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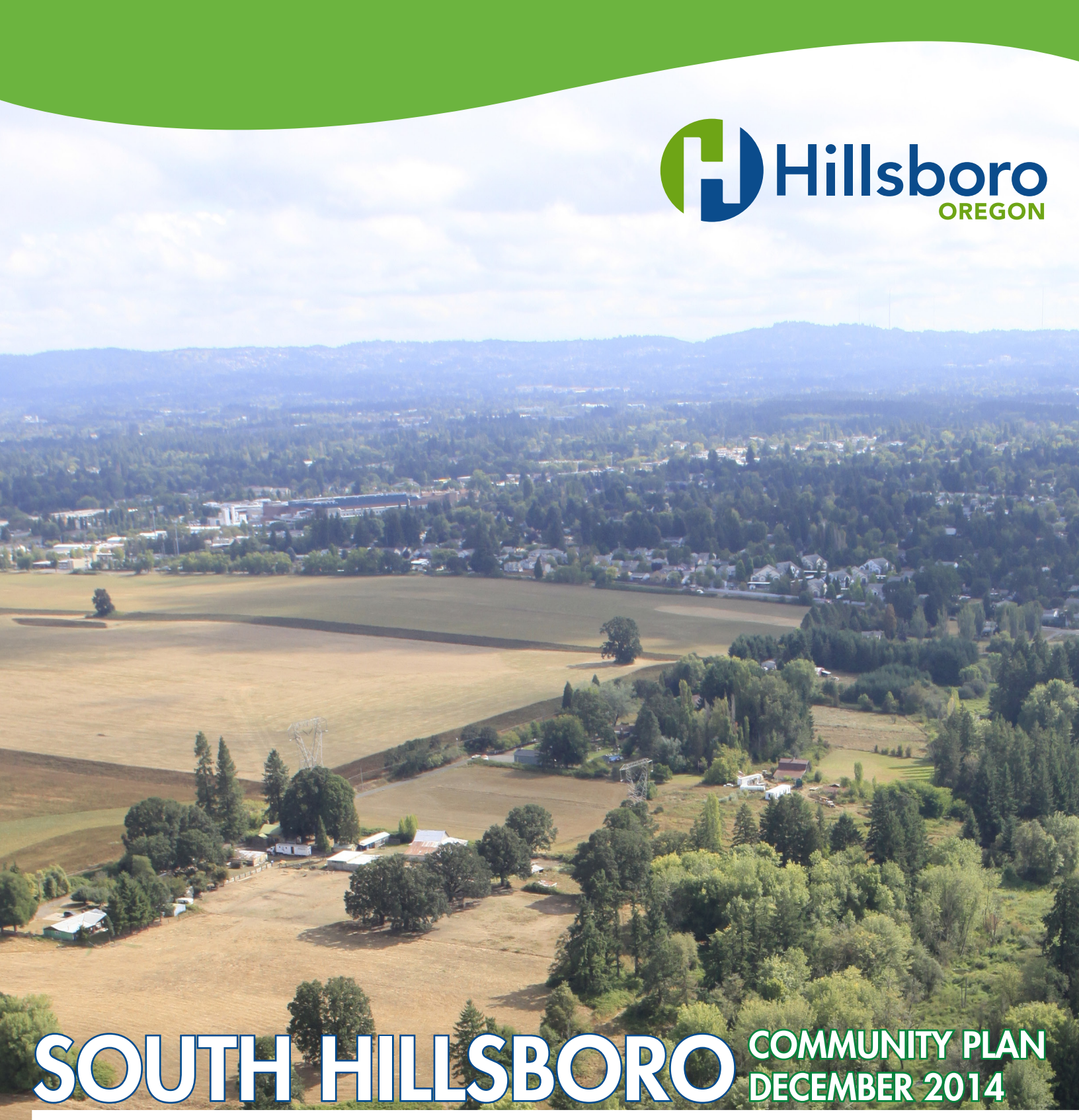

SOUTH HILLSBORO COMMUNITY PLAN

DECEMBER 2014

Hillsboro
Planning

City of Hillsboro Planning Department
150 E. Main Street, 4th Floor
Hillsboro, OR 97123-4028

Phone 503.681.6153
Fax 503.681.6245
Web www.hillsboro-oregon.gov/Planning

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Introduction

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1.1 Project Overview

South Hillsboro presents a unique opportunity for the City to create a new and innovative community responding to the needs of the City of Hillsboro, Washington County, Metro Region, and neighboring residents. This document outlines the foundation, principles, approach, and implementation action plan that will realize this vision.

The planning effort for South Hillsboro brings together almost 20 years of conceptual planning to provide a specific framework for future development of this unique Hillsboro community. The project builds upon previous planning efforts led by the City of Hillsboro and two major South Hillsboro property owners to achieve the following:

- Articulate the City's vision for best-in-class development and design of the South Hillsboro community using Planning and Design Principles and identification of Best Practices.
- Incorporate property owners' visions into the city's Master Plan where consistent and compatible with the City's vision, goals, policies, and principles.
- Establish recommended road alignments, bicycle and pedestrian corridors, parks and open space, school locations and land use designations/zoning.
- Provide regulatory guidance and process clarity to enable property owners to create detailed development plans.
- Provide flexibility to encourage creative approaches to development and design, both public and private.
- Provide cost estimates and identify funding tools and strategies for the infrastructure improvements needed to develop South Hillsboro.
- Identify expected phasing of public improvements.
- Describe a comprehensive implementation strategy that includes detailed design and development standards that will apply to the South Hillsboro planning area.

1.2 Planning Area Description

The South Hillsboro Plan Area (depicted in Figure A-1) has been a candidate for future urban growth for the past decade. Its development is a key component of the City's effort to provide adequate housing products and types to encourage people working in Hillsboro to live in Hillsboro. South Hillsboro represents the most significant residential and mixed-use expansion of the City planned in the next 20 years, complementing the industrial-oriented urban growth boundary expansion areas to the north.

The South Hillsboro Plan Area is located at the southeastern edge of the City of Hillsboro (see Figure A-2). It lies to the west of SE 209th Avenue and to the south of SW Tualatin Valley Highway. The Plan Area contains approximately 1,400 acres of developed and undeveloped land. Gordon, Butternut, and Rosedale Creeks traverse the area generally from west to east. A Bonneville Power Administration (BPA) powerline corridor crosses the Plan Area from north to south. The Plan Area is adjacent to the Reedville, Aloha, and Witch Hazel Village neighborhoods.

South Hillsboro is also a unique opportunity to create a compelling place that encourages people to live, work, play, stay, and learn in Hillsboro. South Hillsboro will serve as the eastern and southern gateway to the City for many visitors. Moreover, as a new development, South Hillsboro provides an opportunity to showcase and demonstrate new, innovative thinking about neighborhood design, yielding neighborhoods that are sustainable, highly livable, affordable, and future-oriented.

Figure A-1: South Hillsboro Master Plan Area

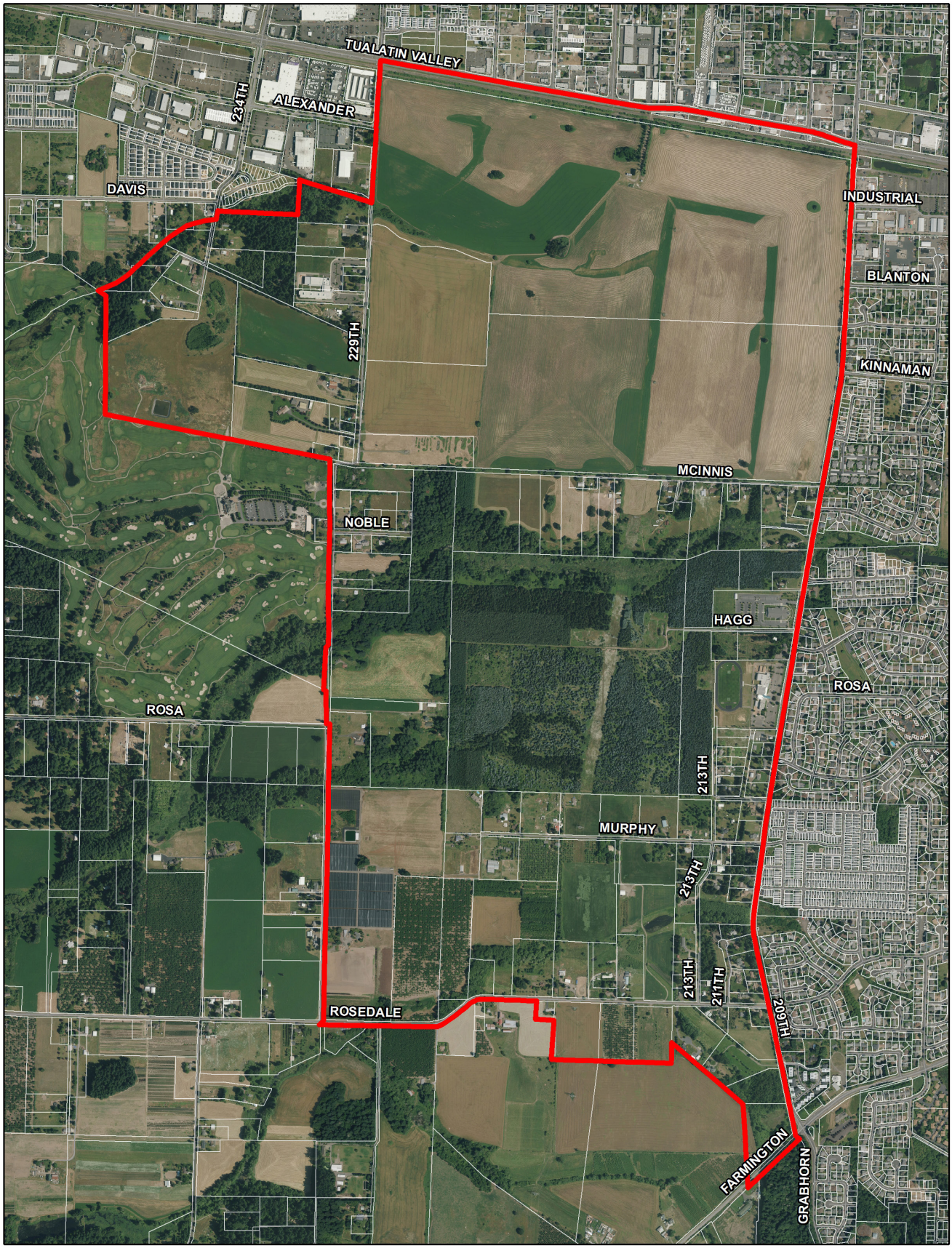
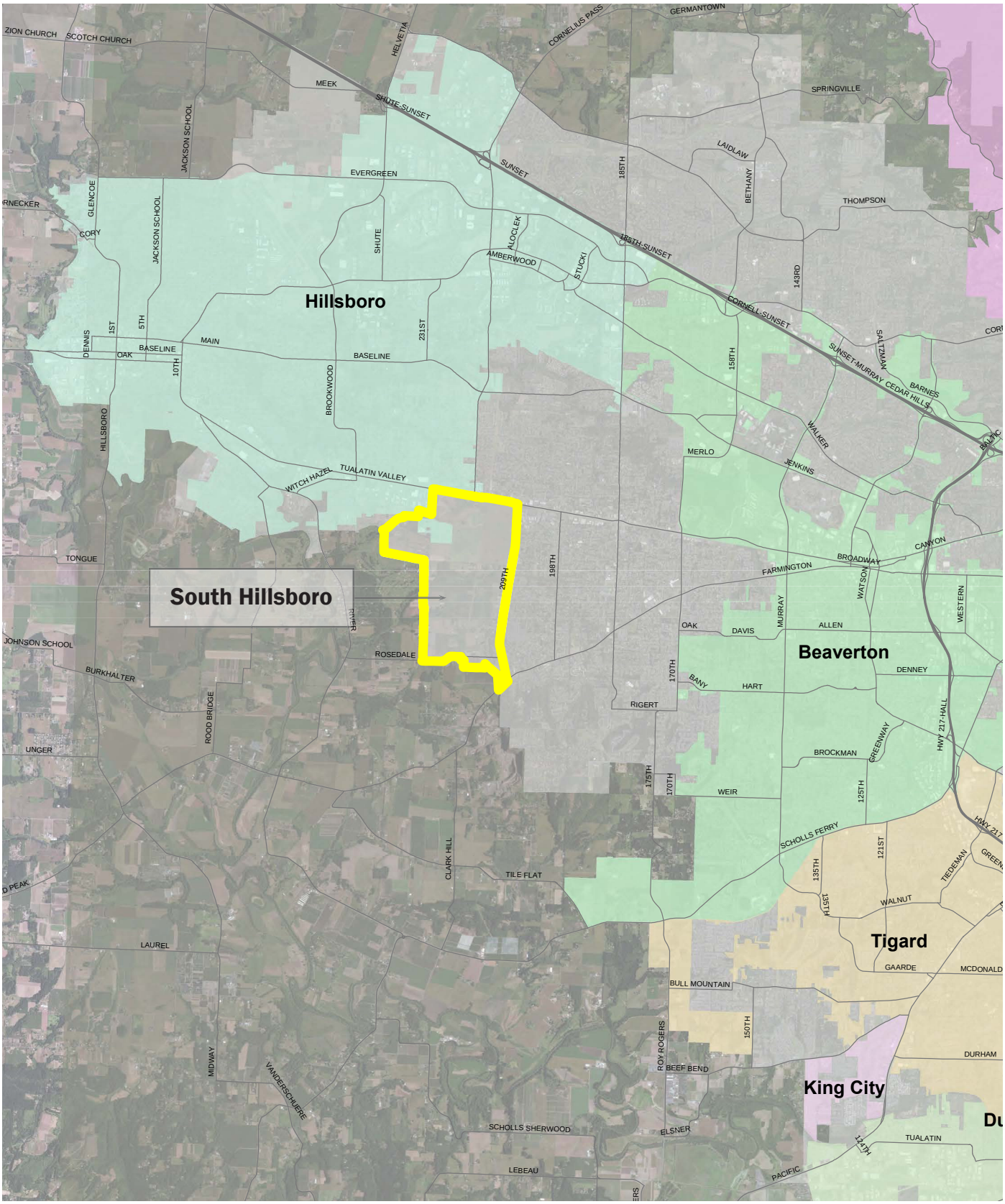


Figure A-2: Plan Area Context



1.3. Plan Area Vision: Complete, Connected, Green

In addition to meeting the demands of local and regional forces and development principles, three overriding, general principles emerged during the concept planning process:

- **Complete:** A community with the full spectrum of facilities and services. A life-cycle community that addresses the needs and desires of all residents for health, housing, education, shopping and recreation.
- **Connected:** A community that provides residents and visitors with full multi-modal access. A community that seamlessly connects neighborhoods and easily transitions from urban to rural lands. A community plan, which in addition to serving future residents, provides older neighborhoods to the East and to the North with access to needed parks, trails, open space, shopping and family services.
- **Green:** A community that integrates open spaces with neighborhoods. A sustainable community that incorporates state-of-the-art green development practices. Preservation and improvement of existing natural resources and wildlife corridors to create a truly distinct natural environment.

The Complete-Connected-Green framework ensures that the evolving Plan Area remains a special and unique place. In addition, the Plan incorporates an array of other local and regional influences with community driven development principles:

- **Hillsboro 2020 Vision:** The Plan implements the Hillsboro 2020 Vision principles. The Hillsboro 2020 Vision statement focus areas include strengthening and sustaining community, enhancing neighborhoods and districts, preserving the environment, creating

Housing fronting the street creates attractive frontage in a neighborhood

Grid system of streets with bike lanes and on-street parking – a "complete street", integrated with building edges and activities

A connected system of natural areas with a public edge.

economic opportunity, expanding education and cultural horizons, and promoting health and safety.

- **Metro Great Communities Characteristics and Regional Values:** The Metro Great Communities Characteristics and Regional Values directly shape the design and development of South Hillsboro. The six regional values include vibrant communities, economic prosperity, safe & reliable transportation, leadership on climate change, clean air & water, and equity.
- **Natural & Cultural Resource Preservation:** The Vision encourages preservation and enhancement of the significant natural and cultural resources. The Gordon and Butternut Creek corridors are part of a community-wide green space network. Cultural resources have also been identified and preserved throughout the development process.
- **Infrastructure Funding & Phasing:** The provision of necessary utilities, facilities and services are guided by an infrastructure funding and phasing program described in the Implementation Action section. The infrastructure program focuses on the adequate provision of public facilities and services as development occurs.
- **Market Feasibility:** The Plan is responsive to the economic and market conditions shaping growth. This includes providing development flexibility to adjust to changing demographics and other market conditions.

These considerations collectively influenced the creation of the Plan for an innovative, dynamic, and vibrant community.

1.4. Regulatory Framework

There are a number of policy and advisory documents that together create the regulatory context guiding development in South Hillsboro. These components include:

- **Comprehensive Plan Policies** in Section 31 of the Hillsboro Comprehensive Plan. These policies enunciate the City's vision and direction for development in South Hillsboro and provide the regulatory basis for other implementing policies and standards that are adopted. Although Comprehensive Plan policies are generally not directly applied to evaluating and approving proposed development, they can be utilized in certain subjective land use reviews such as the Conditional Use and the Planned Unit Development processes.
- **Community Plan Narratives** in the appendix to Section 31 of the Hillsboro Comprehensive Plan (this document). The appendix is intended to provide additional context and background on the City's vision for South Hillsboro, including the planning principles and background information used to develop policies and standards, and examples of desired development patterns and design elements. The appendix is not a regulatory document, but could be useful to developers and decision makers for interpreting and evaluating future design and development proposals.
- **Community Development Code (CDC)** sections, including a specific Plan District for South Hillsboro (CDC 12.65), a new Mixed Use-Village and Town Center zoning district (CDC 12.24), and other zoning district language as necessary to implement the various comprehensive plan designations. These CDC sections set specific development requirements and standards, specific land uses, and the processes used in the design review and permitting processes.

- **Various system master plans** administered by City departments and outside service providers, including but not limited to Transportation System Plan, Capital Improvement Plans, Parks and Trails Master Plan, Sanitary Sewer Master Plan and similar documents.
- **Agreements with developers and property owners** including Memoranda of Understanding, Annexation Agreements, and Development Agreements specifying obligations and conditions for development in South Hillsboro, including allocation of trips, financing of infrastructure or public realm improvements, and obligations for ongoing maintenance, among other topics.

2

Planning Context

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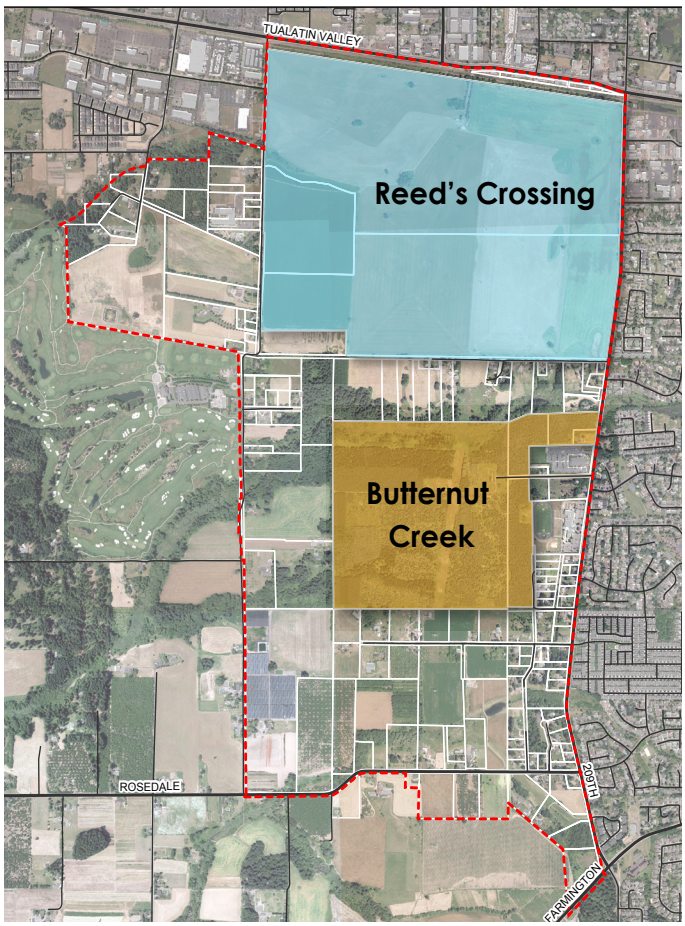
2.1. Area History

The South Hillsboro planning area has played a locally significant role in the area's agricultural heritage. The area planned for the Reed's Crossing development, near the north of the planning area (see Figure A-3), was historically the Ladd-Reed Farm. This farm was named for William S. Ladd, a former mayor of the City of Portland, and Simeon G. Reed, the namesake of the community of Reedville immediately to the east of South Hillsboro, as well as the founder of Portland's Reed College. Founded in the 1870s, the Ladd-Reed Farm produced a variety of livestock, various crops, and trees, and Reed experimented with a number of agricultural innovations including steam-powered farm equipment and new systems for irrigation. The operation later evolved into the first large dairy farm in Washington County[1].

Following the death of the founders, the farm became the basis for the endowment for Reed College. John Kelly purchased the property from the endowment in 1925, and the property was willed to the Sisters of St. Mary of Portland in 1957[2]. The last dwellings on the farm were demolished in 1963, and all of the main farm buildings were subsequently removed[3]. The Sisters of St. Mary of Portland sold the property in 2001[4].

Figure A-3: Primary Property Owners at present



Through the various owners of the Ladd-Reed Farm, the property has remained in agricultural production, most recently through contract arrangements with local farmers. Other areas of South Hillsboro have also supported agricultural production, including a large tree farm in the area planned for the Butternut Creek development and Village Center, and other smaller agricultural operations in the southern portions of the planning area.

Over time, areas surrounding South Hillsboro have urbanized to various degrees, particularly in Aloha and Reedville to the east and northeast, both unincorporated communities immediately adjacent to Hillsboro.

1 Josephson, J. (2013). The Reed Farm. In *Images of America: Aloha-Reedville*. Charleston, SC: Arcadia Publishing.

2 *D. S. Parklane Development, Inc., et al v. Metro*, LUBA 97-048, p. 4410-4419.

3 Washington County, Oregon. (1983). *Washington County Cultural Resource Inventory,* Resource 110/332.

4 Tomich, D. (2010, Winter). Reading Between the Bricks. *Spirit (Sisters of St. Mary of Oregon Ministries Corporation)*, 10-11.

Collectively, the population of Aloha and Reedville totals over 50,000 as of 2010[5].

- **Reedville**, located near the intersection of Tualatin Valley Highway and SW 209th Avenue, was originally platted in 1889 and served as a commercial center for surrounding residences and farms through the 1950s. Much of the original town was lost to highway expansion, as well as damage from the 1962 Columbus Day Storm[1].
- **Aloha**, located to the east of the planning area, was also originally farmland, but experienced a rapid influx of new residents beginning in the 1960s as residential uses replaced agricultural production. Development in Aloha has followed traditional suburban patterns to a large extent, although development of supporting infrastructure including urban-scale roads, complete sidewalks, and adequate stormwater facilities has been less consistent[5].

