STAFFORD URBAN RESERVE AREA

Total Acres	3,198	Parcel Acres	2,875
Gross Vacant Buildable Acres	826	Net Vacant Buildable Acres	627

General Description (see attached map)

The Stafford Urban Reserve Area is a large irregular shaped area that is located north of the Tualatin River between the cities of Lake Oswego and West Linn and is 3,198 acres in size. The UGB forms the western, northern and eastern boundaries along with the Rosemont Urban Reserve that is adjacent to the east. The Tualatin River forms the southern edge and the land south of the river is urban reserve. There are numerous streams that flow south through the reserve area to the Tualatin River including Pecan Creek and Wilson Creek. The area slopes down from north to south, loosing over 500 feet from S Bergis Road to the Tualatin River. A significant amount of the area contains slopes greater than 10% with slopes greater than 25% along many of the stream corridors. Access to the area is provided by S Rosemont Road, SW Johnson Road, SW Childs Road and SW Stafford Road.

Parcelization, Building Values, Development Pattern (see attached aerial photo)

This large reserve area contains 773 parcels that range in size from 419 square feet to 166 acres. One hundred and fifty-seven of the parcels are less than ½ acre, two hundred and thirty-two are less than one acre, and 627 are less than five acres in size. Only 48 parcels are greater than ten acres and 18 are greater than 20 acres in size. Five hundred and forty-one of the 773 parcels have improvements, with a median value of $266,340, not including any publicly owned buildings. One hundred and forty-one structures are valued greater than $500,000 and 40 are valued over $1 million, with four of those valued over $2 million and one valued at $4.5 million. The reserve area is dominated by rural residences, especially in the southern portion of the area with small pockets of agricultural land mainly occurring in the middle and northern portion of the reserve area. Portland General Electric has a substation off of S Rosemont Road, two water providers (Mossy Brae Water District and Highland Water Corporation) have facilities and Tualatin Valley Fire and Rescue owns a structure in the reserve area. There is one church, Willamette Christian that is located on S Brandywine Drive that encompasses 31 acres. Finally, the State of Oregon owns six parcels (3.5 acres), Metro owns seven open space parcels (59 acres), Clackamas County owns 14 parcels (8.0 acres) and the City of Lake Oswego owns 14 parcels (145 acres) including Luscher Farm.

GOAL 14 LOCATIONAL FACTORS

Efficient accommodation of identified land needs

One third of the parcels in this reserve area are less than one acre in size and over 50% are less than two acres in size, many of which contain single family homes. The numerous stream corridors, associated habitat areas, and park and open space land, combined with the numerous rural residences further reduce the buildable area to a few select locations. All of these locations contain slopes greater than 10% which reduces their ability to accommodate an employment land need. Overall, this area is able to accommodate a residential land need.

Orderly and economic provision of public facilities and services

Sanitary Sewer Services

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 east and the City of Lake Oswego serves the adjacent areas inside the UGB to the north and west. Lake Oswego and West Linn send their sewer in different directions. Lake Oswego sends sewer to the City of Portland's facility at the Tryon Creek Waste Water Treatment Plant. Portland is currently engaged in a $26 million capital improvements plan to address issues related to aging pipe infrastructure, trunk upsizing and pump station capacity. Trunk upsizing is directed specifically to the Canal and Southwood basins. The wastewater system 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 County Water Environment Services (WES). Improvements are currently happening at the treatment plant, which will provide sufficient capacity to meet current UGB needs. West Linn has also indicated that there is adequate capacity within the existing pipe networks and pump stations.

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

As mentioned above, Lake Oswego could potentially serve the reserve but would require system upgrades and additions within the UGB. Connection points to the system that would 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. Trunk lines and pumps stations would need to be developed within the reserve. The City of West Linn indicated that the wastewater treatment plant would need to be expanded in order to provide capacity for the reserve area and there is space for expansion at the treatment plant. An alternative to consider would be to construct a pre-treatment plant within the Stafford reserve area. In addition, existing pump stations would require upgrades. Existing pipe capacities are unknown and further analysis would be required to determine the extent of trunk line upgrades.

