at the intersection of S Maplelane Road and S Beavercreek Road. Chapter 4, Figure 4.4 of the 2023 RTP identifies gaps in the planned regional pedestrian network along S Beavercreek Road and S Maplelane Road. There are also gaps in the planned regional trail network in the UGB near the reserve, as indicated in Chapter 4, Figure 4.6 of the 2023 RTP.

Figure 4.14 in Chapter of the 2023 RTP identifies Molalla Avenue inside the UGB as a high injury corridor.

The sections of Highway 99E, Highway 213, and I-5 in Oregon City are identified as a throughways Chapter 4, Figure 4.7 of the 2023 RTP. Figure 4.8 of that chapter indicates that these highway sections currently meet travel speed reliability performance thresholds, with no more than four hours per day when travel speeds fall below the identified minimum speed. RTP models indicate this reliability will continue at least to the year 2045.

b. Capacity of existing facilities to serve areas proposed for addition to the UGB

Highway 213 is the nearest RTP-designated throughway to the reserve, nearly one mile away via S Maplelane Road and S Beavercreek Road. As noted above, the section of the highway in the city currently meets travel speed reliability performance thresholds. Considering RTP reliability forecasts, development of the reserve is not expected to jeopardize the throughway reliability of the highway.

There is currently no TriMet bus service all of the way to the reserve. The nearest stop is for Route 32 on S Beavercreek Road, roughly two-thirds of a mile west of the reserve via S Maplelane Road or about half a mile away via S Thayer Road.

The bike facilities on S Maplelane Road stop about 1,000 feet from the west of the reserve and there are incomplete bike facilities on S Thayer Road.

The adjacent residential subdivision within the city between S Maplelane Road and S Thayer Road has nearly a dozen local streets with sidewalks that stub to west of the reserve, including at Blue Blossom Way, Sourwood Street, and Sugarpine Street, which lead out to S Maplelane Road and S Thayer Road. However, as noted above, S Maplelane Road and S Thayer Road lack sidewalks on both sides and have some gaps. Sidewalks are lacking in the reserve itself. There are no trails that serve or connect to the reserve, either.

It was noted in response to Factor 1 that the reserve is not likely to be able to efficiently accommodate an employment land need, but could support a residential land need. The regional center is approximately three miles from the reserve and, as noted above, not

fully connected to the reserve by transit, bike facilities, or pedestrian facilities. The employment uses along Beavercreek Road, Highway 213, and Molalla Avenue and Clackamas Community College, however, are roughly within a mile of the west side of the reserve, providing closer opportunities for future resents of the reserve to meet their daily needs and find employment opportunities. Nonetheless, without direct transit service and complete bike and pedestrian facilities linking these areas to the reserve, it is likely that future residents of the reserve would be reliant on private motor vehicle transportation.

c. Impacts to existing facilities that serve nearby areas already inside the UGB

S Beavercreek Road, S Thayer Road, S Maplelane Road, and S Waldo Road would be expected to see additional private vehicle traffic from development of the reserve. Existing bike and pedestrian facilities nearby would also be expected to see additional use.

With the lack of direct transit service and complete bike facilities and sidewalks connecting to the reserve, future residents will likely rely primarily on private motor vehicle transportation to access their daily needs and employment opportunities. However, employment uses, including commercial uses, Clackamas Community College, are within about a mile of the reserve, potentially limiting any increase home-based VMT per capita. Development of the reserve is not expected to jeopardize Highway 213's throughway reliability. Any additional motor vehicle traffic on Molalla Avenue caused by development of the reserve could exacerbate the road's high-crash conditions.

d. Need for major transportation facility improvements and associated costs

To serve urban development of the reserve, more than a mile of S Maplelane Road would likely need to be improved to urban arterial standards, and the sections of S Waldow Road and S Thayer Road passing through the reserve (approximately 1.3 miles in combined length) would likely need to be improved to urban collector standards. Improvements to these roads would require acquisition of extra right-of-way. In addition, three new collectors totaling approximately 0.86 miles in length are likely needed to provide necessary street connectivity. Some lengths of the facility improvements could require higher than average per-mile costs due to topography and stream crossings.

Facilities	Cost
Arterials, existing/improved full street	$67.60 million
Arterials, existing/improved half street	$0
Arterials, new	$0
Collectors, existing/improved full street	$56.38 million
Collectors, existing/improved half street	$0
Collectors, new	$36.46 million
Total:	**$160.44 million**
Per dwelling unit at 20 units per net vacant buildable acre:	**$31,601**

e. Provision of public transit service

TriMet evaluated the reserve for providing transit service. TriMet could provide services to the reserve, although there is no guarantee of service. Actual service depends on the level of development in the reserve and in the corridors leading to it. Conceptual road layouts for the reserve do not provide enough roadway network to make service feasible. However, service could potentially be provided with adjusted layouts and by extending Route 79 after "Forward Together" improvements are completed, with three additional zero-emission buses at a capital cost of $3,000,000 – $4,500,000 (recurs every 12 years). Annual service cost is $668,824 and grows with inflation year.

Prior to land being included in the UGB, a more detailed concept plan, consistent with the requirements of Metro's Urban Growth Management Functional Plan Title 11, will be required. This concept plan process will develop more refined public facility and service needs and cost estimates.

Factor 3: Comparative environmental, social, energy, and economic consequences

Environmental consequences

A tributary of Abernethy Creek flows east through the Maplelane Urban Reserve for approximately 0.6 miles on the north side of S Maplelane Road, east of S Waldow Road. Just over half of the stream length flows through cleared land and includes two National Wetland Inventory (NWI) wetlands, each measuring just less than an acre in area, and identified riparian habitat. The remaining length flows through a forested area with slopes greater than 25 percent. The length of the stream flowing through the cleared landscape is located in such a manner that could allow for the protection of the stream corridor, wetlands, and habitat areas consistent with urban protection levels, while allowing for future development opportunities on the remaining portion of the relevant tax lots. The forested section would also be impacted minimally from urbanization due to development constraints related to steep slopes. In addition, a significant portion of the upland habitat adjacent to the stream is located on school district property, which would not be impacted by the development of future school facilities given steep slope constraints.

Three tributaries to Thimble Creek flow generally east through the southern portion of the reserve on the south side of S Thayer Road. The main tributary flows in an arcing pattern from the southern edge of the reserve and then east for 0.6 miles before joining Thimble Creek just outside the reserve, ultimately draining into Abernethy Creek. About half of this stream lengths flows through semi-forested or forested land that provides a fairly healthy riparian corridor. The remaining portion of the stream is located adjacent to S Thayer Road, away from the developable portions of the relevant tax lots. While this allows for development of the tax lots without impacting the stream corridor, road improvements to bring S Thayer Road up to urban standards could impact the stream's riparian habitat in this location. There are some significant locations of upland habitat adjacent to the stream corridor that could also be impacted, as access to this portion of the reserve would need to come from S Thayer Road, unless access came from S Loder Road to the south that is already inside the UGB. The steep slopes along the stream corridors would limit the amount of the residential development that can occur to a degree, therefore protecting some portions of upland habitat. Natural resource protection requirements for land added to the UGB will help reduce the overall impacts; however, significant impacts would be expected given the stream's location near S Thayer Road, the need to access the parcels to the south, and other potential transportation connection needs.

A minor, 600-foot-long tributary joins the main tributary in the southwest corner of the reserve. About half of this stream length is located on land owned by the US government; this ownership, as well as some powerlines, will likely restrict urban development and thereby result in certain environmental protections from such development. The remaining length flows through an identified and intact riparian habitat. Impacts to the habitat areas could occur, depending on the design of the future development and new transportation connections.

The third tributary appears to originate from a pond not included in the NWI on the north side of S Thayer Road and flows for about a third of a mile before joining the main tributary south the roadway. This stream flows mostly through forested areas and a second pond, also not identified as a wetland on the NWI, is located along the stream route. There is both riparian and upland habitat identified along this stream segment. Impacts to the habitat areas could occur depending on the design of the future development and new transportation connections.

This analysis finds that urbanization of the reserve could occur with comparatively moderate to high impacts to the stream corridors, wetland, and the upland habitat areas. Additional environmental consideration, specifically regarding avoidance of conflict between urban development and regionally significant fish and wildlife habitat, is provided in the Metro Code Factors Analysis (Appendix 7A).

Considering the comparative environmental consequences of urbanization, the Maplelane Urban Reserve is given a "low" score in Attachment 3 for this Goal 14 boundary location sub-factor.

Social, energy, and economic consequences

The Maplelane Urban Reserve already contains numerous rural residences, including a subdivision with more than 30 homes and a manufactured dwelling park, as well as a large electrical utility facility and powerlines. The reserve is also adjacent to urban residential development with a number of urban local streets already stubbing to the reserve and is close to some more major urban commercial retail areas. Therefore, urbanization of the reserve is not expected to cause a significant change in sense of place or degradation of rural lifestyle for residents of the reserve. Moreover, because the powerlines, as well as steep slopes, natural resources, and publicly owned lands, in some sense divide the reserve into sections of developable land, development of one section will not necessarily cause significant changes for other sections of the reserve.

As detailed more fully in response to Factor 2, the proximity of a variety or urban land uses and modes of transportation could help limit significant increases in VMT and, therefore, related energy impacts from urbanization of this reserve.

There is minimal commercial agriculture occurring within the reserve and the economic consequences of a loss in farming activity in the reserve may be outweighed by the economic benefits of residential development.

This analysis finds that there would be comparatively low social, energy, and economic consequences from urbanization of this reserve. The Maplelane Urban Reserve is given a "high" score in Attachment 3 for this Goal 14 boundary location sub-factor.

Factor 4: Compatibility of the proposed urban uses with nearby agricultural and forest activities occurring on farm and forest land outside the UGB

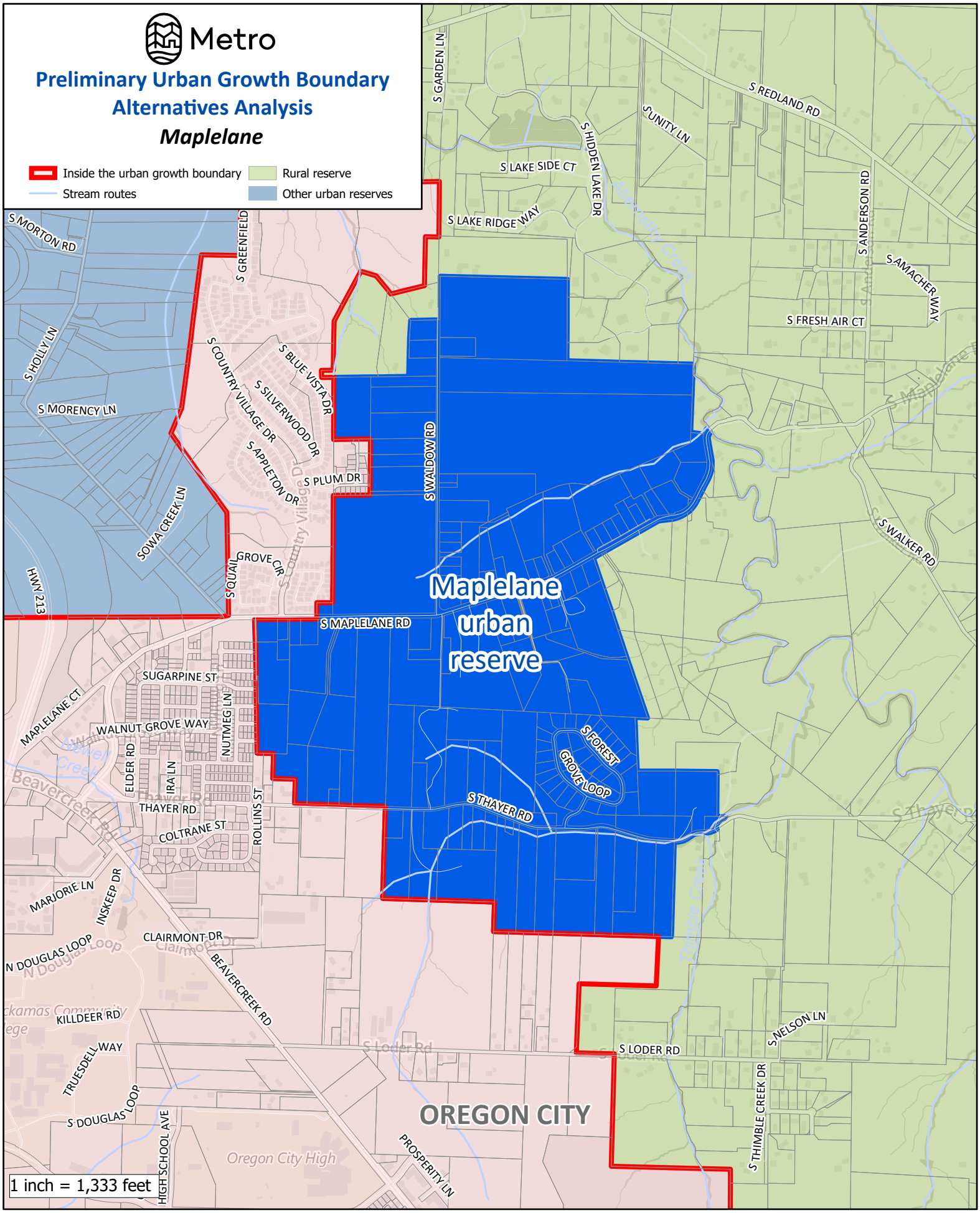
There are three locations where lands outside the UGB but contiguous to the Maplelane Urban Reserve have Goal 3 or 4 resource land zoning for agricultural and forest activities.

The first location is a single 15-acre tax lot zoned Timber (TBR) by Clackamas County at the north end of S Waldo Road with a single-family residence. This tax lot does not appear to be in active agricultural or forestry use. It is adjacent to rural residential development with some very large homes on one- to three-acre tax lots. Due to the current residential use of this and nearby properties, the likelihood of commercial agriculture or timber activities on this property is small; thus, the proposed urban uses of the adjacent reserve would be considered compatible with nearby agricultural or forest activities in this location.

The second location is a single eight-acre tax lot zoned TBR by Clackamas County that shares a 170-foot edge with the northeast corner of the reserve. This tax lot contains a portion of Abernethy Creek and, according to assessment records, is in the same ownership as an adjacent tax lot that is part of the rural residential subdivision with very large homes. Considering these conditions, the likelihood of commercial agricultural or timber activities on this property is small; thus, the urban development of the reserve would be considered compatible with agricultural and forest activities in this location.

The third location is near S Thayer Road, adjacent to the southeast corner of the reserve where three tax lots are zoned TBR by Clackamas County. The tax lots have residential uses and have very minimal amounts of trees available to commercial timber operations and no apparent commercial agricultural activities. Therefore, urban development of the reserve would be considered compatible with agricultural and forest activities occurring on these adjacent lands.

Overall, the proposed urban uses (i.e., urban development of the reserve) would be considered to have high compatibility with the nearby agricultural and forest activities occurring on farm and forest land. The Maplelane Urban Reserve is given a "high" score in Attachment 3 for this Goal 14 boundary location factor.

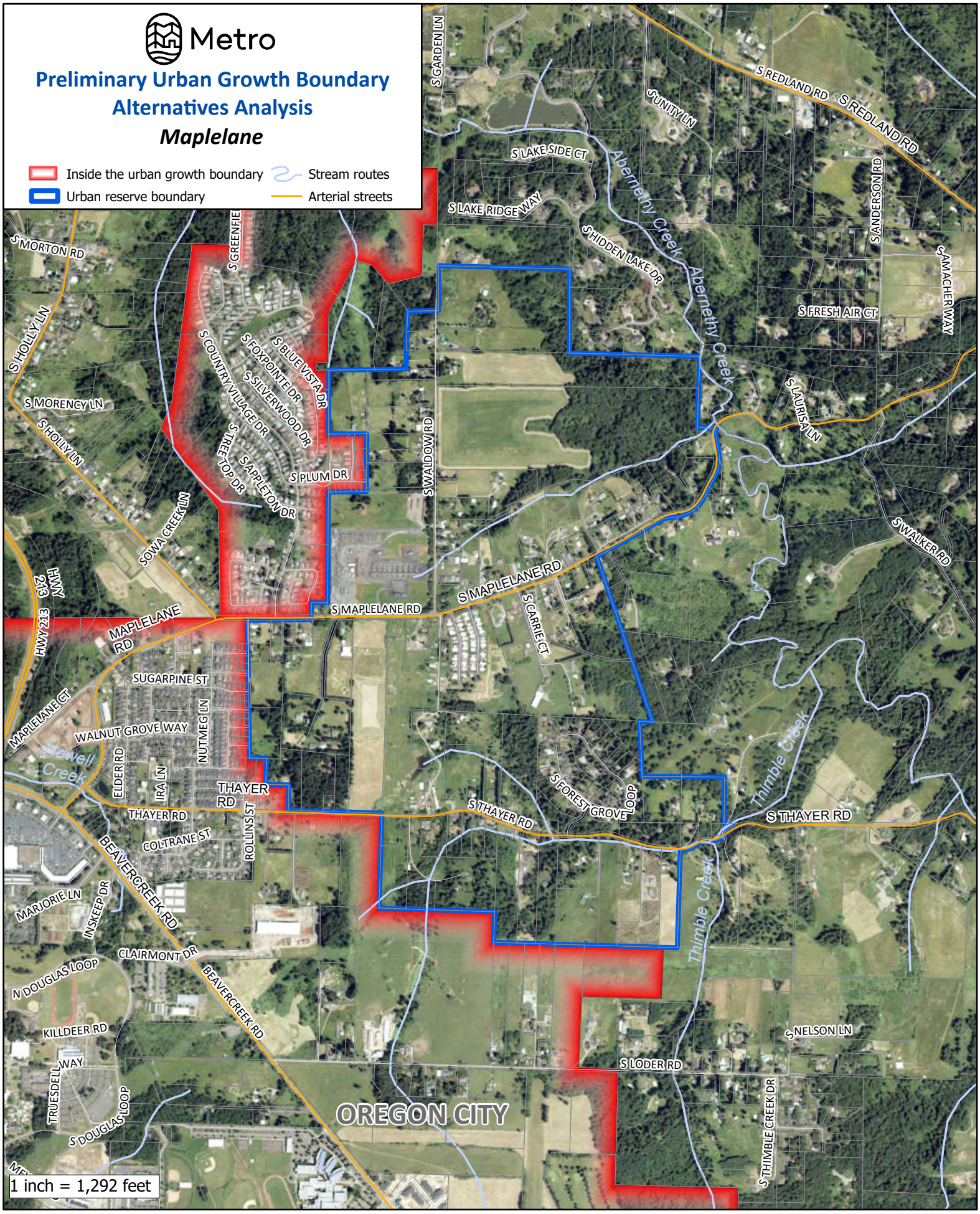


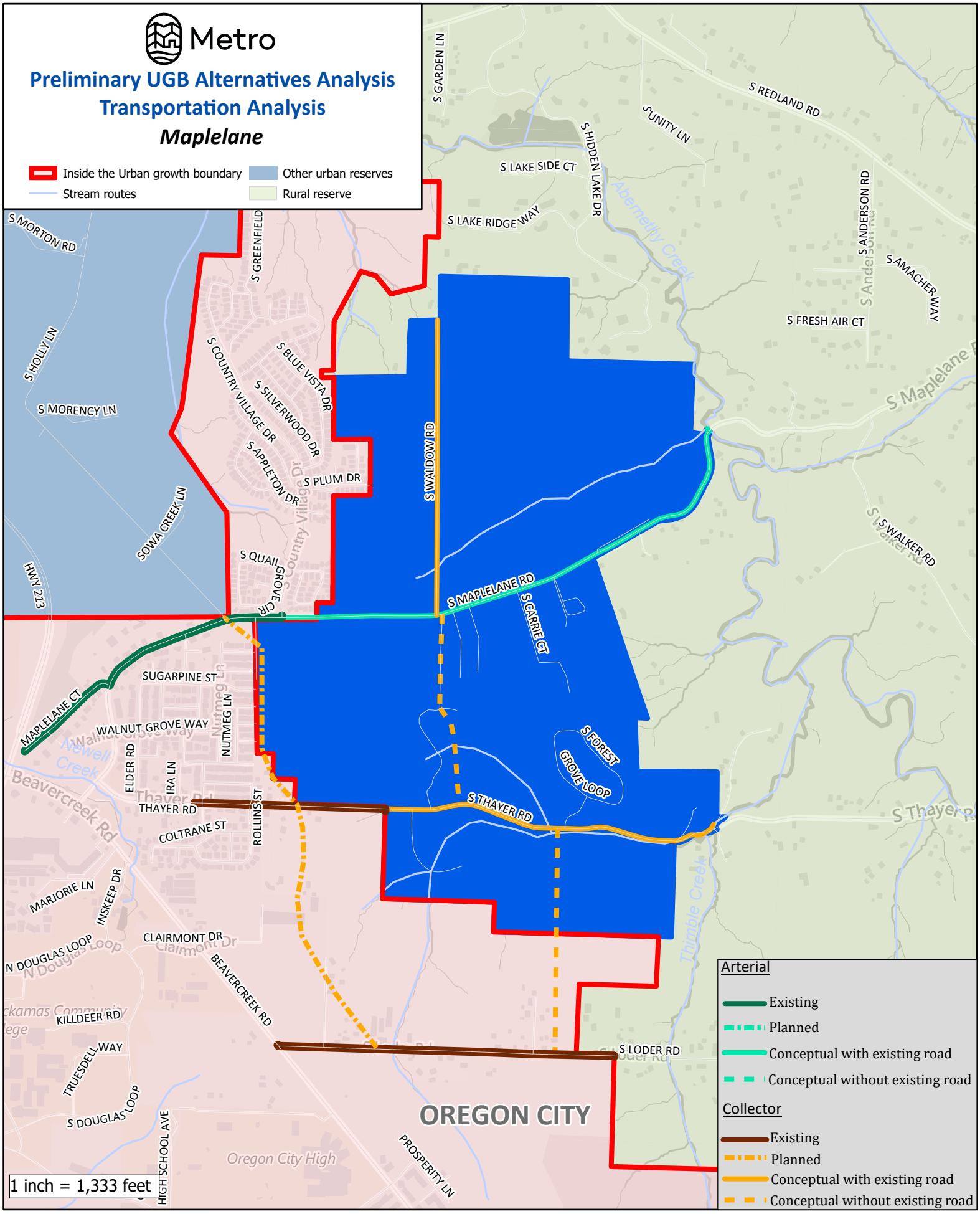
Metro

Preliminary Urban Growth Boundary Alternatives Analysis

Maplelane

Inside the urban growth boundary
Urban reserve boundary
Stream routes
Arterial streets

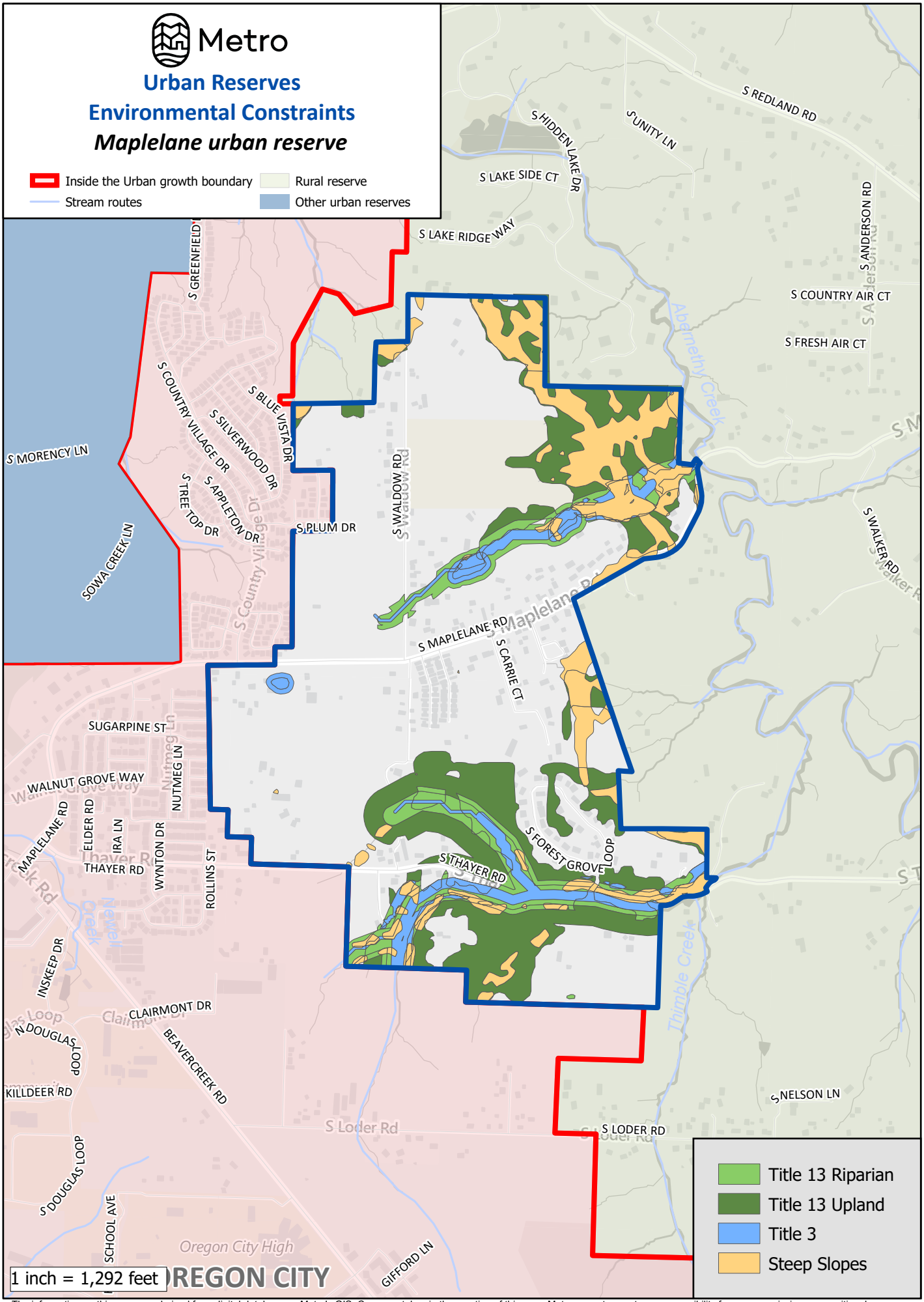




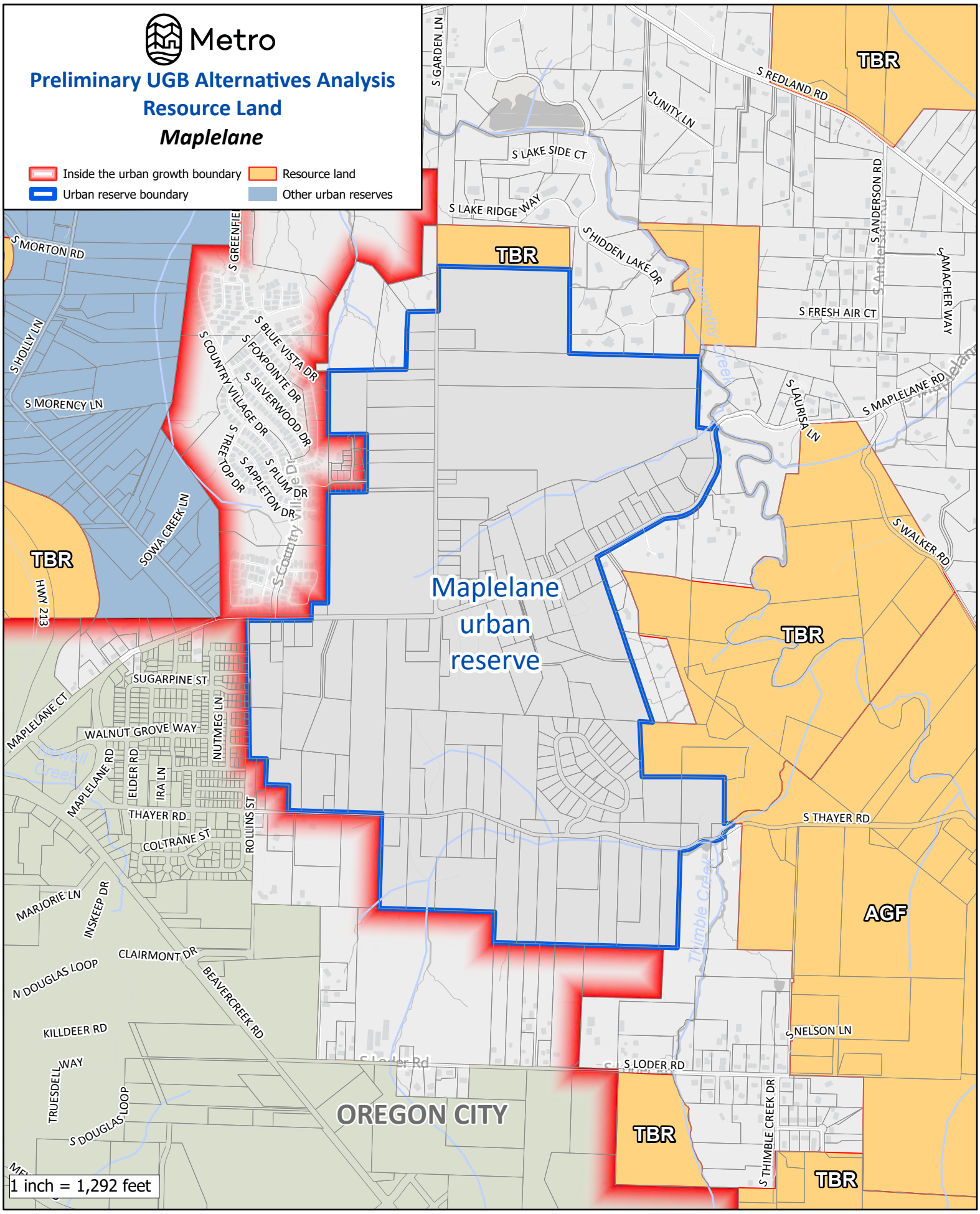
Metro

Urban Reserves
Environmental Constraints
Maplelane urban reserve

Inside the Urban growth boundary
Stream routes
Rural reserve
Other urban reserves



1 inch = 1,292 feet



NORWOOD URBAN RESERVE

Total Reserve Area	1,539 acres
Total Tax Lot Area in Reserve (without Right-of-Way)	1,451 acres
Gross Vacant Buildable Area	1,040 acres
Net Vacant Buildable Area	**775 acres**

The Norwood Urban Reserve is located in Clackamas County, east of SW 65th Avenue, south of I-205, and mostly west of SW Stafford Road, on the opposite side of I-205 from the east end of current Tualatin city limits. The UGB forms a portion of the reserve's northern boundary, with urban reserve land (the I-5 East – Washington County, Elligsen Road North, and Elligsen Road South Urban Reserves) to the west and additional urban reserve land (the "Borland" Urban Reserve) to the north. The reserve otherwise borders undesignated and rural reserve land to the east and south. Boeckman Creek and a small portion of a tributary to Newland Creek flow south, and tributaries to Saum Creek flow north, through the center of the reserve. Athey Creek also flows north through the northeastern corner of the reserve. Large portions of the reserve, particularly in its north and south, have slopes greater than 10 percent.

GOAL 14 BOUNDARY LOCATION FACTORS

Factor 1: Efficient accommodation of identified land needs

The Norwood Urban Reserve is a contiguous area that contains the entirety of 364 tax lots and a 14,000-square-foot piece of one more tax lot disconnected from the remainder of that tax lot by SW Stafford Road. Of the tax lots that are entirely in the reserve, slightly more than a quarter a smaller than two acres each, more than two-thirds are smaller than five acres each, and nine are larger than 10 acres, with the largest being about 36 acres. The State of Oregon owns four tax lots in the reserve totaling nearly 11 acres in area and Verizon Northwest owns two tax lots totaling just over one acre in area. As noted above, the entire reserve contains 1,040 gross vacant buildable acres and 775 net vacant buildable acres.

The reserve is largely characterized by rural residential and accessory uses, with some agricultural uses in its south and forested areas in its north. Nearly 90 percent of the reserve's tax lots have assessed improvements, with the median assessed value of those tax lots' improvements exceeding $660,000.

The reserve is largely surrounded by rural residential and agricultural uses. The Stafford Academy is adjacent to the reserve's northeast corner, while Bridgeport Elementary School and Athey Creek Middle School are within a mile of the northern end of the reserve but on the opposite side of I-205. Atfalati Park in Tualatin is also on the opposite side of I-205.

The SW Stafford Road interchange with I-205 is approximately a quarter mile from the northwest corner of the reserve, and a SW Elligsen Road interchange with I-5 is approximately 1.25 miles from the reserve's southern end. The nearest TriMet bus stop is on the opposite side of I-205 on SW 65th Avenue.

As noted above, the reserve has relatively steep topography in its north and south, as well as multiple streams.

Despite the reserve's proximity to interchanges with two highways, this steep topography, as well as its smaller tax lot sizes, large amount of higher-value existing residential development, and surrounding rural residential land uses, make it unsuitable for accommodating an employment land need. However, the reserve is considered able accommodate a residential land.

Factor 2: Orderly and economic provision of public facilities and services

Water Services

With regard to water services, the Norwood Urban Reserve is given a "low" score in Attachment 3 for this Goal 14 boundary location factor, for the reasons detailed in (a)-(d) below.

a. Capacity of existing facilities to serve areas already inside the UGB

Lands to the north inside the UGB are served by the City of Tualatin. Tualatin's sole source of water is treated water purchased from Portland Water Bureau. Water is then delivered through a 36-inch supply line from the Washington County Supply Line. The reserve might be in Pressure Zone B. According to the city's March 2023 Water System Master Plan, the zone has a storage surplus under current conditions, but may have a storage deficit under UGB buildout conditions. The Martinazzi and Boones Ferry Pump Stations previously serving Zone B have reached the end of their usable lives and do not currently operate, and Zone B is now served by the Boones Ferry flow control valve/pressure reducing valve. There are also existing flow deficiencies in Zone B. Water service to the Norwood Urban Reserve could require another reserve (e.g., the I-5 East – Washington County Urban Reserve) to first be added to the UGB and developed.

b. Capacity of existing facilities to serve areas proposed for addition to the UGB

Assuming the Norwood Urban Reserve is added to the UGB after full buildout of the areas already within the UGB, and assuming storage facilities are not expanded, development of the reserve would cause a greater storage capacity deficit. It is likely that existing pipes do not have the capacity to serve urban development of the reserve and would need to be upgraded. As noted above, service to the reserve could require prior development of another adjacent urban reserve.

c. Impacts to existing facilities that serve nearby areas already inside the UGB

Additional storage capacity will likely be needed to avoid negative impacts to service in the UGB. Without addressing undersized pipes, the number and severity of the existing flow deficiencies could increase if the reserve is added to the UGB and its development is connected.

d. Estimated water service-related costs for reserve development

Water piping, pumping, and storage costs	Cost
10-inch pipe	$13.51 million
12-inch pipe	$0 million
15-inch pipe	$0
Pumping	$0
Storage	$1.08 million
Total:	**$14.59 million**
Per dwelling unit at 20 units per net vacant buildable acre:	**$941**

Sanitary Sewer Services

With regard to sanitary sewer services, the Norwood Urban Reserve is given a "low" score in Attachment 3 for this Goal 14 boundary location factor, for the reasons detailed in (a)-(d) below.

a. Capacity of existing facilities to serve areas already inside the UGB

Wastewater from nearby lands to the north in the City of Tualatin is treated at the Durham Advanced Wastewater Treatment Facility (AWWTF), which is owned and operated by Clean Water Services (CWS) and understood to have sufficient capacity to meet current needs. CWS is also responsible for the system's gravity sewers over 24 inches in size, pump stations, and force mains. The Boreland Pump Station has surplus capacity under existing conditions and there are no modeled pipe deficiencies in the Nyberg Basin under existing conditions.

The south end of the reserve is only about half a mile from the City of Wilsonville. Wastewater in Wilsonville is conveyed in a City of Wilsonville-owned and operated collection system to the Wilsonville Wastewater Treatment Plant (WWTP), which was upgraded in 2014 to a capacity of 4.0 MGD, resulting in excess capacity. That excess capacity is believed to be able to accommodate growth in the Frog Pond areas recently added to the UGB. Wilsonville is planning on necessary system upgrades to meet future needs. The existing system, including its piping and pump stations, is not known to have any hydraulic deficiencies.

The eastern portion of the reserve is about two miles from the City of West Linn, located on the opposite side of the Tualatin River. The downstream end of the West Linn system includes a Clackamas Water Environment Services (WES) owned pumps and force mains, which direct sewage to the Tri-City Water Resource Recovery Facility (WRRF) located on the east side of the Willamette River. West Linn's 2019 Sanitary Sewer System Master plan identified potential system capacity deficiencies for relevant

modeled pipes in both existing and buildout scenarios. The 2019 WES Master Plan identifies an expansion of the existing treatment plant within the 2020-2040 timeframe to increase its capacity.

b. Capacity of existing facilities to serve areas proposed for addition to the UGB

Based on the varying topography throughout the reserve and the reserve's proximity to multiple jurisdictions, it's possible that its urban development is served by a combination of providers, such as CWS, the City of West Linn, and the City of Wilsonville.

The western portion of the site could, for example, be routed to the CWS system. While the treatment plant may have sufficient capacity now, wastewater treatment for development the relatively large Norwood Urban Reserve – and development of the I-5 East -Washington County Urban Reserve, which may preclude development of the Norwood Urban Reserve – could require plant improvements. It is unclear from either Tualatin's 2019 Sewer Master Plan or CWS's 2019 Master Plan whether relevant pumps have sufficient capacity to serve the Norwood Urban Reserve (and other urban reserves). The Nyberg Basin's pipes may not have sufficient capacity to serve the reserve(s) either. In order to connect to the CWS system, a new sewer line crossing I-205 could be required.

The eastern portion of the site may connect to an existing City of West Linn sewer located in Willamette Falls Drive. The city has previously indicated that the treatment plant would likely need some upgrades to accommodate additional flow. The available capacities of relevant pump stations and pipes to serve the Norwood Urban Reserve are unknown. The Borland Urban Reserve would likely need to be added to the UGB and developed before sanitary sewer service from West Linn can be connected to development in the Norwood Urban Reserve.

The southern portion of the site may most readily be served by the City of Wilsonville. In order to serve this portion of the reserve, the Elligsen North Urban Reserve would likely need to be urbanized first. Depending on the timing of additional development in Wilsonville, planned treatment plant upgrades may be needed sooner in order for the system to also serve new development in the Elligsen Road North Urban Reserve. Both the Canyon Creek and Memorial Park pump stations require capacity improvements to serve the Elligsen Road North Urban Reserve, and there are several trunk line extensions that would be needed as well.

c. Impacts to existing facilities that serve nearby areas already inside the UGB

Considering that other reserves may need to be urbanized before the Norwood Urban Reserve can be served with sanitary sewer services, treatment plant improvements and pumping and piping capacity improvements will likely be needed to avoid negative impacts to service within the existing UGB. Potential treatment plant improvement costs are not included in the below figures.

d. Estimated sanitary sewer service-related costs for reserve development

Sanitary sewer piping and pumping costs	Cost
10-inch pipe	$5.45 million
12-inch pipe	$3.78 million
15-inch pipe	$0
Pump station	$1.44 million
Force mains	$2.26 million
Total:	**$12.93 million**
Per dwelling unit at 20 units per net vacant buildable acre:	**$2,389**

Stormwater Management Services

With regard to stormwater management services, the Norwood Urban Reserve is given a "medium" score in Attachment 3 for this Goal 14 boundary location factor, for the reasons detailed in (a)-(d) below.

a. Capacity of existing facilities to serve areas already inside the UGB

There is no indication of major capacity issues with existing stormwater facilities that serve the adjacent land inside the UGB. Based on topography, stormwater from development of the Norwood Urban Reserve would discharge directly to Saum Creek; the City of Tualatin's 2019 Stormwater Master Plan did not identify the Saum Creek Basin as currently facing capacity challenges.

b. Capacity of existing facilities to serve areas proposed for addition to the UGB

Stormwater will be conveyed, treated, and disposed of within the reserve and discharge to Saum Creek, rather than connecting to existing facilities in the UGB. Saum Creek is believed to have sufficient capacity to serve development of the reserve.

c. Impacts to existing facilities that serve nearby areas already inside the UGB

As noted above, stormwater will be conveyed, treated, and disposed of within the reserve and discharge to Saum Creek, rather than connecting to existing facilities in the UGB. Saum Creek is believed to have sufficient capacity. Therefore, no adverse impacts to existing facilities are anticipated.

d. Estimated stormwater service-related costs for reserve development

Stormwater piping and water quality/detention	Cost
18-inch pipe	$7.08 million
24-inch pipe	$6.38 million
30-inch pipe	$5.00 million
Water quality/dentition	$18.59 million
Total:	**$37.05 million**
Per dwelling unit at 20 units per net vacant buildable acre:	**$2,389**

Transportation Services

With regard to transportation services, the Norwood Urban Reserve is given a "high" score in Attachment 3 for this Goal 14 boundary location factor, for the reasons detailed in (a)-(e) below.

a. Capacity of existing facilities to serve areas already inside the UGB

Figure 4.36 in Chapter 4 of the 2023 Regional Transportation Plan (RTP) displays 2020 home-based vehicle miles traveled (VMT) per capita by Metro transportation analysis zone, with average VMT per capita considered 11.32. According to Figure 4.36, areas in the UGB adjacent to and near the Norwood Urban Reserve had below average and average home-based VMT per capita in 2020.

Metro's adopted 2040 Growth Concept Map designates a town center in the adjoining City of Tualatin. Town centers are meant to: serve populations of tens of thousands of people; offer more locally-focused retail uses and public amenities; and be well served by transit. The roughly 300-acre Tualatin Town Center aligns with this 2040 Growth Concept Map area. The city's Tualatin Town Center Plan envisions a mixed-use live, work, and play center that integrates natural resources, like the Tualatin River, with civic, social, economic, and cultural functions in a walkable community. Metro's 2017 State of the Centers Atlas showed that the Tualatin Town Center had a low number of dwelling units per acre and a much higher total number of employees compared with other town centers in the region. The town center had a very high "access to parks" score in the atlas, due in part to the numerous open space/natural areas and the Tualatin Community Park along the Tualatin River nearby. The town center also includes grocery stores and other retail commercial uses, medical/dental facilities, a post office, and multi-family housing, but also storage facilities, auto-oriented uses, and large parking lots. Within the UGB and adjoining the town center are Title 4 designated Industrial Area and Employment Area lands, as well as low- and medium-density residential uses.

Seven TriMet bus lines and the Westside Express Service (WES) Commuter Rail serve Tualatin. The routes are spread out along the major roadways including Highway 99W, SW Tualatin-Sherwood Road, and SW Boones Ferry Road, providing service to the town center and employment areas. WES connects the town center with Beaverton to the north and Wilsonville to the south. Figure 4.3 in Chapter 4 of the 2023 RTP does identify gaps in the planned regional transit network along SW Boones Ferry Road, SW Tualatin – Sherwood Road, and elsewhere in the city.

Nonetheless, the town center's existing land uses and transit service, and some availability for new development in and near the town center, demonstrate that growth in the current UGB near the town center will not necessarily cause a significant increase in home-based VMT per capita in the future, as residents will be able to access some daily needs through modes other than private motor vehicle transport. Growth in other areas of the city where residential uses surround schools and parks are is also unlikely to significantly impact home-based VMT per capita in the future.

The town center is less than a mile away from areas in the UGB adjacent to the reserve, but these areas are on the opposite side of I-5 and I-205 from the reserve. I-5 also separates residential uses in the UGB to the north of the reserve from the town center to the west; there are just two overpasses that connect these residential uses to the town center, limiting connectivity. Residents of these areas, where there are also fewer bus routes, may be more reliant on private motor vehicle transportation to get to the town center and areas to the west.

Tualatin has a fairly well-established bike route system, with approximately 25 miles of dedicated bike lanes, seven miles of established bikeways, and local trails that connect the employment areas and town center to the residential areas. There are two bike lane connections across I-5 to provide access to the eastern portion of the city. Figure 4.5 in Chapter 4 of the 2023 RTP shows several existing bike facilities in Tualatin as a part of the planned regional bike network, including facilities on SW Boones Ferry Road, SW Nyberg Street, and SW Tualatin-Sherwood Road. There are identified gaps in planned regional bike facilities in the southwest and east of the city.

The town center has a well-established pedestrian network that also includes access to some trails. Most of the residential areas of Tualatin also have sidewalks, but there are fewer exiting pedestrian facilities in employment areas outside of the town center. The Tualatin River Greenway Trail connects the town center to parks in Durham and Tigard to the north, as well as to Browns Ferry Park along the Tualatin River on the east side of I-5. Figure 4.4 in Chapter 4 of the 2023 RTP shows a number of existing streets in Tualatin as in the regional pedestrian network, including sections of SW Boones Ferry Road, SW Borland Road, and SW Tualatin – Sherwood Road. The figure identifies gaps in the future regional pedestrian network, however, in the south and east of the city.

Figure 4.14 in Chapter 4 of the 2023 RTP identifies the SW Tualatin-Sherwood Road in the UGB as a high injury corridor. The intersection of SW Tualatin-Sherwood Road and

SW Boones Ferry Road, as well as the intersection of SW Martinazzi Avenue and SW Boones Ferry Road, are identified in Figure 4.14 as top five percent high injury intersections. There are no other high injury corridors or high injury intersections in Tualatin's portion of the UGB identified on Figure 4.14.

The portions of I-5 and I-205 that cross through Tualatin are identified as throughways in Figure 4.7 in Chapter 4 of the 2023 RTP. Figure 4.8 of the chapter indicates that these portions of both interstates currently meet travel speed reliability performance thresholds, with no more than four hours per day when travel speeds fall below the identified minimum speed. RTP models indicate this reliability will continue at least to the year 2045.

b. Capacity of existing facilities to serve areas proposed for addition to the UGB

While the reserve is adjacent to I-205, the nearest interchange, located at SW Stafford Road, is approximately a quarter mile from the northwest corner of the reserve. The SW Elligsen Road interchange with I-5 is approximately 1.25 miles from the reserve's southern end. As noted above, the portions of these highways in Tualatin currently meet travel speed reliability performance thresholds. Given the proximity of the town center and other commercial/employment areas to the reserve, including employment areas in Wilsonville on the same side of I-5 as the reserve, urban development of the reserve is unlikely to generate sufficient traffic on either I-5 or I-205 to cause them to no longer meet those performance thresholds. Future residents of the reserve, even if reliant on private motor vehicles for transportation, could use roadways other than these interstates to access employment opportunities and to meet their daily needs closer to home.

Currently, there is no transit service to the reserve. TriMet Route 76, which provides access to the Tualatin Town Center, is approximately one-third of a mile from the northwest corner of the reserve via SW 65th Avenue, on the opposite side of I-205. No other bus lines are close to the reserve.

There is a dedicated bike lane on SW 65th Avenue that is approximately one-tenth of a mile north of the northwest corner of the reserve, also on the opposite side of I-205. This bike lane connects to a bike lane on SW Sagert Street, which in turn provides a connection to the west side of I-5, the town center, and employment areas. The small gap on SW 65th Avenue needs to be completed in order to directly connect to the reserve. For the most part, there are no other dedicated bike facilities near to or within the reserve. However, portions of SW Stafford Road adjacent to the east side of the reserve have wide painted shoulders and there are designated bike lanes on a nearly half-mile section of SW Stafford Road beginning at the northeast corner of the reserve. This bike-lane section leads to others on the north side of I-205, but with some gaps.

The Saum Creek Greenway Trail is approximately 800 feet north of the reserve via SW 65th Avenue and connects to sidewalks on SW 65th Avenue and SW Sagert Street. The

sidewalks do not connect across I-5 and, therefore, provide only limited access to other parts of Tualatin. The 800-foot gap needs to be completed in order to directly connect to the reserve. Generally, there are no other sidewalks near to or within the reserve. There are painted crosswalks at the northeast corner of the reserve at the intersection of SW Stafford Road and SW Ek Road, both those sidewalks do not current connect to complete sidewalks.

There are no urban residential or employment uses within a mile of the reserve and on the same side of I-5 or I-205. The one adjacent interstate crossing of SW 65th Avenue has gaps in bike and pedestrian facilities. There is also no existing transit service to the reserve. Therefore, without facility improvements and service extensions, and unless the reserve itself is developed with a mixture of uses, which may not be practicable for reasons addressed in response to Factor 1, future residents of the reserve will likely be reliant on private motor vehicle transport to access their daily needs and employment, and employees of future employment uses in the reserve will need to commute by private motor vehicle from their homes located elsewhere. The analysis in Factor 1 indicated that the reserve would not be able to efficiently accommodate an employment land need.

c. Impacts to existing facilities that serve nearby areas already inside the UGB

SW 65th Avenue, SW Elligsen Road, and SW Stafford Road would see additional private motor vehicle traffic as a result of urbanization of the reserve. However, if transit service were to be extended to the reserve and if gaps in bike and pedestrian facility connections were to be completed, there would be less additional traffic on these roadways. Providing the bike and pedestrian facility connections would lead to more use of the existing facilities within the UGB.

Given the proximity of the town center and other employment areas to the reserve. development of the reserve is unlikely to jeopardize the throughway reliability of I-5 or I-205. Any additional motor vehicle traffic on SW Tualatin-Sherwood Road resulting from development of the reserve, however, may exacerbate the road's high-crash conditions.

d. Need for major transportation facility improvements and associated costs

To serve urban development, a section of SW Stafford Road at the east and south of the reserve and a section of SW 65th Avenue at the west of the reserve, with a combined length of more than five miles, will likely need to be improved to urban arterial standards, including with acquisition of additional right-of-way. The SW 65th Avenue section is considered a half-street improvement, as the western side of the road would be developed as an arterial with the urbanization of the adjacent I-5 East – Washington County Urban Reserve. Sections of SW Prosperity Park Road, SW Delker Road, SW 55th Avenue, SW meridian Way, and SW Trail Road, with a combined length of more than three miles, will also likely need to be improved to urban collector standards, including with acquisition of additional right-of-way. Six new collectors with a combined length of

approximately 2.5 miles are assumed to be needed to provide sufficient connectivity throughout the reserve. Improved existing and new roadways would need to traverse some steeper topography and waterbodies, resulting in some expected higher per-mile costs.

Facilities	Cost
Arterials, existing/improved full street	$197.99 million
Arterials, existing/improved half street	$65.01 million
Arterials, new	$0
Collectors, existing/improved full street	$112.26 million
Collectors, existing/improved half street	$0
Collectors, new	$97.00 million
Total:	**$472.26 million**
Per dwelling unit at 20 units per net vacant buildable acre:	**$30,464**

e. Provision of public transit service

Though the Norwood Urban Reserve is within the TriMet Service District, when TriMet evaluated the reserve for providing transit service for this analysis, it determined service to the reserve is unlikely to occur.

Prior to land being included in the UGB, a more detailed concept plan, consistent with the requirements of Metro's Urban Growth Management Functional Plan Title 11, is required. This concept plan process will develop more refined public facility and service needs and cost estimates.

Factor 3: Comparative environmental, social, energy, and economic consequences

Environmental consequences

Boeckman Creek and a small tributary flow south through the southwestern portion of the Norwood Urban Reserve for just over 0.8 miles. The streams flow through cleared fields and forested areas mostly adjacent to rural residences. Riparian habitat is identified along the stream corridors. It appears Boeckman Creek has been altered in certain locations as it flows through the residential area. There is one small wetland on the National Wetland Inventory (NWI) located near the tributary that is approximately 5,500 square feet in area. The location of Boeckman Creek between SW Stafford Road and SW 65th Avenue could lead to impacts related to future local street connections. The increased protection levels for streams, wetlands, and habitat areas added to the UGB will help lessen any potential impacts.