2.2. Planning Foundation

The vision for South Hillsboro blends an array of local and regional influences with community driven development principles. Key underlying principles are described briefly below. Additional planning principles more specific to South Hillsboro are included in Chapter 4 of this appendix.

- The **Hillsboro 2020 Vision** statement focuses on strengthening and sustaining community, enhancing neighborhoods and districts, preserving the environment, creating economic opportunity, expanding education and cultural horizons, and promoting health and safety. The Vision also encourages preservation and enhancement of significant natural and cultural resources.
- The adequate provision of utilities, facilities and services guided by an infrastructure funding and phasing program as described in the Implementation Action section of the Community Plan.
- The Plan must be responsive to the economic and market conditions shaping growth. This includes providing development flexibility to adjust to changing demographics and other market conditions.
- The **Metro Great Communities** Characteristics and Regional Values directly shape the design and development of South Hillsboro. The six regional values include vibrant communities, economic prosperity, safe & reliable transportation, leadership on climate change, clean air & water, and equity.
- There are also a number of state and regional planning documents that contain guidelines and regulations with which the Community Plan must be consistent. The most important of these are:
  - » The **Statewide Metropolitan Housing Rule** (which implements Statewide Planning Goal 10, Housing). In general, the rule requires that the City "designate sufficient buildable land to provide the opportunity for at least 50 percent of new residential units to be attached single family housing or multiple family housing." The rule also establishes minimum housing densities that are to be achieved in areas like South Hillsboro located in the Metropolitan region.
  - » The Oregon **Transportation Planning Rule (TPR)**. The TPR guides jurisdictions through meeting the broad objectives of the Statewide Transportation Goal, which are to provide a safe, convenient and economic transportation system, while addressing the needs of the transportation disadvantaged.

5 Washington County, Oregon (2014). *Aloha-Reedville Study and Livable Community Plan Final Report.*

» Metro's **Urban Growth Management Functional Plan, Title 11** requirements. Title 11 requires that concept or community planning be done for newly urbanized areas. Planning must address residential densities to support local and regional housing needs; a diversity of housing stock and affordable housing; transportation planning; identification and mapping of resource areas to be protected; and conceptual public facilities and service plans and a conceptual school plan identifying land and facilities necessary to serve the area.

2.3. Previous Planning Efforts

Planning for the South Hillsboro area began in the late 1990s and resulted in preparation of a draft South Hillsboro Community Plan in 2008 and adoption of an updated South Hillsboro Community Plan in 2012. The Community Plan was the first step in establishing a set of goals and objectives for the future growth of the planning area and described a development program that emphasized a "complete-connected-green" approach. The City has also completed an Economic, Social, Environmental and Energy (ESEE) analysis of South Hillsboro that identifies how and where natural resource protection will be applied through the city's Significant Natural Resource Overlay Zone.

In addition, the City completed an amendment to its Transportation System Plan (TSP) for the South Hillsboro area in September 2013. A Transportation Financing Plan and other public infrastructure analyses and cost estimates have been prepared concurrently with this Community Plan update and will be incorporated in separate documents, with some information from that effort included in the Funding element of this appendix.

A number of individual property owners within the South Hillsboro planning area are also preparing their own plans for future development. In particular, project partners Newland Communities and Hagg Lane, LLC, have worked with their own teams to prepare relatively detailed plans for their properties (Reed's Crossing and Butternut Creek respectively). Other property owners have engaged in similar but less detailed planning efforts. Specific elements of those plans have been blended into this appendix.

2.4. Planning Context

The following additional factors have been considered throughout planning efforts for South Hillsboro.

2.4.1. Natural Resources

The Tualatin River lies roughly one mile to the west of the planning area. Several tributaries to the Tualatin River flow west through the site, including Rosedale Creek, Gordon Creek, and Butternut Creek. South Hillsboro contains upland and riparian wildlife habitat along these stream corridors. Figure A-21 shows the approximate locations of these habitats, as well as significant and potentially significant wetlands. Figure A-4 depicts the topography in the planning area.

Properties that contain natural resources have been or will be inventoried and a significance determination made using the methodologies described in the adopted City of Hillsboro Goal 5 Natural Resource Inventory & Assessment Report. Those findings will be incorporated in an Environmental Energy Social and Economic (ESEE) analysis which will guide how those resources are treated during the development process as part

Figure A-4: Topographic Map

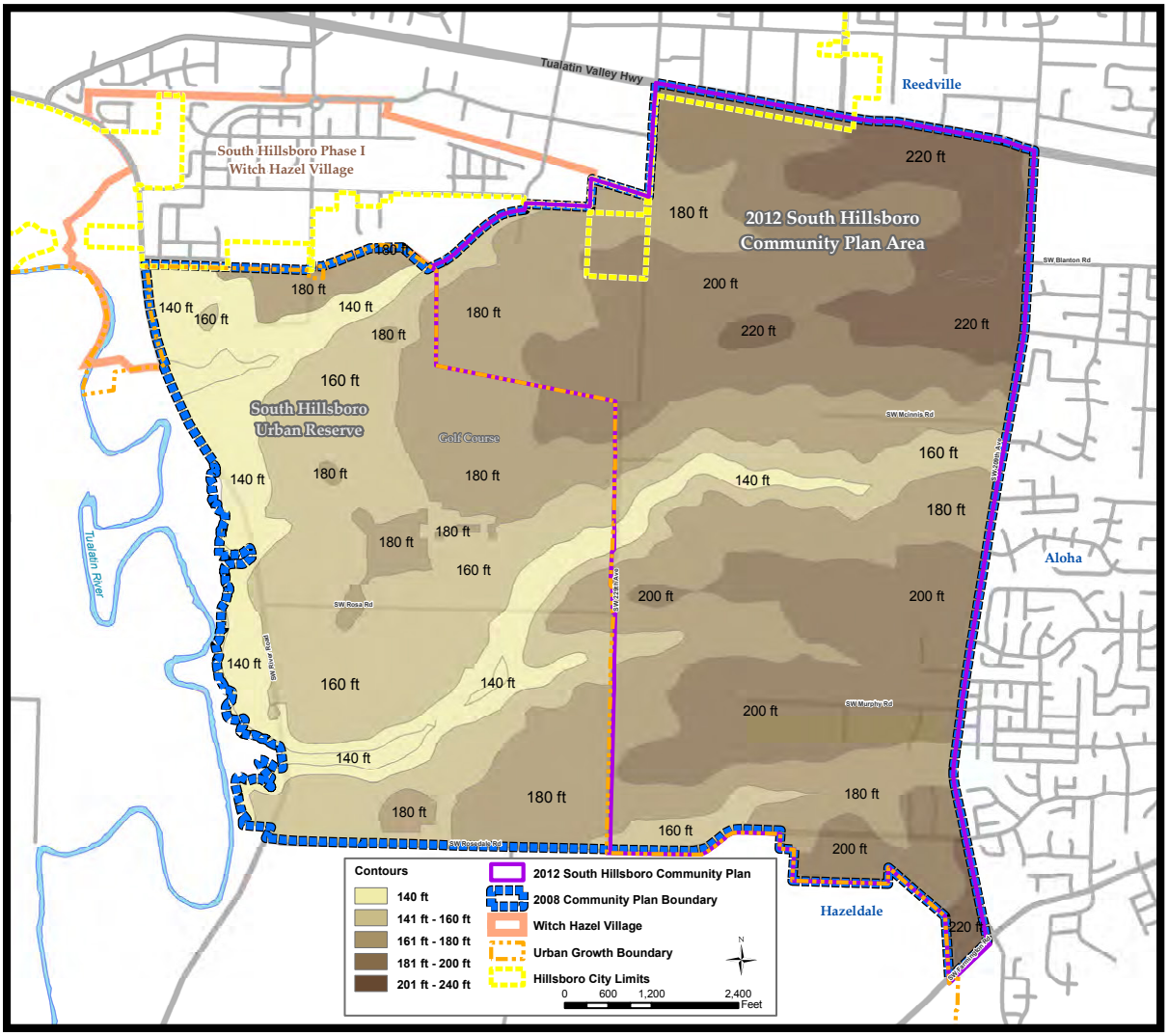
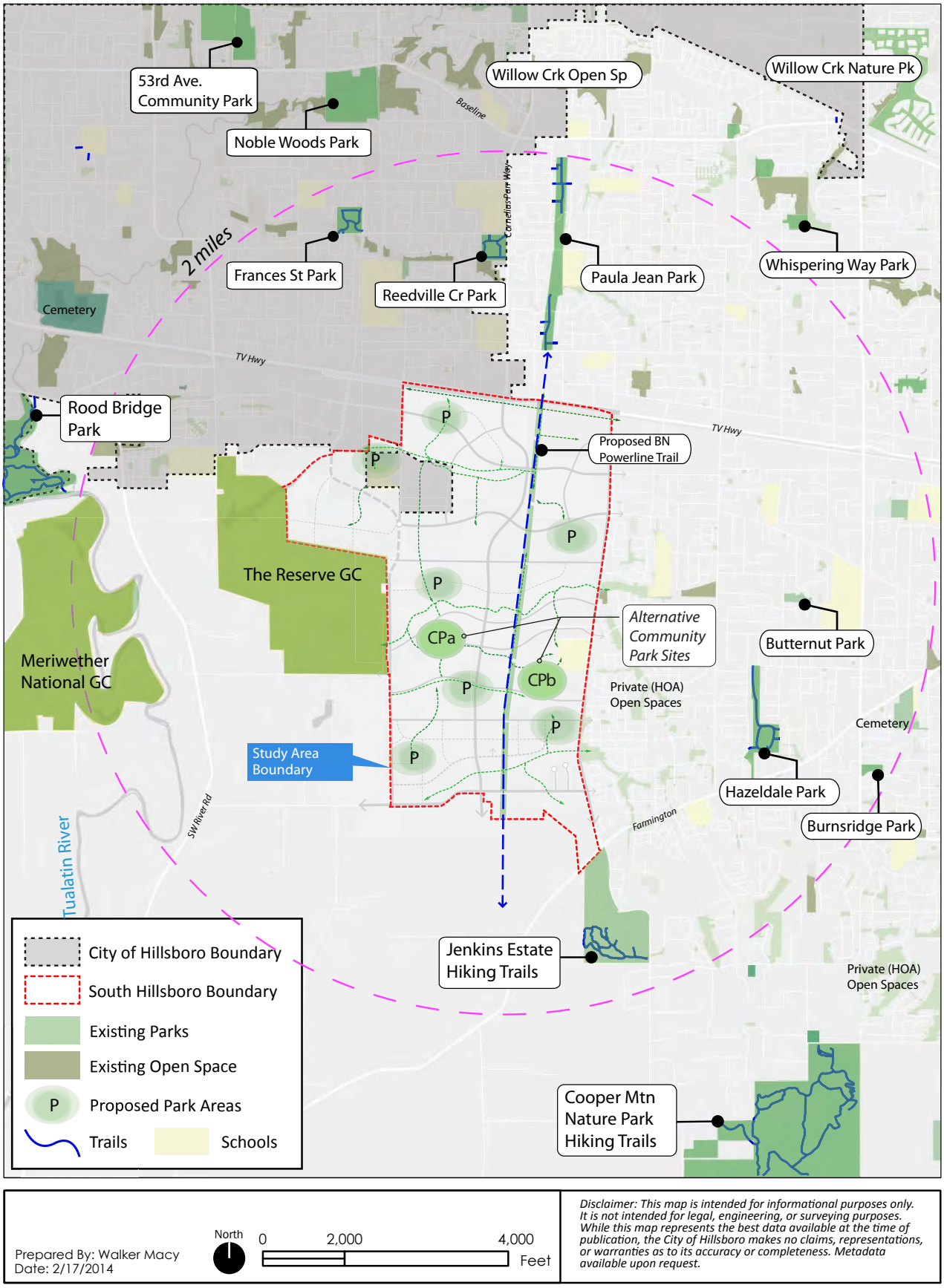


Figure A-5: Regional Parks, Trails, and Open Space



of application of the City of Hillsboro's Significant Natural Resources Overlay (SNRO) zone. In general, natural resources should be woven into the fabric of the development pattern in South Hillsboro and treated as valuable resources and amenities for future residents.

2.4.2. Parks, trails and open space

Figure A-5 shows the locations of parks, trails and public open space in the vicinity of South Hillsboro. Butternut, Hazeldale, and Burnsridge parks lie to the east of the planning area, as well as several private open spaces. To the north lie Francis Street Park, Reedville Creek Park, Paula Jean Park, and Whispering Way Park. A golf course abuts the planning area to the West and the Jenkins Estate hiking trails lie near South Hillsboro's southeastern boundary. Development of additional community and neighborhood parks, trails and open spaces should be considered within this larger park and recreation facilities context.

2.4.3. Schools

There are two existing schools within South Hillsboro: Rosedale Elementary in the northwest and Life Christian private school in the east. The majority of the planning area is within the Hillsboro School District, with approximately 170 acres of the southeasterly portion within the Beaverton School District. Figure A-6 shows the locations schools in and near the planning area as well as school district boundaries. The Hillsboro School District plans to add four new elementary schools and a new middle school within the planning area.

2.4.4. Cultural resources

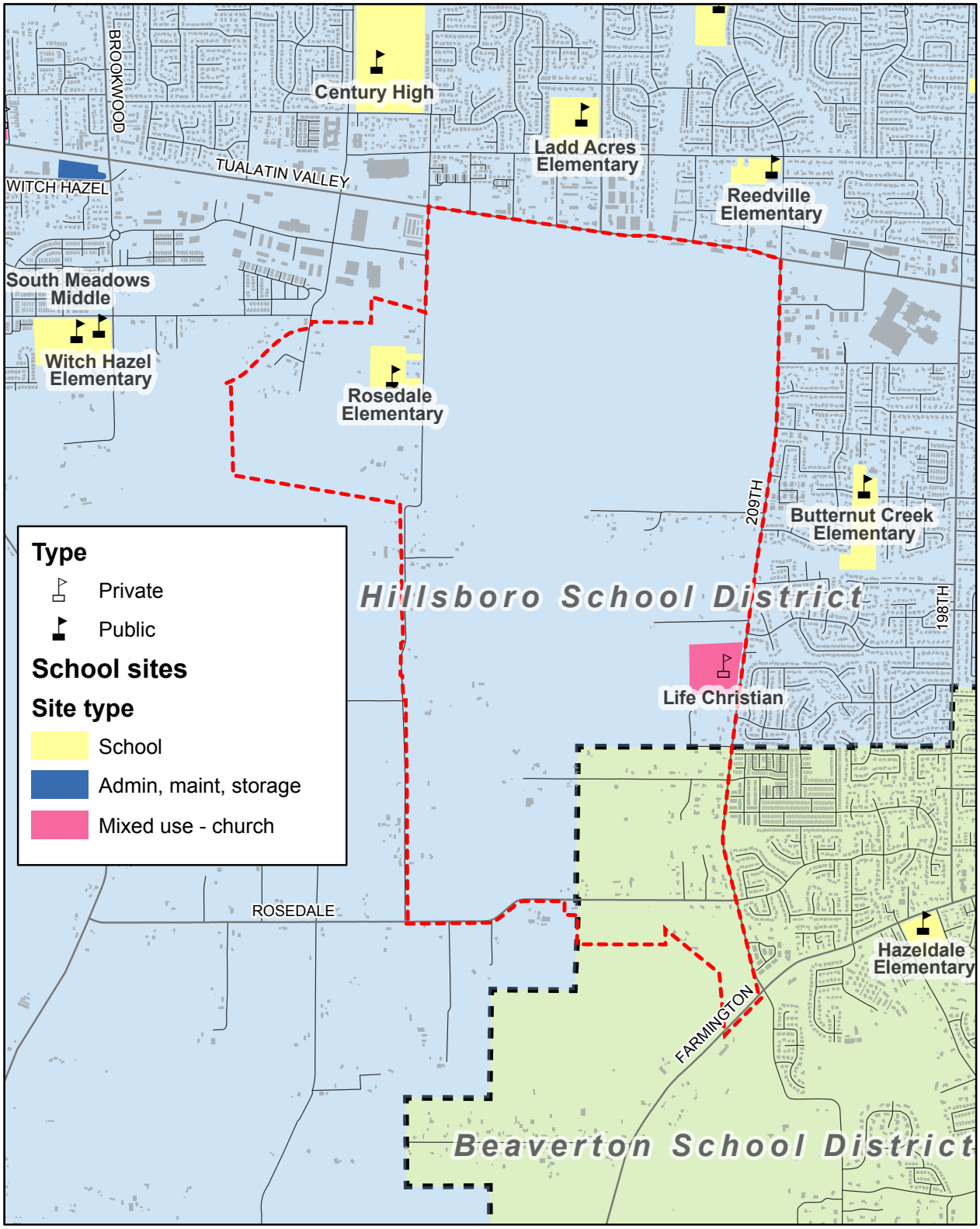
The Oregon State Historic Preservation Office (SHPO) database indicates that historic and archaeological sites not formally documented do occur in the vicinity of South Hillsboro, including an unmarked cemetery and Native American archaeological sites. The records of the Oregon Commission on Historic Cemeteries indicate that another nameless cemetery is located south of Reedville, on the Ladd-Reed farm. Issues associated with cultural resources will be addressed in more detail and in accordance with applicable law as part of the development process.

2.4.5. Market conditions

A market analysis was prepared as part of the Community Plan process in 2007-2008. This analysis was updated in 2012 and again in 2014 by Johnson Economics. Key findings from this analysis related to current and future housing development in the area include the following:

- There will continue to be a strong future demand for housing in the Hillsboro area. Over the next ten years, South Hillsboro will meet approximately 60% of the total Hillsboro area demand for new housing of all types and just 42% of the demand for single-family detached housing.
- Economic projections indicate rapid absorption of single-family detached units, with lots in the 7,000-9,000 square foot range having the fastest absorption in the market based on demand.
- The scale, density and type of housing proposed in the plan, including housing envisioned in medium-density, high-density and mid-rise residential areas, as well as mixed use residential/commercial areas are generally consistent with market demand in the area in terms of average densities, likely pricing and market depths based on Hillsboro-market area trends.
- The phasing of retail and commercial development in South Hillsboro will be important. While the

Figure A-6: Regional School Locations



Prepared By: APG

Date: 7/8/2013

NORTH

0 1,250 2,500 5,000 Feet

Disclaimer: This map is intended for informational purposes only. It is not intended for legal, engineering, or surveying purposes. While this map represents the best data available at the time of publication, the City of Hillsboro makes no claims, representations, or warranties as to its accuracy or completeness. Metadata available upon request.

amount of commercial space in the initial phases may be modest compared to later phases, it is important that the initial phases be sited properly; be financially viable on their own; create a very attractive gateway to the Town Center and entire South Hillsboro community; and be built as early as possible to provide this gateway and sense of place.

2.5. Key Planning Elements

As a preliminary step in this Community Plan update process, key planning issues were identified to ensure that those elements considered critical to the success of South Hillsboro were addressed. Those key issues are described below.

2.5.1. Creating a unique community

An overall goal of the City's planning effort is to create a distinct area in South Hillsboro that emphasizes sustainable, high-quality development that offers a mix of residential, commercial, and employment uses; incorporates environmentally, socially and economically sustainable and resiliency planning practices; and ensures that South Hillsboro is connected to and complements surrounding neighborhoods within the larger community.

These goals are reflected in the Design Principles and Concepts described in Chapter 4 of this appendix, which strive for a "complete-connected-green" community. Those underlying principles have been used throughout this process to shape all elements of the plan and will similarly be codified in proposed development code provisions to be applied in South Hillsboro through a combination of base zones and a South Hillsboro Plan District.

2.5.2. Major road alignments

A major component of the planning effort is the evaluation and determination of appropriate alignments for major roads through South Hillsboro, particularly Cornelius Pass Road and its location relative to the Town Center. Approximate road alignments will be used primarily to ensure appropriate connection points for roads that cross property lines and to estimate costs of public facilities. Within individual properties, road alignments should be considered approximate and subject to potential modification through the development application process.

2.5.3. Land use configurations

Concurrent with development of road alignments, this plan update process evaluated land use and development configurations that complement road alignments and meet other project objectives. This included assessment of size and location for the Town and Village Centers, location of different residential neighborhood types and commercial/retail nodes, and the approximate location and configuration of parks and open space networks within South Hillsboro. The process also included determination of appropriate locations for schools within South Hillsboro. This information will be used to develop an overall zoning concept, discussed in Chapter 5, which guides application of future zoning in a manner that yields desired densities, housing products, and neighborhood configurations over the long term.

2.5.4. Housing opportunities

A key element of the plan update is the identification of specific mixes and types of residential uses that will best achieve the housing objectives and community vision for

South Hillsboro. This includes consideration of how those housing types/mixes will relate to the planned Town and Village Centers, as well as parks and open spaces. Information related to housing is intended to be conceptual. Specific types of allowed housing in different areas of South Hillsboro will be controlled by provisions of the Community Development Code and through the development permitting processes.

2.4.5. Infrastructure & Phasing

Another key aspect to guiding successful development of the South Hillsboro area will be ensuring adequate and appropriate stormwater management. Two new sanitary sewer pump stations will be located within the South Hillsboro planning area - the Butternut Creek and Rosedale Pump Stations. While water service in the planning area will be ultimately provided by the City of Hillsboro, early phases between 209th Avenue and the proposed Cornelius Pass Road alignment will receive water from the Tualatin Valley Water District (TVWD) pursuant to an intergovernmental agreement between the City and TVWD. In addition, a number of different strategies may be implemented to manage stormwater quality treatment and detention (quantity) in South Hillsboro.

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3

Planning Process

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3.1. Project reconnaissance and background research

Drawing on previous work done for the South Hillsboro Community Plan, one of the first steps in the master planning process was to gain a comprehensive understanding of the current regulatory, land use, market, transportation, and infrastructure conditions in the South Hillsboro Plan Area. This information was summarized in South Hillsboro Master Plan Summary Report: Existing Conditions, Opportunities and Constraints, which was completed in August 2013.

Nearly 80% of the plan area is currently improved or unimproved farmland in 161 individual parcels. The average parcel is 8.3 acres in size, although there are four parcels of 50-250 acres that will play key roles in defining the Town and Village Centers that will serve the community. Developed lands are more concentrated near the boundaries of the Plan area, particularly in the southeast, and contain a mix of residential, farm, commercial, and institutional uses.

The summary report found that there is a significant opportunity in South Hillsboro to integrate individual property owner plans with leading design and planning principles in a way that would yield a unique, distinctive community comprised of a variety of housing types and neighborhood styles, closely integrated with compelling mixed-use areas and a strong parks and open space system.

The report also found that significant infrastructure investment would be necessary to support residential development in South Hillsboro. Existing roads, water, and waste treatment systems are most appropriate to a rural, not urban context. Development and phasing of transportation, parks, schools, water, sewer, and civic infrastructure improvements will be key to delivering the type of community that South Hillsboro can be.

