



BASALT CREEK CONCEPT PLAN

Attachment A: Basalt Creek Concept Plan and
Technical Appendices (Final)

Basalt Creek Technical Appendices can be accessed here:

https://www.ci.wilsonville.or.us/sites/default/files/fileattachments/planning/page/84121/a_bccp_technical_appendices_final.pdf

Basalt Creek
Concept Plan



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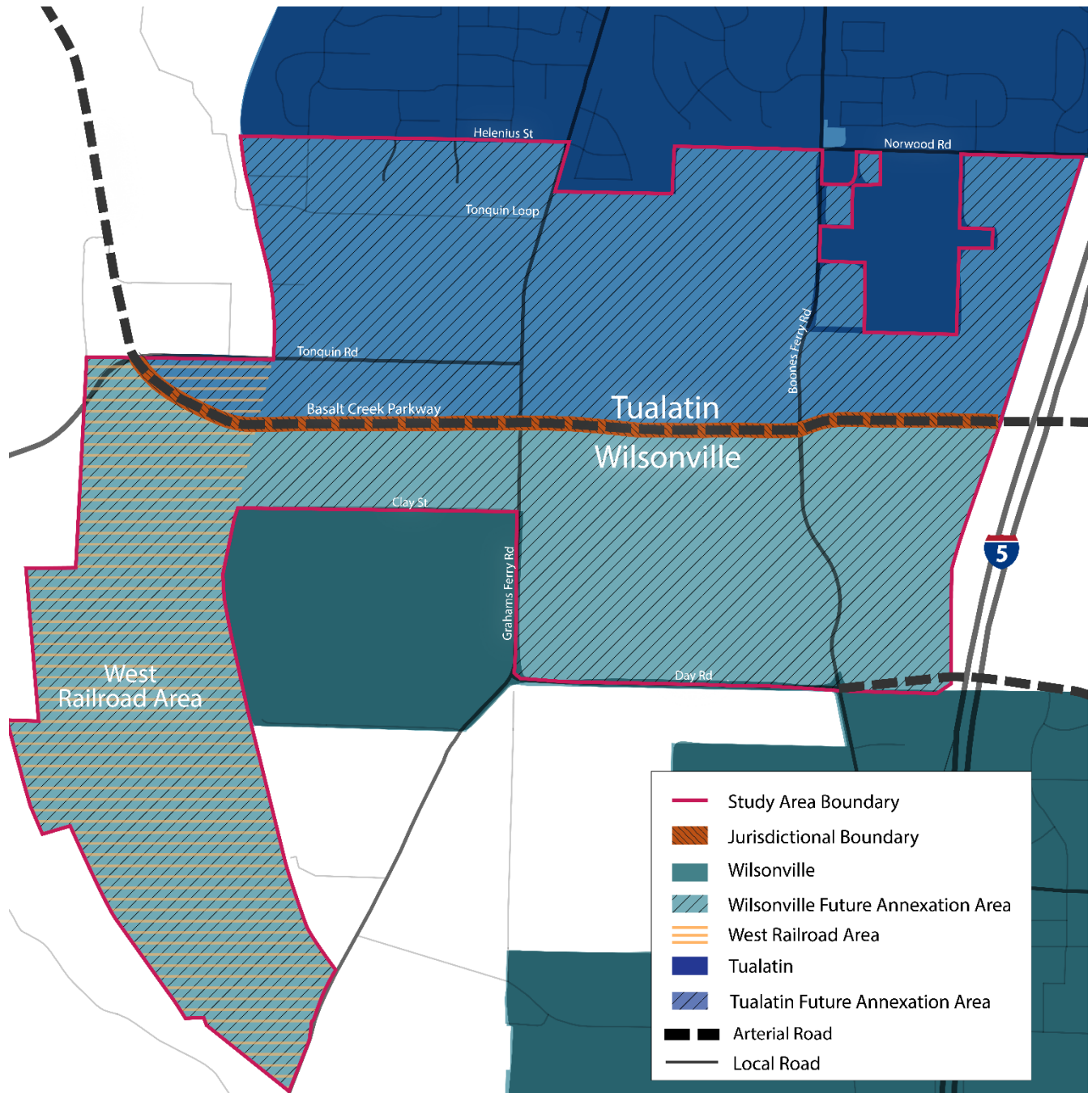
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Introduction

The Basalt Creek Planning Area

The Basalt Creek Planning Area consists of 847 acres located in Washington County between the Cities of Tualatin and Wilsonville. The Planning Area is irregularly shaped, generally oriented east-west with an extension southward at the western edge, which is commonly referred to as the West Railroad Area. The West Railroad Area is divided from the rest of the Planning Area by the Portland and Western Railroad (PNWR) and the Coffee Creek Correctional Facility. The rest of the Basalt Creek Planning Area is bound by Norwood and Helenius Roads to the north, Interstate 5 (I-5) to the east, Coffee Lake Creek to the west, and Day Road to the south until it reaches Coffee Creek Correctional Facility, where the boundary turns north on Graham's Ferry and then westward again on Clay Road. The area also has distinctive natural features, particularly its namesake - Basalt Creek - and the surrounding wetlands habitat running north-south through the eastern half of the Planning Area. The primary existing land uses in Basalt Creek are rural agriculture, industrial, and rural residential consisting of low-density single-family housing. Washington County recently completed construction of a portion of the Basalt Creek Parkway, extending 124th Avenue and connecting Tualatin-Sherwood Road to Grahams Ferry Road. In the future, the Parkway will run east-west across the Planning Area between Grahams Ferry Road and Boones Ferry Road, and eventually extend over I-5. The parkway will be a high-capacity major freight arterial with limited access to local streets providing industrial access from the Tonquin, Southwest Tualatin, and Basalt Creek Planning Areas.

Figure 1 Basalt Creek Planning Area and jurisdictional boundaries.



A more detailed description of the Planning Area, including natural and historic resources, existing land uses and regulatory context can be found in the Existing Conditions Report (Appendix A).

What is a Concept Plan?

A concept plan identifies a vision and guides future land use and transportation decisions for the planning area. It helps ensure the area has the land capacity to contribute to meeting local and regional land use and transportation goals. Concept plans also ensure compliance with state land use goals,

regional policies, and other plans, including existing transportation plans. A concept plan sets the framework for future development and outlines an implementation strategy for future provision of urban services (water, sanitary sewer, and storm water systems), public services (such as transit, parks, and open space), and protection of natural and cultural resources.

Basalt Creek Concept Plan

The Basalt Creek Concept Plan guides development in the Basalt Creek Planning Area over the next twenty years. To accomplish this, the plan:

- Establishes a vision for urbanization of the Basalt Creek Planning Area that will meet local and regional goals
- Coordinates future land use, transportation and infrastructure investments between Tualatin, Wilsonville, and Washington County
- Establishes a new jurisdictional boundary between Tualatin and Wilsonville (to determine which parts of the Planning Area may be annexed into and served by each city)
- Identifies preferred land uses across the area
- Recommends high-level designs for transportation and infrastructure systems to support future development consistent with local, regional and state goals
- Sets specific action items and implementation measures

Figure 2 Basalt Creek Planning Area in regional context.



In 2004, Metro identified the Basalt Creek Planning Area as a good candidate for industrial development because it is near I-5, adjacent to Wilsonville's industrial area to the south, and contains large, flat sites suitable for industrial users. Metro passed an ordinance in 2004 to annex land into the existing Urban Growth Boundary (UGB), which included the Basalt Creek Planning Area, to ensure a sufficient regional supply of land for employment growth over the next twenty years. Based on Metro's 2014 Employment and Housing Forecast, Metro projected the region would grow by 474,000 people and 365,000 jobs by

2035. The Basalt Creek Planning Area was expected to accommodate about 1,200 new housing units and 2,300 new jobs (mostly industrial, with some service jobs and few retail jobs). A detailed explanation of these figures and the Industrial Land Alternative Analysis can be found in the Existing Conditions Report (Appendix A, starting on page 17).

In the Metro region, areas brought into the UGB are required to have a land use and transportation Concept Plan before urban development can occur. The intent of the Basalt Creek Concept Plan is to meet this requirement and provide a roadmap for the development of the area that is consistent with state, regional and local land use planning laws. This Concept Plan involved a collaborative effort between two local jurisdictions – the Cities of Tualatin and Wilsonville.

While several concept plans were developed over the last decade for other UGB annexation areas (e.g. Southwest Tualatin Plan, Tonquin Employment Area Plan, and Coffee Creek Industrial Area), Basalt Creek is somewhat unusual. Its large size, location between (rather than at the edge of) other urbanized areas, and requirement to be jointly planned by two different cities—each with their own identity, goals and local governance—make it different from most other concept plans.

While the process and context were unique, the final Basalt Creek Concept Plan incorporates the key elements consistent with other concept plans and meets all state and regional requirements for a concept plan.

Table 1 Summary Table of Basalt Creek Concept Plan Elements

Element	Description
Jurisdictional Boundary	Follows the alignment of the Basalt Creek Parkway centerline with Tualatin to the north and Wilsonville to the south.
Land Use and Development	Land uses in Wilsonville focus on employment, while Tualatin has a mix of employment and housing. Housing in the northern part of the area is meant to buffer existing residential neighborhoods from non-residential land uses. There is a small retail node just east of the Basalt Creek Canyon and north of the jurisdictional boundary in the Planning Area, which will serve residents and workers. The land suitability analysis influenced the most appropriate locations for employment-based land uses. Land use types and densities were balanced to meet obligations for providing regional employment capacity while limiting negative impacts on congestion and traffic levels.
Transportation	Major new roads and improvements will be constructed as laid out in the 2013 Basalt Creek Transportation Refinement Plan (TRP), which is also coordinated with the 2014 Metro Regional Transportation Plan (RTP). Basalt Creek Parkway, portions of which are currently under construction, will be a major east-west arterial, with limited access (connecting only at Grahams Ferry and Boones Ferry Roads), creating a new connection between I-5 and 99W. Further roadway improvements—such as adding capacity to north-south collectors, widening Day Road to five lanes, and two additional I-5 crossings at Day and Greenhill—will be needed to handle future traffic levels as the area is built out. Local roads connecting to this network will be planned and built by property owners as the area develops.
Bicycle and Pedestrian Framework	Opportunities for bike and pedestrian connections are identified, and additional bike/pedestrian facilities will be integrated into new and updated road projects in accordance with State, County and City standards.

Transit	Transit service in the area will be coordinated between TriMet and SMART. Service will build on existing bus routes to enhance service and provide good connectivity both north-to-south and east-to-west through the Planning Area.
Parks & Open Space	The Basalt Creek Canyon natural area spans both cities and there are opportunities for regionally-connected trails and open space in the Planning Area. The Cities will each work to create a park plan for the area as part of their respective citywide plans and will coordinate on trail planning particularly as it relates to the Basalt Creek Canyon.
Natural Resources	The Cities recognize that the Basalt Creek Canyon is a significant natural resource and have agreed to coordinate on a joint approach to natural resource management practices. There are also significant riparian and upland habitat areas in the West Railroad Area. All natural resources in the Planning Area are mapped on Figure 13.
Water	Each city will provide its own drinking water infrastructure within its jurisdiction, with connections to existing water lines.
Sewer	Each city will provide sanitary sewer service for development within its jurisdiction to the extent reasonably possible with the understanding that a future agreement may address potential cooperative areas. Tualatin will coordinate with its provider – Clean Water Services (CWS) – to extend service to this area.
Stormwater	New stormwater infrastructure will be primarily integrated with the local road network. Tualatin, Wilsonville and CWS acknowledge they must follow requirements established for their respective stormwater MS4 permits. Much of the area is in a basin that drains toward Wilsonville. Each City will serve its own jurisdictional area. The Cities and CWS will adopt an Intergovernmental Agreement that addresses areas where cooperative stormwater management is needed.
Implementation Strategies and Tools	Recommendations for a public facilities phasing plan include conceptual overviews of the recommended facilities and Class 5 concept level costs and a general overview of possible funding strategies. The development phasing will include recommended near and long-term strategies for land use development. Implementation recommendations include sequential action items necessary for implementing the plan and readying the Basalt Creek Planning Area for future development.

The Planning Process

The Basalt Creek Concept Plan was developed through several years of planning that included extensive research and analysis and a variety of opportunities for input from stakeholders and citizens. The public was engaged at key points and invited to participate through a visioning workshop, an open house, online surveys, and community outreach meetings. The full Public Involvement Plan can be found in Appendix B.

Decision Making Process

The Tualatin and Wilsonville City Councils were the ultimate decision-making body for the final Basalt Creek Concept Plan. Joint Council meetings were held involving both City Councils at important project milestones. This role included approval of the guiding principles, selection of the preferred land use scenario, and identification of the future jurisdictional boundary and key elements of the plan. Individual City Council meetings were also held to provide periodic updates and discuss measures, ordinances, and resolutions specific to each city to adopt and implement the Basalt Creek Concept Plan. To ensure the greatest level of cooperation and collaboration with local and regional partners, the planning process

included a project management team with staff from both cities, an advisory Agency Review Team (ART), and both cities' Planning Commissions.

Joint Council

Joint City Council meetings were held at key decision-making stages in the project with the Joint Council serving as the final decision-making body for the plan. There were five Joint Council meetings between October 2013 and December 2015. The purpose of Joint Council meetings was to approve Guiding Principles, determine jurisdictional boundaries, select a preferred land use scenario, and identify key elements for the final concept plan. All Joint Council meetings were advertised and open to the public. Themes from the Joint Council meetings were further developed into the Guiding Principles and included:

- Meeting regional responsibility for jobs & housing
- Capitalizing on the Planning Area's assets
- Protecting existing neighborhoods
- Maintaining cities' unique identities
- Exploring creative approaches to land use, including integration of employment and housing
- Ensuring appropriate transitions between land uses
- Integrating high-quality design and amenities for employment

Project Management Team

The Project Management Team (PMT) was composed of each city's project managers, department directors, relevant staff, and project consultant (see Appendix K for full list of members).

The PMT met regularly to check the status of major deliverables, track and maintain a regular project schedule, coordinate materials for individual and Joint Council work sessions and meetings, plan public events and outreach strategies, and develop consistent messaging for project outcomes. The Project Consultant team representatives participated in the PMT meetings on a bi-weekly basis as needed. The plan's content was guided and produced by the project consultant team and reviewed by the PMT.

Agency Review Team

The Agency Review Team (ART) represented local service providers and regional partners, who advised staff members of both cities about regulatory and planning compliance (see Appendix K for full list of members). Input gathered from the ART was incorporated into the Concept Plan and included in regular staff updates to the Planning Commissions and City Councils. Involvement was required for some key agencies that needed to approve or concur with the Concept Plan, while other agencies were invited to participate in the planning process as their advice was needed on specific issues. Metro, CWS, Washington County, and the Sherwood, Tigard-Tualatin and West Linn-Wilsonville school districts participated in the ART to provide support and concurrence with the Concept Plan.

In addition to the above-mentioned, ART member agencies included the Oregon Department of Transportation (ODOT), Tualatin Valley Fire & Rescue, and the Bonneville Power Administration (BPA). Other agencies were invited to the planning process when their specific advice was necessary, specifically the City of Sherwood, City of Tualatin (including Planning, Community Development, Building, Community Services, Economic Development, Engineering, Parks and Recreation, and Public

Works departments/divisions), City of Wilsonville (including Planning, Community Development, SMART Transit, Public Works, Engineering, Parks and Recreation, Natural Resources, and Building departments/divisions), Clackamas County, Northwest Natural, Portland General Electric, and Tri-Met. This collaborative analysis and joint decision-making set a framework for the Basalt Creek Concept Plan to have the greatest possible chance for success for the community.