A very short segment of a tributary to Newland Creek flows south through the southeastern corner of the reserve for approximately 1,150 feet. This stream length is along a wooded area that forms the eastern edge of the reserve. There is riparian habitat identified along the

stream corridor that could receive regulatory protections once the land is added to the UGB. Indeed, considering the increased protection levels for streams and habitat areas that come with addition to the UGB, and considering the land to the east is in a rural reserve and therefore has limited development opportunities, this stream segment would not be impacted by future urbanization.

Athey Creek and a small tributary flow north through the northeastern corner of the reserve for approximately 2,900 feet. Athey Creek flows through private open space that is either wooded or a mixture of open field with scattered tree canopy. This portion of the stream would be protected from future urbanization. The tributary also flows through private open space with a very small section in open field and wooded portions of residential tax lots. Riparian habitat is identified along both stream segments. Increased protection levels for habitat areas inside the UGB will provide additional protection to the stream section that is not on the designated open space land; thus, urbanization would have minimal impact on these two streams.

There are two sets of tributaries to Saum Creek that flow north through the central and western portions of the reserve. Those in the western set, which is composed of two stream corridors, flow mainly through rural residential areas with a small section located in open fields that appear to be tilled. There is one roughly 14,600-square-foot wetland identified on the NWI located along one of the stream corridors. In numerous locations, the stream has been altered with manmade ponds. Riparian habitat has been identified along both stream corridors. The majority of the two stream segments flow along edges of developed rural residential properties and could be impacted by urbanization, depending on the density and design of the development.

The central tributary is also composed of a 1.5-mile-long main stem and a second, 2,820-foot-long stream that flow mainly through forested portions of rural residential tax lots, some open fields, and a forested private open space. There is one 6,289-square-foot wetland identified on the NWI located along the main stream corridor and another pond not identified on the inventory. There are several significant sections of steep slopes in the forested areas along both streams. Riparian habitat is identified along the two stream corridors with upland habitat identified in the forested areas. There are a couple of locations where the streams could be impacted by future urbanization; however, the majority of the two stream segments flow along edges of tax lots within canyons or gullies and the level of impact by urbanization of the area would depend on the design of the development and necessary road connections. An east-west connection between SW Prosperity Park Road and SW Trail Road could impact a significant amount of habitat.

This analysis finds that, given the location of the stream corridors adjacent to steep slopes, the increased protection levels for streams, wetlands, and habitat areas on land inside the UGB, and the existing pattern of the rural residential development, urbanization of the reserve could occur with comparatively minimal to moderate impact to the streams, wetlands, and habitat areas, depending on road connections and urban form.

Considering the comparative environmental consequences of urbanization, the Norwood Urban Reserve is given a "medium-high" score in Attachment 3 for this Goal 14 boundary location sub-factor.

Social, energy, and economic consequences

The Norwood Urban Reserve has a significant amount of rural residences. As noted in response to Factor 1, Nearly 90 percent of the reserve's tax lots have assessed improvements, with the median assessed value of those tax lots' improvements exceeding $660,000. There are high-value homes in multiple platted subdivisions and on smaller-sized tax lots. The reserve is adjacent to I-205. Given the level of existing development and parcelization, as well as the stream and habitat corridors that divide up the area, rapid, large-scale redevelopment is not likely; urbanization of the reserve may cause some, but not necessarily significant, changes in residents' sense of place or in degradation of an existing rural lifestyle.

As detailed more fully in response to Factor 2, future residents of the reserve will likely be reliant on private motor vehicle transportation, which will have adverse energy consequences.

There is essentially no large-scale commercial agricultural activity in the reserve. What agricultural activity there is generally limited to maximum two-acre sites scattered throughout the reserve and generally associated with its rural residential development. The economic consequences of a loss in farming activity in the reserve would likely be outweighed by the economic benefits of urban residential development.

Overall, there would be comparatively low to moderate social, energy, and economic consequences from urbanization of this reserve. The Norwood Urban Reserve is given a "medium-high" score in Attachment 3 for this Goal 14 boundary location sub-factor.

Factor 4: Compatibility of the proposed urban uses with nearby agricultural and forest activities occurring on farm and forest land outside the UGB

Goal 3 agricultural lands, specifically lands zoned Exclusive Farm Use (EFU) by Clackamas and Washington Counties, border the Norwood Urban Reserve in areas outside the UGB to the south, southeast, and west.

The EFU-zoned land to the south is part of a sizeable stretch of farmland that extends to the Willamette River. The EFU-zoned land directly adjacent to the reserve's south in the area north of SW Homesteader Road appears to be in agricultural use, including for field crops and pastureland, though there are some rural residential uses. There is no topographic or built (e.g., road right-of-way) separation between these farm uses and the reserve. Development of the reserve could, therefore, lead to land use conflicts related to safety, liability, and vandalism and complaints due to noise, odor, dust, and the use of pesticides and fertilizer. Urbanization of the reserve would increase traffic on SW Stafford Road, which could impact the movement of both farm equipment and goods.

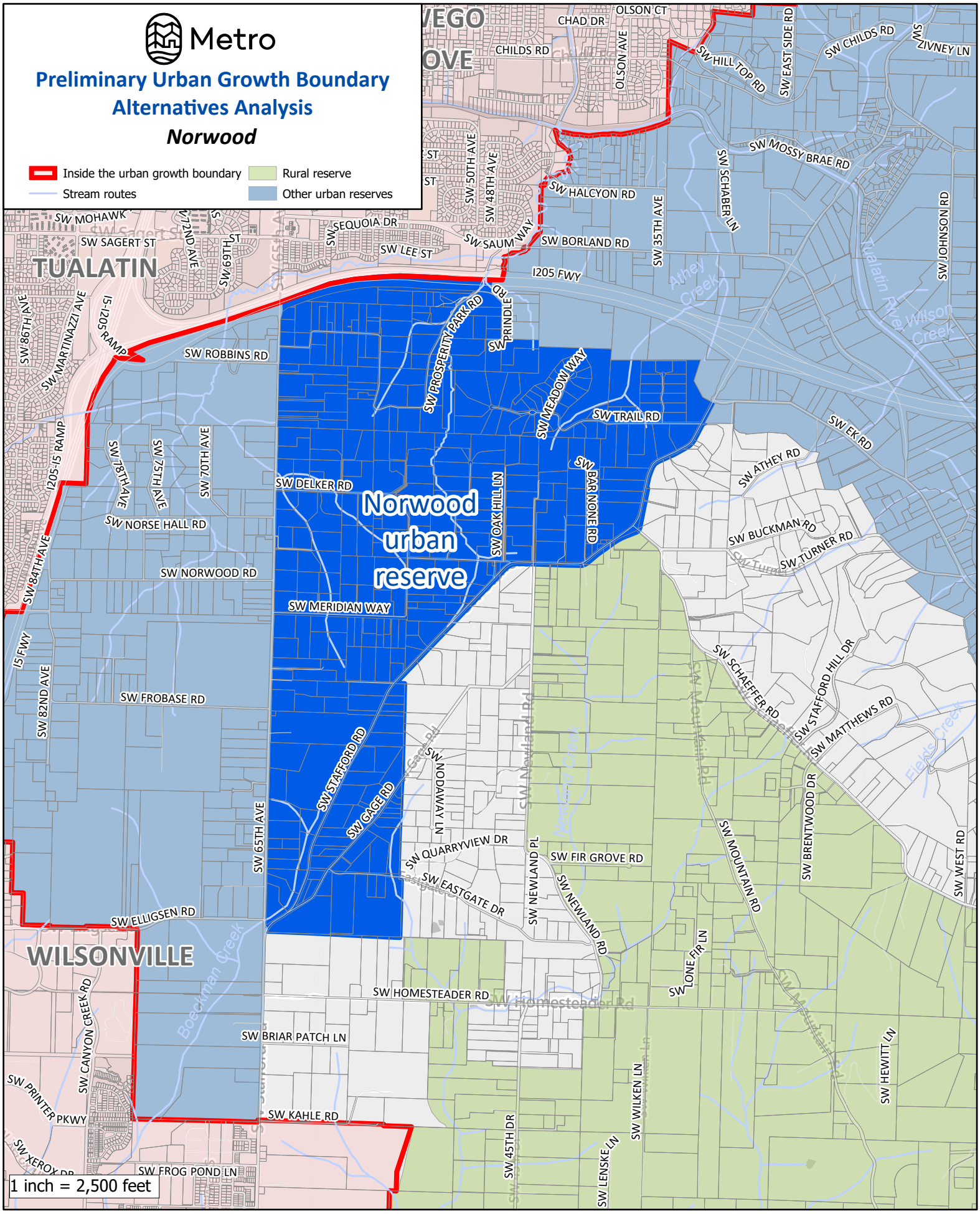
Therefore, proposed urban uses are considered incompatible with the nearby agricultural activities occurring on the EFU-zoned land to the south.

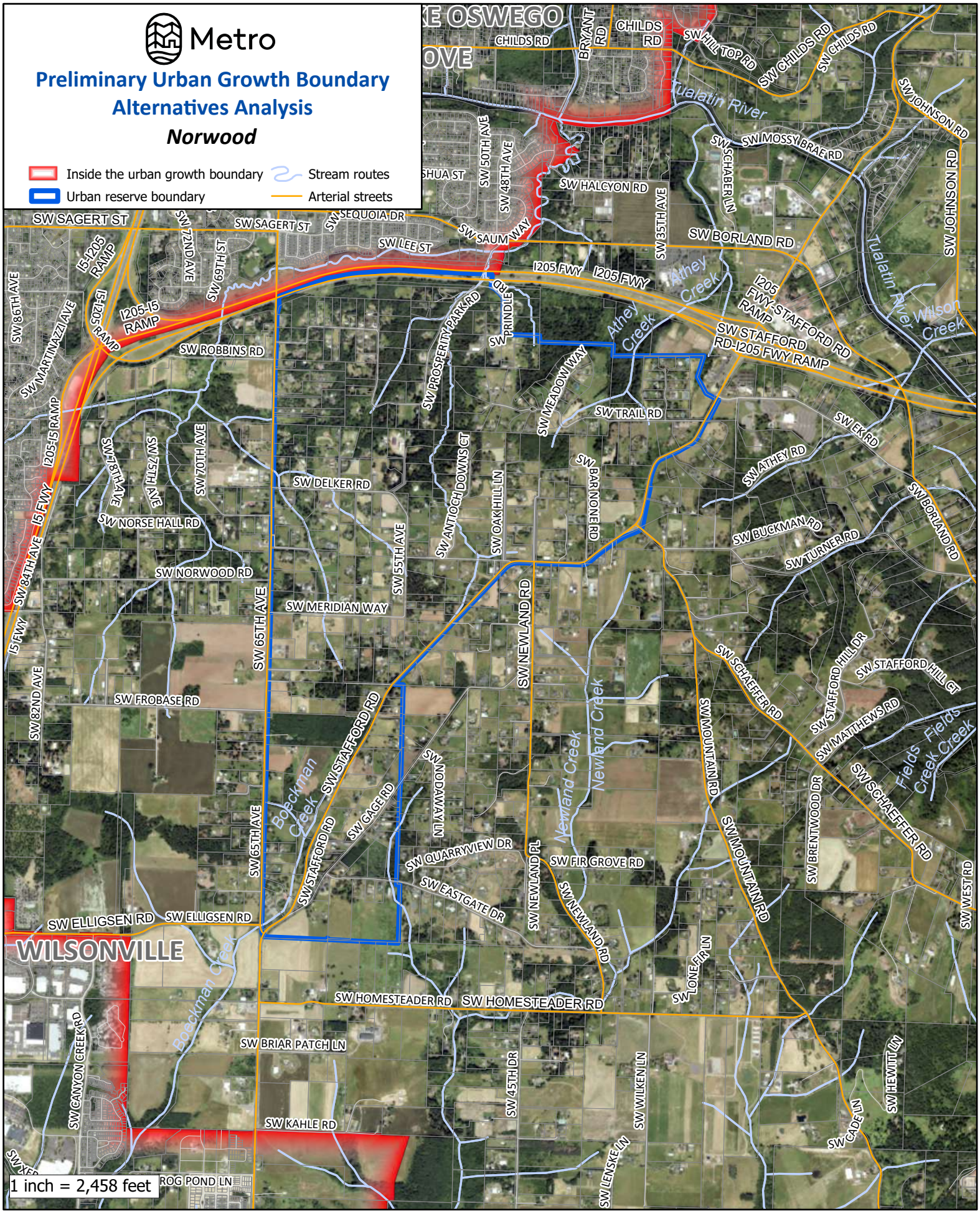
The EFU-zoned land to the southeast of the reserve, in the vicinity of SW Mountain Road, is part of a large tract of EFU land that extends over a mile to the south. Most of the EFU-zoned land directly adjacent to the reserve is in agricultural production, including field crops and pastureland, although the West Linn-Wilsonville School District Administrative office is also located on this farmland and there are some small tax lots with rural residential development. SW Stafford Road would not itself provide an adequate buffer between urban development and agricultural activity. Development of the reserve could lead to land use conflicts related to safety, liability, and vandalism and complaints due to noise, odor, dust, and the use of pesticides and fertilizer. The improvement of SW Stafford Road to urban standards, and associated street light illumination and bicycle and pedestrian movements, may further jeopardize the compatibility of the two uses, though the impacts of urban roadways on adjacent agricultural activity may be minimized through road design. Urbanization of the reserve would increase traffic on SW Stafford Road, which could impact the movement of both farm equipment and goods taking the most direct route to I-5 and I-205. Therefore, proposed urban uses are considered incompatible with the nearby agricultural activities occurring on the EFU-zoned land to the southeast.

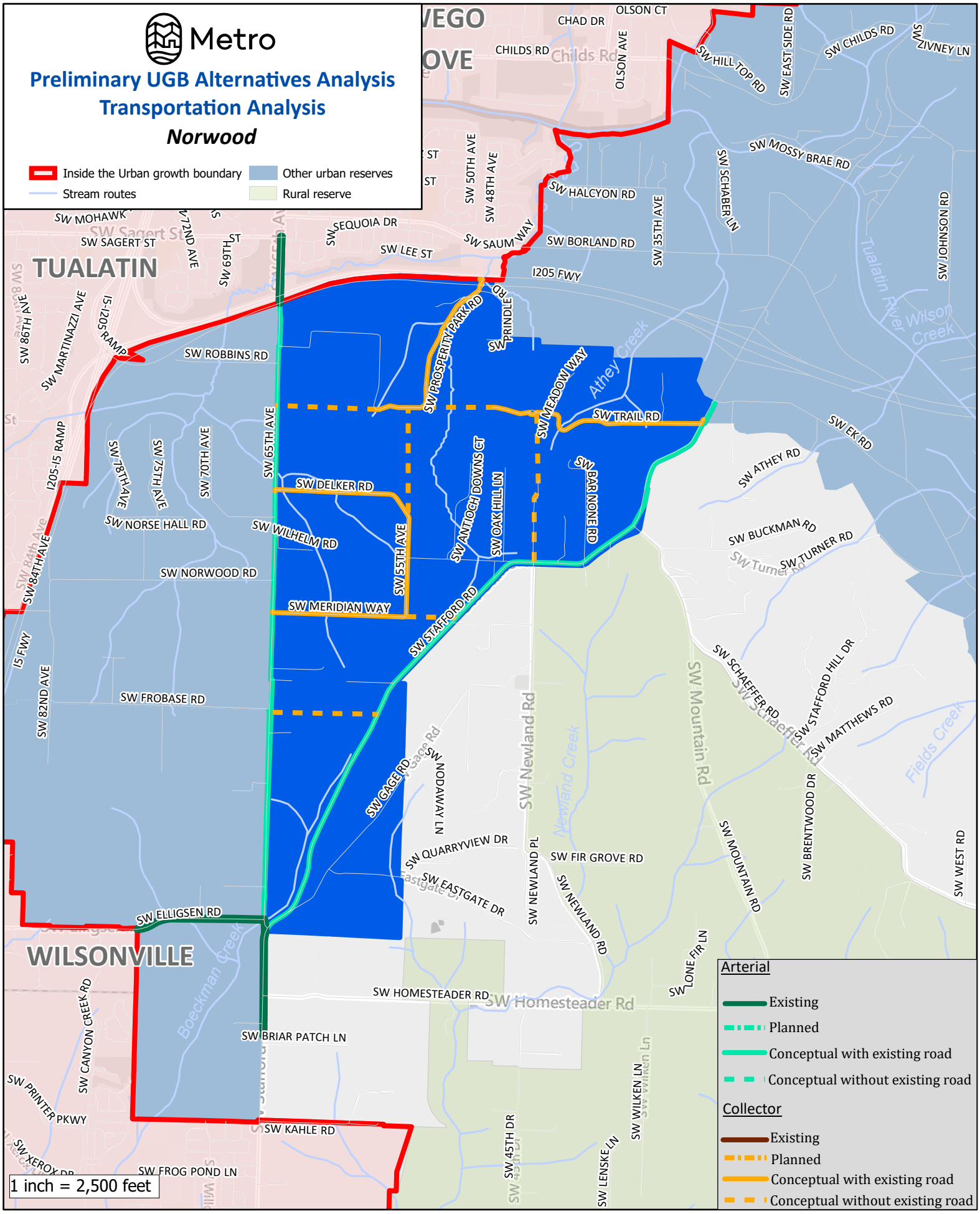
There are two pockets of EFU-zoned land to the west of the reserve, on the opposite side of SW 65th Avenue. The first is a more than 100-acre tract on the north side of SW Frobase Road at the intersection with SW 65th Avenue. This area is nearly entirely in agricultural production, mostly for field crops Christmas trees. The tract does have some small stands of trees as well, but they are generally along Saum Creek, which may inhibit harvesting for timber. There is a rural residence centered within the farm fields. The second location is a roughly 100-acre tract of EFU-zoned land south of SW Robbins Road adjacent to SW 65th Avenue. This is the location of Lee Farms, which is a family-owned business that includes Christmas tree plantings, a pumpkin patch, berries, and a county store. Lee Farms hosts various farm-related events, as well. There are also field crops in the northern part of this section of EFU land, but presumably not associated with Lee Farms. The forested patches in these areas are generally around Saum Creek, which may limit their ability to be harvest for commercial timber.

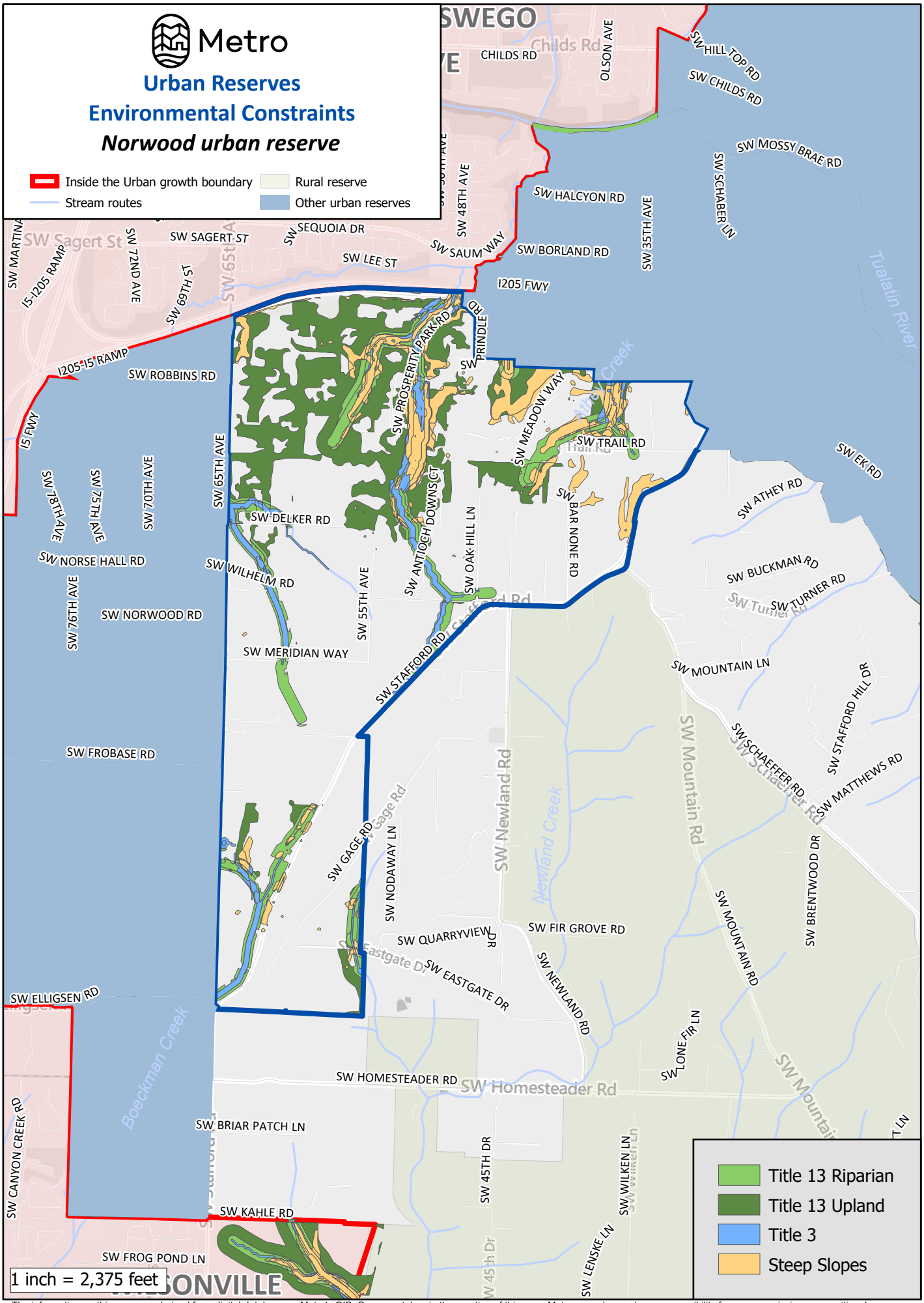
SW 65th Avenue separates the reserve from these EFU-zoned lands to the west, but the road itself would not provide an adequate buffer between urban development and agricultural activity. Development of the reserve near here could lead to land use conflicts related to safety, liability, and vandalism and complaints due to noise, odor, dust, and the use of pesticides and fertilizer. The improvement of SW 65th Avenue to urban standards, and associated street light illumination and bicycle and pedestrian movements, may further jeopardize the compatibility of the two uses, though, as noted above, the impacts of urban roadways on adjacent agricultural activity may be minimized through road design.

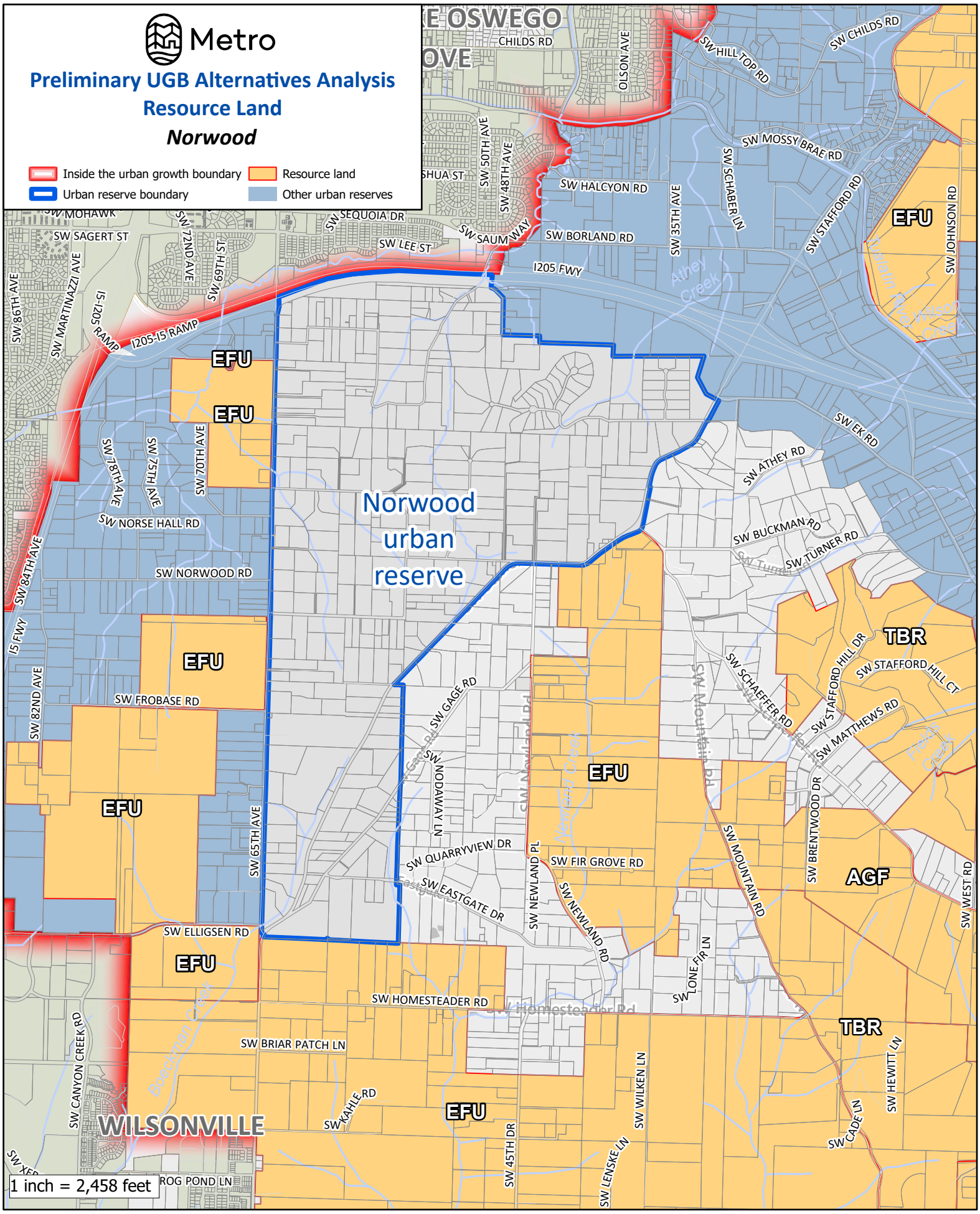
This analysis finds that the proposed urban uses are considered to have low compatibility with nearby agricultural and forest activities occurring on farm and forest land outside the UGB. Land use conflict mitigation measures would be warranted. The Norwood Urban Reserve is given a “low” score in Attachment 3 for this Goal 14 boundary location factor.











ROSA URBAN RESERVE

Total Reserve Area	789 acres
Total Tax Lot Area in Reserve (without Right-of-Way)	769 acres
Gross Vacant Buildable Area	288 acres
Net Vacant Buildable Area	**210 acres**

The Rosa Urban Reserve, which is the remainder of the former "South Urban Reserve" after a portion was added to the UGB in 2018, is on the south side of Hillsboro, north of SW Rosedale Road between SW River Road and SW 229th Avenue. It is adjacent to the UGB on its east and north, while rural reserve land is to the south and west. The reserve is relatively flat with some minor slopes near its stream corridors. Access is provided by SW Rosedale Road, SW River Road, and SW 229th Avenue. SW Rosa Road bisects the southern portion of the reserve in an east-west direction.

GOAL 14 BOUNDARY LOCATION FACTORS

Factor 1: Efficient accommodation of identified land needs

The Rosa Urban Reserve is comprised of the entirety or portions of 97 contiguous tax lots. Of the 79 tax lots entirely in the reserve, roughly a third are smaller than two acres each, another third are between two and five acres each, and six are greater than 30 acres each, with one being 221 acres in area. The tax lots that are only partially within the reserve have portions in the reserve that are generally less than two acres, though a few have portions in the reserve between six and nine acres. The combined tax lot area within the reserve is approximately 769 acres. As noted above, the entire reserve contains 288 gross vacant buildable acres and 210 net vacant buildable acres.

Three tax lots, with a total area of 310 acres (approximately 40 percent of the reserve's area), are occupied by "The Reserve Vinyard and Golf Club", which feature golf courses and accessory commercial uses. The other tax lots are characterized by rural residential development, smaller-scale agricultural uses, and groves of trees. Of all the tax lots entirely or partially within the reserve, 77 (roughly 80 percent) have assessed improvements, with the median assessed value of those tax lots' improvements being nearly $310,000.

The only existing urban residential development directly adjacent to the reserve adjoins the golf course property, though residential and commercial development is planned for neighboring areas already inside the UGB. Rosedale Elementary School and South Meadows Middle School are both within one mile of the of the reserve. The planned Sohi Community Park is adjacent to the reserve's east, on the opposite side of SE Century Boulevard and the Meriwether National Golf Course is just to the west. The Tualatin Valley Highway is approximately two miles away via SW River Road and SE Witch Hazel Road, and Highway 26 is further away. The closest TriMet bus stops are on Tualatin Valley Highway.

This reserve is generally flat, with some minor slopes along the stream corridors that divide the area into two tracts. The northern tract contains the golf course, which is considered "developed land" in Metro's buildable lands inventory methodology. While there are a few sizeable and

relatively flat tax lots in the southern portion of the reserve, they are more than five miles from Highway 26. The proximity of educational and recreational uses, and existing and planned residential development, means the reserve is best suited to accommodating a residential land need.

Factor 2: Orderly and economic provision of public facilities and services

Water Services

With regard to water services, the Rosa Urban Reserve is given a "medium" score in Attachment 3 for this Goal 14 boundary location factor, for the reasons detailed in (a)-(d) below.

a. Capacity of existing facilities to serve areas already inside the UGB

Adjacent lands inside the UGB are served by the City of Hillsboro. The city owns and operates two municipal drinking water systems, the city's System, which is the primary system, and the Upper System, which is a secondary system. It utilizes wholesale water purchased from the Joint Water Commission (JWC). JWC, which is jointly owned by the Tualatin Valley Water District (TVWD) and the cities of Hillsboro, Beaverton, and Forest Grove, obtains water from Hagg Lake (Scoggins Reservoir) and the Barney Reservoir released into the upper portion of the Tualatin River. When flows are available, water from the Tualatin River is used. It is then withdrawn and filtered through the JWC water treatment plant. Chlorine and pH adjustments are added before leaving the plant, where chlorine and pH adjustments are added to the water. The city is working with TVWD on development of a new water supply system that will draw water from the Willamette River in order to, among other goals, better accommodate growth in the city and surrounding areas. The project is expected to be completed in 2026. There are also plans to an upgrade of the JWC Water Treatment Plant. In the meantime, it is assumed there is generally sufficient treatment, storage, and transmission capacity to meet existing demands, though additional storage may be needed for areas within the existing UGB during regional supply shortage events and to accommodate full buildout.

b. Capacity of existing facilities to serve areas proposed for addition to the UGB

The City of Hillsboro has previously indicated there is or will be adequate water supply to serve the reserve as it develops, but capacity availability will ultimately depend on specific land uses in the reserve and the timing of any other urban development connected to the system. Additional supply capacity (e.g., from the WWSS project planned for completion in 2026) and pipe upsizing may be needed, and additional storage capacity is likely necessary.

c. Impacts to existing facilities that serve nearby areas already inside the UGB

Additional supply and storage capacity, as well as pipe upsizing, may be needed in order to avoid adversely impacting existing facilities in areas already inside the UGB.

d. Estimated water service-related costs for reserve development

Water piping, pumping, and storage costs	Cost
10-inch pipe	$0
12-inch pipe	$9.44 million
18-inch pipe	$0
Pumping	$0
Storage	$0.28 million
Total:	**$9.72 million**
Per dwelling unit at 20 units per net vacant buildable acre:	**$2,316**

Sanitary Sewer Services

With regard to sanitary sewer services, the Rosa Urban Reserve is given a "medium" score in Attachment 3 for this Goal 14 boundary location factor, for the reasons detailed in (a)-(d) below.

a. Capacity of existing facilities to serve areas already inside the UGB

In adjacent areas already in the UGB, the City of Hillsboro provides sanitary sewer services that feed into the regional sanitary sewer system operated by Clean Water Services (CWS). CWS treats wastewater at the Rock Creek Wastewater Treatment Plant. Capacity is believed to be adequate to meet current demand, though CWS is in the process of developing the West Basin Master Plan (WBMP), which, when completed as early as 2025, will identify projects needed to accommodate redevelopment and new development in the UGB.

b. Capacity of existing facilities to serve areas proposed for addition to the UGB

The forthcoming WBMP will help to identify projects needed to accommodate development in and beyond the existing UGB. Nonetheless, CWS has indicated that it is likely development of the Rosa Urban Reserve would require a new pump station that would pump sewage direct to the Rock Creek treatment plant.

c. Impacts to existing facilities that serve nearby areas already inside the UGB

The WBMP will help to identify projects needed to accommodate development beyond the existing UGB while maintaining adequate service elsewhere. As noted above, CWS has indicated that it is likely development of the Rosa Urban Reserve would require a new pump station.

d. Estimated sanitary sewer service-related costs for reserve development

Sanitary sewer piping and pumping costs	Cost
10-inch pipe	$5.17
12-inch pipe	$0
15-inch pipe	$0
Pump station	$2.52
Force mains	$0
Total:	**$7.69**
Per dwelling unit at 20 units per net vacant buildable acre:	**$1,833**

Stormwater Management Services

With regard to stormwater management services, the Rosa Urban Reserve is given a "medium" score in Attachment 3 for this Goal 14 boundary location factor, for the reasons detailed in (a)-(d) below.

a. Capacity of existing facilities to serve areas already inside the UGB

There is no indication of significant challenges with existing stormwater management facilities being able to serve existing development in adjacent areas inside the UGB.

b. Capacity of existing facilities to serve areas proposed for addition to the UGB

Based on topography, stormwater related to new development in the Rosa Urban Reserve could potentially discharge to Butternut Creek or Gordon Creek via private and public outfalls, without connecting to other existing stormwater infrastructure.

c. Impacts to existing facilities that serve nearby areas already inside the UGB

As noted above, stormwater related to new development in the Rosa Urban Reserve could potentially discharge to Butternut Creek or Gordon Creek via private and public outfalls, without connecting to other existing stormwater infrastructure. Therefore, no adverse impacts to existing facilities serving areas already inside the UGB are anticipated. It is also expected that stormwater will be treated and detained onsite, thereby limiting impacts to these creeks.

d. Estimated stormwater service-related costs for reserve development

Stormwater piping and water quality/detention	Cost
18-inch pipe	$3.00 million
24-inch pipe	$2.21 million
30-inch pipe	$0
Water quality/dentition	$9.38 million
Total:	**$14.59 million**
Per dwelling unit at 20 units per net vacant buildable acre:	**$3,476**

Transportation Services

With regard to transportation services, the Rosa Urban Reserve is given a "low" score in Attachment 3 for this Goal 14 boundary location factor, for the reasons detailed in (a)-(e) below.

a. Capacity of existing facilities to serve areas already inside the UGB

Figure 4.36 in Chapter 4 of the 2023 Regional Transportation Plan (RTP) displays 2020 home-based vehicle miles traveled (VMT) per capita by Metro transportation analysis zone, with average VMT per capita considered 11.32. According to Figure 4.36 in Chapter 4, areas in the UGB adjacent to the Rosa Urban Reserve had above average home-based VMT per capita in 2020.

Metro's adopted 2040 Growth Concept Map designates two regional centers and separate town centers in the City of Hillsboro, as well as a town center in nearby unincorporated Washington County. Regional centers are generally meant to: serve populations of hundreds of thousands of people; surround high-quality transit service and multi-modal street networks; and offer larger commercial uses, healthcare facilities, local government services, and public amenities. Town centers are meant to: serve populations of tens of thousands of people; offer more locally-focused retail uses and public amenities; and be well served by transit. The Hillsboro Regional Center in Hillsboro and the Aloha Town Center in Washington County are the closest 2040 Growth Concept designated centers to the Rosa Urban Reserve.

The Hillsboro Regional Center includes historic downtown Hillsboro and a large surrounding area that encompasses a wide variety of residential, employment, institutional/public uses. The center includes grocery stores, restaurants, medical facilities, government offices, school uses, parks, and a variety of housing types. Metro's 2017 State of the Centers Atlas showed that this large regional center has an average population density and dwelling units per acre, and a slightly lower number of businesses per acre, when compared with the other regional centers in the region.

The Aloha Town Center is located along Tualatin Valley Highway in unincorporated Washington County. In 2017, Washington County completed the Aloha Tomorrow Plan for the town center area to integrate land use changes, transportation improvements, and policies that support affordable housing and economic development. The center includes grocery stores, other retail commercial uses, medical offices, a preschool, places of worship, and a variety of housing types. Metro's State of the Centers Atlas showed that the town center has a high total population and dwelling units per acre, but a very low number of total businesses and employees, when compared with other town centers in the region.

The South Hillsboro Community Plan area, which is in the UGB and adjacent to the reserve to the east, is expected to develop with a higher-density mixed-use town center ("Reed's Crossing") along Tualatin Valley Highway and a smaller-scale village center south of Butternut Creek. While these two centers are not formally designated 2040 Growth Concept centers, they are expected to have similar purposes and characteristics.

Growth in and near these 2040 Growth Concept centers, Reed's Crossing, and the village center will not necessarily cause a significant increase in home-based VMT per capita in the future, as area residents will be able to access some daily needs with relatively short trips. The transit service and bike and pedestrian facilities that serve these areas, described further below, can also help to ensure that additional growth nearby does not adversely impact home-based VMT per capita.

Six TriMet bus routes provide service to Hillsboro and/or nearby unincorporated Washington County, mainly along the arterial streets in the central portion of the city, focusing on the Hillsboro and Tanasbourne/Amber Glen Regional Centers, the Orenco Town Center, and employment areas. There is generally more minimal transit service to the southern and northern portions of the city. However, TriMet Route 57 provides service along Tualatin Valley Highway and connects the Hillsboro Regional Center with Aloha Town Center. The MAX Light Rail Blue Line stops at nine stations within Hillsboro, connecting the city to Beaverton and Portland. Figure 4.3 in Chapter of the 2023 RTP indicates that there are gaps in planned frequent transit service along certain routes in the UGB near the reserve, including along SE Cornelius Pass Road and SE Century Boulevard.

Hillsboro has over 54 miles of dedicated bike lanes, more than 24 miles of established bikeways, and numerous streets considered "bike friendly" that, together, create a fairly well-connected system that is focused mostly on the central portion of the city and its two regional centers, including the Hillsboro Regional Center. There are dedicated bike facilities on SE River Road, SE Davis Road west of SE Brookwood Avenue, and the roughly 1,000 feet of SE Davis Road leading up to SE Century Boulevard, in the area of the UGB near the reserve. There are also dedicated bike facilities along the developing SE Butternut Creek Parkway, which will serve that area's new development and its prospective village center. The existing bike facilities on Tualatin Valley Highway are identified as part of the regional bike network on Figure 4.5 in Chapter 4 of the 2023

RTP. However, the figure also identifies gaps in the planned network in other areas in the UGB near the reserve, including along SE Davis Road.

A large proportion of the residential neighborhoods in Hillsboro, including those in the UGB near the reserve, have sidewalks, although there are other residential areas of the city that do not have sidewalks. The Hillsboro Regional Center and Aloha Town Center have sidewalks, as does the developing South Hillsboro Community Plan area. Trails, such as the Butternut Creek Trail to the east of the reserve and the Rock Creek Trail, provide additional pedestrian opportunities. However, large sections of Tualatin Valley Highway lack sidewalks and sections of SE Brookwood Avenue and SE Davis Road in the UGB lack sidewalks on both sides. There are also no sidewalks along SE River Road south for most of the length south of SE Oakhurst Street. Chapter 4, Figure 4.4 of the 2023 RTP identifies the missing sidewalks on Tualatin Valley Highway, SE Brookwood Avenue, and SE River Road as gaps in the planned regional pedestrian network.

Figure 4.14 in Chapter of the 2023 RTP identifies a number of high injury corridors in the area already inside the UGB near the reserve and in Hillsboro, including Tualatin Valley Highway and SE River Road. The figure also identifies a number of intersections along Tualatin Valley Highway and SE River Road in the UGB near the reserve as high injury intersections.

Highway 26 within the UGB near Hillsboro is identified as a throughway Chapter 4, Figure 4.7 of the 2023 RTP. Figure 4.8 of that chapter indicates that this section of Highway 26 currently meets travel speed reliability performance thresholds, with no more than four hours per day when travel speeds fall below the identified minimum speed. RTP models indicate this reliability will continue at least to the year 2045.

b. Capacity of existing facilities to serve areas proposed for addition to the UGB

Highway 26, an RTP-designated throughway, is more than four miles away from the reserve. As noted above, the section of the highway in the UGB near Hillsboro currently meets travel speed reliability performance thresholds.

There is currently no transit service into the reserve itself. TriMet Route 57, which travels on Tualatin Valley Highway between Forest Grove and the Beaverton Transit Center, is just shy of a mile from the eastern edge of the reserve along SE 67th Avenue and just over a half mile from the middle of the reserve along SE Brookwood Avenue.

There is a dedicated bike lane on north of the reserve on SE/SW River Road that connects to a bike lane on SE Davis Road 1,000 feet to the north that provides access to nearby South Meadows Middle School and Witch Hazel Elementary School. It appears the bike lane on SE Davis Road will be extended to the east as the area develops, given the fact that there are bike lanes on those portions of SE Davis with new homes. The bike lane on SE/SW River Road also extends south into the reserve to SW Rosedale Road. There are bike lanes and bikeways in South Hillsboro Community Plan area and it is expected that these facilities will continue to be built as development progresses.

There is one directly adjacent residential development that has sidewalks. However, this development is next to the golf course portion of the reserve and currently the sidewalks do not connect to the reserve itself. It is unclear as to whether they will be connected in the future.

As noted in response to Factor 1, the reserve may not be able to efficiently accommodate employment uses and instead would best accommodate residential uses, meaning future residents may have to travel outside of the reserves for daily services and employment opportunities. This Hillsboro Regional Center is located approximately 2.5 miles from the reserve via Tualatin Valley Highway or SE River Road. The Aloha Town Center is located about 3.5 miles to the east of the reserve along Tualatin Valley Highway. Without direct transit service, and without direct and complete bike and pedestrian facilities leading to transit on Tualatin Valley Highway, it is likely that future residents of the reserve will need to rely on private motor vehicle transportation to access their daily needs and employment opportunities in these centers. The "center-like" mixed use development in the nearby South Hillsboro Community Plan area could offer closer services.

c. Impacts to existing facilities that serve nearby areas already inside the UGB

SE 67th Avenue, SE River Road, SE Brookwood Avenue, and Tualatin Valley Highway would be expected to see additional private vehicle traffic from development of the reserve. The few existing bike and pedestrian facilities nearby would also be expected to see additional use. Considering the distance between the reserve and the 2040 Growth Concept designated centers, the lack of direct transit service, the limited bike and pedestrian facilities, and the size of the reserve, the reserve could generate more private motor vehicle traffic on roadways already inside the UGB than other reserves. Any additional motor vehicle traffic on Tualatin Valley Highway or SE River Road may exacerbate their high-crash conditions. However, in part because Highway 26 is more than four miles from the reserve, development of the reserve is not expected to impact the performance of Highway 26 as a throughway.

d. Need for major transportation facility improvements and associated costs

Urbanizing the reserve will likely require an approximately 0.91-mile section of SW River Road in the west of the reserve to be improved to urban arterial standards, including acquisition of additional right-of-way. It is also likely that the following roadways would need to be improved to urban collector standards, with acquisition of additional right-of-way: a 0.92-mile section of SW Rosa Road; a 0.91-mile section of SW Rosedale Road; and a 1.05-mile section of SE Century Boulevard. The SW Rosedale Road improvements are considered half-street improvements for the purposes of this analysis, as the southern half of the roadway may be outside of the UGB. SE Century Boulevard improvements are also considered half-street improvements because the eastern half of the roadway would be inside the current UGB. Two new collectors with a combined length of approximately 1.27 miles are likely needed to serve central portions

of the reserve. Most of these new and improved roadways' per-mile costs are expected to be normal, though a few stream crossings could lead to higher-than-normal costs in specific locations.

Facilities	Cost
Arterials, existing/improved full street	$70.50 million
Arterials, existing/improved half street	$0
Arterials, new	$0
Collectors, existing/improved full street	$29.67 million
Collectors, existing/improved half street	$34.04 million
Collectors, new	$52.10 million
Total:	**$186.32 million**
Per dwelling unit at 20 units per net vacant buildable acre:	**$44,404**

c. Provision of public transit service

The Rose Urban Reserve is almost entirely within the TriMet District, but the area to the west of SW River Road is outside of the district. Conceptual road layouts for the reserve indicate that future transit service may not be feasible. However, TriMet nonetheless evaluated the reserve for providing transit service and determined they could reroute a potential new bus line proposed in TriMet's 2045 Network Vision that would operate along Roy Rogers Road. An analysis determined that the service would not create significant, additional costs. TriMet could potentially provide services to the reserve, although there is no guarantee of service. Actual service depends on the level of development in the reserve and in the corridors leading to it.

Prior to land being included in the UGB, a more detailed concept plan, consistent with the requirements of Metro's Urban Growth Management Functional Plan Title 11, will be required. This concept plan process will develop more refined public facility and service needs and cost estimates.

Factor 3: Comparative environmental, social, energy, and economic consequences

Environmental consequences

Gordon Creek flows west through the golf course in the northern portion of the Rosa Urban Reserve for approximately 1,830 feet. Wetlands identified on the National Wetland Inventory (NWI) are associated with the entire stream length and total 5.8 acres. Riparian habitat is identified along the stream and wetlands. The golf course is considered developed land so no urbanization here is expected; therefore, the stream, wetland, and habitat areas on the golf course would not be impacted by future urbanization of the reserve.

Butternut Creek flows diagonally through the southern portion of the reserve for approximately 1.4 miles. The entire stream is within a floodplain and 26.5 acres of NWI

wetlands are identified along the entire length. There are a few locations with slopes greater than 25 percent near the western edge of the reserve.

Two small tributaries flow into Butternut Creek near the eastern edge of the reserve and combined total 2,400 feet. All three of the streams flow through forested riparian corridors. There is a significant amount of riparian and upland habitat identified along the corridors.

Butternut Creek bisects the southern portion of the reserve, and any north-south connection developed with urbanization would impact habitat areas, floodplain, and wetlands. However, given the increased protection levels for, streams, wetlands, steep slopes, and habitat areas on lands added to the UGB, urbanization of the area can occur without impacting this stream corridor and habitat areas, especially if a north-south road connection is not made.

Overall, urbanization of the reserve could occur with comparatively moderate impacts to the stream corridors and habitat areas, depending on north-south roadway connections and ultimate urban form. Additional environmental consideration, specifically regarding avoidance of conflict between urban development and regionally significant fish and wildlife habitat, is provided in the Metro Code Factors Analysis (Appendix 7A).

Considering the comparative environmental consequences of urbanization, the Rosa Urban Reserve is given a "medium-high" score in Attachment 3 for this Goal 14 boundary location sub-factor.

Social, energy, and economic consequences

This Rosa Urban Reserve has three primary land uses: the Reserve Vineyards and Golf Course; rural residences on forested tax lots; and agricultural activities mostly occurring in the southern portion of the reserve. The golf course, which is not considered developable, mostly separates the developable portions of the reserve from areas from existing development already in the UGB, somewhat isolating the currently rural areas of the reserve. However, urban development on lands to the northwest and east of the reserve is likely in the near future and that development will impact the rural character of the wider area. The number of existing rural residences is relatively small and are generally clustered along SW River Rd on smaller tax lots. This existing development and parcelization, as well as nearby natural features, will limit opportunities for new development in this area of the reserve. Larger-scale urban development would instead likely occur first in the southeast corner of the reserve where lands are cleared and flatter, away from most existing residences. Butternut Creek and the tributary to the Tualatin River and their associated habitat and floodplain areas also divide the reserve into smaller sections that would result in a less dense urban development pattern and could help to buffer urban development for other areas of the reserve until they urbanize.

As detailed more fully in response to Factor 2, future residents of the reserve are likely to be reliant on private motor vehicle transportation, which will have some adverse energy impacts.

There is agricultural activity in the south of the reserve, primarily field crops and Christmas tree farming. The economic consequences of a loss in farming activity in the reserve may be outweighed by the economic benefits of residential development.

This analysis finds that there would be comparatively moderate social, energy, and economic consequences from urbanization of this reserve. The Rosa Urban Reserve is given a "medium" score in Attachment 3 for this Goal 14 boundary location sub-factor.

Factor 4: Compatibility of the proposed urban uses with nearby agricultural and forest activities occurring on farm and forest land outside the UGB

Goal 3 agricultural lands, specifically lands zoned Exclusive Farm Use (EFU) by Washington County, border the Rosa Urban Reserve to the south and west.

The EFU-zoned lands bordering to the south extend into unincorporated areas for a number of miles. Nearly all of the EFU-zoned land directly adjacent to the reserve on the south side of SW Rosedale Road is in agricultural production and include field crops, row crops, and orchards. There is also one roughly four-acre stand of trees near to some rural residential development. SW Rosedale Road itself would not provide an adequate buffer between urban development and agricultural activity. Development of the reserve could lead to land use conflicts related to safety, liability, and vandalism and complaints due to noise, odor, dust, and the use of pesticides and fertilizer. In addition, the improvement of SW Rosedale Road to urban standards, and associated street light illumination and bicycle and pedestrian movements, may further jeopardize the compatibility of the two uses, though the impacts of urban roadways on adjacent agricultural activity may be minimized through road design. Urbanization of the reserve would increase traffic on SW Rosedale Road, which could impact the movement of both farm equipment and goods, although the amount of traffic may be limited as Butternut Creek isolates the southern portion of the reserve and SW 229th Avenue and SW River Road provide more direct routes to the existing urban area. The proposed urban uses are considered mostly incompatible with the extensive nearby agricultural activities occurring on the farmland to the south and mitigation measures on the urban land will be necessary. While there is the aforementioned four-acre stand of trees on the adjacent EFU-zoned land in this area, the stand is not significant enough to attract large-scale timber operations that would be in conflict with urban development of the reserve.

The Tualatin River and its associated forested riparian corridor provide a buffer for the vast majority of the EFU land to the west. In addition, the some of the EFU-zoned land west of the river in this location is composed of the Meriwether National Golf Course and not actually in agricultural use. The tax lots at the southwest corner of the reserve are divided by the reserve boundary and the portions of these tax lots outside the reserve are zoned EFU. A very minor portion of this land, approximately two and a half acres in area, is currently in agricultural production along with the portion of the tax lot that is within the reserve. Given the location of this very small area between the Tualatin River and the reserve boundary, and the lack of an easy access point for farm equipment when urbanization occurs, the expectation is that, if the area urbanized, the agricultural activities on these remnants of land would not continue and the potential for land use conflicts

between urban development and agricultural activity would be further reduced. Therefore, the proposed urban uses would be considered compatible with nearby agricultural activities in this location.