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

As mentioned above, Lake Oswego could potentially serve the reserve but would require system upgrades and additions to existing facilities within the UGB along with new facilities in the reserve area. Wastewater services (digesters) in the WES system are expected to need some upgrades to provide service for growth beyond that in the current UGB. The upgrades and financial impacts are beyond the scope of this report. The significant impacts to the wastewater system are primarily from the financial contributions required to build the mains within the reserve area. New wastewater mains must be provided to allow development of the reserve area and the laterals off the mains are provided by the development community. With major facilities located at a lower elevation than that reserve area, West Linn may be the logical provider of sewerage services and sewer would need to flow through the Borland urban reserve to connect to the existing gravity line in Willamette Falls Drive, thus the Borland urban reserve is expected to precede this reserve area.

Sanitary Sewer Piping Costs

Sanitary sewer piping costs	Cost (in millions)
Less than 12" pipe (gravity)	$3.69
12 – 18" pipe (gravity)	$4.09
Greater than 18" (gravity)	$3.72
Total	**$11.51**

Water Distribution Services

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 east and the City of Lake Oswego serves the adjacent areas inside the UGB to the north and west. Both of these cities are part of the Lake Oswego – Tigard Water Partnership. Potable water comes from the South Fork Water Board (SFWB), jointly owned by the Cities of West Linn and Oregon City. The source water is the Clackamas River. The SFWB operates a conventional water treatment plant located on the south side of the Clackamas River near its confluence with the Willamette River. The SFWB system includes intake facilities, a water treatment plant, and a transmission pipeline to a pump station located on Division Street in Oregon City. The water treatment plant was upgraded in October 2016. Both cities have stated that there are no problems or issues related to serving the areas currently within the UGB in regard to supply, pumping, storage, and piping.

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

Both cities have indicated the ability to provide potable water to the reserve area. Lake Oswego has roughly 2 MGD of excess treatment capacity. No excess capacity exists for transmission however. Water storage and pumping for the reserves does not exist at this time. Connection points exist at Laurel Street and Erickson Street where access is made to the Bergis Reservoir for transmission. Additional storage would need to be created in the reserve area. A pump station at McVey and Oak Street is available but will need expansion. The City of West Linn indicated that there are no issues

with water supply to serve the reserve area. The treatment plant will likely require upgrades in order to deliver the supply. There is a 16-inch waterline in Rosemont Road that could be used to serve the area. There will be several pressure zones within the Stafford reserve area and, as with Lake Oswego, new water tanks will be needed to provide both adequate storage and pressure.

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

Potable water could readily come from Lake Oswego or West Linn. Lake Oswego has 2.0 MGD available and West Linn has enough water rights to supply the system, but some capacity related upgrades to the water treatment plant will be necessary. Both Cities have indicated that new water storage tanks will be required to serve the area. New water mains must be provided to allow development of this reserve area. The laterals off the mains are provided by the development community. Only limited knowledge is available at this time regarding the amount of upsizing that would be needed. The Borland urban reserve is expected to precede this reserve in terms of urbanization. Doing so would allow for location of water facilities and the related distribution network that would be necessary to serve portions of the reserve area.

Water Costs

Water piping/storage/pumping costs	Cost (in millions)
12" and smaller	$5.77
18" and larger	$22.53
Storage/pumping	$10.36
Total	**$38.66**

Storm Sewer Services

Capacity of existing facilities to serve areas already inside the UGB

There is no indication of capacity issues with existing stormwater facilities that serve the land inside the UGB.

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

Stormwater will be conveyed, treated, and disposed of within the reserve area, therefore, it is not anticipated that existing facilities would be utilized.

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

Stormwater will be conveyed, treated, and disposed of within the reserve area; therefore, no impacts to existing facilities are anticipated.