3.2. Community engagement and public participation

Recent public involvement efforts build upon engagement activities from earlier phases of planning work in South Hillsboro. Early in the master planning process, a public involvement plan was developed in order to ensure a broad level of participation by all interested stakeholders and the larger Hillsboro community. The City's Citizen Involvement Advisory Committee (CIAC) approved an initial public outreach plan in February 2012. A refined plan for public involvement activities was developed

Hillsboro
OREGON

South Hillsboro: Growing a Great Community

Join Your Neighbors at the Next SoHi Community Open House!

Tuesday, June 26 • 5:30 to 7:30 pm
Rosedale Elementary School Cafeteria • 3901 SW 229th Avenue
Come at any time • Refreshments provided • All ages welcome

Help Plan the Future of South Hillsboro!

At the third and final community open house to create a plan for the future of South Hillsboro, participants will hear a brief presentation, followed by an open house to review and comment on the proposed:

- Land use and development plan
- Parks, trails and open space
- Location and design of major roads
- Phasing of key capital and transportation improvements
- Examples of housing and other development types
- Village and town centers
- Next steps toward adoption

Can't make the open house?
Visit our website: www.hillsboro-oregon.gov/SouthHillsboro, or contact:
Jeannine Rustad, J.D., Long Range Planning Supervisor, 503.681.5321, jeannine.rustad@hillsboro-oregon.gov

Para información en español, por favor llame al Omar Carrillo, 503.278.3462, omar.carrillo@coganowens.com

150 East Main Street, Hillsboro, Oregon 97123-4028 Phone 503.681.6153 Fax 503.681.6245 Web www.hillsboro-oregon.gov

Hillsboro
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Informational flyer sent to local residents inviting them to the June 2014 Community Open House.

around a community engagement strategy developed by consultants in July 2013, calling for a variety of tools and approaches to be taken to engage stakeholders and the broader community. The CIAC and the Advisory Committee for Citizen Involvement both approved an updated Public Involvement Plan in August 2013.

During the 2008 planning process, public input was received during citizen-led Task Force meetings, three project open houses, two community forums, one scenario planning workshop, stakeholder interviews, a housing market focus group session, a local business community meeting, several Citizen Participation Organization (CPO) meetings and a Hillsboro Vision 2020 Town Hall event. Public feedback was also obtained through email, letters, surveys, and comment cards. Over 12,000 project newsletters, comment cards and meeting notifications were mailed to property owners in-and-around the plan area.

In 2012, the City began public outreach efforts for the adoption phase of the South Hillsboro planning effort. Outreach efforts on 2012 included:

- Project webpage updates
- A public open house (held March 22, 2012) focusing on two alternatives to meet Metro conditions
- A public open house (held May 8, 2012) focusing jointly on South Hillsboro, the Tualatin Valley Highway Corridor Refinement Plan, and the Aloha-Reedville Livability Study
- Two Planning Commission worksessions on alternatives and to review memoranda of understanding with project partners.

In the latest phase of master planning work beginning in 2013, community engagement efforts have included:

- Individual or group meetings with property owners, service providers, and community members
- Three public open houses (discussed below)
- Media outreach
- A Project Website (http://www.hillsboro-oregon.gov/SouthHillsboro) including documents, maps, and project updates
- Worksessions and meetings with the Hillsboro City Council, Planning Commission, Transportation Committee, Finance Committee, and other bodies as appropriate.

Community members and staff discuss display boards at the November 2013 Community Open House.

Community members and staff discuss display boards at the November 2013 Community Open House.

- Stakeholder interviews
- Inter-departmental and inter-agency coordination.

Open houses were held on September 10, 2013, November 12, 2013, and June 26, 2014 at Rosedale Elementary School, which is within the planning area. Each event was designed to provide a forum for discussion and feedback from community members, organized around the focus of the planning team at that point in the plan development process. At each open house, community members had the opportunity to leave informal written or verbal comments, which were then used to refine the project team's work. Each of these events is summarized below.

Open House 1 (September 20, 2013)

Agenda topics: presentation and general question and answer session regarding the project overview and schedule, planning principles, best practices, and next steps. Estimated 75 attendees.

Open House 2 (November 12, 2013)

Agenda topics: conceptual plans for land use, housing types, transportation, parks and open space, schools, urban design, and neighborhood development patterns. Estimated 35 attendees.

Open House 3 (June 26, 2014)

Agenda topics: presentation and general question and answer session focusing on the draft composite plan, and refined concepts for land use, transportation, parks and open space, schools, and community amenities. Estimated 100 attendees.

3.3. Partner collaboration

The City and its consultant teams worked closely with project partners throughout the plan development process to ensure multiple opportunities for input on project deliverables, and to ensure alignment between the City's vision for South Hillsboro and the economic realities facing developers as they implement these plans. This collaborative effort included:

- Representatives of two major property owners in South Hillsboro (Hagg Lane, LLC, and Newland Communities),

- Owners of property in other areas of South Hillsboro, and
- Related departments, agencies and service providers including the City of Hillsboro Parks, Public Works, and Water Departments; Hillsboro School District; Clean Water Services; Washington County; TriMet; and the Oregon Department of Transportation.

Many of the key project issues (for example, determining the location and design of major roads, parks, and schools) were addressed through a collaborative approach with these project partners.

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4

Design Principles and Concepts

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4.1. Implementing the Complete-Connected-Green Vision

This section expands on the Complete-Connected-Green vision described earlier, and identifies key hallmarks of planned development in South Hillsboro that are intended to deliver this vision. These concepts drive the design principles and planning practices explained later, which in turn drive the policies and standards governing development in South Hillsboro.

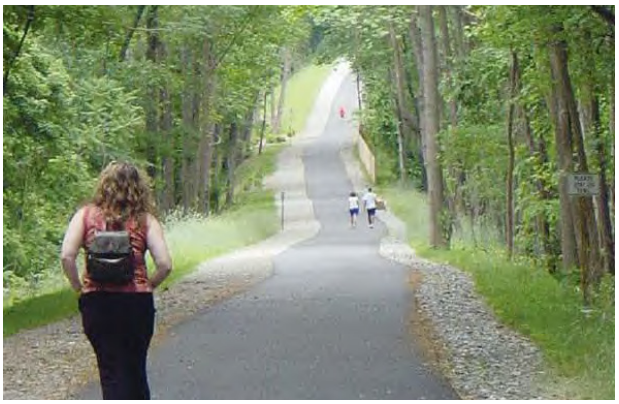
4.1.1. Complete: A lifestyle system

Complete means the spectrum of activities that define where we live; where we work or attend school; and where we spend our time outside of home and work. The Plan provides a balance of land uses to accommodate each of these. Providing shelter creates space for "inhabitants." Providing a home creates space for "residents." But providing a community creates space for "citizens."

The Plan provides both a sense of place and a sense of community. This "complete community" concept is directly related to the six key focus areas of the Hillsboro 2020 Vision as described in the Hillsboro 2020 Vision section of this report. It also mirrors the Metro Great Communities "Complete Communities" characteristics and Regional Values. The Plan provides a unique opportunity to create a new, complete community with the full spectrum of land uses and public services. In addition, South Hillsboro will provide affordable housing, parks and recreation and will accommodate age and income diversity. Areas where residents live, work and play will include a Town Center, Village Center, compact single-family and larger-lot single-family neighborhoods. South Hillsboro will be a life-cycle community serving all segments of the population. The physical design:

- Creates a transitional community, with more intense uses close to Tualatin Valley Highway, becoming less intense moving outward toward the urban growth boundary.
- Integrates a Town Center with commercial, residential, mixed-use, civic uses, transit center, and the greenspace system.
- Integrates a Village Center with commercial, residential, mixed-use and the greenspace system.
- Integrates compact neighborhoods with the Town and Village Centers, schools, parks and the greenspace system.
- Integrates single-family neighborhoods with schools, parks and the greenspace system.

COMPLETE: Good streets have a sense of enclosure, an active street frontage, and create a "third place" (apart from homes and public spaces) where people can gather



CONNECTED: Wide shared greenway trails for bike and pedestrian access to and through natural areas, and pathways connect residential development to other areas.

- Creates third places that benefit both the immediate Plan Area and the larger Hillsboro and broader Washington County communities.

4.1.2. Connected: A multimodal transportation system

Connectivity is key to creating a cohesive, complete community. The Plan provides a circulation system and greenspace network that promotes walkability and provides multiple ways to travel within the area. Different neighborhood orientations to streets, greenspace areas and other design features help create a diverse set of corridors, walking/biking trails, and roadways. The physical design includes the following elements:

- Grid pattern circulation system to accommodate streets, bike lanes and sidewalks.
- Greenspace circulation system to accommodate walkways, bicycle and hiking trails.
- Transit center to enable a future bus/commuter rail transit system. The transit center is intended to support potential high capacity transit service and help provide for transit connections between South Hillsboro and other areas in the City and region.
- Implement recommended improvements from the Tualatin Valley Highway Corridor and South Hillsboro Focus Area Plans to increase regional connectivity.
- North/south extension of Cornelius Pass Road for regional connectivity.
- Transportation planning envisions linkages to Downtown Hillsboro, North Hillsboro employment and Tanasbourne/AmberGlen via the circulation system and expanded transit system.

4.1.3. Green: A comprehensive greenspace system

The Greenspace system includes the natural stream corridors, the Bonneville Power Administration power line corridor, and new parks and trails. Collectively these form a greenspace network that links the community both internally and with adjacent neighborhoods. The greenspace system supports riparian habitat, passive and active recreation, and open space preservation. The power line corridor can help create a unifying feature for orienting the compact neighborhoods. The physical design for this concept includes:

- Connect east-west stream corridors with north-south wildlife travel corridors.
- Use the power line corridor as a north-south greenspace connector for trails. The corridor will be

GREEN: stormwater planters filter runoff and create a pleasant transition from public to private space. Ecoroofs help to filter stormwater runoff and should be incorporated in building design whenever possible

Sustainable design - permeable parking surfaces

designed to ensure public health and safety through regulated design and use.

- Preserve wide forested areas to provide habitat for interior forest species.
- Maintain wetland/stream hydrology in sub-basins.
- Incorporate trails/passive recreational opportunities in outer edges of greenspace areas.
- Expand future greenspace to improve connectivity with the Tualatin River.
- Use natural buffers as part of the urban growth boundary where possible, to aid the transition to agricultural uses.
- Promote habitat friendly development practices.

4.2. Design Principles and Best Planning Practices

This section includes planning and design principles that serve as the foundation for the overall land use, transportation and open space framework developed for South Hillsboro, and the comprehensive plan policies and Community Development Code standards that result. These principles also provide a basis for design standards and other development code provisions that will be applied in South Hillsboro. Sustainable design and development concepts and other planning best practices have been incorporated into the principles wherever possible.

These design principles are based upon best practices for sustainable development. Staff and community members worked to refine these best practices into more specific principles relevant to the context of South Hillsboro. These principles were reviewed at community workshops and meetings, with property owners, and with the Planning Commission and City Council.

4.2.1. Land Use

- Highlight views to Mt. Hood and other key natural resources such as local and surrounding foothills, forests and creek corridors.
- Design areas on the edge of South Hillsboro (adjacent to rural areas) to incorporate practices that create a transition between urban and rural development.
- Incorporate a sense of entry into the design of key locations and distinct neighborhoods within the South Hillsboro community through the use of signage, gateway structures, street design, landscaping and building form.
- Incorporate wayfinding and contextual elements to provide a sense of location for travelers and establish

Preserving and leveraging key view corridors.

Commercial street with a sense of enclosure

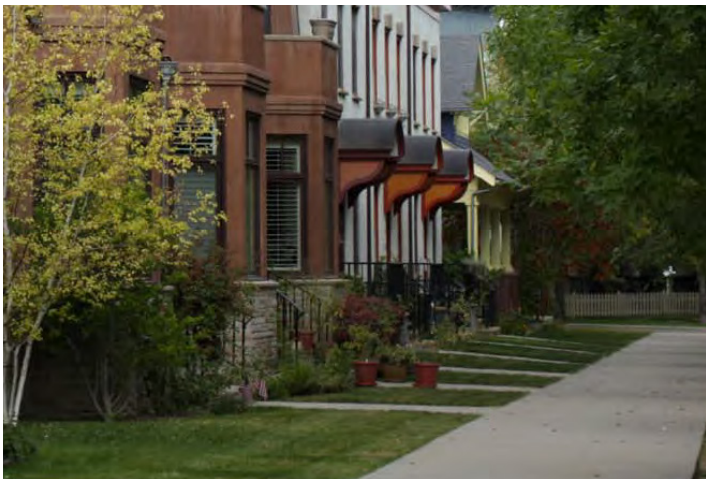
Areas of low density development adjacent to rural land create a transition from urban to rural

distinctions between different neighborhoods and centers in South Hillsboro.

- Site commercial and mixed-use buildings to provide a sense of enclosure along the street frontage.
- Create a plan that is financially feasible to achieve and economically sustainable over the long term.

4.2.2. Housing

- Overall development density should be compatible with surrounding planned density and residential diversity should be promoted.
- All residential areas should allow for opportunities for a variety of housing types and a range of densities appropriate to the intent of each zone and that meet the needs of people in a range of household incomes and structures.
- Individual neighborhoods should allow for a range of architectural styles and design characteristics.
- Environmentally sustainable approaches should be incorporated in the design and construction of



Context-sensitive development (views of surrounding landscape; garages tucked behind residences) with particular attention to the "First 30 Feet," or area of the building elevation closest to street level

housing, such as building orientation, energy-efficient construction, water-efficient fixtures, photovoltaic panels, recycled and regional materials, water-efficient landscape, minimized site disturbance and/or other similar techniques.

- Residential neighborhoods should be designed for openness. Gated communities and tall, sight-obscuring fences and walls should be avoided except for screening mechanical systems and back of house services such as trash collection areas.

4.2.3. Commercial

- Development along Tualatin Valley Highway and the railroad should help create an attractive and inviting "face" and sense of entry to South Hillsboro by establishing buildings that are visually open and minimize blank walls. Parking and loading areas should be significantly screened from roadways and adjacent pedestrian facilities.
- Retail and commercial buildings should be constructed of high quality materials. Standards for use of materials on the ground floor of retail, commercial and other buildings, including in mixed use areas is particularly important. Special attention should be paid to the first 30 vertical feet of the buildings to ensure a pleasant and inviting presence for the pedestrian.
- Site buildings so that they provide active street frontages that support walking, with minimal setbacks. Building heights should be sufficient to create a sense of street enclosure, or 'outdoor room.'
- Parking and loading services should be located so as to allow desired uses and activities to face the street and to support pedestrian-oriented streets. The majority of parking and loading areas should be located on the side or rear of buildings. Direct, safe and convenient pedestrian access through parking areas should be integrated into site design and layout.
- Ground floor retail and commercial buildings and uses should have a high degree of transparency, with glass windows or doors occupying a majority of the ground floor façade and allowing pedestrians to see inside the building.
- Upper stories also should incorporate a large degree of window openings and other features that provide visual interest and are compatible in scale and character with nearby neighborhoods.
- Ensure that large-scale retail does not detract from the character of the Town Center.

Commercial uses provide a sense of enclosure, an active street frontage, and create a "third place" (apart from homes and public spaces) where people can gather

- Signage should be pedestrian-oriented in scale and location, and should not contribute to a sense of visual clutter.
- Civic, retail, residential and other uses should be sited and designed such that they are visually complementary to each other. Larger-scale commercial uses should be located in the Town and Village Centers only. Neighborhood commercial uses should be of smaller scale, oriented to pedestrian access from nearby homes.

4.2.4. Transportation

- To the greatest extent possible, create a road system that ensures safety and maximizes connectivity within South Hillsboro as a whole and within individual neighborhoods while supporting regional traffic which must pass through South Hillsboro (while diminishing neighborhood cut-through traffic). This road system should generally include a grid of major arterials, collector, and local streets and alleyways designed to respond to a full range of development types and transportation functions. In some areas, the ability to create a grid system may be affected by topography, natural resource constraints or other limiting factors.
- Roadways should include facilities for walking and bicycling as appropriate based on roadway classification and context. A network of inner-connected pedestrian and bicycling routes should be provided that are inviting, safe and that encourage use by a broad spectrum of users.
- Arterials should be designed with a limited number of driveways and intersecting roads to provide adequate capacity for through traffic while providing connections to surrounding streets and neighborhoods. Wherever possible, access to individual businesses and properties should be provided from secondary streets.
- Streets in mixed use and commercial areas should incorporate pedestrian-oriented designs and amenities such as wide sidewalks and highly visible crosswalks, medians or refuges, on-street parking, pedestrian scale lighting, street trees and furniture, opportunities for outdoor seating and/or other features intended to activate and energize streetscapes. On-street parking should be included in street design, where appropriate,

Attractive intersection treatments provide increased safety for all users

to support commercial and retail uses fronting on the street.

- Trails and pathways should be designed and built to safely accommodate a variety of users and provide connections between homes, local and regional destinations, including retail and shopping areas, schools, parks, natural and open spaces and other community facilities.
- Major streets such as Cornelius Pass Road should be connected to adjacent neighborhoods as much as possible. These streets should act as part of the neighborhoods rather than barriers. Sound walls should be avoided.
- Throughout South Hillsboro, Cornelius Pass Road should be designed to support a 35 mph posted speed limit, with a 25 mph limit in the Village Center.

4.2.5. Parks and Open Space

- Natural features and habitat areas should be preserved, enhanced, and incorporated into the design of residential and commercial areas, as well as parks and recreational facilities.
- Parks and open spaces should have public edges (i.e., public streets) adjacent to supportive uses in order to help make them safe. Avoid placing rear yards and fences as borders to parks and open spaces.
- Where feasible and beneficial, schools, civic uses, parks and open space corridors may be co-located and/or directly connected to make them walkable for children, improve safety, reduce the need to drive between these facilities and use land and other resources efficiently.
- Civic uses and parks should have prominent locations to create neighborhood identity and to encourage public use.
- Parks should meet the city's size standards and include a variety of active and passive recreational and other neighborhood or community-oriented activities and opportunities and meet the needs of surrounding residential and mixed use neighborhoods.
- The design and siting of parks should help enhance the character of surrounding neighborhood and serve as a tool for creating desirable urban form.
- Higher density residential areas and commercial and mixed use areas should incorporate gathering places for residents, workers, shoppers and other visitors. These spaces should be sized and designed to accommodate gatherings and events as appropriate.
- The BPA Easement Corridor should be considered as an amenity and should be adjacent to a public street or

Design and siting of parks and open spaces complements and gives character to the surrounding development

Bioswales in a residential development treat stormwater runoff from the street and sidewalk

other public space with opportunities for linear open space and trail connections where feasible.

4.2.6. Other Infrastructure

- Clarify public and private responsibilities for building and maintaining public facilities, spaces and other infrastructure.
- Plan for undergrounding of all utilities.
- Low impact development practices should be incorporated in designing and building streets and pathways, including building narrower streets and using sustainable drainage techniques where feasible and financially sustainable over the long term.
- Stormwater treatment facilities should be seamlessly incorporated into the landscape and design of neighborhoods and civic spaces as much as possible.
- Utilize passive building strategies, including building orientation to maximize daylight and natural ventilation, to promote sustainability.

4.3. Design of Community Facilities

4.3.1. Overview

The City of Hillsboro intends for development in South Hillsboro to be clearly integrated with the overall brand of the City of Hillsboro while still providing a unique sense of place within South Hillsboro. In part, this unique identity can be created through the visual clues provided by a mix of improvements within publicly owned spaces and facilities. How strongly the brand is expressed depends upon the extent to which the design of these improvements are pre-determined and required.

The following specific types of strategies are proposed to help establish a unique identity.

- Intersection and crosswalk paving
- Landscaping and street trees
- Street lighting and furnishings
- Utilities
- Parks, trails and plazas
- Wayfinding
- Gateways

Following is a summary of general recommendations for how these elements will be implemented in South Hillsboro. Ultimately most of these strategies will be implemented through additional requirements in the City's Development Code or through separate Engineering standards referenced in the development code. Further work on those requirements will be needed and is expected to involve review and discussion among various City Departments, partnering property owners and developers and other community members prior to finalizing and preparing those standards.

Differentiated materials are used within crossings but not repeated on sidewalks in this example.

4.3.2. Intersection Paving

One highly visible design feature that will be found throughout South Hillsboro is the treatment of intersections and in particular, pedestrian crossings and other paving elements within and adjacent to those intersections. Consistent and systematic use of paving treatments will incorporate a strong cohesive bicycle and pedestrian system, use of high quality materials and a relatively cohesive design aesthetic:

- Use of unique, highly visible materials will create a consistent look for South Hillsboro and improve safety for pedestrians, bicyclists and drivers. Options include texture or pattern-differentiated concrete or well-designed high-visibility pedestrian crossings (consistent with Public Works standards). Use of brick and dyed concrete would be less preferred given maintenance and other issues.
- Pedestrian crossings should be placed as close to the intersection as possible (not set back from it) to reduce crossing distances, improve visibility and make crossing in two directions as direct as possible.
- Crossings should be as wide as reasonably possible to improve visibility and safety.

This example features a raised concrete crossing area to enhance visibility for drivers and pedestrians in a mixed use area.

A well-designed "zebra crossing" is another alternative.

- Crossings should be integrated with other intersection design features and aspects of the design of the adjacent streets.
- High-visibility pedestrian crossing treatments are recommended at all intersections of collectors and/or arterial, or as otherwise indicated for use in Public Works standards. They might also be used for intersections of collectors and local streets adjacent to schools, parks or other key public facilities and/or at mid-block crossings in the town or village centers.
- A very specific standard could be used or developers (and the City) could be provided with a limited number of options that could be used in different situations (e.g., crossings in the town and village centers might look somewhat different than in more residential areas). In either case, the number of options should be limited to ensure that they result in a cohesive, unique design aesthetic for South Hillsboro in its entirety while ensuring safety of all road users.

4.3.3. Landscaping and Street Trees

Within South Hillsboro, street trees and other landscaping within the public right-of-way will provide opportunities to reinforce the area's identify. This will include street trees, other landscaping found in planting areas adjacent to the roadway (e.g., grasses, shrubs or other groundcover plants), or in center medians and use of hanging plants, planter boxes and/or other similar features. Landscaping also may be integrated with "hardscape" features such as paving in civic plazas, small courtyards or other gathering places. Landscaping in the right-of-way is expected to be provided throughout South Hillsboro. However, the prevalence and character of different landscaping elements may vary between different types of areas. While a certain degree of consistency may be desirable across all areas, different approaches would be taken in residential areas vs. the Town and Village Center Core Areas and other mixed use areas. In addition, landscaping approaches may differ between lower density single family neighborhoods and more urban, medium or higher density residential areas. Other strategies and recommendations related to street tress and landscaping include the following:

Large streets provide a canopy over this local residential street.