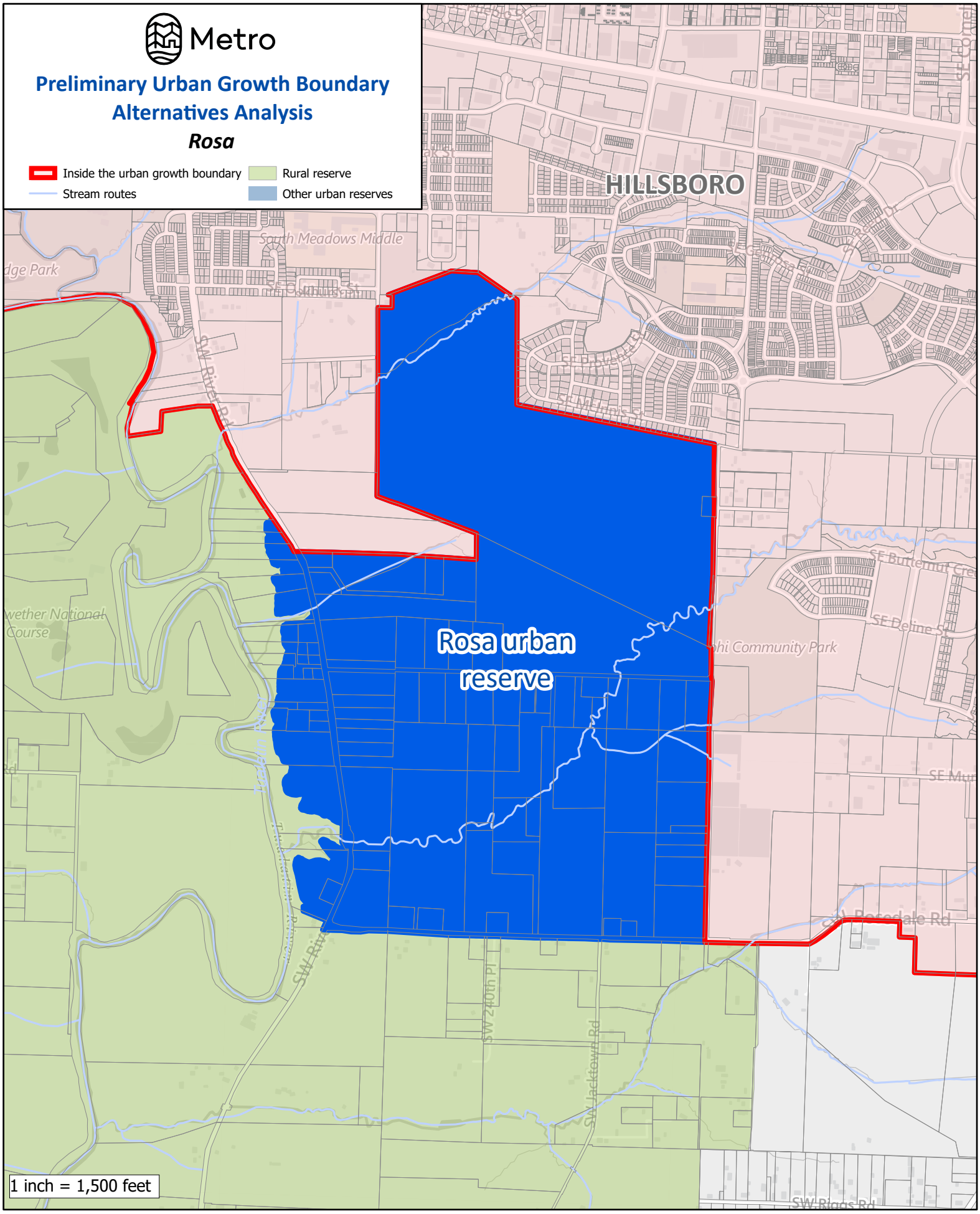
In summary, the proposed urban uses are generally compatible with nearby agricultural and forest activities occurring on farm and forest land outside the UGB to the west, but not compatible with the agricultural activities occurring on the farmland to the south where mitigation measures on the urban land could be warranted. Overall, the proposed urban uses have moderate compatibility with the nearby agricultural and forest activities occurring on farm and forest land outside the UGB. The Rosa Urban Reserve is given a "high" score in Attachment 3 for this Goal 14 boundary location factor.

Metro

Preliminary Urban Growth Boundary Alternatives Analysis

Rosa

Inside the urban growth boundary
Rural reserve
Stream routes
Other urban reserves



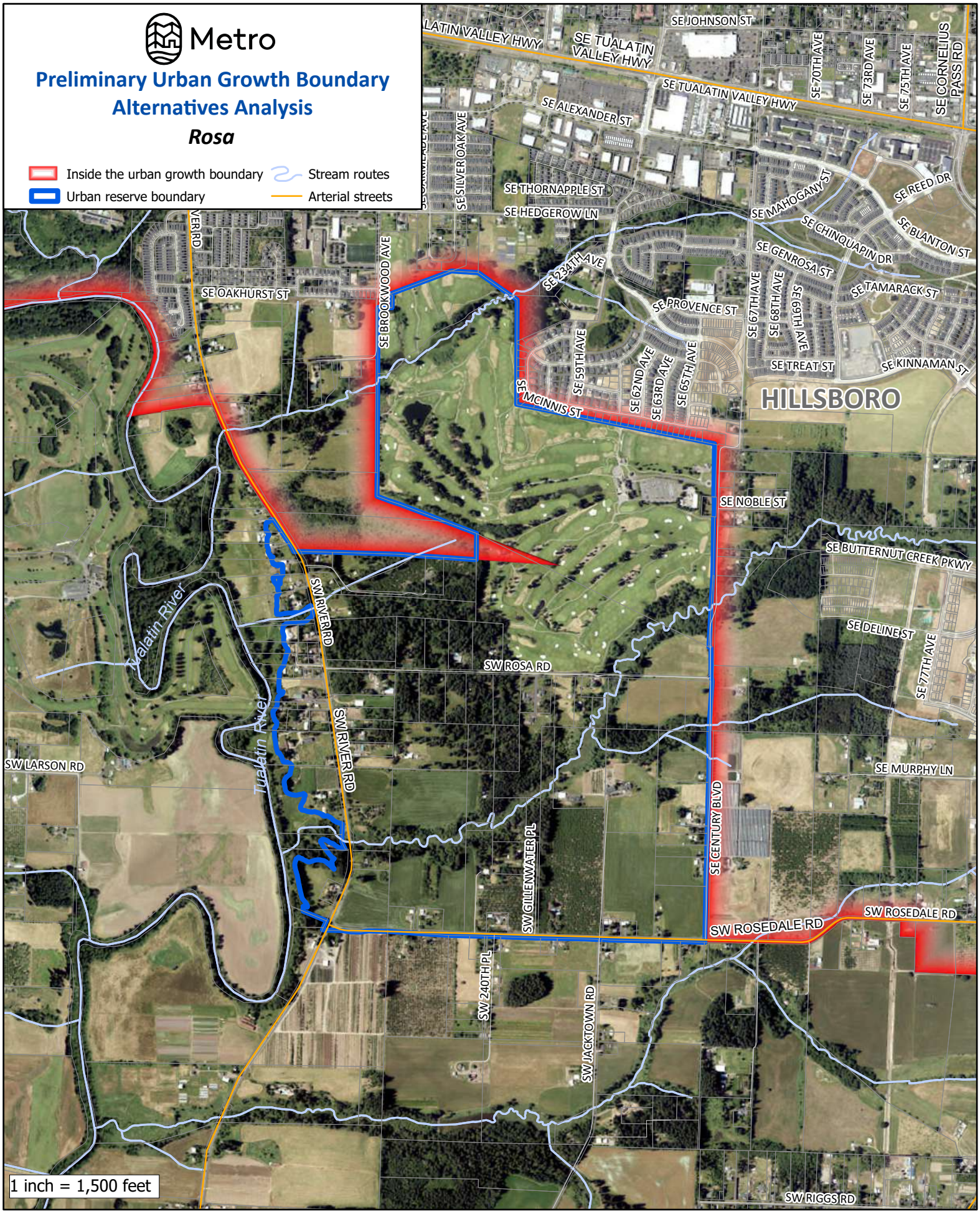
1 inch = 1,500 feet

Metro

Preliminary Urban Growth Boundary Alternatives Analysis

Rosa

Inside the urban growth boundary
Urban reserve boundary
Stream routes
Arterial streets



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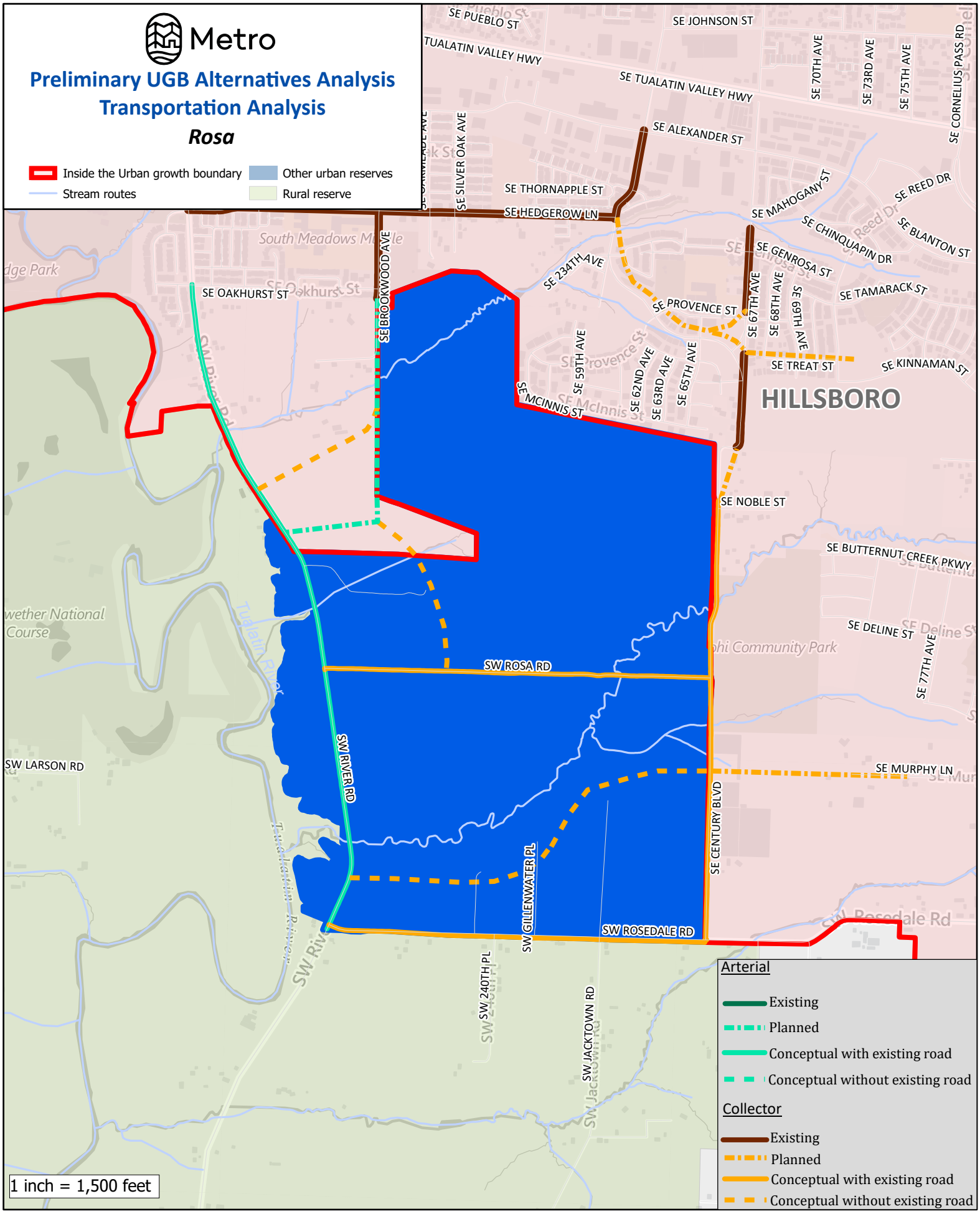
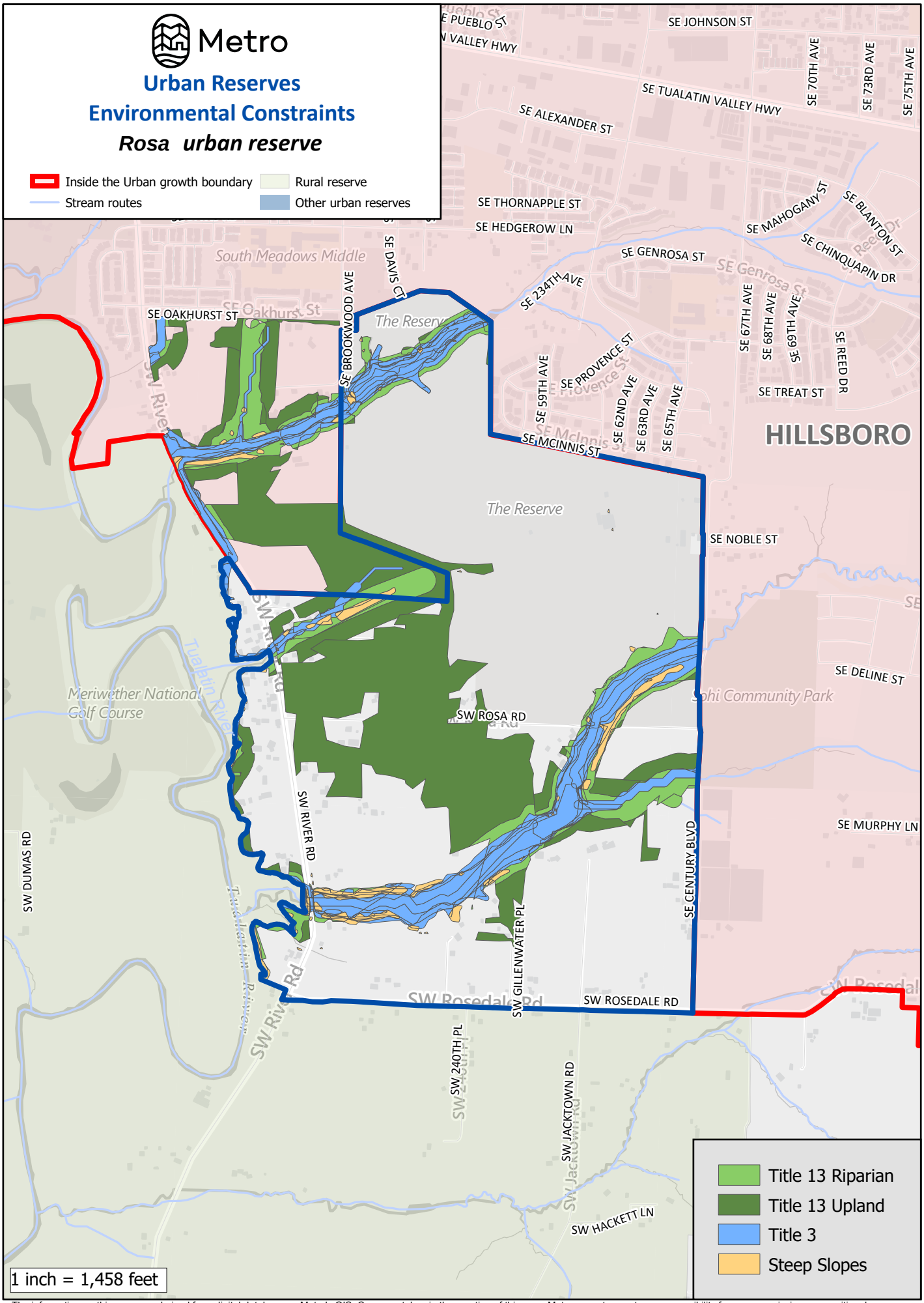
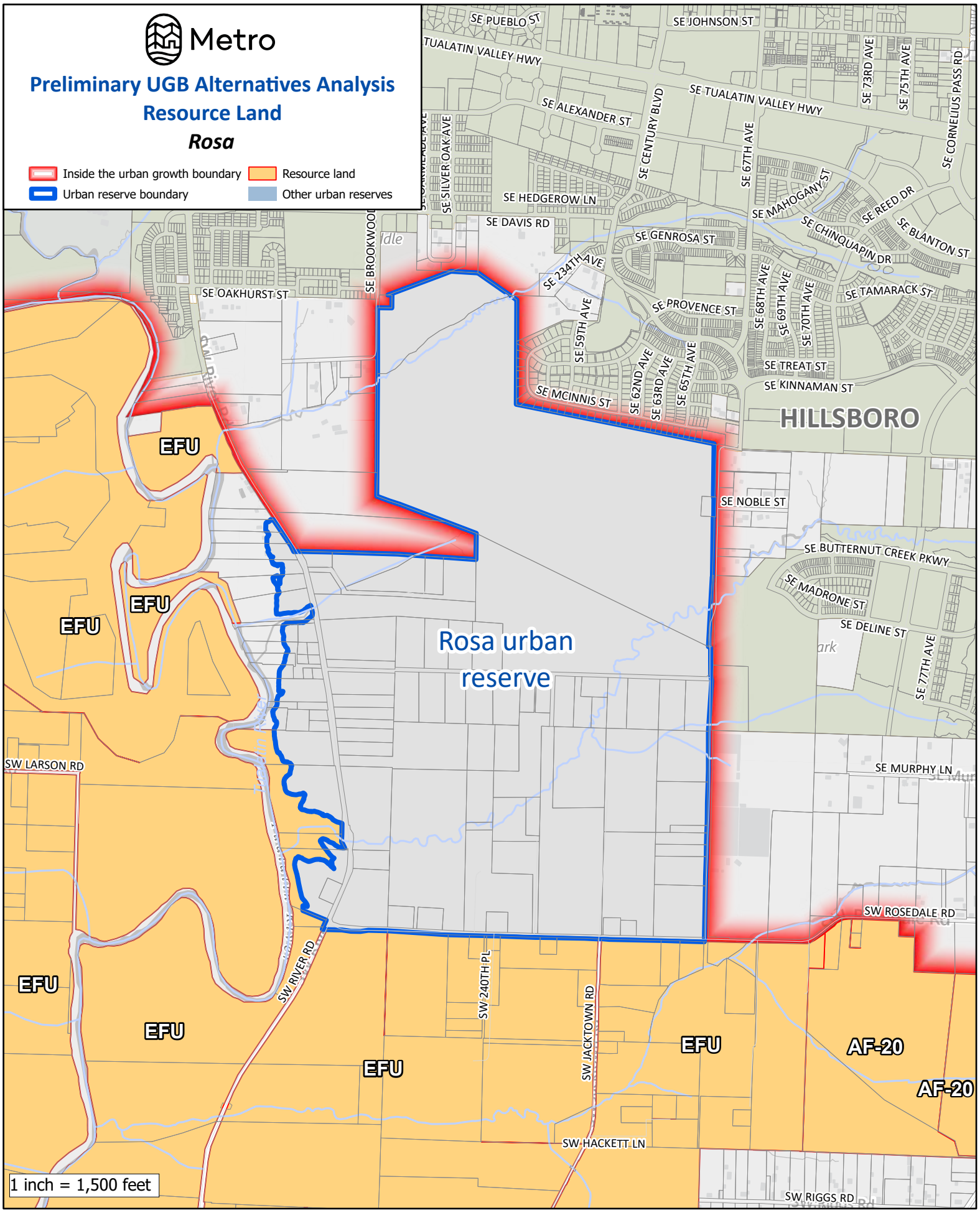






ROSEMONT URBAN RESERVE

Total Reserve Area	128 acres
Total Tax Lot Area in Reserve (without Right-of-Way)	127 acres
Gross Vacant Buildable Area	112 acres
Net Vacant Buildable Area	**83 acres**

The Rosemont Urban Reserve is a relatively small area on the opposite side of S Rosemont Road from West Linn city limits. The UGB forms the reserve's northern and western boundaries, and the reserve is otherwise entirely surrounded by the separate Stafford Urban Reserve. The reserve is generally flat, with a bench along S Rosemont Road that gently slopes to the south and west. There are some slopes greater than 10 percent mainly along the reserve's other edges and in its center.

GOAL 14 BOUNDARY LOCATION FACTORS

Factor 1: Efficient accommodation of identified land needs

The Rosemont Urban Reserve contains 19 contiguous tax lots, all of which are entirely within the reserve. All but seven of the tax lots are larger than five acres each; one tax lot is more than 13 acres in area and another is more than 38 acres in area. One of the reserve's tax lots appears to only be a private access drive.

Roughly 70 percent of the reserve's tax lots are developed with rural residences and accessory uses. Aerial imagery indicates there is some minor agricultural activity (e.g., Christmas tree farming) in the reserve, as well as some forested patches. In total, 13 of the reserve's tax lots have assessed improvements, with the median assessed value of those tax lots' improvements being more than $1 million.

Rosemont Ridge Middle School and the West Linn Adult Community Center are directly adjacent to the reserve, and Trillium Creek Primary School is across S Rosemont Road. The reserve is also adjacent to urban low density residential development. Commercial and mixed-use developments, including a grocery store and medical offices, and a disc golf course are within a quarter mile of the east side of the reserve.

Access to the reserve is provided by S Rosemont Road, S Wisteria Road, and Salamo Road. The nearest highway interchange is the interchange of 10th Street with I-205, nearly two miles away via Salamo Road. There are no existing TriMet bus stops within a mile of the reserve.

Considering the reserve's overall small size, its limited highway access, slopes, large number of high value existing residences, and surrounding residential development, the reserve is not considered suitable for accommodating an employment land need. However, the existing and surrounding residential uses and the proximity of schools and recreational and commercial uses, could support and/or be cohesive with residential land uses. This reserve is considered able to accommodate a small residential land need.

However, regarding the "efficient" accommodation of identified land needs, it is important to note that the cities adjacent to the "Stafford Triangle" area, which includes the Rosemont Urban Reserve, have for decades opposed UGB expansions in that area, and those cities' elected officials have taken steps to restrict any city's ability to plan for the accommodation of future urban development. In 2019, the cities of Lake Oswego, Tualatin, and West Linn entered into an agreement that prohibits any of those cities from completing a concept plan for any part of the Borland, Rosemont, and Stafford Urban Reserve areas until, at the earliest, December 31, 2028. This restriction and the ongoing opposition of the three adjacent cities to planning, annexing, and developing the Rosemont Urban Reserve weighs heavily against this area regarding its ability to efficiently accommodate the identified needs for residential or employment land under Factor 1.

Factor 2: Orderly and economic provision of public facilities and services

Water Services

With regard to water services, the Rosemont Urban Reserve is given a "medium" score in Attachment 3 for this Goal 14 boundary location factor, for the reasons detailed in (a)-(d) below.

a. Capacity of existing facilities to serve areas already inside the UGB

The City of West Linn serves the adjacent areas inside the UGB to the north and east. The West Linn Water System receives potable water from the South Fork Water Board (SFWB), with a treatment plant in Oregon City jointly owned by the Cities of West Linn and Oregon City. SFWB's water treatment process includes flocculation, sedimentation, filtration, and chlorination of raw water from the Clackamas River to remove harmful bacteria. The water treatment plant was upgraded in October 2016. There are currently no known major treatment system deficiencies or relevant pressure zone storage deficiencies. However, it is unclear whether there is sufficient pumping and distribution system capacity to fully serve buildout conditions, at least without system improvements.

b. Capacity of existing facilities to serve areas proposed for addition to the UGB

Storage, transmission line, and pumping system improvements may be needed for West Linn to serve urban development of the Rosemont Urban Reserve.

c. Impacts to existing facilities that serve nearby areas already inside the UGB

Additional storage, pumping, and distribution system capacity may be needed to serve urban development of the Rosemont Urban Reserve while avoiding negative impacts to service to areas already inside the UGB.

d. Estimated water service-related costs for reserve development

Water piping, pumping, and storage costs	Cost
10-inch pipe	$0.67 million
12-inch pipe	$0
16-inch pipe	$0
Pumping	$2.9 million
Storage	$0.10 million
Total:	**$3.67 million**
Per dwelling unit at 20 units per net vacant buildable acre:	**$2,204**

Sanitary Sewer Services

With regard to sanitary sewer services, the Rosemont Urban Reserve is given a "low" score in Attachment 3 for this Goal 14 boundary location factor, for the reasons detailed in (a)-(d) below.

a. Capacity of existing facilities to serve areas already inside the UGB

The City of West Linn provides service to nearby lands in the UGB to the north and east. At the downstream end of the City of West Linn system are WES-owned pumps and force mains. Sewage ultimately gets pumped to the Tri-City Water Resource Recovery Facility (WRRF) located on the east side of the Willamette River. The Rosemont area would be part of the WES Willamette Basin, which flows to the Willamette Pump Station and then to the West Linn Interceptor. The WES Master Plan identifies an expansion of the existing treatment plant within the 2020-2040 timeframe, taking it from its existing 78.3 MGD capacity to 104 MGD capacity. The city's 2019 Sanitary Sewer Master Plan has identified potential system capacity deficiencies for modeled pipes in both existing and buildout scenarios. There are no deficiencies identified in the city system downstream of the likely Rosemont Urban Reserve connection point under existing conditions, but there may be deficiencies under buildout conditions downstream of the system near the Willamette River. The WES Master Plan identifies hydraulic deficiencies for future dry weather flow, groundwater infiltration, and rainfall derived infiltration and inflow.

b. Capacity of existing facilities to serve areas proposed for addition to the UGB

Whether the development of the Rosemont Urban Reserve would strain the capacity of existing city system or WES facilities depends in part on the timing of its development and other development in and around the city. It's possible that sewage from the Rosemont Urban Reserve would need to flow toward the Stafford Urban Reserve on its way to the treatment plant; if so, sewer lines will be needed through this adjacent reserve potentially requiring its inclusion in the UGB as well. Existing piping and hydraulic deficiencies may also need to be addressed. The planned expansion of the

treatment plant should provide additional capacity that could help support development of the reserve.

c. Impacts to existing facilities that serve nearby areas already inside the UGB

As explained above, treatment plant improvements and piping and hydraulic capacity improvements will likely be needed to avoid negative impacts to service within the existing UGB. Potential treatment plant improvement costs and other system-wide/adjacent reserve development costs are not included in the below figures.

d. Estimated sanitary sewer service-related costs for reserve development

Sanitary sewer piping and pumping costs	Cost
10-inch pipe	$1.43 million
12-inch pipe	$0
15-inch pipe	$0
Pump station	$0.90 million
Force mains	$1.12 million
Total:	**$3.45 million**
Per dwelling unit at 20 units per net vacant buildable acre:	**$2,072**

Stormwater Management Services

With regard to stormwater management services, the Rosemont Urban Reserve is given a "high" score in Attachment 3 for this Goal 14 boundary location factor, for the reasons detailed in (a)-(d) below.

a. Capacity of existing facilities to serve areas already inside the UGB

There is no indication of major capacity issues with existing stormwater facilities that serve the adjacent land inside the UGB. Based on topography, at stormwater from development of the Rosemont Urban Reserve would likely be conveyed, treated, and detained within the reserve and discharge directly to Fritchie Creek, which does not have any identified capacity issues.

b. Capacity of existing facilities to serve areas proposed for addition to the UGB

Fritchie Creek is believed to have sufficient capacity to serve development in the reserve.

c. Impacts to existing facilities that serve nearby areas already inside the UGB

Stormwater from development of the Rosemont Urban Reserve would likely be conveyed, treated, and detained within the reserve and discharge directly to Fritchie

Creek, without connecting to any existing City of West Linn Stormwater infrastructure. Fritchie Creek is believed to have sufficient capacity. Therefore, no adverse impacts to existing facilities are anticipated.

d. Estimated stormwater service-related costs for reserve development

Stormwater piping and water quality/detention	Cost
18-inch pipe	$0
24-inch pipe	$0
30-inch pipe	$0
Water quality/dentition	$1.53 million
Total:	**$1.53 million**
Per dwelling unit at 20 units per net vacant buildable acre:	**$920**

Transportation Services

With regard to transportation services, the Rosemont Urban Reserve is given a "medium-high" score in Attachment 3 for this Goal 14 boundary location factor, for the reasons detailed in (a)-(e) below.

a. Capacity of existing facilities to serve areas already inside the UGB

Figure 4.36 in Chapter 4 of the 2023 Regional Transportation Plan (RTP) displays 2020 home-based vehicle miles traveled (VMT) per capita by Metro transportation analysis zone, with average VMT per capita considered 11.32. According to Figure 4.36, areas in the UGB adjacent to and near the Rosemont Urban Reserve had an above average home-based VMT per capita in 2020.

Metro's adopted 2040 Growth Concept Map designates a town center in the adjoining City of West Linn. Town centers are meant to: serve populations of tens of thousands of people; offer more locally-focused retail uses and public amenities; and be well served by transit. West Linn's Willamette Town Center, which includes the Willamette Historic District, aligns with the 2040 Growth Concept Map. The town center area includes local retail commercial uses, medical facilities, school uses, police and fire stations, and some residential uses. Within the UGB but within half a mile of the reserve there is a grocery store, other retail commercial uses, banks, school uses, places of worship, a community center, medical services, multifamily housing, parks, and the West Linn City Hall. Growth in and near the town center and areas in the UGB near the reserve will not necessarily cause a significant increase in home-based VMT per capita in the future, as area residents will be able to access some daily needs with relatively short trips.

Two TriMet bus lines serve West Linn, including Route 35, which runs along Willamette Drive, and Route 154, which runs along Willamette Falls Drive. They provide transit

service to the Willamette Town Center and other portions of West Linn. Figure 4.3 in Chapter 4 of the 2023 RTP shows these existing routes as in the regional transportation network. There are currently no TriMet bus stops in the UGB within a mile of the reserve.

There are more than nine miles of dedicated bike lanes and five miles of bikeways in West Linn, including on portions of Blankenship Road and Willamette Falls Drive that help connect western ends of West Linn to the Willamette Town Center. Parker Road Rosemont Road, Salamo Road, and Santa Anita Drive, which are in the UGB near the reserve, all have dedicated bike lanes. Figure 4.5 in Chapter 4 of the 2023 RTP shows some existing bike facilities in West Linn, including those along Salamo Road, as in the regional bike network. However, there are gaps in the planned regional bike network in the city, such as along Willamette Falls Drive.

Large portions of West Linn are well served by sidewalks, especially in areas that have been developed more recently. There are sidewalks on the SW Borland Road bridge over the Tualatin River that join sidewalks on Brandon Plance and Dollar Street in the UGB that connect with the Fields Bridge Park, Athey Creek Middle School, and, eventually, the Willamette Town Center. The Willamette Falls Drive Streetscape Project improved pedestrian accessibility in the historic Willamette neighborhood. The Rosemont and Salamo Trails provide pedestrian connection routes along Rosemont Road and Salamo Road and that tie the lower and upper portions of West Linn together on the west side. There are also sidewalks along Bay Meadows Drive, Furlong Drive, Hidden Springs Road, Hoodview Avenue, Noble Lane, and Santa Anita Drive in the UGB near the reserve connecting to schools, commercial and civic uses, residential areas, and parks. Figure 4.4 in Chapter 4 of the 2023 RTP shows that there are some gaps in the planned regional pedestrian network in West Linn.

There are no high injury corridors or high injury intersections in West Linn's portion of the UGB identified on Figure 4.14 in Chapter 4 of the 2023 RTP.

The section of I-205 that crosses through the UGB near the reserve is identified as a throughway in Chapter 4, Figure 4.7 of the 2023 RTP. Figure 4.8 of the chapter indicates that the interstate section currently meets travel speed reliability performance thresholds, with no more than four hours per day when travel speeds fall below the identified minimum speed. RTP models indicate this reliability will continue at least to the year 2045.

b. Capacity of existing facilities to serve areas proposed for addition to the UGB

The nearest highway interchange to the reserve is the interchange of 10th Street with I-205, nearly two miles away via Salamo Road. The section of I-205 near the reserve connecting Tualatin and West Linn is expected to continue to meet RTP travel speed reliability performance thresholds at least to the year 2045.

The Willamette Town Center is just over a mile from the reserve but, as noted above, there are other areas with commercial uses, including a grocery store, as well as civic and school uses, medical service, parks, and places of worship within half a mile of the reserve where future residents of the reserve could access daily needs without traveling a long distance (i.e., without increasing home-based VMT per capita). Indeed, Rosemont Ridge Middle School and the West Linn Adult Community Center are adjacent to the reserve and Trillium Creek Primary School is only about 500 feet away. As detailed below, these uses are already connected to the reserve by designated bike facilities and sidewalks, which reduces the need for future residents of the reserve to rely on private motor vehicle transportation to access them.

There is currently no transit service near to the reserve. The closest bus stop is on Willamette Drive, about 1.5 miles away via Santa Anita Drive and Pimlico Drive. However, as explained below, TriMet has plans to provide hourly service along Rosemont Road sometime in the future. In the meantime, there are dedicated bike facilities on Rosemont Road and Salamo Road adjacent to the reserve, as well as on Hidden Springs Road, Parker Road, and Santa Anita Drive leading to the reserve. These roads, as well as almost all of the nearby neighborhood streets, also have sidewalks and the Rosemont Trail along Rosemont Road provides access to the reserve. Past the nearby neighborhoods, there are some gaps in sidewalks or pedestrian facilities along the major streets that limits pedestrian movement.

c. Impacts to existing facilities that serve nearby areas already inside the UGB

Hidden Springs Road, Parker Road, Rosemont Road, Salamo Road, Santa Anita Drive, and S Wisteria Road would see additional private motor vehicle traffic as a result of urbanization of the reserve. However, the existing bike and pedestrian facilities adjacent to the reserve, future transit service along Rosemont Road, and the close proximity of schools, civic and commercial uses, medical facilities, parks, and places of worship could help to minimize that additional roadway traffic. Moreover, as future residents of the reserve would be able to use roadways other than I-205, as well as existing bike and pedestrian facilities, to access these uses/services, development of the relatively small reserve is not expected to cause I-205 to no longer meet throughway reliability thresholds.

d. Need for major transportation facility improvements and associated costs

To serve urban development, the half-mile-long portion of Rosemont Road adjacent to the northwest side of the reserve will likely need to be improved to urban arterial standards and the 0.36-mile-long portion of S Wisteria Road will likely need to be improved to urban collector standards, including with acquisition of additional right-of-way in both cases. These roadway improvements are considered half-street improvements for the purposes of this analysis, as the other halves would be improved to urban standards with the development of the adjacent Stafford Urban Reserve or are otherwise in the UGB.

Facilities	Cost
Arterials, existing/improved full street	$0
Arterials, existing/improved half street	$15.33 million
Arterials, new	$0
Collectors, existing/improved full street	$0
Collectors, existing/improved half street	$8.74 million
Collectors, new	$0
Total:	**$24.07 million**
Per dwelling unit at 20 units per net vacant buildable acre:	**$14,474**

e. Provision of public transit service

TriMet evaluated the reserve for providing transit service. TriMet could provide services to the reserve, although there is no guarantee of service; actual service will depend on the level of development in, and in the corridors leading to, the reserve. Future service is proposed in TriMet's 2045 Network Vision and would bring service through the northern portion of the reserve along Rosemont Road. Service could be provided at 60-minute headways for all day service, five days per week.

Prior to land being included in the UGB, a more detailed concept plan, consistent with the requirements of Metro's Urban Growth Management Functional Plan Title 11, will be required. This concept plan process will develop more refined public facility and service needs and cost estimates.

Factor 3: Comparative environmental, social, energy, and economic consequences

Environmental consequences

Approximately 350 feet of an unnamed stream that ultimately flows into the Tualatin River is located adjacent to S Wisteria Road near the intersection with S Clematis Road. The stream flows through an open field and riparian habitat that is identified along the stream corridor. The stream would not necessarily be impacted by development of the are due to its location at the edge of the Rosemont Urban Reserve; however, any required improvements to S Wisteria Road to upgrade it to urban standards would have an impact on the stream. Therefore, urbanization of the reserve could result in comparatively low to moderate environmental consequences, depending on the impact from the road improvements. Additional environmental consideration, specifically regarding avoidance of conflict between urban development and regionally significant fish and wildlife habitat, is provided in the Metro Code Factors Analysis (Appendix 7A).

Considering the comparative environmental consequences of urbanization, the Rosemont Urban Reserve is given a "high" score in Attachment 3 for this Goal 14 boundary location sub-factor.

Social, energy, and economic consequences

It is expected that urbanization of the Rosemont Urban Reserve will result in new housing replacing at least some of the existing rural residences over time, though many of these are higher-value homes, so their replacement and any resulting change in sense of place and degradation of rural lifestyle would likely be slow. Indeed, the close proximity of urban uses, including schools and commercial retail uses, already limits the rural character for the area.

As detailed more fully in response to Factor 2, there may be additional vehicle traffic generated from urbanization of the reserve, but increased VMT and related energy impacts would be relatively minimal.

There may be fewer than 30 acres of agricultural activity occurring in the reserve, so the economic impacts of a loss in farming activity would likely be minimal; the economic benefits of residential development of the reserve may even outweigh this loss.

Overall, there would be comparatively low social, energy, and economic consequences from urbanization of this small reserve. The Rosemont Urban Reserve is given a "high" score in Attachment 3 for this Goal 14 boundary location sub-factor.

Factor 4: Compatibility of the proposed urban uses with nearby agricultural and forest activities occurring on farm and forest land outside the UGB

There are no locations where lands outside the UGB but contiguous with the Rosemont Urban Reserve have Goal 3 or 4 resource land zoning for agricultural or forest activities. Therefore, the proposed urban uses are considered to have high compatibility with the nearby agricultural and forest activities occurring on farm and forest land.

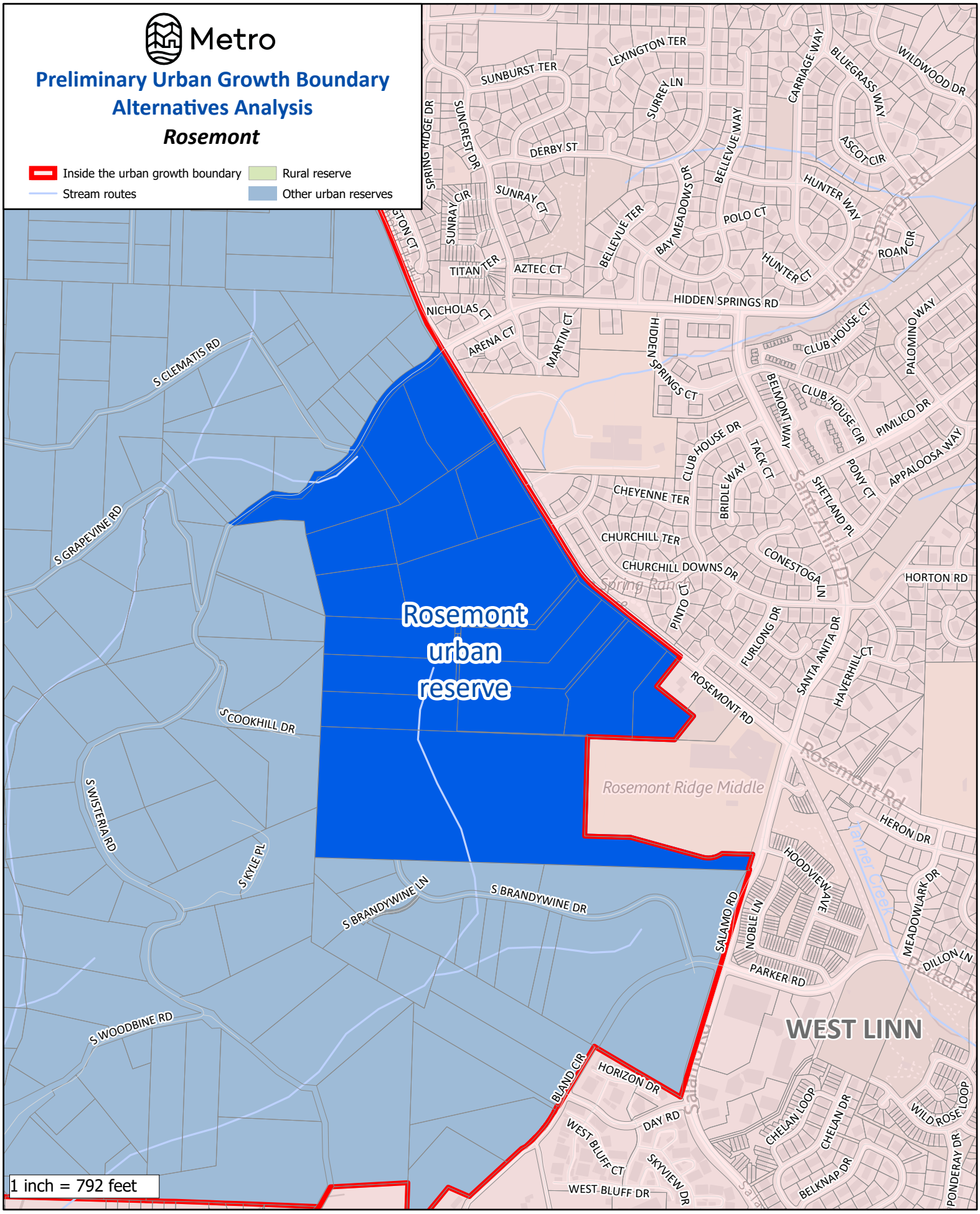
The Rosemont Urban Reserve is given a "high" score in Attachment 3 for this Goal 14 boundary location factor.

Metro

Preliminary Urban Growth Boundary Alternatives Analysis

Rosemont

Inside the urban growth boundary
Rural reserve
Stream routes
Other urban reserves



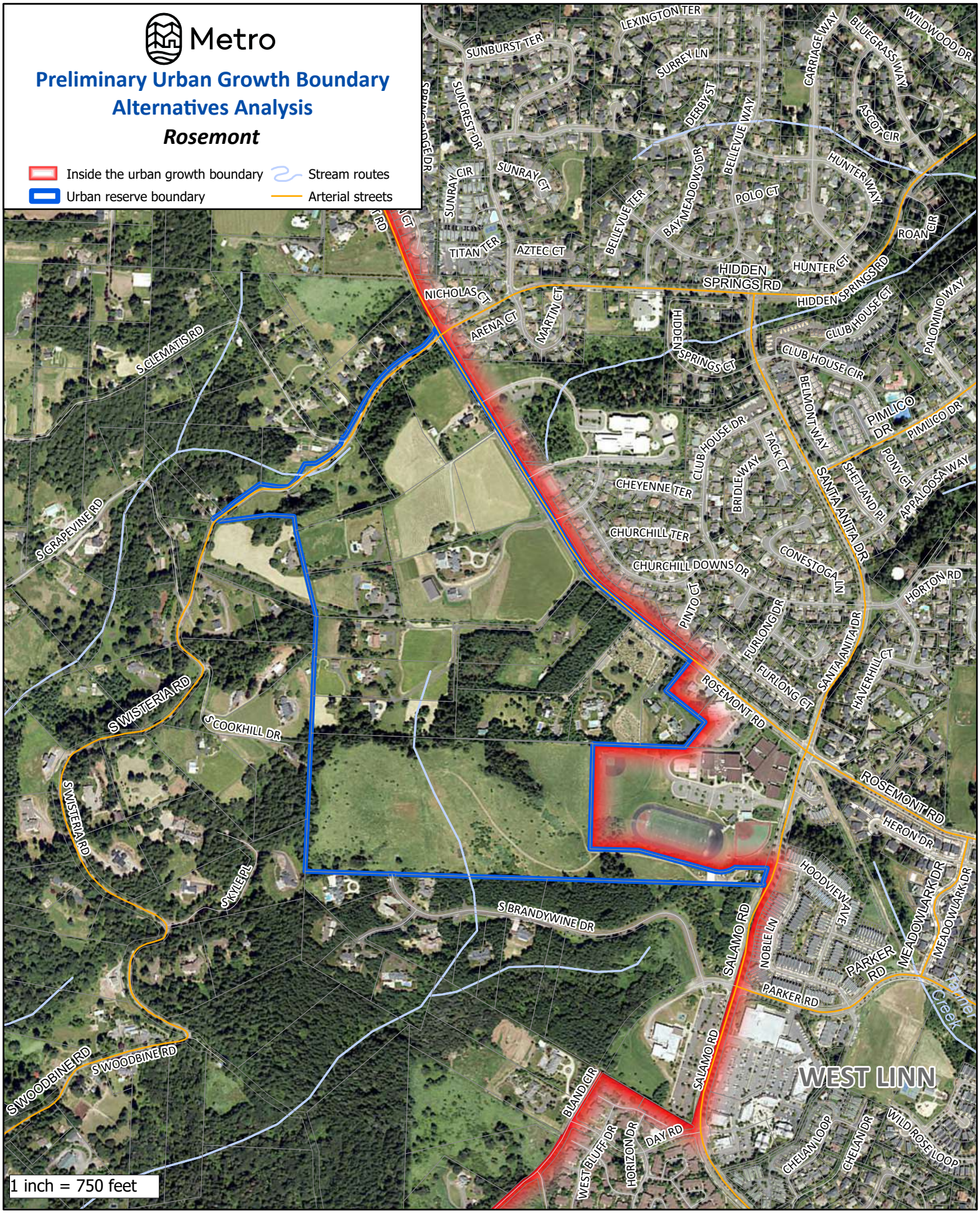
1 inch = 792 feet

Metro

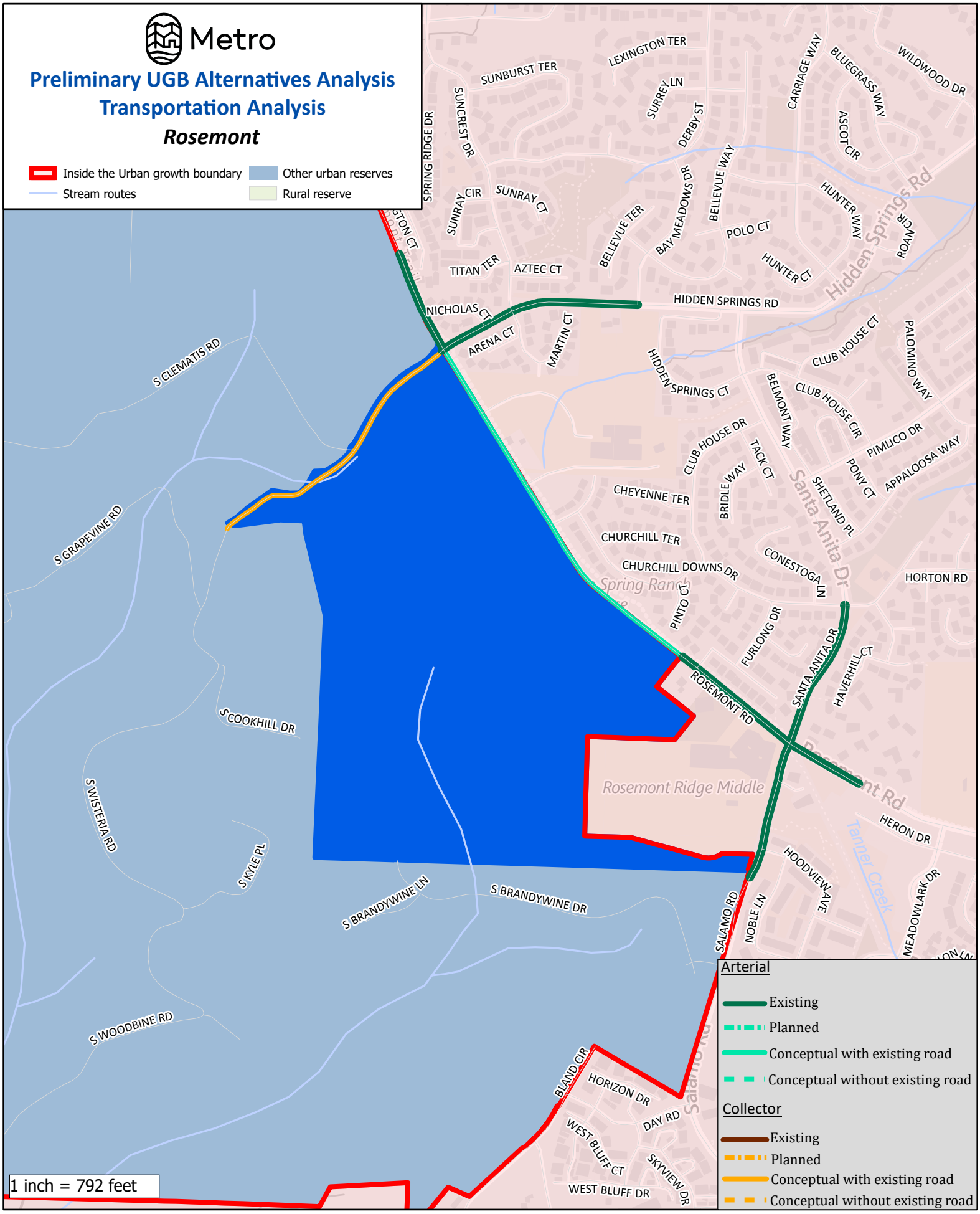
Preliminary Urban Growth Boundary Alternatives Analysis

Rosemont

Inside the urban growth boundary
Urban reserve boundary
Stream routes
Arterial streets



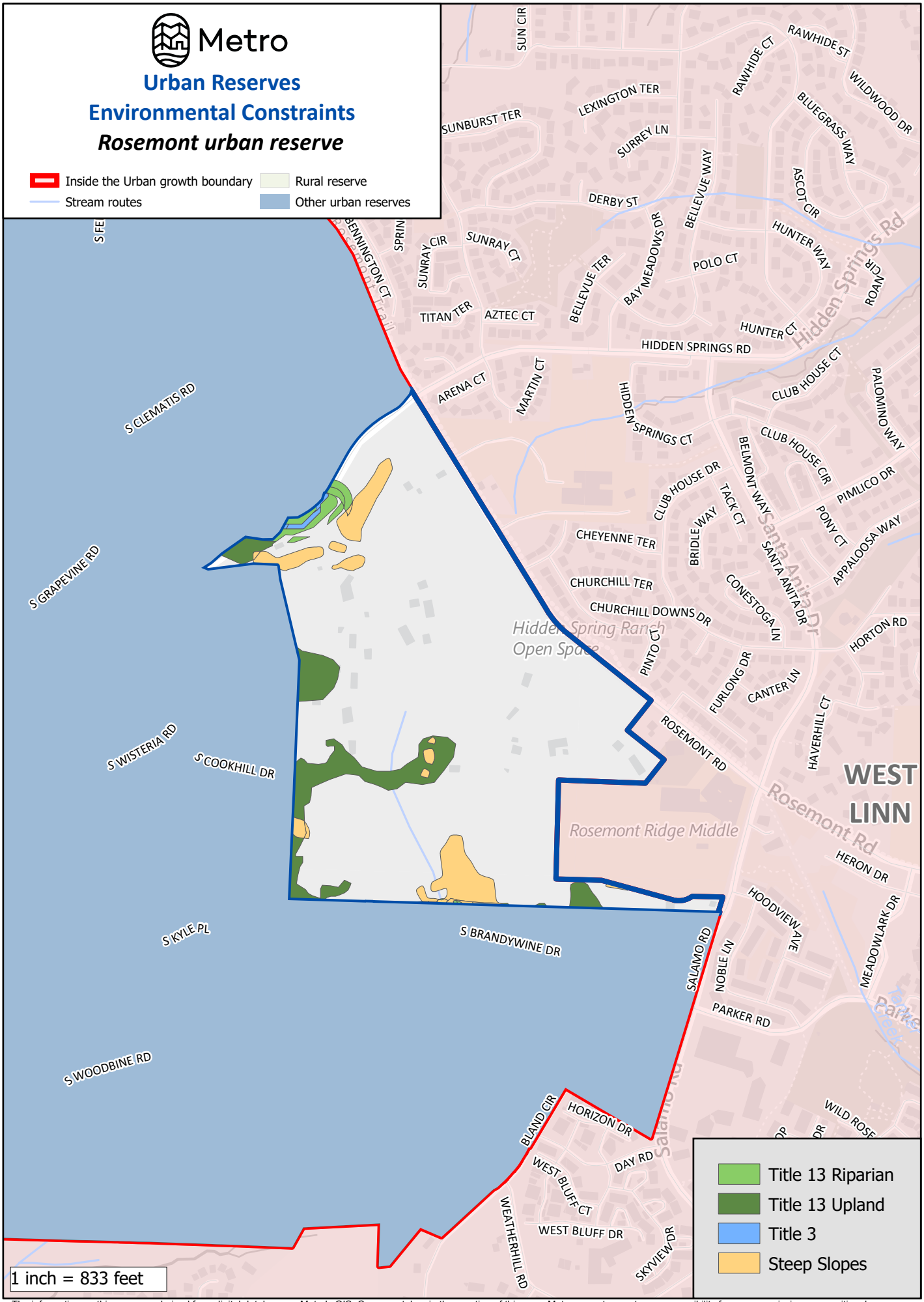
1 inch = 750 feet

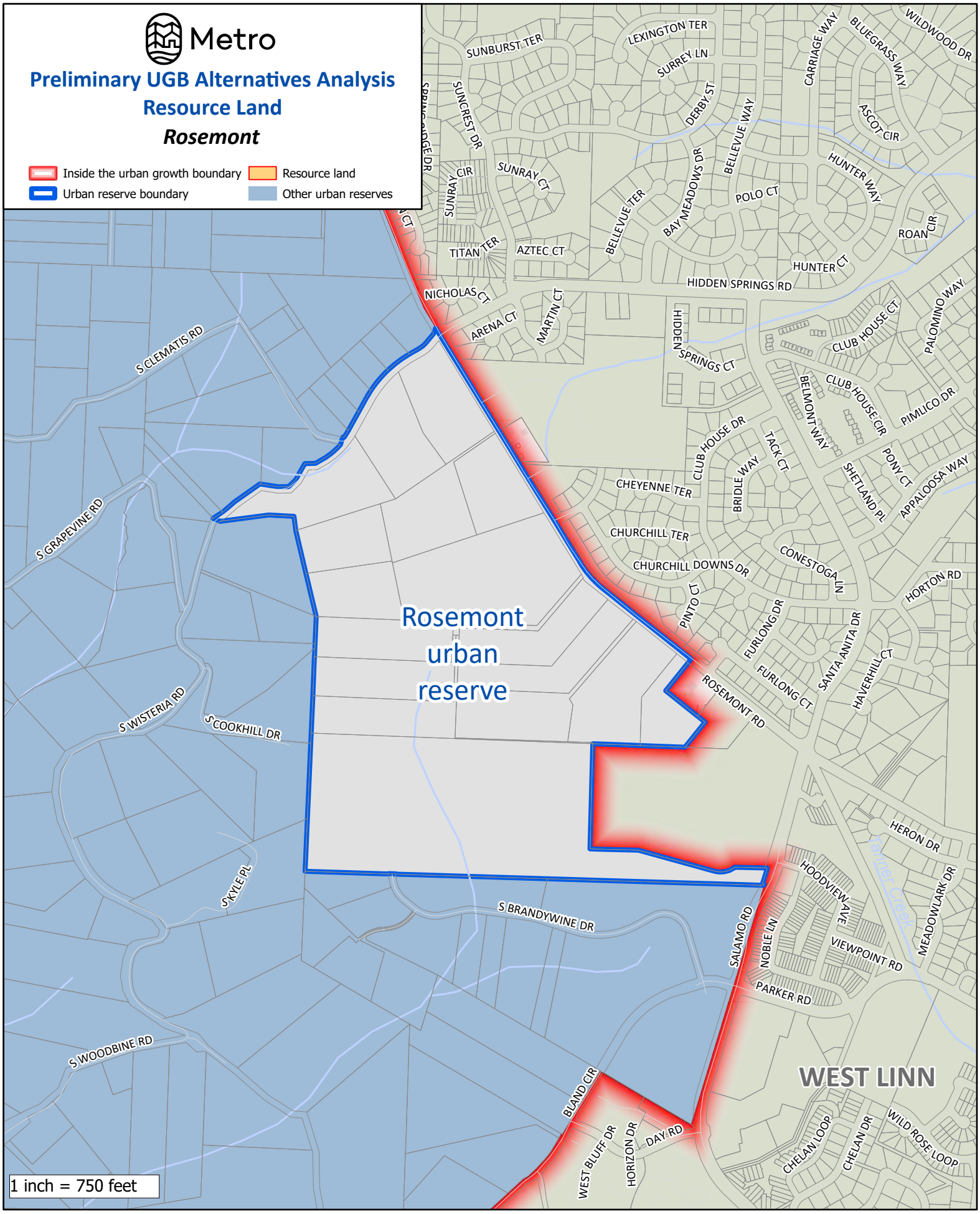


Metro

Urban Reserves
Environmental Constraints
Rosemont urban reserve

Inside the Urban growth boundary
Stream routes
Rural reserve
Other urban reserves





SHERWOOD NORTH URBAN RESERVE

Total Reserve Area	123 acres
Total Tax Lot Area in Reserve (without Right-of-Way)	113 acres
Gross Vacant Buildable Area	62 acres
Net Vacant Buildable Area	**46 acres**

The Sherwood North Urban Reserve is located on the north side of Sherwood on both sides of Highway 99W (Pacific Highway). It is comprised of three disconnected and relatively thin "sub-areas". The 100-year floodplain and rural reserve lands form the northern boundary of all three sub-areas. The eastern sub-area is located north of SW Galbreath Drive, is accessible by SW Gerda Lane and SW Cipole Road, and is approximately 35 acres in size. The central sub-area is bisected by Highway 99W, is potentially accessible by SW Langer Farms Parkway, and is approximately 57 acres in size. The western sub-area is north of SW Seely Lane and is approximately 31 acres in size.