Storm sewer conveyance and water quality/detention costs for roadways

Conveyance & water quality/detention costs	Cost (in millions)
Conveyance	$33.55
Water quality/detention	$32.6
Total	**$66.15**

Transportation Services

Capacity of existing facilities to serve areas already inside the UGB

Roadway: Most of the roadways in West Linn, which borders the reserve area on the east side, have an acceptable volume/capacity ratio (<0.9) for the 2015 pm peak. Willamette Drive at I-205 has a congested volume/capacity ratio (<1.0) in both directions as does I-205 between Willamette Drive and Salamo Road. Northbound I-205 between S Woodbine Road and 10th Street also has a congested volume/capacity ratio. All of the roads in Lake Oswego, which borders the reserve area on the west and north sides, have an acceptable volume/capacity ratio (<0.9) for the 2015 pm peak with the exception of Highway 43 from Oak Street to Glenmorrie Drive which has a congested volume/capacity ratio (<1.0) in both directions for the pm peak.

Transit: Two TriMet bus lines serve West Linn. Route 35 runs along Willamette Drive and Route 154 runs along Willamette Falls Drive providing transit service to the Town Centers and a small portion of the city. Five TriMet bus lines serve Lake Oswego along the major roadways of the city including Country Club Road, Boones Ferry Road, Kruse Way, Highway 43 and South Shore Blvd. These bus routes connect the Lake Oswego Town Center to transit centers and downtown Portland.

Bike: There are nine miles of dedicated bike lanes and four and a half miles of established bikeways in West Linn that generally run in a north south alignment due to topography limitations, thereby limiting east-west bike travel. A number of residential areas and neighborhoods, such as Willamette and Barrington Heights have few bike facilities that connect to other parts of the system. Lake Oswego had 10.5 miles of dedicated bike lanes and seven miles of established bikeways, although most of them do not connect to other bike facilities which results in numerous gaps in the system. The Town Center is not well served by bike facilities.

Pedestrian: Large portions of West Linn are well served by sidewalks, mostly in areas that have been developed more recently. Older neighborhoods such as Willamette and Sunset have very few sidewalks. The Rosemont and Salamo Trails provides a pedestrian connection route along Rosemont and Salamo Roads that ties the lower and upper portions of the city together on the west side. A majority of Lake Oswego does not contain sidewalks including most of the residential areas. The commercial portion of the Town Center does include sidewalks as well as a significant portion of Boones Ferry Road. The Kruse Way Trail, William Stafford Trail and the Stafford Trail provide some longer pedestrian connections.

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

Roadway: Most of the roadways in West Linn that borders the reserve area have an acceptable volume/capacity ratio (<0.9) for the 2015 pm peak. I-205 between Willamette Drive and Salamo Road has a congested volume/capacity ratio (<1.0) in both directions. Northbound I-205 between S Woodbine Road and 10th Street also has a congested volume/capacity ratio. All of the roads in Lake Oswego that borders the reserve area have an acceptable volume/capacity ratio (<0.9) for the 2015 pm peak.

Transit: Neither of the two TriMet bus lines that serve West Linn is close to the reserve area nor do they have a potential direct route to the reserve area. TriMet bus route 36 that runs along South Shore Blvd. in Lake Oswego is approximately one-mile from the reserve area via Stafford Road. The vast majority of the reserve area is two-three miles from a bus route with no direct road connections between the bus routes and the reserve area.

Bike: There is an established bikeway along S Rosemont Road that extends from the West Linn city limits west to SW Stafford Road. Dedicated bike lanes on Hidden Springs Road, Santa Anita Drive and Salamo Road also connect into the reserve area. There is an established bikeway along SW Stafford Road that extends from the Lake Oswego city limits to S Rosemont Road. There is a dedicated bike lane on SW Stafford Road, south of SW Sunset Drive in the reserve area that extends south of the Tualatin River to the Borland urban reserve.

Pedestrian: Some of the nearby neighborhood streets in West Linn have sidewalks but connections to the reserve area may be difficult given the development pattern. In addition once you get past the nearby neighborhoods there are gaps in sidewalks or pedestrian facilities along the major streets that limits pedestrian movement. The Rosemont Trail along S Rosemont Road provides access to the reserve area. There is one adjacent residential street in Lake Oswego that contains sidewalks however it is limited to that street with no connections to other pedestrian facilities. The Stafford Trail provides access to the Rosemont Trail from a limited portion of Lake Oswego.

