Sherwood West Preliminary Concept Plan
A long range look at our future.

Community Engagement Plan and Evaluation

Draft Community Engagement Objectives

The purpose of the Community Engagement Plan is to describe ways in which the City will engage the Sherwood community in discussions about what is important to them, including community values, assets and desired future characteristics. The community engagement process is designed to meet the following objectives:

- Encourage dialogue and provide opportunities for frequent and meaningful participation.
- Ensure education and understanding of potential pre-Concept Plan benefits.
- Ensure that communication and educational opportunities are clear so that all community members can participate.
- Ensure that the planning process is clear and transparent.
- Create a framework for momentum to continue into implementation.

The plan will:

- Utilize existing City mechanisms for communication and public involvement.
- Establish public involvement objectives.
- Identify project stakeholders, their values and concerns.
- Describe the array of tools and activities best suited to inform and engage Sherwood residents, businesses and other stakeholders.
- Establish a schedule for implementation that includes engagement strategies for three phases of public involvement:
  - Phase I: Identify Sherwood West Preliminary Concept Plan Vision and Goals
  - Phase II: Citywide Housing Needs and Alternatives Analysis[1]
  - Phase III: Preferred Alternative/Draft Sherwood West Preliminary Concept Plan
- Incorporate measures to evaluate success.

<u>Planning Commission</u>

The City of Sherwood Planning Commission consists of seven members appointed by the City Council, to review and make recommendations on planning issues in the City. Within the context of this program, the Planning Commission is charged with:

- Ensuring the Plan reflects the community's core values and implements the vision and goals.
- Advising on and helping implement community engagement strategies.
- Informing and engaging constituencies, communities and civic organizations.
- Conducting public hearings on the preferred plan alternatives
- Providing the City Council with recommendations on plan alternatives

[1] The Housing Needs Analysis (HNA) was reviewed by the CAC, TAC and Planning Commission. The HNA was used solely as a means for data acquisition and analysis. No policy resulted from this HNA, and therefore this phase did not undergo the same public involvement process as the other phases. Future decisions regarding growth and any subsequent policy changes will not be undertaken until a city-wide comprehensive plan update.

Community Advisory Committee

A broadly-based Community Advisory Committee (CAC) will help inform the Plan's creation. The CAC consists of members who demonstrate a balanced commitment to the adopted scope of work and a broad spectrum of the Sherwood community. They are charged with:

- Reviewing materials from the consultant team.
- Providing broad perspectives to ensure the Sherwood West Concept Plan reflects diverse needs.
- Participating in public outreach regarding the plan
- Providing the Planning Commission with recommendations on plan alternatives.

Technical Advisory Committee

The Technical Advisory Committee (TAC) consists of the City's Project Manager and representatives from Sherwood, Washington County, Clean Water Services, Tualatin Valley Fire & Rescue, the Sherwood School District, Metro, Oregon Department of Land Conservation and Development (DLCD), Oregon Department of Transportation (ODOT) and other reviewing agencies. TAC members review project deliverables for technical adequacy, policy and regulatory compliance.

Community Engagement Activities

Community engagement activities will be designed in a way that fosters a deeper, more effective and long-standing relationship with Sherwood residents and property owners. The community engagement process will incorporate wide-ranging activities to reach a broad constituency of the Sherwood residents, businesses and property owners. Community engagement tools and activities are expected to include, but are not limited to:

- A recognizable project look for project-related materials.
- Informative, accessible Website created and administered by City staff. The Consultant will provide content for the site, links and content for the interactive website platform and other key messages and a narrative that describes the status of the project, upcoming meetings, and other opportunities for involvement and draft and final work products. The consultant will ensure the language speaks to people in common terms rather than "plannereze".
- Maintaining an ongoing list of interested parties throughout the process
- Short informational video that articulates the purpose of the project and an invitation to participate. The video will be posted on the project website, played on the Community Access Television channel, and introduced at both the Planning Commission and/or City Council.
- Three interactive and engaging community events.
- Articles in the Gazette, Archer, other civic organization and school newsletters, flyers, FAQ and other outreach materials that provide project information and publicize community forums and other activities.
- A community conversations format that provide an opportunity for community members to discuss aspects of the Sherwood West Concept Plan on their "own turf" at their community meetings in a modified speakers bureau format. City staff would arrange for and lead these conversations.
- Activities tailored to engage the area's youth and future leaders.
- Two community surveys on line and in print including visual preference opportunities and programs to allow residents to both help create plan evaluation criteria and weigh in on what they like about the range of alternatives as they emerge.
- Briefings for elected and appointed officials.

Evaluation of Community Engagement Plan

Engagement efforts are evaluated based on the degree to which objectives are achieved:

Objectives	Very Well	Well	Not well	Comments
Consistency of messages used and a public understanding of the benefits of concept planning				• Key messages were developed, focusing on issues of growth, housing, available land and the benefits of planning.
Frequency and effectiveness of community engagement opportunities • Open CAC and TAC meetings • Video views • Community conversation opportunities and participants (e.g., 100 participants total at 10 meetings) • Two community workshops (e.g. 80 total)				• All CAC and TAC meetings were both open to the public. Time was reserved in the agenda to address public comment at the CAC meetings. • The video received more than 1,000 views. • The City held community conversations at events such as Music on the Green, Robin Hood Festival, Sherwood Rotary, Movies in the Park, as well youth activities, talking to more than 150 people. • Two community workshops and an open house attracted more than 100 participants.
Increasing participation over time				• The first community open house had approximately 40 participants in attendance. The last open house engaged more than 80 participants.
Piloting new techniques (Mindmixer and Social Media) • 50 engaged online in each round associated w/ each public event				• The City's Facebook account was created during this process and helped publicize meetings, events and engagement opportunities • The City tested a web platform ("MindMixer") for online engagement, though the platform did not meet the needs of the project and was discontinued. SurveyMonkey and Qualtrics were used instead. • More than 50 people were engaged with each online survey. The first, second and third surveys had 117, 77 and 54 participants, respectively.
Community concerns identified and addressed				• The Plan was a highly iterative process, incorporating more than three rounds of revisions to reflect comments received at the community workshop, CAC meetings, online surveys and community conversations.
A Pre-Concept plan that reflects expressed community vision and values for Sherwood West and the future of Sherwood as a whole.				• Overall, the process engaged hundreds of community members. The Plan incorporates high-quality feedback, according to community-sourced core values and goals.

Sherwood Housing Needs Analysis 2015 to 2035

Draft Report

ECONorthwest
ECONOMICS • FINANCE • PLANNING

Prepared for:

Cogan Owens Greene &

City of Sherwood

June 2015

Executive Summary

This is an executive summary of the findings of the Sherwood Housing Needs Analysis for the 2015 to 2035 period. The housing needs analysis provides Sherwood with a factual basis to support future planning efforts related to housing, including Pre-Concept Planning for Sherwood West, and prepares to update and revise the City's Comprehensive Plan policies

The housing needs analysis is intended to comply with requirements of statewide planning policies that govern planning for housing and residential development, Goal 10, it's implementing Metropolitan Housing Rule (OAR 660-007), and Metro's 2040 Functional Growth Management Plan. Taken together, the City's primary obligations from Goal 10 are to (1) designate land in a way that provides the opportunity for 50% of new housing to be either multifamily or single-family attached housing (e.g., townhouses); (2) achieve an average density of six dwelling units per net acre; and (3) provide enough land to accommodate forecasted housing needs for the next 20 years. Sherwood is able to meet these requirements and can accommodate most of the new housing forecast, as described in this summary.

How has Sherwood's Population Changed in Recent Years?

The basis for the housing needs analysis is an understanding of the demographic characteristics of Sherwood's residents.[1]

Sherwood's population grew relatively fast in recent years. Sherwood's population increased from 3,000 people in 1990 to nearly 18,600 people in 2013, averaging 8% annual growth. Sherwood's fastest period of growth was during the 1990s, consistent with statewide trends. Since 2000, Sherwood grew by 6,600 people, at an average rate of nearly 3.5% per year. For comparison, Washington County grew at 2.5% annually between 1990-2013 and the Portland Region grew at 1.6% per year.

Sherwood's population is aging. People aged 45 years and older were the fastest growing age group in Sherwood between 2000 and 2010, consistent with state and national trends. By 2035, people 60 years and older will account for 24% of the population in Washington County (up from 18% in 2015) and 25% in the Portland Region (up from 19% in 2015). It is reasonable to assume that the share of people 60 years and older will grow relatively quickly in Sherwood as well.

Sherwood is attracting younger people and more households with children. In 2010, the median age in Sherwood was 34.3 years old, compared to Washington County's median age of 35.3 years and the State median of 38.4. Sherwood has a larger share of households with

[1] The majority of data quoted in this analysis is from the U.S. Census American Community survey, with population data from the Population Research Center at Portland State University and development data from the City's Building Permit database.

children (47% of households), compared with Washington County (33%) or the Portland Region (29%). The Millennial generation—people born roughly between 1980 to 2000—are the largest age group in Oregon and will account for the majority of household growth in Sherwood over the next 20 years.

Sherwood's population is becoming more ethnically diverse. About 6% of Sherwood's population is Latino, an increase from 4.7% in 2000. In comparison to Washington County and the Portland Region, Sherwood is less ethnically diverse. In the 2009-2013 period, 16% of Washington County residents, and 12% Portland Region residents, were Latino.

WHAT FACTORS MAY AFFECT FUTURE GROWTH IN SHERWOOD?

If these trends continue, population will result in changes in the types of housing demanded or "needed" in Sherwood in the future.

The aging of the population is likely to result in increased demand for smaller single-family housing, multifamily housing, and housing for seniors. People over 65 years old will make a variety of housing choices, including: remaining in their homes as long as they are able, downsizing to smaller single-family homes (detached and attached) or multifamily units, or moving into group housing (such as assisted living facilities or nursing homes) as they continue to age.

The growth of younger and diversified households is likely to result in increased demand for a wider variety of affordable housing appropriate for families with children, such as small single-family housing, townhouses, duplexes, and multifamily housing. If Sherwood continues to attract young residents, then it will continue to have demand for housing for families, especially housing affordable to younger families with moderate incomes. Growth in this population will result in growth in demand for both ownership and rental opportunities, with an emphasis on housing that is comparatively affordable.[2]

Changes in commuting patterns could affect future growth in Sherwood. Sherwood is part of a complex, interconnected regional economy. Demand for housing by workers at businesses in Sherwood may change with significant fluctuations in fuel and commuting costs, as well as substantial decreases in the capacity of highways to accommodate commuting.

Sherwood households have relatively high income, which affects the type of housing that is affordable. Income is a key determinant of housing choice. Sherwood's median household income ($78,400) was more than 20% higher than Washington County's median household income ($64,200). In addition, Sherwood had a smaller share of population below

[2] The housing needs analysis assumes that housing is affordable if housing costs are less than 30% of a household's gross income. For a household earning $6,500 (the median household income in Sherwood), monthly housing costs of less than $1,960 are considered affordable.

the federal poverty line (7.6%) than the averages of Washington County (11.4%) and the Portland Region (13.9%).

WHAT ARE THE CHARACTERISTICS OF SHERWOOD'S HOUSING MARKET?

The existing housing stock in Sherwood, homeownership patterns, and existing housing costs will shape changes in Sherwood's housing market in the future.

Sherwood's housing stock is predominantly single-family detached. About 75% of Sherwood's housing stock is single-family detached, 8% is single-family attached (such as townhomes), and 18% is multifamily (such as duplexes or apartments). Sixty-nine percent of new housing permitted in Sherwood between 2000 and 2014 was single-family detached housing.

Almost three quarters of Sherwood's residents own their homes. Homeownership rates in Sherwood are above Washington County (54%), the Portland Region (60%), and Oregon (62%) averages.

Homeownership costs increased in Sherwood, consistent with national trends. Median sales prices for homes in Sherwood increased by about 30% between 2004 and 2014, from about $245,000 to $316,5000. The median home value in Sherwood is 3.8 times the median household income, up from 2.9 times the median household income in 2000.

Housing sales prices are higher in Sherwood than the regional averages. As of January 2015, median sales price in Sherwood was $316,500, which is higher than the Washington County ($281,700), the Portland MSA ($269,900), and Oregon ($237,300) median sales prices. Median sales prices were higher in Sherwood than in other Portland westside communities such as Tigard, Tualatin, and Beaverton, but lower than Wilsonville or West Linn.

Rental costs are higher overall in Sherwood than the regional averages. The median rent in Sherwood was $1,064, compared to Washington County's average of $852. On a per-square-foot basis, Sherwood/Tigard/Tualatin's rents ($1.13 per square foot) were lower than the Portland Metro area's average of $1.22 per square foot.

More than one-third of Sherwood's households have housing affordability problems. Thirty-eight percent of Sherwood's households were cost-burdened (i.e., paid more than 30% of their income on rent or homeownership costs). Renters were more likely to be cost-burdened (40% of renters were cost-burdened), compared to homeowners (35% were cost-burdened) in Sherwood. These levels of cost burden are consistent with regional averages. In Washington County in the 2009-2013 period, 38% of households were cost burdened, compared to 41% in the Portland Region.

Future housing affordability will depend on the relationship between income and housing price. The key question is whether housing prices will continue to outpace income growth.

Answering this question is difficult because of the complexity of the factors that affect both income growth and housing prices. It is clear, however, that Sherwood will need a wider variety of housing, especially housing affordable to low- and moderate-income households.

How Much Housing Growth is Forecast, and Can that Growth be Accommodated within Sherwood?

The housing needs analysis in this report is based on Metro's coordinated forecast of household growth in Sherwood. The forecast includes growth in both areas within the city limits, as well as areas currently outside the city limits that the City expects to annex for residential uses (most notably the Brookman area).

Sherwood is forecast to add 1,156 new households between 2015 and 2035. Of these, 606 new households are inside the existing city limits; 550 new households are outside the current city limits in the Brookman Area.

Sherwood's land base can accommodate the entire forecast for growth. Vacant and partially vacant land in the Sherwood Planning Area has capacity to accommodate 1,281 new dwelling units. Compared to demand, Sherwood has a small surplus of residential land.

Sherwood will need to annex the Brookman Area to accommodate the forecast for growth. If Sherwood does not annex the Brookman Area, the city's options for accommodating future growth will be limited to growing within the existing city limits or to growing in a different area, such as Sherwood West. The availability of other areas to accommodate growth, including Sherwood West, will depend on changes to the Metro urban growth boundary and theses changes typically take years to make.

What if Sherwood Grows Faster?

The forecast for growth in Sherwood is considerably below historical growth rates. Metro's forecast for new housing in Sherwood shows that households will grow at less than 1% per year. In comparison, Sherwood's population grew at 3.4% per year between 2000 and 2013 and 8% per year between 1990 and 2013. If Sherwood grows faster than Metro's forecast during the 2015 to 2035 period, then Sherwood will not have sufficient land to accommodate growth.

At faster growth rates, Sherwood's land base has enough capacity for several years of growth. At growth rates between 2% to 4% of growth annually, land inside the Sherwood city limits can accommodate two to five years of growth. With capacity in the Brookman Area, Sherwood can accommodate four to ten years of growth at these growth rates.

Additional housing growth in Sherwood depends the availability of development-ready land. The amount of growth likely to happen in Sherwood is largely dependent on when the Brookman Area is annexed, when the Sherwood West area is brought into the City and annexed, and when urban services (such as roads, water, and sanitary sewer) are developed in each area.

WHAT ARE THE IMPLICATIONS FOR SHERWOOD'S HOUSING POLICIES?

To provide adequate land supply, Sherwood voters will need to approve/annex the Brookman area. If voters continue to reject the Brookman annexation, Sherwood as a community will either be unable to accommodate expected growth or will need to identify an alternative (more politically acceptable) area for growth. Sherwood West is just one of these possibilities. Another alternative would be to develop the existing vacant lands at higher densities than what they are zoned.

Sherwood will need Sherwood West to accommodate future growth beyond the existing city limits and Brookman area. The growth rate of Metro's forecast for household growth (0.7% average annual growth) is considerably lower than the City's historical population growth rate over the last two decades (8% average annual growth). Metro's forecast only includes growth that can be accommodated within the Sherwood city limits and Brookman. Given the limited supply of buildable land within Sherwood, it is likely that the City's residential growth will slow until Sherwood West is made development-ready.

Sherwood has a relatively limited supply of land for moderate- and higher-density multifamily housing. The limited supply of land in these zones is a barrier to development of townhouses and multifamily housing, which are needed to meet housing demand resulting from growth of people over 65, young families, and moderate-income households.

The results of the Housing Needs Analysis highlight questions for the update of the City's Comprehensive Plan and the Pre-Concept Planning of Sherwood West.

- Providing housing opportunities for first time home buyers and community elders (who prefer to age in place or downsize their housing) will require a wider range of housing types. Examples of these housing types include: single family homes on smaller lots, clustered housing, cottages or townhomes, duplexes, tri-plexes, four-plexes, garden apartments, or mid-rise apartments. Where should Sherwood consider providing a wider range of housing types? What types of housing should Sherwood plan for?
- Changes in demographics and income for Sherwood and regional residents will require accommodating a wider range of housing types. How many of Sherwood's needed units should the city plan to accommodate within the city limits? How much of Sherwood's needed units should be accommodated in the Brookman Area and in Sherwood West?
- What design features and greenspaces would be important to consider for new housing?
- What other design standards would be needed to "keep Sherwood Sherwood"?

City of Sherwood Oregon

Sherwood West Preliminary Concept Plan

A long range look at our future.