Columnar species of street trees are often used in commercial and mixed use areas to maintain visibility of storefronts and signage.

Example of street trees in planting areas in a mixed use area.

- Consistent with the "Complete-Connected-Green" theme for South Hillsboro, provide a higher level of landscaping in South Hillsboro compared to other parts of the City. This may mean a tighter minimum spacing of street trees, a higher percentage of plantings within civic plazas or similar areas, wider landscaped buffers for parking lots, and/or wider planting strips or generally more area devoted to landscaping in the right-of-way. Some of these requirement have already been incorporated in the South Hillsboro Plan District provisions to be adopted as amendments to the City's Community Development Code.
- Wherever possible, use climate-adapted plant species that require less water and limited maintenance, consistent with an emphasis on environmentally sustainable practices. Street tree species selected should be well-suited to urban environments and must be consistent with the species list as designated by Public Works.
- In commercial and mixed use areas, balance landscaping objectives with visibility for local businesses. This may include using columnar tree species and "limbing up" or pruning trees to a height that ensure that they do not block ground floor business signs or windows.
- Vary the degree of living plantings and hardscape in different areas. In more urban areas such as the Town Center or Village Center Core Areas, a higher degree of hardscaping may be appropriate, with the highest percentages in the Town Center and relatively lower percentages in lower density residential neighborhoods.
- Consider maintenance costs and needs in selecting tree and other plant species and in determining the most appropriate mix of planting and hardscape.
- Implement a maintenance approach that is cost-effective for the City, and efficient and equitable for adjacent property owners.
- Similar to other elements of the public realm, integrate landscaping approaches with other aspects of the streetscape and the character of surrounding private development.
- Integrate landscaping with stormwater management facilities.

4.3.4. Street Lighting and Furnishings

Similar to other public realm elements, street lighting and street furniture provide opportunities to reinforce a unique identity in South Hillsboro. All three zones of the streetscape (vehicular, sidewalk, and parking) must be properly lit. Pedestrian scale street lighting should be provided in all areas of South Hillsboro where street lighting is required. However, given the width of the right of way, special consideration to the scale of the street lights along Cornelius Pass Road will be needed. Within the mixed use areas, additional lighting enhancements should be considered on the light poles such as brackets for hanging baskets, banners or permanent community identifiers, and outlets for holiday lighting.

Pedestrian and bicyclist amenities (e.g., amenities such as benches, trash receptacles, bollards, bicycle racks, drinking fountains and/or other similar features) are expected to be provided primarily in mixed use areas such as the Town and Village Centers and adjacent to institutional uses (e.g., schools and schools) which are allowed in residential zones. In addition, they could be required in higher density residential zones as well.

Contemporary trash and recycling container. Seat walls can be an effective alternative to benches.

These trash containers have been placed in a furnishing zone outside the main pedestrian walking zone.

Street lighting integrated with wayfinding, regulatory signs and art.

Simple, staple bicycle racks, located outside the pedestrian zone, but under awnings.

Following are more specific guidelines for street furniture and lighting in South Hillsboro.

- At a minimum, include street furniture in streetscape design standards areas designated for mixed use. Consider incorporating some elements in high density residential area as well.
- At a minimum, street furnishings in the Town and Village Centers should include benches, trash receptacles and bicycle racks. Drinking fountains also could be included if a water source is readily available and if the City determines that the benefit/cost ratio for providing them is relatively high.
- Bollards may be considered as needed as a safety device (e.g., adjacent to mid-block crossings and possibly in other locations where there is an elevated risk of vehicle/ pedestrian collisions such as curbless streets. Where bollards are used, they should be designed and placed to address potential maintenanace and obstruction issues to minimize the need for manual cleaning around the bollard, and to discourage graffiti.
- The design and scale of street furniture and lighting should be integrated with other urban design features and aspects of the streets in a given area, as well as with the architectural design of buildings and other aspects of private development.
- The design of streets should include a zone for street furnishings, typically the first 4 feet between a street's curb towards the building edge, to reduce clutter and avoid pedestrian obstacles.
- Identify a design aesthetic for street lighting and street furniture for use within South Hillsboro

that reflects the brand and history of the area. A "northwest contemporary" look is recommended for street furnishings in South Hillsboro. This should incorporate a more contemporary look that is timeless (not trendy) rather than tied to a specific time period (e.g., a "historical" look).

- Street furnishings and lighting should be chosen to minimize maintenance costs and should be "weather-appropriate" for conditions in the Pacific Northwest (i.e., significant rainfall).
- Street and other exterior lighting should provide for security and extended use of properties into nighttime hours, while ensuring an environmentally sensitive and energy efficient nighttime environment that includes the ability to view the stars against a dark sky from residential and other appropriate viewing areas.
- Other pedestrian scale street lighting considerations include:
  - » Considering use of solar powered lighting.
  - » Allowing stores to help illuminate sidewalks in the evening.
  - » Using newer LED lighting, not high pressure sodium.
  - » Integrating lighting with signage and/or art.
- The City should not simply select and purchase a low cost, "off the shelf" set of street furniture and pedestrian scale lighting for this area. The design of these elements should be carefully considered in conjunction with other aspects of the design of these areas.
- Ultimately, specific standards may include requirements for which areas shall include street furniture and lighting; approximate spacing of street lighting; the approximate numbers of benches and trash receptacles that should be provided on a given block face or length of street in the town and village centers; and/or factors that shall be considered in selecting specific furniture and lighting products.

4.3.5. Utilities

Within South Hillsboro the design and regulation of utilities provides an opportunity to reinforce the brand and to ensure a high quality environment. As proposed in the draft South Hillsboro Plan District, utilities are required to be undergrounded either in the public right-of-way or in a public utility easement. However, some aspects will still be visible and standards for the placement and screening of those utilities also is addressed in the proposed Plan District. In addition to applying these proposed standards, the following strategies also will be implemented in South Hillsboro:

- Work closely with public utilities on a comprehensive approach to undergrounding major utilities as construction proceeds, to avoid having to disturb streets later.
- Coordinate with franchise utilities to do the same.
- As currently established in the plan district, on Active Use streets require that vaults be located underground to avoid conflicts. Alternatively, if desired, revisit the

Contemporary version of a unique manhole

plan district standards to allow utility boxes to be above ground where public art will be incorporated.

- Consider requiring landscaping when artificial rocks are used to screen utility vaults.
- Locate utilities within rear alleys where possible. Utility reluctance to do so is typically due to concerns about vehicles striking the vaults. Small curbs can be installed around the vaults to mitigate this.
- If all utilities cannot be undergrounded in residential areas, work closely with providers to ensure that facilities are located away from significant public parks and major gateways.
- Multiple boxes should be arranged in close proximity to reduce visual impact and allow for concentrated landscape screening.
- Incorporate public art on above-ground vaults and work with utilities and property owners to establish a utility vault art program.

Unscreened vaults are rather unsightly and should be discouraged except in an alley or on the rear of the project.

Utility boxes can be a location for public art.

4.3.6. Parks, Trails and Plazas

Successfully accommodating existing and special conditions in South Hillsboro is an important part of the design of public park, plaza and trail design.

Public Parks

The City of Hillsboro Parks and Recreation Department's existing standards have resulted in very good parks. However, if appropriate, establishing unique park design requirements within South Hillsboro could be another means of creating a distinct identity. There will be six Neighborhood parks and one community park in South Hillsboro. While these parks may serve somewhat different roles within the community, they are all urban parks that will be meeting the recreational needs of the residents. If the City determines that these parks should have aspects unique to the South Hillsboro area, then common design elements within the parks that are unique to this area could be used to help foster a sense of place as well as serving to distinguish it a distinct area within the City of Hillsboro. Distinctive pavers, fencing, plantings, furniture and/or structures could also be used to establish a unique identity. Overall, a high level of quality is desired in the choice of materials, to establish this community as an enduring, well-designed neighborhood. In addition, design standards should ensure parks within South Hillsboro:

Trails should be designed with a hierarchy of widths and materials to meet the needs of a range of future users.

Plazas in Town and Village Centers should include shade trees and places for sidewalk dining to spill out onto the edges of public spaces

Water features in parks and urban plazas ensure a wide range of ages will activate the park

- Focus on context sensitive design;
- Use of climate-adaptive plants which will thrive with in local environment (e.g., use less irrigation, pesticides and fertilizers); and
- Ensure timelessness and durability through high quality materials.

Trails

South Hillsboro will be connected by a series of trails. Similar to parks, to the extent trails within South Hillsboro differ from elsewhere in Hillsboro, they provide another mechanism to reinforce a distinct identity there. The width of the trails, paving materials, fences, signs, and adjacent plantings can all serve to promote a distinct South Hillsboro identity. Design standards should ensure trails within South Hillsboro:

- Are located in ways which create a pleasant and interesting route while minimizing ecological impacts;
- Recognize the needs of user group(s) in terms of design and materials. For example, pathways should be the minimum necessary to accommodate expected future users.

Plazas

Plazas will be an integral part of the Village and Town Center Core Areas. These spaces will likely be on private property and managed by the property owner. The Hillsboro Community Development Code currently establishes some minimum criteria for plazas that will be counted toward the open space requirement. These standards are focused primarily on size and amenity requirements. However, similar to parks, common design elements such as distinctive pavers, plantings, furniture and/or structures could also be used to establish a unique

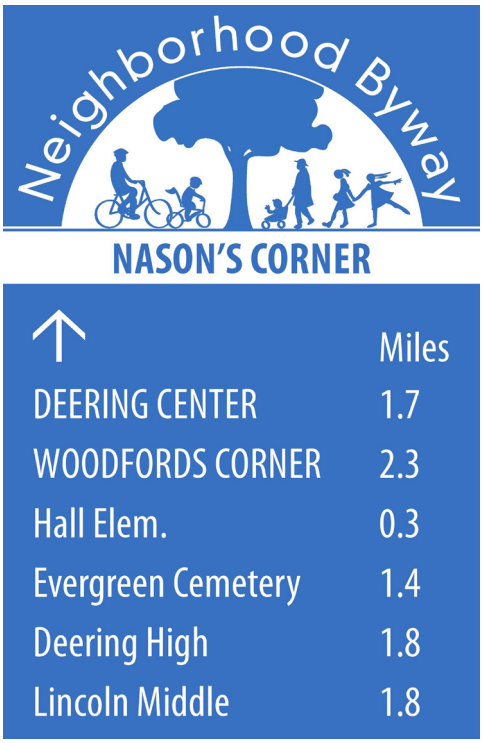
identity for South Hillsboro. However, the Town Center Core Area and Village Center Core Area will not necessarily have the same design aesthetic; therefore, the design of all plazas does not need to be identical although all should relate to the streetscape elements.

4.3.7. Wayfinding

Within South Hillsboro, wayfinding provide opportunities to reinforce the area's identity. Wayfinding, in the urban design context, refers to elements which provide orientation and direction within the built environment while helping to establish an identity and sense of place for the community. This can include a range of elements, but for the purposes of this paper the focus is on directional and locational signage. Key principles include:

- Wayfinding in South Hillsboro should contain some unique aspects that reinforce a distinct sense of place both within individual neighborhoods as well as across all areas of South Hillsboro, while integrating with citywide Wayfinding standards and programs.
- South Hillsboro is intended to be a connected community. Within residential areas, the use of individual subdivision entry signs, which tend to create a sense of exclusion, should be limited or prohibited. Signage identifying individual neighborhoods in South Hillsboro should be provided in a consistent manner that unifies the community.
- The wayfinding system for vehicular and pedestrian users should function as an integral part of the built environment and carefully consider the context and scale of signs. Permanent iconic signs, rather than paint, is the preferred method.
- Use materials and colors that reflect and complement the site and context, as well as the area's unique landscape, culture and history. If possible, carefully tie the visual feel of the wayfinding signs to other elements of Hillsboro identity (such as colors and fonts or City logos).
- Provide information in a clear, concise, and minimal manner, while not adding to visual clutter.
- Lighting should be designed into the landscape or integrated into the sign to provide even illumination and reduce "dark sky" uplighting.

Wayfinding in neighborhoods should provide locational information in a consistent manner



Wayfinding for pedestrians and bicyclists.

Distinctive wayfinding signage for trails

- Within parks, open space and trails additional wayfinding should be provided that helps the user (especially bicyclists and pedestrians) find their way between connected facilities and other destinations (e.g., the Town Center and Village Center Core Areas). The design of these elements should be unified throughout public open spaces in South Hillsboro.

Subtle, non-signage wayfinding can also be encouraged through the use of specific landscape plantings or trees (as a visual marker that signifies a town center or local park) or streetscape elements like furnishings and surfacing that provide cues to one's position in an urban environment. Even differentiating the scale of street design can help to communicate that one is entering a residential neighborhood.

Within the Town Center and Village Center Core Areas additional commercial signage will be visible; however, wayfinding signage should be provided. The Town Center Core Area and Village Center Core Area will not necessarily have the same design aesthetic; therefore, the wayfinding signage does not need to be identical. However, both should relate to those streetscape elements they have in common. For example, SW Cornelius Pass Road will be a primary point of entry for both commercial centers. Streetscape elements on SW Cornelius Pass Road (e.g., street lights and furniture) will be a unifying element to which the wayfinding signage at both centers will need to relate.

4.3.8. Gateways

Gateway elements at important entrances to the community (e.g. key intersections and bridges) can contribute to a sense of identity for a community. Gateways can be thought of as community signatures and their design should somehow reflect elements of local culture, natural landscape, built form or community history, helping to define community boundaries. Within South Hillsboro locating gateway elements at key intersections and bridges provides an opportunity to reinforce the area's unique identity. Gateways into South Hillsboro should represent the entire area and should not be specific to a particular development. The scale and content should avoid the appearance of an entrance to a business park or similar commercial enterprise or to a separate city.

Landform combined with signage as a gateway. NOTE: Expanses of manicured lawn should be discouraged in South Hillsboro.

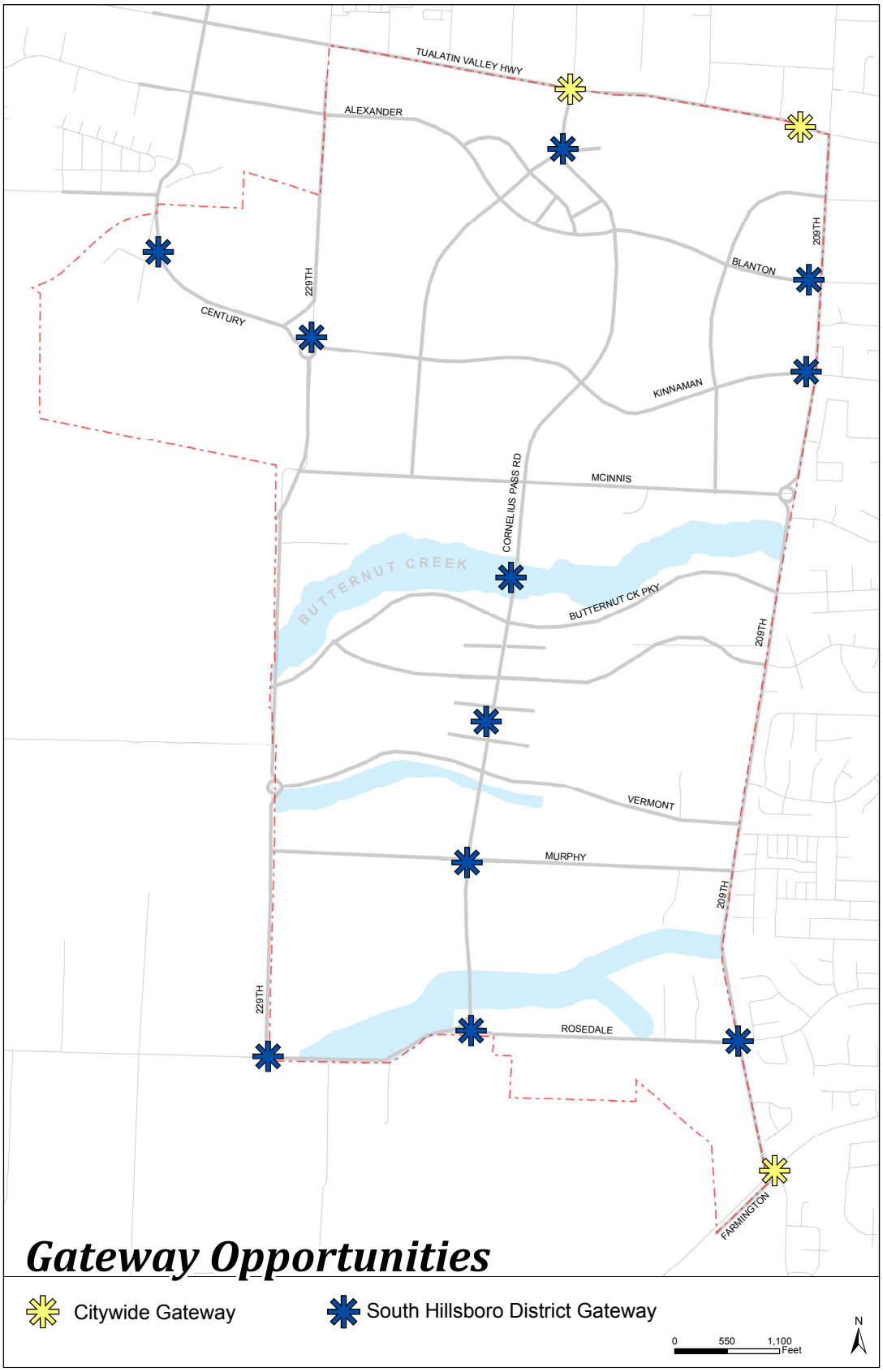
Figure A-7 illustrates opportunities for gateway treatments in South Hillsboro, both for smaller-scale neighborhood or district gateways providing transitions between areas in South Hillsboro, as well as larger or more prominent citywide gateways marking key entrances to the City as a whole. These locations were chosen based upon their prominence to land uses and key transportation intersections. It is not anticipated that all of these gateway locations will be utilized -- rather this map is intended to highlight where a gateway treatment may be most appropriate.

Key issues related to the role, scale and location of gateways should be considered prior to identifying gateways for specific areas or locations.

- Gateway should be visually striking such that it can be noticeable to passersby, but should also blend and fit in with the surrounding landscape and built form.
- Use materials and colors that reflect and complement the site and context (e.g., the northwest agricultural heritage of the area). The City should consider how/ whether a highly-lit piece of public art, where the play of light is integral to the design, would be appropriate. Brightly lit pieces create night time interest, but tend to feel much more urban.
- Consider designs which complement or echo the major gateway elements at lesser gateways such as bridges or other locations.
- A striking landform or significant planting design (with seasonal variations) can serve as an effective gateway, although in general the use of manicured lawns should be discouraged due to environmental impacts.
- A large public art piece could also serve as an effective major gateway to South Hillsboro, with minor gateways at other entry points. Gateway elements should be coordinated with wayfinding.
- The scale and placement of landscape or art gateways is critical— elements which are located too far from an entry point or are too small will not be legible to people arriving. On a wide roads location is critical. A median or island offers a highly visible location.
- If text is to be incorporated into gateways, consider what message would be appropriate. A reference to "South Hillsboro" would recognize the area's distinct identity, but could suggest that South Hillsboro is not a part of the City of Hillsboro. Alternatively, less location-specific text (e.g., "complete-connected-green") could be incorporated into a public art piece.
- As an alternative to a "public art" approach to establishing gateways, encourage developers to locate buildings of a sufficient scale to serve as gateways at key locations. For example, taller (3 – 4 story) buildings can create gateways at key locations.

Public art expressing a non-location-specific message.

Figure A-7: Gateway Opportunities



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5

Development Program

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5.1. Overall Land Use Framework

The South Hillsboro land use plan is derived from the general land uses and street alignments that were proposed in the 2008 Community Plan. Much of the form of that plan was driven by the alignment of a major new southward extension of the Cornelius Pass Road arterial from its existing terminus at Tualatin Valley Highway. This arterial is expected to become a spine of the community, with highest densities located along its route. New collector roads were generally aligned to extend existing streets west across the plan area, connecting SW 209th and SW 229th Avenues.

Two major landowners have developed more detailed plans for their holdings (Reed's Crossing and Butternut Creek) under the general framework of the Community Plan. Their plans are included in the Composite Map shown later in this chapter. Each developer's consultants have prepared useful analyses of likely development form that are also reproduced in this plan. The plans prepared by Hagg Lane also include properties owned by other individuals to the east and west.

The other properties in the plan area will be rezoned as they are annexed. Some areas may be assembled into larger parcels for development. For the purposes of this Master Plan, Community Plan land use designations are applied to those parcels as a placeholder.

A grid of streets, connecting to the grid seen in conceptual plans for Reed's Crossing and Butternut Creek, has been applied to parcels between these areas. It is assumed that the detailed street system will change according to landowners' individual plans and Planned Unit Development submittals. Thus, this plan seeks to confirm alignments of major collectors but does not specify location of local streets.

Collectors include the SW 229th Avenue realignment to connect to SW 234th Avenue (Century Boulevard north of Tualatin Valley Highway) and routes following the key drainages across the site. Connections to Reed's Crossing and Butternut Creek streets are also key components of ensuring that this becomes an integrated community, rather than a collection of unrelated subdivisions. Connections between different neighborhoods and to natural areas, green spaces (parks and trails), and other parts of the City are also crucial.

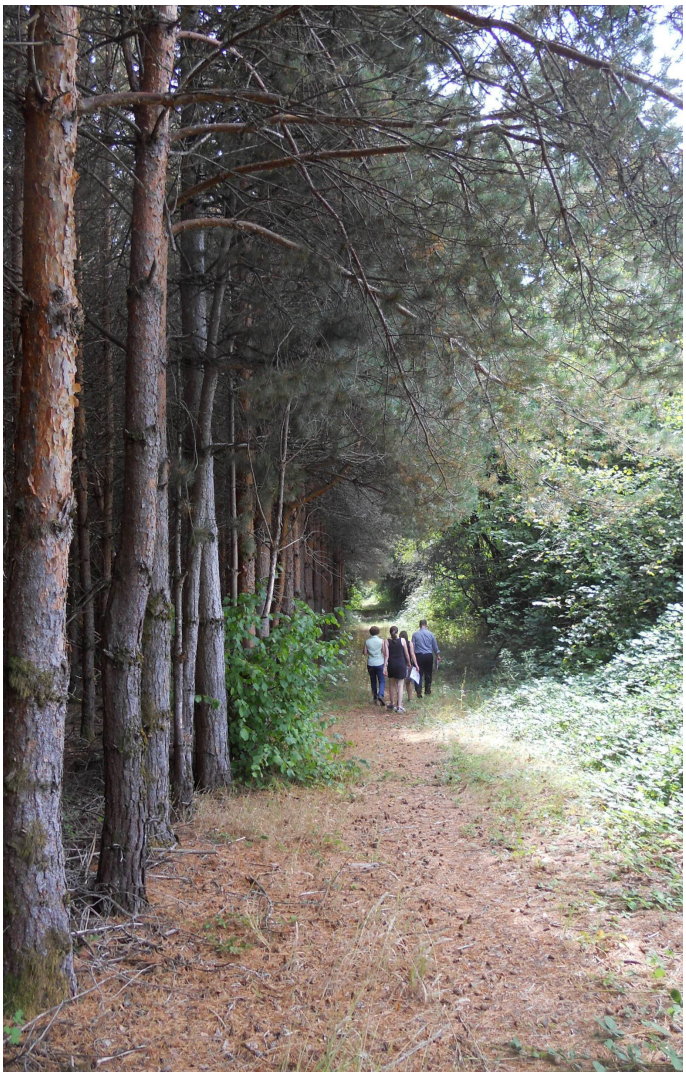
There are three other key drivers of the land use plan's form:

- **Bonneville Power Administration Corridor:** A 250-foot wide transmission line easement runs north-south across the site, much of which is currently farmed or vacant. It does not represent a barrier to movement across the plan area, but BPA regulations significantly limit development within the easement. The corridor may see a doubling of transmission capacity in future. The easement effectively creates a swath of open land from Tualatin Valley Highway to SW Farmington Road, intersecting all three major drainages across

Bonneville Power Administration lines through South Hillsboro.

the site. A major regional trail is envisioned for the Corridor. Conceptual plans for the Butternut Creek development identify the Corridor as a potential major recreational asset, and locate neighborhood parks adjacent to the transmission line.