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

Roadway: Most of the roadways in West Linn that borders the reserve area have an acceptable volume/capacity ratio (<0.9) for the 2015 pm peak. The local roads such as Hidden Springs Road and Rosemont and Salamo Roads could see some impact from additional traffic, especially if I-205 is congested. I-205 between Willamette Drive and Salamo Road has a congested volume/capacity ratio (<1.0) in both directions. Northbound I-205 between S Woodbine Road and 10th Street also has a congested volume/capacity ratio. It is expected that I-205 would see additional traffic. All of the roads in Lake Oswego that borders the reserve area have an acceptable volume/capacity ratio (<0.9) for the 2015 pm peak. Highway 43 and Stafford Road/McVey Road in Lake Oswego could see additional traffic.

Transit: There would be no impact to the existing bus routes that serve West Linn and Lake Oswego. See transit analysis below.

Bike: The established bikeways on S Rosemont Road and SW Stafford Road that extend into the reserve area would see additional use as a result of urbanization of the area. The dedicated bike lanes on Hidden Springs Road, Santa Anita Drive and Salamo Road in West Linn that connect into the reserve area would also be expected to see additional use.

Pedestrian: The Rosemont Trail along S Rosemont Road would be expected to see additional use as a result of urbanization especially as it connects with some commercial retail development. Sidewalks in the adjacent neighborhoods would not be impacted as they provide internal circulation. The Stafford Trail in Lake Oswego would also be expected to see additional use although it currently only connects to some nearby residential areas prior to ending at near Patton Street.

Need for new transportation facilities and costs (see attached transportation map)

SW Stafford Road, S Rosemont Road, SW Johnson Road (between SW Stafford and SW Long Farm Road), SE Long Farm Road, S Sunshine Lane, S Station Lane will need to be improved to urban arterial standards. A short section of S Rosemont Road is considered a ½ street improvement as the other portion is inside the UGB. One new arterial is needed to connect SW Long Farm Road to S Sunshine Lane. S Bergis Road, S Whitten Road, S Sweetbriar Road, S Clematis Road, S Wisteria Road and SW Johnson Road (remaining section of road) will need to be improved to urban collector standards. Two new collectors are needed, between SW Johnson Road and S Sweetbriar Road and between S Whitten Lane and S Bergis Road.

Facility Class		
Arterials	Type	Cost (in millions)
	Existing/Improved	$202.65
	Existing/Improved 1/2	$6.13
	New	$8.76
Collectors	Type	Cost (in millions)
	Existing/Improved	$191.61
	New	$41.63
Total		**$450.78**

Provision of public transit service

TriMet evaluated the reserve area for providing transit service. TriMet could provide services to the reserve area although there is no guarantee of service. Actual service depends on the level of development in the expansion area and in the corridors leading to the reserve area. Service could be provided at 30 minute headways for all day service, five days a week, with two additional buses at a capital cost of $800,000 (recurs every 16 years). Annual service cost is $728,000 and grows 2% per 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.

Comparative environmental, energy, economic and social consequences (ESEE analysis)

Environmental

There are seven stream corridors that flow south through the area, including Pecan Creek and Wilson Creek that ultimately drain into the Tualatin River. The first stream flows along the western edge of the reserve area for 1,370 feet through five rural residential properties. The stream includes a wooded riparian canopy with slopes greater than 25% and there is riparian and some upland habitat identified along the stream corridor. The portion of the reserve area where the stream joins the Tualatin River is within the 100-year floodplain. The increased protection levels for streams, wetlands, steep slopes and habitat areas within the UGB will lessen any potential impacts.Given the relatively small size of the parcels and the fact that they abut existing residences in Lake Oswego, thus removing the need for any road connections, any impacts on the stream corridor and habitat areas will be minor.