Existing Conditions Summary

Updated November 13, 2015

The purpose of this memorandum is to summarize the existing conditions and opportunities of the Sherwood West study area. An overview of Sherwood's population characteristics, land use and historic growth patterns is provided. In addition, this memorandum outlines the opportunities and constraints for the provision of parks and trails, transportation facilities and public services (including water, sanitary sewer, and storm utilities) to the study area. The memorandum includes the following sections:

- Project Description
- Study Area
- Population and Demographics
- Land Use and Buildable Lands
- Historic Growth Patterns
- Public Facilities
- Transportation
- Parks and Trails
- Environment and Natural Resources

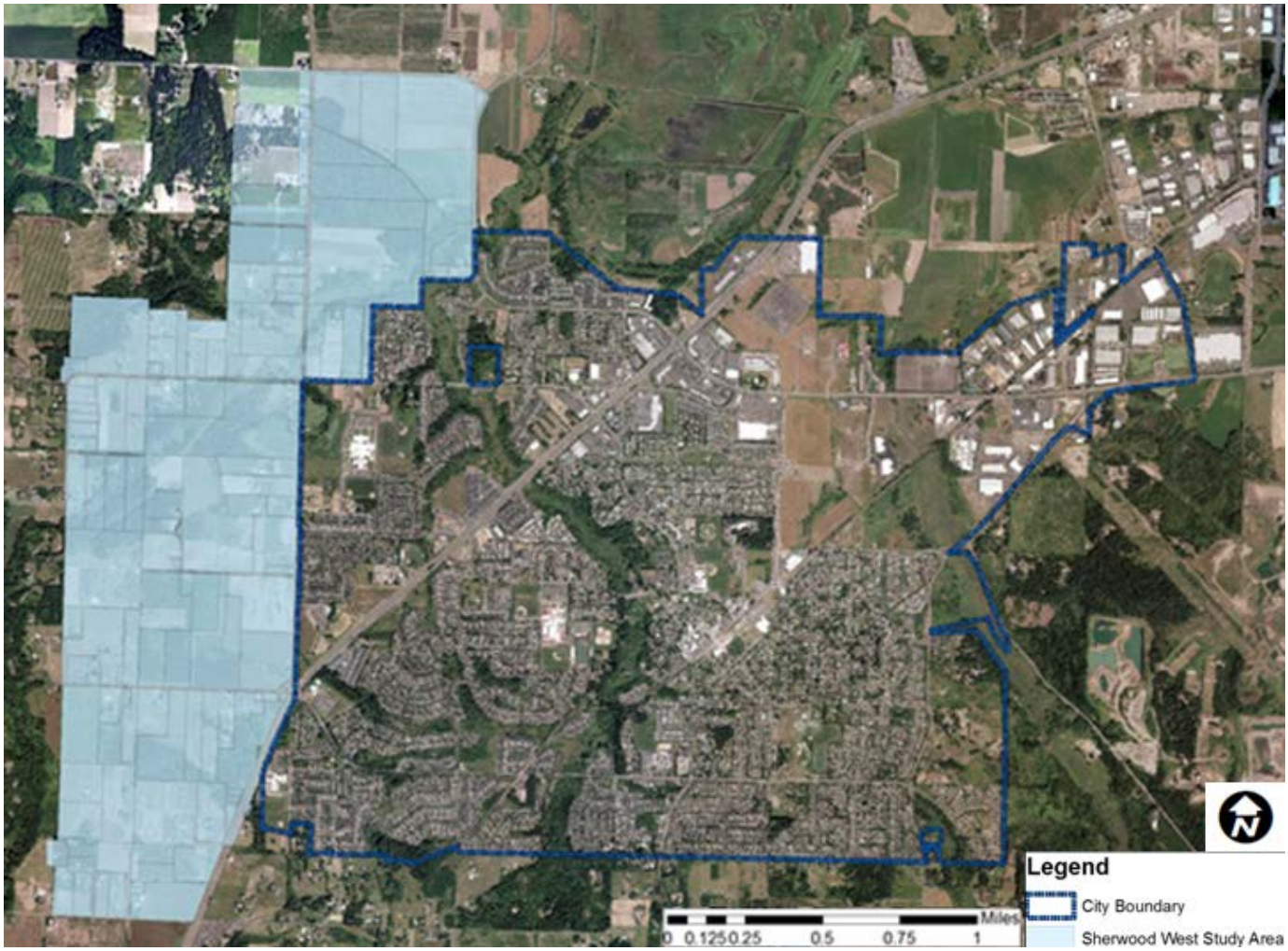
Project Description

The Sherwood West Preliminary Concept Plan is a comprehensive, long-range community plan for the Urban Reserve Area 5B, as designated by the Metro Council in 2011. As a preliminary concept plan, this project will help inform future decisions about whether Sherwood grows up or out, where housing is built and schools are located, and how infrastructure may be served over the next 50 years. A key element of a preliminary concept plan is a phasing strategy for incremental inclusion in the UGB, to the extent demanded by local and regional growth projections.

Study Area

The study area encompasses approximately 1,291 acres located along the western side of the current city limits (Figure 1). The site is bounded on the east by Hwy 99W, SW Elwert Road, and SW Roy Rogers Road. It is bounded by SW Chapman Road on the south and SW Lebeau Rd and SW Scholls-Sherwood Rd to the north. Site topography generally slopes from west to east, with an elevation difference of approximately 150 to 200 feet.

Figure 1. Sherwood West Study Area



Population and Demographics

As of the 2010 US Census, there were 18,194 people living in the City of Sherwood. The City accounts for about 3.4% of Washington County's total population of 531,335.

Covering an area of approximately 4.3 square miles, Sherwood's population density is about 4,217.2 per square mile. Relative to the nearby cities of Tualatin, Wilsonville and Newberg, Sherwood has a slightly higher population density per square mile. As shown in Table 1,

Sherwood also has a greater number of family households and a higher median household value, as compared to Washington County.

Table 1. City of Sherwood, and Washington County, 2010

	City of Sherwood	Washington County
Median Household Value	$327,000	$282,400
Median Household Income	$81,000	$60,963
Family Households	77.7%	67.1%
Average Commute time	26 minutes	24 minutes
Gender (female)	50.3%	50.8%
Median age	34.2 years	35 years
Hispanic or Latino	7%	15.7%

Source: US Census Bureau, 2010

Land Use and Zoning

The City of Sherwood's plan and zoning map indicates that the majority of the City is residential (See Appendix A). Some commercial activity is centered along HWY 99W and within the historic center, while industrial uses occupy the northeastern edge of Sherwood. The City has a relatively large portion of land zoned for public institutions and civic centers.

Whereas City acreage is 2,757.8 (4.3 square miles), the Sherwood West study area encompasses 1,291 acres across 126 tax lots and existing right-of-way (Table 2). Besides residential uses, the majority of the land use is designated as agricultural or forested. See Appendix B for the study area's buildable land by taxlot.

Table 2. Sherwood West Study Area Buildable Lands Facts

Total Acreage	1,291
Total Tax Lots	126
Total Tax Lot Acreage (excludes non-taxable area)	1,234
Total Right-of-Way (ROW) Acreage	57
Vacant Lots	39 (263.5 buildable acres)
Partially Vacant Lots with dwellings	83 (406.8 buildable acres)
Committed Lots	4 (0 buildable acres)
Total Buildable Land** Acreage	670.3

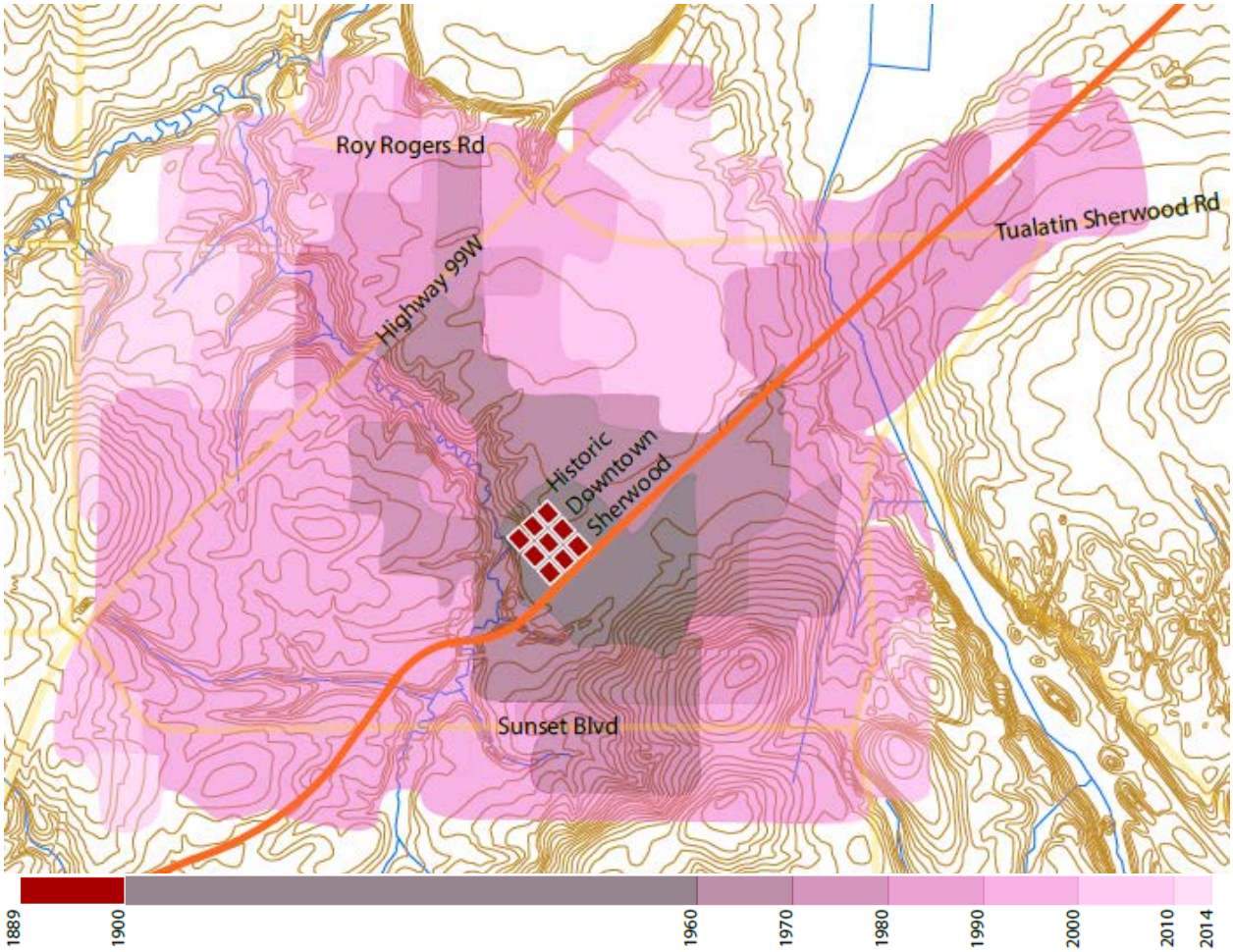
***Buildable land calculation includes removal of constrained land, deduction of 0.25-acre from lots greater than 0.5-acre with a dwelling unit, and a percent deduction for future streets.*

Historic Growth Patterns

The City of Sherwood was first platted in 1889, and later incorporated in 1893. The city plot was oriented around the railroad and subsequently built out from this 45-degree angle. Like most other western frontier towns, Sherwood's economy was largely based off the gold rushes in the 1800s. At the time of incorporation in the 1890s, Sherwood's main industry was a pressed brick yard.

The geographic distribution of Sherwood's growth has mostly been defined by creeks and roads. From the early 1900s to 1950s, Sherwood's growth remained relatively compact and primarily followed the railroad track (Figure 2). In 1951, Sherwood's downtown spanned 9 blocks and had fewer than 600 people.

Figure 2. City of Sherwood, Historic Growth, 1889-2014



It was only after 1960 that Sherwood began to witness major, consecutive growth spurts, with its population and land area nearly doubling (on average) every ten years through present day (Table 3).

Table 3. City of Sherwood, Population and % Change, 1900-2015

	Population	% change
1900	111	--
1910	115	3.6
1920	320	178.3
1930	382	19.4
1940	447	17
1950	575	28.6
1960	680	18.3
1970	1,396	105.3
1980	2,386	70.9
1990	3,093	29.6
2000	11,791	281.2
2010	18,194	54.3
Estimated 2015	18,955	3.8

Source: US Census Bureau

In 1991, with the availability of 1,300 acres of land for construction, the City of Sherwood adopted its first Comprehensive Plan. Over the next ten years, Sherwood saw its biggest boom, with its population nearly tripling in size. Most of this growth was attributed to the Woodhaven development, which added over 1,000 housing units to Sherwood. Today, the City estimates its current population at 18,995, up from around 18,195 from the 2010 US Census. Relative to historical patterns, growth in the past five years has slowed.

Whereas Sherwood's population growth has been significant over the past 50 years, the City's major services exist within a one-mile radius, which helps retains the City's "small-town feel." With the potential incorporation of Sherwood West study area, this radius could extend up to 1.5 miles.

Public Facilities

Water Systems

Existing Conditions

The current Water System Master Plan was adopted in May 2015. The Master Plan considers all areas within the city limits, the urban growth boundary and the West Urban Reserve (Sherwood West study area). The City's primary water supply is from the Wilsonville Water Treatment Plant, supplemented by groundwater wells. The City maintains an emergency connection and transmission piping to the Tualatin-Portland supply main. The City's distribution system includes three service zones supplied 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, serving the area around the Sunset Reservoirs, is supplied constant pressure by the Sunset Pump Station, and the 455 Pressure Zone serves higher elevation customers on the western edge of the City by gravity from the Kruger Reservoir.

Opportunities and Constraints

Existing water facilities in or near the study area include a water reservoir, a supply line, and distribution lines. The Kruger Reservoir is a 3.0 MG reservoir located inside the study area, south of SW Kruger Road and approximately one half mile west of Hwy 99 W. The Kruger

Reservoir serves the 455 pressure zone. An 18-inch transmission line is located in SW Kruger Road between the reservoir and Hwy 99W. The study area south of SW Handley Street is split between the Future 455 West and Future 630 West zones. The study area north of SW Handley Street falls primarily within the Future 380 West pressure zone.

Adjacent to the study area, the 18-inch water main from the Kruger Reservoir extends north in SW Elwert Road for approximately 800 feet. The line then reduces to a 12-inch line and continues north to SW Handley Street. In addition, a short segment of 12-inch waterline has been constructed in Elwert Road in the vicinity of Derby Terrace. Near the north end of the study area, a 16-inch water main located in SW Copper Terrace terminates at SW Edy Rd, approximately 840 feet east of the study area.

Initial anticipated growth in the West Urban Reserve will be served by extending existing 380- and 455-Zone distribution mains. Future customers along the ridge north and south of the existing Kruger Reservoir will be served by constant pressure from the proposed Kruger Pump Station at the existing reservoir site. This proposed closed zone is referred to as the 630 West Zone. Some future customers in the West Urban Reserve at the interface between the 630 West and 455 Zones may need to be served through a PRV-controlled sub-zone or through individual PRVs on each service in order to maintain required service pressures. This area is referred to as the 630 West PRV Zone.

A small area on the western edge of the West Urban Reserve along Edy Road near Eastview Road is too high in elevation to receive adequate service pressure from the adjacent 380 Zone. This area will be served as part of the closed 475 West Zone by constant pressure from the proposed Edy Road Pump Station. An additional pump station would potentially be needed to serve the 630 West PRV Zone. Extensive large diameter mains will be needed to expand the City's water service area to supply Sherwood West as development occurs.

See Appendix C for pressure zone boundaries and existing and proposed reservoir, pump station and water line locations identified in the Water System Mater Plan.

Sanitary Sewer System

Existing Conditions

The current Sanitary Sewer Master Plan was completed in July 2007 and is currently being updated. The Master Plan considers all areas within the city limits and the urban growth boundary. The West Sherwood Concept Plan study area is outside of the urban growth boundary and was not included in the Master Plan.

The City of Sherwood is served by two sanitary sewer trunk lines, the Sherwood Trunk Sewer (24-inch) which conveys sewage from the Cedar Creek sewage collection basin and the Rock Creek Trunk (18-inch) which conveys sewage from the Rock Creek sewage collection basin. Both trunk lines convey flows to the Sherwood Pump Station, owned by Clean Water Services (CWS),

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

Opportunities and Constraints
Existing sanitary sewer facilities adjacent to or near this site are limited. The Sherwood Interceptor crosses the study area near the northeast corner at Cedar and Chicken Creeks; and any sewer mainlines would need to cross these creeks in order to connect. A 15-inch line is stubbed to Elwert Road at adjacent Derby Terrace. This line connects to a 15-inch line in SW Copper Terrace which flows north to SW Edy Road and connects to the Sherwood Interceptor to the east.

The Brookman Addition is an area within the urban growth boundary on the south end of Sherwood between the city limits and SW Brookman Road. In the Sanitary Sewer Master Plan, this area is identified as Area 54/55. The City, recently constructed a sewer mainline to the boundary of the Brookman Addition. Future projects, which would occur with the development of the Brookman Addition,, would extend the sewer line into the Brookman Addition, providing sewer access for the West Sherwood Concept Plan study area at Brookman Road, east of Hwy 99W.

Capacity of the Sherwood Trunk line Sewer and the Sherwood Pump Station will need to be evaluated as part of the Master Plan update. See Appendix D for a map of existing sanitary sewer facilities.

<u>Stormwater</u>

Existing Conditions
The current Storm Water Master Plan was completed in June 2007 and is currently being updated. The Master Plan considers all areas within the city limits and the urban growth boundary. The West Sherwood Concept Plan study area is outside of the urban growth boundary and was not included in the Master Plan.

The West Sherwood Concept Plan study area lies primarily within the Chicken Creek Drainage Basin. The basin flows north and northeast along Chicken Creek, which bisects the site. Cedar Creek flows into Chicken Creek at the northeast corner of the study area, west of SW Roy Rogers Road. West Fork Chicken Creek enters the site near the northwest boundary, and flows east into Chicken Creek.

A small portion of the study area in the southeastern corner is part of the Cedar Creek Drainage Basin. On-site runoff enters Goose Creek, which flows from west to east, crosses under Hwy 99 W and reaches Cedar Creek.

The Stormwater Master Plan notes that Chicken and Cedar Creeks have been identified by the EPA as providing habitat for anadromous fish that are listed as threatened under the Federal Endangered Species Act. According to the Storm Water Master Plan, on-site soils fall primarily

in Hydrologic Soils Group C, with small areas of Groups B and D. The study area in the vicinity of Chicken and Cedar Creeks and their tributaries have been designated by Metro as riparian corridors, upland wildlife habitat, and aquatic impact areas. Some areas within the riparian corridors are also shown on the National Wetland Inventory.

Opportunities and Constraints
As the study area is undeveloped, there is no existing stormwater infrastructure on-site. As development occurs in the future, stormwater would likely be discharged onto the floodplain of the adjacent creeks and tributaries. The City of Sherwood requires that all stormwater facilities meet the requirements of Clean Water Services Design and Construction Standards for conveyance, water quality treatment, and water quantity treatment. The City has indicated that they prefer to use regional stormwater facilities within this study area.

See Appendix E for a map of storm drainage basins, creeks, and existing storm water facilities.

Transportation

Elwert Road from Highway 99W to Scholls-Sherwood Road is currently functioning as a two lane rural arterial. Elwert Road historically was a rural road used primarily for providing transportation access for farm equipment and rural residents. Over time, Elwert Road has become a secondary bypass route for commuter traffic (through trips) traveling between Highway 99W and Scholls-Sherwood Road and Roy Rogers Road, avoiding the intersection signals along the Highway 99W route.

Elwert Road's physical characteristics consist of two 11-foot paved lanes, a straight horizontal alignment, and a vertical alignment consisting of rolling hills that include acute vertical sags and crests which result in poor vertical sight distances, and intersection sight distances. Access points onto Elwert Road include several private driveways and seven street intersections (both local and collector). The intersecting streets and their classifications are listed below.

- Kruger Road – Local
- Orchard Hill Road – Local
- Edy Road – Collector
- Schroeder Road – Local
- Haide Road – Local
- Handley Road – Collector
- Conzelmann Road – Local
- Lebeau Road - Local

The City of Sherwood's Transportation System Plan (COS TSP) and Washington County's Transportation System Plan (WACO TSP) coordinated the analysis and results for Elwert Road from the intersection of Highway 99W to the Scholls-Sherwood Road intersection.