The ART met three times throughout the project – in June and September of 2014, and then again in February 2016. The first meeting provided an opportunity to present an overview of the Basalt Creek Concept Plan project and process to the ART and inform members of key milestones and decision points where their input would be needed. The project consultant also presented the proposed methodology for the Existing Conditions report, particularly soliciting feedback on the market analysis, infrastructure analysis, and transportation analysis components. The second meeting served to solicit feedback from ART members on the draft Existing Conditions report, clarify issues surrounding infrastructure, provide an overview of public feedback, and present the land suitability analysis for review. The third meeting was held on February 19, 2016 to further discuss transit, parks and open spaces, schools, parks, and trails.

Information Gathering

The project consultant conducted research on the existing conditions and future needs in the Planning Area, as well as reviewed previous planning efforts affecting the area. This research included land use, transportation, the real estate market, geology, water and sewer infrastructure, stormwater, natural resources and parks. The Existing Conditions Report provides additional background information in Appendix A.

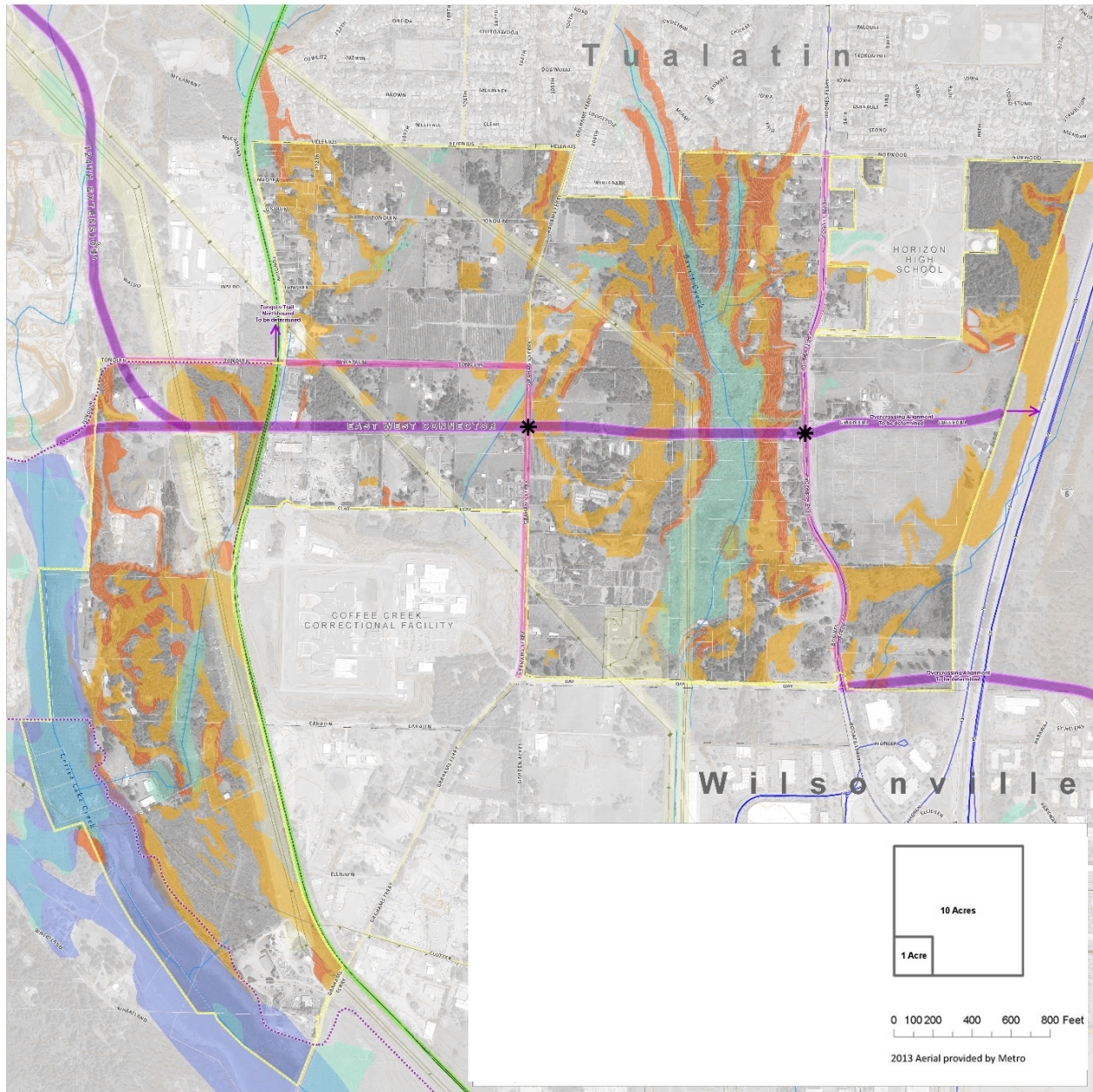
Public Involvement Plan

A Public Involvement Plan, developed by the PMT, was used to guide outreach strategies and events throughout the planning process (Appendix B).

Public Workshop

The planning process began with a community workshop for the Basalt Creek Concept Plan on June 17, 2014. This was a visioning workshop and open house attended by roughly 40 people and solicited input on priorities and preferences for future land use and transportation in the Planning Area. Key outputs included initial scenarios that identified important issues for the area, including a desire to keep the Basalt Creek Canyon as open space, the need for residential buffer areas, traffic challenges and ideas for new parks. Results indicated a preference for appropriate transitions between land uses and protection of existing neighborhoods, but an openness to a range of employment and commercial uses. Instant polling at the workshop was combined with the results of the online survey for a total of 160 responses from participants living both inside and outside the Planning Area. Survey results included a strong interest in public access to natural resources and were less focused on housing or industrial warehousing. This participation informed the establishment of Guiding Principles for the project.

Figure 3 Example of the Basalt Creek Planning Area Base Map used for workshop activity. Participants used these maps to draw and design a vision for future uses of the Basalt Creek Planning Area.



Basalt Creek

- | | | |
|--|---|---|
| City Limits (Source: RLIS 2014) | Proposed Ice Age Tonquin Trail | 5 Foot Contours (Source: RLIS 2014) |
| Planning Area (Source: Cities of Tualatin and Wilsonville) | WES Commuter Line (Source: RLIS 2014) | Stream (Source: RLIS 2014) |
| Taxlots (Source: RLIS 2014) | Bicycle Routes (Source: RLIS 2014) | Wetland (Source: Fregonese Associates and RLIS) |
| PGE Transmission Poles (Source: City of Wilsonville) | Bus Lines (Source: RLIS 2014 and Metro) | FEMA 100 Year Flood Areas Updated by Metro (Source: RLIS 2014) |
| PGE Transmission Lines (Source: City of Wilsonville) | Future Roadway Improvements (Source: DKS Associates) | Slopes (Source: Fregonese Associates) |
| Railroads (Source: RLIS 2014) | Approx. Alignment of Future Major Roadways (Source: DKS Associates) | 10% and above (generally unsuitable for industrial development) |
| | East West Connector Access Point | 25% and above (unsuitable for any development) |
| | | PGE and BPA Easements and Property (Source: PGE and BPA) |

Stakeholder Interviews/Focus Groups

The Basalt Creek concept planning process included over a dozen focus group meetings and stakeholder interviews with developers and property owners in June and July 2014. Developer discussions included industrial, office, retail, residential, and mixed-use development. Knife River, Coffee Creek Correctional, Ibach Citizen Involvement Organizations and the Chamber of Commerce from each City also provided input. These discussions focused on future industrial development types, housing preferences, land assembly, and employer amenities. Property owners expressed a desire for flexibility in land uses and concern over how development will impact quality of life in the area. Developers were concerned with industrial development types changing, along with changing housing preferences, the land assembly challenge, and what employers will consider amenities in the area. These discussions informed the Concept Plan's market analysis, land suitability analysis, building prototypes, development types and land use placements for testing different land use scenarios for the Planning Area.

Open House

A second open house was held on April 28, 2016 to share the draft Concept Plan elements, including land use, road network and improvements, transit, bike, pedestrian and trail network improvements, parks, natural areas, and infrastructure systems. Members of the public were invited to share feedback on the Concept Plan generally as well as specific options for future parks, natural areas, and the bike, pedestrian and trail network. Participants expressed general support for the preferred alternative presented at the Open House, and during instant polling, shared a desire to use the area for recreation, neighborhood parks and conservation areas.

Email and Website Updates

The Project Management Team (PMT) typically sent monthly updates to those on the interested parties list via email and to property owners via postal mail, which included approximately 300 people. Council and Planning Commission work sessions and updates were scheduled and held throughout the project, including before critical milestones and Joint Council meetings, all of which were open to the public and notice provided on City websites and the project website.

Scenario Testing and Concept Plan Development

What is Scenario Planning?

Scenario planning is a tool used to estimate the likely future effects of growth and development patterns in a specific area. This information helps local governments make decisions about what type of land use, transportation and infrastructure plans and policies will best meet community needs in the future. Scenario planning helps identify challenges and opportunities for desired growth and allows exploration of different approaches to achieve the community vision for an area. Unlike a plan, scenarios are very specific, intending to model likely future land uses. Learning from these, a plan can be developed to allow for several beneficial scenarios.

Scenario Planning for Basalt Creek Planning Area

Scenarios were used to understand how different land use decisions, infrastructure investments, other regulations and policies might impact the future outcomes in Basalt Creek – and how well they achieve

the guiding principles. The scenarios that were designed and tested for the Basalt Creek Planning Area integrated many different variables (such as different land uses and service areas) and the relationships between those variables. By modifying the scenarios, the impact of different sets of decisions were able to be better understood.

The scenario testing for Basalt Creek sought to answer questions about the implications of various development and infrastructure options. Taken together, these questions formed objectives for the scenario evaluation.

- Where should the boundary between Tualatin and Wilsonville be?
- What combination of land uses is most appropriate for the area?
- What infrastructure is needed to support future development, and what will be the cost of that infrastructure?
- Which agencies will provide public services to different parts of the area?
- How will traffic generated by new development in this area impact traffic flows and congestion levels, both locally and regionally?
- How will the benefits and costs of serving the area be balanced fairly between Tualatin and Wilsonville?

The project team created and evaluated a Development Base Case and tested Alternative Development Scenarios. These development scenarios used existing buildings from both jurisdictions to model potential future development and reflect existing zoning and development regulations in the Envision Tomorrow modeling program (see Appendices C1 and C2).

During the scenario development process, jurisdictional boundary discussions were ongoing and different scenarios considered different boundary alternatives. A series of five scenarios were developed in an ongoing iterative process that tested the following variables: the location and amount of different land uses, the location of the jurisdictional boundary, location of service boundaries, and design of infrastructure systems. The PMT also developed performance measures associated with the Guiding Principles, in addition to local and regional goals, to compare the different scenarios. As a complex set of conditions, the variables tested were interrelated and needed to be combined in scenarios to understand how changes in one variable impacted the others.

These scenarios were vetted by the project's PMT and each City Council, and then fully analyzed for the transportation, infrastructure, and land use implications. Based on these analyses, discussions among the PMT, and feedback from the Joint Councils, a preferred scenario was developed. The preferred scenario became the basis for the Basalt Creek Concept Plan.

Final Plan Development

The final phase of the project included further refinement of the Concept Plan using the preferred scenario, setting the jurisdictional boundary, and drafting an implementation strategy for the Concept Plan. The final Basalt Creek Concept Plan was designed to meet all the requirements associated with areas added to the urban growth boundary (see Title 11 Compliance Memo in Appendix D) and was forwarded to Metro for review. The Councils from the City of Tualatin and the City of Wilsonville each adopted the Concept Plan by resolution. Comprehensive Plan amendments and implementation strategies and tools are to be consistent with this Plan.

Concepts that Shaped the Plan

Guiding Principles represent the collective interests and goals for the Basalt Creek Planning Area as agreed to and established by the Joint Council. They provided a framework for gathering input and developing transparent and meaningful measures that helped inform the decision-making process for this plan (see Appendix E for Guiding Principles Memo which provides further descriptions).

1. Maintain and complement the Cities' unique identities
2. Capitalize on the area's unique assets and natural location
3. Explore creative approaches to integrate jobs and housing
4. Create a uniquely attractive business community unmatched in the metropolitan region
5. Ensure appropriate transitions between land uses
6. Meet regional responsibility for jobs and housing
7. Design cohesive and efficient transportation and utility systems
8. Maximize assessed property value
9. Incorporate natural resource areas and provide recreational opportunities as community amenities and assets

In addition to the Guiding Principles, during a Joint Council meeting, the Councils also identified ten key elements for successful implementation of the Basalt Creek Concept Plan that relate to key functions such as the sewer, water, and transportation services, land use and natural resources in the area. These considerations informed the key elements of the Concept Plan (see Appendix E for 10 Considerations of Success for further descriptions).

Planning Area Conditions

The project consultant team conducted research on the existing conditions and future needs in the Planning Area, as well as reviewed previous planning efforts affecting the area. The project team studied land use, transportation, the real estate market, geology, water and sewer infrastructure, stormwater, natural resources and parks.

Planning Context and Urban Growth Boundary

The Portland Metropolitan Area Urban Growth Boundary (UGB) includes three counties and 24 cities. Metro administers the UGB, which includes a mandatory six-year assessment of whether it includes sufficient land to accommodate 20 years of expected development for residential and job growth.

During the 2004 analysis, Metro identified a shortfall of industrial land and a study identified good candidates for industrial development by looking at soil classification, earthquake hazard, slope steepness, parcel size, accessibility to regional transportation and necessary services, and proximity to existing industrial uses. Several areas of land identified as good candidates for industrial development were added to the UGB by Metro via Ordinance 04-1040B in 2004, two of which comprise the Basalt Creek Planning Area. The current 2040 Growth Concept Map identifies the Basalt Creek Planning Area as industrial, but the Ordinance does provide some flexibility to include housing in the Planning Area. The

Ordinance identified outer neighborhood as a potential land use in the northern portion of the Planning Area, to provide some housing and a buffer for existing residential neighborhoods in Tualatin.

The industrial designation from Metro is defined within the Regional Framework Plan's Glossary as "an area set aside for industrial activities. Supporting commercial and related uses may be allowed, provided they are intended to serve the primary industrial users. Residential development shall not be considered a supporting use, nor shall retail users whose market area is substantially larger than the industrial area be considered supporting uses."

The Land

Landscape Context

The general character of the area's landscape was shaped by the Glacial Lake Missoula Ice Age floods, a series of cataclysmic floods that shaped the landscape of the Columbia River Gorge and the Willamette Valley during the last Ice Age. The Ice Age Tonquin Trail Master Plan describes the area as "comprised of upland prairie fragments, and oak and madrone woodlands. Rare wildflowers are found near basalt hummocks (scablands) to the west of the Planning Area, and rare reptiles (pond turtles) and amphibians (northern red-legged frogs) live in the kolk ponds." Remains from the Ice Age floods that can be seen in and around the Basalt Creek Planning Area include glacial deposits, scablands, kolk ponds (ponds formed by eddies during the Missoula Floods), and flood channels. The terrain includes significant slopes of more than 25% and with a change in elevation from 250 ft above mean sea level (amsl) to a maximum elevation of 350 ft amsl.

Existing Land Use

The primary existing land uses in the Basalt Creek Planning Area are rural agriculture, industrial and rural residential consisting of low-density single-family housing. There are areas of agricultural uses, including a nursery, landscaping supply, and blueberry farms. Existing industrial land users include gravel quarries and cement manufacturing in the northwest corner of the Planning Area. The existing housing in the area consists of detached single-family on large lots. A significant portion of single-family homes are located on the eastern edge of the Basalt Creek Canyon along Boones Ferry Road.

Adjacent Land Uses

The Planning Area is bounded to the north by Tualatin residential neighborhoods, to the south by Wilsonville commercial and industrial uses, I-5 to the east, and to the west by Coffee Lake Creek, wetland habitat, and rural and industrial lands.