- **Rail Corridor:** A short line freight railroad corridor runs alongside Tualatin Valley Highway, currently in active use by the Portland and Western Railroad. Due to operational and safety restrictions, at-grade access across railroad tracks is increasingly limited. The existing at-grade crossing at SW 229th Avenue will be closed, leaving just three connections to the Tualatin Valley Highway from the overall South Hillsboro area (including the connection at SW 209th Avenue). This will funnel most traffic to either Cornelius Pass Road, SW 209th Avenue, or to a third access outside the South Hillsboro area, at SW 234th Avenue via SE Alexander Street. This will reduce the potential for a fully connected grid system of streets connecting to the Tualatin Valley Highway, while also resulting in the need for significant intersection improvements at these points.
- **Natural Features:** The natural features of this area are another key influence on urban form. These features are entirely related to three major drainages that flow from east to west across the site, draining the land to the Tualatin River, and include riparian corridors, associated wetlands, and adjacent upland wooded habitat.



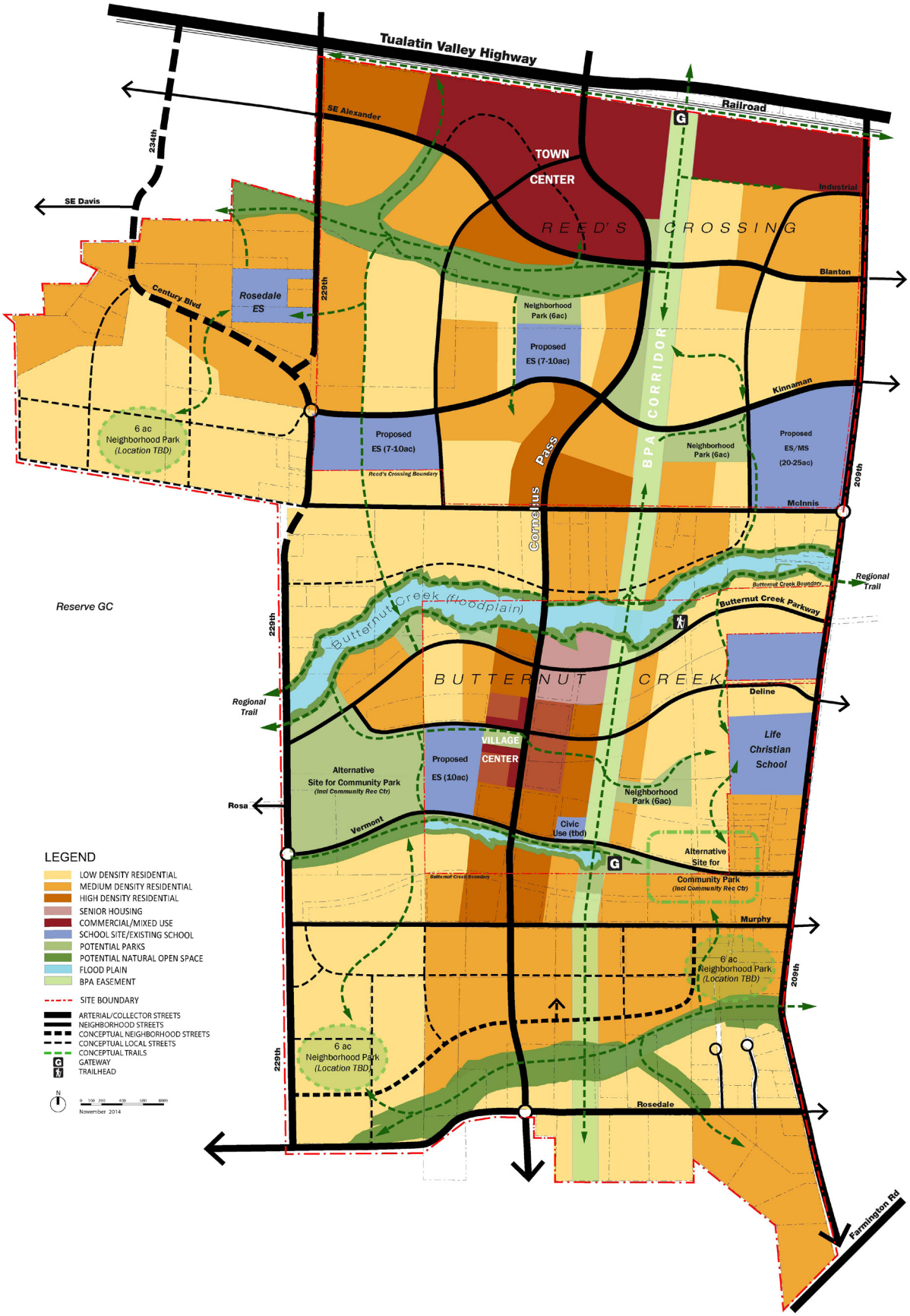
Existing natural areas in South Hillsboro.

5.2. Land Use Plan

5.2.1. Composite Map

The Composite Map shown in Figure A-8 illustrates conceptual development throughout South Hillsboro, including the Town and Village Centers, proposed locations of parks and schools, trail and road systems, and residential and commercial development types. This map enunciates City goals for housing product type mix and location, identifies ways to meet community needs for parks, schools, and open space, and blends the development aspirations of major partners. Although this map is not itself regulatory, it is used as the basis for guiding other decisions about densities, uses, and system design explored elsewhere in this Appendix.

Figure A-8: Land Use Composite Map



5.2.2. Reed's Crossing: Town Center

As shown in the Composite Map, the highest intensity of development is anticipated to occur in the northern portion of the area, in Reed's Crossing. This will include a Town Center slated for retail, office, and multi-family uses. The Town Center is envisioned as a walkable district visible from Cornelius Pass Road. Buildings and streets will have a high quality design, and parking will be placed behind the buildings to ensure direct frontage onto the main street and Active Use Streets, and an orientation to the pedestrian. The design of Cornelius Pass Road and other streets in the Town Center -- including the relationship of buildings to the street and the design and location of pedestrian and bicycle facilities -- is the key to ensuring a vibrant, walkable, attractive, and economically viable Town Center. Other blocks in Reed's Crossing will feature a range of residential densities from low to high density, as noted in the Composite Map shown in Figure A-8.

Example Imagery of Reed's Crossing Town Center features

5.2.3. Butternut Creek: Village Center

Conceptual plans for Butternut Creek include a range of densities similar to Reed's Crossing. This is based on consistent findings in market studies and similar development intentions of providing a mix of retail, commercial and residential uses, along with parks, schools and other community amenities. A Village Center is proposed in Butternut Creek along Cornelius Pass Road. This is a smaller-scale mixed use 'node' with a pocket park perpendicular to Cornelius Pass. Ground-floor retail uses will face the park. A school and Community Park to the west will further activate this Village Center. Residential density is highest in the Center and lessens in a concentric pattern moving away from its core. Development along the east edge of the plan area should generally reflect the character and density of existing development along SW 209th Avenue, particularly newer subdivisions at densities approaching 10 dwelling units per acre.

Example Imagery of Butternut Creek Village Center

5.2.4. Southern and Western portions of South Hillsboro

The properties in the northwestern portion of the plan area present an opportunity to locate executive housing along the adjacent Reserve Golf Course property. To facilitate access to this portion of South Hillsboro, property owners have worked together on a conceptual realignment of 234th Avenue/Century Boulevard to 229th Avenue and a realignment of SW 229th Avenue through these parcels. A simple grid of streets will be imposed over the mainly flat ground due north of the golf course. A forested drainage near Gordon Creek, north and west of the Rosedale Elementary School, may make development more constrained in that corner of South Hillsboro.

The southern portion of the South Hillsboro area is currently a mix of agricultural uses and large lot subdivisions along SW 209th Avenue. Land uses in this area will likely be almost entirely residential, although the very southeast corner of the plan area, at the intersection of SW 209th Avenue and SW Farmington Road could attract retail uses due to the number of passing vehicles.

5.2.5. Housing & Commercial Development

South Hillsboro is intended to meet a variety of housing needs for future residents. The scale, density, and type of housing will include a combination of executive, low-density, medium-density, high-density, and mid-rise residential uses, as well as mixed-use residential/commercial areas, consistent with current and future market demand in the area in terms of average densities, likely pricing and other Hillsboro-area market trends.

The land use plan leverages opportunities to develop a mix of housing types and price ranges for Hillsboro's growing workforce, especially for the forecasted number of employees within professional and business, retail, leisure, hospitality, and health services. Housing densities that reduce land costs and increase transit feasibility will be key to achieving housing affordability within South Hillsboro. These housing forms may include single-family homes on small lots or in cluster housing developments, row houses or townhouses, or multi-family apartments.

Figure A-9: Excerpt from Reed's Crossing Draft Plan

Figure A-10: Residential Development Patterns

Low-Density Residential

Medium/High-Density Residential

Low-density housing at the edge of rural land should be compatible with adjacent rural character and provide views of nearby agricultural fields

High-quality construction and materials create a character of place. Higher densities achieved through subtle home design types (image shows a duplex)

The City will implement residential and mixed-use Comprehensive Plan designations in South Hillsboro through a variety of zones that allow for these types of housing. The City also intends to adopt policies and subsequent regulations that encourage innovative housing products and development types, particularly those that enable live/work housing arrangements and those that integrate sustainable and low-impact building approaches or technologies.

Future retail and commercial development in South Hillsboro will serve local demand and regional demand, including residents within South Hillsboro and surrounding areas such as Aloha and Reedville, which are currently underserved by commercial and retail services. Retail and commercial uses are expected to include a mix of general merchandise stores as well as smaller, locally-oriented retail and service businesses. Smaller retail businesses are expected to generate nearly half of the demand for future development. These types of businesses are most compatible with mixed-use and other non-large-format development types.

Commercial and retail development will be concentrated in the Town and Village Centers and adjacent areas. It is expected that these locations will improve the economic vitality of these businesses and allow for the establishment of shopping options that are highly accessible via walking, biking, or transit. Outside the Town and Village Centers, some very limited low-intensity, neighborhood-friendly commercial or retail uses may exist, such as small corner stores or home occupations, with the bulk of commercial development occurring in the centers.

5.2.6. Schools, Parks, Trails, and Open Space

Schools are often important amenities for new residential development, and this plan provides opportunities for integration of schools with communities, allowing children to walk to school and providing community gathering spaces. A Middle/Elementary School site is reserved in the southeast corner of Reed's Crossing. There are two existing schools in the plan area: Rosedale Elementary School on SW 229th Avenue and the private Life Christian Elementary School on SW 209th Avenue, south of Hagg Lane.

5.3. Comprehensive Plan Land Use

The City utilizes a two-map system of implementing land use. The guiding map is the Comprehensive Plan Land Use Map (see Figure A-11), which assigns specific land use categories (e.g. Commercial, Industrial, Open Space, and Residential of varying densities) to property within the City's planning area. The Comprehensive Plan designations are then implemented by applying corresponding zoning districts on the City's Zoning Map for property annexed into the City limits (discussed later). Each zone addresses the specific uses allowed (outright or conditionally) and the development standards applicable to each district.

5.4. Zoning Concept and Buildout Projections

5.4.1. Zoning Concept

The City has developed an overall concept to guide the application of zoning to implement desired land uses and densities throughout South Hillsboro consistent with Comprehensive Plan policies. The zoning concept covers all properties in South Hillsboro, and considers development of single-family detached housing, single-family attached housing, and multi-family housing, including residential components of mixed-use development in the Town and Village Centers. The strategy also identifies take-outs for designated rights-of-way, projected locations for parks and schools, and environmental takeouts related to significant riparian or upland resources.

The zoning concept is illustrated in Figure A-12. The concept calls for the application of the following zones (as defined in the Hillsboro Community Development Code) in various locations in South Hillsboro:

- Single-family residential zones: SFR-4.5, SFR-6, SFR-7, SFR-8.5, and SFR-10.
- Multi-family residential zones: MFR-1, MFR-2, and MFR-3.
- Mixed-use zones: MU-VTC.

The zoning concept described here is a projection, not a determination of zoning for all properties. Over time, this concept may be refined to reflect changes in the market or new development trends. Zones will be applied to properties once they have been annexed into the City using standard land use decision processes for annexation and zoning.

5.4.2. Buildout & Density Projections

Based upon the zoning concept discussed in Section 5.4.1, development projections can be made for each residential product type. The City is currently projecting a total dwelling unit estimate of 7,712 units throughout South Hillsboro, based upon the current zoning concept. This would yield an average residential density of between 9 and 12 dwelling units per net acre outside of Planned Unit Developments, where the maximum density would be 14 dwelling units per net acre. Residential product mix would be approximately 57% single-family detached, 22% single-family attached, and 21% multi-family.

These estimates represent 95% of the maximum dwelling units allowed assuming implementation of the proposed zoning concept, including take-outs for rights-of-way, parks and schools, and environmental resources. These buildout projections also assume transfer of allowed density from the Bonneville Power Administration corridor to other locations where development is not

Figure A-11: Comprehensive Plan Map

Figure A-12: Zoning Concept

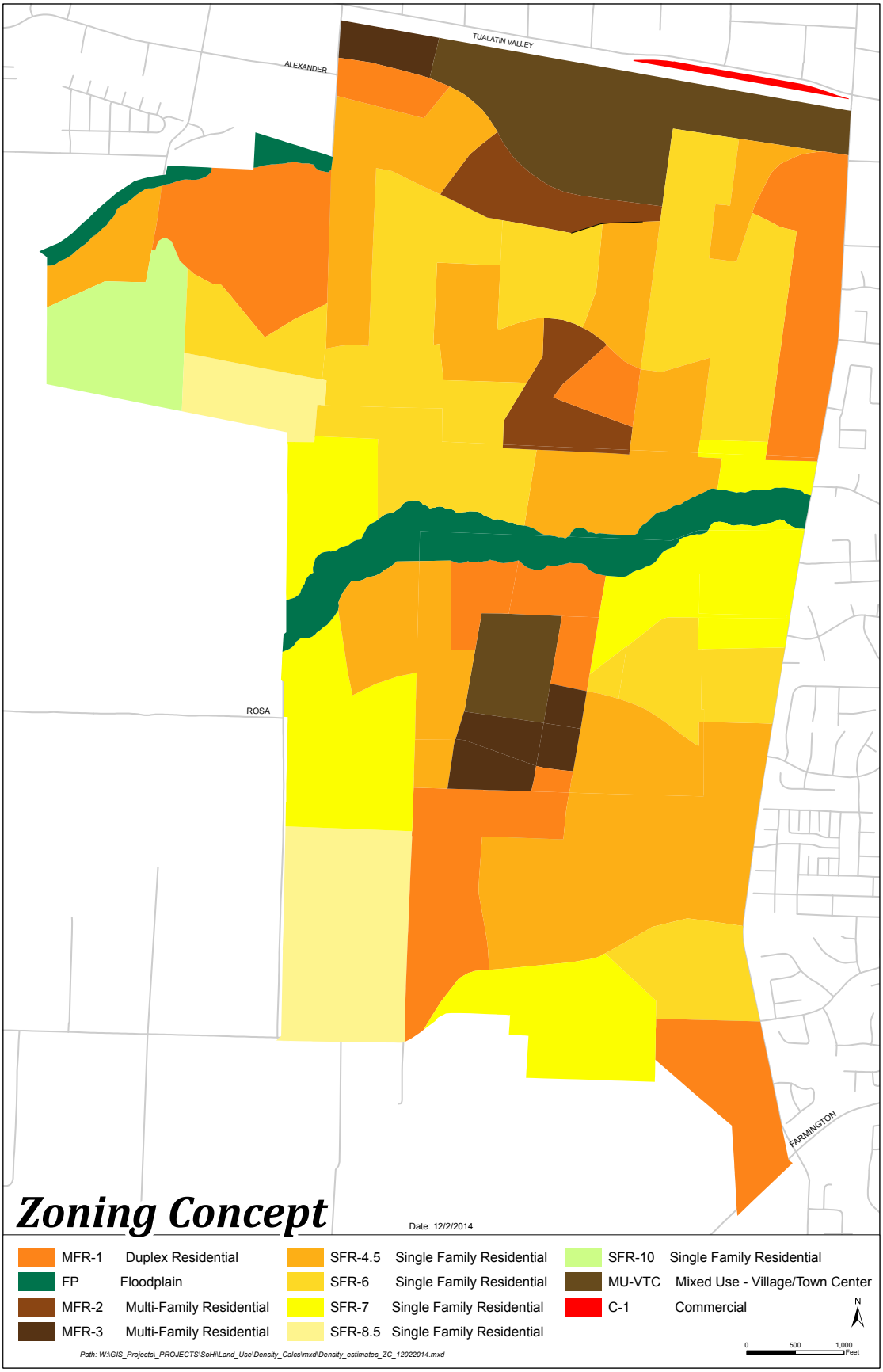


Table A-1: Zoning Concept and Buildout Projections

restricted. Detailed buildout projections for each zone are shown in Table A-1.

These buildout projections are subject to change as the zoning concept is refined over time, particularly regarding environmental takeouts. Some property owners did not allow access to their properties for wetland surveys; therefore, wetland delineations on these properties were made by orthophotography, which is less precise. There is a possibility that takeouts for newly-identified wetlands in these areas are more than might actually be required. There is also a possibility that significant riparian or upland resources may be under-represented in Butternut Creek, as that property owner did not submit results of their inventory to the Department of State Lands.

Financing Strategy (11/04/2014)		Zone					
		DU/ac	Reed's Crossing	Butternut Creek	SoHi West	Other Area	TOTAL
Total Developable Area[a]			385	130	101	351	966
(Less ROW and Res Split)[b]			245	85	73	246	**649**
MU-VTC (RC Town Center)	Net Acres[b]		33	-	-	-	33
	Min DU	40	1,299	-	-	-	1,299
	Max DU[d]	48.5	1,575	-	-	-	1,575
	DU (95% of MAX)	46.1	1,497	-	-	-	1,497
	- SFD	0%	-	-	-	-	-
	- SFA	50%	748	-	-	-	748
	- MF	50%	748	-	-	-	748
	PUD Max DU[d]	58.2	1,890	-	-	-	1,890
MU-VTC (BC Village Center)	Net Acres[b]		-	7	-	-	7
	Min DU	18	-	132	-	-	132
	Max DU[d]	45	-	329	-	-	329
	DU (95% of MAX)	42.75	-	313	-	-	313
	- SFD	0%	-	-	-	-	-
	- SFA	50%	-	156	-	-	156
	- MF	50%	-	156	-	-	156
	PUD Max DU[d]	54	-	395	-	-	395
MFR-3	Net Acres[b]		6	11	-	-	17
	Min DU	23	133	245	-	-	378
	Max DU	28.75	166	307	-	-	473
	DU (95% of MAX)	27.313	157	292	-	-	449
	- SFD	0%	-	-	-	-	-
	- SFA	30%	47	88	-	-	135
	- MF	70%	110	204	-	-	314
	PUD Max DU[d]	34.5	199	380	-	-	579
MFR-2	Net Acres[b]		26	-	-	1	27
	Min DU	17	443	-	-	13	456
	Max DU	21.25	554	-	-	16	570
	DU (95% of MAX)	20.188	525	-	-	15	540
	- SFD	0%	-	-	-	-	-
	- SFA	40%	210	-	-	6	216
	- MF	60%	315	-	-	9	324
	PUD Max DU[d]	25.5	664	-	-	19	683
MFR-1	Net Acres[b]		31	15	14	40	100
	Min DU	11	338	166	154	445	1,103
	Max DU	16	492	242	224	648	1,606
	DU (95% of MAX)	15.2	467	230	213	616	1,526
	- SFD	65%	303	150	138	401	992
	- SFA	30%	140	69	64	185	458
	- MF	5%	24	11	11	30	76
	PUD Max DU[d]	19.2	595	288	269	777	1,929
SFR-4.5	Net Acres[b]		63	18	6	69	156
	Min DU	8	503	143	45	554	1,245
	Max DU	10	629	179	56	693	1,557
	DU (95% of MAX)	9.5	596	171	54	658	1,479
	- SFD	100%	596	171	54	658	1,479
	- SFA	0%	-	-	-	-	-
	- MF	0%	-	-	-	-	-
	PUD Max DU[d]	12	755	215	67	832	1,869
SFR-6	Net Acres[b]		86	15	15	33	149
	Min DU	6	517	89	91	200	897
	Max DU	7.5	645	111	114	251	1,121
	DU (95% of MAX)	7.125	613	107	108	238	1,066
	- SFD	100%	613	107	108	238	1,066
	- SFA	0%	-	-	-	-	-
	- MF	0%	-	-	-	-	-
	PUD Max DU[d]	9	775	134	136	301	1,346
SFR-7	Net Acres[b]		-	19	-	63	82
	Min DU	5	-	96	-	316	412
	Max DU	6.25	-	120	-	395	515
	DU (95% of MAX)	5.9375	-	114	-	376	490
	- SFD	100%	-	114	-	376	490
	- SFA	0%	-	-	-	-	-
	- MF	0%	-	-	-	-	-
	PUD Max DU[d]	7.5	-	145	-	474	619
SFR-8.5	Net Acres[b]		-	-	15	39	54
	Min DU	4	-	-	61	156	217
	Max DU	5	-	-	76	195	271
	DU (95% of MAX)	4.75	-	-	72	185	257
	- SFD	100%	-		72	185	257
	- SFA	0%	-		-	-	-
	- MF	0%	-		-	-	-
	PUD Max DU[d]	6	-	-	91	234	325
SFR-10	Net Acres[b]		-	-	23	-	23
	Min DU	3.5	-	-	81	-	81
	Max DU	4.35	-	-	101	-	101
	DU (95% of MAX)	4.1325	-	-	95	-	95
	- SFD	100%	-	-	95	-	95
	- SFA	0%	-	-	-	-	-
	- MF	0%	-	-	-	-	-
	PUD Max DU[d]	5.22	-	-	121	-	121