Both WACO's and COS's TSP's identify the future build-out condition of Elwert Road as a 3-lane arterial which will include sidewalks and bike lanes on both sides of the road. Appropriately sized arterial roads will allow through trips to remain on the arterial system and discourage use of local streets for cut-through traffic routes.

Due to the current adverse vertical alignment condition of Elwert Road, it is anticipated that large cut and fill sections and associated acquisition of additional right-of-way may be needed to bring Elwert Road's alignment (both vertical and horizontal) into conformance with adopted roadway design standards.

The Kruger/Elwert/Sunset Boulevard/Highway 99W intersection is on the current Major Streets Transportation Improvement Plan (MSTIP) for reconstructing the intersection by replacing it with a roundabout. This is intended to alleviate a current condition of inadequate stacking distance and restricted traffic by-pass flow off Highway 99W towards Scholls-Sherwood Road.

Roadway Access onto Elwert Road. Development of the Sherwood West area would require the creation of a secondary collector road paralleling Elwert Road to provide access for businesses and residential developments. This secondary road alignment could potentially run from Chapman Road north to Edy Road. The crossing of Chicken Creek would be a major obstacle for any road extension to Scholls-Sherwood Road.

Ideally, any parallel collector road would reconnect to Elwert Road prior to the Elwert Road/Edy Road intersection. From that point on, the Elwert Road vertical alignment would be reconstructed to correct the vertical curve and sight distance issues. The intersections beyond Edy Road/Elwert road include Schroeder Road and Conzelmann Road. These intersections would likely need to be reconfigured to meet appropriate design standards.

Highway 99W is a state designated freight corridor and limited access highway. It is identified as a principal arterial in both the WACO TSP and COS TSP. Access onto Highway 99W would be coordinated with the Oregon Department of Transportation. The intersections of SW Chapman, SW Elwert, and SW Brookman roads will all need to be studied and possibly reconfigured or signalized depending on the amount of traffic generated by future land uses within the area.

Scholls-Sherwood Road is designated as an arterial within the WACO TSP. According to Washington County, rural arterials serve a mix of rural-to-urban and farm-to-market traffic. In some cases rural arterials, especially in rural/urban fringe areas, accommodate significant amounts of urban-to-urban through-traffic during peak commuting time periods. This is not the intended function of the rural arterial designation and is often the result of congestion on urban arterials. Rather, arterials are intended to provide freight movement in support of principal arterials. Arterials have strong access control for cross streets and driveways. There are two intersections along Scholls-Sherwood Road within the study area. As mentioned earlier, the intersection with Elwert Road will require additional study, reconfiguration, and eventual signalization as Sherwood West is developed. The intersection of Roy Rogers Road was recently reconfigured and signalized as a Washington County transportation improvement. Per the current COS TSP standards for arterial roads, new access should be spaced between 600 to 1,000 feet apart.

Roy Rogers Road is designated as an arterial within the WACO TSP. The same standards that apply to Scholls-Sherwood Road would apply to Roy Rogers Road as well.

Both *Edy and Chapman roads* are classified as collectors within WACO TSP. Edy Road is also designated a collector street within the COS TSP. Collector streets provide both access and circulation between residential, commercial, industrial and agricultural community areas and the arterial system. Collectors tend to carry fewer motor vehicles than arterials, with reduced travel speeds. Collectors may serve as freight access routes, providing local connections to the arterial network. Generally, collector status roads are intended to connect neighborhoods to nearby centers, corridors, station areas, main streets and nearby destinations in the urban area. In the rural area, collectors are a primary link between the local street system and arterials for freight, people, goods and services. Access control on collectors is moderate, and direct driveway connections are discouraged.

The remaining streets within the study area are classified as local streets within the WACO TSP. Local streets primarily provide direct access to adjacent land. While local streets are not intended to serve through-traffic, the aggregate effect of local street design can impact the effectiveness of the arterial and collector system when local trips are forced onto the arterial street network due to a lack of adequate local street connectivity. Rural local roads have traditionally provided access to a variety of rural land uses including agriculture, forestry, quarry activities, low-density rural residential uses as well as rural commercial and industrial uses. The local streets within the study area are paved with narrow lane widths and roadside ditches to provide drainage. These streets do not include traffic calming measures, sidewalks, or lighting.

Given the terrain, the presence of existing significant natural areas, and the current parcelization of the area, there are likely to be significant costs and challenges with constructing and connecting roadways within the study area.

The Street Functional Classification Maps from the WACO TSP and COS TSP are shown in Appendix F and G, respectively.

Parks and Trails

Adopted in October 2006, the Parks and Recreation Master Plan conducted a comprehensive review of existing recreation facilities and land resources, and developed goals, objectives, and actions to implement long term strategies for future park development, preservation, design, and funding mechanisms. Key recommendations of the plan include completion of the community trail system and expansion of recreation opportunities such as construction of a skate park.

The Master Plan analyzed lands and facilities in the Sherwood city limits and includes mention of the Tualatin River National Wildlife Refuge (about 1 mile north of the city). At its nearest

point, the Wildlife Refuge is less than a quarter-mile from the northeast point of the Sherwood West study area. Within the city limits, Sherwood manages over 300 acres of open space including most of the 100-year floodplain along Cedar Creek and portions along Rock Creek.

In total, 6.5 miles of paved multi-use trails are present in the open space system. Existing hard surface trails terminate at Highway 99 just south of Sunset Boulevard and approximately 600 feet to the north at Highway 99 in the greenway north of the Sherwood YMCA. These are the closest multi-use trail connections to the Sherwood West study area. The planned Ice Age Tonquin Trail alignment will parallel Roy Rodgers Road at the northeast edge of the study area. The future trail will traverse through Sherwood along Cedar Creek and connect to the Tualatin River National Wildlife Refuge. The completed Tonquin Trail system will link the cities of Sherwood, Tualatin, and Wilsonville.

There are no formal multi-use trails or parks in Sherwood West. Chicken Creek forms a natural greenway flowing southwest to northeast through the study area, eventually draining to the Tualatin River via Cedar Creek. The Cedar Creek greenway through the city connects at Chicken Creek. West Fork Chicken Creek and Goose Creek form smaller natural greenways in the central and southeast portions of the study area, respectively. Upper Chicken Creek, a 38-acre Metro-owned natural area, is located just outside the study area and abuts its western edge south of Kruger Road.

While the Parks Master Plan does not detail needs for the Sherwood West area, Chapter 5 of the Sherwood Comprehensive Plan establishes minimum standards for parks and open space. Those minimum standards are summarized in the following Table 4.

Table 4. Guidelines for Providing Parks, recreation, and Trail Facilities in Sherwood

TYPE	SIZE	LEVEL OF SERVICE
Tot Lots/Mini-Parks	2,400 sq. ft. to 1 acre in size	Minimum of 1 acre to serve needs of 1,000 people
Neighborhood Parks	2-5 acres in size	Minimum of 1 acre to serve needs of 500 people or 1 park to a neighborhood of 2,000 to 4,000 people
Community Park	10-25 acres in size	Minimum of 1 acre to serve needs of 1,000 people or 1 park to a community of 20-25,000 people
General Open Space – Greenway	variable depending on location	acres per population density is variable but intended to serve entire community
Natural Trails and Scenic Pathways	average of 1 to 2 miles long with a use intensity of about 50 people per day	These typically border transportation and utility corridors, floodplains and other areas of natural and scenic value
Conservation Management Area	not specified	These generally consist of areas within the 100-year flood plain that are described as wetlands, marsh, bogs, and ponds, and includes all creek and natural drainage ways

The Comprehensive Plan emphasizes that park facilities must be accessible and central to the population it serves. For example, the service area of a neighborhood park is considered to be ½-mile in radius.

Environment and Natural Resources

Floodplains

Based on FIRM analysis, there is a defined 100-year floodplain for a portion of Chicken Creek and up West Fork Chicken Creek within Sherwood West. The floodplain for Cedar Creek at its intersection with Chicken Creek is also defined. These floodplain areas currently appear to be natural greenways within the study area. The upper reaches of Chicken Creek and Goose Creek do not have available flood study data.

Wetlands

National Wetland Inventory (NWI)-mapped wetlands in the study area are most prominent along the riparian corridor of Chicken Creek. Three smaller wetland areas are also shown outside this corridor—two near Chicken Creek and one near the headwaters of Goose Creek. In total, the NWI-mapped wetlands comprise just over 31 acres within the study area. The local wetland inventory from Metro is identical to the NWI.

Additional areas of wetlands are also likely present within the study area. These wetlands would most likely occur along smaller tributaries of Chicken Creek, Cedar Creek and Goose Creek as well as in areas of mapped hydric soils. The Natural Resources Conservation Service (NRCS) maps three hydric soil series within the study area: Wapato silty clay loam, Huberly silt loam, and Delena silt loam. Wapato soils occur within the floodplains of the major streams within the study area; Huberly soils occur on stream terraces and in the agricultural fields in the northern portion of the study area; and Delena soils occur in swales in the upper portions of the watersheds. Additional wetlands are likely present within areas of mapped hydric soils. A wetland inventory would be necessary to determine the likely extent of these wetlands.

Wetlands, streams, and natural waterbodies would also have a buffer regulated by Clean Water Services (CWS). These buffers generally extend up to 50 feet from the boundary of the sensitive area, but may extend farther in areas where slopes greater than 25% occur adjacent to the sensitive area.

Slope Hazard

Steep slopes (25% and greater) in Sherwood West are defined along drainage corridors for Chicken Creek, West Fork Chicken Creek, Goose Creek, and their tributaries. The steeper slopes are linear along the banks of these drainage ways. In addition, a higher point in the southwest portion of the study area has slopes that exceed 25%. Generally, the study area has an undulating form but not drastic changes in terrain relief. Slope analysis in GIS calculated the results shown below in Table 5 (acreages clipped to the Sherwood West boundary).

Table 5. Summary of Slope Hazard Area within the Study Area

SLOPE (%)	AREA (acres)	PORTION OF STUDY AREA (%)
0-10	862.03	67
10-15	219.53	17
15-20	91.53	7
20-25	54.36	4
>25	63.45	5
TOTAL	1,291	100

Endangered and Threatened Species

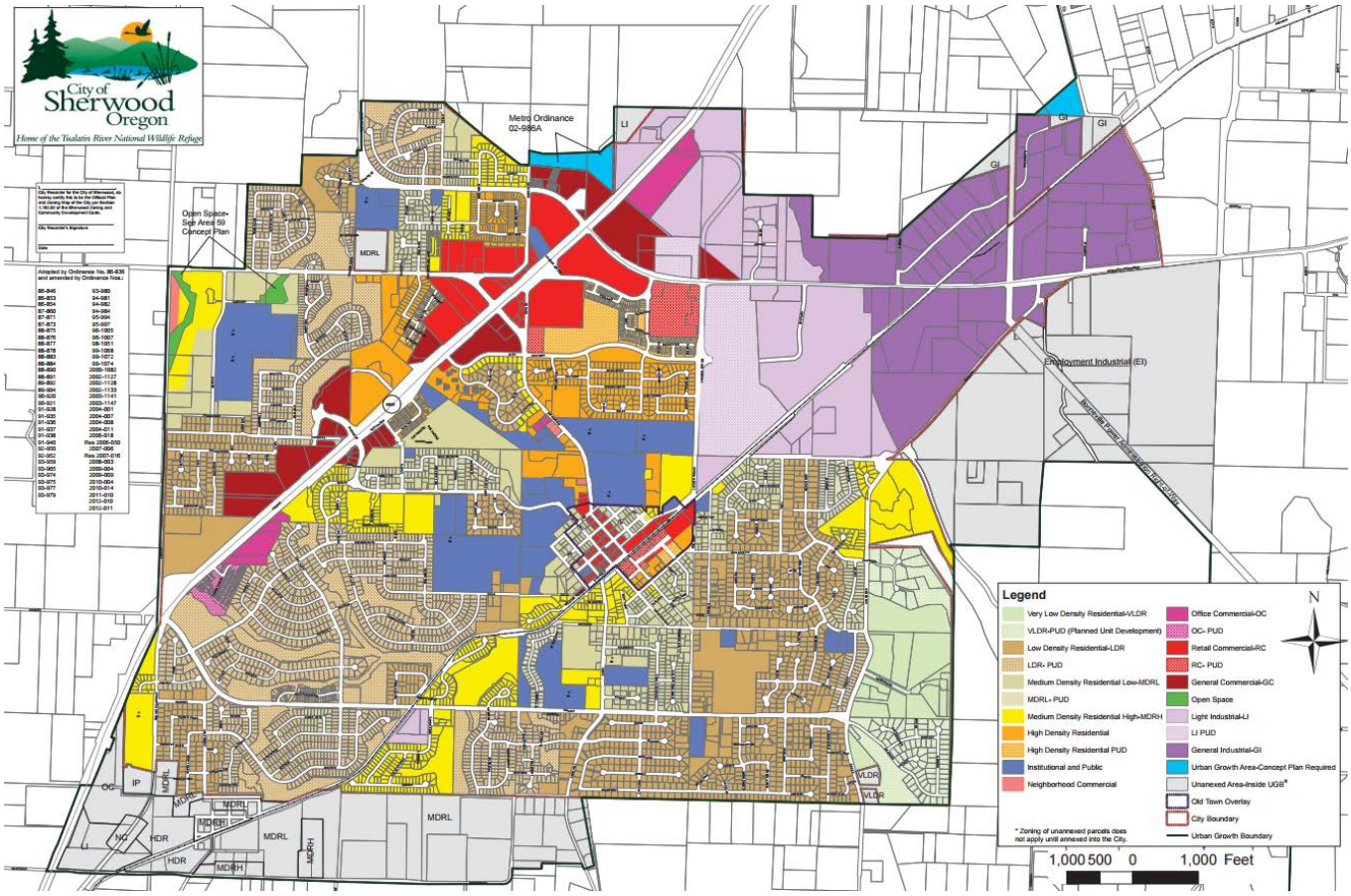
Endangered and threatened species may occur within the study area if suitable habitat is present. Data from the Oregon Biodiversity Information Center (ORBIC) indicates that one federally listed fish and one state-listed plant have been documented within two miles of the study area. Steelhead (*Oncorhynchus mykiss*), which is federally listed as threatened, is known to occur in Chicken Creek and Cedar Creek. White rock larkspur (*Delphinium leucophaeum*), which is state-listed as endangered, is known to occur to the south of the study area and could occur within the study area if suitable habitat exists.

The U.S. Fish and Wildlife Service (USFWS) lists nine additional federally listed endangered, threatened, and candidate species that are known or suspected to occur in Washington County (Table 6). None of these species are known to occur within the study area, but they could occur if suitable habitat is present. An inventory of the study area would be necessary to document the occurrence of these species or the presence/absence of suitable habitat within the study area.

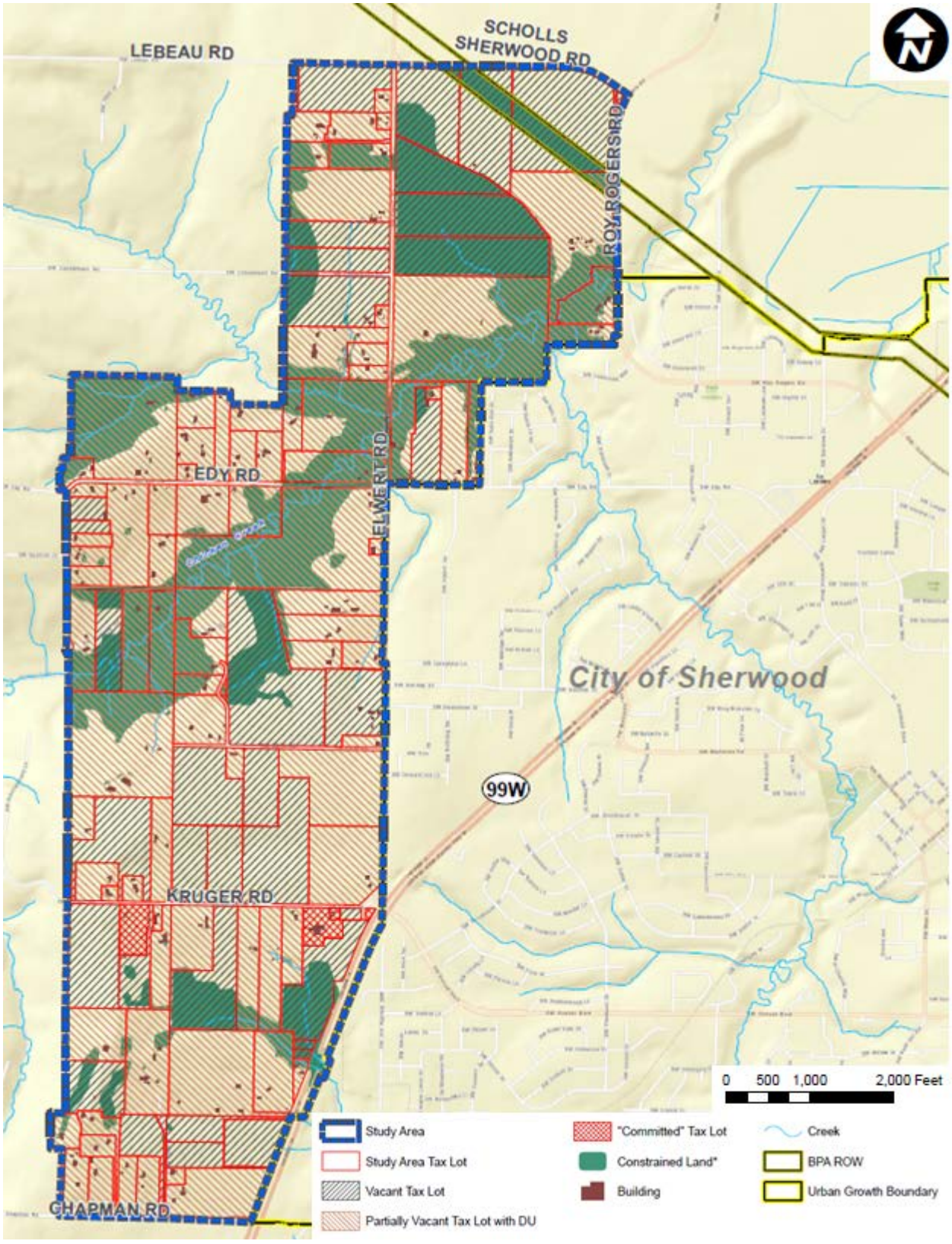
Table 6. Endangered and Threatened

Common Name	Scientific Name	Status	Comments
Yellow-billed cuckoo	*Coccyzus americanus*	Threatened	
Northern spotted owl	*Strix occidentalis caurinus*	Threatened	Habitat not present within study area
Marbled murrelet	*Brachyrhamphus marmoratus*	Threatened	Habitat not present within study area
Streaked horned lark	*Eremophila alpestris strigata*	Threatened	
Nelson's checkermallow	*Sidalcea nelsoniana*	Threatened	
Willamette daisy	*Erigeron decumbens var. decumbens*	Endangered	
Kincaid's lupine	*Lupinus sulphureus ssp. kincaidii*	Threatened	
Fender's blue butterfly	*Icaricia icarioides fender*	Endangered	
Red tree vole	*Arborimus longicaudus*	Candidate	