- The southernmost residential neighborhoods of Tualatin, including recently-built subdivisions such as Victoria Gardens, are located to the north of the Planning Area. These neighborhoods are zoned a mix of low- and medium-low density residential and are comprised primarily of high-quality, detached, single-family homes. Also, to the north is the 30-acre campus of Horizon High School (a private high school). The campus is bordered on three of its sides by the Planning Area.
- To the west, the Planning Area is bordered by unincorporated portions of Washington County including the Southwest Tualatin Concept Plan area where active quarries and an asphalt plant are located. Further west of the Southwest Tualatin Concept Plan area is the Tonquin Employment Plan area which falls within the City of Sherwood's urban planning area. Most of this land is undeveloped or vacant at this time.

- South of the Planning Area are existing and planned commercial, office and industrial uses located within the City of Wilsonville. The employment areas around SW Commerce Circle, Ridder Road, and 95th Avenue include advanced manufacturing, clean tech, warehouse, distribution, and logistics businesses. The Coffee Creek Planning Area abuts the Basalt Creek Planning Area along the south side of Day Road and south and west to the existing Wilsonville city boundary. The City adopted a Master Plan and Industrial Form-based Code for this area to create a high caliber business district.
- Adjacent to the southern border of the Planning Area is Coffee Creek Correctional Facility. This is a state-owned correctional facility with 1,250 female inmates, and a fluctuating number of male inmates (around 400) undergoing intake until they are transferred to another facility. The Correctional Facility employs 435 people with day and nighttime shifts comprising a 24-hour workforce.

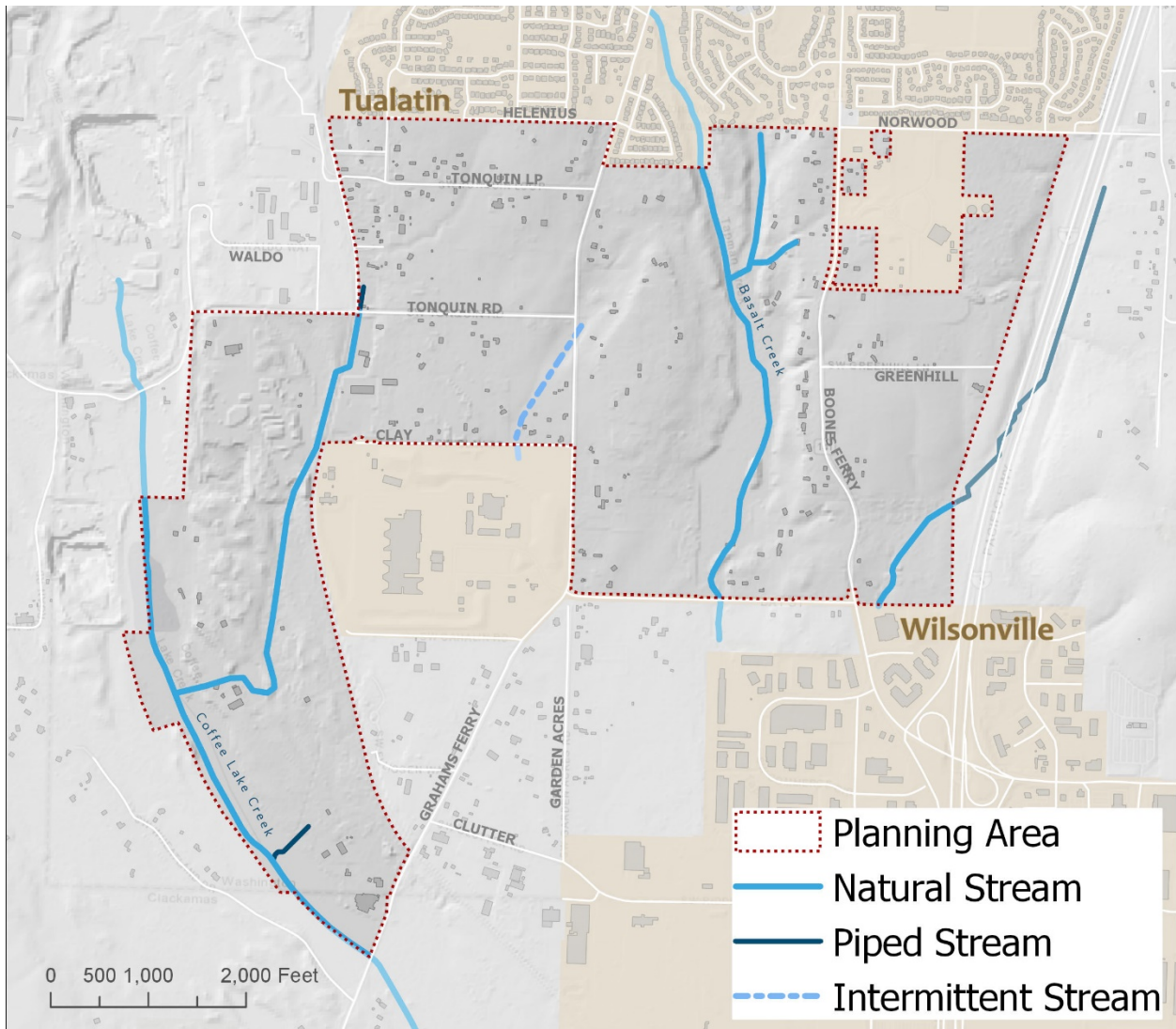
Natural Resources

Wetlands, floodplain, upland habitat, streams, open water and riparian areas provide important natural resources in the planning area. Within the Basalt Creek Canyon and Coffee Lake Creek basin, there are open water, emergent and scrub-shrub wetlands. The small, forest patches scattered throughout the planning area provide travel corridors and habitat for a variety of species including Red-legged Frogs and the Pileated Woodpecker. Land suitability studies for this area identified constrained lands including 18,845 feet of natural streams; 1,402 feet of underground or piped streams, defined as water that flows under the surface in a definite channel; and 789 feet of intermittent streams in the Planning Area.

There are two main streams in the Planning Area, Basalt Creek (also known as Seeley's Creek or Tappin Creek) and Coffee Lake Creek and its east tributary, which run through the West Railroad Area. There is also an underground, piped stream near I-5 along the eastern edge of the Planning Area. Coffee Lake Creek forms the western boundary of the Planning Area. There are also 69 acres of wetlands (8% of the Planning Area), including 49 acres of open water in the Planning Area.

There are 116 acres of land designated by Metro as Water Quality and Flood Management Areas. Following Metro's designations and associated regulations, local jurisdictions determine development rules and requirements that affect these areas. Clean Water Services, who regulates environmental lands in the City of Tualatin and elsewhere in Washington County and the City of Wilsonville, have local ordinances in place that go beyond the level of conservation otherwise required by Metro. Existing local standards from each City would apply upon annexation of property into either Wilsonville or Tualatin.

Figure 4 Map of Streams by Category.



Buildable Lands Assessment

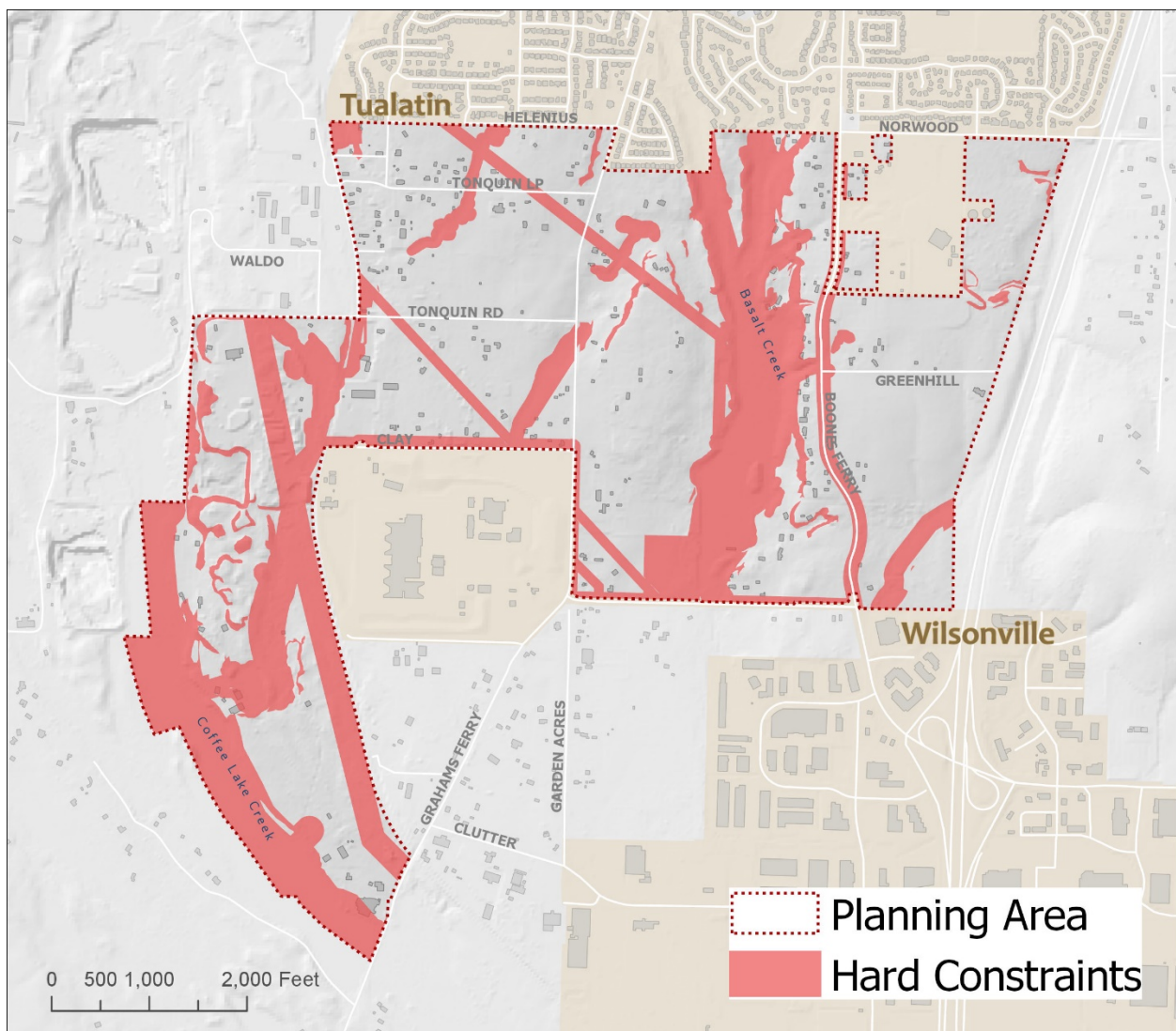
A buildable lands assessment for the Basalt Creek Planning Area (see Appendix F) screened out parcels where there is limited or no development potential to identify the places where development is most suitable given the environmental and regulatory context. There is a range of factors that influence development potential within the Planning Area, but they can be divided into two categories: hard and soft constraints. Hard constraints are either physical attributes or legal requirements that prohibit new development. These areas are excluded from the analysis. Soft constraints are where physical attributes or legal requirements allow some development with guidance on appropriate land uses and development densities. Assumptions regarding the amount of development in these areas followed Metro guidelines calling for restrained development.

Land Suitability Analysis

Determining the development capacity for the Planning Area starts with the buildable lands assessment and then further analyzes the land supply to estimate development capacity on any given parcel. The Planning Area includes land that is constrained by streams and easements. This land supply analysis then evaluates existing land uses, as provided by tax lot data via Metro's Regional Land Information System (RLIS), visual surveys of the area via aerial photographs and online tools such as Google Earth, and site visits for verifying stream conditions and alignments.

After completing this more detailed review of the land supply to determine development suitability, the land suitability analysis is combined with the buildable lands assessment to remove constrained land and to create a geographically referenced database of developable land within the Planning Area.

Figure 5 Map of Hard Constraints within the Basalt Creek Planning Area.

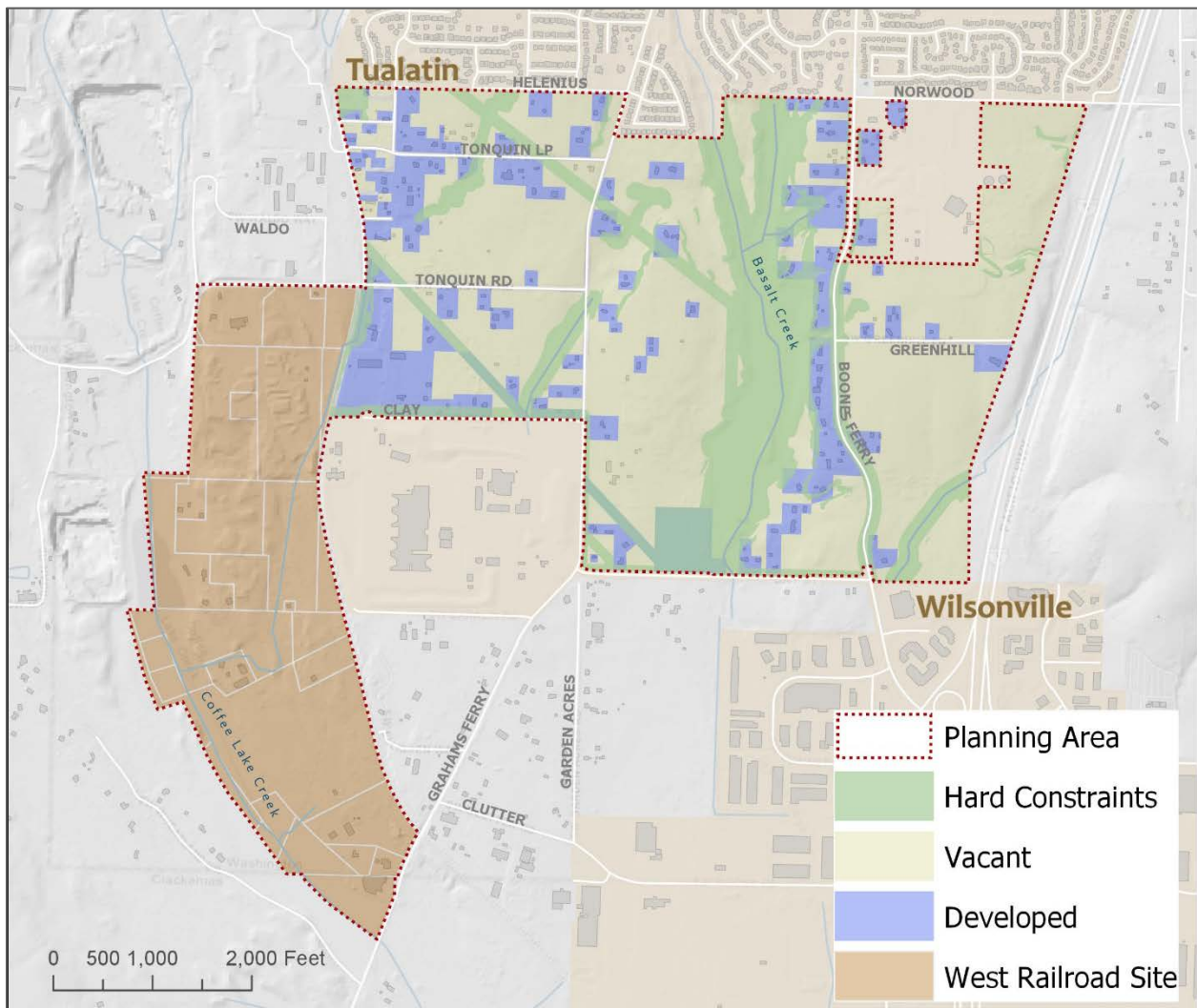


The goal is to classify every parcel within the Planning Area into one of the categories described below:

Table 2 Land Supply within the Basalt Creek Planning Area by Type and with Acreage.

Land Supply by Type and Acreage		
Land Type	Acres	Description
Vacant Land	331	Unconstrained land that is ready to build with no major structures located on the site
Developed Land	125	Land already built upon which includes acreage covered by roadways
Constrained Land	153	Land that cannot be built upon due to environmental or other hard constraints
West Railroad Area	238	Excluded from development plan due to large amount of constraints and limited access
Total Land Supply	847	

Figure 6 Land Supply by Type.