GOAL 14 BOUNDARY LOCATION FACTORS

Factor 1: Efficient accommodation of identified land needs

As noted above, the Sherwood North Urban Reserve has three disconnected sub-areas. The western sub-area is comprised of portions of 11 tax lots; only one of those tax lots has area in the reserve larger than five acres and several of the tax lots are publicly-owned (e.g., by Washington County or the federal government). The central sub-area is comprised of portions of five tax lots, including one owned by Portland General Electric (PGE) and another by a national home improvement retail chain; all portions of the central sub-area's tax lots within the reserve are larger than five acres, with three larger than 10 acres. The eastern sub-area is comprised of portions of seven tax lots, four of which are owned by the federal government; the portions of the eastern-sub area's tax lots within the reserve range in size from less than an acre to more than 11 acres. The combined area of all portions of the reserve's 23 tax lots within the reserve is approximately 113 acres. However, the reserve has just 62 gross vacant buildable acres and 46 net buildable acres.

According to aerial imagery: the western sub-area is comprised of groves of trees, some cleared land, and a few rural residential structures; the central sub-area is primarily agricultural land with a few rural structures; and the eastern sub-area is also primarily agricultural land, but with more rural development and a forested section at its southern end. Powerline easements cross portions of each sub-area. Overall, eight of the reserve's tax lots have assessed improvements, with the median assessed value of those tax lots' improvements being more than $284,000.

The central sub-area is bisected by Highway 99W, which is a 2040 Growth Concept designated corridor, while the western sub-area is within half a mile of the highway and the eastern sub-area approximately one mile away. All three sub-areas adjoin existing or planned employment uses and are within a mile of the Sherwood Town Center. The western sub-area is adjacent to existing low-density residential development already within the UGB, and local streets SW Seely Lane and SW Borchers Drive stub to the sub-area. There are existing TriMet bus stops within 1,000 feet of the

central and eastern sub-areas, and within about half a mile of the eastern sub-area on the opposite side of Highway 99W. The nearest public schools are approximately one mile away from each sub-area.

While each relatively flat, the three sub-areas contain only small amounts of fully buildable land due to the numerous power line easements. In addition, the majority of the urban reserve land is on tax lots that also include non-urban-reserve land (e.g., rural reserve land), which could complicate development. The irregular shape of the three sub-areas further reduces the ability to provide a well-connected residential development pattern and the western sub-area's "protrusion" into a rural reserve limits a secondary access from the north. Public ownership of the much of the reserve could also limit redevelopment potential. However, the existing street stubs to the western sub-area and the close proximity of Highway 99W and utility services could support some development. Indeed, the middle and eastern sub-areas being adjacent to existing employment uses provides the opportunity for extensions of these existing uses. This area is considered able to accommodate a very small portion of a residential and/or employment land need.

Factor 2: Orderly and economic provision of public facilities and services

Water Services

With regard to water services, the Sherwood North Urban Reserve is given a "high" score in Attachment 3 for this Goal 14 boundary location factor, for the reasons detailed in (a)-(d) below.

a. Capacity of existing facilities to serve areas already inside the UGB

Adjacent lands inside the UGB are provided with water service by the City of Sherwood. The city obtains the majority of its water supply from the Willamette River Water Treatment Plant (WRWTP) in the city of Wilsonville, with the remainder coming from four groundwater wells in city limits. The city also maintains an emergency connection and transmission piping to a supply main serving Tualatin from Portland. The city's water distribution system includes three service zones served by three storage reservoirs and two pumping stations. The majority of Sherwood customers are served from the 380 Pressure Zone, which is supplied by gravity from the city's Sunset Reservoirs. The 535 Pressure Zone serves the area around the Sunset Reservoirs, supplied with constant pressure by the Sunset Pump Station, while the 455 Pressure Zone serves higher elevation customers on the city's western edge by gravity from the Kruger Reservoir. The Sherwood North Urban Reserve would likely become part of the 380 Pressure Zone.

Supply, storage, pumping, and distribution piping are considered sufficient to meet maximum daily demand of current development within the city's portion of the UGB; however, according to the city's 2015 Water System Master Plan, additional supply and storage capacity may be needed for full buildout. Efforts, including capital improvement projects, are planned to increase treatment plant capacity to satisfy buildout demand.

No pump stations are currently needed to serve the 380 Pressure Zone. Very few distribution deficiencies are identified in the Master Plan for either existing or buildout maximum daily demand (MDD) conditions and no additional deficiencies are identified in the Plan under peak hour demand conditions. New large diameter water lines will likely need to be extended through the currently underdeveloped Brookman Addition and Tonquin Employment Area to serve additional development.

b. Capacity of existing facilities to serve areas proposed for addition to the UGB

Urbanization of this relatively small reserve should not itself require upgrades to the water treatment plant; however, buildout of the existing UGB and development of one more other urban reserves (e.g., the Sherwood West Urban Reserve) prior to development of the Sherwood North Urban Reserve could warrant the planned treatment plant improvements in order for it to be provided with adequate water service. There are several existing eight-inch sewer lines that extend from existing development near the reserve's southern boundary. The western sub-area of the reserve would likely be served by the Sherwood Trunk Line, while the eastern sub-area will likely be served by the Rock Creek Trunk Line, which are presumed to have adequate capacity to serve the Sherwood North Urban Reserve.

c. Impacts to existing facilities that serve nearby areas already inside the UGB

With any preceding significant new development in current city limits and new urban development in one more other urban reserves (e.g., the Sherwood West Urban Reserve), additional treatment plant and storage capacity may be needed to also serve the Sherwood North Urban Reserve while avoiding adverse impacts to existing facilities in areas already inside the UGB. Those potential treatment system improvement costs and the full costs of new storage facilities also serving areas already inside the UGB are not included in the below figures.

d. Estimated water service-related costs for reserve development

Water piping, pumping, and storage costs	Cost
10-inch pipe	$2.52 million
12-inch pipe	$0
16-inch pipe	$0
Pumping	$0
Storage	$0.60 million
Total:	**$2.58 million**
Per dwelling unit at 20 units per net vacant buildable acre:	**$2,780**

Sanitary Sewer Services

With regard to sanitary sewer services, the Sherwood North Urban Reserve is given a "medium" score in Attachment 3 for this Goal 14 boundary location factor, for the reasons detailed in (a)-(d) below.

a. Capacity of existing facilities to serve areas already inside the UGB

The City of Sherwood and Clean Water Services (CWS) together provide sanitary sewer services in adjacent areas already in the UGB. Two CWS sanitary sewer trunk lines connect to the local, city-maintained components of the system, including the 24-inch "Sherwood Trunk", which conveys sewage from the Cedar Creek sewage collection basin, and the 18-inch "Rock Creek Trunk", which conveys sewage from the Rock Creek sewage collection basin, to a CWS-owned pump station. Sewage is then directed to the Durham Advanced Wastewater Treatment Plant via the Upper Tualatin Interceptor, also owned by CWS.

The City of Sherwood updated its Sanitary Sewer Master Plan in 2016. The Master Plan includes areas within Sherwood city limits, as well as the Tonquin Employment Area (TEA) and the Brookman Addition, which are within the UGB. The Master Plan indicates that there is sufficient conveyance, pump station, and treatment plant capacity for existing development in areas already inside the UGB. However, at full buildout of the UGB, there may be deficiencies with the Sherwood and Rock Creek Trunk Lines, the Sherwood Pump Station, and the Upper Tualatin Interceptor. The city and CWS both have capital improvement projects planned to address these capacity issues. Responsibility for upsizing the Sherwood and Rock Creek Trunk Lines may be shared between city and CWS.

b. Capacity of existing facilities to serve areas proposed for addition to the UGB

The existing treatment plant is assumed to have the capacity to serve future urban development of this relatively small reserve as well as development already in the UGB. There are several existing eight-inch sewer lines that extend from the adjacent developments near the reserve's southern boundary. The western sub-area would likely be served by the Sherwood Trunk Line, while the eastern sub-area will be served by the Rock Creek Trunk Line. The trunk line, pump station, and interceptor improvement projects mentioned above may be needed to provide sufficient capacity to urban development of the reserve, particularly in addition to buildout of areas already in the UGB; the full costs of these system-level improvements are not included in the figures below.

c. Impacts to existing facilities that serve nearby areas already inside the UGB

The trunk line, pump station, and interceptor improvement projects mentioned above may be needed in order to avoid adverse impacts to service to areas already inside the UGB.

d. Estimated sanitary sewer service-related costs for reserve development

Sanitary sewer piping and pumping costs	Cost
10-inch pipe	$1.54 million
12-inch pipe	$0
15-inch pipe	$0
Pump station	$0.54 million
Force mains	$0
Total:	**$2.08 million**
Per dwelling unit at 20 units per net vacant buildable acre:	**$2,241**

Stormwater Management Services

With regard to stormwater management services, the Sherwood North Urban Reserve is given a "high" score in Attachment 3 for this Goal 14 boundary location factor, for the reasons detailed in (a)-(d) below.

a. Capacity of existing facilities to serve areas already inside the UGB

There is no indication of significant challenges with existing stormwater management facilities being able to serve existing development in adjacent areas inside the UGB.

b. Capacity of existing facilities to serve areas proposed for addition to the UGB

Based on topography, stormwater from development of the reserve could likely outfall directly to Chicken Creek, Rock Creek, and their tributaries. Per CWS and city of Sherwood stormwater standards for new development, water quality and quantity should be provided on private property before outfalling to these water bodies; therefore, the existing facilities would not be impacted by the development of the reserve.

c. Impacts to existing facilities that serve nearby areas already inside the UGB

As noted above, stormwater related to new development in the reserve could likely outfall directly to Chicken Creek, Rock Creek, and their tributaries, without connecting to other existing stormwater infrastructure. Therefore, no adverse impacts to existing facilities serving areas already inside the UGB are anticipated. It is also expected that stormwater will be treated and detained onsite, thereby limiting impacts to these water bodies.

d. Estimated stormwater service-related costs for reserve development

Stormwater piping and water quality/detention	Cost
18-inch pipe	$0
24-inch pipe	$0
30-inch pipe	$0
Water quality/dentition	$0.71 million
Total:	**$0.71 million**
Per dwelling unit at 20 units per net vacant buildable acre:	**$760**

Transportation Services

With regard to transportation services, the Sherwood North Urban Reserve is given a "high" score in Attachment 3 for this Goal 14 boundary location factor, for the reasons detailed in (a)-(e) below.

a. Capacity of existing facilities to serve areas already inside the UGB

Figure 4.36 in Chapter 4 of the 2023 Regional Transportation Plan (RTP) displays 2020 home-based vehicle miles traveled (VMT) per capita by Metro transportation analysis zone. According to that figure, areas in the UGB adjacent to the Sherwood North Urban Reserve had average (11.32) and above average home-based VMT per capita in 2020.

Metro's adopted 2040 Growth Concept Map designates a town center in the adjoining City of Sherwood less than half a mile from the reserve. Town centers are meant to: serve populations of tens of thousands of people; offer more locally-focused retail uses and public amenities; and be well served by transit. The Langer Drive Commercial District of the City of Sherwood's 2013 "Sherwood Town Center Plan" generally aligns with the geography of the town center area on the Growth Concept Map. The Langer Drive Commercial District is envisioned as a walkable and active shopping district complete with more pedestrian-oriented buildings. Metro's 2017 State of the Centers Atlas showed that, in the area of the Langer Drive Commercial District, there was a very high jobs-to-housing ratio and a very low number of dwelling units per acre compared to other town centers in the region. According to aerial imagery, much of the area is already built out with commercial retail uses, including a grocery store, restaurants, and medical/dental offices, though there are numerous parking lots that may be able to accommodate redevelopment. Near to the Langer Drive Commercial District is a police station, the Sherwood Ice Arena, and other public/quasi-public land uses, as well as some undeveloped and underdeveloped tax lots. Sherwood is served by TriMet Route 94, which runs along Highway 99W, and Route 97, which runs along SW Tualatin-Sherwood Road; both routes include stops at the town center. The town center plan, its existing land uses and transit service, and some availability for new development in and

near the town center demonstrate that growth in the current UGB near to the Sherwood North Urban Reserve will not necessarily cause a significant increase in home-based VMT per capita in the future.

As noted above, TriMet Routes 94 and 97 both serve areas already in the UGB in the adjacent City of Sherwood. Currently, however, those routes only connect to the northern and central portions of the city and not to the city's south and west. Figure 4.3 in Chapter 4 of the 2023 RTP also shows a gap in "frequent transit service" in Sherwood's portion of the planned regional transit network.

Sherwood has more than 10 miles of dedicated bike lanes and established bikeways, including along major roadways, that connect with some other bike-friendly streets, as well as residential and employment uses, schools, and the town center. However, there are gaps in bike facility connections to some of the residential areas south of the railroad. Figure 4.5 in Chapter 4 of the 2023 RTP identifies existing bike facilities along Highway 99W and SW Tualatin-Sherwood Road as part of the planned regional on-street bike network and facilities in the central portion of the city as part of the planned regional off-street bike network, though there is a short network gap along SW Tualatin-Sherwood Road west of the highway and other gaps in the west, east, and south of the city.

Most developed neighborhoods in Sherwood, including the town center, have sidewalks. Figure 4.4 in Chapter 4 of the 2023 RTP identifies existing sidewalk facilities along SW Tualatin-Sherwood Road, SW Sunset Boulevard, and SW Main Street as part of the planned regional on-street pedestrian network, though there are network gaps along Highway 99W in the north of the city, along SW Brookman Road in the south of the city, and along SW Elwert Rd in the west of the city.

The Cedar Creek Trail in Sherwood is identified as an existing regional trail in Figure 4.6 in Chapter 4 of the 2023 RTP. The figure identifies gaps in connections of this trail to other regional trails in the planned regional trial network.

Construction has commenced on a pedestrian bridge over Highway 99W that, when completed, will connect Sherwood High School with the YMCA and surrounding neighborhoods. Goals of the project include: reducing vehicle/pedestrian conflicts and exposure; minimizing out of direction travel for pedestrians; and providing crossing opportunities that accommodate all pedestrians and bicyclists.

Figure 4.14 in Chapter 4 of the 2023 RTP identifies the SW Tualatin-Sherwood Road as a high injury corridor. The road, which is already inside the UGB, is less than a quarter mile from each of Sherwood North Urban Reserve's three sub-areas. There are no other RTP-designated high injury corridors in Sherwood's portion of the UGB.

Highway 99W is also already inside the UGB and generally bisects the city. Highway 99W is identified as a throughway in Figure 4.7 in Chapter 4 of the 2023 RTP. Figure 4.8 in Chapter 4 of the RTP indicates that it currently meets RTP travel speed reliability

performance thresholds, with no more than four hours per day when travel speeds fall below the identified minimum speed. RTP models indicate this reliability will continue at least to the year 2045.

b. Capacity of existing facilities to serve areas proposed for addition to the UGB

The reserve's central sub-area is close to existing major roadways. Highway 99W bisects the central portion of the reserve and SW Tualatin-Sherwood Road is less than 1,000 feet from the eastern sub-area. As noted above, Highway 99W, an RTP-designated throughway in Sherwood, currently meets RTP travel speed reliability performance thresholds, though SW Tualatin-Sherwood Road is identified in the RTP as a high injury corridor.

TriMet Route 94 travels through the central sub-area along Highway 99W and there is a transit stop less than half a mile from the western sub-area. Route 97 has a transit stop about 800 feet from the eastern sub-area along SW Tualatin-Sherwood Road.

Highway 99W and most of SW Roy Rogers Road have dedicated bike lanes providing access to the western and central sub-areas. There is a 1,000-foot segment of SW Roy Rogers Road between Highway 99W and SW Borchers Drive that does not have a bike lane. There is an established bikeway along SW Tualatin-Sherwood Road that is about 800 feet from the eastern sub-area. These facilities provide connections to the town center.

Sidewalks connect to the western sub-area along SW Borchers Drive and SW Seely Lane. Sidewalks connect to the central sub-area along Highway 99W. There are sidewalks on SW Tualatin-Sherwood Road and SW Gerda Lane that stop approximately 600 feet short of the eastern sub-area. These facilities provide connections to the town center. There are no existing regional trails connected to the reserve.

Existing urban residential uses adjacent to the reserve could provide housing to future employees of the reserve, and nearby existing employment uses could provide employment opportunities to future residents of the reserve, helping to limit VMT. However, the existing nearby housing is relatively low in density and, as noted in response to Factor 1, the reserve is unlikely to provide significant residential development opportunities; therefore, future employees of the reserve may still mostly have to commute from further away.

c. Impacts to existing facilities that serve nearby areas already inside the UGB

SW Roy Rogers Road, SW Langer Farms Parkway, and Highway 99W would see some additional private vehicle traffic with urban development of the reserve. However, considering the relatively small size of the reserve, the reserve's proximity to the Sherwood Town Center and its employment/public uses, and the availability of existing transit service and bike and pedestrian facilities near to the reserve, urban development of the reserve is not expected to significantly increase home-based VMT per capita in

nearby areas already in the UGB or jeopardize Highway 99W's ability to continue to meet throughway reliability thresholds. Nearby existing transit service and bike and pedestrian facilities would be expected to see additional use with development of the reserve.

d. Need for major transportation facility improvements and associated costs

No major transportation facility improvements (i.e., new or improved urban arterial or collector roads) are expected to be needed to serve urban development of the Sherwood North Urban Reserve.

Facilities	Cost
Arterials, existing/improved full street	$0
Arterials, existing/improved half street	$0
Arterials, new	$0
Collectors, existing/improved full street	$0
Collectors, existing/improved half street	$0
Collectors, new	$0
Total:	**$0**
Per dwelling unit at 20 units per net vacant buildable acre:	**$0**

e. Provision of public transit service

TriMet evaluated the reserve for providing transit service upon urbanization and determined that no additional service would necessary. Future service is proposed in TriMet's "2045 Network Vision" that would bring two new routes within half a mile of the reserve. Additionally, Route 94 already serves Sherwood and travels along the 99W corridor, which divides the reserve's central sub-area.

Factor 3: Comparative environmental, social, energy, and economic consequences

Environmental consequences

No streams or inventoried wetlands are located within the Sherwood North Urban Reserve, but a "100-year" floodplain forms the northern edge of all three sub-areas. There are sizeable locations of riparian or upland habitat identified in the eastern and western sub-areas associated with the location of the floodplain and the nearby Tualatin River National Wildlife Refuge. Some of the identified habitat is in locations that are currently in agricultural production, and a refined analysis required upon inclusion in the UGB will determine if those identified habitats warrant protection from urban development. In addition, some of the identified habitat in the western sub-area is located within powerline easements, which would provide some level of protection due to the inability to urbanize at a high level. The majority of the central sub-area is free of inventoried habitat areas. Some of the reserve's inventoried habitat is located on land owned by the federal government or Washington County and would not likely be urbanized.

Overall, urbanization of the reserve could occur with comparatively minimal to moderate impacts to the habitat areas, depending on the type and form of urban uses the reserve is developed with and the results of an updated habitat inventory conducted upon inclusion in the UGB. Additional environmental consideration, specifically regarding avoidance of conflict between urban development and regionally significant fish and wildlife habitat, is provided in the Metro Code Factors Analysis (Appendix 7A).

Considering the comparative environmental consequences of urbanization, the Sherwood North Urban Reserve is given a "medium-high" score in Attachment 3 for this Goal 14 boundary location sub-factor.

Social, energy, and economic consequences

There are fewer than 10 residences in this relatively small reserve. Much of the land is in public or corporate ownership. Some of the land is also impacted by powerline easements that reduces the opportunity for urban development. The reserve's sub-areas already border urban residential and employment uses, as well as Highway 99W. Therefore, urbanization of the reserve would result in minimal change in sense of place or degradation of rural lifestyle for existing residents of the reserve. Moreover, urbanization of the reserve with a mixture of uses could bring new social and recreational opportunities for existing residents.

As detailed more fully in response to Factor 2 and due in part to the reserve's small size, additional VMT and related energy impacts from urbanization would be relatively minimal.

It appears that there are fewer than 20 acres of land in the reserve being used for commercial agriculture, so the adverse economic consequences from the loss of farming activity in the reserve would also be minimal; indeed, the economic benefits of residential and/or employment development of the reserve may outweigh this loss.

This analysis finds that there would be comparatively low social, energy, and economic consequences from urbanization of this small reserve. The Sherwood North Urban Reserve is given a "high" score in Attachment 3 for this Goal 14 boundary location sub-factor.

Factor 4: Compatibility of the proposed urban uses with nearby agricultural and forest activities occurring on farm and forest land outside the UGB

All of the land outside of the UGB adjacent to the Sherwood North Urban Reserve has Goal 3 or 4 resource land zoning by Washington County for agricultural and forest activities, specifically with Agriculture and Fores (AF20) and Exclusive Farm Use (EFU) designations.

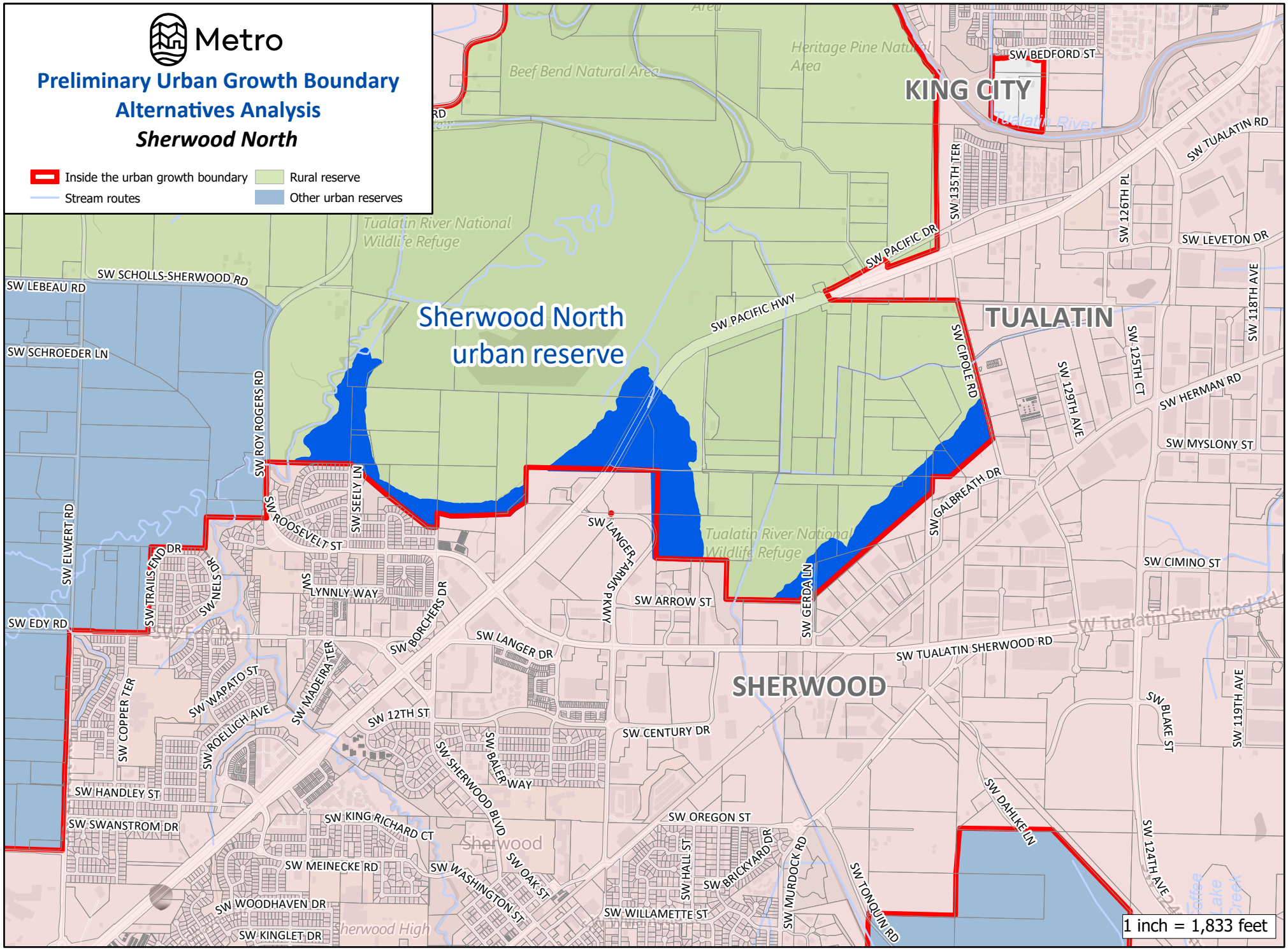
The lands outside the UGB and adjacent to the western sub-area area zoned EFU. However, it appears that no significant agricultural activity is occurring on these adjacent lands. The Chicken Creek riparian area provides a buffer on the west side of this sub-area and the land on the east and north side contains small patches of trees, scrub shrubs, powerlines, and only about five areas of cleared fields. Much of this location is in a flood hazard area. Considering these factors, urban

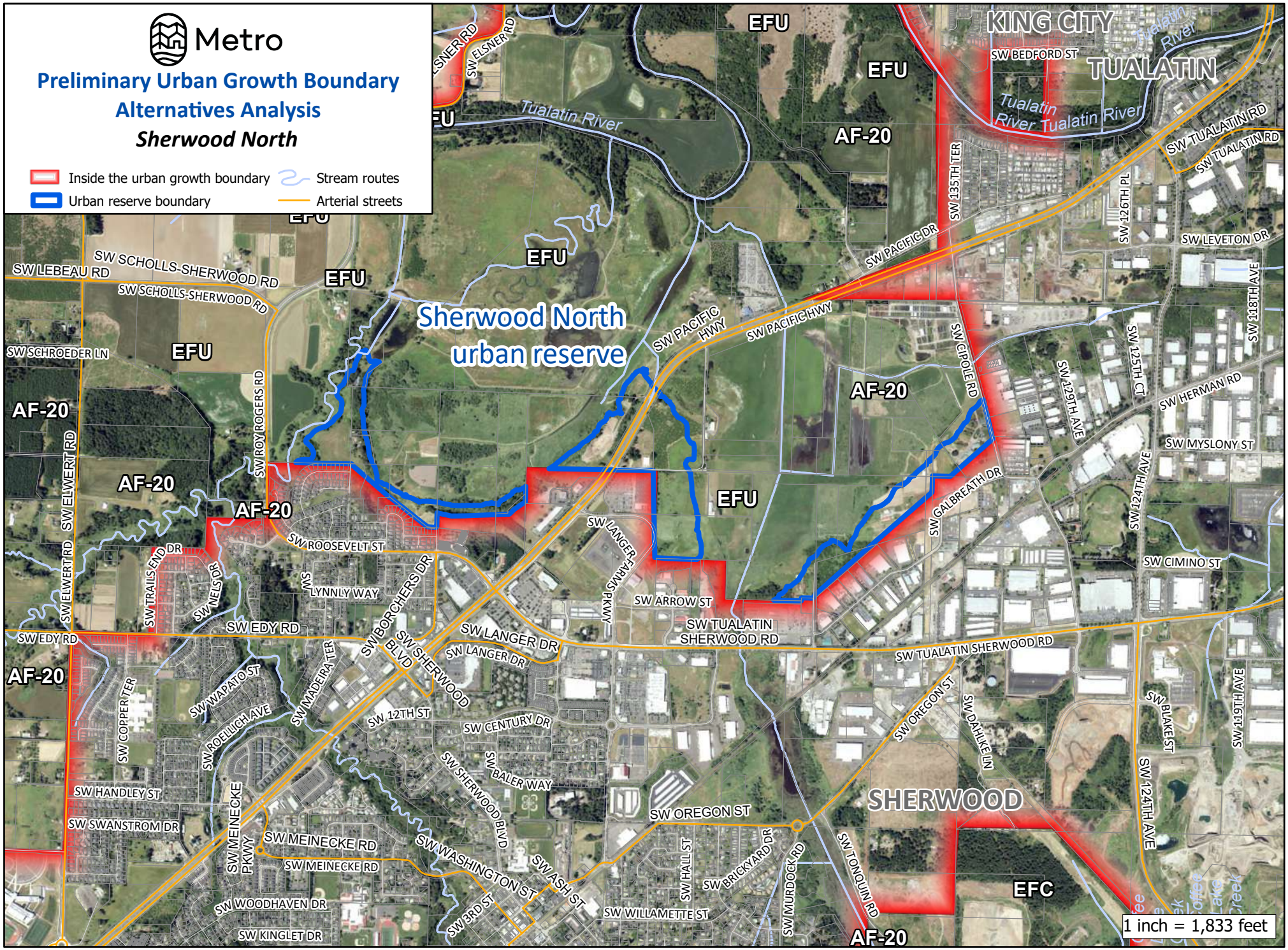
development of the western sub-area would be generally compatible with the nearby agricultural and forest activities occurring on this farm and forest land.

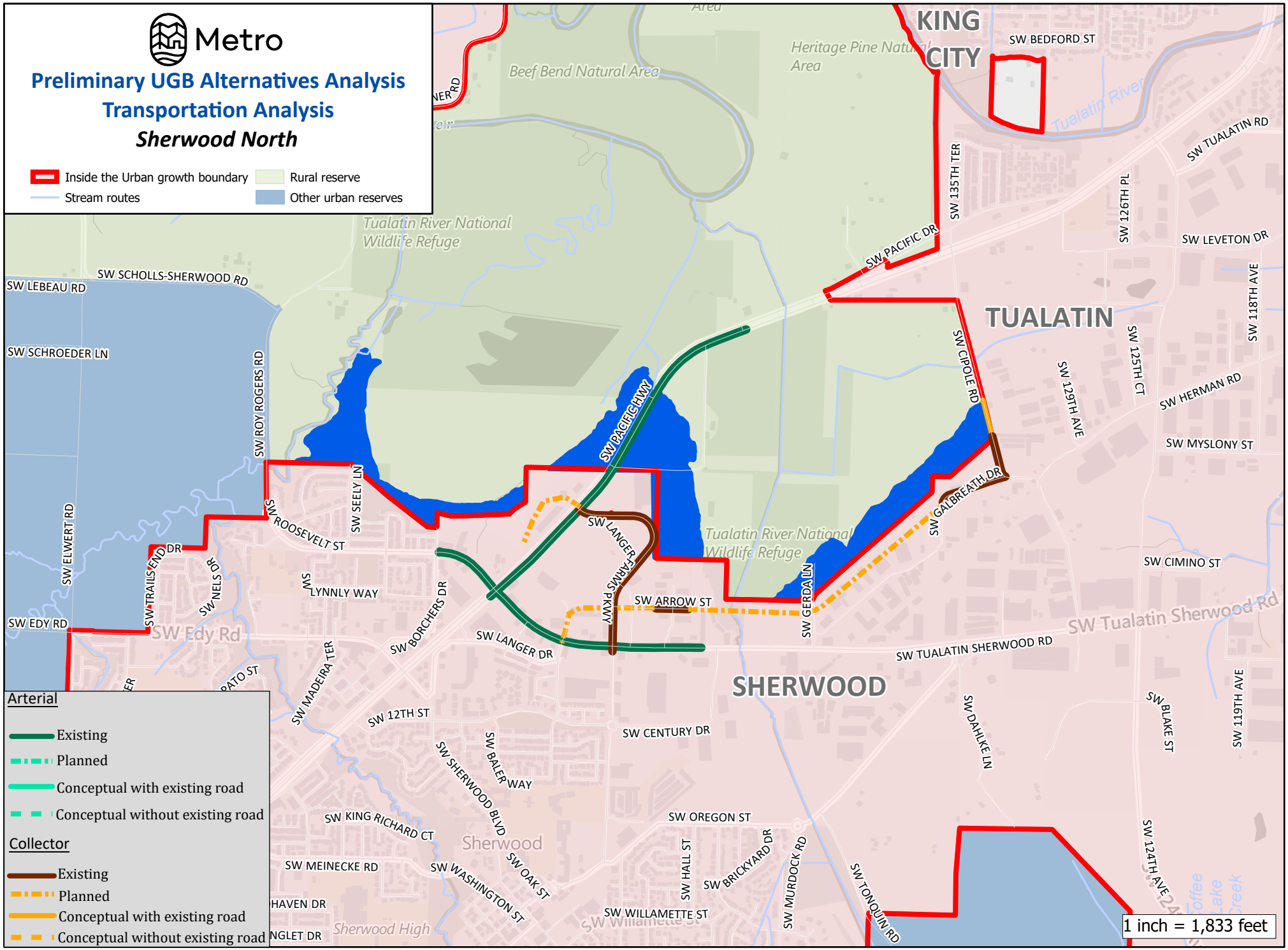
The land adjacent to the central sub-area is zoned EFU as well. The EFU land on the north side of SW Pacific Highway is not being farmed and appears to contain areas of standing water for significant portions of the year as part of the wildlife refuge operations. The EFU land to the south of SW Pacific Highway contains some limited agricultural activities including field crops, orchards, and pastureland. Urbanization of this portion of the sub-area may impact these agricultural activities; however, since the amount of development that could occur would be relatively small and could take access away from farmed areas, the impacts would not be significant. Therefore, the urban development of the central sub-area would generally be compatible with the nearby agricultural activities occurring on this farm and forest land as well.

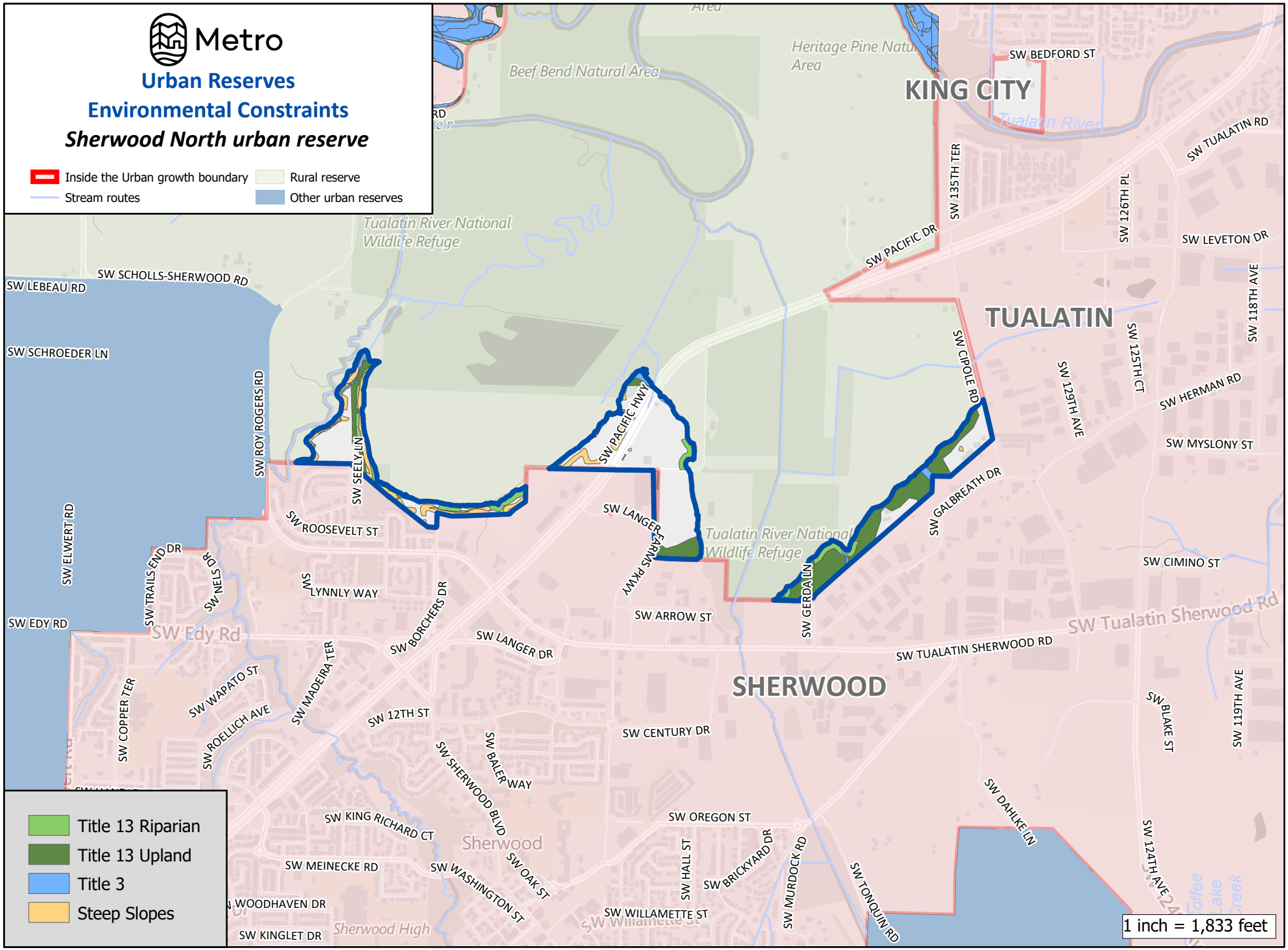
Most of the land adjacent to the eastern sub-area is zoned EFU and there is a tract AF20-zoned land adjacent to the portion of eastern sub-area near SW Cipole Road. The majority of this resource land contains some level of agricultural activity, including field crops and pastureland. Urbanization of this portion of the sub-area may impact these agricultural activities; however, since the amount of development that could occur would again be relatively small and would also take access away from the farmed areas, the impact would still not be significant.

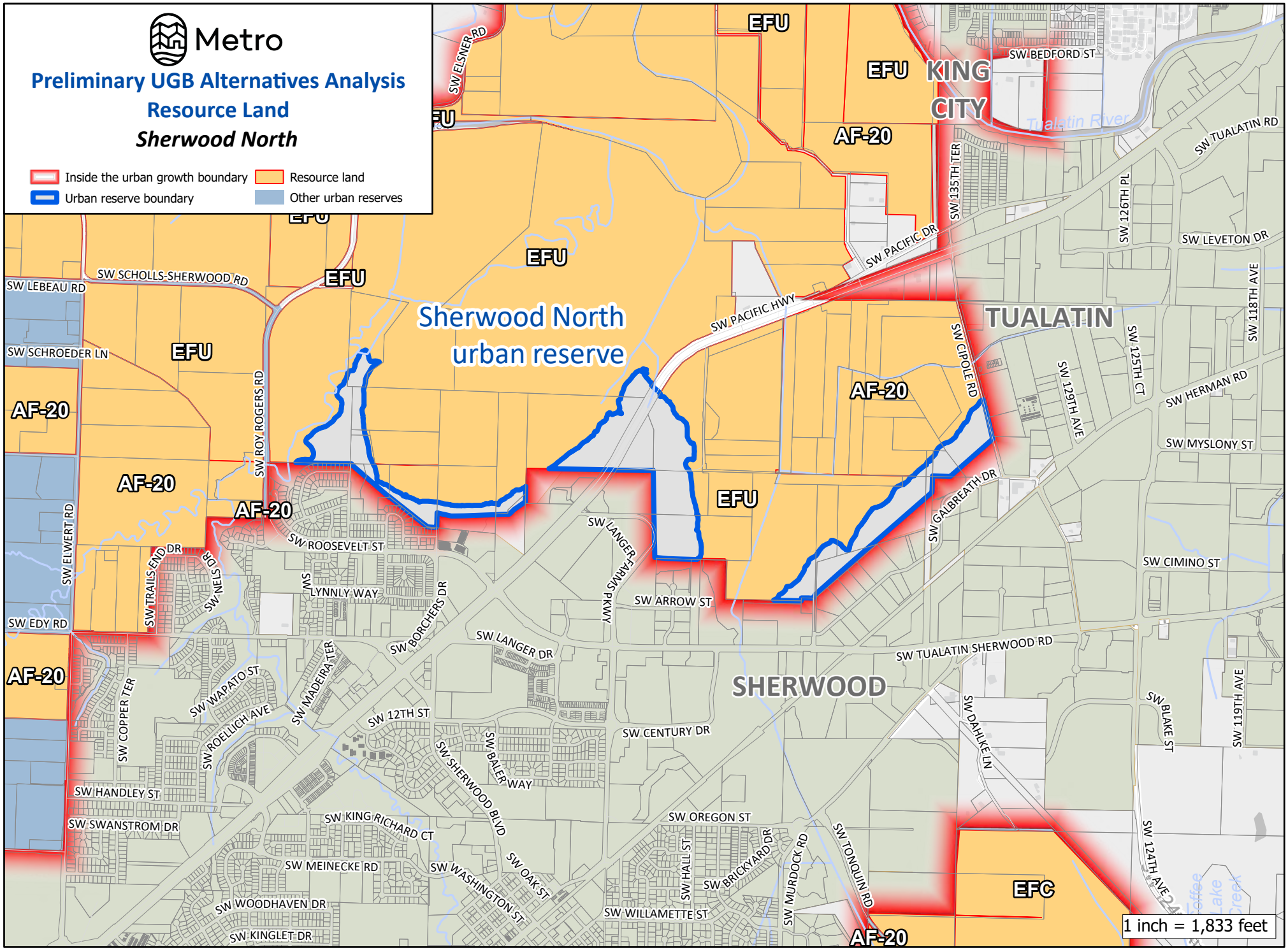
Overall, proposed urban uses in the reserve are considered to have high compatibility with nearby agricultural and forest activities occurring on farm and forest land outside the UGB. The Sherwood North Urban Reserve is given a “high” score in Attachment 3 for this Goal 14 boundary location factor.











SHERWOOD SOUTH URBAN RESERVE

Total Reserve Area	448 acres
Total Tax Lot Area in Reserve (without Right-of-Way)	424 acres
Gross Vacant Buildable Area	207 acres
Net Vacant Buildable Area	**155 acres**

The Sherwood South Urban Reserve is a rectangularly shaped area on the south side of Sherwood, south of SW Brookman Road and east of Highway 99W. The UGB forms the northern boundary and the Clackamas-Washington County line forms the eastern boundary; rural reserves are adjacent to the west and south. The reserve is served by SW Brookman Road, SW Middleton Road, and SW Oberst Road. The reserve has five streams, including the confluence of Goose and Cedar Creeks.

GOAL 14 BOUNDARY LOCATION FACTORS

Factor 1: Efficient accommodation of identified land needs

The Sherwood South Urban Reserve is comprised of 71 contiguous tax lots, all but one of which are entirely within the reserve. The combined land area of the 71 tax lots actually within the reserve is approximately 424 acres. Of the 70 tax lots entirely in the reserve, 77 percent are larger than two acres, 42 percent are larger than five acres, seven are larger than 10 acres, and one is larger than 50 acres. The one tax lot that is not entirely within the reserve nonetheless has more than 27 acres of territory in the reserve. As noted above, the entire reserve contains 207 gross vacant buildable acres and 155 net vacant buildable acres.

According to aerial imagery, there reserve includes rural residential development, forested lands, and limited agricultural activity, mostly pastureland, Christmas tree farms, and orchards. The area The Timberline Baptist Church is located on an 8.3-acre tax lot in the northwest corner of the reserve on SW Old Highway 99W and a Northwest Natural Gas facility is located on a 0.6-acre tax lot across the road. Overall, more than 90 percent of the reserve's tax lots have assessed improvements, with the median value of those tax lots' improvements exceeding $322,000.

Highway 99W runs along the western edge of the reserve and. Existing urban low density residential development and associated local streets lie directly across SW Brookman Road to the north. Some small rural commercial uses (e.g., retail food services, RV repair businesses) are outside of the reserve on the opposite side of the highway to the west. Middleton Elementary School is less than half a mile to the north of the reserve; Sherwood High School is about a mile away, but on the opposite side of Highway 99W. A half-mile section of Portland and Western Railroad track runs through the reserve's western portion. The nearest existing TriMet bus stop is approximately two miles away to the north via Highway 99W.

The reserve is a mixture of relatively flat areas, with some small hills and steeper slopes primarily near the streams that flow north towards Sherwood. Most of the flatter areas are near SW Old Highway 99W and SW Middleton Road and are made up of smaller tax lots that would likely need to be combined to provide opportunities for meaningful employment uses. Additionally, the limited

number of smaller and flatter sites in the reserve are more than a couple miles from Sherwood's existing employment lands. For these reasons, the reserve is not considered able to efficiently accommodate an employment land need, despite the proximity to Highway 99W. The existing rural residential development pattern and the agricultural lands in the reserve, the adjacent urban low density residential development, and nearby school uses provide the opportunity for future residential development. Thus, the area is able to accommodate a residential land need.

Factor 2: Orderly and economic provision of public facilities and services

Water Services

With regard to water services, the Sherwood South Urban Reserve is given a "low" score in Attachment 3 for this Goal 14 boundary location factor, for the reasons detailed in (a)-(d) below.

a. Capacity of existing facilities to serve areas already inside the UGB

Adjacent lands inside the UGB are provided with water service by the City of Sherwood. The City obtains the majority of its water supply from the Willamette River Water Treatment Plant (WRWTP) in the City of Wilsonville, with the remainder coming from four groundwater wells in city limits. The City of Sherwood also maintains an emergency connection and transmission piping to a supply main serving Tualatin from Portland. The Sherwood's water distribution system includes three service zones served by three storage reservoirs and two pumping stations. The majority of Sherwood customers are served from the 380 Pressure Zone, which is supplied by gravity from the Sherwood's Sunset Reservoirs. The 535 Pressure Zone serves the area around the Sunset Reservoirs, supplied with constant pressure by the Sunset Pump Station, while the 455 Pressure Zone serves higher elevation customers on the city's western edge by gravity from the Kruger Reservoir. At least part of the Sherwood South Urban Reserve would likely become part of the 380 Pressure Zone.

Supply, storage, pumping, and distribution piping are considered sufficient to meet maximum daily demand of current development within the city's portion of the UGB; however, according to the city's 2015 Water System Master Plan, additional supply and storage capacity may be needed for full buildout. Efforts, including capital improvement projects, are planned to increase treatment plant capacity to satisfy buildout demand. No pump stations are currently needed to serve the 380 Pressure Zone. Very few distribution deficiencies are identified in the Master Plan for either existing or buildout maximum daily demand (MDD) conditions and no additional deficiencies are identified in the Plan under peak hour demand conditions. New large diameter water lines will likely need to be extended through the currently underdeveloped Brookman Addition and Tonquin Employment Area to serve additional development.

b. Capacity of existing facilities to serve areas proposed for addition to the UGB

Full buildout of the existing UGB and development of Sherwood South Urban Reserve could warrant the planned treatment plant improvements in order for the reserve to be provided with adequate water service. Additional storage capacity, distribution capacity, and some pumping capacity will also likely be needed.

Potential treatment system improvement costs, water main extension costs, and the full costs of new storage facilities also serving areas already inside the UGB are unknown and not included in the below figures. Sherwood's 2015 Water System Master Plan does not address urban water service to this reserve.

c. Impacts to existing facilities that serve nearby areas already inside the UGB

Full buildout of the existing UGB and development of Sherwood South Urban Reserve could warrant the planned treatment plant improvements in order for the reserve to be provided with adequate water service. Additional storage, piping, and pumping capacity are also likely needed. Those potential treatment system improvement costs and the full costs of improved storage facilities also serving areas already inside the UGB are not included in the below figures.

d. Estimated water service-related costs for reserve development

Water piping, pumping, and storage costs	Cost
10-inch pipe	$4.94 million
12-inch pipe	$3.32 million
16-inch pipe	$0
Pumping	$13.34 million
Storage	$0.20 million
Total:	**$21.80 million**
Per dwelling unit at 20 units per net vacant buildable acre:	**$7,051**

Sanitary Sewer Services

With regard to sanitary sewer services, the Sherwood South Urban Reserve is given a "low" score in Attachment 3 for this Goal 14 boundary location factor, for the reasons detailed in (a)-(d) below.

a. Capacity of existing facilities to serve areas already inside the UGB

The City of Sherwood and Clean Water Services (CWS) together provide sanitary sewer services in adjacent areas already in the UGB. Two CWS sanitary sewer trunk lines

connect to the local, city-maintained components of the system, including the 24-inch "Sherwood Trunk", which conveys sewage from the Cedar Creek sewage collection basin, and the 18-inch "Rock Creek Trunk", which conveys sewage from the Rock Creek sewage collection basin, to a CWS-owned pump station. Sewage is then directed to the Durham Advanced Wastewater Treatment Plant via the Upper Tualatin Interceptor, also owned by CWS.