APPENDIX A. City of Sherwood Plan and Zoning Map, 2013

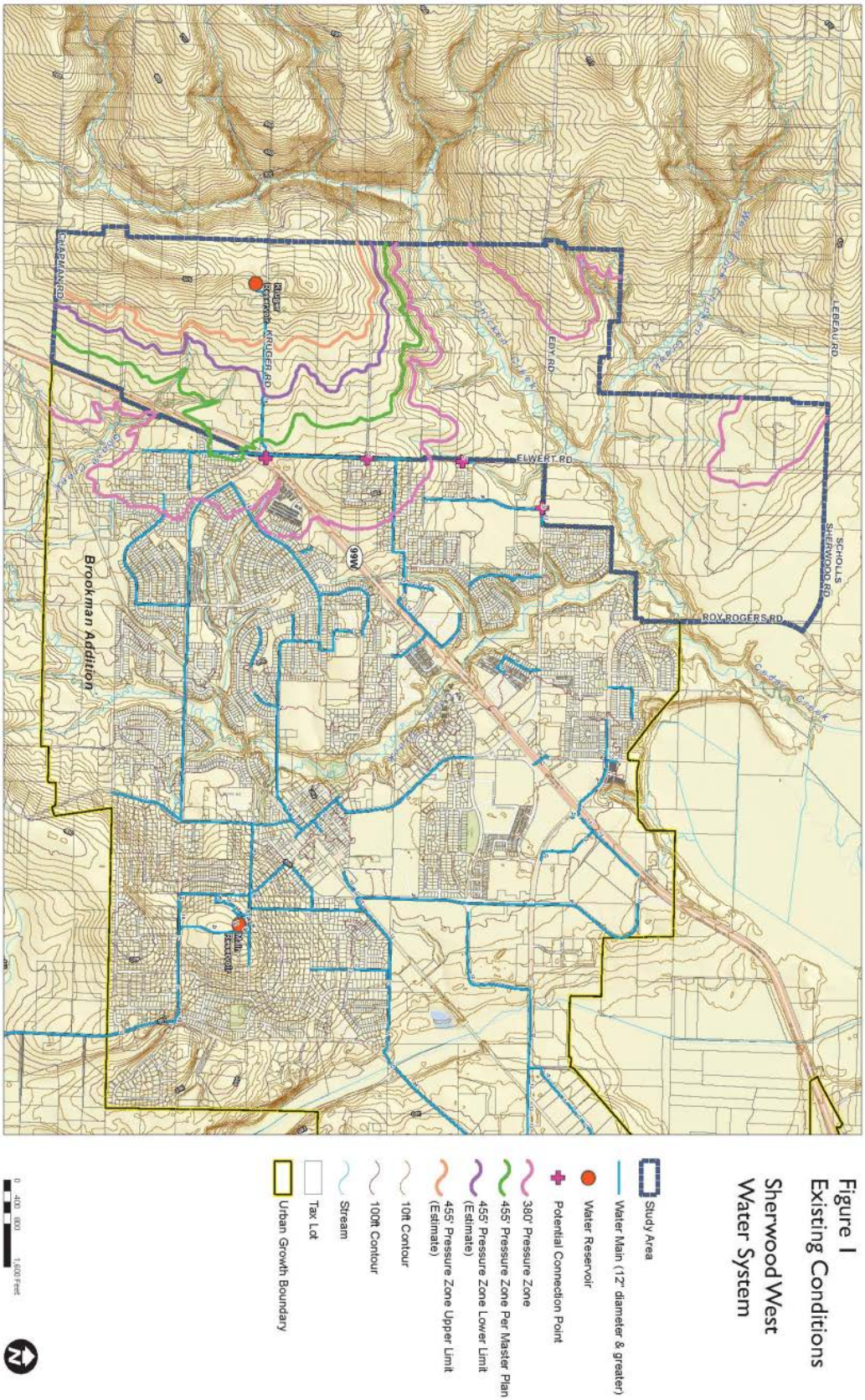


APPENDIX B. Sherwood West Buildable Land



**Constrained area includes Title 13 lands, slopes 25% and greater, the 100-year floodplain, and a BPA transmission line corridor.*

APPENDIX C. Sherwood West Water System



APPENDIX D. City of Sherwood Sanitary and Sewer Systems

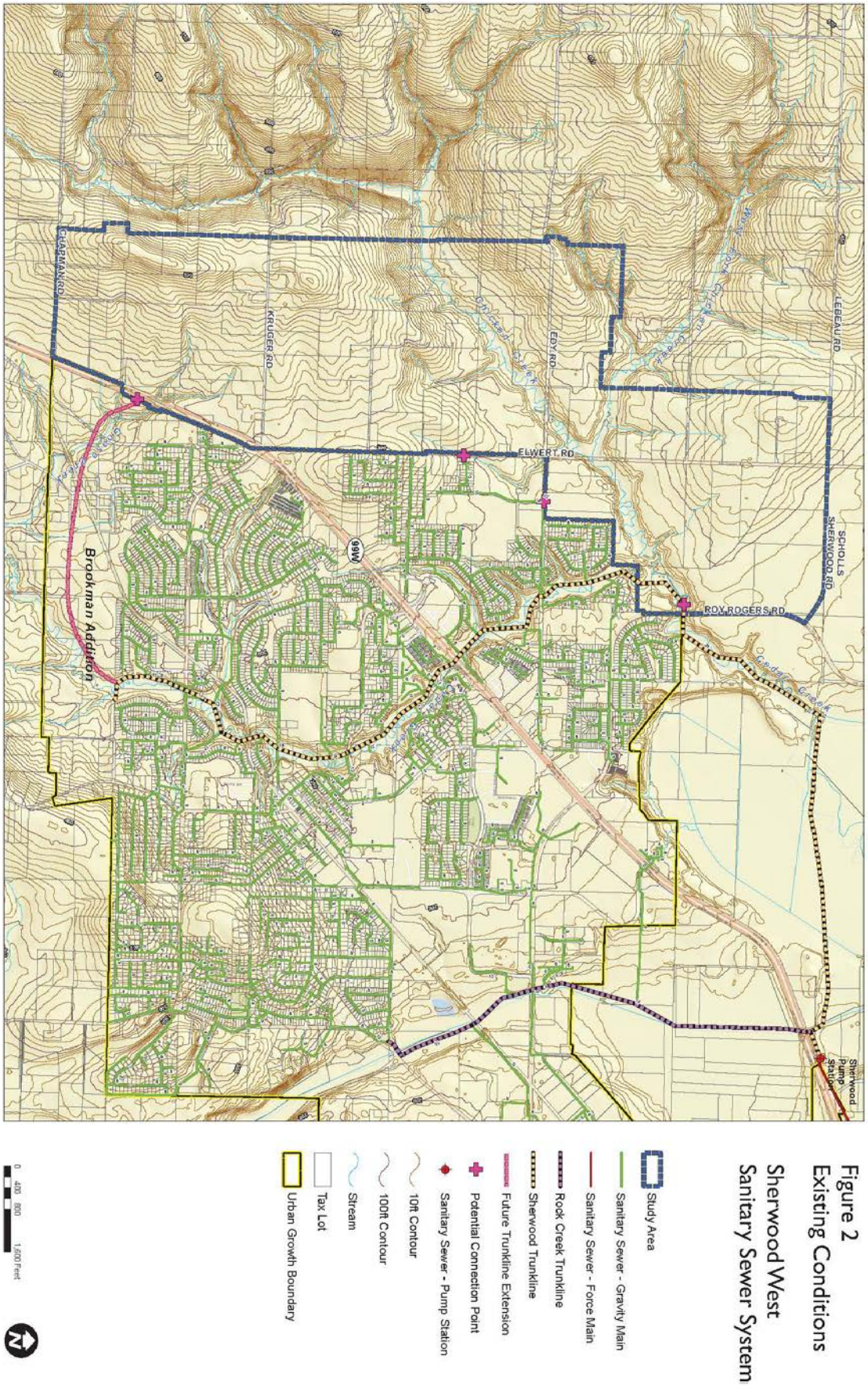


Figure 2
Existing Conditions
Sherwood West
Sanitary Sewer System

APPENDIX E. Sherwood West Stormwater System

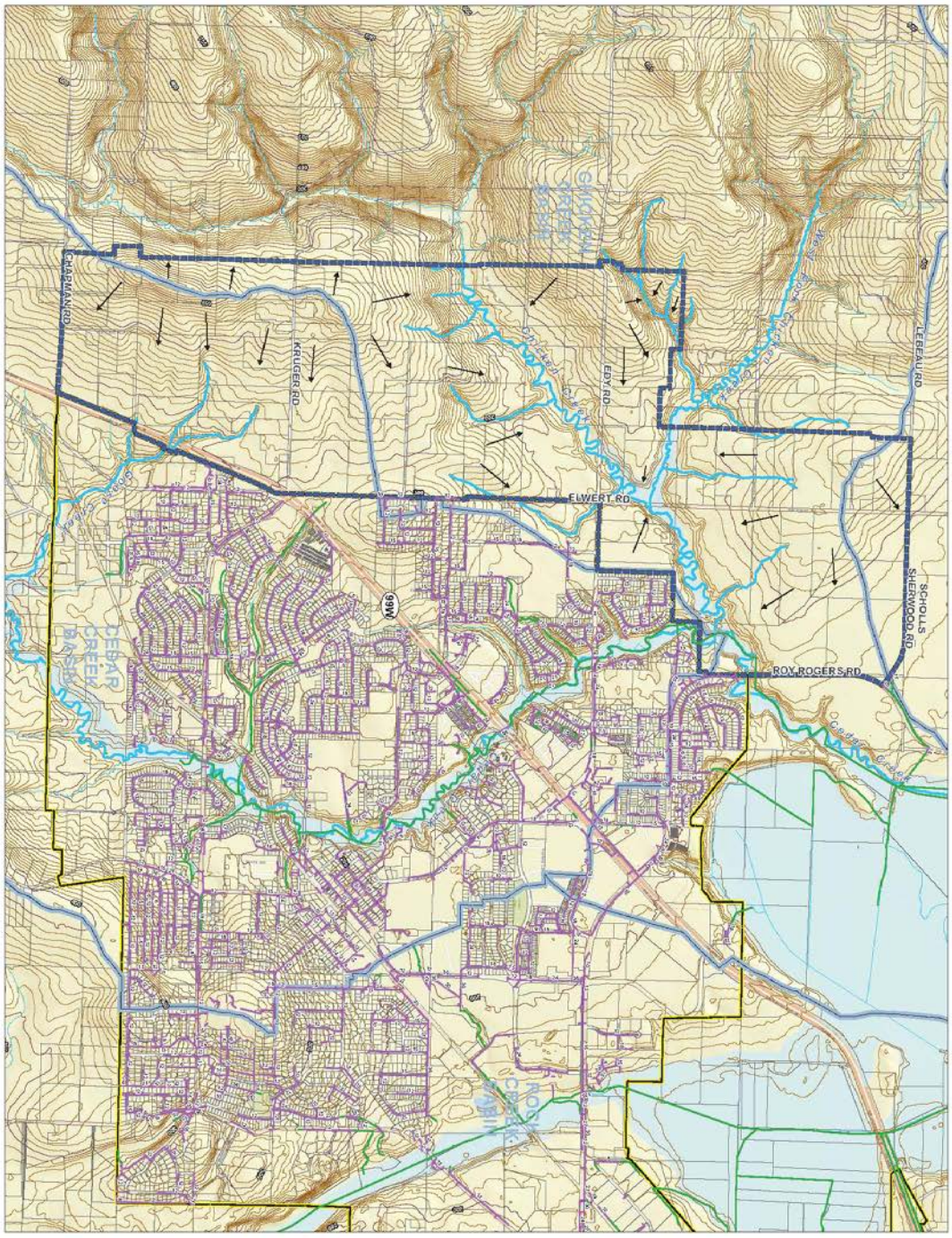
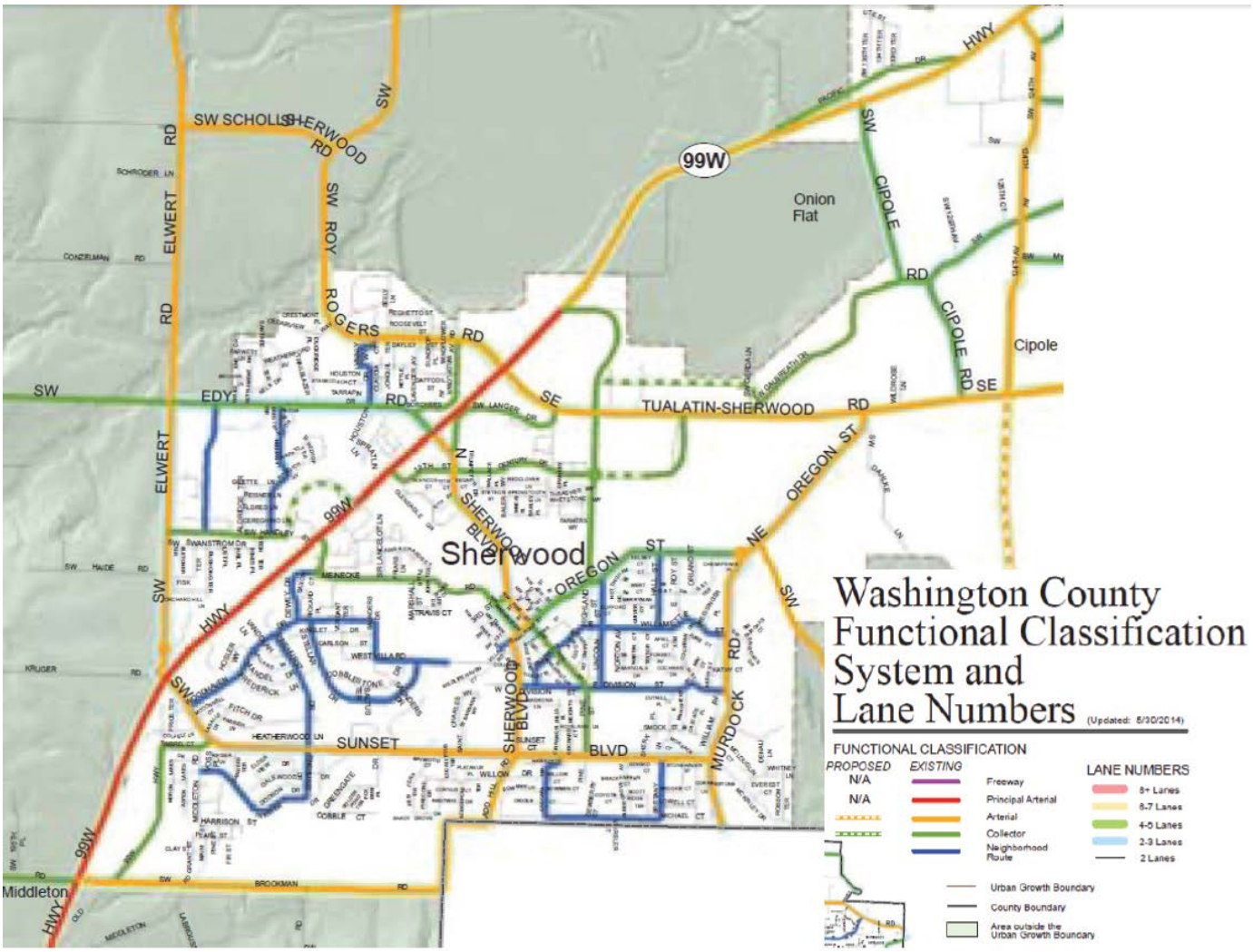
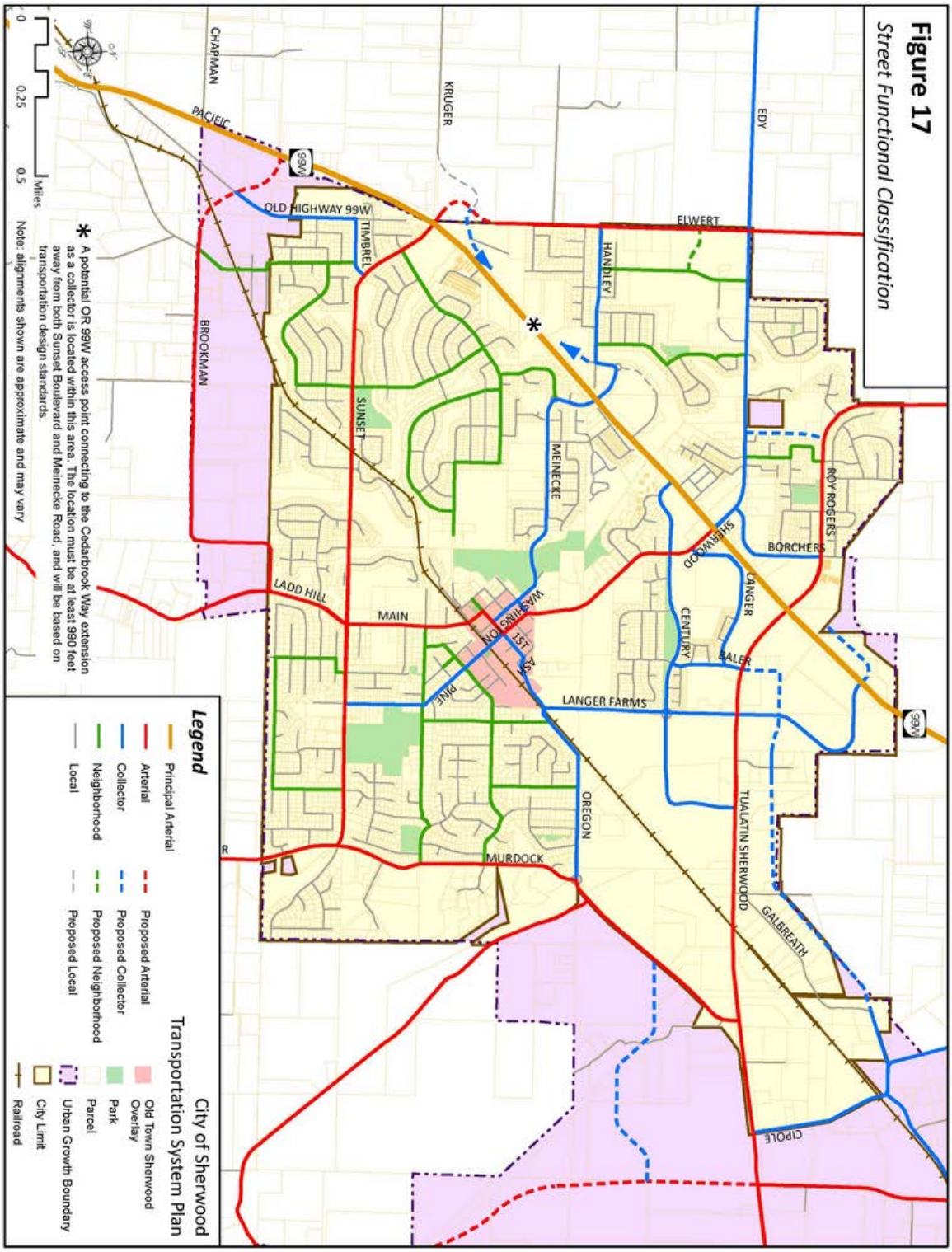


Figure 3
Existing Conditions
Sherwood West
Stormwater System

APPENDIX F. Washington County Street Classification Map



APPENDIX G. City of Sherwood Street Functional Classification



The methodology used to develop the buildable lands inventory and the results of the buildable lands inventory was developed and assessed by City of Sherwood staff.[1]

Methodology

1. *Definitions used in the inventory:*

Vacant land

- Any tax lot that is fully vacant as determined by RLIS GIS Data[2], aerial photography, field checks and local records.
- Tax lots that are at least 95% vacant are considered vacant land.
- Tax lots that are less than 2,000 sq. feet developed AND developed part is under 10% of entire lot

Developed land

- Part vacant/part developed tax lots are considered developed and will be treated in the redevelopment filter

2. *Steps in developing the buildable land inventory:*

Step 1: Inventory and map fully vacant residential lands

a. Sort City tax lot data by zoning designation within the City boundary.