Pecan Creek flows through the western portion of the area, west of SW Stafford Road and SW Pattulo Way for 1.2 miles. Over 3,000 feet of the creek flows through land either owned by Metro (open space), City of Lake Oswego (park) or Portland General Electric. The remaining portion of the stream flows along the back edges of rural residential parcels that are 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 that mainly flow along the wooded edges of residential parcels. The western tributary flows mainly through an area where the slopes are greater than 25%. In addition, an 850 foot portion of the northern tributary flows through land owned by the City of Lake Oswego. As one would expect the two tributaries also have adjacent riparian and upland habitat identified along the corridors. Based on the increased protection levels for streams, steep slopes and habitat areas and the fact that significant portions of the streams are on publicly owned land, impacts to Pecan Creek and its tributaries from future urbanization of the area 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%. The northern portion of the stream is within a very large parcel that could be developed in the future, and would be susceptible to impacts from urbanization. There is riparian and upland habitat identified along the stream corridor and 100-year floodplain where the stream meets the Tualatin River. The increased protection levels for streams, steep slopes and habitat areas inside the UGB, combined with the public owned land and the homeowners association land, would allow urbanization to occur without impacts to this stream except for that portion of the stream that is north of SW Johnson Road which could see moderate impacts depending on the design of the future development.

Wilson Creek flows south through the central portion of the reserve area 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 parcels that either contain rural residences or are vacant. Approximately 4,520 feet of Wilson Creek is on City of Lake Oswego, Metro or private open space land. There are slopes greater than 25% 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 parcels where impacts could occur if the area was developed to urban densities and standard transportation connections. 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, the extent of the impact depending mostly on the need for transportation connections. The increased protection levels for streams and habitat areas on land inside the UGB, combined with the publicly owned land, and the private open space land will lessen the impacts of urbanization on the stream corridors. However, as Wilson Creek runs lengthwise through the center of the reserve area and its tributaries spread out mainly to the east through some large vacant parcels, the opportunity for impacts to the stream and habitat areas from urbanization, especially through needed transportation connections, is significant.

The next 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 the side and back forested sections of rural residential parcels. There are slopes greater than 25% along a significant length of the stream and riparian and upland habitat is identified along the entire length of the stream. The location of the stream along the edges of parcels adjacent to the open space combined with the private open space land and the increased protection level for streams, habitat areas and steep slopes for land inside the UGB, results in 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 parcels 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 (1.8 acres total) identified on the NWI 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 parcels, the presence of steep slopes, and the increased

protection level for riparian and upland habitat, wetlands and 100-year 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. Just under half of the stream flows through vacant forested parcels that have some large areas of slopes greater than 25%. The remainder of the stream is located on the back portion of rural residential properties. Similar to the other streams, there is riparian and upland habitat identified along the stream corridor. The steep slopes and habitat areas on the vacant parcels will limit the amount of development that can occur, thus reducing the impacts to the stream and habitat areas. In addition, the rural residential properties contain high value homes that will also deter future redevelopment of those properties, thus urbanization could occur with minimal to no impact on this stream corridor.