The City of Sherwood updated its Sanitary Sewer Master Plan in 2016. The Master Plan includes areas within the City of Sherwood city limits, as well as the Tonquin Employment Area (TEA) and the Brookman Addition, which are within the UGB. The Master Plan indicates that there is sufficient conveyance, pump station, and treatment plant capacity for existing development in areas already inside the UGB. However, at full buildout of the UGB, there may be deficiencies with the Sherwood and Rock Creek Trunk Lines, the Sherwood Pump Station, and the Upper Tualatin Interceptor. The city and CWS both have capital improvement projects planned to address these capacity issues. Responsibility for upsizing the Sherwood and Rock Creek Trunk Lines may be shared between the city and CWS.

b. Capacity of existing facilities to serve areas proposed for addition to the UGB

The city's 2016 Sanitary Sewer Master Plan does not plan for urban development of the Sherwood South Urban Reserve, so information on the existing system's capacity to serve the reserve is limited. However, given the size of the reserve, it is possible that the existing treatment plant would be insufficient to serve both full buildout of the current UGB and development of the reserve. Trunk line and pumping capacity are also likely insufficient. Currently, sewer service does not extend to the reserve, and a sewer line would need to be constructed through the Brookman Addition inside the UGB to serve the reserve's development. Costs associated with increasing the capacity of the treatment plant, as well as sewer lines and pumping systems outside the reserve, to levels necessary to serve both full buildout of the current UGB and the reserve are unknown and are not included in the below figures. However, those costs are likely to be significant.

c. Impacts to existing facilities that serve nearby areas already inside the UGB

The treatment system, sewer line, and pumping system improvements noted above are likely needed in order to avoid adverse impacts to service to areas already inside the UGB.

d. Estimated sanitary sewer service-related costs for reserve development

Sanitary sewer piping and pumping costs	Cost
10-inch pipe	$5.78 million
12-inch pipe	$0
15-inch pipe	$0
Pump station	$0
Force mains	$0
Total:	**$5.78 million**
Per dwelling unit at 20 units per net vacant buildable acre:	**$1,868**

Stormwater Management Services

With regard to stormwater management services, the Sherwood South Urban Reserve is given a "low" score in Attachment 3 for this Goal 14 boundary location factor, for the reasons detailed in (a)-(d) below.

a. Capacity of existing facilities to serve areas already inside the UGB

The City of Sherwood's 2016 Stormwater Master Plan states that, overall, the existing stormwater network for areas inside the UGB is in good condition, though there are some isolated deficiencies. There is no indication of significant challenges with existing stormwater management facilities being able to serve existing development specifically in areas of the UGB adjacent to the reserve.

b. Capacity of existing facilities to serve areas proposed for addition to the UGB

Based on topography, stormwater from development of the reserve could likely outfall directly to Cedar Creek and its tributaries. Per CWS and City of Sherwood stormwater standards for new development, water quality and quantity should be provided on private property before outfalling to these water bodies; therefore, the existing facilities would not be impacted by the development of the reserve.

c. Impacts to existing facilities that serve nearby areas already inside the UGB

As noted above, stormwater related to new development in the reserve could likely outfall directly to Cedar Creek and its tributaries, without connecting to other existing stormwater infrastructure. Therefore, no adverse impacts to existing facilities serving areas already inside the UGB are anticipated. It is also expected that stormwater will be treated and detained onsite, thereby limiting impacts to these water bodies.

d. Estimated stormwater service-related costs for reserve development

Stormwater piping and water quality/detention	Cost
18-inch pipe	$4.00 million
24-inch pipe	$2.10 million
30-inch pipe	$0
Water quality/dentition	$6.56 million
Total:	**$12.77 million**
Per dwelling unit at 20 units per net vacant buildable acre:	**$4,132**

Transportation Services

With regard to transportation services, the Sherwood South Urban Reserve is given a "low-medium" score in Attachment 3 for this Goal 14 boundary location factor, for the reasons detailed in (a)-(e) below.

a. Capacity of existing facilities to serve areas already inside the UGB

Figure 4.36 in Chapter 4 of the 2023 Regional Transportation Plan (RTP) displays 2020 home-based vehicle miles traveled (VMT) per capita by Metro transportation analysis zone, with average VMT per capita considered 11.32. According to Figure 4.36, areas in the UGB adjacent to the Sherwood South Urban Reserve had above average and significantly above average home-based VMT per capita in 2020.

Metro's adopted 2040 Growth Concept Map designates a town center in the adjoining City of Sherwood. Town centers are meant to: serve populations of tens of thousands of people; offer more locally-focused retail uses and public amenities; and be well served by transit. The Langer Drive Commercial District of the City of Sherwood's 2013 "Sherwood Town Center Plan" generally aligns with the geography of the town center area on the Growth Concept Map. The Langer Drive Commercial District is envisioned as a walkable and active shopping district complete with more pedestrian-oriented buildings. Metro's 2017 State of the Centers Atlas showed that, in the area of the Langer Drive Commercial District, there was a very high jobs-to-housing ratio and a very low number of dwelling units per acre compared to other town centers in the region. According to aerial imagery, much of the area is already built out with commercial retail uses, including a grocery store, restaurants, and medical/dental offices, though there are numerous parking lots that may be able to accommodate redevelopment. Near to the Langer Drive Commercial District is a police station, the Sherwood Ice Arena, and other public/quasi-public land uses, as well as some undeveloped and underdeveloped tax lots. Sherwood is served by TriMet Route 94, which runs along Highway 99W, and Route 97, which runs along SW Tualatin-Sherwood Road; both routes include stops in the town center. The city's adopted town center plan, its existing land uses and transit

service, and some availability for new development in and near the town center demonstrate that growth in the current UGB will not necessarily cause a significant increase in home-based VMT per capita in the future. However, the area already in the UGB and adjacent to the Sherwood South Urban Reserve is approximately two miles from the town center.

As noted above, TriMet Routes 94 and 97 both serve areas already in the UGB in the adjacent City of Sherwood. Currently, however, those routes only connect to the northern and central portions of the city and not to the city's south and west. Figure 4.3 in Chapter 4 of the 2023 RTP also shows a gap in "frequent transit service" in Sherwood's portion of the planned regional transit network.

Sherwood has more than 10 miles of dedicated bike lanes and established bikeways, including along major roadways, that connect with some other bike-friendly streets, as well as residential and employment uses, schools, and the town center. However, there are gaps in bike facility connections to some of the residential areas south of the railroad near the Sherwood South Urban Reserve. Figure 4.5 in Chapter 4 of the 2023 RTP identifies existing bike facilities along Highway 99W and SW Tualatin-Sherwood Road as part of the planned regional on-street bike network and facilities in the central portion of the City as part of the regional off-street bike network, though there is a short network gap along SW Tualatin-Sherwood Road west of the highway and other gaps in the west, east, and south of the City, including along Highway 99W in the UGB near the Sherwood South Urban Reserve.

Most developed neighborhoods in Sherwood, including the town center, have sidewalks. Figure 4.4 in Chapter 4 of the 2023 RTP identifies existing sidewalk facilities along SW Tualatin-Sherwood Road, SW Sunset Boulevard, and SW Main Street as part of the planned regional on-street pedestrian network, though there are network gaps along Highway 99W in the north of the city, along SW Brookman Road in the south of the city adjacent to the Sherwood South Urban Reserve, and along SW Elwert Rd in the west of the city.

The Cedar Creek Trail in Sherwood is identified as an existing regional trail in Figure 4.6 in Chapter 4 of the 2023 RTP. The figure identifies gaps in connections of this trail to other regional trails in the planned regional trail network.

Construction has commenced on a pedestrian bridge over Highway 99W that, when completed, will connect Sherwood High School, which is in the UGB, with the YMCA and surrounding urban neighborhoods. Goals of the project include: reducing vehicle/pedestrian conflicts and exposure; minimizing out of direction travel for pedestrians; and providing crossing opportunities that accommodate all pedestrians and bicyclists.

Figure 4.14 in Chapter 4 of the 2023 RTP identifies the SW Tualatin-Sherwood Road as a high injury corridor. The road, which is already inside the UGB, is more than two miles

from the Sherwood South Urban Reserve. There are no other RTP-designated high injury corridors within Sherwood's portion of the UGB.

Highway 99W is also already inside the UGB, bisecting the City of Sherwood. Highway 99W is identified as a throughway in Figure 4.7 in Chapter 4 of the 2023 RTP. Figure 4.8 in Chapter 4 of the RTP indicates that it currently meets travel speed reliability performance thresholds, with no more than four hours per day when travel speeds below the identified minimum speed. RTP models indicate this reliability will continue at least to the year 2045.

b. Capacity of existing facilities to serve areas proposed for addition to the UGB

The reserve is adjacent to Highway 99W. As noted above, Highway 99W, an RTP-designated throughway, currently meets travel speed reliability performance thresholds.

There is currently no transit service near to the reserve. The closest transit stop, for TriMet Route 94, is over one mile away.

There are dedicated bike lanes on Highway 99W at the SW Brookman Road intersection, though the bike lanes on Highway 99W may not be the most comfortable environment for all bicyclists. There is a small 650-foot bike lane section on SW Ladd Hill Road between SW Sunset Boulevard and SW Willow Drive; however, this bike lane does not connect to any other bike facilities and is over half a mile from the reserve.

SW Sunset Boulevard has sidewalks, as do the residential neighborhoods south of the road; however, these sidewalks only provide connections internal to the subdivisions. SW Ladd Hill Road has as sidewalk on one side that extends to SW Brookman Road, which is just shy of half a mile from the reserve. Sidewalks will be provided with the residential development that is occurring on the north side of SW Brookman Road opposite of the reserve. The pedestrian bridge noted above that is currently being constructed over Highway 99W is nearly a mile from the closest point of the reserve. There are no existing regional trails connected to the reserve.

As noted in response to Factor 1, the reserve is unlikely to efficiently accommodate employment uses. There are also no significant employment uses within the UGB near to the reserve. Therefore, future residents of the reserve will likely have to commute multiple miles to get to employment.

c. Impacts to existing facilities that serve nearby areas already inside the UGB

SW Brookman Road and Highway 99W would see additional private vehicle traffic from urbanization of the reserve. Indeed, considering the reserve's distance from the Sherwood Town Center, the unlikelihood of the reserve itself being able to accommodate employment land uses (e.g., commercial uses), the lack of nearby transit service, and gaps in connections to existing nearby bike, pedestrian, and trail networks, development of the Sherwood South Urban Reserve is likely to rely significantly on

private motor vehicle transportation in the future. Resulting traffic may impact home-based VMT per capita in nearby areas already inside the UGB and the performance of Highway 99W as a throughway, though the number of new dwelling units the reserve is likely to accommodate is relatively low.

The dedicated bike lanes on Highway 99W could see additional use, though, as noted above, they are not particularly comfortable for all cyclists. The small bike lane section on SW Ladd Hill Road would most likely not see any additional use as it does not connect to any other bike facilities. The sidewalk on SW Ladd Hill Road and the sidewalks on SW Sunset Boulevard could see additional use once the gap from SW Brookman Road is completed, as that would provide a (somewhat long) connection north of SW Sunset Boulevard along SW Main Street to the town center. The sidewalks in the new residential areas to the north would be expected to see some additional use, although the railroad tracks provide a barrier to connecting to the remainder of the city.

d. Need for major transportation facility improvements and associated costs

To serve urban development of the reserve, more than a mile of SW Brookman Road will likely need to be improved to urban arterial standards, including with acquisition of additional right-of-way. However, this improvement of SW Brookman Road is considered a half-street improvement for the purposes of this analysis, as the north side of the future road is already included in the UGB. Sections of W Middleton Road, SW Labrousse Road, and SW Oberst Road, with a combined length of approximately 1.68 miles will also likely need to be improved to urban collector standards, including with acquisition of additional right-of-way. Two new collectors with a combined length of just over a mile are expected to be needed as well. The new and improved roadways would need to traverse areas with steeper topography and waterbodies, so some associated per-mile costs are estimated to be higher than normal costs.

Facilities	Cost
Arterials, existing/improved full street	$0
Arterials, existing/improved half street	$36.52 million
Arterials, new	$0
Collectors, existing/improved full street	$61.42 million
Collectors, existing/improved half street	$0
Collectors, new	$45.76 million
Total:	**$143.70 million**
Per dwelling unit at 20 units per net vacant buildable acre:	**$46,490**

e. Provision of public transit service

The Sherwood South Urban Reserve is outside the TriMet Service District. TriMet evaluated the reserve for providing transit service and determined they could reroute a potential new bus line along Roy Rogers Road, slated for Forward Together 2.0 improvements. Analysis determined that the service would not create significant,

additional costs. TriMet could provide services to the reserve, although there is no guarantee of service. Actual service depends on the level of development in, and in the corridors leading to, the reserve. An on-route, pantograph-style fast charger at a capital cost of approximately $1,000,000 – $1,500,000 would be required to provide this service.

Prior to land being included in the UGB, a more detailed concept plan, consistent with the requirements of Metro's Urban Growth Management Functional Plan Title 11, is required. This concept plan process will develop more refined public facility and service needs and cost estimates.

Factor 3: Comparative environmental, social, energy, and economic consequences

Environmental consequences

Five streams flow through the Sherwood South Urban Reserve, including Goose Creek, Cedar Creek, and unnamed tributaries to Cedar Creek. Goose Creek flows south through a predominately wooded area for approximately 1,400 feet to join Cedar Creek in the middle of the reserve. Cedar Creek enters the reserve in its southwest corner and flows northeast for approximately 3,930 feet to its confluence with Goose Creek. This section of Cedar Creek flows mainly through a wooded riparian area that is well-established and located away from existing development and also contains an associated 3.1-acre wetland identified on the National Wetland Inventory (NWI). Cedar Creek continues flowing northeast for approximately 2,100 feet, again through a mostly wooded riparian corridor. This section of the creek also has an adjacent half-acre NWI wetland. There is a considerable amount of floodplain associated with these two streams that would help protect the riparian corridors due to floodplain development limitations.

Three tributaries to Cedar Creek flow north through the eastern portion of the reserve. The two most eastern streams flow through wooded areas with total lengths of approximately 4,650 feet. A half-acre NWI wetland has been identified along the easternmost stream and a small pond not identified as a wetland is along the other stream. The third stream flows through a mostly cleared landscape of pastureland and land with farm-related structures, before crossing through a wooded area with rural residences. The total length of this stream section is approximately 2,180 feet and also includes a fairly large irrigation pond.

Both riparian and upland wildlife habitat have been identified along all of the stream corridors. The five streams and associated wildlife habitat essentially break up the reserve into smaller sections of unconstrained land. In order for these sections to urbanize the area in a well-connected manner with necessary transportation options, numerous stream crossings would be required; these crossings would most likely negatively impact the stream corridors. If urbanization occurs with less roadway connectivity, then impacts to the natural resources can be reduced. It should be noted that the City of Sherwood has preserved the Cedar Creek riparian area that currently is within the city limits by

integrating the stream corridor into the urban fabric, resulting in a natural amenity for the public.

This analysis finds that urbanization of the reserve could occur with comparatively moderate to significant impacts to the stream corridors and habitat areas, depending on the urban form and extent of road connections. Additional environmental consideration, specifically regarding avoidance of conflict between urban development and regionally significant fish and wildlife habitat, is provided in the Metro Code Factors Analysis (Appendix 7A).

Considering the comparative environmental consequences of urbanization, the Sherwood South Urban Reserve is given a "low" score in Attachment 3 for this Goal 14 boundary location sub-factor.

Social, energy, and economic consequences

There are a number of rural residences on smaller tax lots in the Sherwood South Urban Reserve, as well as agricultural uses, a place of worship, and forested and other natural areas. Becaause natural areas would receive some protections from urbanization when added to the UGB, and because existing development and parcelization may limit or slow opportunities for new development, likely levels of urbanization of the reserve may not result in significant changes in residents' sense of place or in degradation of an existing rural lifestyle. However, the reserve does border rural reserves on two sides, and undeveloped lands on its other sides; the residents of this reserve are somewhat separated from urban development and any levels of growth may be a perceptible change.

As detailed more fully in response to Factor 2, future residents of the reserve may be fairly reliant on private motor vehicle transportation. However, given the somewhat limited buildable area of the reserve, overall increases in VMT and, therefore, adverse energy consequences, may be minimal to moderate.

Aerial imagery suggests there are a few locations of larger-scale agricultural activity within the reserve, primarily Christmas tree farming, ranching, and some pastureland, as well as some smaller-scale agriculture on tax lots with rural residences. The economic consequences of a loss in these agricultural activities may be outweighed by the economic benefits of residential development of the reserve.

Overall, there would be comparatively low to moderate social, energy, and economic consequences from urbanization of this reserve. The Sherwood South Urban Reserve is given a "medium-high" score in Attachment 3 for this Goal 14 boundary location sub-factor.

Factor 4: Compatibility of the proposed urban uses with nearby agricultural and forest activities occurring on farm and forest land outside the UGB

Goal 3 agricultural lands or Goal 4 forest lands, specifically lands zoned Agriculture and Forest (AF20) by Washington County, border the Sherwood South Urban Reserve to the north and west.

There is a 127-acre tract of AF20-zoned land directly south of the reserve between SW Ladd Hill Road and SW Labrousee Road. The majority of this land is forested with just some rural residences and a very small amount of agricultural activity. Two unnamed tributaries to Cedar Creek flow in deep ravines north through the forested portion; timber harvesting may already be limited in this area due to topography, riparian habitat protections, and nearby rural residential development. Given the limited nature of agricultural activities, that there is no indication of commercial timber activities already occurring in this area, practical constraints on timber harvesting in the future, and that access is available through roads other than those going through the reserve, the proposed urban uses are considered compatible with the nearby agricultural and forest activities occurring in this location.

A second tract of AF20-zoned land is located west of the reserve, on the west side of Highway 99W between SW Chapman Road and SW Gimm Lane, and extends approximately one and a half miles to the Washington County – Yamhill County line. Agricultural activities near Highway 99W include orchard and field crops and a 44-acre equestrian center. There are also a few rural residences in this location, as well as some smaller-scale commercial activities, some of which are agricultural-related. The Highway 99W right-of-way, which is approximately 150 feet wide, provides a meaningful buffer between the reserve and agricultural activities in this location. In addition, the equestrian center site, with its large, constructed facilities, as well as rural residential uses and stands of trees along the highway provide additional buffering from the agricultural activities that occur further to the west. Traffic from urban development of the reserve is not likely to adversely impact roadways to the west of Highway 99W. For these reasons, the proposed urban uses are considered compatible with the nearby agricultural activities occurring on the farm and forest land to the west of the reserve.

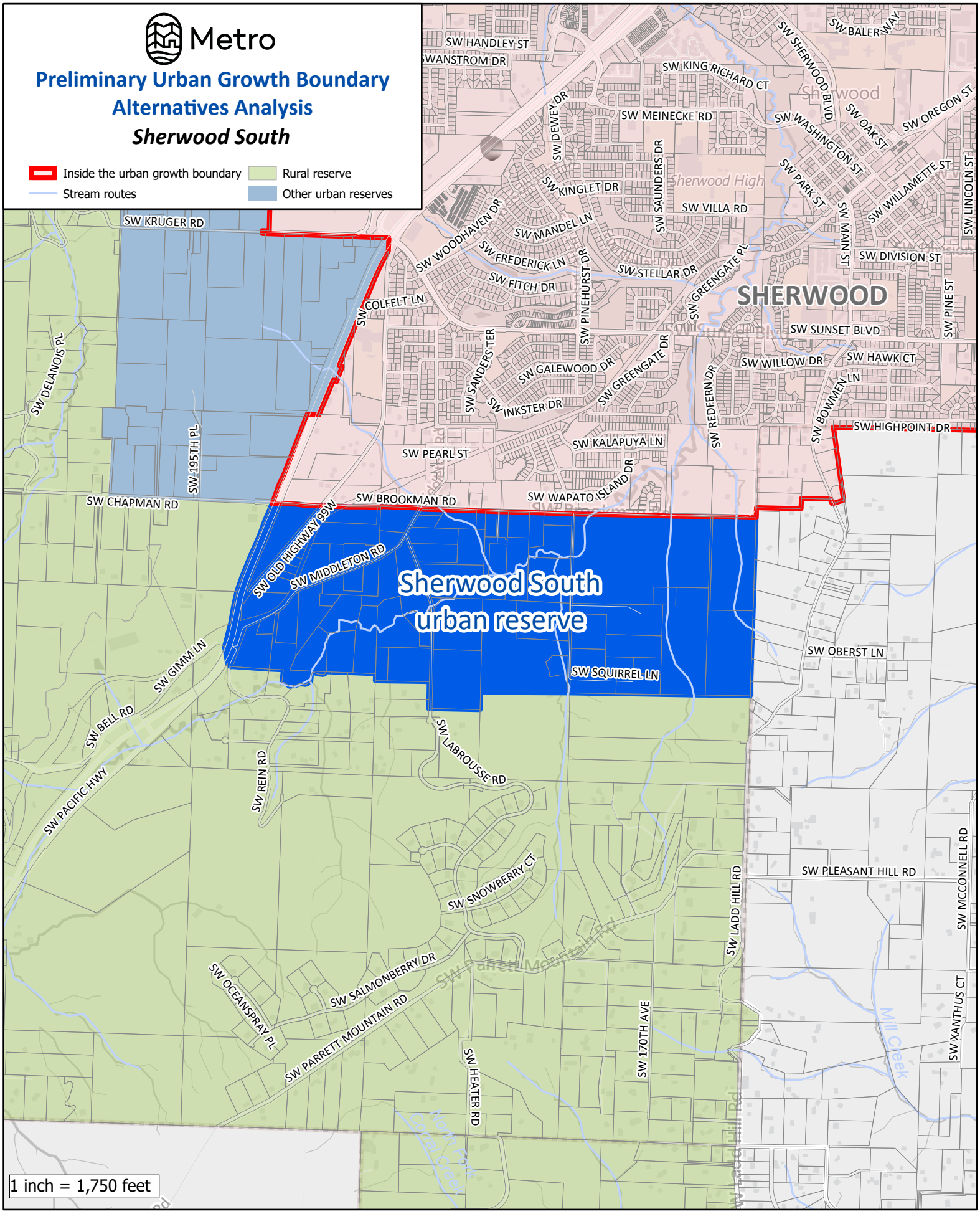
A third, nearly 450-acre tract of AF20-zoned land is located approximately a quarter of a mile south of the reserve along SW Rein Road. This land is approximately 100 feet higher in elevation than the reserve and is separated from the reserve by several rural residences. Considering that this land is not directly adjacent to the reserve, that traffic from urbanization of the reserve is unlikely to adversely impact this area, the differences in topography, and that there are already a number of rural residences located on the slope between the two areas, the proposed urban uses are considered to be compatible with nearby agricultural or forest activities occurring on this farm or forest land as well.

This analysis finds that proposed urban uses of this reserve are considered to have high compatibility with nearby agricultural and forest activities occurring on farm and forest land outside the UGB. The Sherwood South Urban Reserve is given a “high” score in Attachment 3 for this Goal 14 boundary location factor.

Metro

Preliminary Urban Growth Boundary Alternatives Analysis

Sherwood South

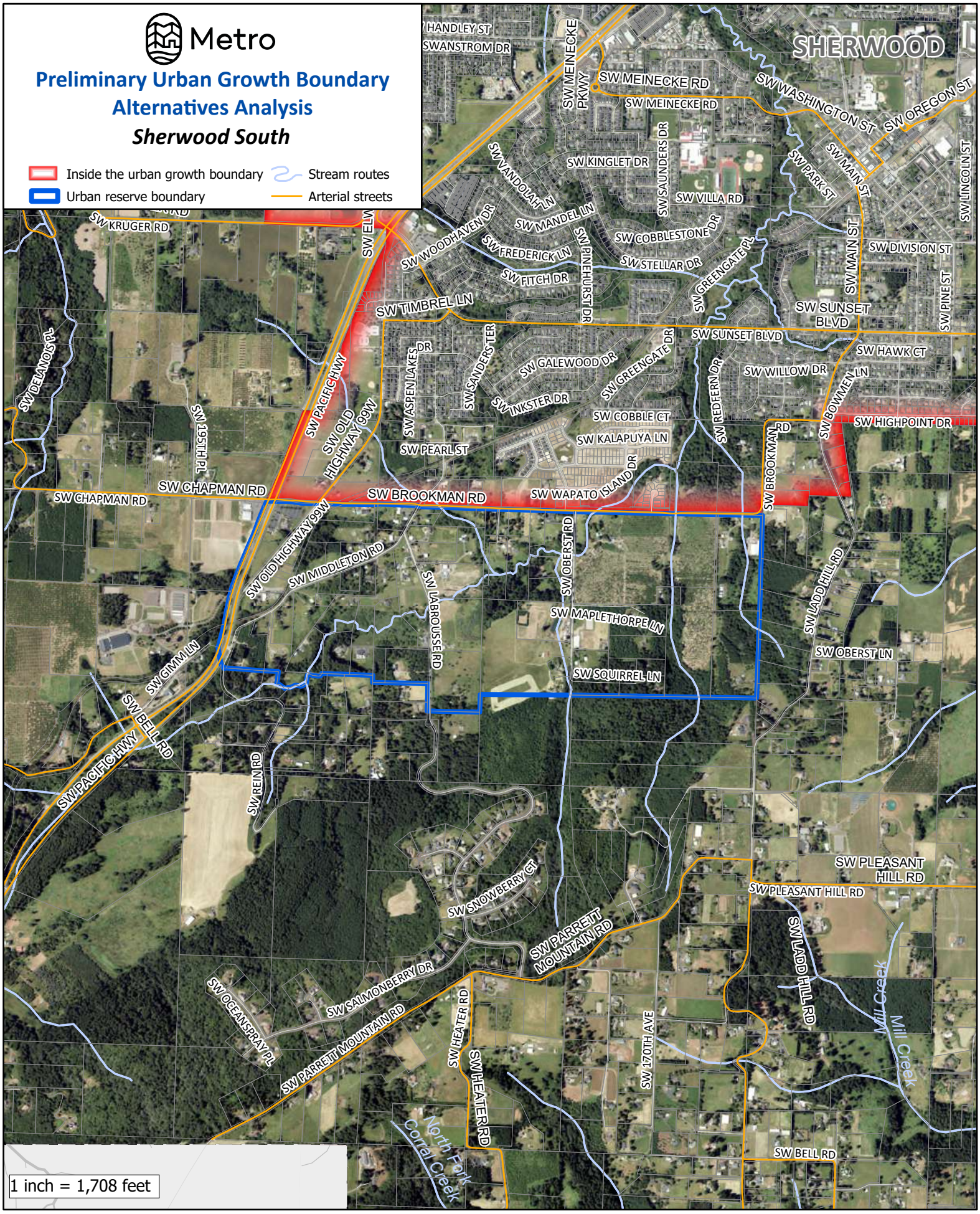


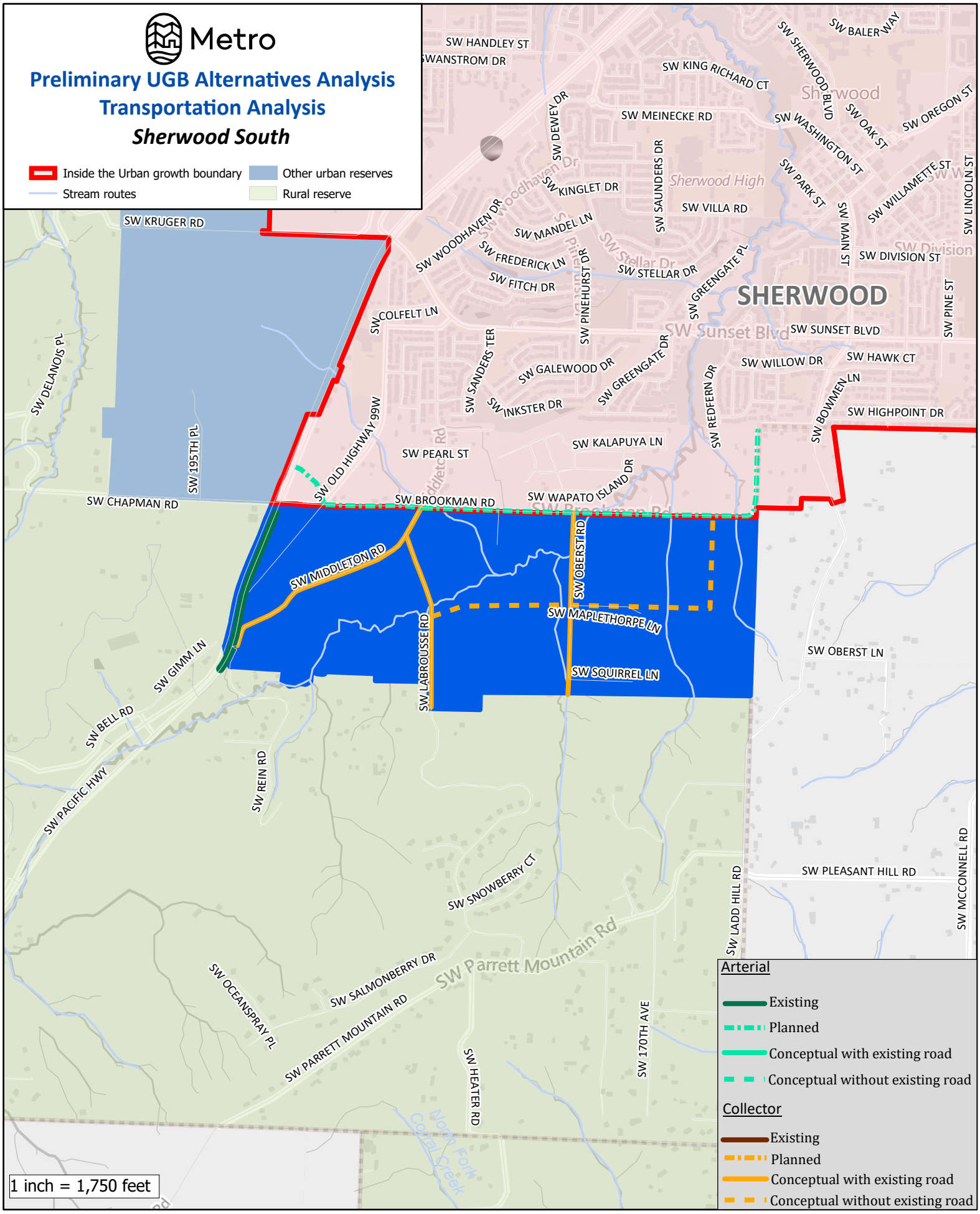
Metro

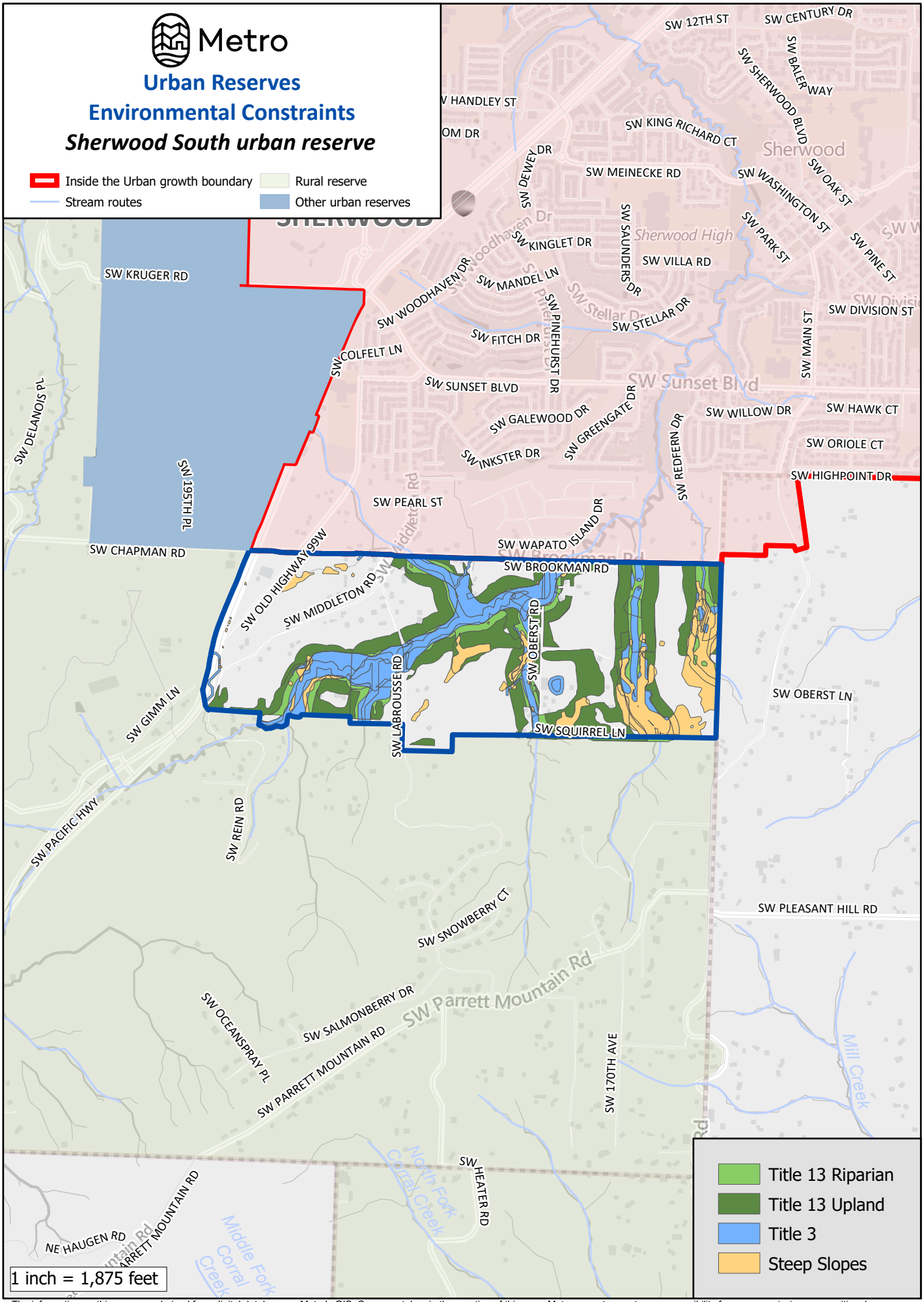
Preliminary Urban Growth Boundary Alternatives Analysis

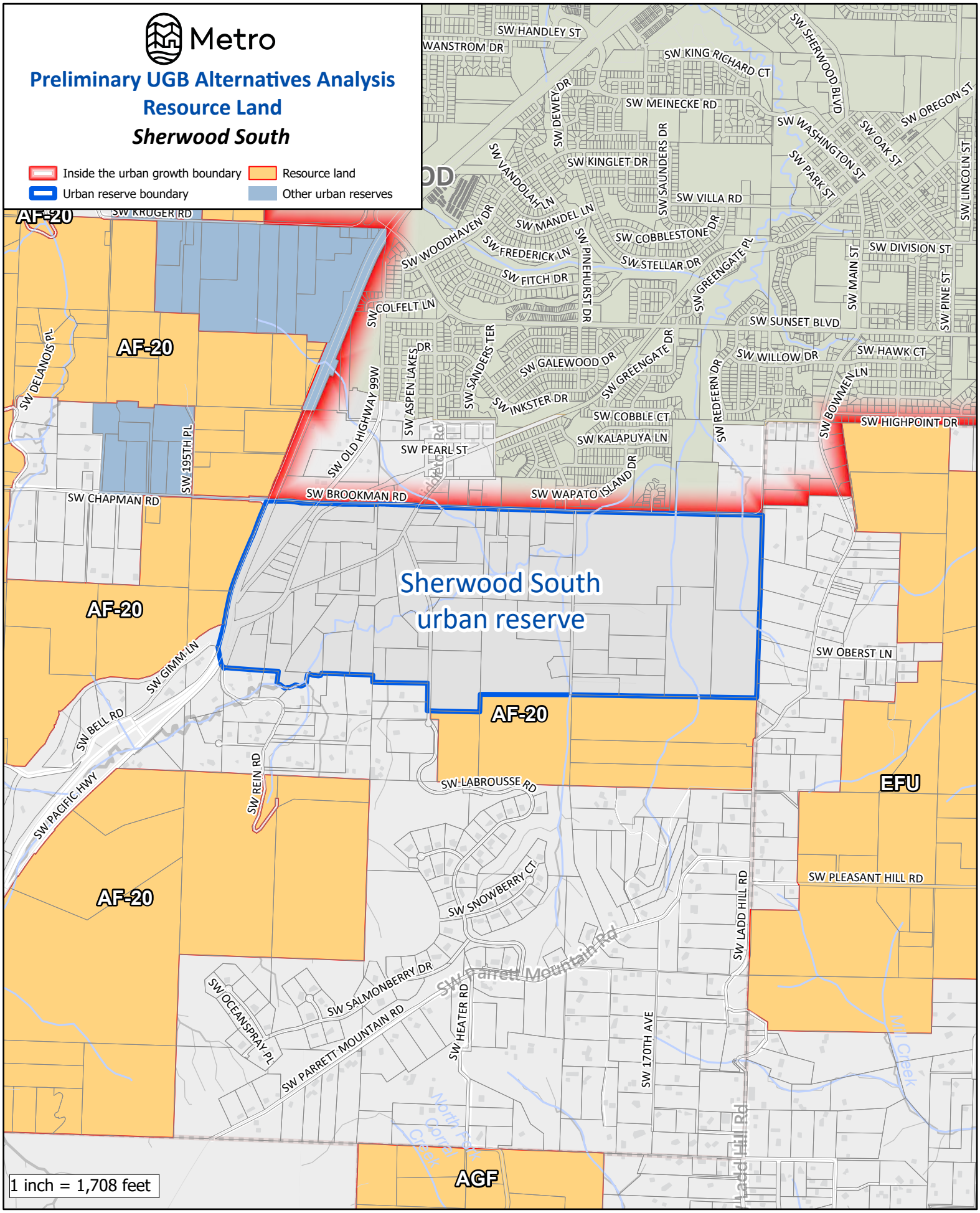
Sherwood South

Inside the urban growth boundary
Urban reserve boundary
Stream routes
Arterial streets









SHERWOOD WEST URBAN RESERVE

Total Reserve Area	1,205 acres
Total Tax Lot Area in Reserve (without Right-of-Way)	1,157 acres
Gross Vacant Buildable Area	797 acres
Net Vacant Buildable Area	**594 acres**

The Sherwood West Urban Reserve is located on the west side of Sherwood and stretches from SW Lebau Road and SW Scholls-Sherwood Road in the north to SW Chapman Road in the south. The UGB constitutes most of the urban reserve's eastern boundary. Those portions of the urban reserve not bordering the UGB are adjacent to rural reserves. Sherwood West generally slopes uphill from east to west, with the highest elevations in the reserve's southwest portion. Chicken Creek flows toward the northeast through the central portion of the reserve and has several tributaries. Access to the reserve north of Chicken Creek is provided by SW Roy Rogers Road, SW Scholls-Sherwood Road, and SW Elwert Road. Access to the area south of Chicken Creek is provided by SW Elwert Road, SW Edy Road, SW Kruger Road, and SW Chapman Road. The southern portion of the reserve is adjacent to and includes sections of Highway 99W.

GOAL 14 BOUNDARY LOCATION FACTORS

Factor 1: Efficient accommodation of identified land needs

The Sherwood West Urban Reserve is comprised of 126 contiguous tax lots. The combined land area of those tax lots is roughly 1,157 acres. Approximately 20 percent of the reserve's tax lots are smaller than two acres, while more than 60 percent are larger than five acres. Nearly a quarter are larger than 10 acres, including 12 tax lots larger than 20 acres and two larger than 50 acres. As noted above, the entire reserve contains 797 gross vacant buildable acres and 594 net vacant buildable acres.

The reserve is generally characterized by rural residential uses, pockets of agricultural uses, and forested tracts. Overall, 75 percent of the tax lots have assessed improvements, with the median assessed value of those tax lots' improvements being approximately $384,000. Assessment records also indicate that the Free Methodist Church of North America owns a nearly 10-acre tax lot in the central portion the reserve along SW Edy Road and that the Countryside Community Church owns a 4.3-acre tax lot in the south of the reserve across from Sherwood High School. The City of Sherwood owns two tax lots in the reserve with a combined area of about 14 acres; one of the City-owned tax lots is used for a water storage facility. Two sets of powerlines run through the reserve, one cutting diagonally across the very northern section of the reserve and the second generally paralleling Chicken Creek.

The southern half of the reserve wraps around the Sherwood High School campus and is adjacent to Middleton Elementary on the opposite side of Highway 99W. Ridges Elementary School is less than half a mile from the central portion of the reserve and the Saint Paul Lutheran Church and Preschool is within 500 feet of the northern half of the reserve. The Sherwood Regional Family

YMCA, which features a swimming pool, sports court, climbing wall, and dance/gymnastics studio space, is directly across Highway 99W from the reserve and planned to be connected with a future pedestrian bridge over the highway.

The central portion of the reserve abuts existing urban residential development. The northern and central portions of the reserve are only about half a mile from the Sherwood Town Center and its commercial development via SW Roy Rogers Road and SW Edy Road, respectively. The southern portion of the reserve is more than a mile away from the town center via Highway 99W. The southern portion of the reserve fronts along Highway 99W and the northern portion of the reserve is less than a mile from the highway via SW Roy Rogers Road. There are currently no transit connections between the reserve and the town center.

The reserve has a mixture of relatively flat land along its eastern edge and moderately sloped hills to its west. There are areas with slopes greater than 10 percent where employment-related land uses would be limited; however, there are also some fairly large tracts of flat land as well.

The proximity of the highway to the reserve and the availability of some larger and relatively flat tax lots suggest the reserve could accommodate employment land uses. At the same time, the reserve's existing and nearby residential development, and the proximity of schools and recreational facilities, could be cohesive with and supportive of residential land uses. Therefore, this reserve is considered able to help serve both employment and residential land needs.

As noted in the Introduction and Methodologies section of Appendix 7, as well as in Attachment 3, the Sherwood West Urban Reserve is the only urban reserve to have an adopted concept plan for its future urbanization. Having this concept plan significantly increases the likelihood that the reserve will actually develop and be able to efficiently provide residential and employment land opportunities within a reasonable timeframe.

Factor 2: Orderly and economic provision of public facilities and services

Water Services

With regard to water services, the Sherwood West Urban Reserve is given a "medium" score in Attachment 3 for this Goal 14 boundary location factor, for the reasons detailed in (a)-(d) below.

a. Capacity of existing facilities to serve areas already inside the UGB

Lands adjacent to the reserve inside the UGB are provided with water service by the City of Sherwood. The city obtains the majority of its water supply from the Willamette River Water Treatment Plant (WRWTP) in the City of Wilsonville, with the remainder coming from four groundwater wells in city limits. The city also maintains an emergency connection and transmission piping to a supply main serving Tualatin from Portland. The city's water distribution system includes three service zones served by three storage reservoirs and two pumping stations. The majority of Sherwood customers are served from the 380 Pressure Zone, which is supplied by gravity from the

city's Sunset Reservoirs. The 535 Pressure Zone serves the area around the Sunset Reservoirs, supplied with constant pressure by the Sunset Pump Station, while the 455 Pressure Zone serves higher elevation customers on the city's western edge by gravity from the Kruger Reservoir. The reserve might be part of Pressure Zones 380 and 455 when urbanized.

Supply, storage, pumping, and distribution piping are considered for the purposes of this analysis to be sufficient to meet maximum daily demand of current development within the city's portion of the UGB; however, according to the City's 2015 Water System Master Plan, additional supply and storage capacity may be needed for full buildout. Efforts, including capital improvement projects, are planned to increase treatment plant capacity to satisfy buildout demand. No pump stations are currently needed to serve the 380 Pressure Zone, though additional pumping capacity may be needed to serve other areas at full buildout. Very few distribution deficiencies are identified in the Master Plan for either existing or buildout maximum daily demand (MDD) conditions and no additional deficiencies are identified in the Plan under peak hour demand conditions.

b. Capacity of existing facilities to serve areas proposed for addition to the UGB

The city's 2015 Sherwood Water System Master Plan, and the Sherwood West Concept Plan formally adopted by the city in 2023 and updated in 2024, consider water service to the reserve. The concept plan will have costs associated with water services that may differ from those listed in (d) below. This can be due in part to differences in costing methodology, in what facility improvements are attributed to the reserve's development, and in assumptions of future densities.

According to the concept plan, initial anticipated urban development of Sherwood West is expected to be served by extending the existing 380 and 455 Pressure Zone distribution mains. Future customers along the ridge north and south of the existing Kruger Reservoir could potentially be served by constant pressure from the proposed Kruger Pump Station at the existing reservoir site. Some future customers in the reserve may need to be served through a Pressure Relief Valve (PRV)-controlled sub-zone or through individual PRVs on each service in order to maintain required service pressures. A small area on the western edge of the reserve, along Edy Road near Eastview Road, is likely too high in elevation to receive adequate service pressure from the adjacent 380 Pressure Zone; this area could instead potentially be served by constant pressure from the proposed Edy Road Pump Station. An additional pump station would potentially be needed to serve this area. Some large-diameter mains will also likely be needed to expand the city's water service area to supply water to the reserve as development occurs.

Full buildout of the areas already in Sherwood, plus full urban development of reserve, is expected to require treatment plant improvements in order for the reserve to be

provided with adequate water service. Additional water storage capacity will also likely be needed.

However, potential treatment system improvement costs, water main extension costs, and the full costs of new storage facilities also serving areas already inside the UGB are currently unknown and not included in the below figures. Additional information on costs of water service will be prepared during the comprehensive planning of the reserve when added to the UGB.

c. Impacts to existing facilities that serve nearby areas already inside the UGB

As noted above, full buildout of the areas in the existing UGB, plus full urban development of the reserve, is expected to require the planned treatment plant improvements in order for the reserve to be provided with adequate water service. Additional storage, piping, and pumping capacity are also likely needed. Those potential treatment system improvement costs and the full costs of improved storage facilities also serving areas already inside the UGB are not included in the below figures.

d. Estimated water service-related costs for reserve development

Water piping, pumping, and storage costs	Cost
10-inch pipe	$0
12-inch pipe	$14.62 million
16-inch pipe	$0
Pumping	$13.34 million
Storage	$0.78 million
Total:	**$28.74 million**
Per dwelling unit at 20 units per net vacant buildable acre:	**$2,421**

Sanitary Sewer Services

With regard to sanitary sewer services, the Sherwood West Urban Reserve is given a "medium" score in Attachment 3 for this Goal 14 boundary location factor, for the reasons detailed in (a)-(d) below.

a. Capacity of existing facilities to serve areas already inside the UGB

The City of Sherwood and Clean Water Services (CWS) together provide sanitary sewer services in adjacent areas already in the UGB. Two CWS sanitary sewer trunk lines connect to the local, city-maintained components of the system, including the 24-inch "Sherwood Trunk", which conveys sewage from the Cedar Creek sewage collection basin, and the 18-inch "Rock Creek Trunk", which conveys sewage from the Rock Creek sewage collection basin to a CWS-owned pump station. Sewage is then directed to the

Durham Advanced Wastewater Treatment Plant via the Upper Tualatin Interceptor, also owned by CWS.

The city updated its Sanitary Sewer Master Plan in 2016. The Master Plan includes areas within the Sherwood city limits, as well as the Tonquin Employment Area (TEA) and the Brookman Addition, which are within the UGB. The Master Plan indicates that there is sufficient conveyance, pump station, and treatment plant capacity for existing development in areas already inside the UGB. However, at full buildout of the UGB, there may be deficiencies with the Sherwood and Rock Creek Trunk Lines, the Sherwood Pump Station, and the Upper Tualatin Interceptor. The city and CWS both have capital improvement projects planned to address these capacity issues. Responsibility for upsizing the Sherwood and Rock Creek Trunk Lines may be shared between city and CWS.

b. Capacity of existing facilities to serve areas proposed for addition to the UGB

The Sherwood West Concept Plan formally adopted by the city in 2023 and updated in 2024 contemplates service to the Sherwood West Urban Reserve. The concept plan will have costs associated with sanitary sewer services that may differ from those listed in (d) below, in part due to differences in costing methodology, in what facility improvements are attributed to the reserve's development, and in assumptions of future densities.

According to the concept plan, development of the reserve north of Haide Road is expected to be served by the proposed Chicken Creek Pump Station and Force Main, while development to the south of Haide Road is expected to be served by the Sherwood Trunk line via the Brookman Trunk line, which has already been partially extended through the Brookman Addition as part of residential subdivisions occurring in the area. The city and CWS expect to extend the trunk line from its current terminus in the Brookman Addition to Sherwood High School, located adjacent to the reserve. A portion of the Chicken Creek Force Main is being installed as part of the Roy Rogers Road widening project. Required sewer upgrades to serve urban development of the reserve are expected to be completed by 2029.

Given the size of the reserve, it is possible that the existing treatment plant would be insufficient to serve both full buildout of the current UGB and development of the reserve, warranting treatment plant upgrades. Costs associated with increasing the capacity of the treatment plant, as well as sewer lines and pumping systems outside the reserve, to levels necessary to serve both full buildout of the current UGB and the reserve are unknown and are not included in the below figures. However, those costs could be significant.

c. Impacts to existing facilities that serve nearby areas already inside the UGB

The treatment system, sewer line, and pumping system improvements noted above may be needed in order to avoid adverse impacts to service to areas already inside the UGB.

Additional information on costs of sanitary sewer service will be prepared during the comprehensive planning of the reserve when added to the UGB.

d. Estimated sanitary sewer service-related costs for reserve development

Sanitary sewer piping and pumping costs	Cost
10-inch pipe	$0.77 million
12-inch pipe	$0
15-inch pipe	$1.39 million
Pump station	$7.02 million
Force mains	$0
Total:	**$9.18 million**
Per dwelling unit at 20 units per net vacant buildable acre:	**$773**

Stormwater Management Services

With regard to stormwater management services, the Sherwood West Urban Reserve is given a "high" score in Attachment 3 for this Goal 14 boundary location factor, for the reasons detailed in (a)-(d) below.

a. Capacity of existing facilities to serve areas already inside the UGB

The City of Sherwood's 2016 Stormwater Master Plan represents that, overall, the existing stormwater network for areas inside the UGB is in good condition, though there are some isolated deficiencies. There is no indication of significant challenges with existing stormwater management facilities being able to serve existing development specifically in areas of the UGB adjacent to the reserve.

b. Capacity of existing facilities to serve areas proposed for addition to the UGB

The Sherwood West Concept Plan formally adopted by the city in 2023 and updated in 2024 addresses stormwater services to future urban development in the Sherwood West Urban Reserve.

According to the concept plan, as development occurs, stormwater would likely be discharged into the floodplains of the adjacent creeks (e.g., Chicken and Cedar Creeks) and tributaries flowing to the north and south of the high school site that drains the middle part of the reserve. The city requires that all stormwater facilities meet the requirements of CWS Design and Construction Standards for conveyance, water quality treatment, hydromodification, and water quantity treatment. The city has also indicated that, where possible, they would prefer to use regional stormwater facilities with Low Impact Development Approaches (LIDA), and proprietary treatment. Per CWS and city stormwater standards for new development, water quality and quantity should be

provided on private property before outfalling directly to an adjacent water body; therefore, the existing facilities are not expected to be impacted by the development of the reserve.