The residential zones including any planned unit development overlay utilized within this study include:

Very Low Density Residential (VLDR)

Low Density Residential (LDR)

Medium Density Residential Low (MDRL)

Medium Density Residential High (MDRH)

High Density Residential (HDR)

b. Identify parcels that are fully vacant.

1. Remove developed parcels using most recent Metro's RLIS GIS data.
2. Planning staff review based on current aerial photography, field checks, and local records

Step 2: Subtract unbuildable acres

a. Remove tax lots that d/n have potential to provide residential growth.

1. Tax exempt with property codes for City, State, Federal and Native American designations
2. Schools
3. Churches and social organizations-based solely on tax exempt codes
4. Private streets
5. Rail properties
6. Tax lots under the minimum lot size of the zone or 4,250 sq. ft. for residential land due to infill standards
7. Parks

b. Calculate deductions for environmental resources[3].

1. Remove Floodways-100% removed

[1] Michelle Miller, AICP, Senior Planner at the City of Sherwood developed the buildable lands inventory.

[2] Metro's Data Resource Center collaborates with local partners to develop and deliver the Regional Land Information System (RLIS) – more than 100 layers of spatial data that supports strategic decision-making for governments, businesses and organizations across the region.

[3] Environmental resources are considered to include Title 3, Title 13 FEMA floodway and slopes over 25 %.

2. Recognize environmental constraints such as slopes over 25 % and constrained areas as defined by Cities and Counties under Metro Functional Plan Title 13-Riparian Corridors (Class I and II) and Upland Wildlife Habitat (Class A and B) -100%
3. By assumption, allow one dwelling unit per residentially zoned tax lot if environmental encumbrances would limit development such that by internal calculations no dwelling units would otherwise be permitted.

c. Calculate for future streets. [4]

This methodology sets aside a portion of the vacant land supply (not redevelopment supply) in order to accommodate future streets and sidewalks. This assumption is calculated on a per tax lot basis.

1. Tax lots less than 3/8 acre assume 0% set aside future streets.5
2. Tax lots between 3/8 acre and 1 acre assume a 10% set aside for future streets
3. Tax lots greater than an acre assume an 18.5% set aside for future streets
4. Industrial zoning assumes a 10% set aside regardless of size.

Step 3: Inventory and map re-developable lands

a. Definition:

Re-developable: applies to lots that are classified as developed that are now likely to redevelop or during the 20-year planning period**.**

b. Query performed that identifies previously developed lots that have potential to redevelop over time due to the relationship between the size of the lot and the value of improvements.

1. Sites between .26-.54 acres with improvements less than $ 50 K
2. Sites over .55 acres with improvement between $50,001-100 K
3. Sites over 1 acre with improvement values between $ 100,001-150 K
4. Results of this query include land that is wholly re-developable, meaning existing improvements would be replaced, and land that is partially vacant, meaning the lot could be divided to allow for additional development.

Step 4: Planning staff review of draft map-(Investigative step)

a. Remove under construction or pending construction as of October 1, 2014

b. Added back and redefined areas of special concern (Areas like Brookman for example)[6]

c. Review and add City owned properties that are developable and not held for public purpose

d. For parcels zoned MDRH and HDR determine densities based on location and likelihood that parcel will develop with multifamily or single-family dwelling units and base densities on minimum lot size for single-family and maximum density for multifamily.

e. Re-developable or partially vacant sites that include:

- Properties currently for sale
- Lots that are more than twice the minimum lot size required to support the number of existing dwelling units including tax lots that have land division potential
- Sites that should have been identified as partially vacant but not caught earlier
- Lands with single-family development zoned for multifamily development

f. Remove from Map and defined the following as Not Likely to Redevelop

- Sites occupied by active religious institutions
- Sites with known deed restrictions
- Sites currently under development
- Sites occupied by utility infrastructure

[4] The BLI accounts for future streets on a tax lot by tax lot basis. The buildable area of each tax lot is reduced based on individual tax lot size.

[5] The basis for these net street deduction ratios derive from previous research completed by the Data Resource Center and local jurisdictions for the 2002 UGR.

[6] Assume Brookman Concept Plan Zoning

- Commercially zoned land greater than ½ mile from either residential or town center lots-most likely won't be mixed use with residential

g. Redevelop Strike Price Analysis

- Perform on all tax lots planned for residential and commercial development, to identify Multifamily and Commercial sites with a market redevelopment strike price of less than $10 per square foot.[7]

Strike Price = (Improvement value + land value)
Total Sq. Ft of lot

h. Identify possible rezone properties that would either be added or subtracted from the inventory over time.

Results of the Buildable Lands Inventory

Table A- 1 presents the City's inventory of buildable land. The buildable lands inventory is based on City of Sherwood and Metro GIS data. Table A- 1 shows that Sherwood has 175 net acres of suitable buildable residential land. Fifty-five percent of Sherwood's vacant land (96 acres) is within the city limits and 45% (79 acres) is within the Brookman Area or other unincorporated areas within the current Urban Growth Boundary.

Table A- 1. Inventory of suitable buildable residential land, net acres, Sherwood city limits and areas within the UGB, 2014

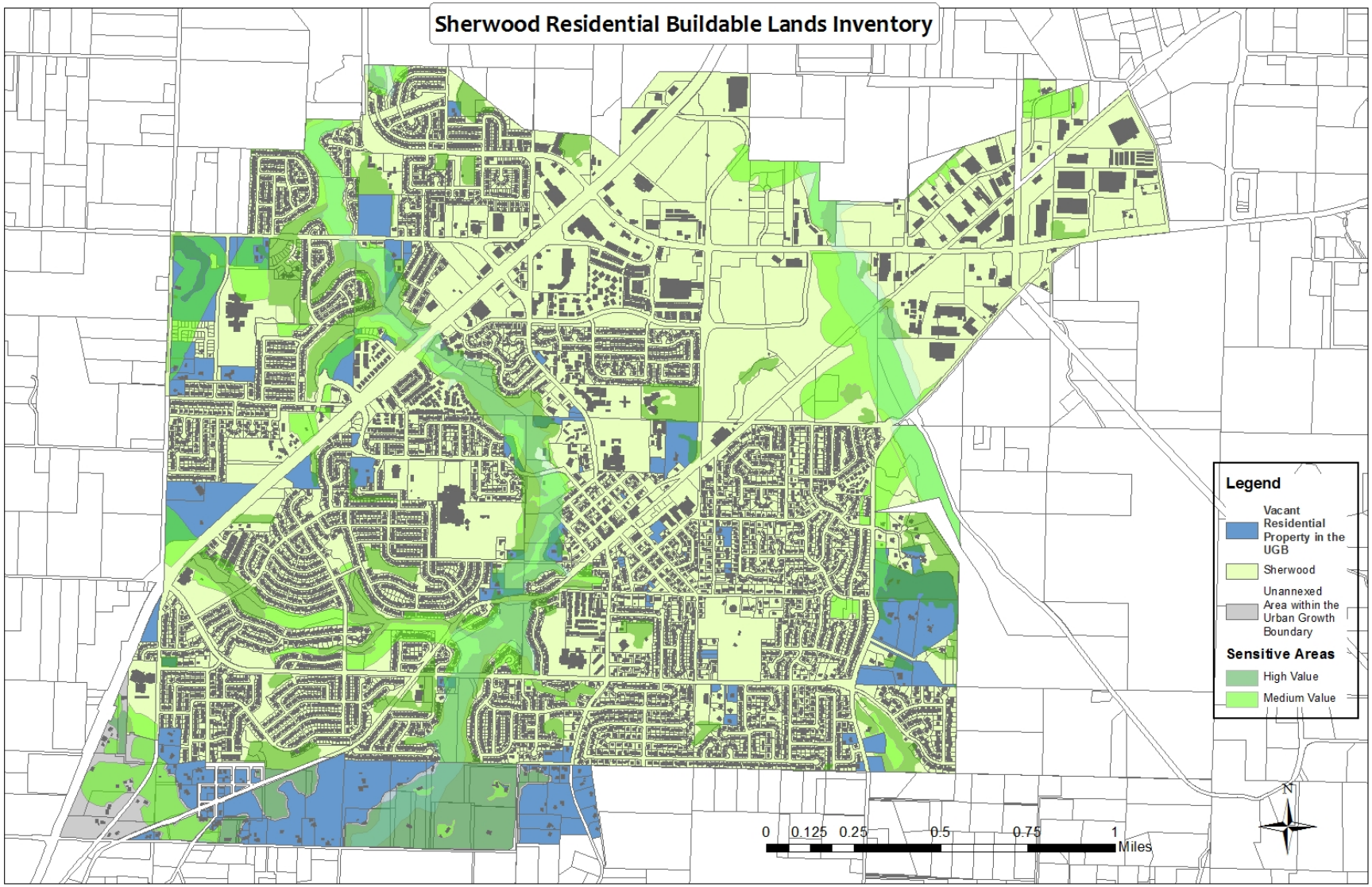
Zone	Gross Acres	Percent of Total
Land within City Limits		
Very Low Density Residential (VLDR)	24	14%
Very Low Density Residential Planned Unit Development (VLDR-PUD)	1	1%
Low Density Residential (LDR)	22	13%
Medium Density Residential-Low (MDRL)	14	8%
Medium Density Residential-High (MDRH)	21	12%
High Density Residential (HDR)	14	8%
Subtotal	**96**	**55%**
Brookman and Other Unincorporated Areas		
Very Low Density Residential (VLDR)	1	1%
Medium Density Residential-Low (MDRL)	52	30%
Medium Density Residential-High (MDRH)	8	4%
Medium Density Residential- Low/High* (MDRL/H)	15	8%
High Density Residential (HDR)	3	2%
Subtotal	**79**	**45%**
Total	**175**	**100%**

Source: City of Sherwood
*Note: There is one lot split between MDRL and MDRH.

Map A-1 shows vacant and partially vacant land in Sherwood.

[7] This formula is part of the draft proposed Metro methodology for identifying sites zoned for Multifamily and Mixed Use Development that are likely to redevelop. $10/sq.ft. is the estimated threshold for the market supporting redevelopment of suburban sites that are zoned for multifamily development.

Map A-1. Inventory of suitable buildable residential land, net acres, Sherwood city limits and areas within the UGB, 2014



Draft Alternative A

The North District is a mixed-housing neighborhood organized around a new school and park with local neighborhood retail between the school and Roy Rogers Road. The corner of Roy Rogers and Scholls/Sherwood Road is envisioned as Athletic Fields serving the entire City of Sherwood. The location on the edge of town offers both local access from the adjacent neighborhood, as vehicular access from the adjacent arterial network.

The West District is a mixed-housing district organized around a neighborhood park at the headwaters of an unnamed creek branching off Chicken Creek. The intersection of Elwert and Edy road has been relocated in this alternative to slow down cut-through traffic and to avoid sensitive creek confluences. Future Elwert Road is envisioned as an extension of Sunset: a heavily landscaped multi-modal boulevard with roundabouts. A mixed-use commercial node is envisioned at this new intersection, adjacent to land already zoned commercial and within walking distance from Edy Ridge School. This center serves both existing and new neighborhoods. A second small mixed-use center is located around the connection of Kruger, Elwert and HWY 99.

The Far West District has a mixed residential and local retail component retail to offset the cost of the Elwert and Edy reconfigurations. The higher and steeper elevations are envisioned to be hillside residential.

The Southwest District is a residential neighborhood with varying densities. A park is envisioned on the top of the hill next to the water reservoir, much like Snyder Park. The higher and steeper elevations are envisioned to be hillside residential.

Draft Alternative B

The North District is a mixed residential neighborhood organized around an internal mixed-use neighborhood center and park. Residential density transitions from center to edge of neighborhood. The corner of Roy Rogers and Scholls/Sherwood is a school, connected to the center of the neighborhood via a park.

The West District is a residential neighborhood with smaller pocket parks. The higher elevation, above the water pressure zone has another school and a mix of housing types. It also has a hilltop park adjacent to the school. At the intersection of Kruger and a proposed north-south street, there is a mixed-use neighborhood center with residential intensity transitioning from the intersection to the edge of the neighborhood. Elwert remains as a straight north-south route in this alternative but is envisioned as an extension of Sunset: a heavily landscaped multi-modal boulevard. There are no roundabouts in this alternative; rather standard intersections that are spaced appropriately.

The Far West District has athletic field in the flattest parts directly north of Edy road, just east of a proposed nature conservancy park. South of Edy is hillside residential is proposed matching existing development patterns.

The Southwest District is a residential neighborhood with varying densities. Higher and steeper elevations are envisioned as hillside residential.

Alternative C

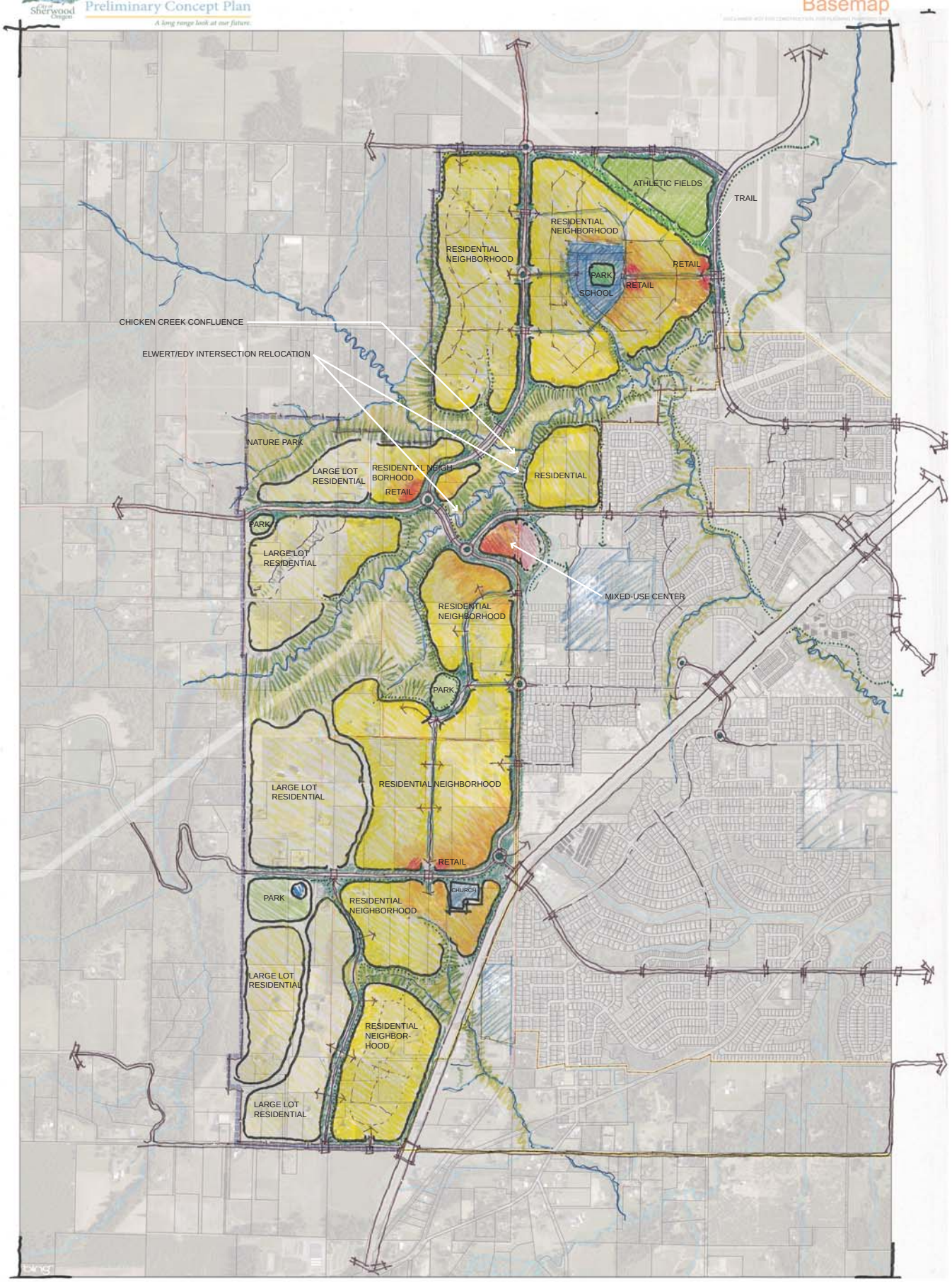
The North District is a mixed-housing neighborhood organized around a park. Local neighborhood commercial is located between Elwert and the neighborhood park. Higher intensity housing types are located along Elwert and the power line corridor. The corner of Roy Rogers and Scholls/Sherwood Road could be a conventional commercial center or even a mixed-use commercial center. It is served to both autos and pedestrians (providing convenient regional and local access).

The West District is a residential neighborhood organized around a school and neighborhood park at the headwaters of an unnamed branch of Chicken Creek. A local mixed-use retail node is directly adjacent to the school and the park, east of Elwert. Housing intensities transition from east to west (low to high). A nature park is shown on the steep terrain between creek braches. There is also a small local retail corner on Kruger near the church. Higher and steeper elevations are envisioned as hillside residential. Elwert Road remains as a straight north-south route in this alternative but is envisioned as an extension of Sunset: a heavily landscaped multi-modal boulevard with an occasional roundabout at key locations to slow down traffic and signal major neighborhood entries.