There were no redevelopment assumptions incorporated in this analysis. The values associated with the existing buildings were high enough to preclude redevelopment for purposes of determining the development types used during scenario testing. Thus, the developable land estimate for the Planning Area is 331 acres. This analysis forms the foundation for determining land use and development capacity on each parcel in the Planning Area. The development plan for the Basalt Creek Planning Area excludes the West Railroad Area from development due to the large amount of constraints on the land and limited access.

Infrastructure and Services

Roadways

The Concept Plan looked at the existing transportation system and the planned transportation system developed as part of the TRP, which includes phased investments to support regional and local transportation needs through 2035. The plan provides 18 transportation investments broken into short, medium and long-term projects, all of which are important to ensure that the transportation network functions at acceptable levels over time. The key element is the East-West Connector to the 124th Avenue extension, the future and partially constructed Basalt Creek Parkway.

Sanitary Sewer

Currently, no sewer service is provided to the Planning Area. Existing homes use septic systems. Wastewater conveyance to the south of the Planning Area is under jurisdiction of the City of Wilsonville. Sewer service to the north of the Planning Area in Tualatin is provided by the City of Tualatin and Clean Water Services.

The nearest treatment facility to the north of the Planning Area is the CWS Durham Advanced Wastewater Treatment Facility (AWTF). Eight gravity sewer mains exist near the north Planning Area boundary that could provide connection points for wastewater from the Basalt Creek Planning Area into the Tualatin collection system. The Victoria Woods Pump Station and associated force main are also located just to the north of the Planning Area boundary. From these connection points, wastewater flows by gravity toward the AWTF, crossing the Tualatin River via the Lower Tualatin Pump Station in Tualatin Community Park. Pump stations will be required to lift flows from the Planning Area into the existing gravity system. Expansion of the service district area to include Tualatin's portion of the Basalt Creek Planning Area needs to be approved by Clean Water Services at time of Annexation.

The nearest treatment facility to the south of the Planning Area is the City of Wilsonville Wastewater Treatment Plant (WWTP), located approximately 3.2 miles south of the Planning Area. This facility was recently expanded to accommodate growth within the current city limits and allow for additional buildout to accommodate growth outside the city limits in Urban Growth Boundary expansion areas. Approximately half (300 acres) of the Basalt Creek Planning Area was accounted for in the year 2030 build-out capacity assessment conducted as part of the facility expansion.

The City of Wilsonville's Coffee Creek Master Plan identifies a new sanitary main line to be constructed. After the adoption of that plan, more analysis was completed and determined the appropriate location of the sanitary sewer line to be along Garden Acres Road from Ridder Road and extending north to near Day Road and then continuing up Grahams Ferry Road. A second sanitary sewer line will extend from Garden Acres east and north to Day Road extending east to Boones Ferry Road. These lines are intended to provide conveyance of wastewater within the Coffee Creek area and are also intended to serve flows

from the Basalt Creek Planning Area to the WWTP. The Sanitary Sewer Collection System Master Plan has analyzed a range of potential flows from the Planning Area.

The Tualatin Sanitary Sewer Master Plan Update is currently being updated and includes the Basalt Creek Planning Area as a sewer basin. The City of Wilsonville updated its Sanitary Sewer Collection Systems Master Plan (MSA, 2014) which included the Basalt Creek Planning Area as a contributing area. The resulting updated master plans identify the improvements needed to increase the capacity of each system to convey flow from the Basalt Creek Planning Area.

Drinking Water

The Basalt Creek Planning Area currently has no municipal water infrastructure in place. Tualatin currently purchases its municipal water from the Portland Water Bureau. The City of Wilsonville Water Treatment Plant draws its potable water from the Willamette River. Based on the topography, the Basalt Creek Planning Area could be served from the south through The City of Wilsonville's distribution system or from the north through the City of Tualatin's distribution system. Lower elevations of the Basalt Creek Planning Area can be adequately served through existing lines in Wilsonville's Pressure Zone B.

Stormwater

Existing stormwater infrastructure consists of roadside drainage ditches and culverts. Culverts in the Planning Area are under the jurisdiction of Washington County and may not have capacity for future urban conditions. Culverts to the south of the Planning Area are part of the City of Wilsonville stormwater system. The City of Tualatin has jurisdiction over the stormwater conveyance system to the north of the Planning Area. Culverts may need to be upsized to provide adequate capacity for runoff from new impervious areas, unless onsite retention or infiltration is required when the location of public drainage or the topography of the site make connection to the system not economically feasible.

Basalt Creek itself flows to the south into Wilsonville as part of the Coffee Lake Creek Basin. Basalt Creek discharges into the Coffee Lake wetlands. Coffee Lake Creek flows south from the wetlands and combines with Arrowhead Creek before discharging to the Willamette River.

The City of Wilsonville's 2012 Stormwater Master Plan identifies capital improvement Project CLC-3 to restore a portion of the Basalt Creek channel, west of Commerce Circle, to increase capacity. The master plan also identifies Project CLC-1 for construction of a wetland for stormwater detention purposes, north of Day Road, to serve an area that includes the Basalt Creek Planning Area. The July 2014 Updated Prioritized Stormwater Project List identifies CLC-3 as a mid-term project (6 to 10 years) and CLC-1 as a long-term project (11 to 20 years).

Locations where stormwater runoff from the Basalt Creek Planning Area could connect to existing stormwater infrastructure will require evaluation of the conveyance systems at time of development.

Schools

The Planning Area falls within the Sherwood School District, which has an estimated enrollment of 5,158 and includes four elementary schools, two middle schools, Sherwood High School, and Sherwood Charter School. Most of these schools are within three miles of the edge of the Basalt Creek Planning Area.

The Planning Area is near Tualatin High School, one of two high schools in the Tigard-Tualatin School District. The district also includes three middle schools and ten elementary schools. It serves 12,363 students overall. Horizon Christian High School (private) has 160 students enrolled on their campus with a vision of serving up to 1,000 students in the future. Existing parks, libraries, and schools are mapped in the Existing Conditions Report (see Appendix A).

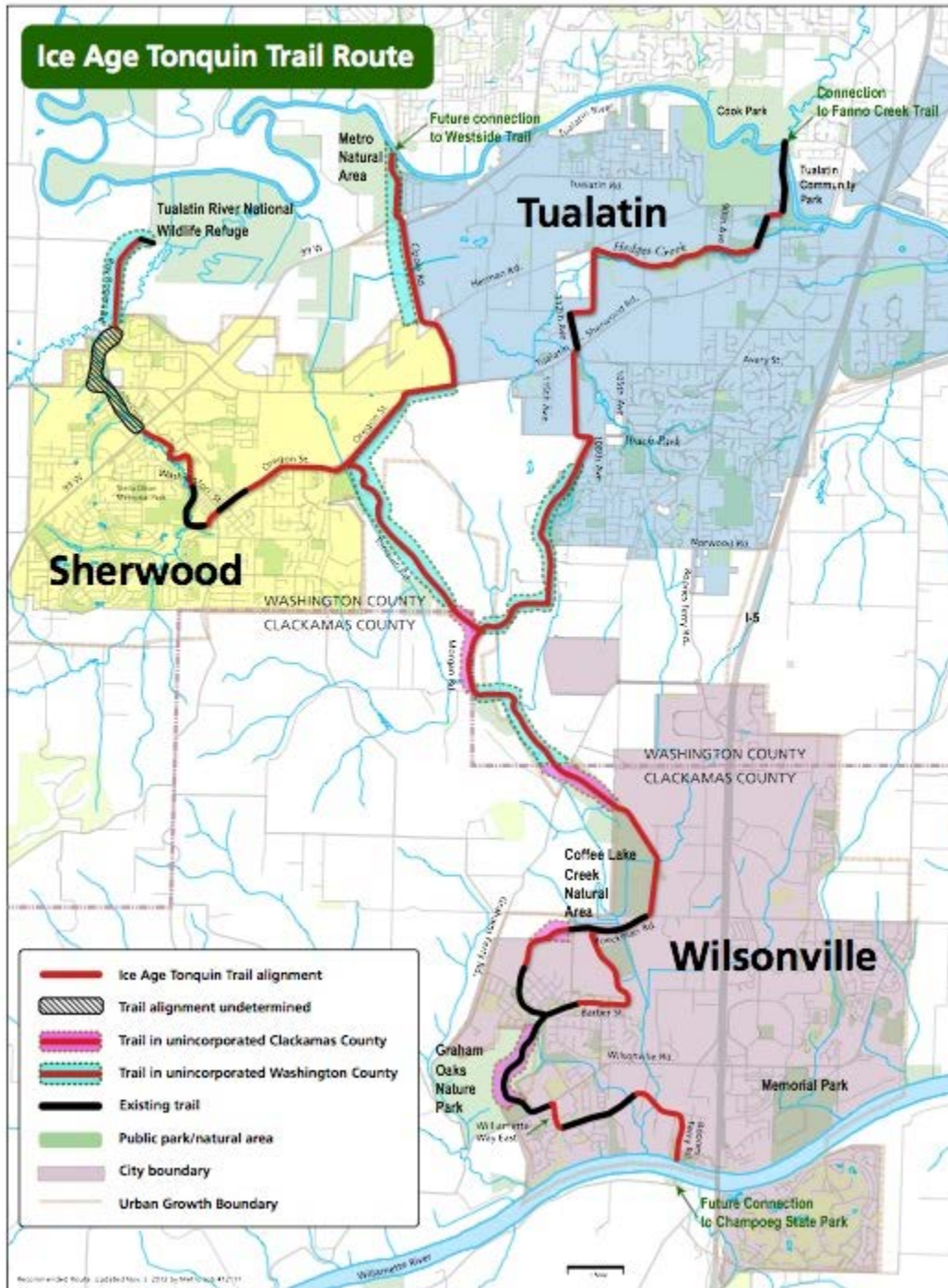
Parks

No parks currently exist within the Planning Area. Wilsonville Parks owns and maintains 16 different public parks, the closest of which is Canyon Creek Park located in Northeast Wilsonville on the other side of I-5. It has 1.41 developed acres and 6.87 acres of natural area popular for picnics and walking. The Other Wilsonville parks are located approximately 2 miles south of the Planning Area, including Graham Oaks Nature Park, which will be connected to the Planning Area when the regional Ice Age Tonquin Trail is complete. City of Tualatin Parks and Recreation owns and maintains 9 different parks, with Ibach Park being the closest to the Planning Area. Ibach includes an award winning and nationally recognized playground that incorporates Tualatin's pre-historic, Native American, and pioneering past, with information on the cultural and natural history of the area.

Trails

Metro's Ice Age Tonquin Trail Master Plan provides a framework for local and regional jurisdictions to embark on trail implementation efforts. The proposed trail alignments show about 22 miles of trails connected through Tualatin, Wilsonville and Sherwood, and includes a section traversing the Basalt Creek Planning Area.

Figure 7 Map from the Ice Age Tonquin Trail Master Plan



Market Analysis

A market analysis (Appendix G) to identify the expected development potential for the Basalt Creek Planning Area as a future industrial and urban growth area was conducted by Leland Consulting Group.

The Planning Area is contiguous with several other employment and industrial areas in the southwestern part of the Portland metropolitan region. The market area for the Concept Plan includes the cities of Tualatin, Wilsonville, and Sherwood, as well as some surrounding areas. Each of these three cities is expecting business expansion and job creation. Viewed together, these areas comprise one of the largest industrial and employment clusters in the region.

Both Tualatin and Wilsonville have seen significant industrial and office development during the past three decades. Industry clusters in which both cities are already highly competitive are expected to continue and provide significant business and job growth in the future. These include advanced manufacturing, corporate and professional services, health care and related fields, and other specific industrial clusters such as food processing and light manufacturing. The amount of industrial development (including warehousing, production, flexible office/industrial space, high tech, etc.) in both cities is significantly larger than the amount of office development. Office development—nationally and regionally—is not expected to bounce back from the recession with the same resiliency as industrial space.

Employment development in the Planning Area will benefit from a number of competitive advantages. A major feature and competitive advantage of this “Southwest Metro” employment cluster in general, and the Basalt Creek Planning Area in particular, is its immediate access to I-5, the west coast’s most important transportation route. Additional advantages are access to I-205, Highway 217, nearby arterial roads, and transit service, a growing and educated workforce, and established and expanding industry clusters nearby. Employment corridors are located along transportation arterials that include the 124th Avenue Extension and the Basalt Creek Parkway located east west along the future jurisdictional boundary.

The market area’s location and current demographics are also encouraging for new housing development. The Planning Area is immediately south of several south Tualatin residential neighborhoods, which contain attractive parks, street trees, and schools. The neighborhoods create a positive environment for residential development along the northern edge of the Basalt Creek Planning Area.

The Planning Area is already served by several major regional and sub-regional retail nodes located nearby—Bridgeport Village, central Tualatin, and Wilsonville’s Argyle Square. Any commercial space built in the Basalt Creek Planning Area will primarily serve residents and employees, as is consistent with Metro’s employment area designation.

Concept Plan for Basalt Creek

Concept Plan Overview

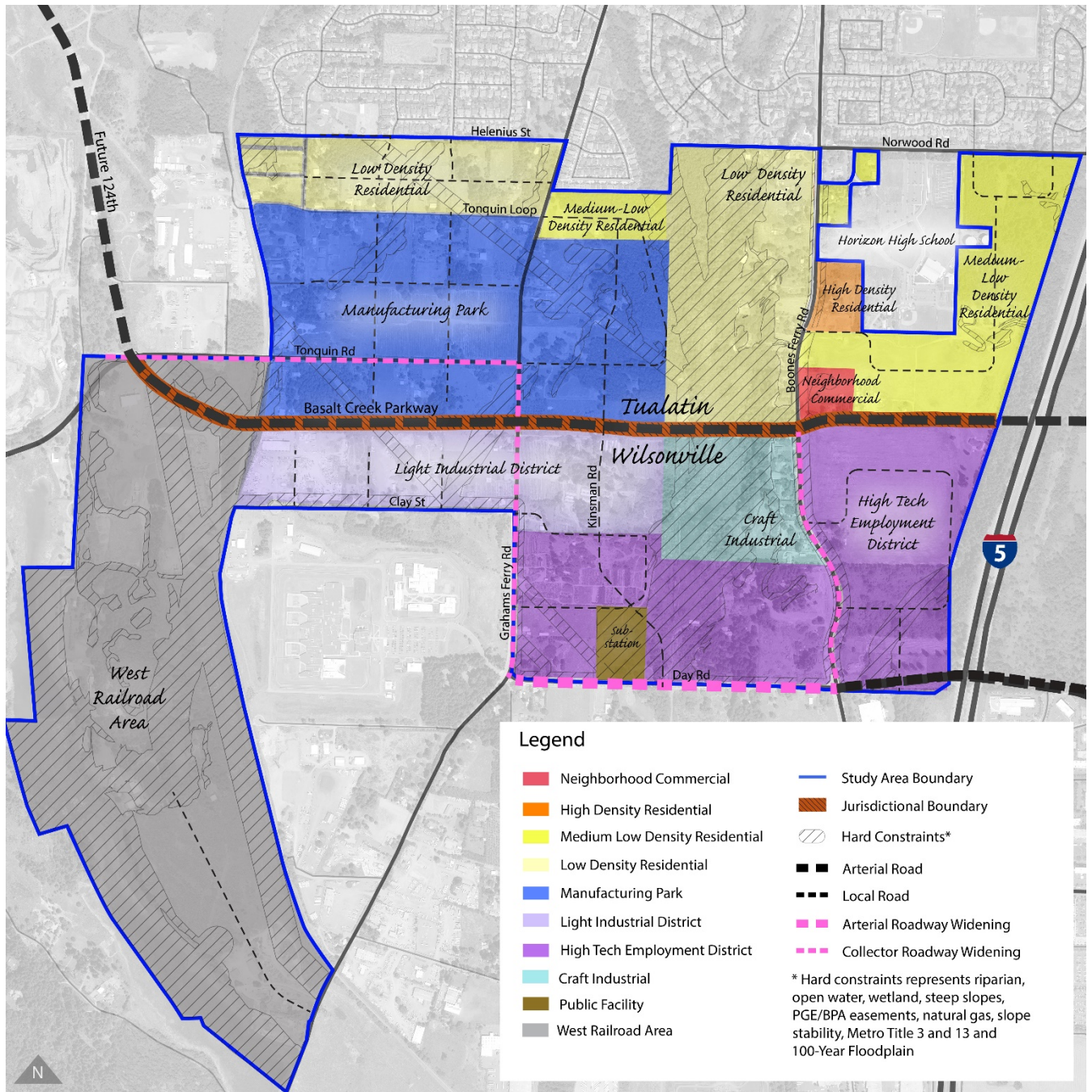
The Basalt Creek Concept Plan guides development within the Planning Area over the next twenty years. It identifies preferred land uses across the area and coordinates future land use, transportation and infrastructure investments between Tualatin, Wilsonville, and Washington County. The partnership between the two cities which shaped this Plan must continue during implementation to drive successful development in the future.