Table A-1 Continued: Zoning Concept and Buildout Projections

Housing Breakdown

Total SFD		1,512	542	467	1,858
Total SFA		1,145	313	64	191
Total MF		1,197	371	11	39
		Reed's Crossing	***Butternut Creek***	***SoHi West***	***Other Area***

Total Dwelling Units (95% of Max)[e]
7,712

DU Count for SDC Calcs

TOTALS	**Net Acreage**	245	85	73	246	**649**
	Min DU	3,233	871	432	1,684	6,220
	Min DU/Net Acre	13	10	6	7	9
	Max DU	4,061	1,288	571	2,198	8,118
	Max DU/Net Acre	17	15	8	9	12
	PUD Max DU	4,878	1,557	684	2,637	9,755
	PUD Max DU/Net Acre	20	18	9	11	15

AVG ACROSS SOHI[f]		
Min DU/acre	***Max DU/acre***	***Max PUD/acre***
9	***12***	***15***

Notes: All areas are reported in Acres; all dwelling unit counts have been rounded down to the nearest whole number

[a] *Total Area with Env Constaints, Schools, Parks, and Public Facilities (existing and proposed) removed*

[b] *Net acreage was calculated by first taking out right-of-way from all Developable Area calculations (25% for RL designations and 35% for all other residential designations); the Residential Split was then added to all Mixed Use areas to identify area available for residential development. A 35% take-out was applied to MU-VTC.*

[c] *PUD could receive 20% increase in maximum density of base zone with discretionary approval*

[d] *MU-VTC ranges vary between the Town Center (Reed's Crossing) and Village Center (Butternut Creek) development areas. Additional information on the minimum and maximum dwelling units assigned to this zone are available in the CDC, Section 12.24.X00*

[e] *This figure is 95% of the Max DU (see green table)*

[f] *Average dwelling units per acre calculated for the minimum and maximum DU density permitted in each zone (averages the totals in the green box)*

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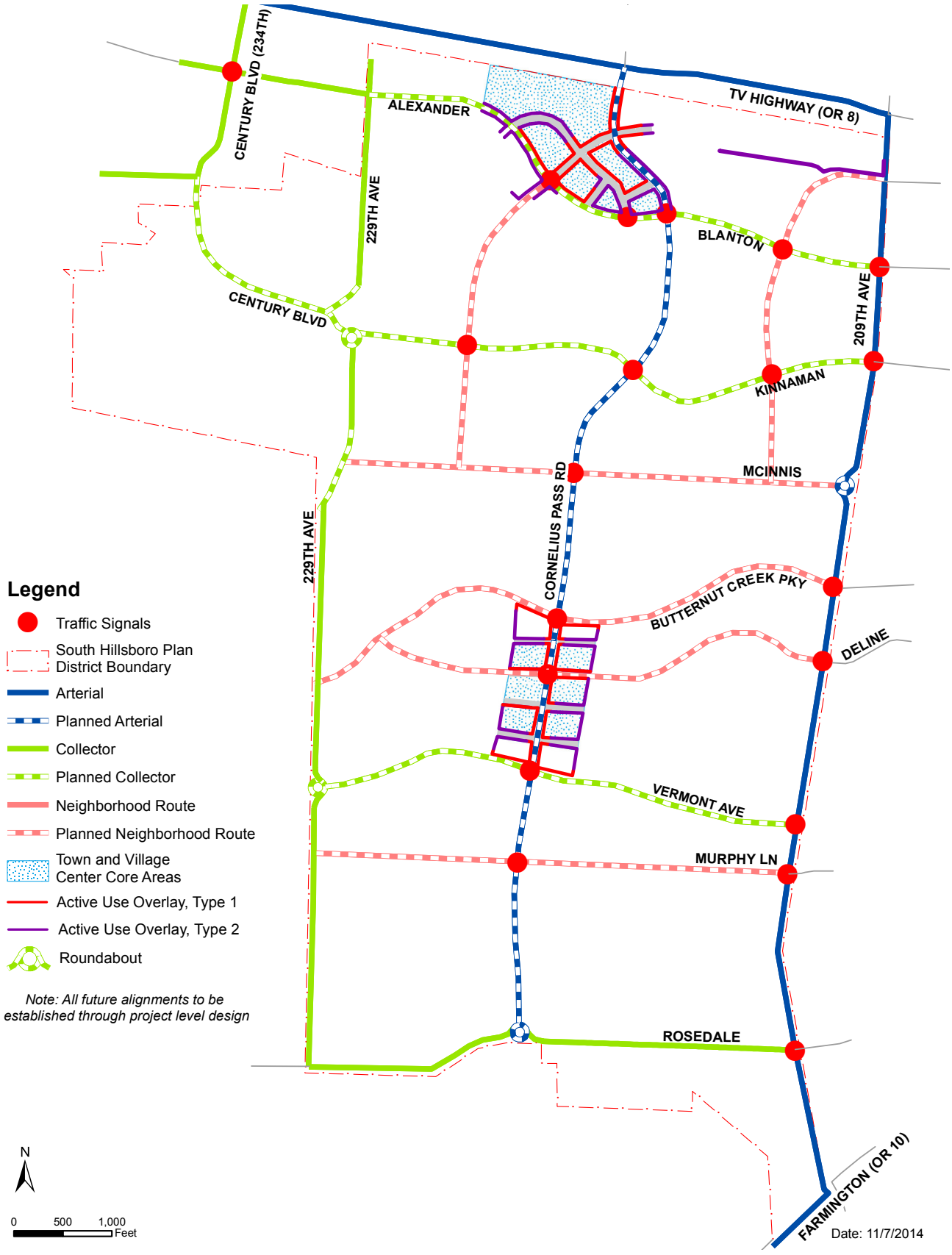
6

Community Infrastructure and Services

Figure A-13: Roadway Location and Designation Map



6.1. Transportation

A variety of transportation facilities will ultimately help people travel within South Hillsboro, as well as to and from places outside the Plan Area. This Plan describes the location and conceptual design of major transportation facilities in South Hillsboro – i.e., large "arterial" and "collector" streets, such as Cornelius Pass Road, Alexander/Blanton Street, SW 229th Avenue, Rosedale Road, and others. It addresses a full range of modes of travel -- individual vehicles, bicycling, use of transit, and walking. It also generally describes how the transportation system will serve and connect to key destinations within and surrounding South Hillsboro. Information about the phasing, costs and funding of transportation facilities is found in Section 7 of this document and in a separate South Hillsboro Transportation Financing Program.

6.1.1. Roadway Location and Design

Figure A-13 shows the approximate location of major roads in South Hillsboro. These locations are approximate and will be further refined during future, more detailed design and development processes. The location of connections between major property owners have been located and designed with a higher level of accuracy to identify roadway tie in points for major property owners. Wherever possible, roads will be located and designed to minimize impacts on existing properties and structures, as well as to reduce impacts on streams, creeks and other natural resources.

Major road facilities include the following:

- **Arterial streets.** These roads will carry the most significant amount of traffic within the area, including traffic that starts or ends in South Hillsboro, as well as traffic destined for other parts of Hillsboro or the region. Cornelius Pass Road and SW 209th Avenue are arterials in South Hillsboro. They will tend to provide less direct access to adjacent properties, since driveways and intersecting roads must be spaced farther apart on arterial streets. When fully built out, these roads will typically include five or seven travel lanes (including turn lanes), with additional turn lanes at intersections in some cases, as well as sidewalks and bicycle facilities.
- **Collector streets.** These streets "collect" traffic from local neighborhood streets, and people will typically use them to travel between neighborhoods in South Hillsboro or to access an arterial street. These will include Alexander/Blanton Street, Kinnaman Road, Vermont Street, Century Boulevard, 229th Avenue, and Rosedale Road, as shown in Figure A-13. When fully built out, these roads will typically include three travel lanes (including turn lanes) as well as sidewalks and bicycle facilities.
- **Neighborhood Routes.** These streets are similar to collectors but are intended to carry less traffic and primarily serve individual neighborhoods. They provide direct access to people's homes and businesses, as well as routes through neighborhoods to local destinations. They typically include two travel lanes, bicycle lanes on the sides, parking on one or both sides and sidewalks with planting strips on both sides of the street. Several possible neighborhood routes are shown in Figure A-13.
- **Local Streets.** For the most part, the locations of local streets will be defined by developers as part of future specific development proposals. Local streets provide direct access to individual homes and businesses. They typically include enough room for on-street parking, travel in both directions, planting strips, and sidewalks. Bicycles generally share the travel lanes

with cars on these streets. The location of these roads will be governed in large part by street spacing and block size standards included in the South Hillsboro Plan District section of the City's Community Development Code.

- **Alleys.** Alleys can provide access to residents of neighborhoods, limiting the negative impacts to streetscape from garages dominating front facades. Alleys can be used for commercial deliveries in mixed use or commercial areas. They can also be used to route some utilities, which can help to eliminate unsightly meter boxes and utility pedestals on front lawns. Alleys would typically be allowed and encouraged but not required in these areas.

The design of these roads will be governed by cross-sectional standards included in the South Hillsboro Plan District section of the City of Hillsboro Community Development Code in conjunction with more specific design and construction standards found in the City's Engineering Design and Construction Manual.

Additional guidelines for the design of streets are found in Section 4 of this document.

6.1.2. Bicycle and Pedestrian System

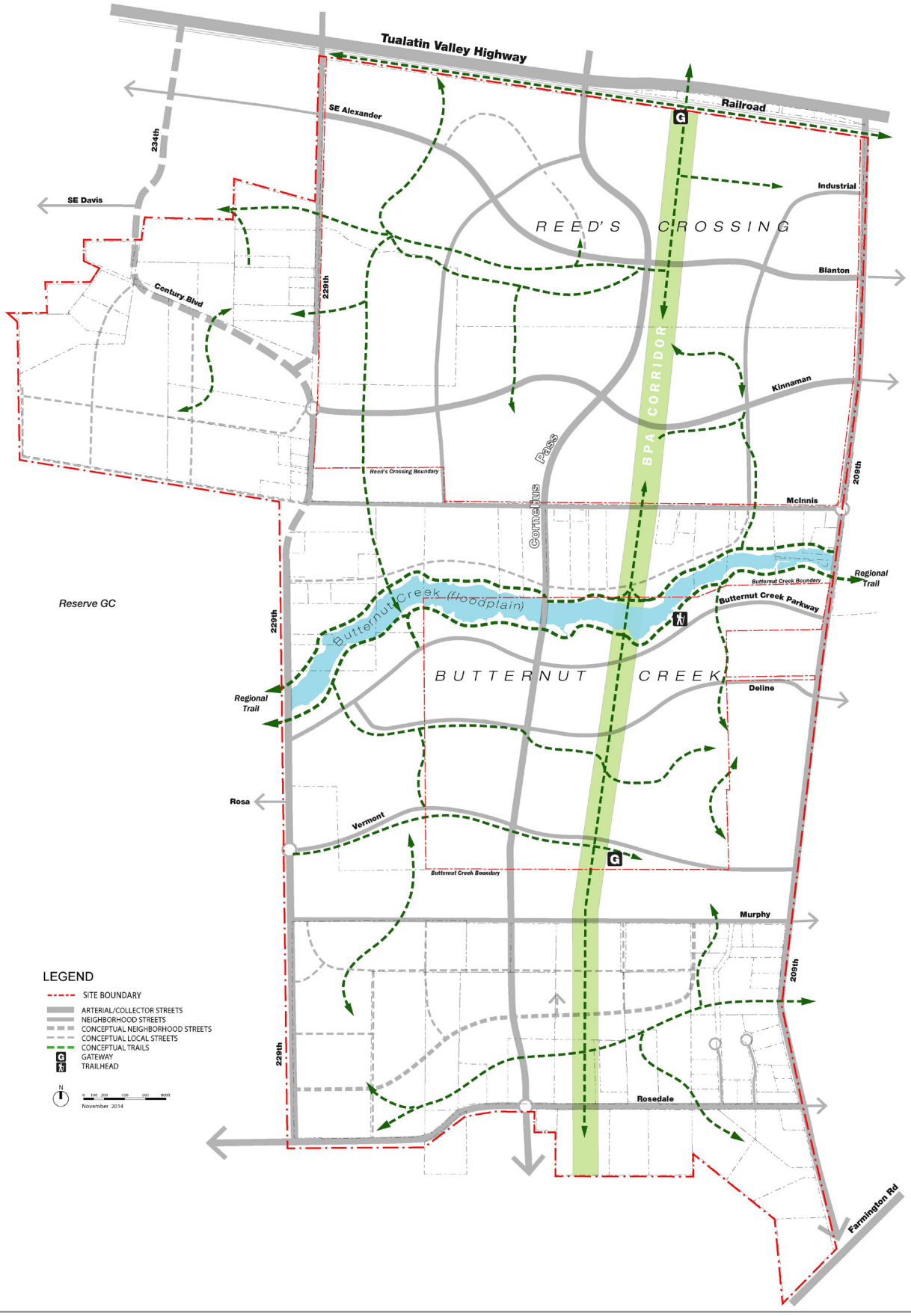
As a "Complete-Connected-Green" community, it is vitally important that South Hillsboro's transportation system provides a variety of choices for people to walk and bicycle within the area, both for exercise and to travel from their homes or businesses to places to shop, eat, drink, recreate, or learn.

Figure A-14 illustrates proposed bicycle and pedestrian facilities within South Hillsboro which will include:

- **Bicycle lanes.** Federal and state policy and good planning practice dictates that bicycle lanes be provided on all collector and arterial streets, as shown in Figure A-14. Bicycle lanes will also be required on neighborhood routes in South Hillsboro.
- **Sidewalks.** All new roads should include sidewalks on both sides of the street to ensure that people can walk within and between different neighborhoods and directly access homes and businesses.
- **Additional multi-use paths and trails.** Pathways are planned for several locations to provide additional opportunities for people to bicycle and walk within South Hillsboro. These will include routes along the BPA powerline corridor, along Butternut and Gordon Creeks, parallel to and south of Tualatin Valley Highway, across Butternut Creek (to supplement limited road crossings of the creek) and interspersed within parks and supplemented by the sidewalk system to provide connections between homes, parks, schools, and other activity centers. These pathways, in conjunction with bicycle and pedestrian connections within the local street system will form an integrated looped system.

Multi-use path adjacent to habitat area

Figure A-14: Bicycle and Pedestrian System



Where trails and public streets coincide, design should consider the opportunity to provide joint sidewalk and bicycle facilities through use of multi-use paths within the public street right of way. Additional guidelines for the design of pathways are found in Section 4 of this document.

6.1.3. Transit Facilities and Service

Providing comprehensive transit service to South Hillsboro residents and visitors will be essential to providing people with a full range of transportation choices. Specific transit routes, frequency of service and the location of transit facilities will be formulated by TriMet in coordination with the City, landowners and community members as development occurs. The type and frequency of service will depend on a variety of factors, including:

- Availability of resources to fund transit service
- Projected ridership for specific planned or proposed routes
- Available layover locations at planned stopover points along a given route
- Ability to coordinate service provision with targeted employers or neighborhoods

Future plans for transit service to serve the South Hillsboro area have been identified through TriMet's 2013 Westside Service Enhancement Plan, which represents TriMet's recently adopted plan for future transit service within northern Washington County, including Hillsboro, Beaverton, Cornelius, and Forest Grove.

TriMet planners anticipate that South Hillsboro will provide housing for Silicon Forest workers at high-tech and manufacturing businesses within North Hillsboro, and for the broader Sunset Highway employment corridor with a smaller share working in the Portland Central City. A key objective of the future transit service is to provide connections from South Hillsboro to these employment areas, and to introduce transit service in conjunction with initial housing development within South Hillsboro. New north-south bus service would provide connections to Light Rail, the existing Route 57 Frequent Bus service, and a planned new bus route which would link Beaverton and Hillsboro along Baseline Road and Main Street.

Preliminary service recommendations include the following:

- Modify Route 46 to link the Intel Jones Farm Campus and Hillsboro Airport, the Fairplex Light Rail Transit Station, Brookwood Parkway and Witch Hazel residential areas, and the South Hillsboro Town Center, potentially utilizing Alexander Street.
- Modify Route 47 to link between the South Hillsboro Town Center, Bethany Village, PCC Rock Creek Campus (with a transfer), and the Silicon Forest employment center including Intel Ronler Acres Campus with potential peak commute 15-minute frequency including connections at the Orenco Light Rail Transit Center and with the Route 57 Frequent Service bus line.
- Potential future enhanced Route 57 transit service subject to the results of an anticipated High Capacity Transit study (longer-term transit enhancement).

Both the Route 46 and Route 47 would terminate initially in the South Hillsboro Town Center area, creating the need for a small transit layover facility with

operator amenities. This facility should be planned to ensure adequate size and accessibility, have safe and efficient ingress and egress (for transit vehicles, bicycles, and pedestrians), and assure efficient connectivity to the Route 57 transit corridor. It should also consider accommodation of bicycle parking to facilitate bike-to-bus connectivity. Facility siting should also consider potential future expansion of transit service south through the Butternut Creek Village Center and beyond, including potential bus service extension to South Washington County. The Village Center may need to include a similar transit facility to serve as an interim route terminus and layover.

Additional related infrastructure improvements should be designed to provide efficient and safe transit services in South Hillsboro, including safe pedestrian crossings near transit facilities and bus stops, safe and visible bicycle routes with storage facilities at transit layover locations, street designs that easily accommodate transit vehicles maneuvering and structural impacts to pavement surfaces, bus stop pull-outs, shelters, and landing pads that facilitate boarding and de-boarding.

Funding for service recommended in the Plan remains tied to continued economic recovery and operating revenue increases for TriMet. Longer term extension and expansion of service to portions of South Hillsboro south of the Butternut Creek area will depend on factors such as:

- Extension of Cornelius Pass Road across Butternut Creek;
- Development throughout South Hillsboro along the Cornelius Pass Road corridor at densities consistent with the South Hillsboro Zoning Concept; and
- Development of other areas south of South Hillsboro, including South Cooper Mountain, River Terrace including upgraded roadway connections, coupled with inter-jurisdictional cooperation between TriMet, Hillsboro, Washington County, Beaverton, Tigard, Tualatin, and Sherwood.

6.2. Public Utilities

A variety of public infrastructure facilities will be needed in South Hillsboro to provide homes, businesses and others with water and sanitary sewer services and to manage the flow and filtration of stormwater. As part of the South Hillsboro Community Planning and Master Planning processes, the approximate location, size and cost of these facilities was determined at a planning level. The location of major water and sanitary sewer lines is based primarily on the location of roads, topography, drainage systems and/or needed facilities to pump water or wastewater uphill. The size of facilities was based on buildout development assumptions for the South Hillsboro area, as well as requirements for serving adjacent areas.

Ultimately, the City's Capital Improvements Plans and Master Plans for sewer and water facilities will be updated to reflect assumptions for South Hillsboro and also guide development of these facilities. Information in this document serves primarily as a set of planning level assumptions intended to guide the overall size and location of facilities, recognizing that more detailed future planning, design and engineering will govern the details of design and construction of major facilities. Similarly, water, sanitary sewer and stormwater conveyance facilities associated with local streets or individual neighborhoods

will be designed and built as part of the land development process.

6.2.1. Water

Typically, the following types of facilities are needed to provide water to an area:

- Treatment plants to ensure that water is clean and drinkable
- Reservoirs to store treated water and large transmission mains to manage distribution to local areas
- Pipes, pump stations, and pressure regulators to distribute the treated water to local homes and businesses

In South Hillsboro, the only water facilities expected to be needed are the local distribution system—pipes, pump stations, and pressure regulators to distribute treated drinking water within local streets. Treatment and large storage facilities that serve South Hillsboro will be located outside the area. While development in South Hillsboro will help fund the cost of these facilities (to the extent they serve new homes and businesses), they are not expected to be located within the South Hillsboro plan area. However, a new high pressure water transmission line from a new storage reservoir in the South Cooper Mountain area is likely to be located in the future Cornelius Pass Road extension corridor to deliver water to an existing transmission line north of Tualatin Valley Highway.

As shown in Figure A-15, the South Hillsboro local distribution pipe network will be generally located along existing and new roads. These pipes will be installed to form a connected loop that ensures adequate water pressure and flow to all users. Temporary connections to existing Tualatin Valley Water District (TVWD) mains will be made in early stages of South Hillsboro development (pursuant to terms of an intergovernmental agreement between TVWD and the City of Hillsboro). These temporary connections will be replaced with permanent connections newly constructed portions of the City's final loop system as they are developed.

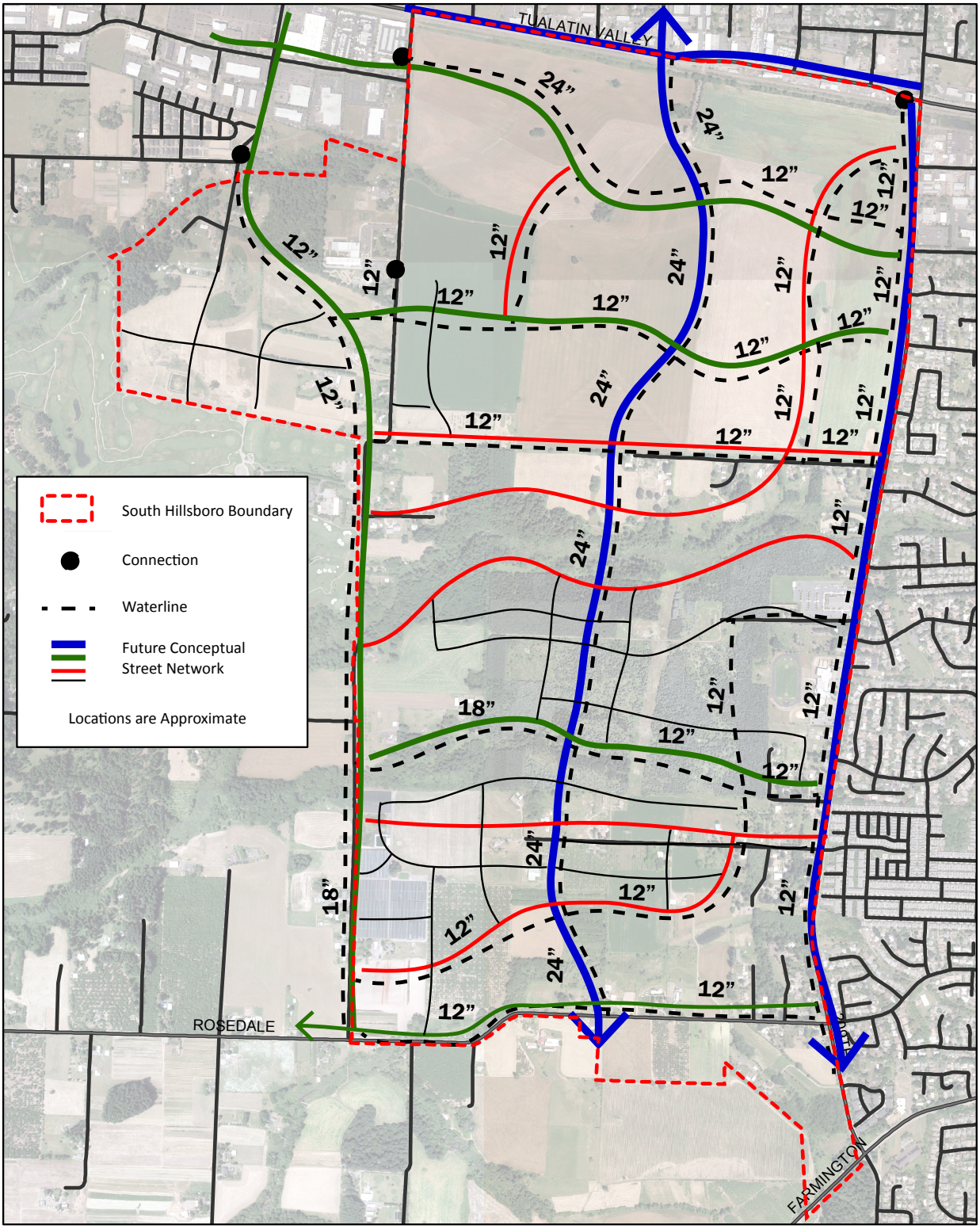
In addition to the new major distribution pipes associated with roadways, Figure A-15 shows the suggested location of additional facilities such as a booster pump station (BPS), pressure reducing valves (PRV), potential temporary connections to existing Tualatin Valley Water District (TVWD) waterlines, and locations of subsurface storage wells called aquifer storage and recovery (ASR) wells that are owned and operated by TVWD and the Joint Water Commission (JWC).