The Far West District has hillside residential and no intense urban development.

The Southwest District is seen as the gateway to Wine country in this alternative, with a mixed-use/commercial/lodging/tourism district. Surrounding residential neighborhoods are buffered by natural features (creek) and also a park at the head waters of Goose Creek. Higher elevations is rural or very low residential.

Basemap



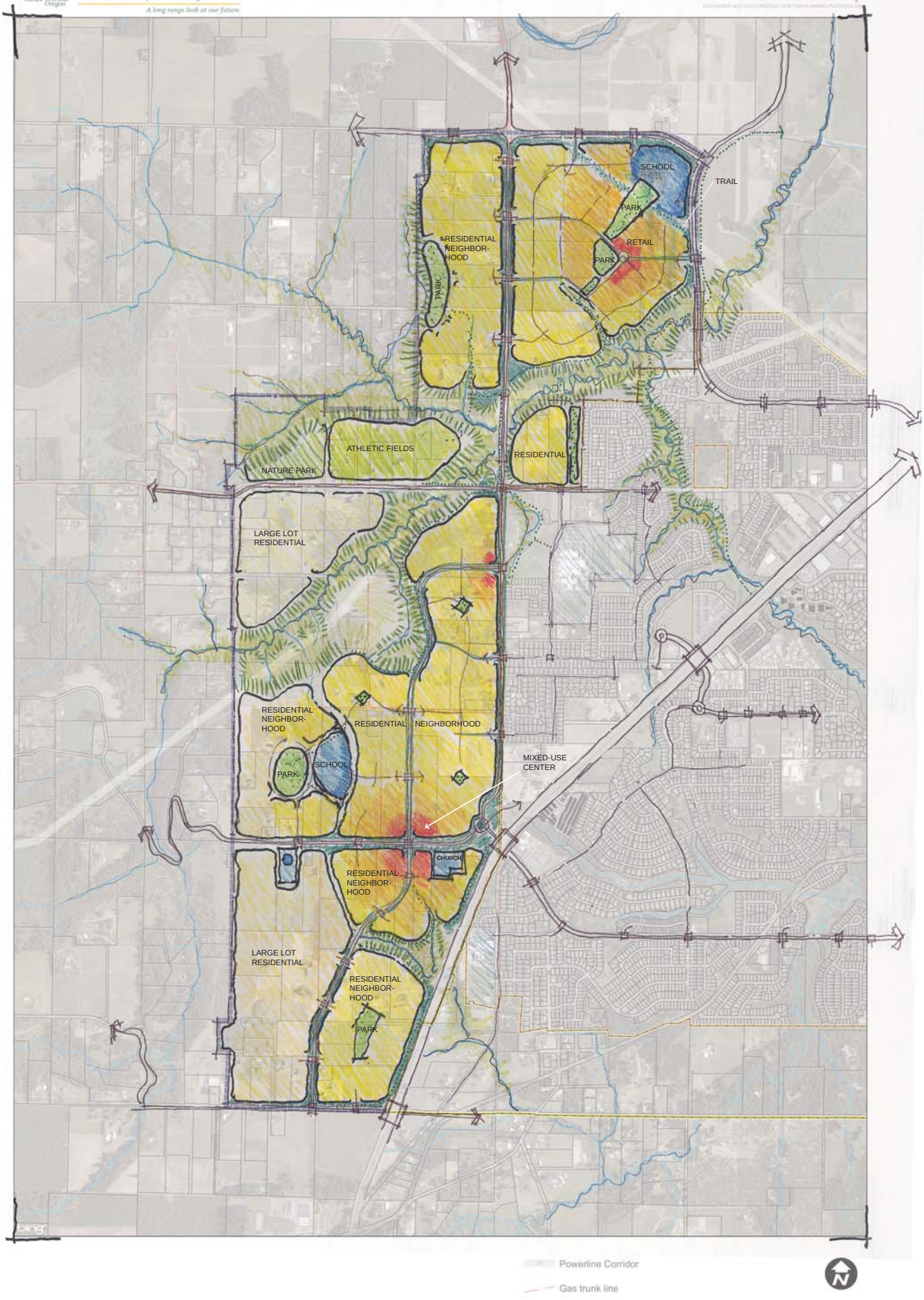
Powerline Corridor

Gas trunk line

DRAFT ALTERNATIVE PLAN A

Sherwood West
Preliminary Concept Plan
A long range look at our future.

Basemap

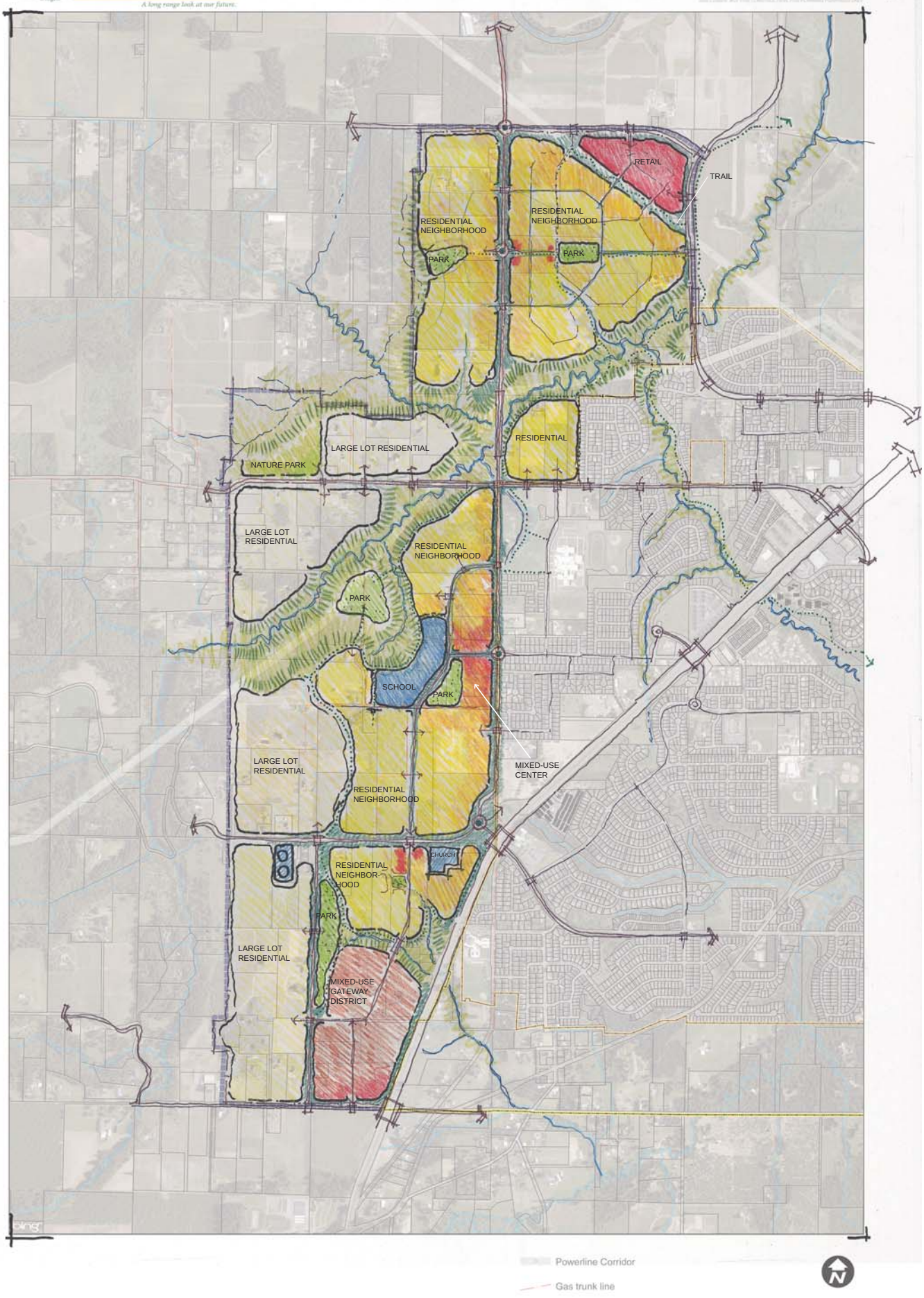


DRAFT ALTERNATIVE PLAN B

May 27, 2015

Sherwood West
Preliminary Concept Plan
A long range look at our future.

Basemap 2



DRAFT ALTERNATIVE PLAN C

DATE: June 10, 2015 **ECO Project #: 21928**

TO: Brad Kilby and Connie Randall, City of Sherwood

FROM: Lorelei Juntunen, ECONorthwest; and Kirstin Greene, Cogan Owens Greene

SUBJECT: FINDINGS FROM INITIAL SERVICE PROVIDER INTERVIEWS

ECONorthwest (ECO) is part of a consulting team led by Cogan Owens Greene (COG) that is assisting the City of Sherwood with development of a Preliminary Concept Plan for Sherwood West. The goal of the Preliminary Concept Plan is to create a roadmap that will help inform future possible urban growth expansion decisions regarding the Urban Reserve Area 5B (Sherwood West). ECONorthwest is charged with, among other tasks, assisting with the development of a phasing and funding strategy for infrastructure and efficient development in the Sherwood West area. The first step in that process, and the subject of this memorandum, is a series of interviews with key city staff and stakeholders regarding infrastructure and service provision in the area. This memorandum summarizes interview findings for use by the consultant and staff team.

Background and purpose

Key findings from the interviews will help the consultant and staff team to understand current financial constraints and opportunities, as well as the existing implementation tool kit. Specifically, the interviews provide input on the following:

- Identify geographic areas with likely infrastructure capacity and constraints, with specific attention to services that communities are required to analyze to comply with Metro's Title 11 and statewide land use planning Goal 14 (water, sanitary sewer, storm water, and transportation facilities)
- Consider possible cost and efficiency implications of various approaches to accommodating expected growth
- Provide preliminary input to the planning team regarding the areas with the least and greatest cost efficiency for accommodating growth, for consideration as the team develops scenarios
- Identify any additional research needed to better specify the scenarios regarding cost efficiency and infrastructure provision and phasing

Interviewees were:

- Joe Gall, City Manager, City of Sherwood
- Julie Blum, City Finance Director, City of Sherwood
- Mike Dahlstrom, Senior Planner Washington County
- Steve Kelly, Senior Planner Washington County
- Rob Fagliano, Sherwood School District
- Phil Johanson, CFO, Sherwood School District

- John Wolff, Deputy Fire Marshal II, Tualatin Valley Fire and Rescue
- Bob Gallati, City Engineer, City of Sherwood
- Craig Sheldon, Public Works Director, City of Sherwood

A follow-up work session with staff also informed findings in this memorandum. Interviewees reviewed and amended draft text to ensure accuracy.

Summary: Key implementation issues to be addressed

The following are high-level findings of implementation issues that the team should consider when developing scenarios, conducting outreach, and identifying preferred development patterns.

- **The City of Sherwood's voter-approved annexation law creates a significant hurdle for development in Sherwood West.** In November 2015, a nearby area referred to as the Brookman Area may be on the ballot for annexation. If the Brookman annexation fails, land needs will be exacerbated as described in the City's recent Housing Needs Analysis.
- **Infrastructure (especially transportation infrastructure) is likely to be expensive throughout the Sherwood West Planning Area**. Creek crossings, upgrades to rural roads, challenging topography, and other issues will contribute to the cost. In many expansion areas, local government officials have stated a strong preference that "growth pay for itself," without burdening the current population; preliminarily, this is also the City of Sherwood's preference. High infrastructure costs may affect development price points if only developer-funded infrastructure is possible. Additional public funding sources should be considered.
- In terms of geography, all areas will have substantial infrastructure costs. The area nearest the **intersection of Kruger and Elwert appears to have the greatest potential for relative cost effective development,** because it is relatively easy to serve with sanitary sewer and water, and is proximate and connected to existing development in Sherwood. Preliminarily, it is the likely location for a first phase. The northern portion of the study area is impacted by Chicken Creek, wetlands, and other natural resource issues that complicate development and infrastructure options. The flattest land and most developable land (in the northern portion of the study area and around Roy Rogers) is difficult to serve with transportation, water and sewer, and stormwater infrastructure. However, additional evaluation for infrastructure costs is warranted, as the area may have benefits for development.

Infrastructure Systems

Water, sanitary sewer, stormwater

- **The area that can be served by existing sanitary sewer and stormwater drainage system is fairly limited**. Stormwater drainage is also challenging since there are two drainage points. Moving stormwater under Highway 99 is challenging. Areas served will be

contour limited. The areas that can be served will be limited and are likely to require regional stormwater facilities. An analysis of downstream impacts to stream structure will be required, if hydromodification becomes mandated as Clean Water Services reconsiders its requirements.

- The area near the Kruger may be the easiest to serve.

Transportation

Providing urban-standard transportation access in the area will be a challenge, and will likely be one of the most significant development costs. Roads in this area were built to rural standards and will need to be upgraded to include medians, sidewalks, buffers, etc. The area sees a lot of pass-through traffic which creates traffic issues that will be exacerbated by development in Sherwood. Specific issues include:

- Bringing Elwert Road up to County standards will require a substantial cut and fill effort because of sight distances, in particular the intersection of Edy and Elwert. It is possible that these upgrades will be necessary regardless of which parts of the study area are targeted for development, though more evaluation is needed to confirm.
- It is likely that Roy Rogers Road, Elwert Road, and Scholls-Sherwood Road would need to be brought up to urban standards to support development in the northern part of the study area, which would be expensive. However, the area is relatively flat with excellent opportunities for transportation access. This area requires more evaluation.
- Focusing development closer to Elwert Road and Kruger Road could require a new road that is parallel to Elwert between Chapman and Lebeau to improve access.
- The City should avoid picking a major arterial road as a boundary, as that could set up conflicts between urban and rural demand.
- Though discussions with the Oregon Department of Transportation (ODOT) will be ongoing, it is unlikely that new crossings or access to Highway 99 will be allowed.
- New creek crossings would be affected by anadramous fish habit, which will merit further study and could increase costs.

Sherwood School District

Thoughtful school planning will be critical to the success of any future development in Sherwood West. The District reports that it is nearing capacity in its system, especially at the high school level. The District has commissioned a long-range facilities analysis to address capacity constraints (to be completed in 2015); it also recently undertook a boundary adjustment process to prepare to accommodate near-term growth inside the city limits. However, these processes do not specifically address the expansion of Sherwood West.

All findings remain preliminary and will need further evaluation as more information about the amount and location of growth expected in Sherwood West is available. At this time, the issues specific to Sherwood West include:

- Sherwood high school is currently operating at capacity, with a student population of 1600 (though annual student populations fluctuate and may decline in coming years as several smaller classes move through). The District will continuously be analyzing data and considering options, including possible expansion of the existing facility and / or eventually adding a second high school. If significant development is expected in West Sherwood, it may affect decision-making and timing.
- Given the capacity of elementary schools nearest to Sherwood West, it is likely that a new elementary school would be needed in Sherwood West. Land will be needed.
- The middle school that's nearest to Sherwood West would need new classrooms and an additional gym to accommodate significant new student growth.
- Funding will be an important consideration. Existing resources (systems development charges, or SDCs) may not be sufficient, especially for acquiring land for and building needed new facilities. Land donations from developers, General Obligation bonds, and other sources should be considered.
- Regardless of where growth occurs, the District strongly prefers metered growth rather than rapid expansion.

Overall, the District's capacity will be affected by growth regardless of where it occurs, but the scale of and timing of potential development in Sherwood West will certainly affect the District's facilities planning process. The Sherwood School District will continue to be engaged in planning for Sherwood West and other potential expansion areas in its boundary.

Public safety and fire

Tualatin Valley Fire & Rescue (TVF&R) serves the Sherwood West area. Planning for development of the area should consider transportation and water infrastructure to support emergency response needs. Not only is access to residential and commercial areas of concern to the Fire District, but connectivity through the area can impact response times. More specifically:

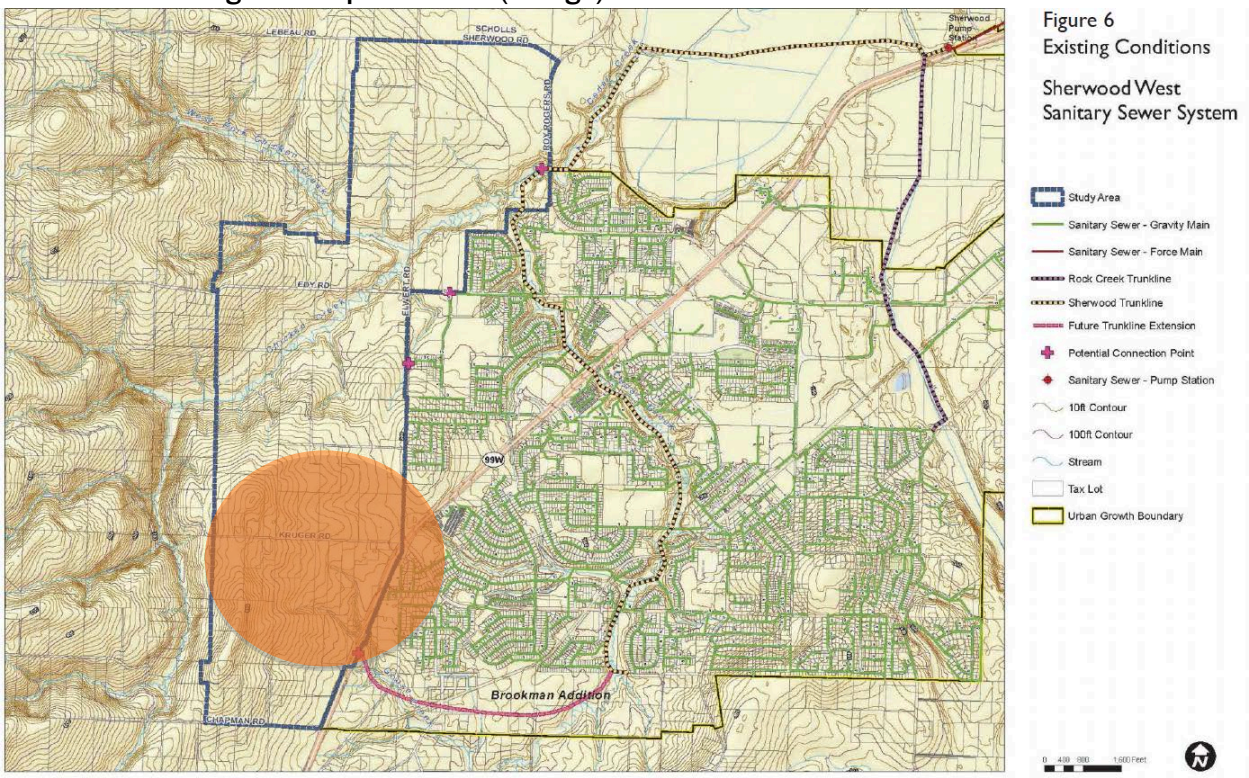
- Topography: The Sherwood West area could create challenges for fire apparatus and access; however, upgrading roads to urban standards should address most of TVF&R's access concerns. The Fire District requires that fire apparatus roadway grades not exceed 12%. When fire sprinklers are installed, a maximum grade of 15% may be allowed (Oregon Fire Code 503.2.7).
- **Water infrastructure:** Water from fire hydrants should be sufficient to provide at least 1,000 gallons per minute to all single-family and commercial buildings. If a structure is 3,600 square feet or larger, then additional flow may be needed (Oregon Fire Code B105.2). The Fire District strongly encourages new residential developments to include fire sprinkler systems to decrease fire and life safety risks.
- **Emergency Response:** Based on years of public opinion research, TVF&R's citizens have consistently voiced that fast and effective emergency response is their top priority. In

addition to Station 33 in Sherwood, the Sherwood West area is served by a network of fire stations. As part of a 10-year plan, the Fire District has identified at least seven sites, including West Bull Mountain, where additional fire stations and infrastructure will improve response times. Factors considered for station placement include housing density, types of development, demographics, and transportation infrastructure. As more specific details emerge about development in Sherwood West, Fire District planners will be able to assess what deployment changes might be needed. (TVF&R's Standard of Cover reflecting response time standards is available upon request.)