In Ordinance No. 04-1040B, the Metro Council concluded that the Basalt Creek Planning Area can be planned for industrial use given there are urban services in the vicinity and that urbanization will have no effect on agricultural practices on adjacent land due to its isolation from agricultural activities. The Metro Council identified the area as the most suitable exception area under consideration for warehousing and distribution, a significant industrial need facing the region. The land use framework for the Concept Plan supports job growth in the area, while preserving natural space, buffering residential areas, and improving connectivity throughout the Planning Area.

Key considerations and conclusions informed the Basalt Creek Concept Plan:

- While there is a unified Concept Plan for the Basalt Creek area, it was also important to customize the land use types and implementation measures for each city.
- Natural features, topography, and future roads identified in the Basalt Creek TRP influenced infrastructure service areas and the jurisdictional boundary.
- Operating separate infrastructure systems along the jurisdictional boundary affords each jurisdiction the ability to develop and manage their own public utility systems.
- The topography and geology in this area may present development challenges and infrastructure costs may be higher than average.
- Various employment types impact performance of the transportation system differently; for example, retail uses generate more trips than industrial or warehousing.
- There are uncertainties in estimating assessed value and property tax revenue of future development due to unpredictability of the market and the extent to which the modeled development types will be built over time; likewise, it is difficult to accurately estimate SDC revenue for future development.
- The West Railroad Area has significant environmental, infrastructure, and transportation constraints and costs to serve new development; this area is likely to take longer to develop than the rest of the Planning Area. When there is development interest, future planning would need to be conducted.

Figure 8 Basalt Creek Land Use Concept Map



Key Elements of the Concept Plan

- Jurisdictional Boundary Determination
- Land Use and Development
- Transportation
- Transit
- Bicycle, Pedestrian and Trail
- Parks and Open Space
- Natural Resources
- Water
- Sewer
- Stormwater
- Implementation & Phasing

Jurisdictional Boundary, Land Use and Development

The Basalt Creek Planning Area is divided between the Cities of Tualatin and Wilsonville, and the Basalt Creek Parkway serves as the jurisdictional boundary between the two. Of the 847 acres in the Basalt Creek and West Railroad Areas, approximately 367 acres will be in the Tualatin planning area and 480 acres will be in the Wilsonville planning area. The land use patterns in the Concept Plan are responsive to the setting and to the existing conditions. Since the area is well suited and intended for industrial and housing uses, much of the Planning Area is designated for employment land uses. The Concept Plan land use pattern also anticipates the inclusion of transitional areas via development design standards to buffer new industrial land from adjacent existing uses and neighborhoods.

The land use designations on the map represent real-world development types. Each development type (i.e. Manufacturing Park) is defined by a set of buildings, which are based on real buildings in each of the cities. Tualatin's land use designations which are north of the jurisdictional boundary are consistent with its current development code, and Wilsonville's land use designations, south of the jurisdictional boundary, are consistent with its current development code.

Using the land suitability analysis, and looking at adjacent land uses, the project team identified appropriate land use designations for properties within the Planning Area. These land use designations were further refined, and appropriate densities selected to provide for regional employment capacity and housing while also maintaining traffic counts consistent with the TRP.

Tualatin land uses include a mix of residential and employment development types, with the housing land use designations in the northern and northeastern portions of the Planning Area. The Plan calls for a small retail node just east of the Basalt Creek Canyon located to serve residents and workers.

Wilsonville land uses include a mix of employment development types and a modest opportunity for live/work housing. These land uses support adjacent and nearby industrial areas such as the Coffee Creek Industrial Area and provide flexibility to meet a range of market demands. These uses could also be a good fit for the City's Industrial Form-based Code, recently adopted for the Coffee Creek Industrial Area, if the City wanted to extend it north into the Basalt Creek Planning Area.

Development Types

Table 3 Summary of Development Types Identified for Basalt Creek Planning Area by Jurisdiction

Jurisdiction	Land Use Designation	Buildable Acreage	Households		Employment	
			Count	Density per Gross Acre	Count (jobs)	Jobs per Gross Acre
Tualatin	High Density Residential	3.36	67	19.9	-	-
	Medium-Low Density Residential	59.83	374	6.3	-	-
	Low Density Residential	24.83	134	5.4	-	-
	Neighborhood Commercial	2.89	-	-	33	11.3
	Manufacturing Park	92.95	-	-	1,897	20.4
	Functionally Unbuildable	10.37	-	-	-	-
	Tualatin Subtotal	194.23	575		1,929	
Wilsonville	Craft Industrial	1.25	6	4.8	27	21.7
	Light Industrial District	35.30	-	-	581	16.5
	High Tech Employment District	94.47	-	-	1,916	20.3
	Functionally Unbuildable	5.62	-	-	-	-
	Wilsonville Subtotal	136.64	6		2,524	
Total		330.87	581		4,453	

Tualatin

Employment. The Concept Plan allocates substantial land as Manufacturing Park, which is expected to accommodate 1,897 new jobs, calculated based on the expected square footage of development in this area and the average square footage needed per employee. The Manufacturing Park is located along the northern edge of the future Basalt Creek Parkway on the land west of Basalt Creek Canyon, including both sides of Tonquin Road and Graham’s Ferry (as shown on the above map).

Housing. Most of the remaining land north of the proposed Basalt Creek Parkway (beyond employment land) is allocated to a mix of residential uses at varying densities. The Concept Plan organizes residential land uses into two general areas that are intended to have easy access to services and be connected to parks, schools, and natural areas.

1. The plan focuses the lowest density housing (a mixture of low-density and medium-low density) along the northern portion of the Planning Area and low density along the west side of Boone's Ferry Road, adjacent to existing neighborhoods of Tualatin. This land is expected to accommodate 134 new households.
2. The eastern portion of the Tualatin future annexation area is anticipated to be a mixture of high and medium-low density residential; the land immediately east of Boones Ferry Rd is intended for high density housing; The remainder of the land east and south of Horizon School is planned for medium-low density residential. This eastern subarea is expected to accommodate 407 new housing units in Tualatin. This land is near the intersection between Boones Ferry Road and the new Basalt Creek Parkway.

Commercial. Neighborhood Commercial is planned north of the jurisdictional boundary and east of the Basalt Creek Canyon at, or near, the northeast corner of the intersection of Boones Ferry Road / Basalt Creek Parkway. It is intended to serve residents and workers.

Wilsonville

High-Tech Employment District. Most of the buildable acres in the Planning Area south of the proposed Basalt Creek Parkway are devoted to a mix of higher-density employment land. The High-Tech Employment District is expected to accommodate the largest number of jobs (1,916) with a mix of warehousing, manufacturing and office buildings. This land use is in the southern and eastern sections of the Planning Area, covering all Wilsonville land east of Boones Ferry Road and most of the land south of Clay Street extending to Day Road and bordered to the west by Coffee Creek Correctional Facility.

Craft Industrial. The southwest corner of the intersection of Boones Ferry Road and the new Basalt Creek Parkway is planned as Craft Industrial, which allows for a mix of smaller-scale commercial uses, which may include live-work units. These envisioned development types respond to the topography on those parcels and their location directly south across the Parkway from residential land and southwest of the neighborhood commercial node across the Parkway in Tualatin. Craft Industrial is a better fit with those surrounding uses, providing a transition to the higher intensity employment uses to the south. This area allows less than 20 percent residential use and is expected to accommodate 27 new jobs and 6 new housing units in the form of live-work units.

Light Industrial District. This land is located across the southern edge of the future Basalt Creek Parkway just north of Coffee Creek Correctional Facility and will be able to accommodate 581 new jobs primarily in warehousing and light manufacturing.

West Railroad Future Planning Area

The West Railroad Area is divided from the rest of the Planning Area by the Portland and Western Railroad (PNWR) and the Coffee Creek Correctional Facility. The area is heavily constrained by wetlands habitat (as seen in Figure 5), steep slopes, and fragmented property ownership. Initial estimates show it would be costly to serve this area with adequate water, sewer, and transportation infrastructure due to

its location. These initial cost estimates for the infrastructure are included in Appendix H (Basalt Creek Concept Plan Transportation Technical Analysis and Solutions Memo) and Appendix I (Basalt Creek Concept Plan Infrastructure Technical Memo). Topography and the PNWR line also create a relative separation between this area and the rest of the Basalt Creek Planning Area as well as access issues for freight trucks. Given these constraints, the area has potential for resource conservation and future public access to nature. Additional land uses may be appropriate but will need further analysis.

Because it is considered to have much lower development potential than the rest of the Planning Area, a future land use scenario was not created for this area at this time – it is being considered an area for future study and consideration. Once development and the extension of infrastructure occurs in the rest of Basalt Creek as well as the Coffee Creek Industrial Area, additional analysis should be completed on infrastructure service costs and appropriate land uses. The West Railroad Area is south of the Basalt Creek Parkway and in the City of Wilsonville future annexation area. Wilsonville’s Comprehensive Plan amendment to adopt this Concept Plan will include a designation of Area of Special Concern for the West Railroad Area. The area will require master planning before any development occurs.

Transportation

Key Transportation Solutions

The TRP sets the layout of major new roads and improvements for the area. Prior to land annexing into either city, a cooperative funding strategy needs to be agreed upon between the City of Wilsonville, the City of Tualatin, and Washington County to build out the transportation network as set forth in the TRP. The network must also coordinate with plans for the area as set out in the Metro Regional Transportation Plan.

The Basalt Creek Parkway, of which the segment between 124th Avenue/Tonquin Road to Grahams Ferry Road is already under construction, is the major east-west arterial through the area. The Parkway allows for limited local access providing important freight connections between Tonquin, Southwest Tualatin, and Basalt Creek Employment Areas to I-5. It also serves as a future jurisdictional boundary between Tualatin and Wilsonville.

Additional road improvements are necessary to handle projected traffic levels as the area develops, including adding capacity to north-south collectors and Day Road as well as two additional I-5 crossings (at Day Road and Greenhill). As the area develops, property owners will plan and build local roads connecting to this network. These roadway improvements will include enhanced bike and pedestrian facilities and connections to the future transit system.

Roadway Network

The roadway network for the Basalt Creek Concept Plan is shown in Figure 9. The transportation network includes projects considered likely to be in place by 2035. Metro’s model for forecasting depends partly on the projects planned for the Basalt Creek Planning Area, as well as those planned for the region (Metro’s 2035 Gamma model). Metro’s 2014 RTP, which lists projects reasonably likely to be funded by 2040, informed this analysis. Table 4 shows potential capacity-related projects from the 2014 RTP list. The projects in the RTP originate from the Basalt Creek TRP (see Figure 10 below).

The planned roadway network includes the projects and facilities described in Table 4 below, with one exception. The East-West Arterial Overcrossing is not included on Figure 9 as that segment of the Basalt Creek Parkway is anticipated to be constructed after 2040. Figure 9 also depicts where local connections may be needed to provide access and circulation to existing development and developable parcels. Both Level of Service (LOS) and Volume to Capacity (V/C) performance measures are shown. Level of service (LOS) ratings and volume-to-capacity (v/c) ratios are two performance measures of intersection operations.

Level of Service: relates the traffic service to a given flow rate of traffic and divides the quality of traffic into six levels ranging from Level A to Level F. A represents the best traffic where the driver has the freedom to drive with free flow speed and Level F represents the worst quality of traffic.

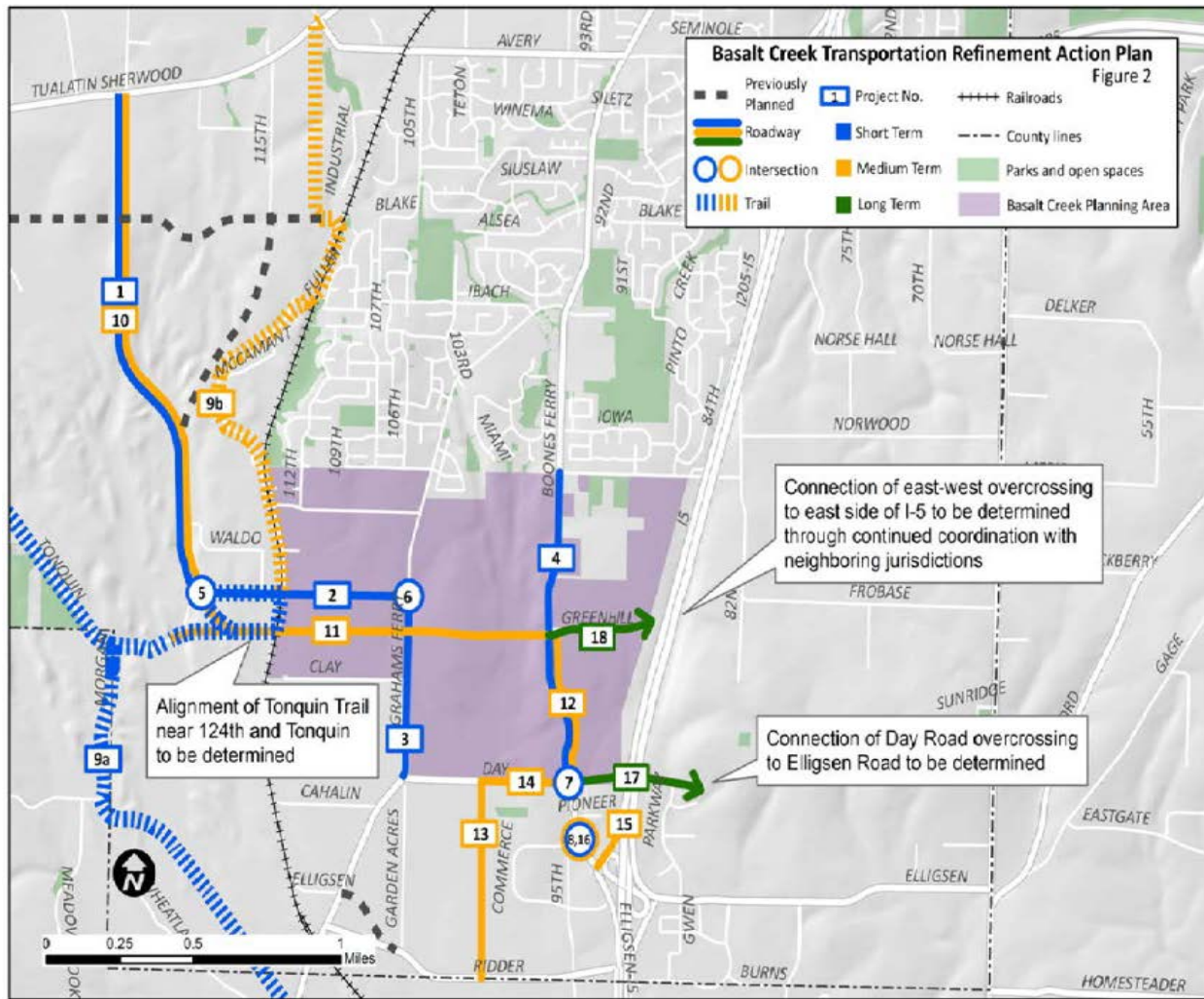
Volume-to-capacity (v/c) ratio: A decimal representation (between 0.00 and 1.00) of the proportion of capacity that is being used at a turn movement, approach leg, or intersection. A lower ration indicates smooth operations and minimal delays as the ratio approaches 1.0 congestion increases and performance is reduced. Above that the intersection is at capacity and considered failing.