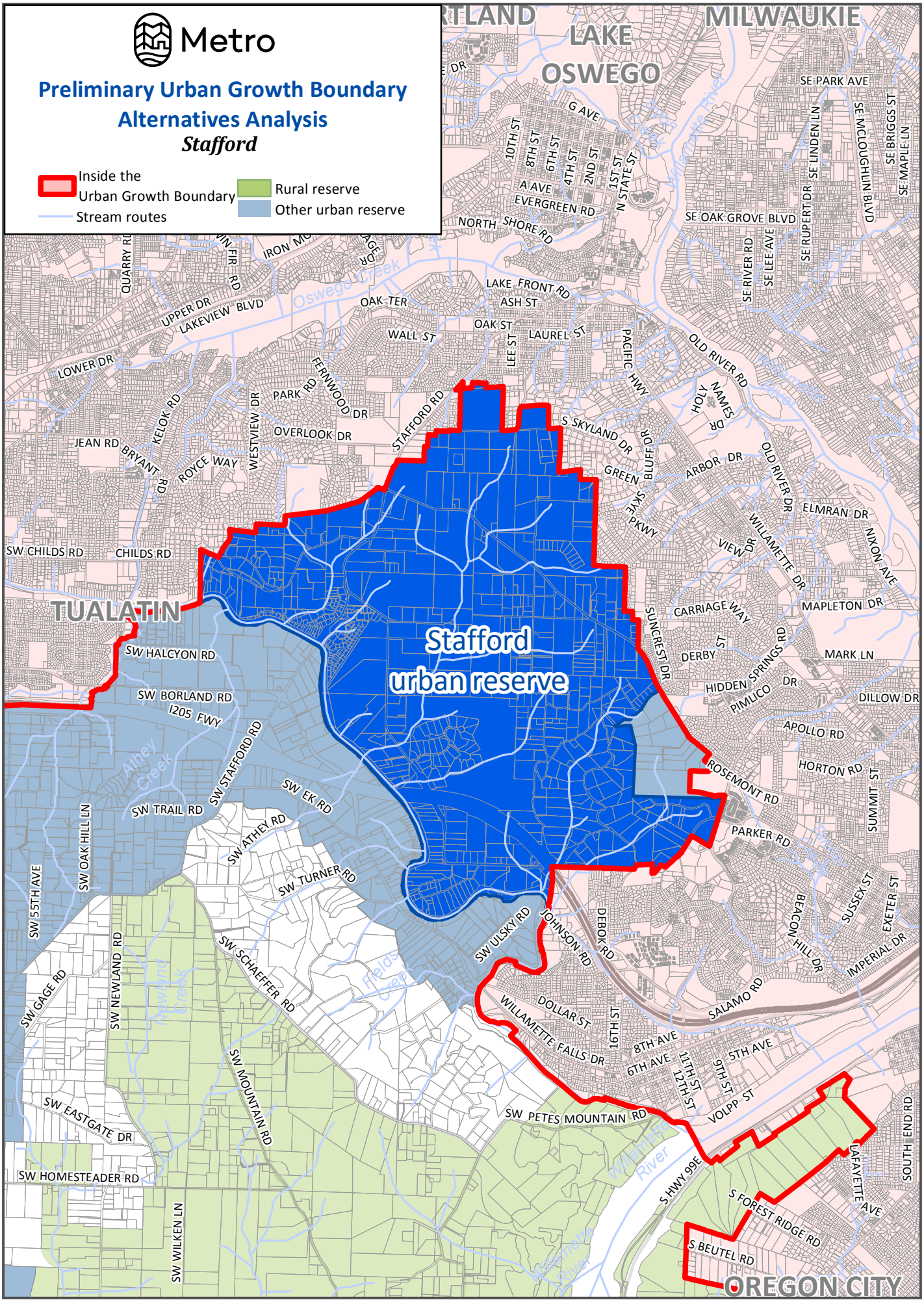
Overall urbanization of the reserve area could occur with low to moderate or high impacts to the streams, wetlands and habitat areas depending on the overall design of the development and most importantly future road connections.

Energy, Economic & Social

It is expected that urbanization of the reserve area will result in new housing replacing the existing rural residences in most instances. However, given the high number of high value homes and the fact that and 81% of the parcels are less than five acres in size, redevelopment of the area will be slow. The 215 acres of public land, 177 acres of private open space, steep slopes and stream and habitat corridors that divide the area up, results in four locations that have the potential for development at an urban level. Thus any social impacts related to loss of sense of place and rural lifestyle for current residents will be localized, happen over an extended timeframe and overall minimal for the entire area. Most of the potential development locations are adjacent to the current UGB, which already may reduce the impact of a loss of rural lifestyle for the residents. The additional traffic generated through urbanization will impact SW Stafford Road and S Rosemont Road which could provide negative energy impacts as these two roads are the main access points to the reserve area. Three conceptual trails, the I-205, River to River and Pecan Creek Trail, would connect to the existing Rosemont and Stevens Meadows Trails, thereby providing options for non-automobile travel, thus reducing some energy impacts. The loss of the economic impact from the agricultural uses in this area would be minimal and the potential economic impact of future residential development, even though it will occur overtime, should outweigh this loss. However, the economic impact of providing urban services may be high due to the limited areas that could be developed to urban densities and the potential impacts to natural areas as a result of roadway connections. Overall this reserve area has medium economic, social and energy consequences from urbanization.