Phasing

Interview participants generally agreed that if development should occur, it makes sense for development to first occur near the intersection of Elwert Road and Kruger Road; expanding out from there. This concept is shown in Exhibit 1.

Exhibit 1. First stage development area (orange)



Source: City of Sherwood

Fiscal / financial tools

As identified by the Technical and Citizens Advisory Committees, a key question for development of the area is who will pay for infrastructure. Finance of urban services is a significant conversation in all urban growth boundary expansion areas. Washington County has developed policies that require the County to address this challenge, specifically as it relates to transportation infrastructure as follows: "As appropriate, prior to allowing development,

develop and implement financing strategies that provide adequate funding for the transportation systems necessary for the urban network."

Sherwood stakeholders generally agree that new development should pay for its own infrastructure. Development-derived tools include systems development charges (SDCs) and Washington County's transportation development tax (TDT). Other tools that may need to be considered to support development feasibility include new taxing districts, Local Improvement Districts, (LIDs), County funding sources, and supplemental systems development charges.

Next steps

As the consulting team develops scenarios for the Sherwood area, additional and more detailed analysis of infrastructure issues is needed.

- Assess property ownership patterns to determine sites that are larger, could be aggregated, and / or would be most likely to redevelop.
- Develop a relative order of magnitude estimate of infrastructure costs to help determine an approach to infrastructure funding and finance. The team should consider, at a high level, the implications of those costs for infrastructure funding tools.
- Coordinate Pre-Concept plans with Stormwater Master Plan and other ongoing infrastructure planning conversations.
- Based upon election results with respect to future Brookman area annexation proposals, refine timing of development in Sherwood West.
- Ongoing public and stakeholder outreach should continue to include property owners and developers.

The benefits of walkable, neighborhood-oriented retail nodes are widely documented; they are increasingly popular components of new master-planned developments. Millenials, who will be roughly 35-55 years old by 2035, will key a key driver in future demand for housing in Sherwood. Literature and surveys suggest Millenials seek walkable neighborhoods and amenities, green space, as well as food, art, and creative culture, and do not want to live in auto-oriented suburbs. By 2035, 24% of Sherwood's population will be 60 years and older[1]. Seniors are often seeking to downsize and increasingly desire walkable neighborhoods, social services, and active communities. Given these environmental, health, and livability benefits that neighborhood small-scale retail nodes provide and are increasingly desired by the population, the nodes are a cornerstone of the Preliminary Plan for Sherwood West.

At the same time, new developments at the fringes of urban areas face challenges with creating successful retail nodes. Many Sherwood residents can point to examples of vacant mixed-use buildings in new residential areas in other communities. For successful neighborhood retail development in Sherwood West, the City needs a thoughtful approach that:

1. **Right-sizes the amount of retail.** The Preliminary Concept Plan attempts to balance the amount of supportable retail with possible future household growth in Sherwood West. While the numbers remain preliminary, as an estimate from Sherwood's Housing Needs Analysis,[2] Sherwood West might need to accommodate about 4,800 new households (or more) at buildout. Assuming Sherwood West follows a development pattern that is somewhere between suburban and urban, the reviewed literature in Table 1 suggests that each of these households will support about eight square feet of retail, for a total of about 38,000 square feet of retail across all retail nodes in the area. However, not all of these residents will live within walking distance of a retail node, and existing auto-oriented retail creates competition for household spending. The actual supportable square footage of retail per node is therefore likely lower. The Preliminary Concept Plan includes preferred locations

Table 1. Supportable retail: estimates from research

Literature Source	Supportable Square Feet Per Household
Robert Wood Johnson Foundation (2013)	***Food/Grocery:* 11.6 sq. ft.** ***Eating Places:* 12.4 sq. ft.** *Drinking Places:* 1.5 sq. ft. *Gift:* 1.0 sq. ft. *Flower:* 0.5 sq. ft.
Easton and Owen (2009)	15 sq. ft.
Capital Region Council of Governments, Urban Places	*Minimum:* 12 sq. ft. *Maximum*: 25 sq. ft. ***Average:*** 12 sq. ft.
Capital Region	*Minimum:* 4.5 sq. ft.

[1] *Sherwood Housing Needs Analysis 2015 to 2035.* ECONorthwest. June 2015.
[2] *Sherwood Housing Needs Analysis 2015 to 2035.* ECONorthwest. June 2015.

and relative size, not the absolute size, of retail. The Plan's relative retail size is greater than ECONorthwest's estimates, and additional and careful study of competing supply and phasing will be necessary in the next phase of research.

2. **Locations of neighborhood retail.** A neighborhood retail node is considered walkable for households within 0.25 miles. To ensure supportability, retail nodes should be surrounded by many rooftops. To support 8,000-10,000 square feet of retail, the rough amount included in the nodes shown on the preconcept plan maps, would require about 1,000-1,250 households within ¼ mile. Additionally, the location of neighborhood retail should be considered relative to existing retail (competing supply). In particular, Sherwood's existing downtown is successfully redeveloping, and new development should support rather than compete with this supply. Figure 1 identifies three locations for neighborhood retail nodes in Sherwood West and provides comments.

3. **Phasing and developer interaction.** Development of neighborhood nodes match overall phasing of Sherwood West. Retail development will only be successful if and when residential development occurs, and may be the last piece to successfully develop. To better understand the market dynamics that will drive financial feasibility of neighborhood retail, the City should work carefully with developers throughout the more detailed implementation work that will accompany entry to the urban growth boundary. As development occurs, maintaining those interactions with developers of mixed-use or neighborhood retail projects will be important to support development and assist with connections to appropriate retail tenants.

The Gateway Retail shown in the Preliminary Concept Plan is anticipated to draw from a more regional marketshed, and may include hotels and other tourist infrastructure tied to the region's growing wine and specialty agriculture tourism industry. Additionally, through community outreach conducted as part of this process, residents identified a potential need for additional retail and entertainment services such as doctors, pharmacies, movies, and auto parts stores in Sherwood. This type of retail might also be possible in the Gateway retail area. However, the type and amount of retail to be included in the Gateway area requires more study and market analysis if and when the area is added to the urban growth boundary.

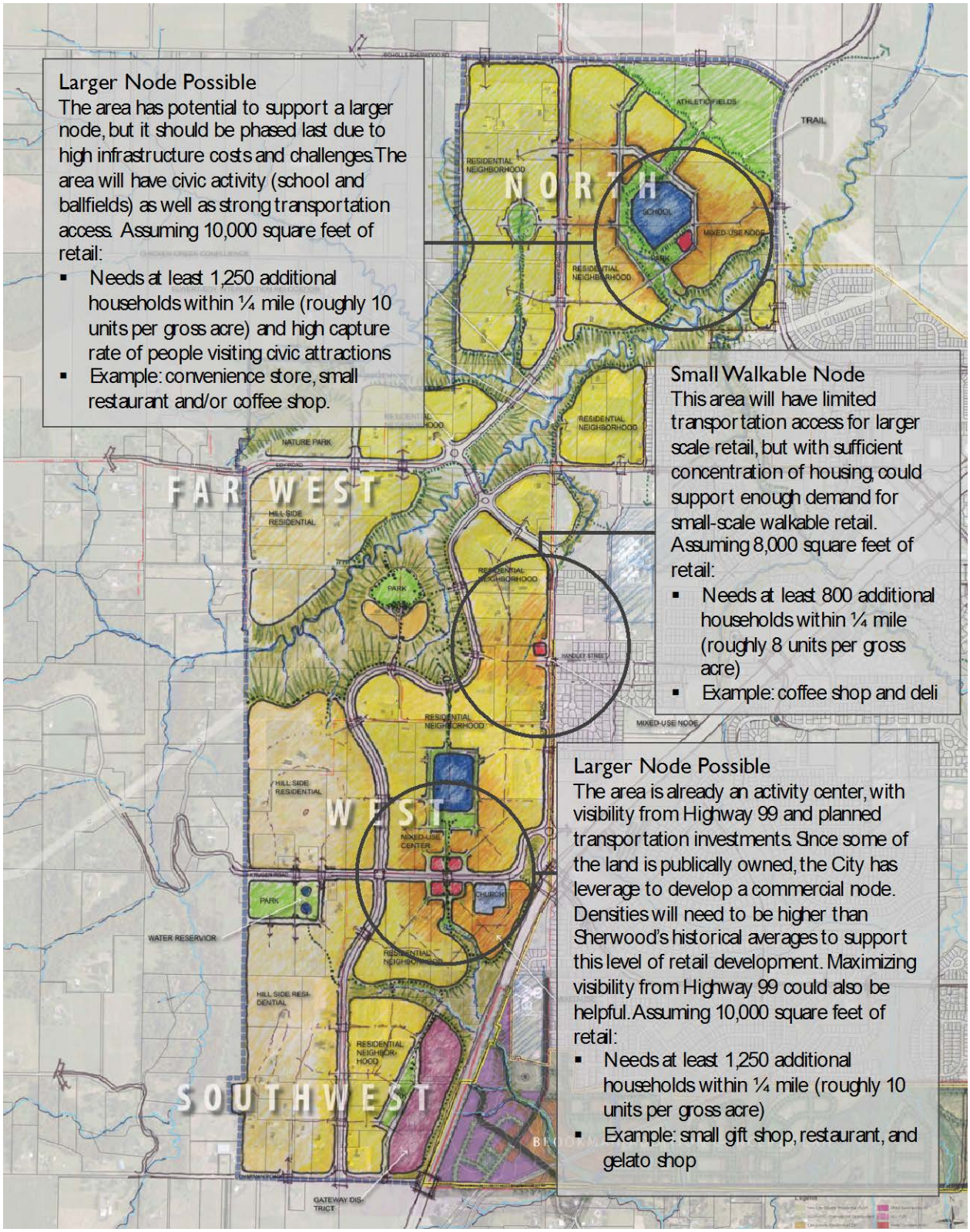


Figure 1. Sherwood West Neighborhood Retail Nodes

City of Sherwood Oregon

Home of the Tualatin River National Wildlife Refuge

City of Sherwood
22560 SW Pine St.
Sherwood, OR 97140
Tel 503-625-5522
Fax 503-625-5524
www.sherwoodoregon.gov

2009 Top Ten Selection

2007 18th Best Place to Live

Sherwood 2006 All-America City Finalist

Sherwood West Concept Plan
Transportation Options Alternative Analysis Report

Option Alternatives Development

The Sherwood West Preliminary Concept Plan transportation analysis was predicated on development of realistic transportation options, a comparison analysis of the pros and cons of any developed alternatives, and then presenting at least two preferred options along with estimated costs as a guide for future discussion of potential transportation improvements in the study area.

Limits of Analysis

The area of analysis is SW Elwert Road from Highway 99W to SW Scholls-Sherwood Road, and a small portion of SW Edy Road at the intersection with SW Elwert Road.

The transportation infrastructure phasing of the Sherwood West Preliminary Concept Plan is based on a technical analysis of where logical breaks in site development would occur. These development areas are defined as areas 1 through 6.

Existing Roads Configuration

SW Elwert Road's existing cross section is comprised of two 12-foot wide lanes, with no paved or gravel shoulders, and adjacent drainage ditches or wetlands within a 60-foot right-of-way. The horizontal alignment is rolling with non-conforming vertical sight distances for the posted speed of 45 mph within the section between Hwy99W and SW Edy Road, and the basic rule speed of 55 mph outside beyond SW Edy Road to SW Scholls-Sherwood Road.

SW Elwert Road has a straight horizontal alignment between the SW Kruger and SW Elwert Road intersection and the SW Elwert Road and SW Scholls-Sherwood Road intersection, with rolling vertical alignment that generally matches the existing topographic terrain. The vertical grades for SW Elwert Road tend to exceed ASSHTO standards for the roadway classification and designated speed limit.

To meet AASHTO standards SW Elwert Road will require a combination of cut and fill actions to remove excessive sags and crests. In particular, the intersection of SW Elwert Road with SW Edy Road is in a depression within both road alignments. This intersection would need to be raised significantly to meet AASHTO standards for arterial/collector intersections.

Proposed Cross Section

SW Elwert Road is classified as an arterial road with a future 3-lane configuration with; two 12-foot travel lanes, a 14-foot center turn lane, two 6-foot bike lanes, two 5-foot wide planter strips, two 8-foot wide sidewalks, and two 1-foot clear areas behind the sidewalks to the right of way line in both the City's and Washington County's Transportation System Plans (TSPs). The overall right of way width required with this cross section is 78-feet.

Analysis – Defining Options

The major limiting condition for the transportation options analysis is the phasing break between Areas 1,2 and Area 3, and in how the intersection of SW Edy Road and SW Elwert Road will be handled. There are two options that were analyzed with respect to constructability, construction costs, and environmental impacts.

Option 1

Option 1 consists of realigning SW Elwert Road and SW Edy Road such as to cross two Chicken Creek tributary streams at the narrowest points in order to reduce or eliminate wetland mitigation issues. The realignment follows the existing terrain, eliminates the need for excessive fills and minimizes impacts to the wetlands within the SW Elwert Road and SW Edy Road intersection. Option 1 will require construction of structural bridging and acquisition of right-of-way to accommodate the realignment of SW Elwert Road.

The realignment of SW Elwert Road will include the construction of roundabouts at major intersections, such as with SW Edy Road. The combination of roundabouts and curved alignments would likely discourage freight traffic usage of the road and reduce speeds of commuter traffic while still allowing significant local residential and commuter traffic flow.

This option has the benefit of flexibility relative to site development. The need to initiate this project would be predicated on the development of Area 3. Area 3 has significant site development items (e.g. school site and regional athletic facility) that would require and be able to cover the majority of the cost of constructing the improvements due to the availability of government funding options. The realignment has the benefit of taking advantage of minimizing environmental impacts and impeding the use of the route by freight traffic.

Construction of this option will also allow the existing SW Elwert Road and SW Edy Road alignments and intersection to remain in use until construction of the realigned roadway is nearly complete.

Analysis of the estimated construction costs indicate that this option, while expensive, is the least costly financially and to the environment, as well as the least impact to local and commuter traffic during construction.

Option 2

Option 2 consists of correcting the vertical alignment of the SW Edy Road and SW Elwert Road intersection to meet ASSHTO design standards. Specifically, raising the road elevation to reduce the adverse vertical curves and meeting stopping sight distances at intersection. This means raising the road approximately 10 to 20 feet (15 foot average) in elevation. The impacts from the intersection along SW Elwert Road from this action extend for approximately 2,050 feet, and approximately 790 feet along SW Edy Road.

By raising the road along this length, impacts to the existing right-of-way and adjacent wetlands occurs due to the need for fill with a 2:1 slope ratio. It is estimated that an additional 20 to 40 feet (30 foot average) of right-of-way would be required to account for fill slope. The standard wetland/vegetated corridor mitigation requirement is approximately 2:1 (Clean Water Service, R&O 07-20, Table 3-2).

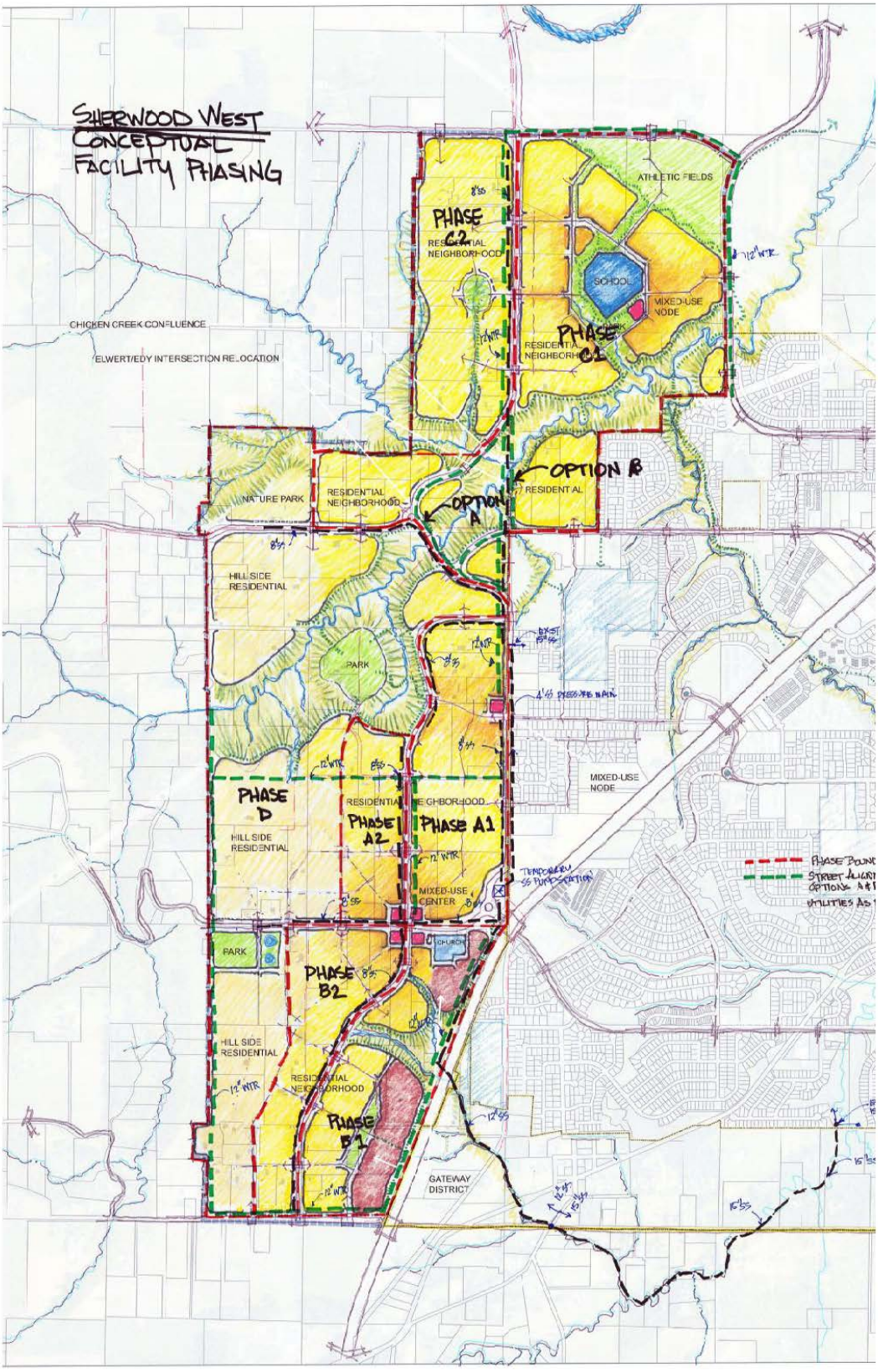
Additionally, the existing culvert crossing would most likely need to be updated to meet future Clean Water Services (CWS), Environmental Protection Agency (EPA), United States Army Corps of Engineers (USACE) and Oregon Department of Fish and Wildlife (ODFW) requirements.