The concept plan will have costs associated with stormwater services that may differ from those listed in (d) below, in part due to differences in costing methodology, in what facility improvements are attributed to the reserve's development, and in assumptions of future impervious surfaces.

c. Impacts to existing facilities that serve nearby areas already inside the UGB

As noted above, stormwater related to new development in the reserve could likely outfall directly an adjacent water body, without connecting to other existing stormwater infrastructure. Therefore, no adverse impacts to existing facilities serving areas already inside the UGB are anticipated. It is also expected that stormwater will be treated and detained onsite, thereby limiting impacts to these water bodies.

d. Estimated stormwater service-related costs for reserve development

Stormwater piping and water quality/detention	Cost
18-inch pipe	$3.24 million
24-inch pipe	$1.70 million
30-inch pipe	$0
Water quality/dentition	$13.64 million
Total:	**$18.58 million**
Per dwelling unit at 20 units per net vacant buildable acre:	**$1,565**

Transportation Services

With regard to transportation services, the Sherwood West Urban Reserve is given a "medium-high" score in Attachment 3 for this Goal 14 boundary location factor, for the reasons detailed in (a)-(e) below.

a. Capacity of existing facilities to serve areas already inside the UGB

Figure 4.36 in Chapter 4 of the 2023 Regional Transportation Plan (RTP) displays 2020 household-based vehicle miles traveled (VMT) per capita by Metro transportation analysis zone, with average VMT per capita considered 11.32. According to that figure, areas in the UGB adjacent to the Sherwood West Urban Reserve had average and above the regional average home-based VMT per capita in 2020.

Metro's adopted 2040 Growth Concept Map designates a town center in the adjoining City of Sherwood. Town centers are meant to: serve populations of tens of thousands of

people; offer more locally-focused retail uses and public amenities; and be well served by transit. The Langer Drive Commercial District of the City of Sherwood's 2013 "Sherwood Town Center Plan" generally aligns with the geography of the town center area on the Growth Concept Map. The Langer Drive Commercial District is envisioned as a walkable and active shopping district complete with more pedestrian-oriented buildings. Metro's 2017 State of the Centers Atlas showed that, in the area of the Langer Drive Commercial District, there was a very high jobs-to-housing ratio and a very low number of dwelling units per acre compared to other town centers in the region. According to aerial imagery, much of the area is already built out with commercial retail uses, including a grocery store, restaurants, and medical/dental offices, though there are numerous parking lots that may be able to accommodate redevelopment. Near to the Langer Drive Commercial District is a police station, the Sherwood Ice Arena, and other public/quasi-public land uses, as well as some undeveloped and underdeveloped tax lots. Sherwood is served by TriMet Route 94, which runs along Highway 99W, and Route 97, which runs along SW Tualatin-Sherwood Road; both routes include stops at the town center. The City's adopted town center plan, its existing land uses and transit service, and some availability for new development in and near the town center demonstrate that growth in the current UGB will not necessarily cause a significant increase in home-based VMT per capita in the future. The area already in the UGB and adjacent to the north end of the Sherwood West Urban Reserve is approximately half a mile from the town center; the area already in the UGB and adjacent to the south end of the reserve is approximately two miles away.

As noted above, TriMet Routes 94 and 97 both serve areas already in the UGB in the adjacent city of Sherwood. Currently, however, those routes only connect to the northern and central portions of the city and not to the city's south and west. Figure 4.3 of the 2023 RTP also shows a gap in "frequent transit service" in Sherwood's portion of the planned regional transit network.

Sherwood has more than 10 miles of dedicated bike lanes and established bikeways, including along major roadways, that connect with some other bike-friendly streets, as well as residential and employment uses, schools, and the town center. However, there are gaps in bike facility connections to some of the residential areas south of the railroad. Figure 4.5 in Chapter 4 of the 2023 RTP identifies existing bike facilities along Highway 99W and SW Tualatin-Sherwood Road as part of the regional on-street bike network and facilities in the central portion of the city as part of the planned regional off-street bike network. However, there is a short network gap along SW Tualatin-Sherwood Road west of the highway and other gaps in the west, east, and south of the City, including along Highway 99W in the UGB near the reserve.

Most developed neighborhoods in Sherwood, including the town center, have sidewalks. Figure 4.4 in Chapter 4 of the 2023 RTP identifies existing sidewalk facilities along SW Tualatin-Sherwood Road, SW Sunset Boulevard, and SW Main Street as part of the planned regional on-street pedestrian network. Again, however, there are network gaps

along Highway 99W in the north of the City, along SW Brookman Road in the south of the City adjacent to the Sherwood South Urban Reserve, and along SW Elwert Rd in the west of the City.

The Cedar Creek Trail in Sherwood is identified as an existing regional trail in Figure 4.6 of Chapter 4 of the 2023 RTP. The figure identifies gaps in connections of this trail to other regional trails in the planned regional trail network.

Construction has commenced on a pedestrian bridge over Highway 99W that, when completed, will connect Sherwood High School, which is in the UGB and adjacent to the reserve, with the YMCA and surrounding urban neighborhoods. Goals of the project include: reducing vehicle/pedestrian conflicts and exposure; minimizing out of direction travel for pedestrians; and providing crossing opportunities that accommodate all pedestrians and bicyclists.

Figure 4.14 in Chapter 4 of the 2023 RTP identifies the SW Tualatin-Sherwood Road as a high injury corridor. The road, which is already inside the UGB, is approximately three quarters of a mile from the northern end of the reserve and more than two miles from the south end of the reserve. There are no other RTP-designated high injury corridors in Sherwood's portion of the UGB.

Highway 99W is also already inside the UGB and generally bisects the city of Sherwood. Highway 99W is identified as a throughway in Chapter 4's Figure 4.7 of the 2023 RTP. Figure 4.8 of that same chapter indicates that the highway currently meets travel speed reliability performance thresholds, with no more than four hours per day below the identified minimum speed. RTP models indicate this reliability will continue at least to the year 2045.

b. Capacity of existing facilities to serve areas proposed for addition to the UGB

The reserve is adjacent to – indeed, includes a small length of – Highway 99W. As noted above, Highway 99W, an RTP-designated throughway in Sherwood, currently meets travel speed reliability performance thresholds.

The reserve currently lacks a transit service connection. The closest transit stop to the north end of the reserve, which is for TriMet Route 94, is nearly one mile away and the south end of the reserve is even further away from existing stops.

There are dedicated bike lanes on Highway 99W at the SW Kruger Road intersection. These bike lanes connect to other bike lanes on SW Meinecke Parkway, which provide access to the middle school, "Old Town", and the town center. There is also a dedicated bike lane on SW Sunset Boulevard that runs for approximately half a mile before connecting to a trail. There are bike lanes on SW Roy Rogers Road that extend north into rural lands and south into the city, but these bike lanes stop short of connecting to the bike lanes on Highway 99W.

There are sidewalks on SW Kruger Road and SW Haide Road that would provide easy pedestrian access from the central portion of the reserve to the Sherwood High School campus. As noted above, a pedestrian bridge is also being constructed to provide pedestrian access from the high school are to the YMCA and other urban development on the other side of Highway 99W. Sidewalks on SW Sunset Boulevard, across Highway 99W from SW Kruger Road, connect with numerous residential areas and "Old Town" via SW Main Street. Additionally, there are sidewalks on SW Handley Street and SW Swanstrom Drive that connect to the sidewalks on SW Meinecke Parkway, which provides additional pedestrian access to the schools, "Old Town", and the town center. Sidewalks on SW Edy Road provide access to Edy Ridge Elementary School and sidewalks on SW Roy Rogers Road connect to the northern portion of the city. Sidewalks along SW Roy Rogers Road provide some pedestrian connection to the northern end of the reserve, but the southern end has no nearby pedestrian connections.

No existing regional trails are connected to the reserve. However, a trail running through green space connects the north end of the reserve at SW Roy Rogers Road to SW Seely Lane and there are trails through greenspace connecting the central portion of the reserve on SW Elwert Road to SW Copper Terrace and Ridges Elementary School.

The Sherwood West Urban Reserve was determined in response to Factor 1 to be able to accommodate both residential and employment land uses. Existing residential and public (e.g., school) uses in the UGB adjacent and near to the reserve could provide housing and educational services to future employees and residents of the reserve and thereby help to limit home-based VMT per capita.

c. Impacts to existing facilities that serve nearby areas already inside the UGB

SW Kruger Road, SW Haide Road, SW Elwert Road, SW Edy Road, and Highway 99W would all be expected to see additional private traffic as a result of urbanizing the reserve. Indeed, the reserve is moderately distant from the Sherwood Town Center and currently lacks transit service to it. However, there are existing and developing bike and pedestrian facilities that provide connections to the town center, as well as to schools and recreational facilities. Additionally, and as detailed in response to Factor 1, the reserve is considered able to accommodate both residential and employment land uses, allowing for the possibility that future residents of the reserve and nearby areas in the UGB could access at least some services and employment opportunities within the reserve itself. For these reasons, urban development of the reserve may result in only moderate impacts to home-based VMT per capita in nearby areas already inside the UGB and to the performance of Highway 99W as a throughway. However, any additional motor vehicle traffic on SW Tualatin-Sherwood Road resulting from development of the north end of the reserve may exacerbate the road's high-crash conditions.

The dedicated bike lanes on Highway 99W at the SW Kruger Road intersection would be expected to see increased use from urbanization of the reserve, although the highway is not the most comfortable environment for all bicyclists and some may be deterred from

using it. The bike lanes on SW Meinecke Parkway would also be expected to see additional use as they provide access to schools, "Old Town", and the Town Center. This route, however, requires a three-quarter-mile ride along the highway, which, as noted, may have conditions that limit or reduce the number of users. The bike lane on SW Roy Rogers Road would also be expected to see additional use.

The sidewalks around the high school campus, as well as the developing pedestrian bridge over Highway 99W, would see more use if the central portion of the reserve were to be urbanized. The sidewalks on SW Sunset Boulevard across Highway 99W from SW Kruger Road would also be expected to see additional use, as they connect to numerous residential areas and eventually "Old Town" via SW Main Street. The sidewalks on SW Handley Street and SW Swanstrom Drive that connect to the sidewalks on SW Meinecke Parkway would likely see additional use from development of the central portion of the reserve, as they provide access to schools, "Old Town", and the town center. Likewise, the sidewalks on SW Edy Road that provide access to Edy Ridge Elementary School and the sidewalks on SW Roy Rogers Road would be expected to see additional use. The trail between SW Roy Rogers Road and SW Seely Lane would see more use with the development of the northern section of the reserve.

d. Need for major transportation facility improvements and associated costs

The adopted Sherwood West Concept Plan includes several potential future street layouts conceived of by the city and addresses associated costs, though these layouts and cost predictions may change during comprehensive planning of the reserve if/when added to the UGB. In order to compare each of Metro's 27 urban reserves with each other for the purposes of Factor 2, the same assumptions and methodologies used in the preliminary analyses of the other reserves' transportation facility improvement needs and costs are employed here in the preliminary analysis of the Sherwood West Urban Reserve.

According to those assumptions and methodologies, urbanization of the reserve would require the following to be improved to urban arterial standards, including acquisition of additional right-of-way: a 1.63-mile section of SW Elwert Road; a 0.57-mile section of SW Roy Rogers Road; a 0.57-mile section of SW Scholls Sherwood Road; and a 0.23-mile section and SW Lebeau Road. Portions of SW Elwert Road and SW Roy Rogers Road sections are considered for the purposes of this analysis to be half-street improvements, as their other halves would be in the current UGB. The following is also expected to be improved to urban collector standards, with acquisition of additional right-of-way: a 0.26-mile section of SW Conzelmann Road; a 0.8-mile section of SW Edy Road; a 0.4-mile section of SW Kruger Road; and a 0.45-mile section SW Chapman Road. Two new collectors with a combined length of nearly 2.5 miles may be needed to provide access to the center of the reserve between SW Chapman Road and SW Edy Road and to extend SW Conzelmann Road east from SW Elwert Road to SW Roy Rogers Road. Due to topography and water crossings, some sections of new and improved roadways are expected to have higher than normal per-mile costs.

Facilities	Cost
Arterials, existing/improved full street	$126.45 million
Arterials, existing/improved half street	$23.22 million
Arterials, new	$0
Collectors, existing/improved full street	$66.54 million
Collectors, existing/improved half street	$0
Collectors, new	$103.26 million
Total:	**$319.47 million**
Per dwelling unit at 20 units per net vacant buildable acre:	**$26,912**

e. Provision of public transit service

The reserve is currently outside the TriMet Service District. Nonetheless, TriMet evaluated the reserve for the possibility of providing transit service in the future and determined they could reroute a potential new bus line along Roy Rogers Road that is slated for "Forward Together 2.0" improvements to serve the reserve. An analysis determined that such service would not create significant, additional costs. While TriMet could provide services to the reserve, there is no guarantee of service. Actual service will depend on the level of development in the reserve and in the corridors to it. If service were to be provided, an on-route, pantograph-style fast charger at a capital cost of approximately $1,000,000 – $1,500,000 could be required.

Factor 3: Comparative environmental, social, energy, and economic consequences

Environmental consequences

Chicken Creek runs northeastward through the northern half of the reserve for more than two miles, eventually flowing through the Tualatin River National Wildlife Refuge and to the Tualatin River. There are four linear wetlands that are identified on the National Wetland Inventory (NWI) and associated with Chicken Creek that total at least 30 acres and encompass a significant portion of the creek's riparian area. Much of the wetlands are forested, as is most of the stream corridor that is outside of the wetlands. In addition, there are a few locations of "100-year" floodplain along the stream corridor outside of the wetland areas. There are significant areas of riparian and upland habitat associated with Chicken Creek and its wetlands, much of which are also within a powerline easement that runs through this portion of the reserve. Considering that floodplains, wetlands, streams, and inventoried habitat areas receive additional regulatory protections when added to the UGB, and considering that the powerline easement could reduce buildability and thereby limit urbanization that could adversely impact environmental features, urbanization in this area may be able to occur without significant impacts to the Chicken Creek riparian corridor. Moreover, the size of the associated habitat areas could make new road crossings in the area comparatively expensive; if those road crossings aren't built to a large scale, adverse impacts from new street connectivity could also be limited. However, if new road crossings were to be built through the habitat areas, then the impacts could be significant.

There are two unnamed tributaries to Chicken Creek that flow into the stream from the central portion of the reserve. The first tributary is approximately 2,000 feet long, flows along the forested edge of agricultural lands and open space, and also has a small NWI wetland associated with it. The second tributary is a short, roughly 480-foot stream section near the corner of SW Edy and SW Elwert Roads that also is within a 1.7-acre NWI wetland and the "100-year" floodplain.

A nearly 1,500-foot section of the West Fork Chicken Creek also flows through the northern end of the reserve and joins Chicken Creek near SW Elwert Road. This stream also flows within the "100-year" floodplain. Additionally, there is a 1,600-foot tributary to West Fork Chicken Creek north of the intersection of SW Edy Road and SW Eastview Road; this stream flows through a forested ravine with slopes greater than 25 percent, which, given the difficulty in developing on steep slopes, will likely provide an additional level of protection for the stream corridor. Similar to the main stem of Chicken Creek described above, there are areas of riparian and upland habitat associated with these stream corridors and wetland. Given the increased protection levels for floodplains, wetlands, streams, and habitat areas within the UGB, urbanization of the reserve could occur without significant impacts to the various tributaries to Chicken Creek.

Finally, a nearly 1,500-foot headwater section of Goose Creek flows south through the southeastern portion of the reserve into current Sherwood city limits on the opposite side of Highway 99W. This creek section has NWI wetland associated with it and flows mainly through forested land, which has been identified as riparian and upland habitat. The stream corridor has associated inventoried habitat areas, which may be impacted by urbanization, particularly new street crossings serving development in the area.

In summary, urbanization of the reserve could occur with comparatively minimal or moderate impacts to the natural resources. If numerous and/or sizeable road crossings are constructed to serve new development, then the impacts to natural resources could be more significant. Additional environmental consideration, specifically regarding avoidance of conflict between urban development and regionally significant fish and wildlife habitat, is provided in the Metro Code Factors Analysis (Appendix 7A).

Considering the comparative environmental consequences of urbanization, the Sherwood West Urban Reserve is given a "medium-high" score in Attachment 3 for this Goal 14 boundary location sub-factor.

Social, energy, and economic consequences

Existing rural residential development in the reserve is relatively sparse and evenly distributed, though there is more existing development on smaller tax lots in the central portion of the reserve and along SW Edy Road near the reserve's western edge. This parcelization and existing development, which includes some higher-value homes, can discourage rapid redevelopment and help maintain a more rural character for the area for a longer period of time. These areas are somewhat separated from other portions of the

reserve by stream and habitat corridors and powerlines, which can help buffer them from urban development that may happen more quickly and at a larger scale on bigger and less developed tax lots elsewhere in the reserve.

These areas that may be more readily available are closer to existing urban development, including the Sherwood High School campus and urban residential development around Ridges Elementary School. Urbanization in these areas of the reserve might support the schools being more central community focal points. And, while urban development could contribute to a loss of sense of place or degradation of a more rural lifestyle for some existing residents of the reserve, it could also bring them new civic, social, and recreational opportunities.

As detailed more fully in response to Factor 2, urbanization of the reserve may lead to moderate levels of VMT. Developing the reserve with a mix of uses would allow existing and future residents the opportunity to access daily needs closer to home, there by limiting adverse energy consequences of urbanization.

There are agricultural uses occurring throughout the reserve, primarily Christmas tree farms, pastureland, orchards, and field crops, though there are some tracts of row crops as well. There are also stands of timber that may be intended for future harvesting. Urbanization of the reserve would result in a loss in farming activity, which could have adverse economic consequences. However, those consequences may be outweighed by the economic benefits of new residential development and urban employment opportunities. Timber stands could also be harvested as a part of urbanization, though not necessarily replanted. Levels of urban density will determine whether, on a per-unit basis, the costs of extending urban services and protecting natural resource areas will be moderate or more considerable.

This analysis finds there would be comparatively moderate social, energy, and economic consequences from urbanization of this reserve. The Sherwood West Urban Reserve is given a "medium" score in Attachment 3 for this Goal 14 boundary location sub-factor.

Factor 4: Compatibility of the proposed urban uses with nearby agricultural and forest activities occurring on farm and forest land outside the UGB

Goal 3 agricultural lands or Goal 4 forest lands, specifically lands zoned Agriculture and Forest (AF20) or Exclusive Farm Use (EFU) by Washington County, border the reserve in four locations.

The first location is near the north of the reserve where reserve lands border an extensive tract of EFU-zoned land on the opposite side of SW Scholls Sherwood Road. The EFU-zoned land appears to be entirely in agricultural use, with the exception of some rural residential development, a food truck, and some agricultural-related commercial activity closer to SW Roy Rogers Road. Lands along the bank of the Tualatin River are also not in agricultural production and are instead generally forested. Agricultural activities near the north of the reserve include field and row crops, pastureland, and orchards. SW Scholls Sherwood Road separates these agricultural activities from

the reserve; however, the road itself would not provide an adequate buffer between urban development and agricultural activity. Development of the reserve in this location could lead to land use conflicts related to safety, liability, and vandalism and complaints due to noise, odor, dust, and the use of pesticides and fertilizer. In addition, the improvement of SW Scholls Sherwood Road to urban standards, and associated street light illumination and bicycle and pedestrian movements, may further jeopardize the compatibility of the two uses, though the impacts of urban roadways on adjacent agricultural activity may be minimized through road design. Urbanization could significantly increase traffic on SW Scholls Sherwood Road and SW Roy Rogers Road and that additional traffic could impact the movement of both farm equipment and goods. Urban development of the reserve is therefore considered incompatible with the nearby agricultural activities occurring on EFU-zoned lands to the north of the reserve.

The second location is a roughly 335-acre tract of AF20-zoned land located north of SW Edy Road in the vicinity of SW Conzelmann Road. This area has a mixture of agricultural activities, forested areas, and rural residential development. The forested portions could buffer some of the agricultural activities from development of the reserve, as may the stream corridor located north of the intersection of SW Edy Road and SW Eastview Road. The forested areas do not appear to be in commercial timber production, and riparian habitat productions and nearby residential development may practically limit the potential for larger-scale commercial harvesting. Urban development of the reserve would have fewer traffic-related impacts on the sections of SW Edy Road and SW Conzelmann Road in this area. Therefore, the proposed urban uses are considered to be generally compatible with the nearby agricultural and forest activities occurring on this tract of farm and forest land.

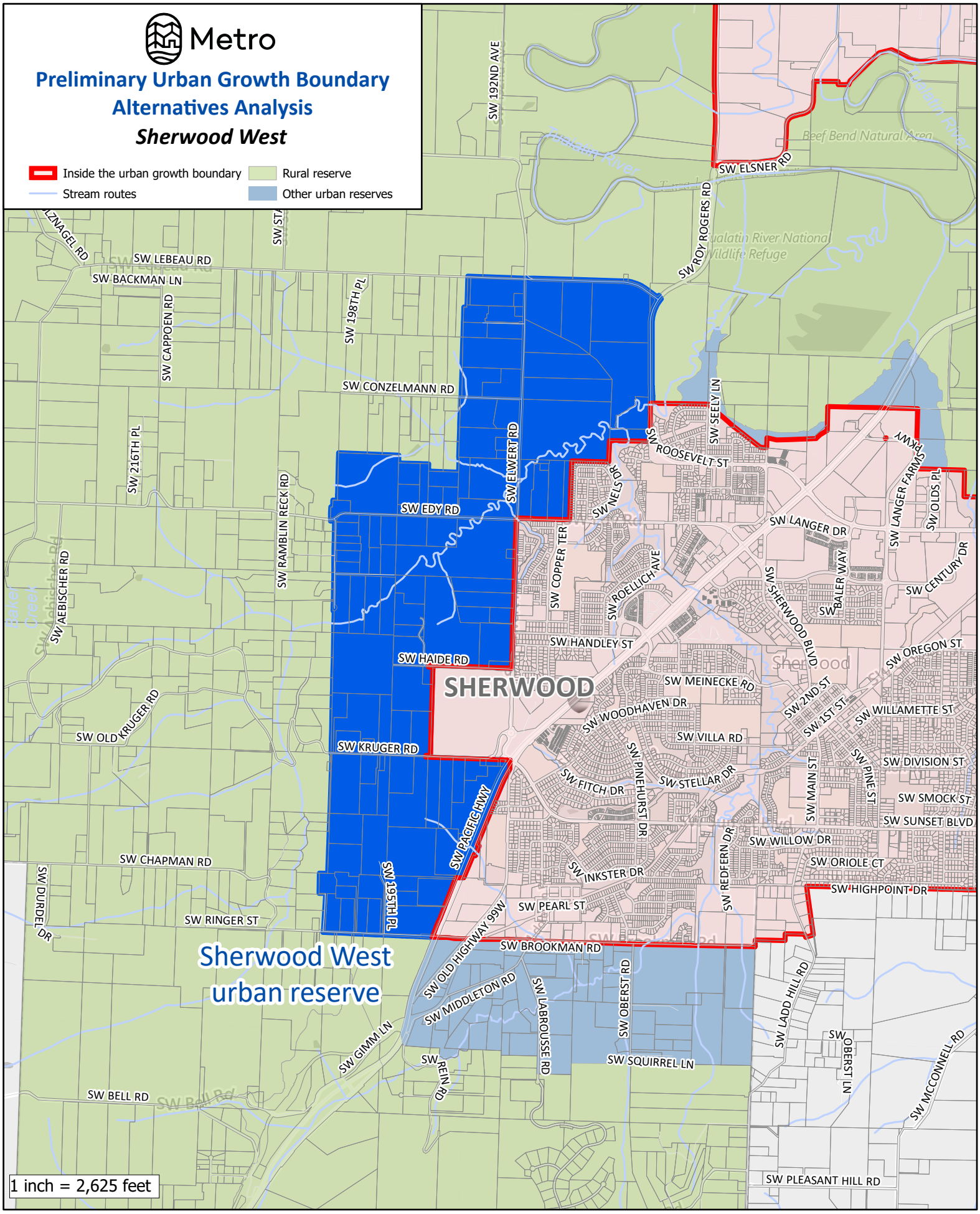
The third location is a large tract of AF20-zoned land on the southwest side of the reserve between SW Kruger Road and SW Chapman Road. This area is characterized by a mixture of agricultural activity, tasting rooms and other commercial activity, stretches of forest generally along Chicken Creek, and rural residential development, including some large, high-value homes. Chicken Creek flows north through this area in a ravine that is approximately 120 feet lower in elevation than the western edge of the reserve. The forested areas in along Chicken Creek and its ravine, the associated topography, and existing residential development would provide a meaningful buffer between urban development in the reserve and agricultural activity to the west. There is no indication that the forested areas in this location are stands for commercial timber harvesting; indeed, the topography, riparian habitat protections, and existing residential development could practically limit commercial forestry opportunities. Urban development of the reserve is unlikely to generate significant additional traffic on roadways in these adjacent AF20-zoned lands as urban traffic will primarily head eastward toward Highway 99W rather than westward. Therefore, the proposed urban uses are considered compatible with the nearby agricultural and forest activities occurring in this location of farm and forest land.

The fourth location is at the south of the reserve on the opposite side of SW Chapman Road. Here, there are AF20-zoned tax lots adjacent to the reserve which have agricultural activity, including Christmas tree farms and row and field crops. There also some rural residences as well as the Red Berry Barn, which is an agriculturally-associated commercial use that includes a garden center,

bakery, and country store and that hosts various farm-related seasonal events, such as a harvest festival. These uses are separated from the previously-mentioned equestrian center to the south by stands of mature trees. Urbanization of the southern portion of the reserve would result in new development adjacent to a small amount of actively farmed land, which could result in land use conflicts related to safety, liability, vandalism, and complaints due to noise, odor, dust, and the use of pesticides and fertilizer. SW Chapman Road itself would not provide an adequate buffer for the agricultural activities on the opposite side of the road from the reserve. Improvement of SW Chapman Road to urban standards, and associated street light illumination and bicycle and pedestrian movements, may further jeopardize the compatibility of the two uses, though the impacts of urban roadways on adjacent agricultural activity may be minimized through road design.

Overall, without impact mitigation measures, urban development in the northern and southern portions of the reserve would be considered incompatible with nearby agricultural and forest activities occurring on farm and forest land outside the UGB. Urbanization of the middle portion of the reserve, however, would be considered compatible with nearby agricultural and forest activities occurring on farm and forest land outside the UGB. Therefore, reserve-wide, the proposed urban uses have a moderate compatibility with nearby agricultural and forest activities occurring on farm and forest land outside the UGB.

The Sherwood West Urban Reserve is given a “medium” score in Attachment 3 for this Goal 14 boundary location factor.

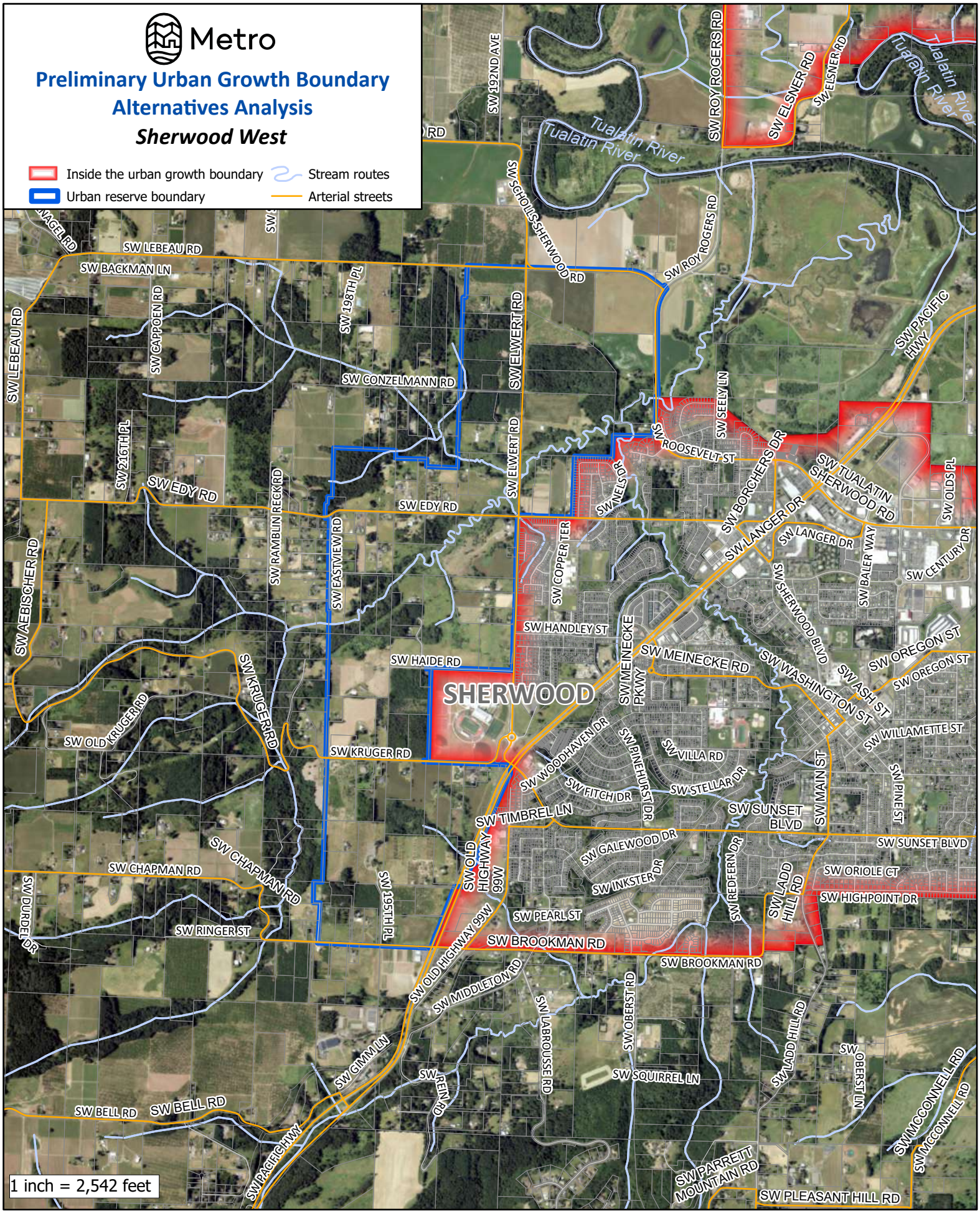


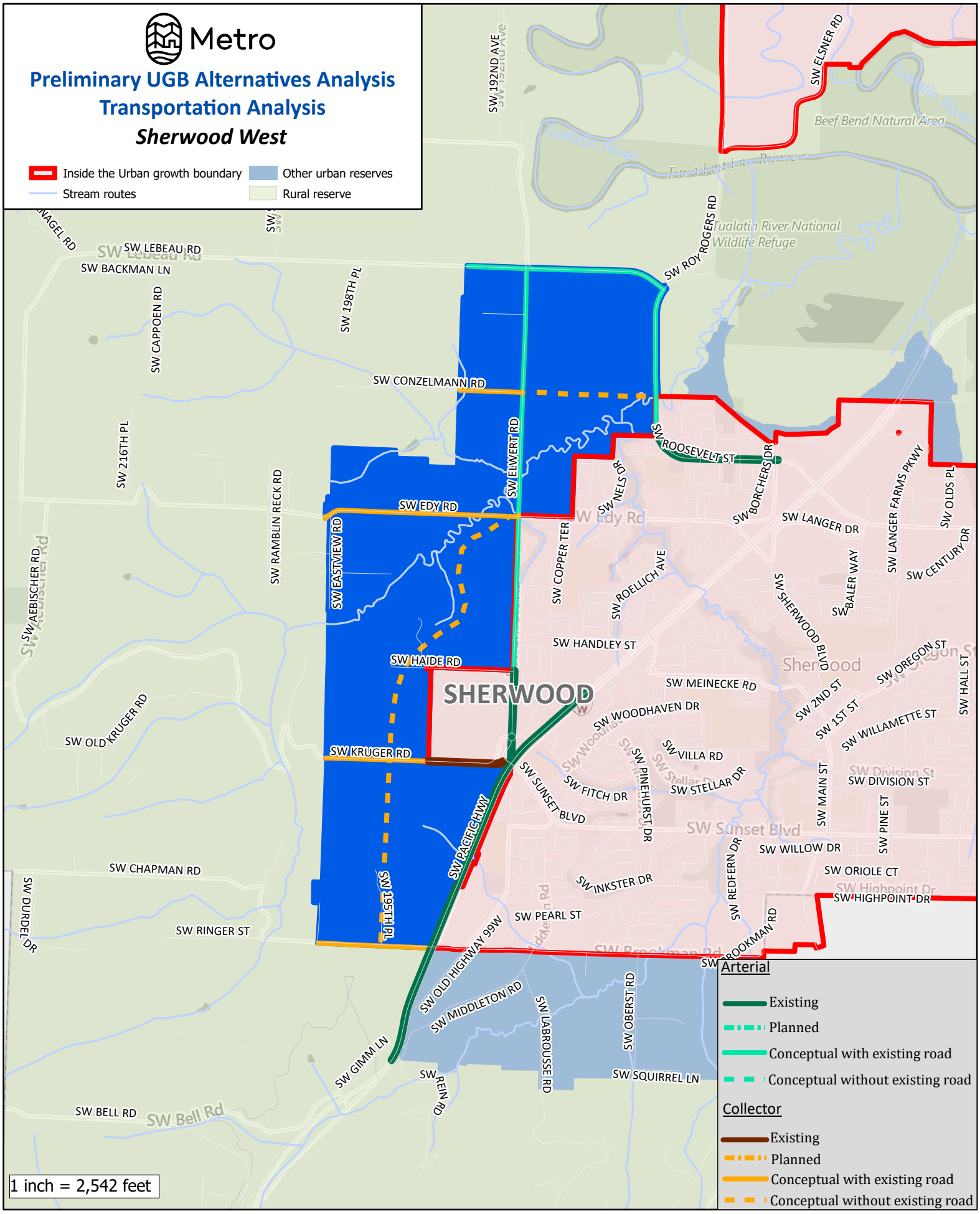
Metro

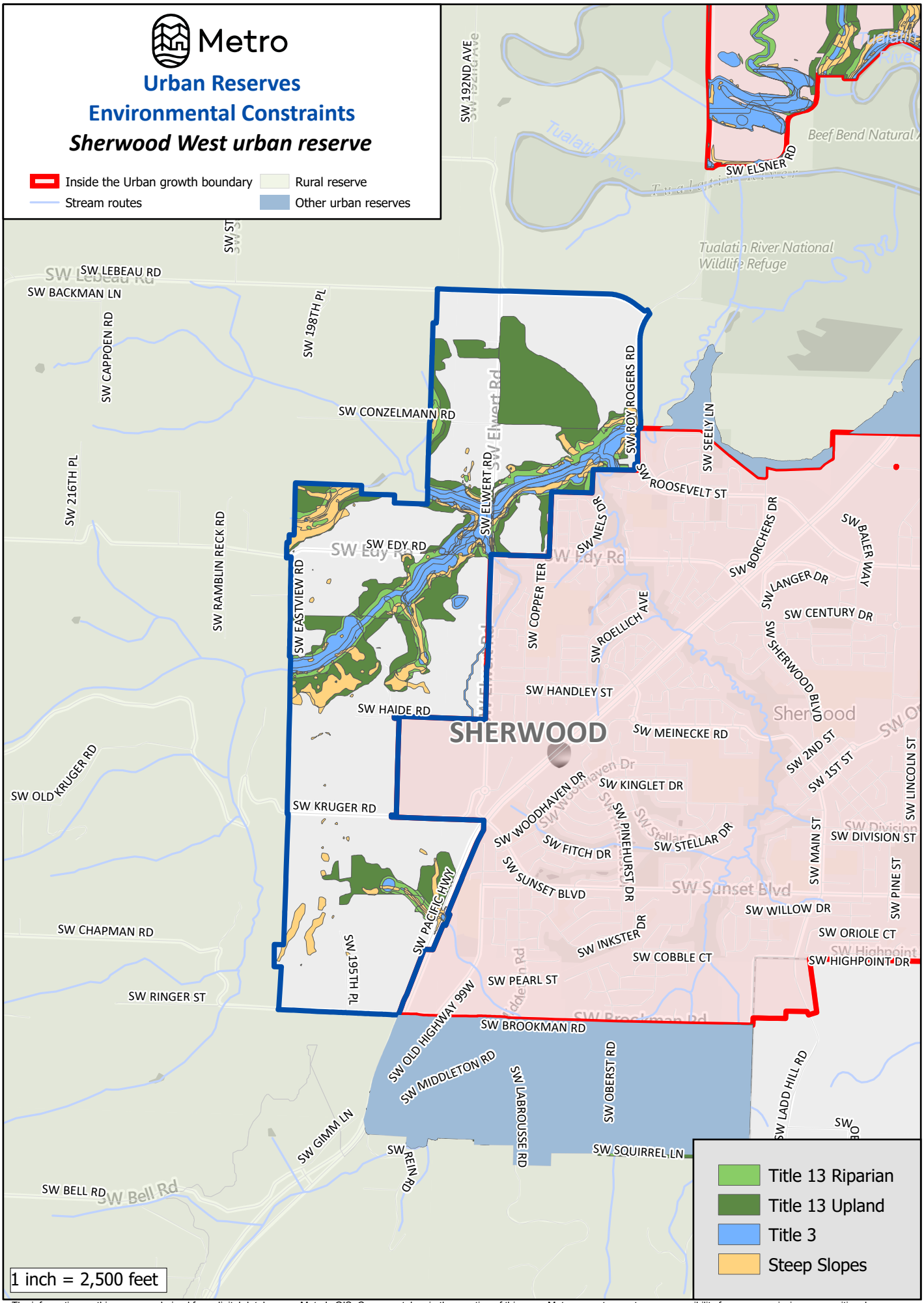
Preliminary Urban Growth Boundary Alternatives Analysis

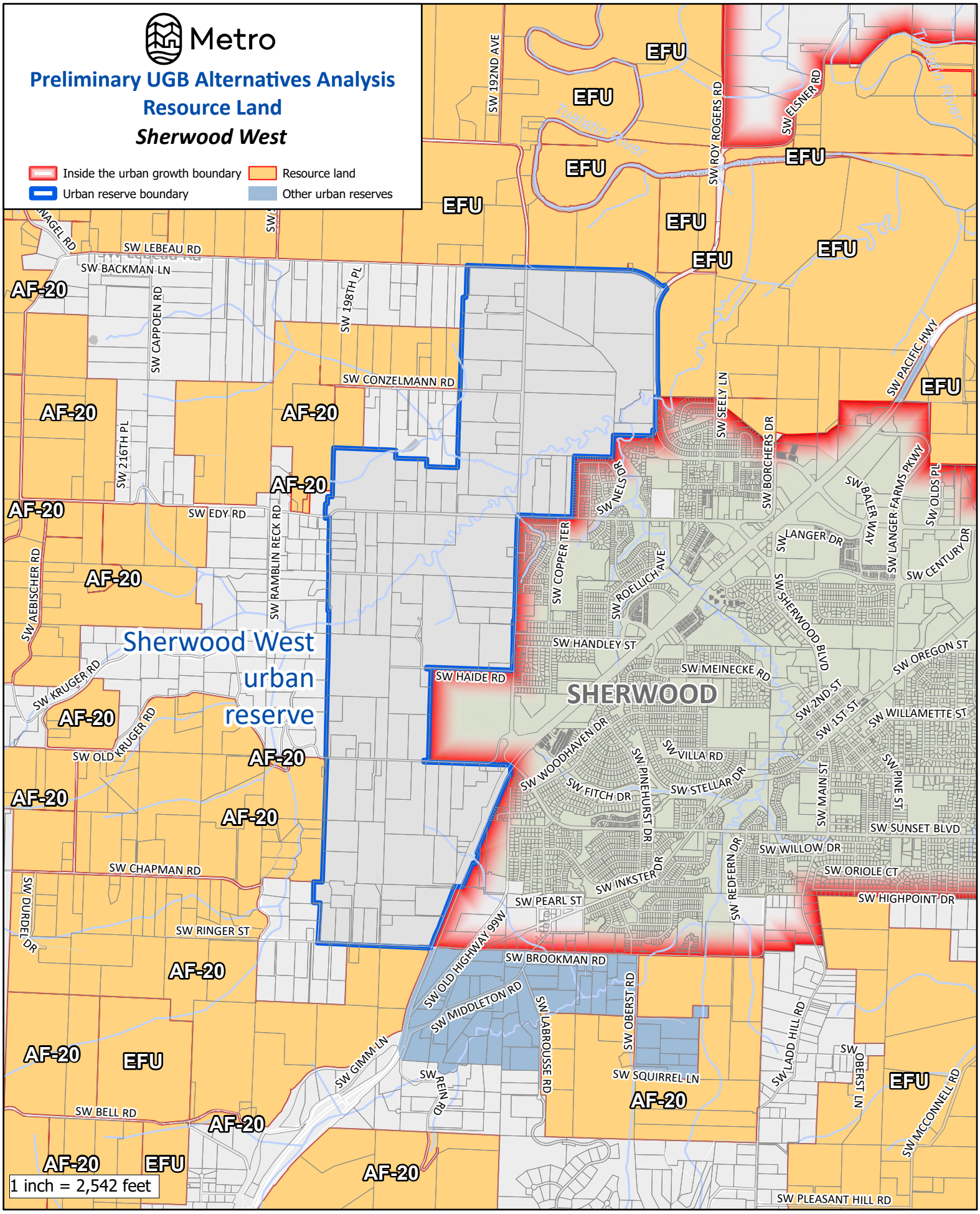
Sherwood West

Inside the urban growth boundary
Urban reserve boundary
Stream routes
Arterial streets









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STAFFORD URBAN RESERVE

Total Reserve Area	3,200 acres
Total Tax Lot Area in Reserve (without Right-of-Way)	2,964 acres
Gross Vacant Buildable Area	1,258 acres
Net Vacant Buildable Area	**937 acres**

The Stafford Urban Reserve is adjacent to the east end of the City of Tualatin, the south side of the City of Lake Oswego, and the west side of the City of West Linn. The UGB forms the reserve's northern boundary and most of its eastern boundary, the Tualatin River is its southern boundary, and the separate Rosemont Urban Reserve neighbors to the east. I-205 crosses through the southern portion of the reserve. There are numerous streams that flow through the southern portion of the reserve as well toward the Tualatin River, including Pecan Creek and Wilson Creek. The reserve's topography slopes down from north to south, dropping over 500 feet from S Bergis Road to the Tualatin River. A significant amount of the reserve has slopes greater than 10 percent, with slopes greater than 25 percent along many of the stream corridors. Access to the reserve is provided by S Rosemont Road, SW Johnson Road, SW Childs Road, and SW Stafford Road.

GOAL 14 BOUNDARY LOCATION FACTORS

Factor 1: Efficient accommodation of identified land needs

The Stafford Urban Reserve includes 799 contiguous tax lots, all but two of which are entirely in the reserve. Slightly more than half of the reserve's tax lots are smaller than two acres each and about 80 percent are smaller than 50 acres each. There are 19 tax lots that are larger than 20 acres each, including three that are each between 50 and 80 acres in area and one that is nearly 170 acres in area. The 170-acre tax lot, as well as multiple others, appear from assessment records to be open space tracts owned by a private homeowners association as part of existing residential subdivisions. The City of Lake Oswego owns 15 tax lots in the reserve with a combined area of nearly 150 acres; this area includes the public Luscher Farm featuring gardens, demonstration farming, a sports field, and park amenities and activities. Clackamas County owns 18 tax lots in the reserve with a combined area of more than 30 acres, Metro owns nine tax lots in the reserve with a combined area of nearly 99 acres, and the State of Oregon owns six tax lots with a combined area of 3.5 acres. PGE-owned tax lots with a combined area of 22 acres have substation facilities and two water service providers, Mossy Brae Water District and Sunny Slope Water District, also have facilities in the reserve. Willamette Christian Church, located on S Brandywine Drive, is on a 31-acre tract. As noted above, the entire reserve contains 1,258 gross vacant buildable acres and 937 net vacant buildable acres.

The reserve is characterized by rural residences and accessory uses, some agricultural activity, large forested areas, steep slopes, and numerous stream corridors. In total, nearly three-quarters of the reserve's tax lots have assessed improvements, with the median assessed value of those tax lots' improvements being more than $450,000.

The east side of the reserve is within 1,000 feet of Trillium Creek Primary School and just over half a mile from Rosemont Ridge Middle School and West Linn Adult Community Center. Stafford Primary School and Ahthey Creek Middle School are just on the opposite side of the Tualatin River from the west end of the reserve. The reserve contains the Luscher Farms complex, as noted above, and is less than a quarter mile from Lake Oswego Golf Course.

The reserve is mostly surrounded by rural and urban residential uses. Commercial and mixed-use development, including a grocery store and medical offices, are on the opposite side of Salamo Road from the reserve's eastern end. The SW Stafford Road interchange with I-205 is less than a mile to the southwest, on the other side of the Tualatin River.

Despite the proximity of the highway and the reserve's overall larger area, the reserve's steep topography, numerous streams, large tracts of public- and homeowners-association-owned lands, and existing residential development limit opportunities for employment uses. However, the existing and surrounding residential uses and the proximity of schools and recreational and commercial uses, could support and/or be cohesive with residential land uses. This reserve is considered able to accommodate a residential land need, but not an employment land need.

However, regarding the "efficient" accommodation of identified land needs, it is important to note that the cities adjacent to the "Stafford Triangle" area, which includes the Stafford Urban Reserve, have for decades opposed UGB expansions in that area, and those cities' elected officials have taken steps to restrict any city's ability to plan for the accommodation of future urban development. In 2019, the cities of Lake Oswego, Tualatin, and West Linn entered into an agreement that prohibits any of those cities from completing a concept plan for any part of the Borland, Rosemont, and Stafford Urban Reserve areas until, at the earliest, December 31, 2028. This restriction and the ongoing opposition of the three adjacent cities to planning, annexing, and developing the Stafford Urban Reserve weighs heavily against this area regarding its ability to efficiently accommodate the identified needs for residential or employment land under Factor 1.

Factor 2: Orderly and economic provision of public facilities and services

Water Services

With regard to water services, the Stafford Urban Reserve is given a "medium" score in Attachment 3 for this Goal 14 boundary location factor, for the reasons detailed in (a)-(d) below.

a. Capacity of existing facilities to serve areas already inside the UGB

The City of Lake Oswego provides service to the adjacent areas inside the UGB to the north and west of the Stafford Urban Reserve, while the City of West Linn provides water service to the adjacent areas inside the UGB to the east of the reserve.

Lake Oswego's water source is the Clackamas River. In 2017, construction of five new major water facilities was completed in partnership with the City of Tigard to increase capacity of drinking water from the Clackamas River to Lake Oswego and Tigard. The

construction included a new river intake pump station in Gladstone, a water treatment plant in West Linn, a 3.5 MG reservoir in Lake Oswego, and a pump station in Tigard, as well as more than 10 miles of large diameter backbone piping. The new Lake Oswego-Tigard Water Partnership water service area includes a portion of the Stafford Urban Reserve in its plans for buildout. It is believed that, following these upgrades, there is sufficient supply, pumping, storage, and piping capacity to provide adequate service to existing development currently within the Lake Oswego's portion of the UGB.

The primary water source for City of West Linn is also the Clackamas River, provided by the South Fork Water Board (SFWB) water treatment plant in Oregon City that was upgraded in 2016. Emergency supply may also be available from the Lake Oswego Water Treatment Plant, though the SFWB plant is understood to be adequate to serve areas already in the UGB. The adjacent West Linn UGB areas are in the Horton, Rosemont, and Willamette Pressure Zones. It is believed that, under normal (non-emergency) conditions, existing storage and piping capacity is adequate to serve existing development, but it is not entirely clear from master plans whether these facilities, or the treatment plant, are sufficient to serve full UGB buildout.

b. Capacity of existing facilities to serve areas proposed for addition to the UGB

Both cities have previously indicated the ability to provide potable water to new development in the reserve, but it is not known just how much development in the reserve could be accommodated with existing treatment plant capacity. Transmission line, water storage, and pumping capacity may also be limited. Potential connection points exist at Laurel Street and Erickson Street, where access is made to the Bergis Reservoir for transmission. There is a 16-inch waterline in Rosemont Road that could be used to serve the reserve as well. Additional storage may need to be created in the reserve itself. A pump station at McVey and Oak Street is available, but will likely need expansion. There will be several pressure zones within the reserve and new water tanks may be needed to provide both adequate storage and pressure.

Only limited knowledge is available at this time regarding the amount of facility improvements that would be needed to serve urban development of the reserve. The full costs of these improvements can't yet be known so are not included in the below figures. The Borland Urban Reserve may need to precede urbanization of this reserve, as doing so would allow for location of water facilities and the related distribution network.

c. Impacts to existing facilities that serve nearby areas already inside the UGB

Additional treatment plant, storage, pumping, and distribution system capacity, as well as potentially urbanization of the adjacent Borland Urban Reserve, may be needed to serve urban development of the Stafford Urban Reserve while avoiding negative impacts to service to areas already inside the UGB.

d. Estimated water service-related costs for reserve development

Water piping, pumping, and storage costs	Cost
10-inch pipe	$0
12-inch pipe	$0
16-inch pipe	$35.5
Pumping	$0
Storage	$1.24 million
Total:	**$36.74 million**
Per dwelling unit at 20 units per net vacant buildable acre:	**$1,960**

Sanitary Sewer Services

With regard to sanitary sewer services, the Stafford Urban Reserve is given a "low" score in Attachment 3 for this Goal 14 boundary location factor, for the reasons detailed in (a)-(d) below.

a. Capacity of existing facilities to serve areas already inside the UGB

The City of Lake Oswego provides service to the adjacent areas inside the UGB to the north and west of the Stafford Urban Reserve, while the City of West Linn provides water service to the adjacent areas inside the UGB to the east of the reserve.

The cities send their sewer in different directions. Lake Oswego sends sewer to the City of Portland's facility at the Tryon Creek Wastewater Treatment Plant; there are no known major deficiencies with the plant's capacity to serve existing development already in the UGB. Based on topography, connection points to the City of Lake Oswego infrastructure would be in SW Childs Road in the Canal Basin and SW Stafford Road in the South Shore Basin. Lake Oswego's Wastewater Master Plan, as amended in 2020, identifies several deficiencies for the 25-year storm event under existing conditions; these deficiencies are all downstream of the likely points of connection, generally occur in large diameter trunk lines, and have associated improvement projects in the master plan to address them.