Compatibility of proposed urban uses with nearby agricultural and forest activities occurring on farm and forest land outside the UGB (see attached resource land map)

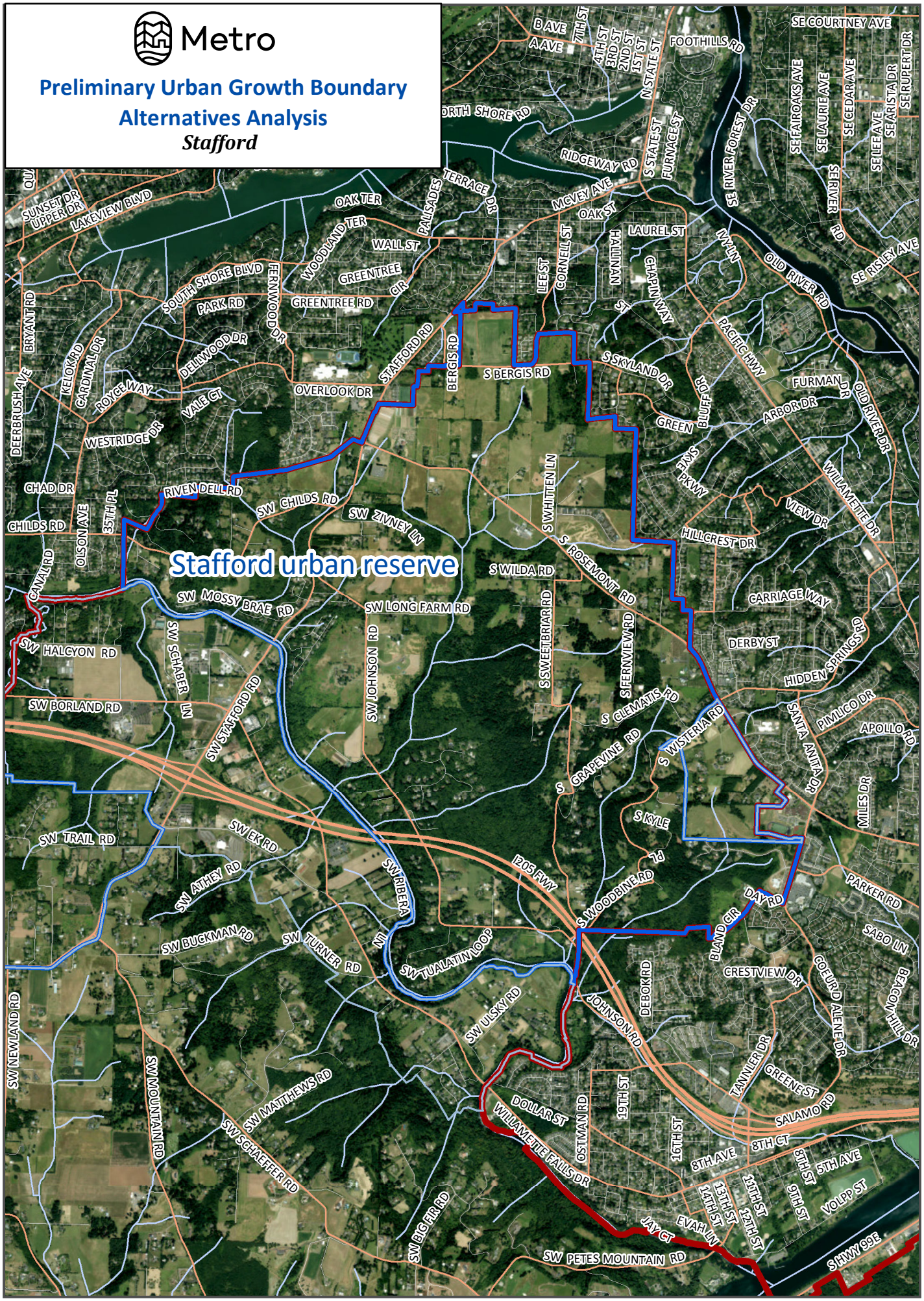
There is no farm or forest land adjacent to the reserve area. Thus the proposed urban uses have high compatibility with nearby agricultural and forest activities occurring on farm and forest land outside the UGB.