Information about the costs and funding of water facilities is found in the Implementation Actions portion of this document.

6.2.2. Sanitary Sewer

Sanitary sewage system facilities are needed to collect wastewater generated in the South Hillsboro area, and convey the flow to the Clean Water Services (CWS) River Road Pump Station, which will force the flow to CWS's Rock Creek Advanced Wastewater Treatment Facility (WWTF) located in Hillsboro but outside of the South Hillsboro plan area. CWS owns and operates pump stations and all sanitary sewer lines 24-inches in diameter and larger. The sanitary sewer main lines located on either side of Butternut Creek, south of the next tributary, and north of Cross Creek, will be constructed by the associated land developments. Figure A-16 shows one potential layout for the main lines and pump stations. Sanitary sewer mains will need to be constructed along and adjacent to the riparian corridors

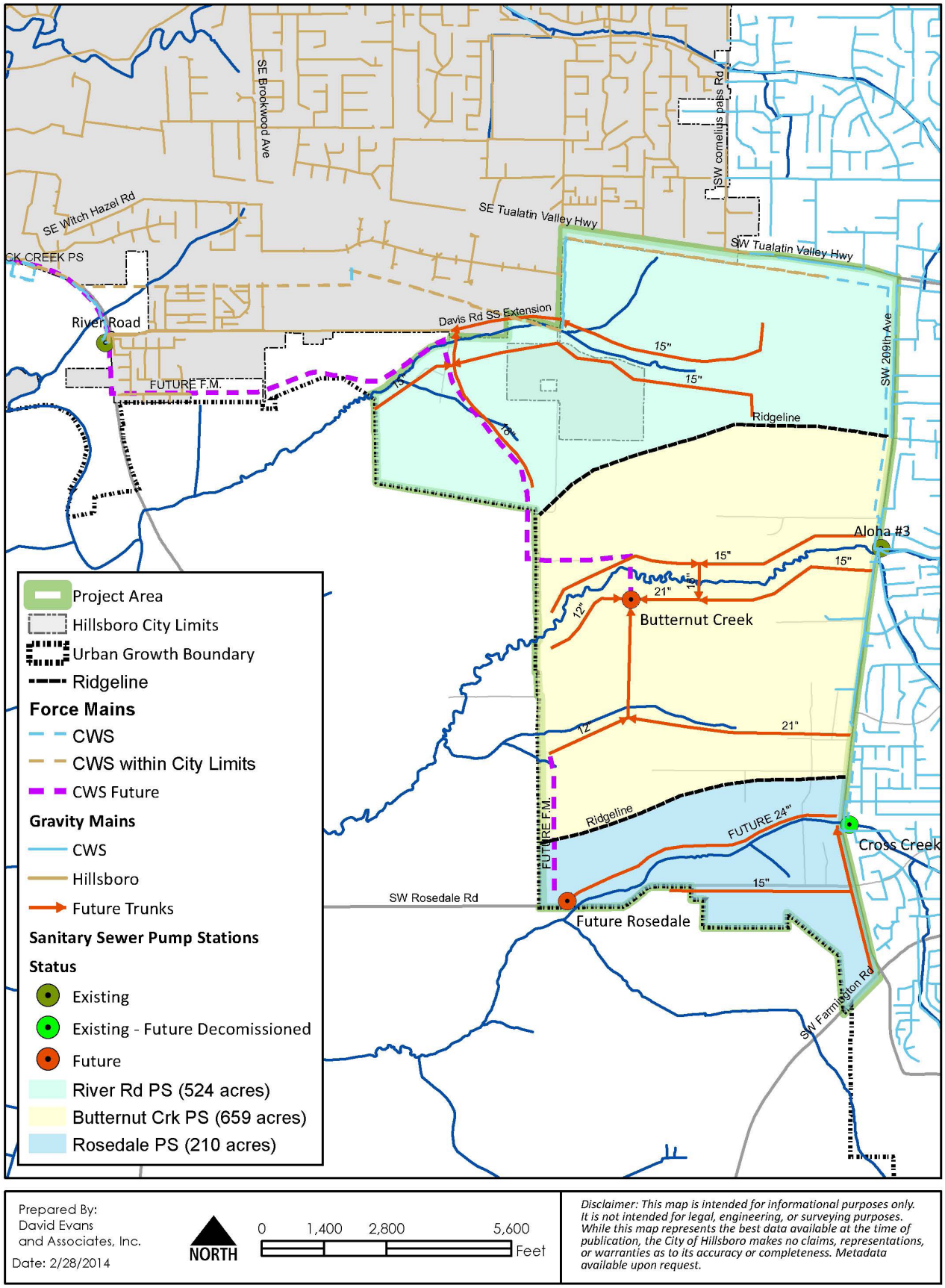
Figure A-15: Water Facilities and Infrastructure



Prepared By: APG, David Evans Associates, Inc.

Disclaimer: This map is intended for informational purposes only. It is not intended for legal, engineering, or surveying purposes. While this map represents the best data available at the time of publication, the City of Hillsboro makes no claims, representations, or warranties as to its accuracy or completeness. Metadata available upon request.

Figure A-16: Sanitary Sewer Facilities and Infrastructure



of existing stream and sensitive areas and convey flows to either the existing sanitary lines or these new pump stations. Smaller sanitary lines will be constructed within streets at the time of development.

Sewer service to the area north of the first ridgeline will be provided by the extension of the Davis Road trunk line, eastward along Gordon Creek. The service area is approximately 524 acres as shown in green in Figure A-16.

Two new pump stations will ultimately be located in South Hillsboro. The Butternut Creek Pump Station (BCPS) is currently in design, with an anticipated location south of Butternut Creek adjacent to the Butternut Creek property. It will collect flow generated from approximately 659 acres as shown in yellow in Figure A-16. The force main will connect to the River Road Pump Station, which CWS plans to have operational by 2016. Prior to "opening day" operation of the Butternut Creek Pump Station, two gravity trunk line extensions will be required from SW 209th Avenue. The first connection will divert flow from the Aloha 3 Pump Station located approximately 300 feet south of the Aloha 3 Pump Station. The second will divert flow from the Cross Creek Pump Station force main discharge (currently discharging to Aloha 3 Pump Station) located approximately at the SW Vermont Street intersection. This will provide minimum operational flows to Butternut Creek PS prior to receiving future development flows.

The Rosedale Pump Station has been identified by CWS and the agency anticipates construction to serve development generally consistent with Hillsboro's anticipated phasing of annexation and development of the South Hillsboro area. If development demand is slower than anticipated, this pump station could be initially constructed to CWS standards by developers. The Pump Station is likely to be located near SW Rosedale Road and SW 229th Avenue. At some future time, CWS will retire the Rosedale Pump Station on SW 209th Avenue. Sanitary flows of the contributing area from North Cooper Mountain as well as the area south of SW Murphy within the South Hillsboro boundary will be routed to the Rosedale Pump Station, which will force the flow north along SW 229th Avenue and discharge to a gravity line eventually arriving at the Butternut Creek Pump Station.

Information about the costs and funding of sanitary sewer facilities is found later in this document.

6.2.3. Stormwater Management

Stormwater management within South Hillsboro must meet the City adopted Clean Water Services (CWS) requirements at the time of building plan submittal. The stormwater management requirements may change whenever CWS's discharge permit is updated by the Department of Environmental Quality or whenever mandated changes in the State and Federal regulations are made.

In general, a site development plan should include water quality treatment and detention (quantity) strategies. Detention strategies shall be designed to minimize impacts from increased stormwater runoff from the road network and all impervious areas on the downstream riparian corridors. Managing stormwater quality and quantity can be achieved by applying a combination of tools and strategies that replicate the natural hydrological conditions of the area. This approach aims to minimize erosion, sedimentation, contaminant discharges, and any other detrimental changes in water flow characteristics. The goal is to prevent impacts to area streams and

riparian corridors. Proposed strategies include the following:

- Piped conveyance to City maintained public regional stormwater quality and detention facilities serving a sub-basin of multiple tenant commercial developments, multi-family, and/or multiple lot single family developments;
- On-site privately owned and maintained stormwater quality and detention facilities where regional stormwater facilities are not feasible due to topography or available land (serving a single tenant commercial lot and/or an individual single family lot);
- Low impact development approach (LIDA) stormwater quality treatment and detention facilities, desired as amenities by private development and maintained by active tenant associations, may be considered to augment the above stormwater management strategies.

The following is a brief description of the main components of the systems noted above.

Regional Stormwater Facilities

Historically, stormwater water quality and detention has been managed within an individual multiple lot development. While this approach may be suitable for in-fill projects within mostly developed areas, it is not the preferred means for handling stormwater from large areas newly added to the urban growth boundary such as South Hillsboro. Regional stormwater facilities serving an entire sub-basin, located on a dedicated parcel at the lower end of the natural drainage or on a linear tract along a creek corridor, and sited optimally to capture the maximum area within the sub-basin, are preferred. Regional facilities are more efficient for the City to maintain and provide the best protection for the receiving stream. Per unit of stormwater volume treated, these larger facilities are generally less expensive to construct and maintain than multiple smaller facilities spread through a basin. The total annual maintenance cost for fewer, larger facilities is significantly less than for numerous, smaller ones.

Anticipated new federal regulations, to be reflected in future CWS permits, will likely require post-construction controls on stormwater such that new development would

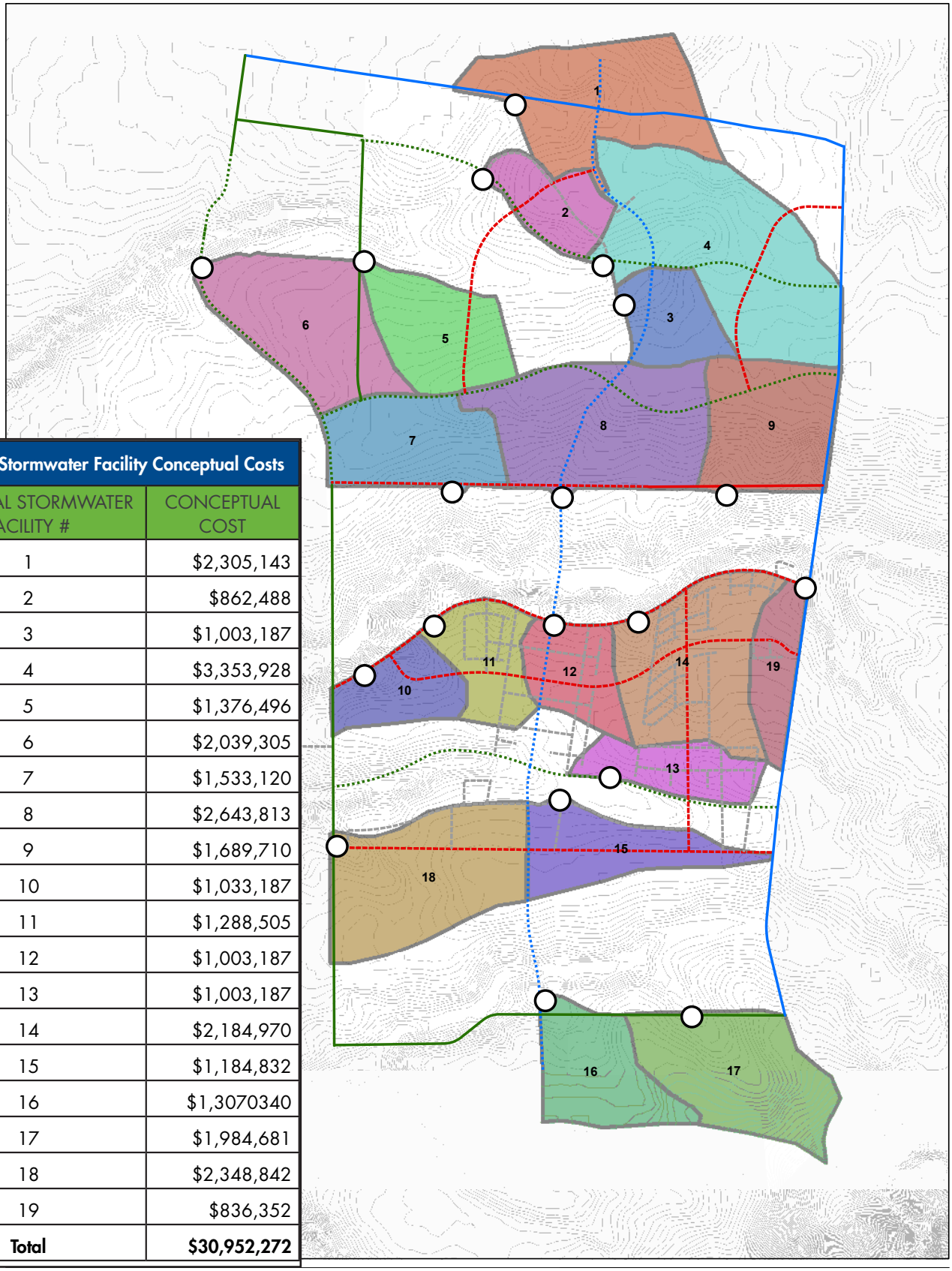
Example of a regional stormwater facility

need to be designed to prevent a significant rise in the peak rate and duration of runoff contributed to streams. CWS will be modifying its design and construction standards within the next two years to reflect this requirement. Regional facilities should be constructed with additional space for future capacity expansion as State and Federal regulatory requirements change. Smaller facilities constructed on space constrained parcels may be difficult to expand in the future.

The location and sizing of large regional stormwater facilities involves evaluating drainage conditions, topography, location of roads, projected development levels, and other factors. In addition, land ownership may further influence the location and size of regional facilities. For example, the number and specific location of facilities may change if a large property owner can direct runoff from multiple catchment areas into a smaller number of larger facilities. Figure A-17 shows the conceptual location and cost of large regional stormwater facilities in South Hillsboro to be refined by area developers' stormwater strategies. Piped conveyance will be needed to convey stormwater from inlets, catch basins and private property development to regional facilities and from those facilities to the stream discharge points. Design of stormwater conveyance systems is a part of the development design review process.

Example of on-site stormwater facility serving Magnolia Park.

Figure A-17: Conceptual Regional Stormwater Facility Map and Conceptual Costs



Regional Stormwater Facility Conceptual Costs	
REGIONAL STORMWATER FACILITY #	CONCEPTUAL COST
1	$2,305,143
2	$862,488
3	$1,003,187
4	$3,353,928
5	$1,376,496
6	$2,039,305
7	$1,533,120
8	$2,643,813
9	$1,689,710
10	$1,033,187
11	$1,288,505
12	$1,003,187
13	$1,003,187
14	$2,184,970
15	$1,184,832
16	$1,3070340
17	$1,984,681
18	$2,348,842
19	$836,352
Total	**$30,952,272**

While the regional stormwater facility approach is recommended wherever possible in South Hillsboro, this tool has challenges that include:

- **Coordination among property owners.** If one property owner is ready to develop, but has to cross through other properties under separate ownership to access a regional stormwater facility and those other property owners are not ready to develop, it may cause costly development delays.
- **Upfront funding.** These shared regional facilities need to be in place for the initial project to develop. That means that someone needs to provide upfront funding, to be reimbursed by subsequent development.
- **Size and location.** While regional facilities may require fewer acres overall, compared to the traditional small site-specific approach, the large-scale facilities will require large, consolidated areas of land accessible to the regional facility by gravity flow. Some initial large area developers may choose to pass the stormwater management facility locations on to the individual site developers to not tie up land for regional stormwater management facilities that could be sold for development. With the smaller sub-basin approach, in some cases the smaller stormwater facilities could be tucked away on otherwise unusable portions of a site.

On-Site Small Stormwater Facilities

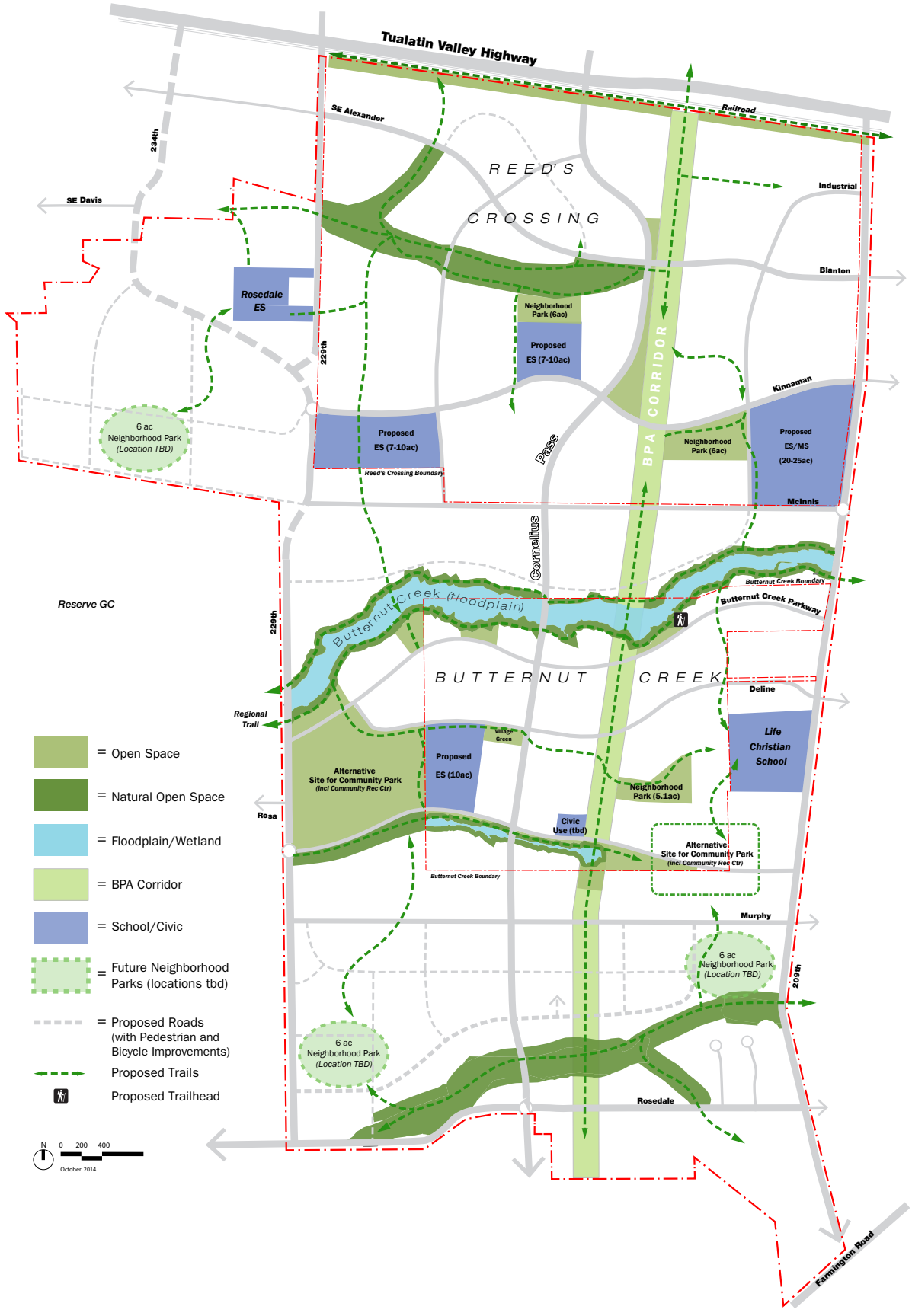
As discussed above, the regional stormwater facility approach has some implementation challenges due to topography and access to available land. When large regional solutions aren't feasible, developers should then look to sites within a sub-basin that serve multiple parcels. Stormwater management facilities proposed to be privately maintained, when other solutions aren't available or practical, will be reviewed by the City on a case-by-case basis. Piped conveyance will be needed to convey stormwater from the on-site collection system within a private property development to the on-site small stormwater facilities and from those facilities to the stream discharge points or to the regional facility if that is the destination. Design of the stormwater conveyance system will be part of the development design review process.

Low Impact Development Approach

Privately maintained low impact development approaches (LIDA) may be desired as an amenity in a development to provide a portion of the stormwater quality treatment and detention. Developers many want to use LIDA techniques for Leadership in Energy & Environmental Design (LEED) credits, site shading, safety, tree canopy and landscaping amenities. Examples of LIDA tools include flow-through planters, planter strips/rain gardens, vegetated filter strips, bioretention swales, green roofs and on-site porous pavement, among others. Unless a LIDA facility discharges directly into a stream corridor, the LIDA facility discharge may need to be connected to a conveyance pipe that goes into a regional or on-site water quality or detention facility downstream of the LIDA facilities. Localized LIDA facilities will not replace the need to have publicly maintained stormwater management facilities prior to discharge either on-site or regionally. Construction of localized LIDA facilities will not receive an SDC credit.

Because much of South Hillsboro's soils are not suitable for infiltration, LIDA approaches may be considered as amenities for private development in limited quantity to augment other stormwater facilities. Maintenance will be a key factor in determining where and how LIDA strategies can be used, given limited public resources available for maintenance of such facilities. In general,

Figure A-18: Schools, Parks, Trails, and Open Space Locations



the City will require that an active tenant association exists in the area where LIDA is being considered and a dependable mechanism and agreement are established with the City that the association will maintain the LIDA facilities. Due to maintenance challenges and costs, LIDA facilities will not be used for stormwater management on public roadways constructed as part of the development of a site, and are not desirable in single family residential developments.