Table 4 2014 RTP Projects Assumed for 2035 Forecasting

Project Number	Project and Description	TRP Time Period	In Place by 2035?
10736	124 th Ave. Extension (Tualatin-Sherwood Rd. to Grahams Ferry Rd.) – new two-lane roadway extension	2014-2017	Yes
11243	Day Rd. (Grahams Ferry Rd. to Boones Ferry Rd.) – widen to five lanes	2018-2024	Yes
10588	Grahams Ferry Rd. (Helenius St. to county line) – widen to three lanes	2025-2032	Yes
10590	Tonquin Rd. (Grahams Ferry Rd. to Oregon St.) – widen to three lanes	2025-2032	Yes
11438	Tonquin Rd./Grahams Ferry Rd. – add traffic signal	2025-2032	Yes
11469	124 th Ave. Extension (Tualatin-Sherwood Rd. to Grahams Ferry Rd.) – widen to five lanes	2025-2032	Yes
11470	East-West Arterial (Grahams Ferry Rd. to Boones Ferry Rd.) – new five-lane roadway extension	2025-2032	Yes
11487	Boones Ferry Rd. (East-West Arterial to Day Rd.) – widen to five lanes	2025-2032	Yes
11488	Boones Ferry Rd./Commerce Circle/95 th Ave. – Intersection improvement and access control	2025-2032	Yes
11489	Boones Ferry Rd./I-5 Southbound – add second southbound right turn lane on ramp	2025-2032	Yes
11490	Day Rd. Overcrossing (Boones Ferry Rd. to Ellgsen Rd.) – new four-lane roadway extension/overcrossing of I-5	2033-2040	Yes
11436	East-West Arterial Overcrossing (Boones Ferry Rd. to east side of I-5) – new four-lane roadway extension/overcrossing of I-5	2033-2040	No

Source: <http://www.oregonmetro.gov/regional-transportation-plan>

Figure 10 Basalt Creek Transportation Refinement Plan



See Appendix J for more information on the full project list.

The Concept Plan analyzed alternatives regarding future development – and therefore trip generation -- in the Basalt Creek/West Railroad area. The land uses assumed for the Concept Plan are key inputs in traffic forecasting and future traffic operations. Assumptions about regional land use (and intensity of trip generation) beyond the Concept Plan area in 2035 also have a strong impact on forecasting and future operations. Table 5 outlines the trip generation by land use in the Planning Area. The trips generated by the land uses in the Concept Plan are consistent with the trip generation assumed in the TRP and the 2014 RTP.

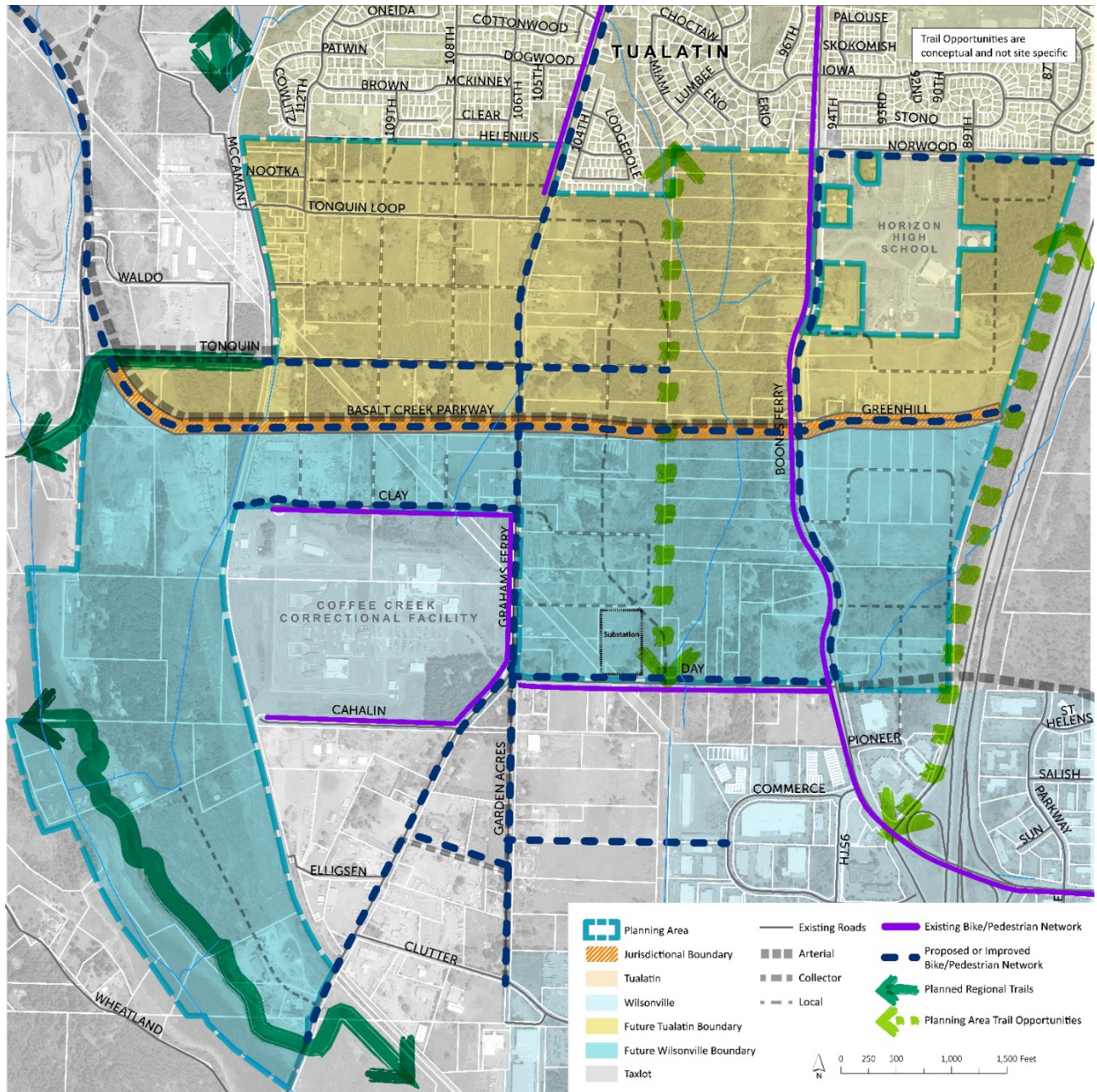
Table 5 Trips by Land Use Designation

Jurisdiction	Land Use Designation	Trips	Trips per Acre
Tualatin	High Density Residential	42	12.52
	Medium-Low Density Residential	236	3.94
	Low Density Residential	85	3.41
	Neighborhood Commercial	24	8.26
	Manufacturing Park	725	7.80
	Tualatin Subtotal/Average	1,111	5.72
Wilsonville	Craft Industrial	16	12.95
	Light Industrial District	218	6.17
	High Tech Employment District	717	7.59
	Wilsonville Subtotal/Average	951	6.96
Planning Area	Planning Area Average		6.23
	Total Trips	2,062	

Bicycle and Pedestrian Framework

As noted in the existing conditions, the bicycle and pedestrian network is incomplete in the Planning Area. Additional bike and pedestrian facilities will be integrated into new and updated road projects in accordance with State, County and City standards and in conjunction with predicted traffic flows. The map below illustrates the location of these proposed upgrades, along with identified trail opportunities that would further enhance connectivity in the Planning Area and to surrounding areas.

Figure 11 Bikes, Trails, and Pedestrian Network Map



While existing bike and pedestrian facilities run along Boones Ferry Road, Day Road, and sections of Grahams Ferry Road, planned improvements will increase safety and completeness. The additional facilities will offer significant east/west connections along the new Basalt Creek Parkway and Tonquin Road as well as an important north/south connection along the length of Graham’s Ferry Road within the Planning Area. These improvements will make connections between the proposed neighborhood commercial area on Boones Ferry Road with residential neighborhoods and employment areas as well as the future transit network. Given the nature of the Basalt Creek Parkway, an over or underpass may be preferred or necessary to make the best bike/pedestrian connections in the Planning Area.

Coordination between the cities, Washington County, Metro, ODOT, and possibly BPA will be necessary for a feasibility study, implementation and funding.

Most participants polled at the April 2016 Open House suggested they would like to use future bike and pedestrian facilities to access recreation or for exercise, with almost half anticipating using these facilities at least once a week. These new connections will not only provide improved connectivity but also valuable access to local recreational areas, trails, and natural areas.

With the conservation of significant natural areas, the plan outlines opportunities to connect these spaces to pedestrian and bike facilities in key locations to create active and passive recreation, outdoor education, and public art amenities. The two main opportunities for trails within the Basalt Creek Planning Area are a Basalt Creek Canyon Ridge Trail and the I-5 easement Trail, which are shown in Figure 11 as Planning Area Trail Opportunities marked by large light green arrows. When trail alignments are considered in the future, access to the natural resource will not take priority over protection and enhancement.

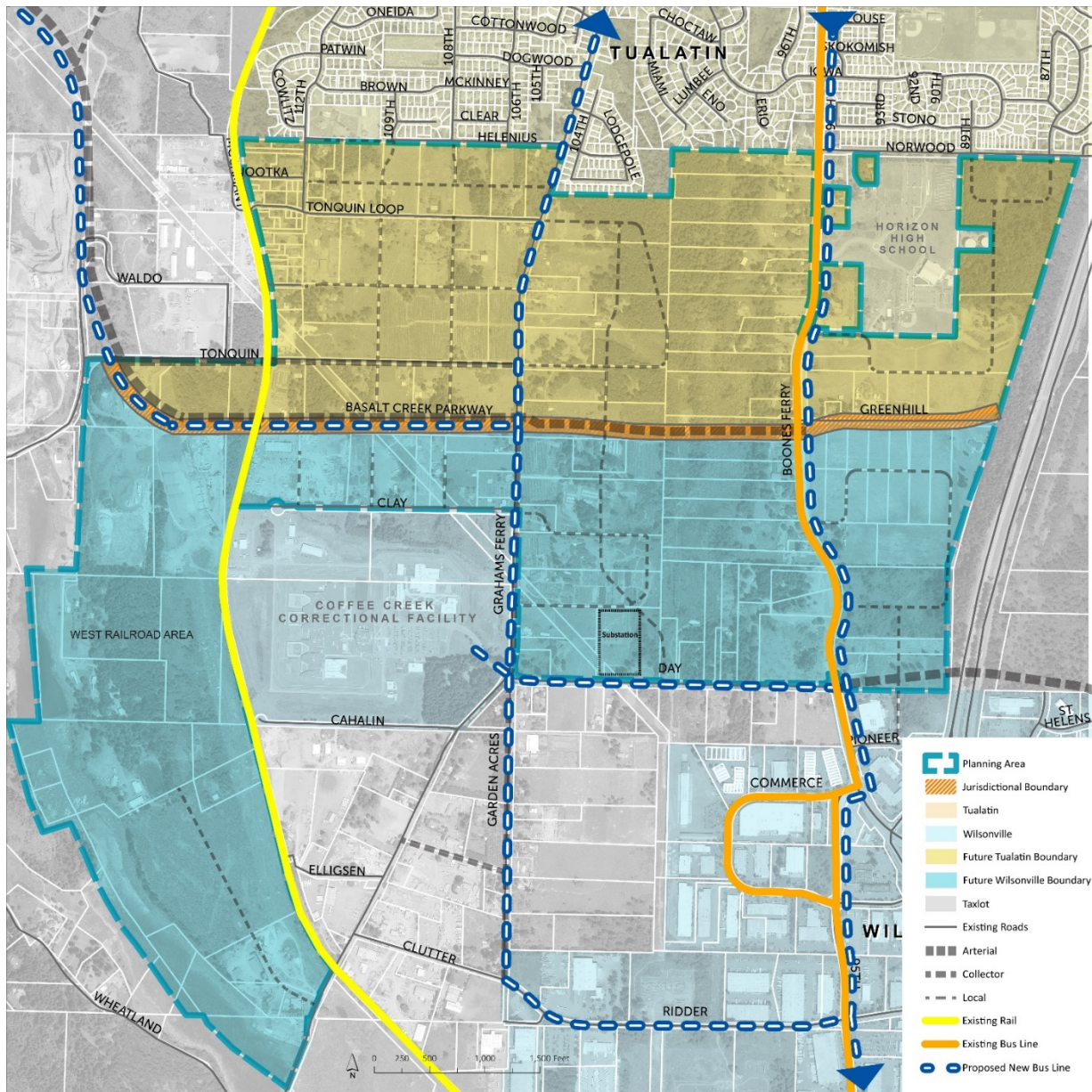
Currently, Basalt Creek Canyon is a barrier to east/west movement through the Planning Area. A north/south connection to the west of the Canyon would further improve the network and make connections to east/west roads that run north and south of the Canyon. The Basalt Creek Canyon Ridge Trail opportunity would be located upland, not within Basalt Creek, near or along the ridge of the Basalt Creek Canyon. This trail could be connected to the regional trail network by extending Tonquin Road with bike/pedestrian facilities across Graham's Ferry to the new ridge trail. There is also opportunity to create a trail parallel to I-5 in the ODOT regional easement that would provide an additional north/south connection that would connect to existing bike and pedestrian facilities.

Decision-making on investments should prioritize connections that link pedestrian and bike networks to transit stops and near locations with higher planned density. Potential funding sources for improving the bike/pedestrian network include Washington County (MSTIP) and Metro (i.e. MTIP, RFFA, SW Corridor, Natural Area Bonds).

Coordination with Metro, Tualatin Community Services Department, and the Wilsonville Parks and Recreation Department will be necessary to establish a local trail network with regional connections. Metro's Ice Age Tonquin Trail Master Plan provides a framework for local and regional implementation of the regional Ice Age Tonquin Trail, which is intended to complement the Ice Age Floods National Geological Trail Planning (the national trail will be a network of driving routes with spurs for biking and walking, from Montana to the Pacific Ocean). The preferred alignment for the regional Ice Age Tonquin Trail includes a section bordering the Basalt Creek Planning Area as part of a 22-mile trail alignment through Wilsonville, Tualatin, and Sherwood with trail facility types varying by location based upon landscape and setting. The Ice Age Tonquin Trail is intended to connect in the north to the Tualatin River Greenway Trail, Fanno Creek Trail, and the Westside Trail, and to the south to the Willamette River.

Future Transit Framework

Figure 12 Future Transit Framework



The creation of additional bus lines along existing and new routes in the Basalt Creek Planning Area will be necessary to increase connectivity and to support the job and household growth envisioned for this area. Transit service in the area requires coordination between TriMet and SMART to enhance service along existing bus routes and to provide effective connections north-to-south and east-to-west through the Planning Area. This service would also provide access to surrounding and regional employment centers and residential neighborhoods. Transit service should facilitate riders commuting to and from work and visiting major local destinations such as the Wilsonville and Tualatin Town Centers. As such, transit service should reflect development and density patterns as the area grows.

SMART and TriMet routes will be integrated with the bike, pedestrian, and trail services with key access points along Grahams Ferry Road, Boones Ferry Road, Day Road, SMART Central, and the Correctional Facility. All extensions will comply with ADA requirements. SMART will continue to serve Wilsonville, including the areas annexed within the Planning Area into Wilsonville. The Cities will work with TriMet to integrate with SMART service. Lawmakers and staff will work together to ascertain the impacts of and process for a possible service boundary change.