The serving West Linn is provided by the Tri-City Service District made up of West Linn, Oregon City, and Gladstone and is managed by Clackamas Water Environment Services (WES). Improvements are planned at the treatment plant, which will provide sufficient capacity to meet current UGB needs. The gravity sewer line downstream of the Johnson Pump Station, a likely connection point for Stafford Urban Reserve to the West Linn System, has two identified deficiencies, including system capacity issues that may cause backwatering in the collection system under existing and buildout conditions.

b. Capacity of existing facilities to serve areas proposed for addition to the UGB

Lake Oswego could potentially serve the reserve, but system upgrades and additions to facilities within the UGB may be necessary. Connection points to the system that might facilitate such service can be found at: Atherton Road near Stafford Road; Childs Road near SW 35th Court; and via the Bryant Road Pump Station at Bryant Road and Cardinal Drive. The City of West Linn has previously indicated that the wastewater treatment plant may need to be expanded in order to provide capacity for development in the Stafford Urban Reserve, and there is understood to be space for expansion at the treatment plant. An alternative to consider could be to construct a pre-treatment plant within the Stafford Urban Reserve itself. In addition, existing pump stations would likely require upgrades. Existing pipe capacities are not fully known and significant further analysis would be required to determine the extent of necessary trunk line upgrades. Trunk lines and pumps stations may need to be developed within the reserve itself. Considering topography, West Linn may be the logical provider of sewer services to the Stafford Urban Reserve, but sewer might need to flow through the Borland Urban Reserve to connect to the existing gravity line in Willamette Falls Drive; therefore, the Borland Urban Reserve may need to be added to the UGB and urbanized first.

c. Impacts to existing facilities that serve nearby areas already inside the UGB

As explained above, treatment plant improvements and pumping and piping capacity improvements could be needed to avoid negative impacts to service within the existing UGB. Potential treatment plant improvement costs and other system-wide costs are not included in the below figures.

d. Estimated sanitary sewer service-related costs for reserve development

Sanitary sewer piping and pumping costs	Cost
10-inch pipe	$1.29 million
12-inch pipe	$13.58 million
15-inch pipe	$0
Pump station	$1.80 million
Force mains	$1.86 million
Total:	**$18.53 million**
Per dwelling unit at 20 units per net vacant buildable acre:	**$989**

Stormwater Management Services

With regard to stormwater management services, the Stafford Urban Reserve is given a "medium" score in Attachment 3 for this Goal 14 boundary location factor, for the reasons detailed in (a)-(d) below.

a. Capacity of existing facilities to serve areas already inside the UGB

There is no indication of major capacity issues with existing stormwater facilities that serve the adjacent land inside the UGB. Based on topography, the majority of stormwater from development of the Stafford Urban Reserve would likely flow toward the Tualatin River and not need to connect to any existing infrastructure.

b. Capacity of existing facilities to serve areas proposed for addition to the UGB

Stormwater will likely mostly be conveyed, treated, and disposed of within the reserve and discharge to the Tualatin River, rather than connecting to existing facilities in the UGB.

c. Impacts to existing facilities that serve nearby areas already inside the UGB

As noted above, stormwater will likely mostly be conveyed, treated, and disposed of within the reserve and discharge to the Tualatin River, rather than connecting to existing facilities in the UGB. Therefore, no adverse impacts to existing facilities are anticipated.

d. Estimated stormwater service-related costs for reserve development

Stormwater piping and water quality/detention	Cost
18-inch pipe	$10.88 million
24-inch pipe	$0
30-inch pipe	$0
Water quality/dentition	$23.08 million
Total:	**$33.96 million**
Per dwelling unit at 20 units per net vacant buildable acre:	**$1,812**

Transportation Services

With regard to transportation services, the Stafford Urban Reserve is given a "low" score in Attachment 3 for this Goal 14 boundary location factor, for the reasons detailed in (a)-(e) below.

a. Capacity of existing facilities to serve areas already inside the UGB

Figure 4.36 in Chapter 4 of the 2023 Regional Transportation Plan (RTP) displays 2020 home-based vehicle miles traveled (VMT) per capita by Metro transportation analysis zone, with average VMT per capita considered 11.32. According to Figure 4.36, areas in the UGB adjacent to and near the Stafford Urban Reserve had above average and significantly above average home-based VMT per capita in 2020.

Metro's adopted 2040 Growth Concept Map designates a town center in the adjoining cities of Lake Oswego and West Linn. Town centers are meant to: serve populations of tens of thousands of people; offer more locally-focused retail uses and public amenities; and be well served by transit.

The 2040 Growth Concept Map's Lake Oswego Town Center includes Downtown Lake Oswego. The town center is approximately one mile from those areas in the UGB adjacent to the reserve. The town center includes multiple grocery stores, other retail commercial uses, school uses, child services, multifamily housing, and recreational uses. Growth in and near the town center will not necessarily cause a significant increase in home-based VMT per capita in the future, as area residents will be able to access some daily needs with relatively short trips.

Five TriMet bus routes serve Lake Oswego along the major roadways of the city, including Country Club Road, Boones Ferry Road, Kruse Way, Highway 43, and South Shore Boulevard. These bus routes connect the Lake Oswego Town Center to transit centers and downtown Portland. Figure 4.3 in Chapter 4 of the 2023 RTP shows gaps in the planned frequent service regional transit network along Highway 43, Iron Mountain Road, and McVey Avenue.

Lake Oswego has more than 10 miles of dedicated bike lanes and seven miles of established bikeways, though not all connect to other bike facilities which results in gaps in the system. While there are dedicated bike facilities along Country Club Road and a section of Highway 43 in the south of the city, the town center is generally not well served by bike facilities and Figure 4.5 in Chapter 4 of the 2023 RTP shows gaps in the planned regional bike network on Iron Mountain Road, South Shore Boulevard, SW Boones Ferry Road, and Highway 43 in the north of the city.

A significant portion of Lake Oswego's roads do not have sidewalks, including those in many residential areas in the UGB nearer to the reserve. There are sidewalks in the town center, as well as along a major portion of SW Boones Ferry Road. Figure 4.4 in Chapter 4 of the 2023 RTP shows gaps in the planned regional pedestrian network along McVey Avenue and South Shore Boulevard in the south of the city. The Kruse Way Trail, the Stafford Trail, and the William Stafford Pathway along the Willamette River provide some longer pedestrian connections, however.

West Linn's Willamette Town Center, which includes the Willamette Historic District, aligns with the 2040 Growth Concept Map as well. This town center area is approximately one mile from the east end of the reserve, and includes local retail commercial uses, medical facilities, school uses, police and fire stations, and some residential uses. Additionally, within a quarter mile of the reserve's east end is a grocery store, other retail commercial uses, banks, school uses, places of worship, a community center, medical services, multifamily housing, parks, and the West Linn City Hall. Growth in and near the town center and areas in the UGB near the reserve will not

necessarily cause a significant increase in home-based VMT per capita in the future, as area residents will be able to access some daily needs with relatively short trips.

Two TriMet bus lines serve West Linn, including Route 35, which runs along Willamette Drive, and Route 154, which runs along Willamette Falls Drive. They provide transit service to the Willamette Town Center and other portions of West Linn. Figure 4.3 in Chapter 4 of the 2023 RTP shows these existing routes as in the regional transportation network. There are currently no TriMet bus stops in the UGB within a mile of the reserve.

There are more than nine miles of dedicated bike lanes and five miles of bikeways in West Linn, including on portions of Blankenship Road and Willamette Falls Drive that help connect western ends of West Linn to the Willamette Town Center. Parker Road Rosemont Road, Salamo Road, and Santa Anita Drive, which are in the UGB near the reserve, all have dedicated bike lanes. Figure 4.5 in Chapter 4 of the 2023 RTP shows some existing bike facilities in West Linn, including those along Salamo Road, as in the regional bike network. However, there are gaps in the planned regional bike network in the city, such as along Willamette Falls Drive.

Large portions of West Linn are well served by sidewalks, especially in areas that have been developed more recently. There are sidewalks on the SW Borland Road bridge over the Tualatin River that join sidewalks on Brandon Plance and Dollar Street in the UGB that connect with the Fields Bridge Park, Athey Creek Middle School, and, eventually, the Willamette Town Center. The Willamette Falls Drive Streetscape Project improved pedestrian accessibility in the historic Willamette neighborhood. The Rosemont and Salamo Trails provide pedestrian connection routes along Rosemont Road and Salamo Road and that tie the lower and upper portions of West Linn together on the west side. There are also sidewalks along Bay Meadows Drive, Furlong Drive, Hidden Springs Road, Hoodview Avenue, Noble Lane, and Santa Anita Drive in the UGB near the reserve connecting to schools, commercial and civic uses, residential areas, and parks. Figure 4.4 in Chapter 4 of the 2023 RTP shows that there are some gaps in the planned regional pedestrian network in West Linn.

There are no high injury corridors or high injury intersections in wither Lake Oswego's or West Linn's portions of the UGB identified on Figure 4.14 in Chapter 4 of the 2023 RTP.

The section of I-205 that crosses through the UGB near the reserve is identified as a throughway in Chapter 4, Figure 4.7 of the 2023 RTP. Figure 4.8 of the chapter indicates that the interstate section currently meets travel speed reliability performance thresholds, with no more than four hours per day when travel speeds fall below the identified minimum speed. RTP models indicate this reliability will continue at least to the year 2045.

b. Capacity of existing facilities to serve areas proposed for addition to the UGB

The SW Stafford Road interchange with I-205 is less than a mile from the reserve to the southwest, on the other side of the Tualatin River. There is also an interchange at 10th Street, nearly two miles away via Salamo Road. The section of I-205 near the reserve connecting Tualatin and West Linn is expected to continue to meet RTP travel speed reliability performance thresholds at least to the year 2045.

The Lake Oswego Town Center is roughly a mile from the north end of the reserve. There is a grocery store on McVey Avenue that is closer to the north end of the reserve, but few other commercial uses in this area to mee the daily needs of future residents of the reserve's north. The areas of the UGB to the north and west of the reserve are generally characterized by low density residential development with incomplete sidewalks and no bike facilities. The Stafford Trail and marked crosswalks on SW Stafford Road at Atheron Drive do provide some pedestrian connections to the west of the reserve and there are about a quarter mile of designated bike facilities on SW Stafford Road leading to the other side of the Tualatin River.

The Willamette Town Center is just over a mile from the east end of the reserve but, as noted above, there are closer areas with commercial uses, civic and school uses, medical service, parks, and places of worship where future residents of the reserve's east end could access daily needs without traveling a long distance (i.e., without increasing home-based VMT per capita). Indeed, Trillium Creek Primary School, Rosemont Ridge Middle School, and the West Linn Adult Community Center are within a quarter mile of the reserve's east end. As detailed below, these uses are already connected to the reserve by designated bike facilities and sidewalks, which reduces the need for future residents of the reserve's east to rely on private motor vehicle transportation to access them.

There is currently no transit service near to the reserve and the vast majority of the reserve is two or three miles from a bus route. There is a bus stop on Willamette Drive, about 1.5 miles away from the east edge of the reserve via Santa Anita Drive and Pimlico Drive. TriMet Route 36, which runs along South Shore Boulevard in Lake Oswego, is approximately one mile from the north of the reserve via SW Stafford Road. However, as explained below, TriMet has plans to provide hourly service along Rosemont Road sometime in the future.

In the meantime, there are dedicated bike facilities on Rosemont Road and Salamo Road adjacent to the reserve's east. These roads, as well as almost all of the nearby neighborhood streets, also have sidewalks and the Rosemont Trail along Rosemont Road provides access to the east end of the reserve. Past the nearby neighborhoods, there are some gaps in sidewalks or pedestrian facilities along the major streets that limits pedestrian movement.

As explained in response to Factor 1, the reserve is unlikely to efficiently accommodate employment uses. Therefore, without robust transit service, and considering the lack of existing commercial uses and bike and pedestrian facilities near to the reserve's west and north, future residents of the reserve are likely to be reliant on private motor vehicle traffic to meet their daily needs.

c. Impacts to existing facilities that serve nearby areas already inside the UGB

Hidden Springs Road, Parker Road, Rosemont Road, Salamo Road, Santa Anita Drive, SW Bergis Road, SW Johnson Road, SW Stafford Road, and SW Sweetbriar Road would see additional private motor vehicle traffic as a result of urbanization of the reserve. The existing bike and pedestrian facilities adjacent to the east end of the reserve, future transit service along Rosemont Road, and the close proximity of schools, civic and commercial uses, medical facilities, parks, and places of worship could help to minimize that additional roadway traffic on some roadways but, as noted above, future residents of the reserve are likely to be reliant on private motor vehicle traffic to meet their daily needs. Nonetheless, because future residents of the reserve would be able to use roadways other than I-205 to access these uses/services, development of the relatively small reserve is not expected to cause I-205 to no longer meet throughway reliability thresholds.

d. Need for major transportation facility improvements and associated costs

To serve urban development, the following will likely need to be improved to urban arterial standards, including with acquisition of additional right-of-way: a 1.28-mile section of SW Stafford Road; a 2.14-mile section S Rosemont Road; a 0.37-mile section of SW Johnson Road; a 0.36-mile section of SE Long Farm Road; a 0.36-mile section of S Sunshine Lane; and a 0.34-mile section of S Station Lane. Of the S Rosemont Road section improvements, approximately 0.28 miles are considered half-street improvements for the purposes of this analysis, as the other half of the roadway section is inside the UGB. One new 0.14-mile arterial is assumed to be needed to connect SW Long Farm Road to S Sunshine Lane. The following will likely need to be improved to urban collector standards, including with acquisition of additional right-of-way: a 0.66-mile section of S Bergis Road; a 0.41-mile section of S Whitten Road; a 1.83-mile section of S Sweetbriar Road; a 0.7-mile section of S Clematis Road; a 1.25-mile section of S Wisteria Road; and a 2.31-mile section of SW Johnson Road. Two new collectors are expected to be needed, one 0.85-mile collector between SW Johnson Road and S Sweetbriar Road and a 0.44-mile collector between S Whitten Lane and S Bergis Road. Some of these new and improved roadways will need to traverse areas of steeper topography and water bodies, leading to higher-than-normal per-mile costs.

Facilities	Cost
Arterials, existing/improved full street	$283.71 million
Arterials, existing/improved half street	$8.59 million
Arterials, new	$12.26 million
Collectors, existing/improved full street	$268.26 million
Collectors, existing/improved half street	$0
Collectors, new	$58.28 million
Total:	**$631.10 million**
Per dwelling unit at 20 units per net vacant buildable acre:	**$33,673**

e. Provision of public transit service

TriMet evaluated the reserve for providing transit service. TriMet could provide services to the reserve, although there is no guarantee of service; actual service will depend on the level of development in, and in the corridors leading to, the reserve. Future service is proposed in TriMet's 2045 Network Vision and would bring service through the northern portion of the reserve along Rosemont Road. Service could be provided at 60-minute headways for all day service, five days per week.

Prior to land being included in the UGB, a more detailed concept plan, consistent with the requirements of Metro's Urban Growth Management Functional Plan Title 11, will be required. This concept plan process will develop more refined public facility and service needs and cost estimates.

Factor 3: Comparative environmental, social, energy, and economic consequences

Environmental consequences

There are seven stream corridors that flow south through the Stafford Urban Reserve and ultimately drain into the Tualatin River.

One stream flows along the western edge of the reserve for 1,370 feet through five rural residential properties. The stream includes a wooded riparian canopy with slopes greater than 25 percent and there is riparian and some upland habitat identified along the stream corridor. The portion of the reserve where this stream joins the Tualatin River is within the "100-year" floodplain. The increased protection levels for streams, wetlands, steep slopes, and habitat areas for areas added to the UGB will help to limit potential impacts from urbanization. Considering the relatively small size of tax lots in this area, and the fact that they abut existing residences in Lake Oswego and thereby will be less likely to have new urban road connections with development of the reserve, any impacts on the stream corridor and habitat areas in this area from reserve development could be comparatively minor.

Pecan Creek flows through the western portion of the reserve as well, for 1.2 miles west of SW Stafford Road and SW Pattulo Way. Over 3,000 feet of the creek flows through land

either owned by Metro and committed as open space, by the City of Lake Oswego for use as park land, or by Portland General Electric; these lands are unlikely to be developed with urban uses that could significantly impact the natural environment. Other lengths of the creek flow along the back edges of rural residential tax lots that are generally wooded. A significant portion of lower Pecan Creek is adjacent to steep slopes and there is riparian and upland habitat identified along the stream corridor. The area where Pecan Creek joins the Tualatin River is within the "100-year" floodplain. There are two tributaries to Pecan Creek, totaling 3,600 feet in length, that primarily flow along the wooded edges of residential tax lots as well. The western tributary runs mainly through an area where the slopes are greater than 25 percent and that topography reduces opportunities for development. In addition, an 850-foot portion of the northern tributary runs through land owned by the City of Lake Oswego. The two tributaries also have adjacent riparian and upland habitat identified along the corridors. Considering the increased protection levels for streams, steep slopes, and habitat areas in areas added to the UGB, and the fact that significant portions of the streams are on publicly owned land that is unlikely to see significant amounts of urban development, impacts to Pecan Creek and its tributaries from future urbanization of the reserve would be minor.

A small stream flows south through the Shadow Wood Park neighborhood on the east side of SW Stafford Road for approximately 2,900 feet. A significant portion of the stream flows through Clackamas County owned land, Shadow Park Homeowners Association land, or platted street right-of-way that is not constructed. This stream corridor also contains slopes greater than 25 percent, where development is unlikely. The northern portion of the stream is within a very large tax lot that could very well be developed in the future and would be susceptible to impacts from that urbanization. There is riparian and upland habitat identified along the stream corridor and "100-year" floodplain where the stream meets the Tualatin River. Nonetheless, when again considering the increased protection levels for streams, steep slopes, and habitat areas inside the UGB, as well as public and homeowners association ownership of certain lands, urbanization in this area can occur without major impacts to this stream, except for that length north of SW Johnson Road, which could see moderate impacts, depending on the design of the future urban development.

Wilson Creek flows south through the central portion of the reserve for approximately 2.3 miles before draining into the Tualatin River. A 0.88-acre wetland identified on the National Wetland Inventory (NWI) is located at the headwaters of the stream and "100-year" floodplain is identified where the stream meets the Tualatin River. Almost the entire length of the stream flows through forested portions of tax lots that either contain rural residences or are vacant. Approximately 4,520 feet of Wilson Creek is on land owned by the City of Lake Oswego or Metro or is private open space land. There are slopes greater than 25 percent along the stream corridor, mostly occurring on the Metro or private open space land. The entire length of the Wilson Creek corridor has been identified as riparian habitat with numerous locations of upland habitat also identified. In several locations, the stream is located such that urbanization of the area would not impact the stream corridor; however, there are a few large vacant tax lots where impacts could occur if the area was developed to

urban densities and standard transportation connections are made. There are five tributaries to Wilson Creek that range in length from 1,200 feet to just over one mile and total 3.1 miles in length. A 0.35-acre wetland identified on the NWI is located along one stream and numerous ponds not identified as wetlands are also present. The smallest tributary is located on private open space and a portion of another tributary is on Metro-owned land. About half of the stream corridors flow through forested areas with the remaining half in open fields. Riparian habitat is identified along the stream corridors with some upland habitat identified in areas that are forested. There are significant stretches where the streams could be impacted by future development, though the extent of the impact will depend on the need for transportation connections to serve future urban development. Considering the increased protection levels for streams and habitat areas on land inside the UGB, public ownership of lands in the area, and the private open space land, there will be some protections from impacts of urbanization on the stream corridors. However, as Wilson Creek runs lengthwise through the center of the reserve and its tributaries spread out mainly to the east through some large vacant and developable tax lots, the opportunity for impacts to the stream and habitat areas from urbanization, especially through needed transportation connections, is significant.

Another stream flows south from the S Sweetbriar Road area for approximately 1.3 miles before draining into the Tualatin River near where I-205 crosses the river. About 2,500 feet of the stream flows through private open space land, with the remaining portion flowing along forested sections of rural residential tax lots. There are slopes greater than 25 percent along a significant length of the stream and riparian and upland habitat is identified along the entire length of the stream. Under these conditions, and again considering the increased protection level for streams, habitat areas, and steep slopes for land inside the UGB, urbanization could occur with minimal impacts to the stream corridor.

The sixth stream flows south from the S Clematis Road area for approximately 1.3 miles before draining into the Tualatin River near SW Johnson Road. The stream flows between S Grapevine Road and S Wisteria Road, along the back edges of the rural residential tax lots that front onto the two roads. A significant portion of the stream is within a forested ravine and riparian and upland habitat is identified along its entire length. A small second stream that flows from the I-205 area appears to meet this stream at the Tualatin River. This stream is piped in some locations and has four wetlands identified on the NWI that are located in the general area. In addition, there is a considerable area of “100-year” floodplain where the streams meet the Tualatin River. Given the location of the stream between the tax lots described above, the presence of steep slopes, and the increased protection level for riparian and upland habitat, wetlands, and floodplain inside the UGB, urbanization could occur with minimal impacts to the stream corridors.

Finally, the seventh stream flows south from the S Brandywine Drive area for just over one mile before flowing into the City of West Linn and draining into the Tualatin River. Roughly half of the stream flows through vacant forested tax lots that have some large areas of slopes greater than 25 percent. The remainder of the stream is located on the back portion

of rural residential properties. Similar to the other streams mentioned above, there is riparian and upland habitat identified along the stream corridor. The steep slopes and habitat areas on the vacant tax lots will limit the amount of development that can occur, thereby reducing the impacts of urbanization on the stream and habitat areas. In addition, the rural residential properties contain high value homes that will also deter future redevelopment of those properties further reducing opportunities for urbanization to no impact this stream corridor.

This analysis finds that urbanization of the reserve could occur with moderate or high impacts to the streams, wetlands, and habitat areas, depending on the overall design of the development and, most importantly, on future road connections.

Considering the comparative environmental consequences of urbanization, the Stafford Urban Reserve is given a "low" score in Attachment 3 for this Goal 14 boundary location sub-factor.

Social, energy, and economic consequences

It is expected that urbanization of the Stafford Urban Reserve would, over time, result in new housing replacing some existing rural residences, which could contribute to a loss of sense of place. However, given the amount of existing rural development, including a large number of high-value homes, and levels of parcelization, urbanization of more developed areas will be slow and piecemeal. Other lands in the reserve are in public ownership or constrained by steep slopes, stream corridors, and habitat areas; these dynamics can act to limit and also isolate new urban development. More immediately developable areas are closer to the current UGB and existing development, where urbanization may have less of a dramatic effect on sense of place character of the area. Large and relatively flat agricultural lands may be able to accommodate more significant urban development that could degrade the rural lifestyle for nearby residents.

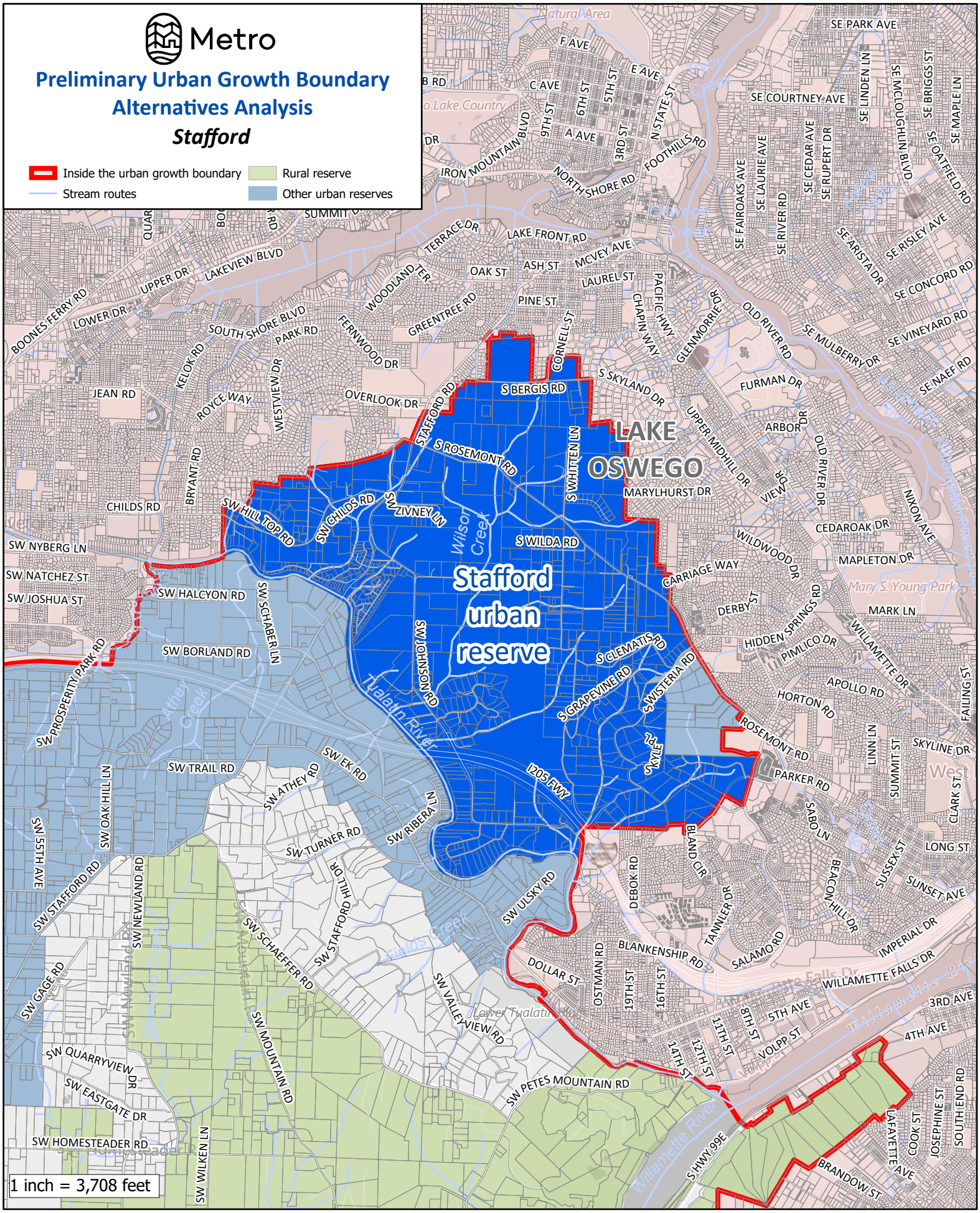
As detailed more fully in response to Factor 2, future residents of the reserve are expected to be particularly reliant on private motor vehicle transportation, which could have some adverse energy consequences.

There are large tracts of agricultural land in the reserve, particularly along SW Johnson Road and Rosemont Road and east of SW Stafford Road. Much of these lands are for field crops and pastureland, though there are some large vineyards and nursery operations. The City of Lake Oswego owns Luscher Farm and operates it as a park; this property, while in agricultural use, is not likely to urbanize. There would be adverse economic consequences from loss in farming activity with urbanization of the other agricultural lands, though these losses may be outweighed by the economic benefits of urban development.

This analysis finds that there would be comparatively moderate social, energy, and economic consequences from urbanization of this reserve. The Stafford Urban Reserve is given a "medium" score in Attachment 3 for this Goal 14 boundary location sub-factor.

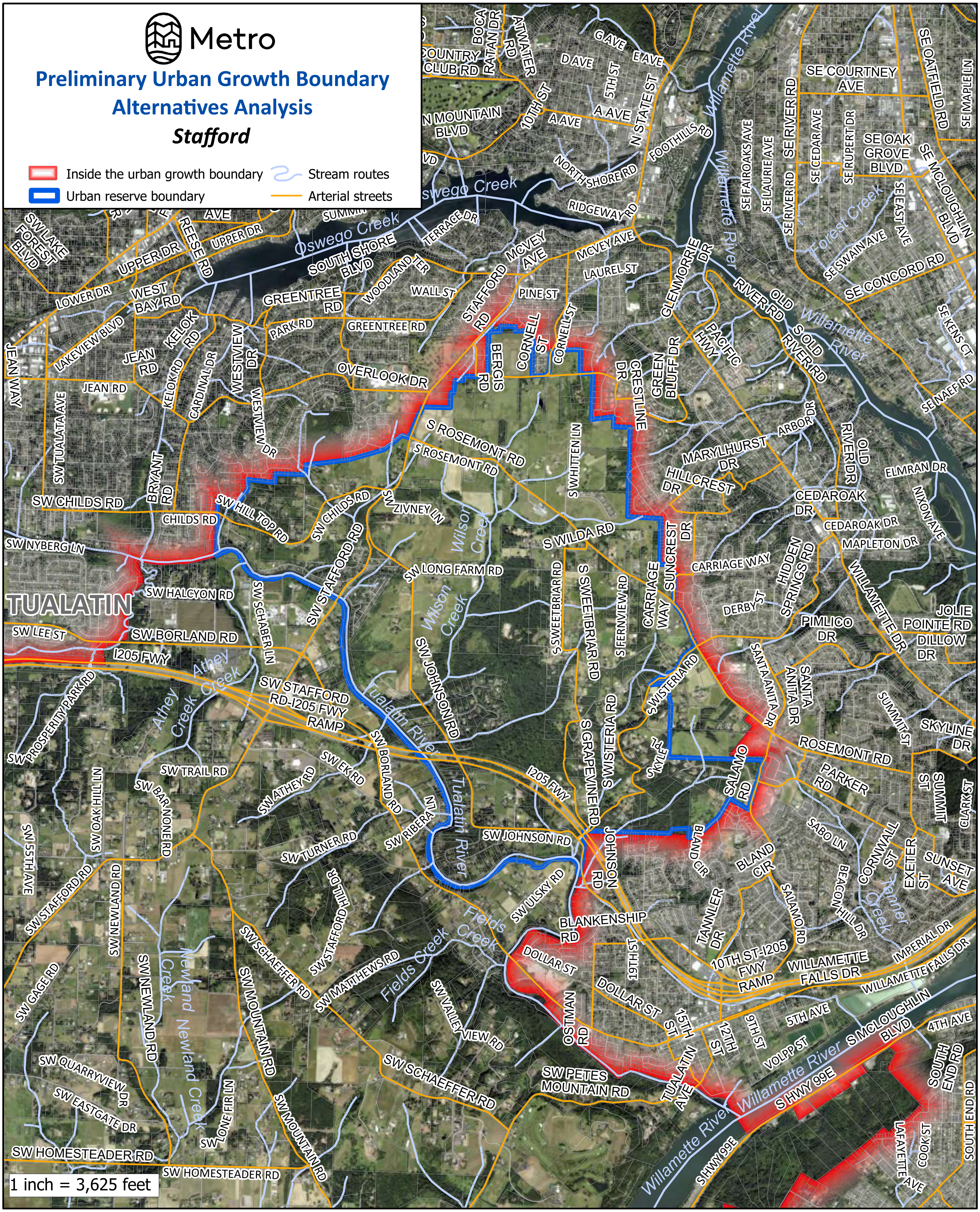
Factor 4: Compatibility of the proposed urban uses with nearby agricultural and forest activities occurring on farm and forest land outside the UGB

There are no locations where lands outside the UGB but contiguous with the Stafford Urban Reserve have Goal 3 or 4 resource land zoning for agricultural or forest activities. Therefore, the proposed urban uses are considered to have high compatibility with the nearby agricultural and forest activities occurring on farm and forest land. The Stafford Urban Reserve is given a "high" score in Attachment 3 for this Goal 14 boundary location factor.



Preliminary Urban Growth Boundary Alternatives Analysis

Stafford



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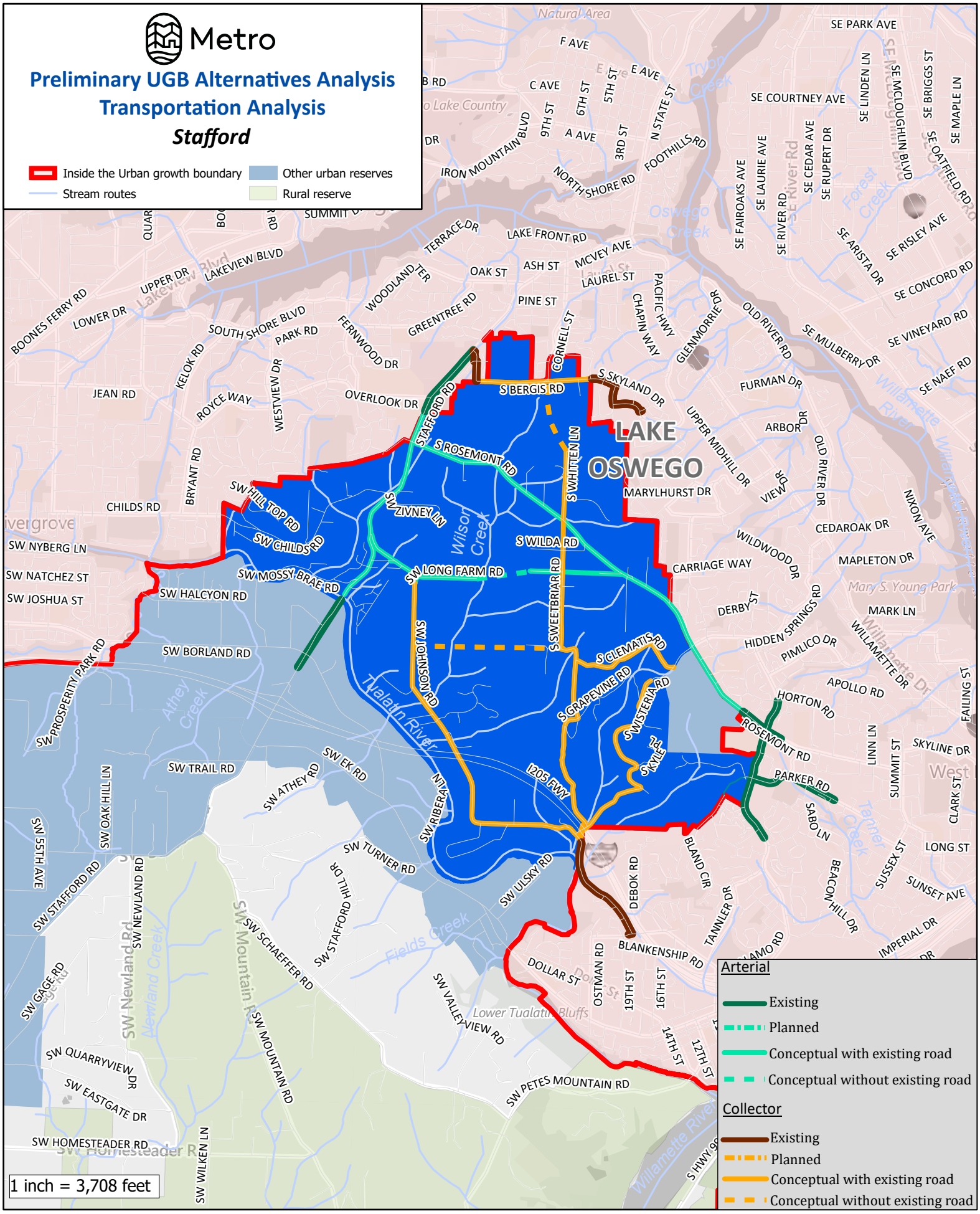

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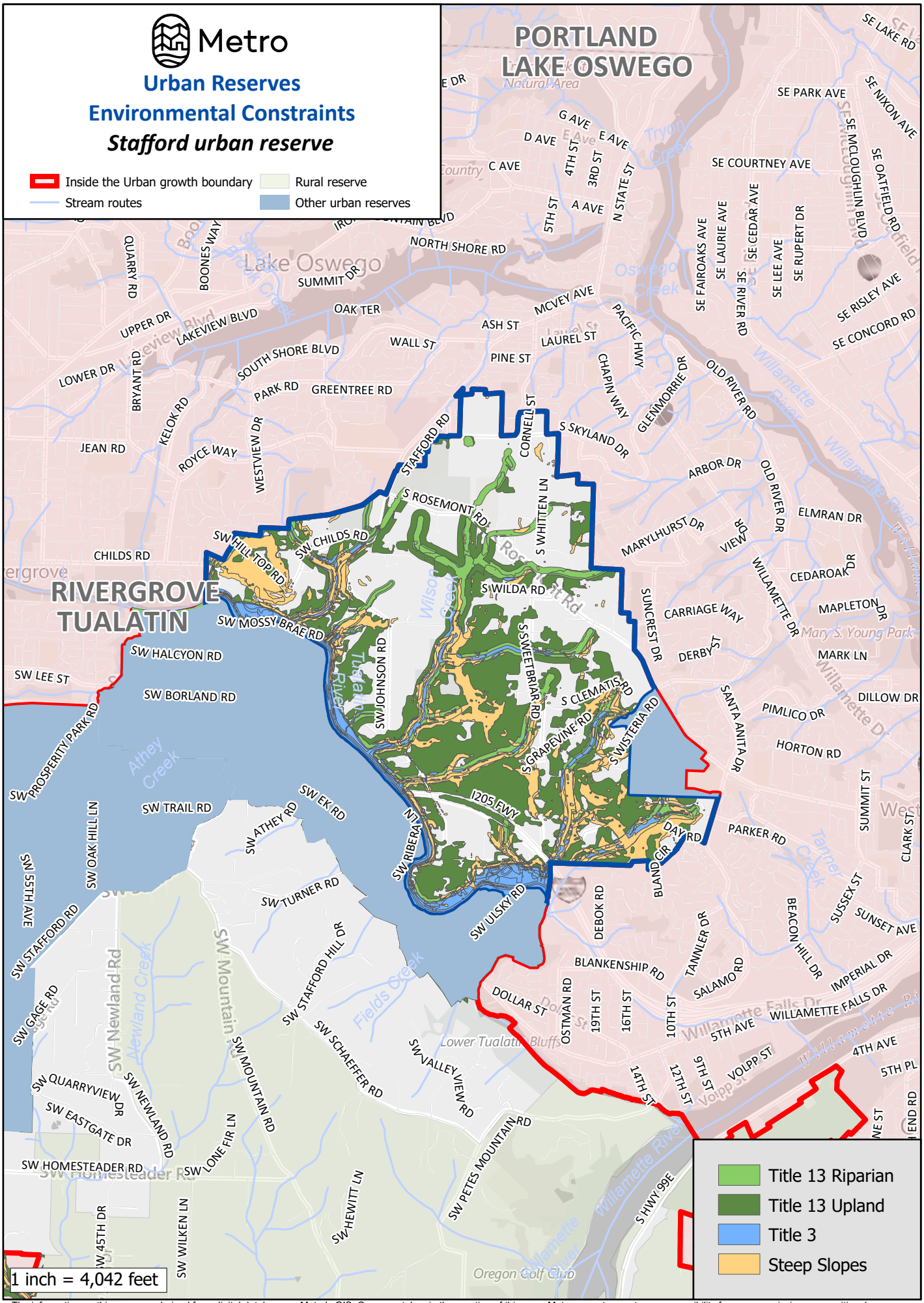

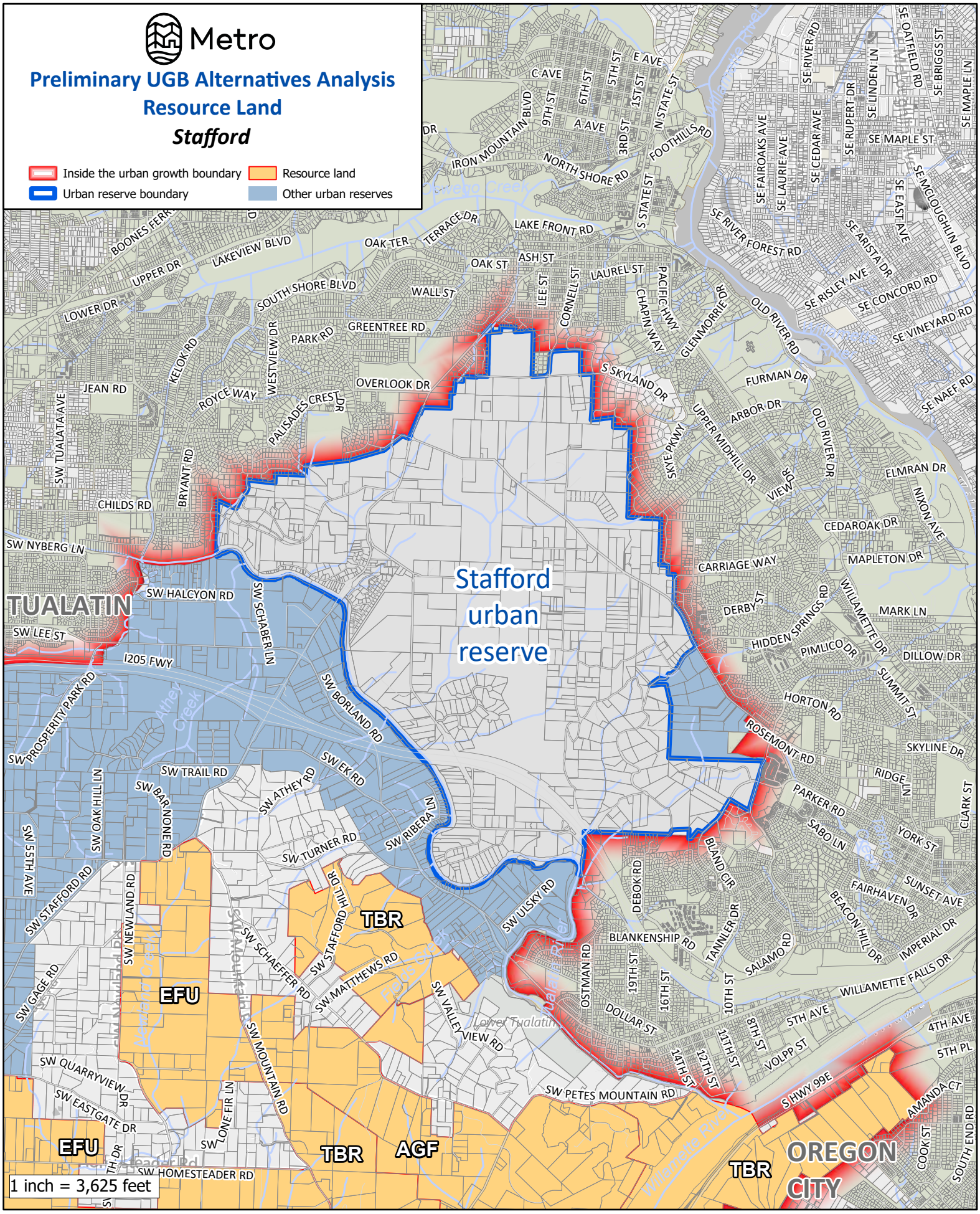

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TONQUIN URBAN RESERVE

Total Reserve Area	572 acres
Total Tax Lot Area in Reserve (without Right-of-Way)	560 acres
Gross Vacant Buildable Area	168 acres
Net Vacant Buildable Area	**125 acres**

The Tonquin Urban Reserve is adjacent to the east side of the City of Sherwood, and about a quarter mile from the city limits of Tualatin and Wilsonville. The UGB generally forms the northern, western, and eastern edge of the reserve, with undesignated and rural reserve lands to the south. SW Tonquin Road runs from the reserve's northwest corner to its east and divides the reserve in to two roughly equal areas. On the west side of the road, Rock Creek flows from the south of the reserve to the northwest on its way to the Tualatin River.

GOAL 14 BOUNDARY LOCATION FACTORS

Factor 1: Efficient accommodation of identified land needs

The Tonquin Urban Reserve is comprised of 31 contiguous tax lots, all but three of which are entirely within the reserve. Of those tax lots entirely within the reserve, only five are less than two acres each, 19 are greater than five acres each, eight are larger than 20 acres each, and one is more than 160 acres. The three tax lots only partially within the reserve have area within the reserve ranging from less than one acre to nearly 60 acres. The combined tax lot area within the reserve is approximately 560 acres. As noted above, the entire reserve contains 168 gross vacant buildable acres and 126 net vacant buildable acres.

Significant portions of the reserve are occupied by quarry sites. A firearm training facility, a gun club shooting range, a 19-acre fire department facility, and a kennel also occupy sizeable portions of the other lands in the reserve. The federal government owns more than 60 acres in the reserve, which are part of the Rock Creek Unit of the Tualatin River National Wildlife Refuge, and Metro owns a 3,500-square-foot tax lot in the reserve that serves as an access to the adjacent North Coffee Lake Creek Wetlands area. Aerial imagery suggests there are few rural residences in the south end of the reserve. Overall, 12 of the tax lots that are wholly or partially in the reserve have assessed improvements, with the median assessed value of those tax lots' improvements exceeding $250,000.

The west side of the reserve neighbors existing and developing urban low density residential development, with an urban local street, SW McKinley Drive, stubbing to this west side. The north end and east side of the reserve neighbor existing and developing industrial uses, powerlines, and quarry sites.

Hawks View Elementary School, St Francis Catholic School, and commercial retail uses in the Sherwood Town Center are all within two miles of the north end of the reserve via SW Tonquin Rd, SW Oregon St, and SW Sherwood Boulevard.

An interchange with I-5 is approximately two miles from the south end of the reserve via SW Tonquin Rd, Basalt Creek Parkway, SW Day Road, and SW Elligsen Road. Highway 99W is also about two miles away from the north end of the reserve via SW Tonquin Road, SW Oregon Street, SW Langer Farms Parkway, and SW Tualatin-Sherwood Road. TriMet Route 97 has bus stops about 1.5 miles to the north of the reserve on SW Tualatin Sherwood Road.

The existing land uses and ownership patterns of the reserve constrain its ability to efficiently accommodate new urban land needs. As noted above, a significant portion of the area is currently being used for quarry operations and once a quarry is no longer being mined, a reclamation plan must be implemented. Thus, any re-use of the quarry areas will be well in the future, possibly even beyond the 20-year timeframe for this analysis. The area also contains a large amount of natural resources that greatly reduce the ability to accommodate a significant amount of residential or employment land need. The Ice Age Tonquin Trail is planned to bisect the area diagonally connecting Sherwood with both Tualatin and Wilsonville.

Nonetheless, the reserve has a few sizable undeveloped tax lots, is near to both existing residential and employment land uses, schools, and commercial uses, and is within relatively close proximity to two highways (I-5 and Highway 99W). This reserve is considered able accommodate a very limited amount of residential and employment land needs.

Factor 2: Orderly and economic provision of public facilities and services

Water Services

With regard to water services, the Tonquin Urban Reserve is given a "low" score in Attachment 3 for this Goal 14 boundary location factor, for the reasons detailed in (a)-(d) below.

a. Capacity of existing facilities to serve areas already inside the UGB

Adjacent lands inside the UGB are provided with water service by the City of Sherwood. Sherwood obtains the majority of its water supply from the Willamette River Water Treatment Plant (WRWTP) in the City of Wilsonville, with the remainder coming from four groundwater wells in city limits. Sherwood also maintains an emergency connection and transmission piping to a supply main serving Tualatin from Portland. Sherwood's water distribution system includes three service zones served by three storage reservoirs and two pumping stations. The majority of Sherwood customers are served from the 380 Pressure Zone, which is supplied by gravity from the city's Sunset Reservoirs. The 535 Pressure Zone serves the area around the Sunset Reservoirs, supplied with constant pressure by the Sunset Pump Station, while the 455 Pressure Zone serves higher elevation customers on the city's western edge by gravity from the Kruger Reservoir. The Tonquin Urban Reserve would likely become part of the 380 Pressure Zone.

Supply, storage, pumping, and distribution piping are considered sufficient to meet maximum daily demand of current development within the city's portion of the UGB;

however, according to the city's 2015 Water System Master Plan, additional supply and storage capacity may be needed for full buildout. Efforts, including capital improvement projects, are planned to increase treatment plant capacity to satisfy buildout demand. No pump stations are currently needed to serve the 380 Pressure Zone. Very few distribution deficiencies are identified in the Master Plan for either existing or buildout maximum daily demand (MDD) conditions and no additional deficiencies are identified in the Plan under peak hour demand conditions.

b. Capacity of existing facilities to serve areas proposed for addition to the UGB

Full buildout of the existing UGB and development of Tonquin Urban Reserve could warrant the planned treatment plant improvements in order for the reserve to be provided with adequate water service. Additional storage capacity is also likely needed. There is currently no water main connected to the reserve, so one will need to be extended to it, likely through the adjacent, but as yet underdeveloped, Tonquin Employment Area (TEA). Potential treatment system improvement costs, water main extension costs, and the full costs of new storage facilities also serving areas already inside the UGB are unknown and not included in the below figures. However, given the size of the Tonquin Urban Reserve, they are presumed to be significant. The city's 2015 Water System Master Plan does not address urban water service to this reserve.

c. Impacts to existing facilities that serve nearby areas already inside the UGB

As noted above, additional treatment plant and storage capacity may be needed to serve full buildout of the UGB as well as new development in the Tonquin Urban Reserve, while avoiding adverse impacts to existing facilities in areas already inside the UGB.

d. Estimated water service-related costs for reserve development

Water piping, pumping, and storage costs	Cost
10-inch pipe	$5.29 million
12-inch pipe	$0
16-inch pipe	$0
Pumping	$0
Storage	$0.16 million
Total:	**$5.45 million**
Per dwelling unit at 20 units per net vacant buildable acre:	**$2,174**

Sanitary Sewer Services

With regard to sanitary sewer services, the Tonquin Urban Reserve is given a "low" score in Attachment 3 for this Goal 14 boundary location factor, for the reasons detailed in (a)-(d) below.

a. Capacity of existing facilities to serve areas already inside the UGB

The City of Sherwood and Clean Water Services (CWS) together provide sanitary sewer services in adjacent areas already in the UGB. Two CWS sanitary sewer trunk lines connect to the local, city-maintained components of the system, including the 24-inch "Sherwood Trunk", which conveys sewage from the Cedar Creek sewage collection basin, and the 18-inch "Rock Creek Trunk", which conveys sewage from the Rock Creek sewage collection basin, to a CWS-owned pump station. Sewage is then directed to the Durham Advanced Wastewater Treatment Plant via the Upper Tualatin Interceptor, also owned by CWS.

The City of Sherwood updated its Sanitary Sewer Master Plan in 2016. The Master Plan includes areas within the City of Sherwood city limits, as well as the TEA and the Brookman Addition, which are within the UGB. The Master Plan indicates that there is sufficient conveyance, pump station, and treatment plant capacity for existing development in areas already inside the UGB. However, at full buildout of the UGB, there may be deficiencies with the Sherwood and Rock Creek Trunk Lines, the Sherwood Pump Station, and the Upper Tualatin Interceptor. The city and CWS both have capital improvement projects planned to address these capacity issues. Responsibility for upsizing the Sherwood and Rock Creek Trunk Lines may be shared between city and CWS.

b. Capacity of existing facilities to serve areas proposed for addition to the UGB

The city's 2016 Sanitary Sewer Master Plan does not plan for urban development of the Tonquin Urban Reserve, so information on the existing system's capacity to serve the reserve is limited. However, given the size of the reserve, it is possible that the existing treatment plant would be insufficient to serve both full buildout of the current UGB and development of the reserve. Trunk line and pumping capacity are also likely insufficient. Currently, sewer service does not extend to the reserve, and a sewer line would need to be constructed through the TEA inside the UGB to serve the reserve's development. New lines will also need to be extended throughout the reserve. Costs associated with increasing the capacity of the treatment plant, as well as sewer lines and pumping systems outside the reserve, to levels necessary to serve both full buildout of the current UGB and the reserve are unknown and are not included in the below figures. However, those costs are likely to be significant.

c. Impacts to existing facilities that serve nearby areas already inside the UGB

The treatment system, sewer line, and pumping system improvements noted above are likely needed in order to avoid adverse impacts to service to areas already inside the UGB.

d. Estimated sanitary sewer service-related costs for reserve development

Sanitary sewer piping and pumping costs	Cost
10-inch pipe	$7.65 million
12-inch pipe	$0
15-inch pipe	$0
Pump station	$0.54 million
Force mains	$1.55 million
Total:	**$9.74 million**
Per dwelling unit at 20 units per net vacant buildable acre:	**$3,885**

Stormwater Management Services

With regard to stormwater management services, the Tonquin Urban Reserve is given a "medium" score in Attachment 3 for this Goal 14 boundary location factor, for the reasons detailed in (a)-(d) below.

a. Capacity of existing facilities to serve areas already inside the UGB

The City of Sherwood's 2016 Stormwater Master Plan states that, overall, the existing stormwater network for areas inside the UGB is in good condition, though there are some isolated deficiencies. There is no indication of significant challenges with existing stormwater management facilities being able to serve existing development specifically in areas of the UGB adjacent to the reserve.

b. Capacity of existing facilities to serve areas proposed for addition to the UGB

Based on topography, stormwater from development of the reserve could likely outfall directly to Rock Creek and its tributaries. Per CWS and City of Sherwood stormwater standards for new development, water quality and quantity should be provided on private property before outfalling to these water bodies; therefore, the existing facilities would not be impacted by the development of the reserve.

c. Impacts to existing facilities that serve nearby areas already inside the UGB

As noted above, stormwater related to new development in the reserve could likely outfall directly to Rock Creek and its tributaries, without connecting to other existing stormwater infrastructure. Therefore, no adverse impacts to existing facilities serving areas already inside the UGB are anticipated. It is also expected that stormwater will be treated and detained onsite, thereby limiting impacts to these water bodies.

d. Estimated stormwater service-related costs for reserve development

Stormwater piping and water quality/detention	Cost
18-inch pipe	$1.16 million
24-inch pipe	$1.66 million
30-inch pipe	$0
Water quality/dentition	$4.23 million
Total:	**$7.05 million**
Per dwelling unit at 20 units per net vacant buildable acre:	**$2,812**

Transportation Services

With regard to transportation services, the Tonquin Urban Reserve is given a "low" score in Attachment 3 for this Goal 14 boundary location factor, for the reasons detailed in (a)-(e) below.

a. Capacity of existing facilities to serve areas already inside the UGB

Figure 4.36 in Chapter 4 of the 2023 Regional Transportation Plan (RTP) displays 2020 home-based VMT per capita by Metro transportation analysis zone, with average VMT considered 11.32. According to Figure 4.36 in Chapter 4, areas in the UGB adjacent to the Tonquin Urban Reserve had average and above average home-based VMT per capita in 2020.