Option 2 does lend itself to phased development in conjunction with Area 3 for the same reasoning described above in Option 1. However, reconstruction of SW Elwert Road would require closure of the roadway to through traffic until roadway construction completion. This would have a definite negative impact to local and commuter traffic during the expected 1 to 2 year construction cycle.

Analysis of the estimated construction costs indicate that this option is the most expensive financially due to mitigating environmental impacts to the Chicken Creek corridor environment, and has the greatest impact to local and commuter traffic during construction.

There are additional utility infrastructure items that are included with each option, however the impacts on each option's construction costs are similar and are consequently not a significant factor in selecting one option over the other.

Robert J. Galati, P.E.
City Engineer


SHERWOOD WEST
CONCEPTUAL
FACILITY PHASING
PHASE C2
RESIDENTIAL NEIGHBORHOOD
ATHLETIC FIELDS
SCHOOL
MIXED-USE NODE
CHICKEN CREEK CONFLUENCE
ELWERT/EDY INTERSECTION RELOCATION
PHASE C1
RESIDENTIAL NEIGHBORHOOD
OPTION B
RESIDENTIAL
NATURE PARK
RESIDENTIAL NEIGHBORHOOD
OPTION A
HILL SIDE RESIDENTIAL
PARK
MIXED-USE NODE
PHASE D
HILL SIDE RESIDENTIAL
PHASE A2
PHASE A1
MIXED-USE CENTER
PARK
PHASE B2
HILL SIDE RESIDENTIAL
PHASE B1
GATEWAY DISTRICT

City of Sherwood Cost Estimate

Project Name: Sherwood West Concept Plan - Option 1 (Phase C1)

Project Description: Reconstruct Elwert Road north of Edy Road to arterial standards from Edy Road to Scholls-Sherwood Road. Reconfigure Edy Road intersection and cross wetland corridors west of existing alignment (2 locations for bridges). Include infrastructure construction, storm water and sanitary. ROW acquisition cost based on full ROW width and aggricultural land valuation.

Construction Items and Descriptions	Unit	Qty	Unit Cost	Total Cost
Site Preparation				
Mobilization (7% of Construction Sub-Total)	LS	1	$3,025,450	$3,025,450
Erosion Control (1% of Construction Sub-Total)	LS	1	$432,207	$432,207
Clearing & Grubbing (2.5% of Construction Sub-Total)	LS	1	$1,080,518	$1,080,518
Temporary Protection & Traffic Control (3% of Contruction Sub-Total)	LS	1	$1,296,621	$1,296,621
Removal of Structures and Obstructions (4% of Construction Sub-Total)	LS	1	$1,728,828	$1,728,828
Roadway Elements				
Asphalt Pavement	SF	838,014	$10	$8,380,140
Roadway Bridge (Elev Match 180')	SF	48,000	$250	$12,000,000
Curb and Gutter	LF	21,666	$25	$541,650
Sidewalk (6-foot width)	SF	129,996	$7	$909,972
Retaining Wall	Vert SF		$100	$0
General Excavation	CY	93,113	$18	$1,676,028
Street Tree	EA	433	$250	$108,330
Planter Strip Landscape Planting	SF	48,749	$8	$389,988
Storm, Sanitary, Water				
Sanitary Sewer Construction	LF	10,833	$185	$2,004,105
Storm Water Sewer Construction	LF	10,833	$145	$1,570,785
Water System Construction	LF	13,514	$250	$3,378,500
Stormwater Quality Treatment Facility (Regional)	LS	2	$175,000	$350,000
Right-of-Way Acquisition				
Right-of-Way Acquisition	SF	679,473	$15	$10,192,095
Traffic Elements				
Traffic Signal (Installation)	EA		$280,000	$0
Traffic Signal (Modification per pole)	EA		$50,000	$0
Rectangular Rapid Flash Beacons (RRFB)	EA	1	$40,000	$40,000
Striping	LF	10,833	$10	$108,330
Signage	LF	10,833	$15	$162,495
Street Lighting (Cobrahead)	LF	10,833	$130	$1,408,290
Street Lighting (Ornamental)	LF		$230	$0
Other Construction Items				
Other				$0
Other				$0

Construction Cost Subtotal	**$50,784,332**

Constuction Contingency (30% of Construction Cost Subtotal)	LS	1	$15,235,300	$15,235,300
Engineering Design and Construction Management (7.5% of Construction Cost Subtotal)	LS	1	$3,808,825	$3,808,825

Total Project Cost:	**$69,828,456**

Notes:

City of Sherwood Cost Estimate

Project Name: Sherwood West Concept Plan - Option 2 (Phase C1)

Project Description: Reconstruct Elwert Road north of Edy Road to arterial standards from Edy Road to Scholls-Sherwood Road. Include infrastructure construction, storm water and sanitary. ROW acquisition cost based on partial ROW width and aggricultural land valuation.

Construction Items and Descriptions	Unit	Qty	Unit Cost	Total Cost
Site Preparation				
Mobilization (7% of Construction Sub-Total)	LS	1	$3,494,645	$3,494,645
Erosion Control (1% of Construction Sub-Total)	LS	1	$499,235	$499,235
Clearing & Grubbing (2.5% of Construction Sub-Total)	LS	1	$1,248,087	$1,248,087
Temporary Protection & Traffic Control (3% of Contruction Sub-Total)	LS	1	$1,497,705	$1,497,705
Removal of Structures and Obstructions (4% of Construction Sub-Total)	LS	1	$1,996,940	$1,996,940
Roadway Elements				
Asphalt Pavement	SF	313,482	$10	$3,134,820
Elevated Roadway (Elevation Match 180')	SF	184,520	$200	$36,904,000
Curb and Gutter	LF	14,018	$25	$350,450
Sidewalk (6-foot width)	SF	84,108	$7	$588,756
Retaining Wall	Vert SF		$100	$0
General Excavation	CY	34,831	$18	$626,964
Street Tree	EA	280	$250	$70,090
Planter Strip Landscape Planting	SF	31,541	$8	$252,324
Storm, Sanitary, Water				
Sanitary Sewer Construction	LF	6,069	$185	$1,122,765
Storm Water Sewer Construction	LF	7,009	$145	$1,016,305
Water System Construction	LF	7,009	$250	$1,752,250
Stormwater Quality Treatment Facility (Regional)	LS	2	$175,000	$350,000
Right-of-Way Acquisition				
Right-of-Way Acquisition	SF	175,225	$15	$2,628,375
Traffic Elements				
Traffic Signal (Installation)	EA		$280,000	$0
Traffic Signal (Modification per pole)	EA		$50,000	$0
Rectangular Rapid Flash Beacons (RRFB)	EA	1	$40,000	$40,000
Striping	LF	7,009	$10	$70,090
Signage	LF	7,009	$15	$105,135
Street Lighting (Cobrahead)	LF	7,009	$130	$911,170
Street Lighting (Ornamental)	LF		$230	$0
Other Construction Items				
Other				$0
Other				$0

Construction Cost Subtotal	**$58,660,105**

Constuction Contingency (30% of Construction Cost Subtotal)	LS	1	$17,598,032	$17,598,032
Engineering Design and Construction Management (7.5% of Construction Cost Subtotal)	LS	1	$4,399,508	$4,399,508

Total Project Cost:	**$80,657,645**

Notes:

Sherwood West Pre-Concept Plan

Initial Evaluation of New Funding Tools

Sherwood West will need to access a range of funding tools to cover infrastructure (sewer, water, roads, etc.) costs to support urban development. To initiate that conversation, ECONorthwest considered a comprehensive list of funding tools against set criteria to arrive at an initial list of preferred tools for discussion.

CRITERIA DEFINED

CAPACITY
Can the tool generate sufficient revenue to serve as a cornerstone for an infrastructure funding plan? (Note that some tools that perform well on other criteria but generate relatively small amounts of revenue may still be included as one component of a larger funding plan even though they are not selected here as a "preferred" tool.)

TIMING
Can the tool provide up-front revenues to cover infrastructure, even before development occurs?

ADMINISTRATIVE EASE
How much administrative burden does the tool impose on City staff and resources?

STABILITY/PREDICTABILITY
Does the tool provide a consistent and reliable source of funds over time?

FLEXIBILITY
Does the tool have limitations on its use that reduce its utility for the Sherwood West site?

FAIRNESS:
Who pays? Are costs imposed proportionate to benefits received?

LEGALITY
Can the tool legally be used for the projects identified on the site?

POLITICAL ACCEPTABILITY
How controversial is the tool? Will the public and regional and local elected leaders support its use for the Sherwood West site?

The following matrix provides an assessment of a comprehensive list of funding tools against the criteria, and identifies the four preferred tools that have been selected for further evaluation.

		Efficiency					Fairness	Legality	Political Acceptability
		Capacity	Timing	Administrative Ease	Stability/ Predictability	Flexibility			
Citywide Tools	Property Tax: GO bonds	+	+	+	+	+	✓	✓	✓
	~~Income Tax~~	+	+	✓	-	+	-	✓	-
	~~Sales Tax~~	+	+	-	✓	+	✓	✓	-
	~~Payroll Tax~~	+	+	-	-	-	-	-	-
Transportation Related	~~Toll~~	✓	✓	-	✓	✓	+	✓	-
	~~Local Gas Tax~~	-	✓	-	✓	✓	✓	✓	✓
	~~VMT Tax~~	-	✓	-	✓	✓	✓	-	-
	~~Local Weight-Mile Tax~~	-	✓	-	-	✓	✓	-	-
	~~Vehicle Registration Fee~~	-	✓	-	✓	-	✓	-	✓
Development Derived	Sole Source SDC	✓	-	+	-	✓	+	✓	+
	Supplemental SDC	+	-	✓	-	+	+	✓	✓
	LID	✓	✓	✓	✓	+	+	✓	+
	Urban Renewal	+	-	✓	✓	+	✓	✓	-
	~~Income Tax Sequestration~~	-	-	-	-	?	-	-	-
	Construction Excise Tax	✓	-	✓	-	?	+	-	+
	~~Permit/Record Surcharge~~	-	-	✓	-	✓	+	✓	-
Other	Utility Fee	+	✓	+	+	+	✓	✓	✓
	Transient Lodging Tax	-	-	✓	✓	✓	-	✓	+
	~~Business License Fee~~	-	-	✓	-	+	-	✓	✓
	~~Real Estate Transfer Tax~~	✓	-	-	-	?	+	-	-
	Special Service District	+	+	✓	+	+	?	✓	?

Legend			
Good	+	Bad	-
OK	✓	Fatal Flaw	-
Unknown	?	Preferred Tool	+

Citywide Tools		Notes
Property Tax: General Obligation (GO) Bonds	Local property taxes are committed to pay debt service on a city-issued GO Bond. GO bond levies typically last for 15 to 30 years for capital projects, and must be approved by a public vote. The effective property tax levied to support GO bond obligations can vary over time, based on the total assessed value of property within the jurisdiction that issued the bonds and the scheduled GO bond payment obligations.	Identified as a preferred tool because it can generate large amounts of up-front funding for infrastructure to support development.
Income Tax	A tax on income, typically calculated as a surcharge on state income tax. Could apply to people, corporations, or both. Relatively low rates (1-3%) have potential to generate substantial levels of revenue.	Fatal flaw: Local income taxes are politically challenging to implement
Sales Tax	A tax on retail sales, typically added to the price at the point of sale. Sales taxes are generally considered regressive because low-income people pay a higher percentage of their income than high-income people. There is no state sales tax in Oregon, but local governments could adopt a local sales tax. Essential goods like food, medicine, and housing are typically exempt from a sales tax.	Fatal flaw: Low likelihood of political acceptability for adopting a sales tax to fund growth.
Payroll Tax	A tax on wages and salaries paid by employers or by employees as a payroll deduction. A payroll tax generates revenue from people who work inside, but live outside of the area in which the tax is applied. Low rates (<1%) have potential to generate substantial levels of revenue.	Fatal flaw: Payroll tax revenue is used for operations and maintenance expenses associated with the transit systems, and would require significant effort to transfer to use for funding infrastructure.

Transportation Related		Notes
Toll	Tolls (e.g. on highways and bridges) are the most familiar form of a transportation access charge. Transportation access charges are most appropriate for high-speed limited access corridors, service in high-demand corridors, and bypass facilities to avoid congested areas.	Fatal flaw: Tolls lack political acceptability and are difficult to administer.
Local Gas Tax	A tax on the sale of gasoline and other fuels, levied as a fixed dollar amount per gallon. Typically, the use of local gas tax revenues is limited to transportation projects.	Fatal flaw: Gas tax is not likely to generate significant amounts of revenue, and could be difficult to administer.
Local Weight-Mile Tax	Heavy vehicles pay the weight-mile tax instead of the gas tax. The tax rate increases with the weight of the truck, and is assessed per mile traveled in Oregon.	Fatal flaw: Administration relies on self-reporting, which limits the accuracy and may require additional staffing to audit self-reported weights. Capacity is limited.
Vehicle Registration Fee	In Oregon, counties (but not cities) can implement a local vehicle registration fee. Fees are limited to $43 per vehicle, charged every two years. A portion of a county's fee could be allocated to local jurisdictions.	Fatal flaw: The vehicle registration fee generates limited funds.

Development Derived		Notes
Sole Source Systems Development Charge (SDC)	SDC's are one-time fees based on proposed new use or increase in use of a property. Sole Source SDSs retains SDCs paid by developers within the limited geographic area that directly benefits from new development.	Could be one component of a funding strategy, but lacks ability to generate sufficient revenue to cover costs.
Supplemental SDC	Supplemental SDCs are additional SDCs charged on a specific sub-area of a city and are supplemental to the city's existing SDC.	Commonly used in expansion areas as one component of a funding plan.
Local Improvement District (LID)	An LID is a special assessment district where property owners are assessed a fee to pay for capital improvements, such as streetscape enhancements, underground utilities, or shared open space. LIDs must be supported by a majority of affected property owners.	Commonly used in expansion areas as one component of a funding plan. More analysis regarding property owner willingness to pay is required.
Urban Renewal	Tax increment finance revenues are generated by the increase in total assessed value in an urban renewal district from the time the district is first established. The governing body, usually acting on the recommendation of Technical and Advisory Committees, creates an urban renewal district with specific boundaries and identifies improvements to be funded within the district. Bonds may be issued to fund improvements. As property values increase in the district, the increase in total property taxes (e.g., city, county, school portions) is used to pay off the bonds. When the bonds are paid off, the entire valuation is returned to the general property tax rolls. Urban renewal funds can be invested in the form of low-interest loans and/or grants for a variety of capital investments: redevelopment projects, economic development strategies, streetscape improvements, land assembly, transportation enhancements, historic preservation projects, and parks and open spaces.	Urban renewal is not typically used in greenfield development areas that are not perceived as "blighted." However, they can be powerful tools for funding infrastructure and the city is legally able to use this tool in Sherwood West.
Income Tax Sequestration	A variation on a local income tax is income tax sequestration. This concept identifies some group of income tax payers and diverts some or all of their state income tax revenues to a specific project.	Fatal flaw: Administering this tool could be expensive and complicated. There is currently no State-sanctioned program in Oregon that would allow income tax sequestration, so a new program would need to be created.
Construction Excise Tax	A construction excise tax is a tax levied on the value of new construction.	Key limitation: Only school districts may levy a new excise tax. This source could potentially be used to fund school capital projects in Sherwood West, but it could not be used for infrastructure.
Permit/Record Surcharge	Building permits are fees charged to property owners for new construction, additions, or remodeling property. The amount of the building permit fee typically depends on the value of the construction.	Fatal flaw: This source generates very limited amounts of funding.

Other Tools		Notes
Utility Fee	A utility fee is a fee assessed to all businesses and households in the jurisdiction for use of specified types of infrastructure or public utilities, based on the amount of use (either measured or estimated). Most jurisdictions charge water and sewer utility fees, but utility fees can be applied to other types of government activities as well (both capital projects and operations and maintenance). A utility fee could be applied citywide or in a smaller area within a city.	Utility fees are increasingly used to fund infrastructure projects.
Transient Lodging Tax	A transient lodging tax is a fee charged to customers for overnight lodging, generally for periods of less than 30 consecutive days. The fee is a percentage of lodging charges incurred by the customer, though some jurisdictions levy a flat fee per room night. Typical tax rates range between 3% and 9%. These local tax rates are in addition to the State transient lodging tax of 1%. Although local jurisdictions use transient lodging tax revenues to fund a wide variety of programs, the State enacted new legislation in 2003 that requires new or increased local transient lodging taxes to dedicate at least 70% of net revenue to fund tourism promotion or tourism-related.	This could be used as one component of a funding plan, but lacks the capacity that bonds and other preferred tools carry.
Business License Fee	There are a variety of ways that jurisdictions could choose to charge fees on businesses, including a flat one-time fee, to an annual fee based on sales, number of employees, size of building, amount of parking, or other factors. License fees can apply to all businesses or only certain businesses such as automobile dealers or service stations.	Fatal flaw: This source generates very limited amounts of funding.
Real Estate Transfer Tax (RETT)	A RETT is a tax levied on the sale price of real property transfers. In other words, a sales tax on the value of homes, applied whenever there is a transfer of title for real property.	Fatal flaw: It is now illegal to adopt a new real estate transfer tax in Oregon.
Special Service District	A special service district can take several forms in Oregon, but in general, they use property taxes, service fees, or a combination of the two to finance infrastructure or other investments. Parks districts, fire districts, and county service districts are examples. A boundary for a potential special service district would need to be evaluated.	In Sherwood West, the most likely special service district would be a parks district to fund land acquisition, park development, and ongoing operations and maintenance of the facilities.