The existing Portland and Western Railroad (PNWR) runs along the western side of the Basalt Creek Planning Area. In addition to transporting freight, it also provides the Westside Express Service (WES), a commuter rail line serving Beaverton, Tigard, Tualatin and Wilsonville. WES runs on weekdays during the morning and afternoon rush hours, with trains every 30 minutes, connecting commuters to both the TriMet and SMART transit systems. The feasibility of a new WES station serving the Basalt Creek Planning Area should be studied with increased development and ridership demand.

Civic Uses

The Basalt Creek Concept Plan does not quantify the specific need or locations for civic uses such as libraries, parks and elementary schools within the Planning Area, but a minimum park space of a 15- to 20-acre Neighborhood Park is needed to serve Tualatin residents and businesses in the Planning Area. The facilities for provision of schools and parks will be determined and funded as development occurs in the area and will be based on level of service standards for the subsequent population expansion. However, during scenario planning, assumptions were built into the model for the size and capacity of residential development types to serve as a guide. The development scenarios assumed school districts, cities, and other service providers would use their site selection and land acquisition processes to acquire the land needed for these facilities. Locations of any necessary facilities will be determined through a collaborative planning effort between the cities and service providers, as such they are not included on any plan maps. Cities have decided to provide library services for the Basalt Creek population through existing libraries that will be sized to accommodate the additional demand.

Schools

Capacity is the main concern for school planning. The school district will calculate the need for new schools based upon demographic and density estimates for future development in the Basalt Creek Planning Area according to operational standards related to the number of students allowed per school. The final development scenario estimates 1,156 future households in the Basalt Creek Planning Area.

The Planning Area currently falls within the Sherwood School District. This district has an estimated enrollment of 5,158 and includes four elementary schools, two middle schools, Sherwood High School, and Sherwood Charter School.

The Basalt Creek Planning Area is located in the Sherwood School District and in 2016 the voters in the District approved ballot measure 34-254 approving a bond. This bond project will allow the District to accommodate an additional 2,000 students district-wide (according to information on the District's website <http://www.sherwood.k12.or.us/information/bond-visioning-process>).

Provision of any new schools will be coordinated with representatives of all nearby school districts for capital planning. The Planning Area is located very close to Tualatin High School. The Tigard-Tualatin

School District has an estimated enrollment of 12,363, and includes ten elementary schools, three middle schools, and two high schools. A private high school, Horizon Christian, is located within the Planning Area and currently serves 160 students but plans significant expansion in the future.

The addition of hundreds of new households can be expected to impact existing school districts, but at this time no district has indicated that they plan to locate any new facilities within the Planning Area. Although, the Basalt Creek Planning Area could provide opportunities for shared facilities, such as parks and recreation spaces.

Parks and Open Space

One of the guiding principles of the Basalt Creek Concept Plan is to protect key natural resources and sensitive areas while making recreational opportunities accessible by integrating new parkland, open spaces, natural areas and trails in the Planning Area and connecting to existing regional networks.

The Planning Area provides an interesting opportunity for different types of parks, given the variety of land uses and the extensive Basalt Creek Canyon natural area: active and passive neighborhood parks, pocket parks, and even perhaps a large community or regional facility. It also provides opportunities for jogging, hiking, or other outdoor recreation by area employees and nearby residents.

Cities will determine specific locations of facilities as part of citywide parks planning and implementation, and will adopt funding methods for acquisition, capital and operating costs for parklands in the Basalt Creek Planning Area, including the use of their current System Development Charges for parks. Locating parks near schools, natural areas or other public facilities is preferable, especially when it provides an opportunity for shared use facilities. As in any park development, the acquisition is best done in advance of annexation and extension of services, with development of the parks occurring as the need arises.

At the time of this writing, both cities are going through a Park and Recreation Master Plan update. This update has considered the Basalt Creek Planning Area in the types of services and facilities that will be needed to serve residents and businesses in this area. Each City will include their respective portions of the Basalt Creek area in their independent Parks and Recreation Master Plan.

Natural, Historical and Cultural Resources

Overview

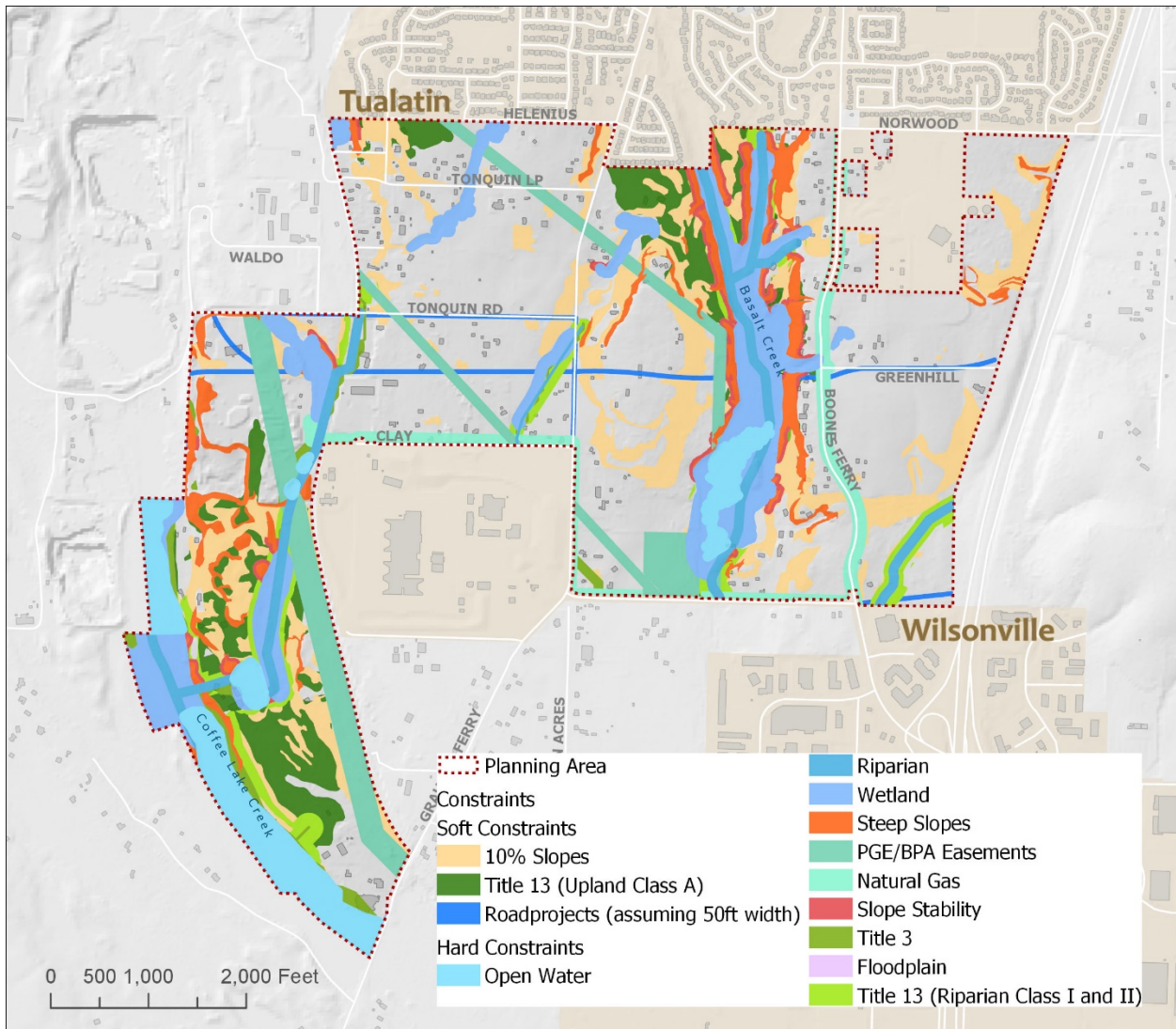
The future vitality of the Basalt Creek Planning Area hinges on development that efficiently locates job growth on the land most suited for it, while preserving and capitalizing on the natural and cultural resources in the area. The identification of environmentally sensitive lands followed the regulatory framework described briefly below and is illustrated on the Natural Resources Map (Figure 13) and in the Existing Conditions Report (Appendix A starting on page 86).

Developable lands for all scenario planning incorporated these findings. Since Clean Water Services and Wilsonville have local regulations compliant with state and regional environmental protection requirements, and in some cases that go above and beyond basic requirements, the constraints analysis used them as a foundation for determining the necessary buffering around a natural feature.

Environmental constraints are summarized below and unless otherwise noted were fully excluded from the developable land input in the scenario testing for the Basalt Creek Concept Plan:

- Open Water
- Streams
- Wetlands
- Floodplains (50% reduction of developable area)
- Title 3 Water Quality and Flood Management protections
- Title 13 Nature in Neighborhoods (20% reduction of developable area in areas designated Riparian Habitat Classes I and II)
- Steep Slopes (25% slopes and greater)

Figure 13 Natural Resources Map



Regulatory Framework for Conserving Natural Resources

Oregon Statewide Planning Goal 5: Natural Resources, Scenic and Historic Areas, and Open Spaces

Goal 5 protects natural resources and conserves scenic and historic areas and open spaces by directing local governments to adopt protection programs. Titles 3 and 13 of Metro’s Urban Growth Management Functional Plan implements Goal 5 in the Portland Metro region.

Metro Title 3: Water Quality, Flood Management and Fish and Wildlife Conservation

Title 3 requires local jurisdictions to limit or mitigate the impact of development activities on Water Quality and Flood Management Areas which includes wetlands and riparian areas. An inventory was conducted in 2001. There are 116 acres of land in the Basalt Creek Planning Area that have been designated by Metro as Water Quality and Flood Management Areas under Title 3. These lands are restricted for development and buffered by a vegetated corridor. Any development within the vegetated corridor must be mitigated by environmental restoration and/or stormwater retention and water quality measures. As a result of Title 3, these lands were excluded from the developable lands input in the scenario testing.

Table 6 Title 3 Wetlands by Category and Acres

Category	Acres	Description
Open Water	49 acres	Includes 50 ft. buffer
Streams	31 acres	Includes 15 to 50 ft. buffers
Wetlands	69 acres	Includes 25 to 50 ft. buffers

Metro Title 13: Nature in Neighborhoods

Title 13 requires local jurisdictions to protect and encourage restoration of a continuous ecologically viable streamside corridor system integrated with upland wildlife habitat and the urban landscape. Metro’s regional habitat inventory in 2001 identified the location and health of fish and wildlife habitat based on waterside, riparian and upland habitat criteria. These areas were named Habitat Conservation Areas.

Table 7 Title 13 HCA Categories with Acreage

HCA Categories	Acres	Description
Riparian Wildlife Habitat Class I	130	Area supports 3 or more riparian functions
Riparian Wildlife Habitat Class II	31	Area supports 1 or 2 primary riparian functions
Riparian Wildlife Habitat Class III	7	Area supports only secondary riparian functions outside of wildlife areas
Upland Wildlife Habitat Class A	103	Areas with secondary riparian value that have high value for wildlife habitat
Upland Wildlife Habitat Class B	72	Area with secondary riparian value that have medium value for wildlife habitat
Upland Wildlife Habitat Class C	37	Areas with secondary riparian value that have low value for wildlife habitat

Designated Aquatic Impact Areas	52	Area within 150 ft. of streams, river, lakes, or wetlands that are not considered regionally significant natural resources but could have some adverse impacts
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Development in Title 13 areas is not prohibited but generally discouraged within the Basalt Creek Planning Area. Areas designated Riparian Habitat Classes I and II require 20% reduction in developable lands. Low impact design and mitigation strategies would be important to any development that might happen to maintain the function of these important ecological areas.

Both the City of Wilsonville and Clean Water Services have local ordinances in place that go beyond the level of conservation required by Title 3 and existing local standards from each City would apply upon annexation of a Planning Area property into either Wilsonville or Tualatin. Future development in Tualatin must comply with Clean Water Services’ Design and Construction Standards & Service Provider Letters (SPLs) for impacts in sensitive areas such as vegetated corridors surrounding streams and wetland habitat, including the Tualatin River Watershed and the entire City of Tualatin. Within the City of Wilsonville, the Significant Resource Overlay Zone (SROZ) includes floodplains, wetlands, riparian corridors, and vegetated corridors. Impact areas are generally considered to be the areas within 25 feet of a Significant Resource area. Development can only be permitted through review of a Significant Resource Impact Report (SRIR) analyzing the impacts of development within mapped significant resource areas.

Natural Resource Protection and Enhancement Strategies

Most of the land with environmental constraints is in or near Basalt Creek Canyon and the West Railroad Area. To protect the natural areas, the Cities have agreed to management practices consistent with Metro Title 3 and 13. The Canyon is very valuable to the area and it needs to be protected, while also having visual or physical public access points in appropriate locations to connect to the bicycle, pedestrian and recreational facilities in the area and to serve the needs of residents and local employees. Future protection and enhancement opportunities may include: controlling invasive plant species, such as reed canary grass, Himalayan blackberry and English ivy, reintroducing native plants into aquatic and upland habitats, retaining and installing snags and woody debris. Important species include Red-legged Frogs, the Pileated Woodpecker, Oregon white oak, Ponderosa pine, and Geyer willow (see Appendix A for more information).

Cultural Resources

Community members through the planning process have identified the old Carlon Schoolhouse as a historically significant landmark. It sits off Grahams Ferry Road near Day Road and was in use as a school until the late 1800s. While the area has an interesting geologic history, it has not been identified as a resource for any significant archaeological artifacts.



Figure 14 Picture of the Carlon Schoolhouse from Tualatin Life Newspaper on August 19, 2014 by Loyce Martinazzi

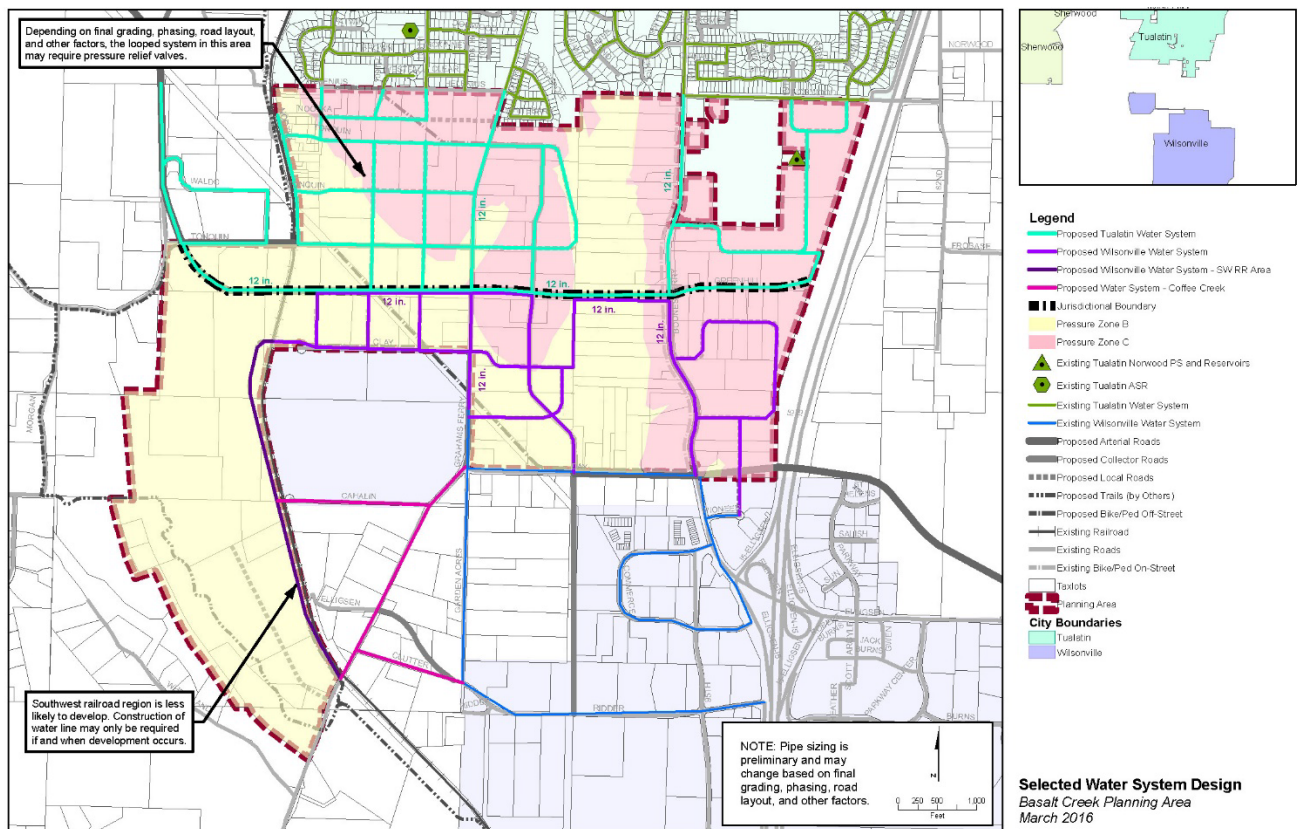
Infrastructure

For the conceptual infrastructure systems, high level planning calculations were completed to estimate water demand and sewer flows (Appendix I). These values can vary widely depending on the actual future development. Each City's individual master plans will be used to provide demand and flow projections when further planning the area.