Metro's 2040 Growth Concept Map designates a town center in the adjoining City of Sherwood. Town centers are meant to: serve populations of tens of thousands of people; offer more locally-focused retail uses and public amenities; and be well served by transit. The Langer Drive Commercial District of the City of Sherwood's 2013 "Sherwood Town Center Plan" generally aligns with the geography of the town center area on the Growth Concept Map. The Langer Drive Commercial District is envisioned as a walkable and active shopping district complete with more pedestrian-oriented buildings. Metro's 2017 State of the Centers Atlas showed that, in the area of the Langer Drive Commercial District, there was a very high jobs-to-housing ratio and a very low number of dwelling units per acre compared to other town centers in the region. According to aerial imagery, much of the area is already built out with commercial retail uses, including a grocery store, restaurants, and medical/dental offices, though there are numerous parking lots that may be able to accommodate redevelopment. Near to the Langer Drive Commercial District is a police station, the Sherwood Ice Arena, and other public/quasi-public land uses, as well as some undeveloped and underdeveloped tax lots. Sherwood is served by TriMet Route 94, which runs along Highway 99W, and Route 97, which runs along SW Tualatin-Sherwood Road; both routes include stops at the town center. The town center plan, its existing land uses and transit service, and some availability for new

development in and near the town center demonstrate that growth in the current UGB will not necessarily cause a significant increase in home-based VMT per capita in the future. However, areas already in the UGB and adjacent to the Tonquin Urban Reserve are more than a mile from the town center.

As noted above, TriMet Routes 94 and 97 both serve areas already in the UGB in the adjacent City of Sherwood. Currently, however, those routes only connect to the northern and central portions of the city and not to the city's south and west. Figure 4.3 in Chapter 4 of the 2023 RTP also shows a gap in planned "frequent transit service" in Sherwood's portion of regional transit network.

Multiple TriMet bus routes and the Westside Express Service (WES) Commuter Rail also serve the nearby City of Tualatin. These routes are spread out along the major roadways, including Highway 99W, SW Tualatin-Sherwood Road, and SW Boones Ferry Road, providing service to the Tualatin Town Center and nearby employment and residential areas.

Sherwood has more than 10 miles of dedicated bike lanes and established bikeways, including along major roadways, that connect with some other bike-friendly streets, as well as residential and employment uses, schools, and the town center. However, there are gaps in bike facility connections to some of the residential areas south of the railroad. Figure 4.5 in Chapter 4 of the 2023 RTP identifies bike facilities along Highway 99W and SW Tualatin-Sherwood Road as in the regional on-street bike network and facilities in the central portion of the city as in the regional off-street bike network, though there is a short network gap along SW Tualatin-Sherwood Road west of the highway and other gaps in the west, east, and south of the city, including along SW Tonquin Road in the UGB near Tonquin Urban Reserve.

Tualatin has around 25 miles of dedicated bike lanes, seven miles of established bikeways, and local trails that connect the employment areas and Tualatin Town Center to the Tualatin's residential areas. There are two bike lane connections across I-5 to provide access to the eastern portion of the city.

Most developed neighborhoods in Sherwood, including its town center, have sidewalks. Figure 4.4 in Chapter 4 of the 2023 RTP identifies sidewalk facilities along SW Tualatin-Sherwood Road, SW Sunset Boulevard, and SW Main Street as in the planned regional on-street pedestrian network, though there are network gaps along Highway 99W in the north of Sherwood and along SW Tonquin Road in the UGB near Tonquin Urban Reserve.

Construction has commenced on a pedestrian bridge in Sherwood over Highway 99W that, when completed, will connect Sherwood High School with the YMCA and surrounding urban neighborhoods. Goals of the project include: reducing vehicle/pedestrian conflicts and exposure; minimizing out of direction travel for

pedestrians; and providing crossing opportunities that accommodate all pedestrians and bicyclists.

Most of the residential areas of nearby Tualatin have sidewalks, but there are fewer pedestrian connections in the city's employment areas. The Tualatin Town Center has a fairly well-established pedestrian network that includes access to some trails as well. The Tualatin River Greenway Trail, for example, connects the Town Center to parks in Durham and Tigard to the north as well as to Browns Ferry Park along the Tualatin River on the east side of I-5.

Figure 4.14 in Chapter 4 of the 2023 RTP identifies the SW Tualatin-Sherwood Road as a high injury corridor. The road, which is already inside the UGB, is less than a mile from the northern end of the Tonquin Urban Reserve. There are no other RTP-designated high injury corridors in Sherwood's or Tualatin's portions of the UGB. The intersection of SW Tualatin-Sherwood Road and SW Boones Ferry Road, as well as the intersection of SW Martinazzi Avenue and SW Boones Ferry Road, are within the UGB and approximately 3.5 miles from the reserve; both of these intersections are identified in Figure 4.14 of the RTP as top five percent high injury intersections.

Highway 99W is also already inside the UGB, bisecting the City of Sherwood. Highway 99W is identified as a throughway in Chapter 4's Figure 4.7 of the 2023 RTP. Figure 4.8 in Chapter 4 of the RTP indicates that it currently meets travel speed reliability performance thresholds, with no more than four hours per day when travel speeds fall below the identified minimum speed. RTP models indicate this reliability will continue at least to the year 2045.

b. Capacity of existing facilities to serve areas proposed for addition to the UGB

The reserve is about two miles from Highway 99W. As noted above, Highway 99W, an RTP-designated throughway, currently meets travel speed reliability performance thresholds.

There is currently no transit service near to the reserve. The closest TriMet bus route is Route 97, which provides service between Sherwood and Tualatin during the morning and afternoon commute times along SW Tualatin-Sherwood Road. All other bus routes are over a mile away. The WES Commuter Rail tracks are only about a quarter of a mile away, but the closest station is about four miles away in Tualatin.

The closest bike facility is the dedicated bike lane on SW Oregon Street in Sherwood that is approximately one-third of a mile from the reserve via SW Tonquin Road. This bike lane is approximately half a mile long, running from the roundabout to just short of SW Tualatin-Sherwood Road. The bike lane doesn't yet provide a connection point to other dedicated bike facilities.

There are complete sidewalks on SW McKinley Drive, which stubs to the west side of the reserve. These sidewalks wind through residential areas before ultimately connecting to

the Town Center. There are also sidewalks along SW Oregon Street, approximately one-third of a mile away from the north end of the reserve. These sidewalks connect to the sidewalks along SW Tualatin-Sherwood Road to the north that extend towards the Town Center and employment areas. There is a one-third-mile gap in sidewalks to the south that leads to Sherwood's "Old Town".

There are no existing regional trails connected to the reserve.

Existing urban residential uses adjacent to the reserve could provide housing to future employees of the reserve, and nearby existing employment uses could provide employment opportunities to future residents of the reserve, helping to limit home-based VMT per capita. However, the existing nearby housing is relatively low in density and, as noted in response to Factor 1, the reserve is unlikely to provide significant residential development opportunities; therefore, future employees of the reserve may still mostly have to commute from further away.

c. Impacts to existing facilities that serve nearby areas already inside the UGB

SW McKinley Dr, Basalt Creek Parkway, and SW 124th Avenue would be expected to see additional private vehicle traffic from development of the reserve. Indeed, the reserve is moderately distant from the Sherwood Town Center and currently lacks direct transit service to it. However, there are existing and developing bike and pedestrian facilities that provide connections to the town center, as well as to schools and recreational facilities. Additionally, as detailed in response to Factor 1, the reserve is considered able to accommodate a small amount of both residential and employment land uses, allowing for the possibility that its future residents of the reserve and nearby areas in the UGB could access at least some services and employment opportunities within the reserve itself. Nearby residences could provide housing to employees of the reserve, and new employment uses in the reserve could provide jobs for nearby residents. For these reasons, development of the reserve may result in only moderate impacts to home-based VMT per capita in nearby areas already inside the UGB and the performance of Highway 99W as a throughway. Any additional motor vehicle traffic on SW Tualatin-Sherwood Road resulting from development of the reserve, however, may exacerbate the road's high-crash conditions.

The dedicated bike lane on SW Oregon Street in Sherwood would be expected to see additional use; however, the one-third-mile gap on the portion of SW Tonquin Road that is already inside the UGB and the larger gap on SW Oregon Street would need to be addressed to reach maximum potential future use.

The sidewalks along SW Oregon Street would be expected to see additional use, though gap in SW Tonquin Road noted above would need to be addressed to make the important connection to "Old Town".

d. Need for major transportation facility improvements and associated costs

To serve urban development, approximately 1.32 miles SW Tonquin Road would likely need to be improved to urban arterial standards, including with acquisition of additional right-of-way. A 1.5-mile-long new collector would also need to be built to connect SW Dahlke Lane and the east side of the reserve to SW Tonquin Road. These new and improved roadways would need to traverse some areas of relatively steep topography as well as water bodies; therefore, some associated per-mile costs are higher than normal.

Facilities	Cost
Arterials, existing/improved full street	$97.01 million
Arterials, existing/improved half street	$0
Arterials, new	$0
Collectors, existing/improved full street	$0
Collectors, existing/improved half street	$0
Collectors, new	$52.78 million
Total:	**$149.79 million**
Per dwelling unit at 20 units per net vacant buildable acre:	**$59,773**

e. Provision of public transit service

TriMet evaluated the reserve for providing transit service and determined that an extension of conceptual routes would be the most effective way to serve future development in this area. TriMet could provide services to the reserve, although there is no guarantee of service. Actual service depends on the level of development in, and in the corridors leading to, the reserve. TriMet's 2045 Network Vision could reroute conceptual line W10 before terminating in Basalt Creek. This service could operate at 60-minute headways, with a capital cost of $2,000,000 – $3,000,000 for two additional zero-emission buses and an additional annual operating cost for the route extension at $1,216,800 and grows with inflation each year.

Prior to land being included in the UGB, a more detailed concept plan, consistent with the requirements of Metro's Urban Growth Management Functional Plan Title 11, is required. This concept plan process will develop more refined public facility and service needs and cost estimates.

Factor 3: Comparative environmental, social, energy, and economic consequences

Environmental consequences

Rock Creek and a tributary flow north through the western portion of the Tonquin Urban Reserve for just over one mile. Approximately two-thirds of the stream corridor is on federal land that is part of the Tualatin River National Wildlife Refuge. The non-federal land that contains Rock Creek is, as of July 2020, included in the Refuge's Rock Creek Unit acquisition boundary, indicating a desire for the Refuge to purchase the land in the future. There are two National Wetland Inventory (NWI) wetlands associated with Rock Creek,

each approximately 11 acres in size, that are also on federal land. There is a significant amount of riparian and upland habitat associated with Rock Creek. Two additional NWI wetlands have been identified that total 1.4 acres in area. The riparian corridor and adjacent upland habitat on the Refuge land will not be impacted by urbanization of the reserve. However, urbanization of the land between the Refuge properties may impact the stream corridor resulting in negative effects downstream, unless the Refuge is successful in purchasing this land that is within the acquisition boundary.

Coffee Lake Creek flows south through the eastern portion of the reserve for approximately 1.5 miles. The northern portion of the stream flows through cleared land under powerlines and forested areas of sportsmen's club property, prior to draining into a pond associated with a quarry operation. An 8.9-acre NWI wetland is associated with this portion of the stream corridor. The remaining portion of the stream is manipulated by a series of quarry operations before leaving the reserve. Numerous NWI wetlands, totaling approximately 18 acres, are identified on the various quarry lands. As expected, there is no evidence of habitat on the quarry sites. It is not practically possible to assess the impacts urbanization may have on the stream and wetlands prior to the quarry reclamation plan being developed.

This analysis finds that urbanization of the reserve could occur with comparatively low to moderate impacts to the stream corridors, wetlands, and upland habitat areas, depending on the ability of the Wildlife Refuge to purchase additional land and the components of the reclamation plans for the individual quarry sites.

Considering the comparative environmental consequences of urbanization, the Tonquin Urban Reserve is given a "medium-high" score in Attachment 3 for this Goal 14 boundary location sub-factor.

Social, energy, and economic consequences

There are only a handful of rural residences in the Tonquin Urban Reserve. Much of the reserve is instead dedicated to quarry operations, a private gun club, commercial dog kennels, and publicly owned natural areas. The reserve is nearly entirely surrounded by urban land uses, quarry operations, powerline easements, and a moderately-size vehicle dismantling and/or junk yard operation. Urbanization of this reserve is not expected to cause significant changes in the reserve residents' sense of place or in degradation of an existing rural lifestyle. Indeed, urbanization of the reserve could bring at least some new social, educational, and recreational opportunities for existing residents.

As detailed more fully in response to Factor 2, urbanization of the reserve is expected to result in, at most, moderate VMT, so the resulting energy consequences would also not be significant.

While there does not appear to be any commercial agricultural uses in the reserve, quarry activity within the reserve is significant; the adverse economic consequences of stopping this extraction prior to the resource being exhausted could be considerable. There could also be adverse economic consequences in discontinuing the gun club and dog kennel uses

in the reserve in order to accommodate new urban development, though that economic benefits of urban development may outweigh those consequences.

Overall, there would be comparatively low to moderate social, energy, and economic consequences from urbanization of this reserve, largely depending on the timing of completion of quarry operations. The Rosa Urban Reserve is given a "medium-high" score in Attachment 3 for this Goal 14 boundary location sub-factor.

Factor 4: Compatibility of the proposed urban uses with nearby agricultural and forest activities occurring on farm and forest land outside the UGB

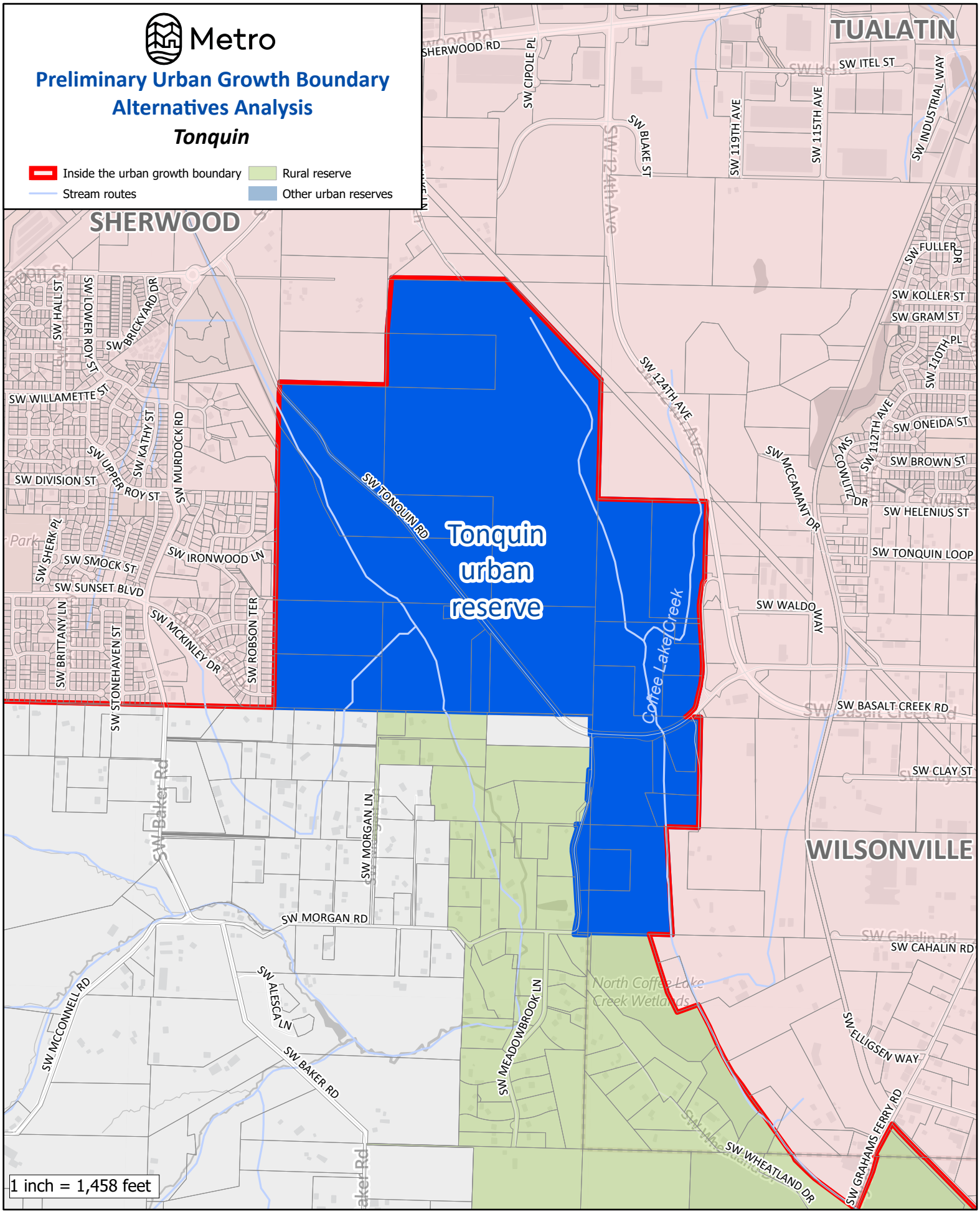
Only the southern edge of the Tonquin Urban Reserve is *not* defined by the UGB and the vast majority of the adjacent land is zoned for rural residential use. There is one very small tract of adjacent land with Goal 3 zoning, specifically Exclusive Farm Use (EFU) zoning by Clackamas County, located outside the UGB at the reserve's southwestern corner. This land, comprised of just two tax lots, contains rural residences and no apparent agricultural activities. While there are some stands of trees on these tax lots, they are small and the existing development could limit harvesting potential. Moreover, access to these tax lots are not accessed via the reserve. Therefore, the proposed urban uses are considered to have high compatibility with nearby agricultural and forest activities occurring on farm and forest land outside the UGB. The Tonquin Urban Reserve is given a "high" score in Attachment 3 for this Goal 14 boundary location factor.

Metro

Preliminary Urban Growth Boundary Alternatives Analysis

Tonquin

Inside the urban growth boundary
Rural reserve
Stream routes
Other urban reserves

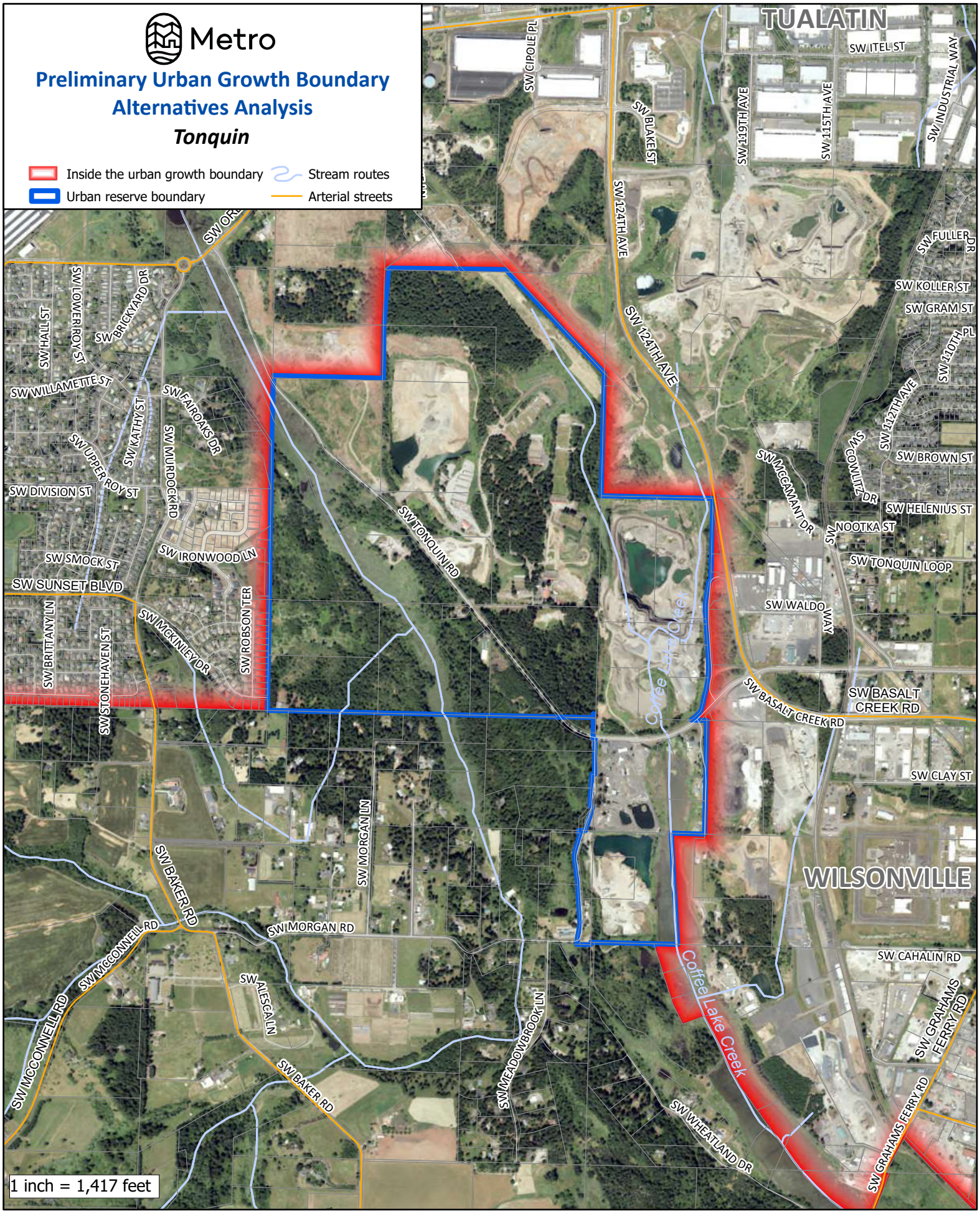


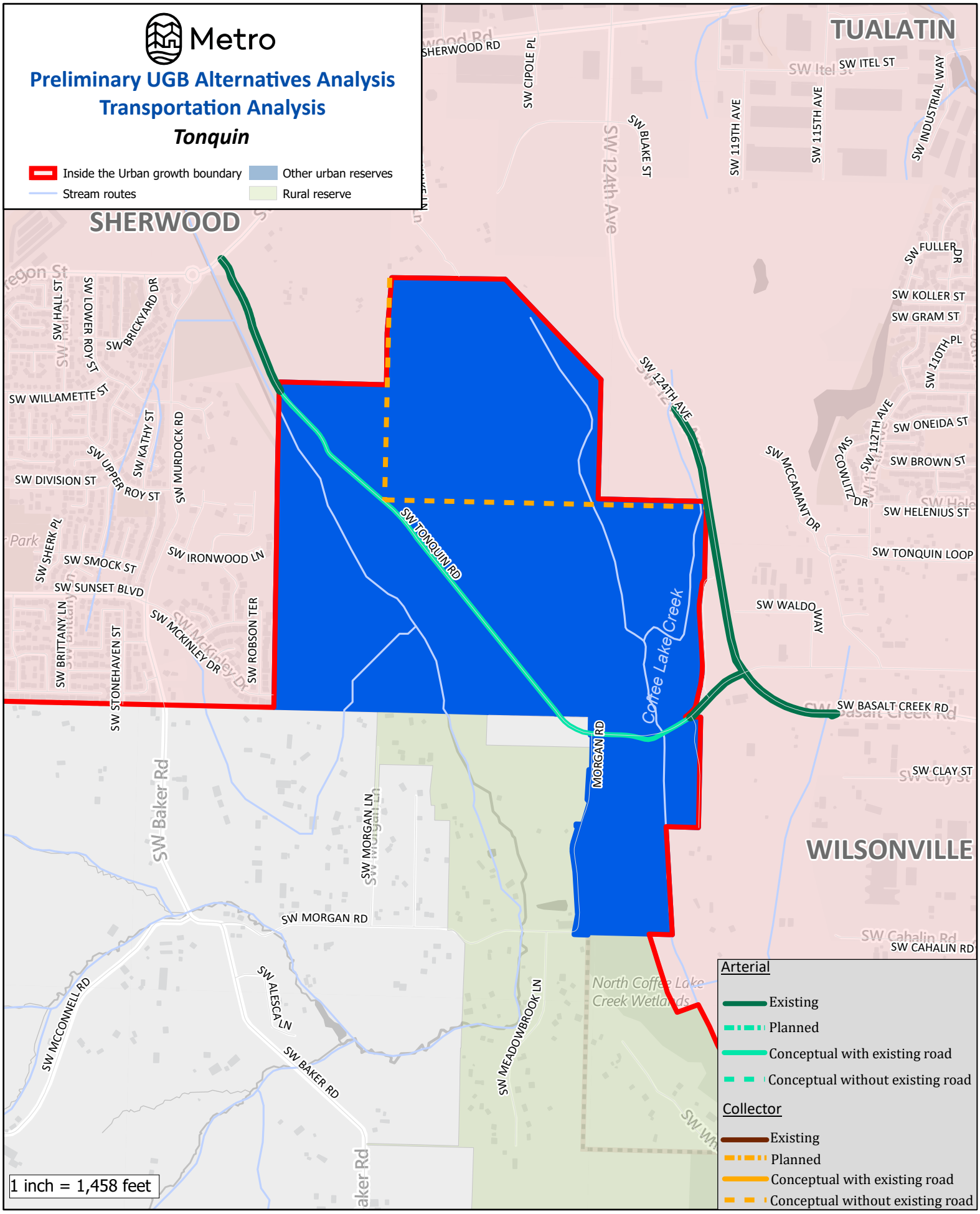
Metro

Preliminary Urban Growth Boundary Alternatives Analysis

Tonquin

Inside the urban growth boundary
Urban reserve boundary
Stream routes
Arterial streets





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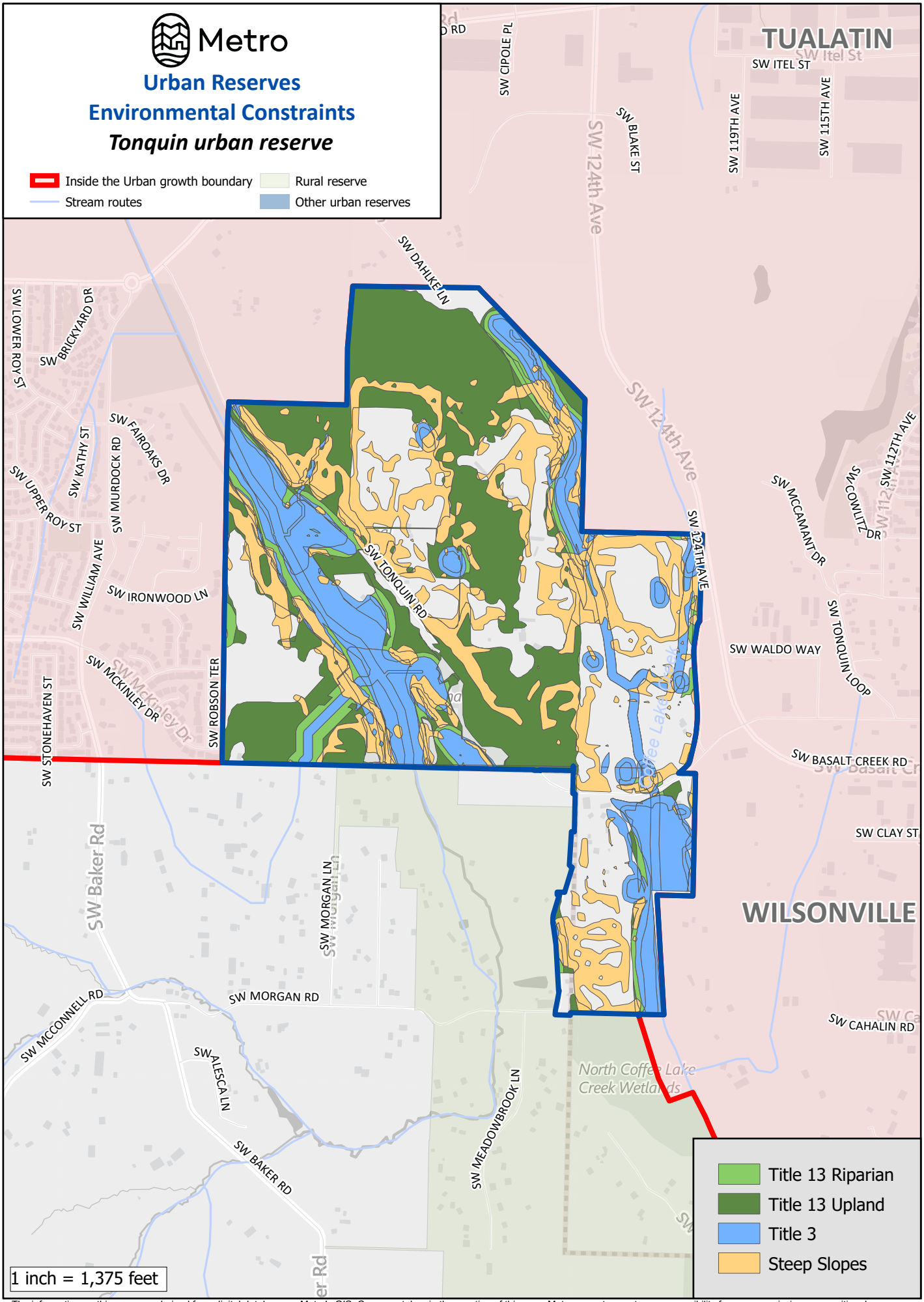

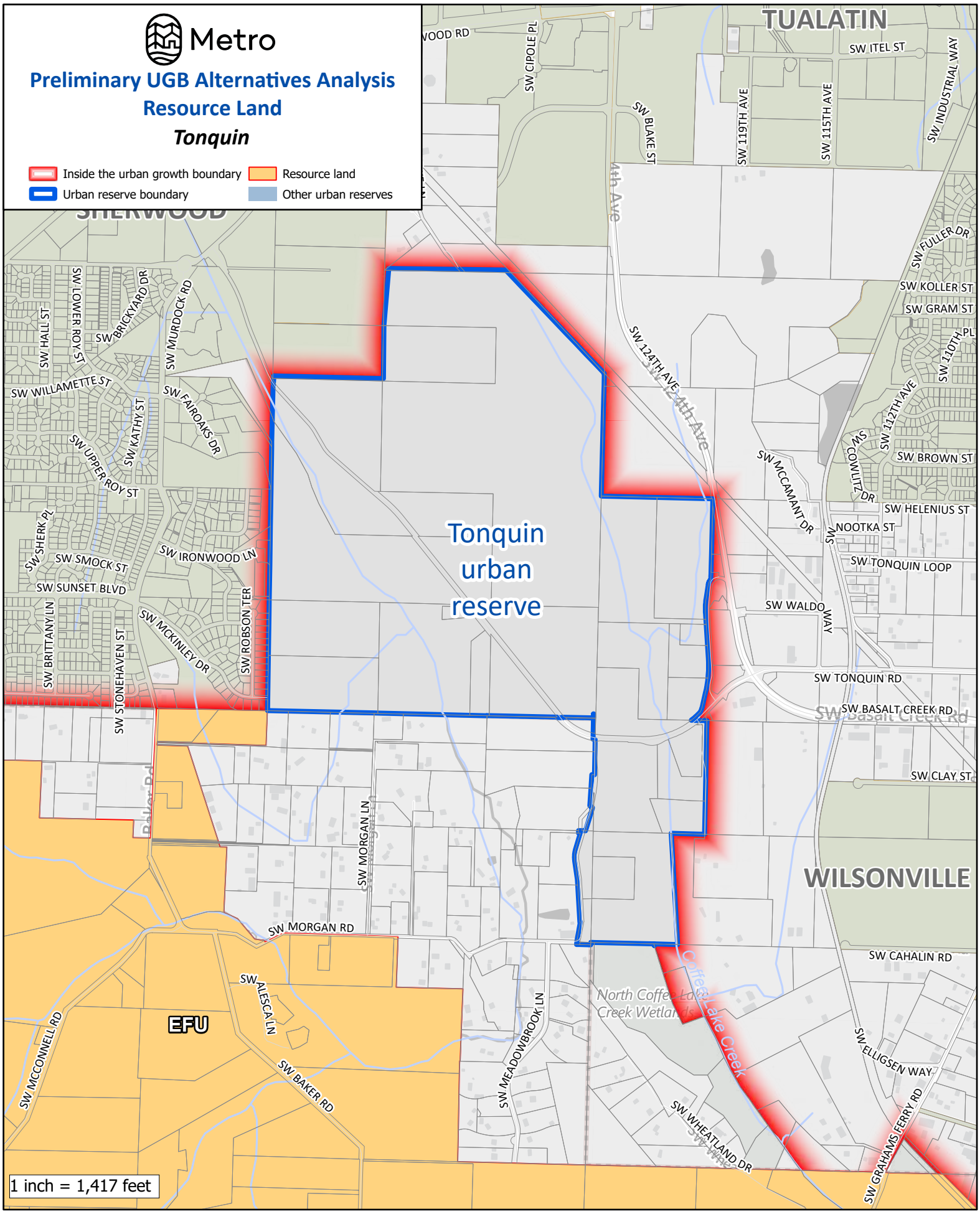

WILSONVILLE SOUTHWEST URBAN RESERVE

Total Reserve Area	67 acres
Total Tax Lot Area in Reserve (without Right-of-Way)	64 acres
Gross Vacant Buildable Area	27 acres
Net Vacant Buildable Area	**20 acres**

The Wilsonville Southwest Urban Reserve is a somewhat triangularly shaped area on the south side of SW Wilsonville Road and only about 250 feet northwest of the Willamette River. The east side of the reserve is adjacent to the UGB and Wilsonville city limits and the reserve is otherwise entirely surrounded by rural reserve lands, which include the Metro-owned Graham Oaks Nature Park directly to the north across SW Wilsonville Road.

GOAL 14 BOUNDARY LOCATION FACTORS

Factor 1: Efficient accommodation of identified land needs

The Wilsonville Southwest Urban Reserve is comprised of just four tax lots, all of which are entirely within the reserve and are contiguous. The combined area of these tax lots is 64 acres. Three of the tax lots are between two and six acres in area; the other tax lot is larger than 50 acres. As noted above, the entire reserve contains 27 gross vacant buildable acres and 20 net vacant buildable acres.

According to aerial imagery, the reserve has only a few rural residences and the vast majority of the land is in agricultural use. Three of the tax lots have assessed improvements, with a median assessed value of those tax lots' improvements exceeding $833,000.

The reserve is adjacent to Corral Creek Natural Area and the Graham Oaks Nature Park and is less than 1,000 feet from River Fox Park. Boones Ferry Primary School and Inza R. Wood Middle School are about a quarter mile away via SW Wilsonville Road. The reserve is separated from existing urban low density residential development to the east by Willamette Way, a local street. The nearest interstate, I-5, is approximately 1.5 miles away. Existing employment uses along SW Boones Ferry Road and SW Bailey St, are also within 1.5 miles. South Metro Area Regional Transit (SMART) has a bus stop directly across SW Wilsonville Road from the reserve.

Large sections of the reserve have slopes greater than 10 percent, though the northernmost portion of the reserve near SW Wilsonville Road is generally flat. These flatter areas, with nearby transit service and relatively direct access to I-5, could potentially accommodate employment uses. The remainder of the reserve closer to the Willamette River and still near to schools and recreational facilities are more suitable to residential land uses.

In general, this reserve is considered able to accommodate both residential and employment land needs.

Factor 2: Orderly and economic provision of public facilities and services

Water Services

With regard to water services, the Wilsonville Southwest Urban Reserve is given a "medium" score in Attachment 3 for this Goal 14 boundary location factor, for the reasons detailed in (a)-(d) below.

a. Capacity of existing facilities to serve areas already inside the UGB

Adjacent lands inside the UGB are served by the City of Wilsonville. The city's primary supply comes from the Willamette River. There is a single water treatment plant, the Willamette River Water Treatment Plant, that serves the city and is in shared ownership with Tualatin Valley Water District. The treatment plant is understood to be capable of processing 15 MGD, and a planned improvement will bring capacity to 20 MGD in order to serve development in the existing UGB through the year 2036. There are currently no significant known storage, pumping, or distribution system deficiencies.

b. Capacity of existing facilities to serve areas proposed for addition to the UGB

The city is believed to have ample water rights for the long term, so water supply to urban development of the reserve is likely not an issue. The planned expansion of the treatment plant should provide sufficient capacity for development of the reserve. Existing storage tanks, however, do not have capacity to serve development outside of the existing UGB. Based on topography, the reserve could be served by gravity from the Elligsen Reservoirs (i.e., not require pumping). Future system infrastructure as shown in the City of Wilsonville Water System Master Plan is adequately sized for required fire flow and operating pressures.

c. Impacts to existing facilities that serve nearby areas already inside the UGB

Additional storage capacity will be needed to avoid negative impacts to service in the UGB.

d. Estimated water service-related costs for reserve development

Water piping, pumping, and storage costs	Cost
10-inch pipe	$0.81 million
12-inch pipe	$0
16-inch pipe	$1.1 million
Pumping	$0
Storage	$0.02 million
Total:	**$1.93 million**
Per dwelling unit at 20 units per net vacant buildable acre:	**$4,789**

Sanitary Sewer Services

With regard to sanitary sewer services, the Wilsonville Southwest Urban Reserve is given a "medium" score in Attachment 3 for this Goal 14 boundary location factor, for the reasons detailed in (a)-(d) below.

a. Capacity of existing facilities to serve areas already inside the UGB

Wastewater from adjacent lands in the City of Wilsonville is conveyed in a city-owned and operated collection system to the Wilsonville Wastewater Treatment Plant (WWTP), which was upgraded in 2014 to a capacity of 4.0 MGD, resulting in excess capacity. That excess capacity is believed to be able to accommodate growth in the Frog Pond areas recently added to the UGB. The city is planning to planning on necessary system upgrades to meet future needs. The existing system, including its piping and pump stations, is not known to have any hydraulic deficiencies.

b. Capacity of existing facilities to serve areas proposed for addition to the UGB

Depending on the timing of additional development in the UGB, planned treatment plant upgrades may be needed sooner in order for the system to also serve new development in the Willsonville Southwest Urban Reserve. There are currently no capacity issues with any of the three pumps that may serve the reserve; however, they are all reaching the end of their useful service and the city has identified capital improvement projects to rehabilitate them within the next 20 years. Based on topography, a new pump station will be required to connect sanitary lines for the reserve to the existing system. This pump station is identified in the City of Wilsonville Wastewater Master Plan.

c. Impacts to existing facilities that serve nearby areas already inside the UGB

As noted above, aging pump stations will likely need to be rehabilitated and, depending on timing of other growth, treatment plant facilities upgraded, in order for Wilsonville Southwest development to not negatively impact service to areas already inside the UGB.

d. Estimated sanitary sewer service-related costs for reserve development

Sanitary sewer piping and pumping costs	Cost
10-inch pipe	$0.45 million
12-inch pipe	$0
15-inch pipe	$0
Pump station	$0.18 million
Force mains	$0.21 million
Total:	**$0.84 million**
Per dwelling unit at 20 units per net vacant buildable acre:	**$2,109**

Stormwater Management Services

With regard to stormwater management services, the Wilsonville Southwest Urban Reserve is given a "medium" score in Attachment 3 for this Goal 14 boundary location factor, for the reasons detailed in (a)-(d) below.

a. Capacity of existing facilities to serve areas already inside the UGB

The City of Wilsonville Stormwater Master Plan (2012) identified "problem areas" (areas with flooding and evidence of significant erosion) based on observation during a 25-year storm event in 2009. The identified problem areas were isolated and there were no serious flooding issues identified under existing conditions.

b. Capacity of existing facilities to serve areas proposed for addition to the UGB

The City of Wilsonville requires that stormwater management (water quality and flow control) be provided for all new impervious surfaces. Based on topography, it seems likely that stormwater management for the development of Wilsonville Southwest would occur within the development area and outfall directly to Corral Creek, which drains directly to the Willamette River without connecting to an existing public stormwater system. The aforementioned master plan does not indicate any problem areas in the short portion of Corral Creek between the Wilsonville Southwest Urban Reserve and the Willamette River.

c. Impacts to existing facilities that serve nearby areas already inside the UGB

If stormwater outfalls directly to Corral Creek via private outfalls from development areas and public outfalls from roadways, there would be no impacts to existing storm facilities.

d. Estimated stormwater service-related costs for reserve development

Stormwater piping and water quality/detention	Cost
18-inch pipe	$0.92 million
24-inch pipe	$0
30-inch pipe	$0
Water quality/dentition	$0.87 million
Total:	**$1.79 million**
Per dwelling unit at 20 units per net vacant buildable acre:	**$4,453**

Transportation Services

With regard to transportation services, the Wilsonville Southwest Urban Reserve is given a "high" score in Attachment 3 for this Goal 14 boundary location factor, for the reasons detailed in (a)-(e) below.

a. Capacity of existing facilities to serve areas already inside the UGB

Figure 4.36 in Chapter 4 of the 2023 Regional Transportation Plan (RTP) displays 2020 home-based vehicle miles traveled (VMT) per capita by Metro transportation analysis zone, with average VMT per capita considered 11.32. According to that figure, areas in the UGB adjacent to the Wilsonville Southwest Urban Reserve had an above the regional average home-based VMT per capita in 2020.

Metro's adopted 2040 Growth Concept Map designates a town center in the adjoining City of Wilsonville. Town centers are meant to: serve populations of tens of thousands of people; offer more locally-focused retail uses and public amenities; and be well served by transit. The roughly 100-acre and centrally-located Wilsonville Town Center aligns with this 2040 Growth Concept Map area. The City of Wilsonville's Town Center Plan envisions it as vibrant, walkable destination that inspires people to come together and socialize, shop, live, and work. The town center, as well as nearby employment areas on the opposite (west) side of I-5, include grocery and drug stores, a library, medical and dental offices, banks, and restaurants. These areas also contain and are adjacent to residential uses, including higher-density residential uses. The town center is located a short distance from the terminus of the TriMet's Westside Express Service (WES) Commuter Rail line, which provides service up to Beaverton.

South Metro Area Regional Transit (SMART), the City of Wilsonville's bus service, provides transit services to the city through seven bus lines; Route 4 "Wilsonville Road Line" connects the town center to areas in the western portion of Wilsonville's UGB, such as the Graham Oak Nature Park, and to development in the east of the city along SW Wilsonville Road.

The town center's existing land uses and transit service, and some availability for new development in and near the town center, demonstrate that growth in the current UGB near the town center will not necessarily cause a significant increase in VMT per capita, as residents will be able to access some daily needs through modes other than private motor vehicle transport. Growth in other areas of the city where residential uses surround schools and parks are is also unlikely to significantly impact VMT per capita.

However, the town center and its adjacent employment areas are more than a mile away from the areas in the UGB adjacent to the reserve. Those areas in the UGB near the reserve are primarily zoned for low density residential development rather than for employment uses, and the transit service to these areas is limited. Under these conditions, growth in these areas in the UGB near the reserve may continue to rely on

private motor vehicle transportation, though existing transit service and bike and pedestrian infrastructure can provide alternatives.

Indeed, in addition to routes described above, SMART also provides medical transport services, a Villebois shopping shuttle, and connections to Keizer and Woodburn. The vast majority of the city's developed areas are within a quarter of a mile of a transit stop. Figure 4.3 in Chapter 4 of the 2023 RTP does, nonetheless, identify a gap in frequent transit service along SW Boones Ferry Road and other locations in the north of the city.

Wilsonville has a well-defined bike network of at least 19 miles of dedicated bike lanes and at least eight miles established bikeways that connect neighborhoods, schools, parks, community centers, business districts, and natural resource areas. Figure 4.5 in Chapter 4 of the 2023 RTP shows several existing bike facilities in Wilsonville as a part of the planned regional bike network, including facilities on SW Boekman Road and SW Wilsonville Road. There is identified gap in regional bike facilities on SW Stafford Road.

The city also has a fairly well-defined pedestrian network in its town center and residential neighborhoods, though with less pedestrian amenities in some industrial and employment areas. I-5 generally provides a barrier for east-west pedestrian connections, but there are sidewalks along both sides of SW Wilsonville Road as it crosses under I-5; there are no sidewalks on SW Boeckman Road over I-5. Figure 4.4 in Chapter 4 of the 2023 RTP shows a number of streets in Wilsonville as on the regional pedestrian network, including SW Wilsonville Road, SW Barber Street, and SW Boeckman Road west of I-5. The figure identifies gaps in the planned regional pedestrian network along SW Boeckman Road east of I-5.

Figure 4.6 in Chapter 4 of the 2023 RTP identifies a number of trails in the south and west of Wilsonville as in the planned regional trail network.

There are no high injury corridors or high injury intersections in Wilsonville's portion of the UGB identified on Figure 4.14 in Chapter 4 of the 2023 RTP.

The portion of I-5 bisecting Wilsonville is identified as a throughway in Figure 4.7 in Chapter 4 of the 2023 RTP. Figure 4.8 in Chapter 4 of the RTP indicates that it currently meets RTP travel speed reliability performance thresholds, with no more than four hours per day when travel speeds fall below the identified minimum speed. RTP models indicate this reliability of this section of I-5 will continue at least to the year 2045.

b. Capacity of existing facilities to serve areas proposed for addition to the UGB

The nearest RTP-designated throughway, I-5, is about 1.5 miles from the reserve. As noted above, I-5 through Wilsonville currently meets RTP travel speed reliability performance standards. Given its relatively small size, urban development of the reserve is unlikely to generate sufficient traffic on the highway to cause it to no longer meet those performance thresholds.

SMART's Route 4 already serves the Graham Oaks Nature Park that is across SW Wilsonville Road from the reserve. SW Wilsonville Road also has a dedicated bike lane and Graham Oaks Nature Park has an established bikeway that connects to Villebois and other bike facilities. Also nearby is an established bikeway along the Ice Age Tonquin Trail that connects to the Willamette River east of the reserve. SW Wilsonville Road and some has sidewalks, and a crosswalk across SW Wilsonville Road provides access to the Graham Oaks Nature Park and Villebois to the north and the Ice Age Tonquin Trial and the Willamette River to the south and east of the reserve. However, some of the local streets in the adjoining residential neighborhood in the UGB lack sidewalks, including much of Willamette Way along the east side of the reserve.

School uses (Boones Ferry Primary School and Inza R. Wood Middle School) are only about a quarter mile from the reserve, and are connected to it by the bike and pedestrian facilities along SW Wilsonville Road noted above, allowing the opportunity for future residents of the reserve to access these schools without travel by private motor vehicle. The facilities along SW Willsonville Road and the SMART transit service would also provide some alternatives to private motor vehicle use for future residents accessing the nearby town center and surrounding employment uses.

c. Impacts to existing facilities that serve nearby areas already inside the UGB

SW Wilsonville Road would see some additional private motor vehicle traffic as a result of urbanization of the reserve. However, given the small size of the reserve, the proximity of schools, parks, the town center, and employment uses, and the direct availability of transit service and bike and pedestrian facilities, additional traffic is likely to be minimal. The bike and pedestrian facilities and nearby trails would see some amount of additional use.

Development of this small reserve is unlikely to cause facilities in Wilsonville to become high injury corridors or intersections, jeopardize the throughway reliability of I-5, or cause significant increases in the area's home-based VMT per capita.

d. Need for major transportation facility improvements and associated costs

To serve urban development, approximately 0.38 miles of SW Wilsonville Road at the north of the reserve will likely need to be improved to urban arterial standards, including with acquisition of additional right-of-way. The terrain the improved roadway would cross is moderately flat and no stream-crossings are necessary; therefore, normal per-mile costs are expected.

Facilities	Cost
Arterials, existing/improved full street	$18.35 million
Arterials, existing/improved half street	$0
Arterials, new	$0
Collectors, existing/improved full street	$0
Collectors, existing/improved half street	$0
Collectors, new	$0
Total:	**$18.35 million**
Per dwelling unit at 20 units per net vacant buildable acre:	**$45,647**

c. Provision of public transit service

SMART evaluated the reserve for providing transit service. SMART could potentially provide services to the reserve, although there is no guarantee of service. Actual service depends on the level of development and the feasibility of a navigable turnaround for Category A buses. Service could be provided at 15- to 30-minute headways weekdays and Saturdays. Annual service cost of adding fixed-route and complementary paratransit service would be $55,000 in addition to services already being provided. This annual service cost would increase with the cost of inflation each year.

Prior to land being included in the UGB, a more detailed concept plan, consistent with the requirements of Metro's Urban Growth Management Functional Plan Title 11, is required. This concept plan process will develop more refined public facility and service needs and cost estimates.

Factor 3: Comparative environmental, social, energy, and economic consequences

Environmental consequences

There are no stream corridors or wetlands within the Wilsonville Southwest Urban Reserve. Corral Creek is located just south of the reserve on Metro-owned land that is unlikely to be developed. Some riparian and upland habitat associated with Corral Creek is identified in the southern portion of the reserve. Mapped upland habitat extends into what appear to actually be orchards in the reserve, but orchards would not be included in a natural resource protection program adopted prior to urbanization because they are for agriculture. Urbanization could likely avoid the identified natural resources located in the southern portion of the reserve, with no impacts to the habitat areas. Therefore, urbanization of the reserve is expected to have comparatively low environmental consequences. Additional environmental consideration, specifically regarding avoidance of conflict between urban development and regionally significant fish and wildlife habitat, is provided in the Metro Code Factors Analysis (Appendix 7A).

Considering the comparative environmental consequences of urbanization, the Wilsonville Southwest Urban Reserve is given a "high" score in Attachment 3 for this Goal 14 boundary location sub-factor.

Social, energy, and economic consequences

Relative to other reserves, the Wilsonville Southwest Urban Reserve is quite small and future urbanization of the reserve will be minor in scale. While any development will impact the few existing residences in the reserve, these residences' location already close to an established urban neighborhood of Wilsonville, a primary school, a middle school, and the Grahams Oak Nature Park will mean that development will not lead to significant changes in the area's character. Moreover, urbanization of the reserve with a mixture of uses could bring new social and recreational opportunities for existing residents.

SW Wilsonville Road provides an easy connection to commercial and employment areas in the City of Wilsonville, bike facilities, the WES commuter line, and I-5, which, as detailed more fully in response to Factor 2, could help limit increased VMT from urbanization. In addition, given the modest amount of development that would occur, the increase in traffic would not be great and would not lead to significant energy consequences.

The agricultural acreage within the reserve is minimal at only about 40 acres, so the economic impact from the loss of agricultural activity would not be considerable; indeed, the economic benefits of residential and/or employment development of the reserve may outweigh this loss.

This analysis finds that there would be comparatively low social, energy, and economic consequences from urbanization of this small reserve. The Wilsonville Southwest Urban Reserve is given a "high" score in Attachment 3 for this Goal 14 boundary location sub-factor.

Factor 4: Compatibility of the proposed urban uses with nearby agricultural and forest activities occurring on farm and forest land outside the UGB

All of the lands bordering the Wilsonville Southwest Urban Reserve outside of the UGB have Goal 3 zoning, specifically Exclusive Farm Use (EFU) zoning by Clackamas County. There are no apparent agricultural activities occurring on these adjoining EFU lands and, while some are forested, nearly all of it is owned by Metro and therefore not likely to be used for commercial forestry. One small adjoining EFU-zoned tax lot at the intersection of SW Wilsonville Road and SW Bell Road has a rural residence. Considering these conditions and the fact that the relatively small reserve could accommodate only minimal development, the proposed urban uses (i.e., urban development of the reserve) is considered to have high compatibility with nearby agricultural activities occurring on farm and forest land outside the UGB. The Wilsonville Southwest Urban Reserve is given a "high" score in Attachment 3 for this Goal 14 boundary location factor.