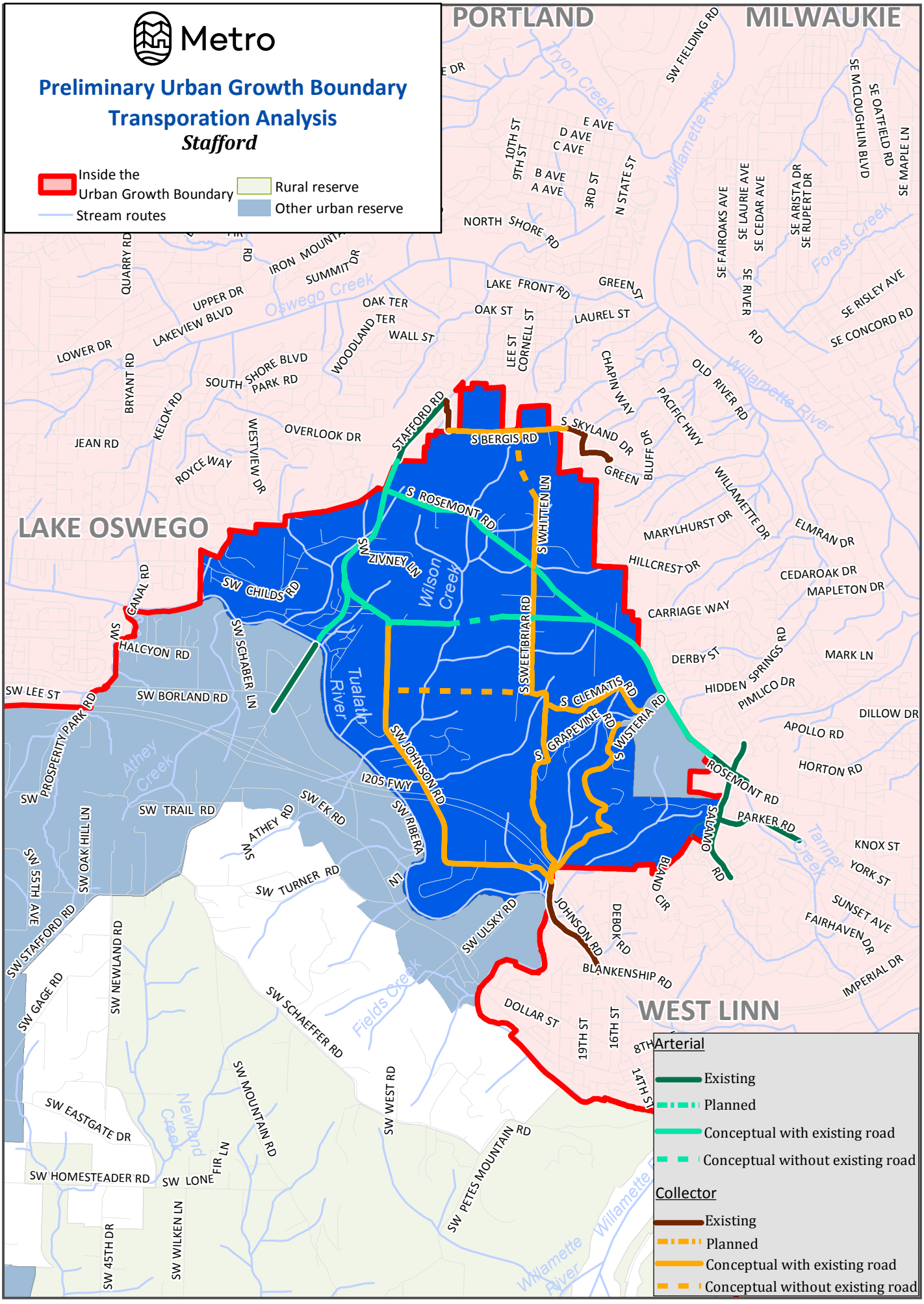


Metro

Preliminary Urban Growth Boundary Alternatives Analysis

Stafford





Metro

Preliminary Urban Growth Boundary Alternatives Analysis Resource Land

Stafford