Water

The conceptual water systems designed to serve the Basalt Creek Planning Area are shown below in Figure 15. The systems are independent looped systems that will not be connected to each other. Water lines for each city may be located along the proposed east-west arterial road, the future Basalt Creek Parkway, and other roadways throughout the Planning Area.

Figure 15 Water Systems Concept for Basalt Creek Planning Area



The existing service zones (levels B and C) from both communities provide sufficient pressure to provide service within each city's planning area. The Tualatin pressure zones B (ground elevations 192 feet to 306 feet) and C (ground elevations 260 feet to 360 feet) will serve the Basalt Creek Planning Area. To provide service to Wilsonville's pressure zone C area (ground elevations 275 feet to 410 feet), the City has identified a need to install a booster pump station to serve the higher elevation areas (above approximately 285 feet) south of Greenhill Road. The booster pump station is one of the CIP projects listed in the 2012 Wilsonville Water Master Plan and has been included in the City's city-wide cost estimates.

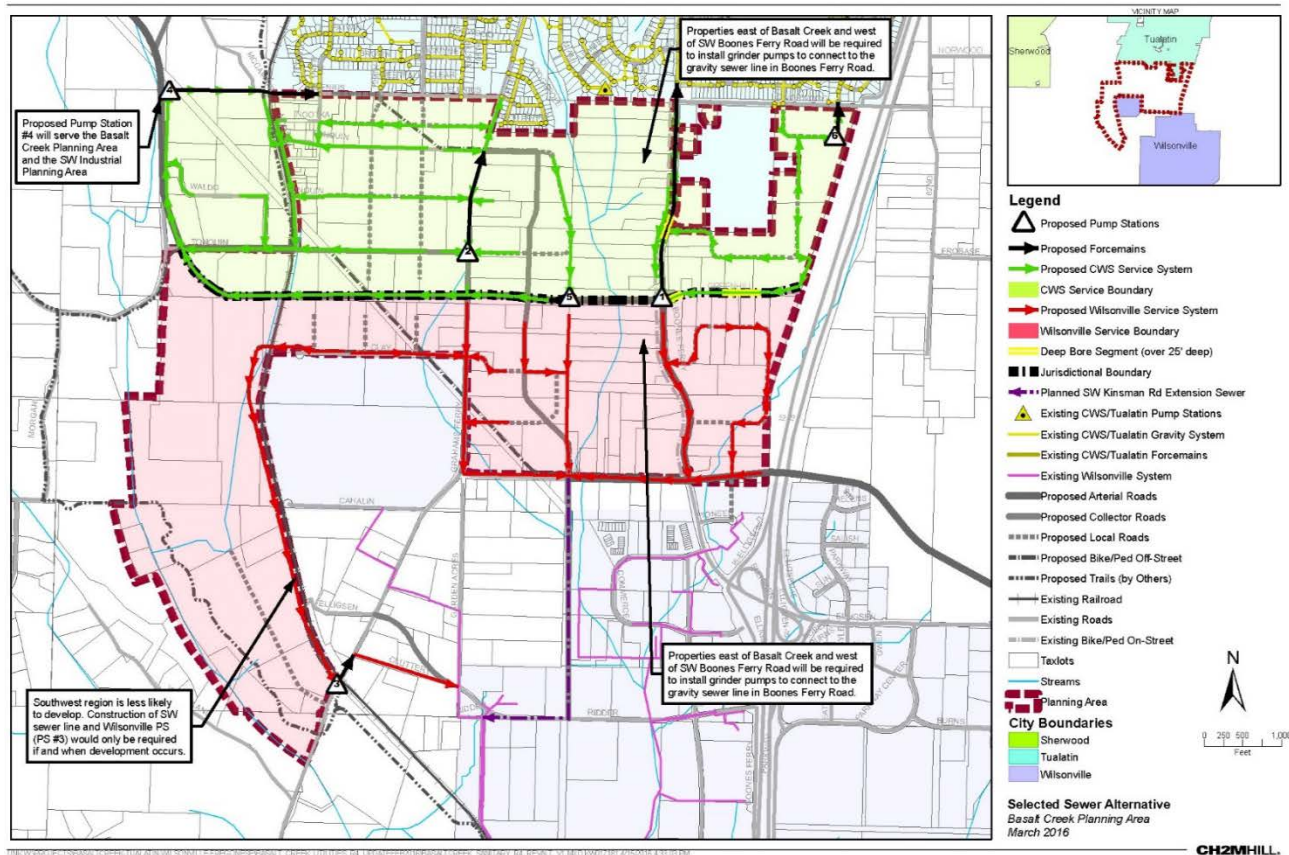
The Coffee Creek water system is shown outside of the Basalt Creek Planning Area (east of the railroad, west of SW Grahams Ferry Road, and south of SW Clay Road) to illustrate Wilsonville’s water system and how to connect services to the West Railroad Area. That portion of the system would be installed and funded by development within the Coffee Creek Master Plan area.

The West Railroad Area has a much lower potential for development due to several constraints including slope, geology, wetlands, habitat areas, access, and existing uses. Cost estimates to serve this area have been included as a separate column but would only be required if and when development occurs.

Sanitary Sewer

The conceptual sanitary sewer systems are shown in Figure 16. While topography will be a major challenge, the sanitary systems use gravity as much as possible and sewers generally flow to the south and west following the slopes of the existing ground and along existing and proposed roadways and trails to avoid streams and natural areas. These systems include new pump stations, which are used to lift wastewater to higher elevations where it can then be transported by gravity flow systems.

Figure 16 Sanitary Sewer Systems Concept for Basalt Creek Planning Area



Five pump stations are proposed to serve the Tualatin system, managed and maintained by Clean Water Services (CWS), and one pump station is required for the proposed Wilsonville system.

In the area between Basalt Creek Canyon and Boones Ferry Road in both Tualatin and Wilsonville service boundaries, residents and business owners who wish to connect to the proposed gravity system (or are

required due to septic failure) likely will require a private grinder pump to connect to public sewer. A grinder pump consists of a collection tank that grinds waste and pumps it to the public sewer system.

The conceptual sewer system connects to the existing Tualatin system at SW 112th Avenue between SW Cowlitz Drive and SW Nootka Street, at SW Grahams Ferry Road and SW Helenius Street, at SW Boones Ferry Road and SW Norwood Road, and at SW Vermillion Drive and SW Norwood Road. The sewer system connects to the existing Wilsonville system in Garden Acres Road to SW Day Road, Grahams Ferry Road and Boones Ferry Road (the sewer line initially contemplated in the Coffee Creek Master Plan and included in the analysis for this Concept Plan has changed, shifting from a SW Kinsman Road extension to Garden Acres Road).

Stormwater Drainage

Stormwater detention and treatment will occur at local facilities and no regional facilities are planned for the area. Each City will serve its own jurisdiction area independently. The Cities acknowledge that they must follow requirements established in their guiding respective NPDES (National Pollution Discharge Elimination System) MS4 (Municipal Separate Storm Sewer System) permits. All flows that outlet within each city will be guided by their respective protocols, design standards, and/or stormwater management plans. Public stormwater systems are included in the road network cost estimate. Stormwater systems outside of the public right-of-way are assumed to be part of the development costs, which have not been estimated.

Implementation and Phasing Strategy

Implementation Measures

Implementing the Concept Plan will take a predictable path in this area:

- First, each City will work with the County to update their Urban Planning Area Agreement.
- Each City will also amend its comprehensive plan to include the essential elements of the Concept Plan.
- Next, the Cities ensure that the zoning and/or development code is updated to enable development in the Planning Area, and includes appropriate zoning standards
- Generally, annexation is predicated on investor interest, and the expectation is that investors will finance the extension of services.
- Either city may decide to invest in service extension as a way to spur development or may decide to help a group of investors develop an area, for example by providing the formation of a Local Improvement District of other funding mechanism.

Action Items

1. Amend Urban Planning Area Agreements

Comprehensive planning within the regional Urban Growth Boundary (UGB) is coordinated between Washington County and cities through Urban Planning Area Agreements (UPAAs). Upon adoption of the Concept Plan both Cities will work with the County to update their respective UPAAs. The UPAAs will acknowledge the future jurisdictional boundary and outline what areas may be annexed into by each city. The amended UPAAs provide the transfer of planning authority to the Cities enabling them to proceed with annexation and development.

2. Amend Comprehensive Plans

Tualatin, which has a “one map” system where the zoning and comprehensive plan are essentially the same map, will be adopted after adoption of the Concept Plan anticipated by May 2019.

Wilsonville, which has a “two map” system where the Comprehensive Plan shows future conditions and not necessarily zoning, will adopt Comprehensive Plan amendments soon after the adoption of the Concept Plan. The Comprehensive Plan amendments will draw from the Concept Plan and use its definitions of uses and standards to design the amendments.

3. Assure zoning is compatible with future land use

Each city will need to assess its zoning codes and ensure that they permit the anticipated uses with appropriate development standards. This will be made fairly easy in that each city has its own development types, drafted around current zoning code standards. However, new uses anticipated in some of the development types will need some zoning code amendments.

In addition, the Cities will need to consider special design elements of the Concept Plan and determine if their respective development codes need to be updated. Specifically, the City of Tualatin will want to

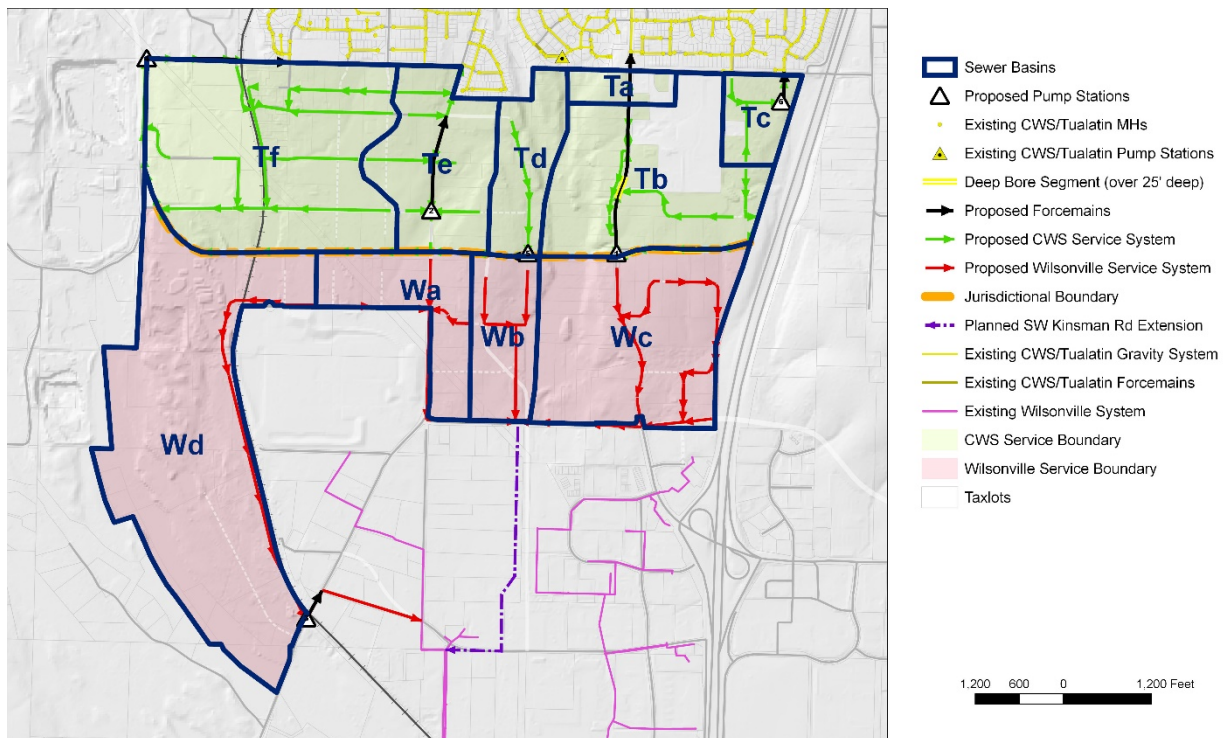
determine what design standards are relevant to creating appropriate transitions between residential and employment uses, and the City of Wilsonville will want to consider the application of its Industrial Form-based Code to help create a uniquely attractive business community.

4. Annex as demand occurs based on feasible phasing

Utility improvements will be made as properties are annexed and developed in each city, so phasing will be driven by the pace of development. Generally, utility improvements will begin at the boundaries of the Planning Area that are adjacent to the existing city services and progress outward. Most of the utility infrastructure follows existing or proposed roadways and construction should be coordinated with new road construction and existing roadway improvements.

The most formative of the utilities (sewer, water and roads) will be sanitary sewer. This is because it is a gravity system that must be hooked into an existing sanitary system or drained to a pump station that will lift the sewage via pressure line to an existing sanitary line.

Figure 17 Implementation Map



Based on the Sewer Master Plan, several natural phasing districts are evident. These are shown on Figure 17. Tualatin has six potential phases based on existing sewer basins and five pump stations. No one sewer basin is dependent on the other, so these areas could develop in any sequence. If the initial installation can install the pump station and pressure line, development can proceed in increments, from the pump station uphill to the extent of the sewer basin. Figure 17 shows Tualatin stages advancing from Ta through Tf.

Wilsonville has four basins, three gravity and one with a pump station. Figure 17 shows phasing progressing from Wa through Wd. District Wd, which serves the West Railroad Area, is the most

constrained and likely to see development last in the Planning Area. The other three are gravity lines that can be constructed independently. They can proceed from the inlet to the existing gravity system uphill in the basin.

In both cities, the water and transportation infrastructure can be installed as needed although some enabling projects may be required to be constructed prior to development to connect properties to existing systems. Efficiency may be achieved when the underground utilities are constructed concurrently with the transportation system.

5. Consider capital improvements to spur development

In both systems, the sewer basin is large enough that it contains several property owners. Each city has a method of reimbursing the developer for installing infrastructure when other development hooks in. However, the Cities may find that in some cases, the property owners of developers cannot finance the infrastructure themselves. In that case, the city may decide to participate in one of several ways:

- Finance the infrastructure themselves, charging reimbursement as projects hook up
- Create a cooperative financing district such as a Local Improvement District or Reimbursement District, that would allow the infrastructure to be installed by a primary party and paid off over time by the property owners, relieving some of the burden of a large capital financial commitment
- Develop the infrastructure as an inducement for desired development, such as for an important job creating project

6. Master planning processes

Many of the ideas proposed in this Concept Plan will require project development to determine the specific needs, feasibility, locations, costs, and other details through each City's master planning process. Typically master plans are completed for infrastructure services, parks, open space, and trails. Master plans include public involvement processes, including Planning Commission review and City Council adoption.