6.3. Parks, Recreation and Open Space

As the South Hillsboro area develops into a complete community, it is important to plan for and set aside space for parks, which if properly planned, can become focal points for new neighborhoods. Parks are often presented as key amenities for potential homebuyers and have been proven to increase property values for nearby homes.

6.3.1. Community and Neighborhood Parks and Open Space

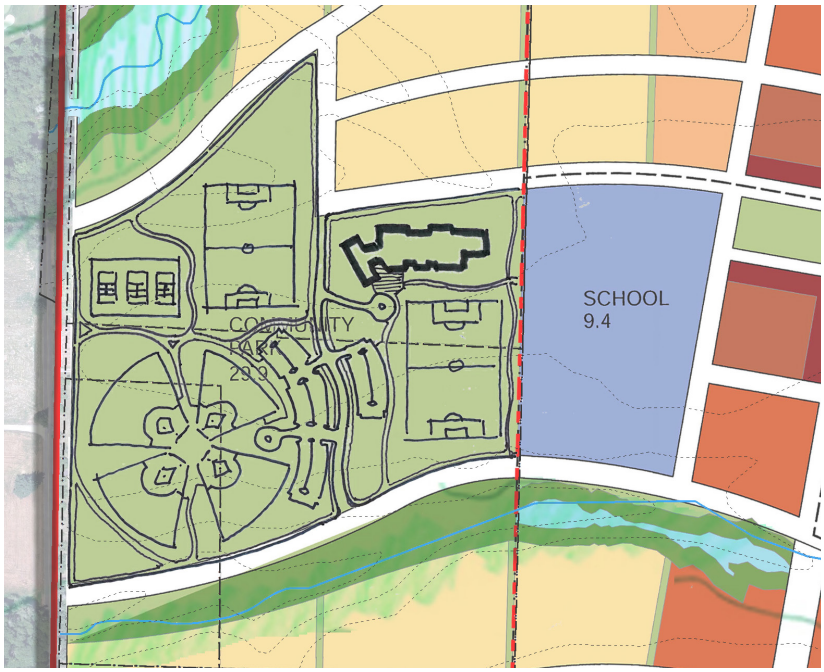
The City of Hillsboro's Parks Department has anticipated growth in the South Hillsboro area and identified the need for seven new parks in South Hillsboro – six neighborhood parks and one community park. Figure A-18 identifies approximate locations for these parks. The locations reflect a logical dispersal of sites that will serve existing and future neighborhoods, providing access to parks for most residents within walking distance. Based on the City's parks and open space acreage standards, the Hillsboro Parks Department has identified the need for approximately 214 acres of parks and open space (with public access) to meet the current level of service of 7.4 acres per 1,000 residents. Table A-2 shows how this estimated need will be met through a combination of neighborhood and community parks, natural areas and other open spaces planned throughout the area. The table indicates that these areas will exceed the City's level of service standards. The table also shows that additional areas which do not count directly towards meeting the City's LOS standards will provide additional open space and natural areas, supporting community livability and wildlife habitat areas.

The Parks Department is currently seeking to acquire land for one large (30-40 acre) Community Park, which will feature an indoor recreation facility and sports fields.

Table A-2: Park and Open Space Level of Service Calculations

Park Areas	Acreage		Notes
Neighborhood Parks in South and NW area (location tbd)	**18**	**ac**	
Community Park x 1	**29.8**	**ac**	
Newland/Reed's Crossing	**38.3**	**ac**	
Neighborhood Parks	12	ac	
Natural Open Space	26.3	ac	
Butternut Creek	**34.5**	**ac**	
Neighborhood Park	5.1	ac	
Village Green	1.5	ac	
Open Space	4.3	ac	
Natural Area	11.1	ac	
Floodplain	12.5	ac	
BPA Corridor	**52.2**	**ac**	
Newland	21.6	ac	
Open Space between BPA and Corn. Pass	4.3	ac	
Butternut Creek	10	ac	
North and South of Butternut	20.6	ac	
TV Highway Linear Park	**11**	**ac**	
Outside of Butternut South of McKinnis	**17.9**	**ac**	
Open Space	2.9	ac	
Natural Open Space	15	ac	
"Other" Natural Areas	**68**	**ac**	
S Natural Area	30.5	ac	
TOTAL:	**285.7**	**ac**	
Additional Acreage not included in LOS	**196.2**	**ac**	
Schools	**61.1**	**ac**	
Floodplain/Wetland	**81.6**	**ac**	
Hanauer	12.5	ac	
Outside of Butternut South of McKinnis	15.6	ac	
NW Natural Area	**37.5**	**ac**	
Newland "Private" Parks and Open Space	**16**	**ac**	*Estimate*

This Community Park is anticipated to be located south of Butternut Creek and will ideally be co-located with a school. While this is a preferred location, other options may be considered as shown on Figure A-18. Land will also be needed for at least six Neighborhood Parks, which will serve nearby homes and feature more passive, unprogrammed space. These parks should be six to ten acres each in the Reed's Crossing and Butternut Creek areas where housing and population densities will be higher and more programmed and unprogrammed space will be needed.



Conceptual Village Green design adjacent to the Butternut Creek Village Center.

In addition to formally-identified Community and Neighborhood Parks, there are other types of public spaces that can contribute to the livability and identity of South Hillsboro, such as public plazas in the Town Center, pocket parks or greens within new neighborhoods, and green roofs and courtyards in larger buildings. For example, the Village Center Green identified in the Butternut Creek draft concept plan provides a strong central placemaking feature that can also become a visual amenity for surrounding higher-density land uses.

In addition to parks, there are many opportunities to provide publicly accessible and other open space in the South Hillsboro area, usually on unbuildable and protected land featuring Goal 5 resources such as riparian areas (Butternut Creek is the most visible example), wetlands, upland habitat and steep slopes. These spaces can provide future residents with access to nature, both visually, as backdrops to new development, and recreationally, with trails routed adjacent to sensitive areas. In addition, community garden locations should also be considered where feasible and close to residents, taking advantage of fertile soils in the South Hillsboro area, while providing a physical link to the area's agricultural heritage.

The 250-foot-wide Bonneville Power Administration (BPA) Pearl-Keeler transmission line easement provides an important opportunity for a significant open space and recreational amenity. The easement includes a 500kV transmission line. The easement effectively creates a swath of open land from Tualatin Valley Highway to SW Farmington Road, intersecting all three major drainages across the site. A major regional trail, the Reedville Trail, is envisioned for the Corridor. Stormwater management facilities and other open space uses also may be desirable within the easement. The Butternut Creek development interest at South Hillsboro has indicated an intention to locate neighborhood parks adjacent to the transmission line in their plans. Devleopment within or adjacent to the transmission line easement will require collaboration with BPA to ensure that planned development meets

Conceptual illustration of Butternut Creek and nearby trail

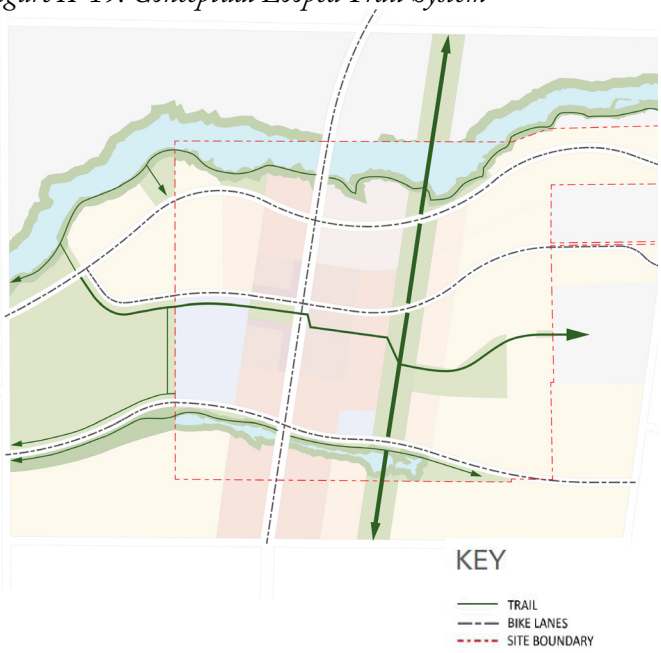
BPA land use, design, construction, and maintenance standards.

Road and trail connections across the easement are possible but need to be planned to minimize impacts on maintenance and operation of powerlines and supporting towers in the corridor. Certain types of development are not permitted within the easement, particularly those that increase the ground level elevation under the lines, and adjacent landowners may be concerned about potential health effects (perceived or real) and how these impact residential sales. At the same time, the line represents a significant opportunity as a trail and open space corridor and defining amenity for the South Hillsboro area.

The BPA has previously discussed the possibility of doubling the capacity of its Pearl-Keeler line by adding a second set of towers and lines within the existing easement. No date for this expansion has been set. The current lines are designed to a rural standard, which means that the lines are closer to the ground than transmission lines in more urbanized areas. It may be necessary to work with BPA to redesign the existing lines to have adequate clearance for trails or street connections considering line sag.

Implementing any future improvements within the corridor will require continued coordination among all parties – the City, BPA and adjacent property owners –

Figure A-19: Conceptual Looped Trail System



to allow the easement to serve as an amenity for South Hillsboro without compromising its function as an electrical transmission corridor.

6.3.2. Trails

A trail network in South Hillsboro can be created out of a range of different trail types, including roadway sidewalks, natural open space trails, and regional connections such as a trail proposed under the BPA transmission line corridor. Trails are an integral part of the transportation network, providing an alternative to auto travel and partially reducing the demand on roads in the new community.

Ideally, a system of trails will be created, connecting open spaces together, linking to other parks and open spaces outside the community, and providing safe routes for children to travel to schools as well as for the elderly to get to civic destinations. Trails can also connect to an integrated system of bike paths and lanes associated with arterials and collectors to allow commuters to access workplaces safely. Figure A-19 illustrates a conceptual looped trail system that incorporates a combination of trails adjacent to natural areas, trails in proposed community and neighborhood parks and the BPA easement corridor, and on-street (sidewalk or pathway) connections.

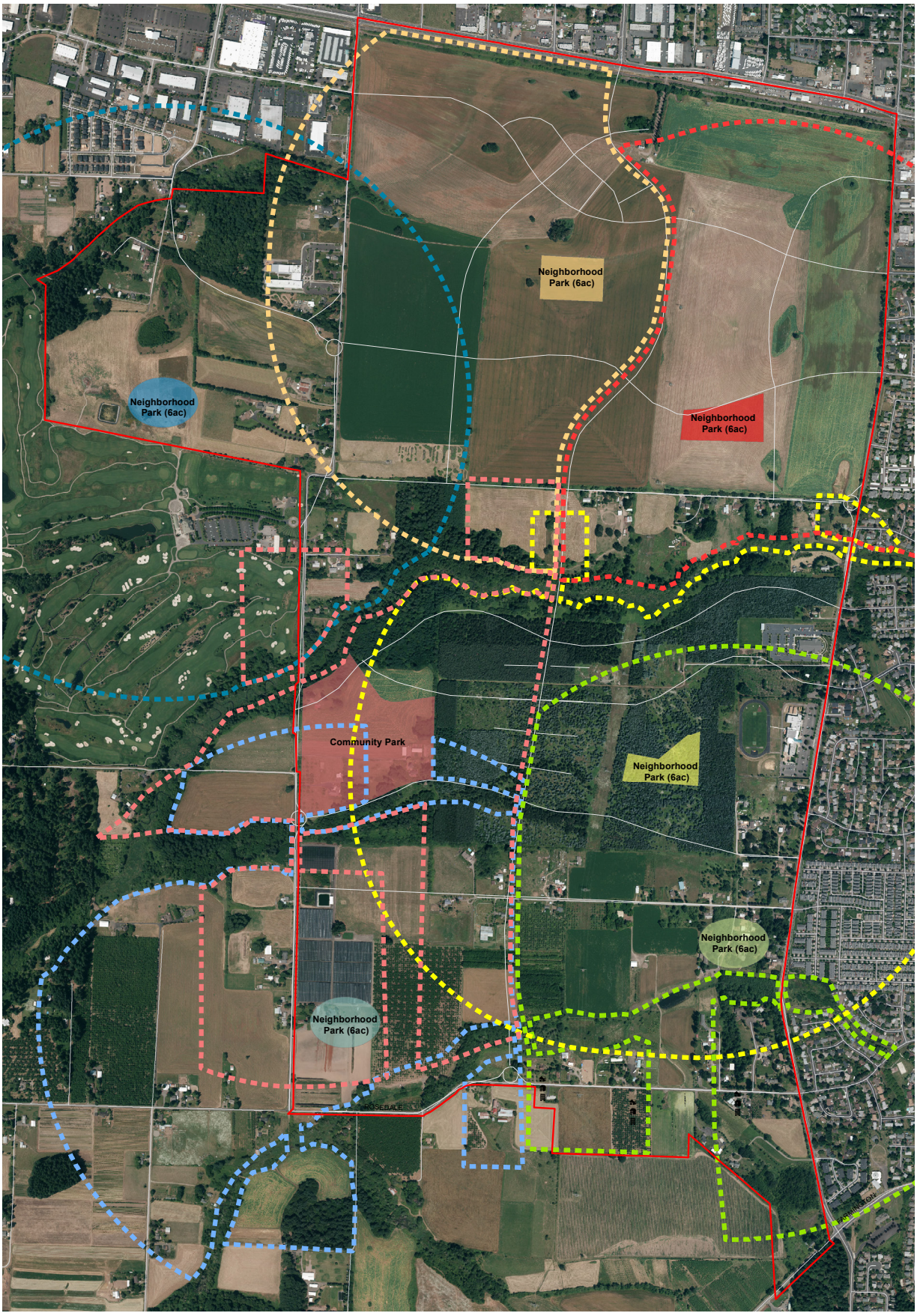
6.3.3. Location of Parks and Schools

Schools and parks play important roles in creating neighborhood identity. Parks should be centrally-located and easy to access, especially on foot, and should be set aside early in the planning process in places that often include natural amenities such as mature trees.

Schools can also serve as important shapers of community identity. Well-designed and sited schools should have a civic presence and an inviting public edge. Both schools and neighborhood parks generally seek out flat sites that are easy to develop. They also require utility provision, so they should be located to take advantage of existing infrastructure.

Figure A-18 shows approximate locations of parks, trails and open spaces based on work conducted during the Master Planning process, including coordination with Reed's Crossing, Butternut Creek and other property owners. The conceptual system of schools, parks, and open space in South Hillsboro is designed such that all residences are within one-half mile of a park or open space facility, as shown in Figure A-20, in accordance with goals set forth in the City of Hillsboro Parks and Recreation Department's Parks and Trails Master Plan.

Figure A-20: Park Catchment Areas



The conceptual system design also features extensive co-location of parks and schools. There are a number of benefits collocating parks and schools, including:

- Efficiencies in land needs and construction cost from sharing facilities such as parking and sports fields that would otherwise need to be exclusively provided.
- Takes advantage of divergent scheduling of each use. Parks are usually busiest nights and weekends, while schools are out of bounds during the day.
- Benefits from sharing operations and maintenance funding and logistics.

In designing co-located park and school facilities, care should be taken to avoid potential issues associated with collocated facilities. For example, facilities should be designed to ensure that large facilities do not hamper connectivity within neighborhoods. In addition, signage and other strategies to clearly delineate where community members can and cannot be at certain times to address security issues associated with schools.

The locations of these facilities may be refined during subsequent development and facility siting processes undertaken by property owners and developers, the City of Hillsboro Parks and Recreation Department and/or the Hillsboro School District. However, ultimate locations will be guided by the planning principles and policies identified in this document and in Chapter 31 of the Hillsboro Comprehensive Plan.

6.4. Other Public Facilities and Services

Other services to be provided in South Hillsboro include library, police, fire and emergency response services.

The City of Hillsboro will provide police services in the area. Most services will be managed through the City's Central police facility, although a community policing office is expected to be located in the South Hillsboro Town Center to provide more direct access to police personnel for South Hillsboro residents and businesses. Hillsboro Fire Department is also evaluating service plans in South Hillsboro, and may site new facilities in the vicinity depending on development timing, adequacy of existing stations, and mutual aid agreements with Tualatin Valley Fire & Rescue.

The City of Hillsboro plans to open a branch library in South Hillsboro in the Reed's Crossing area. The library is expected to be an approximately 8,000 square foot branch, with a possibility of future expansion to continue serving a growing population in the area. Given the distance from this location to existing Library branches and the Aloha Library, this will be adequate to serve the area even with the increases in density.

6.5. Natural Resources

The plan area is located in the Middle Tualatin-Rock Creek Watershed within three sub-water-sheds including Middle Tualatin-Gordon Creek, Butternut Creek, and Middle Tualatin-Rosedale Creek. The Tualatin River flows southerly near the western boundary of the urban reserve area. Several tributaries to the Tualatin River flow west/southwesterly through the site, including Gordon Creek, Butternut Creek, a Butternut Creek tributary, Rosedale Creek (also referred to as Hazeldale Creek), and an unnamed Tualatin River tributary that originates immediately west of the Reserve Vineyards and Golf Club and joins the Tualatin River at approximately river mile 36.5.

Wetlands and other natural resources in portions of the South Hillsboro area were mapped in 2001 for a portion of the South Hillsboro area in the City of Hillsboro Goal 5 Natural Resources Inventory and Assessment. In 2014, wetlands and other natural areas in the remainder of the area were mapped by consultants to the City of Hillsboro and several area property owners. In many cases, wetland and natural resource boundaries mapped in the inventory are approximate and are intended for general planning purposes only. For example, wetland areas are not the result of formal wetlands "delineations" in most cases. Significant riparian corridors and upland wildlife habitat were also mapped along Gordon Creek and Butternut Creek in the City's Goal 5 inventory. Remaining significant riparian corridors and upland wildlife habitat were mapped during 2014. In addition, a formal wetland delineation has been prepared by the Oregon Department of State Lands (DSL) for the portion of Gordon Creek located east of SW 229th Avenue in Reed's Crossing.

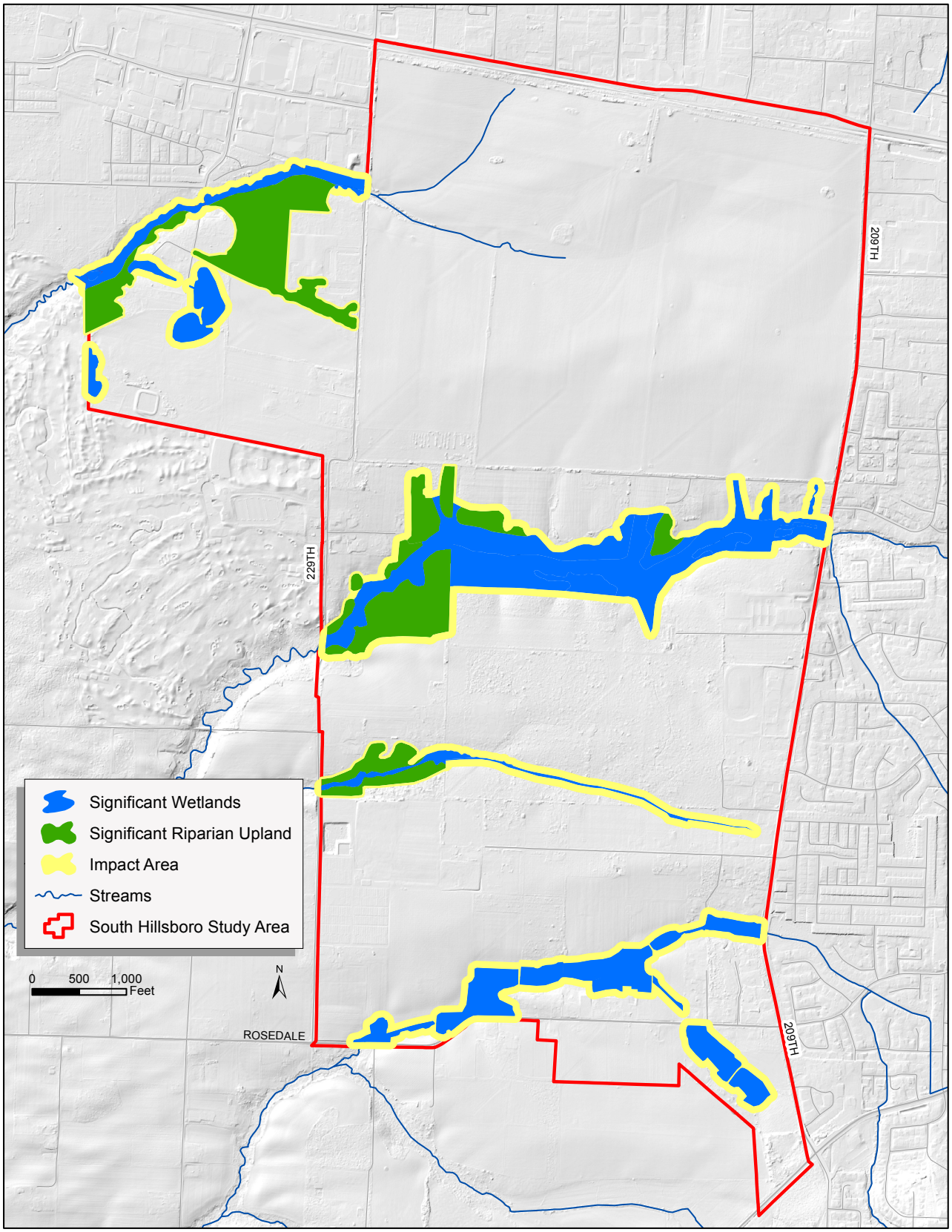
Natural resources determined to be significant and their Impact Areas have been or will be added to the Significant Natural Resource Overlay (SNRO) District as part of the rezoning process. An Economic, Social, Environmental, and Energy (ESEE) Consequences Analysis has been conducted for the Significant Natural Resource (SNR) sites added to the SNRO District. The SNRO District and associated development code provisions will govern how natural resource areas are protected in this area, including whether development is and its impacts are prohibited, avoided, managed or mitigated. In addition to the City's SNRO District, the City is a partner in the Tualatin Basin Fish & Wildlife Habitat Program. This is a voluntary program that encourages the use of Habitat Friendly Development Practices, including Low Impact Development (LID) techniques, designed to reduce the environmental impacts of new development and remove barriers to their utilization. The intent is to provide flexibility in the land development ordinances to encourage the protection of qualified Habitat Benefit Areas.

6.6. Cultural Resources

An archival search at the Oregon State Historic Preservation Office (SHPO) was conducted to determine if known prehistoric or historic archaeological sites or other documented cultural resources are present within or near the plan area. The SHPO database indicates that historic and archaeological sites not formally documented do occur within the plan area, including an unmarked cemetery. The cemetery is referred to as the "Original Reed Farm Cemetery" or the "Ladd-Reed Cemetery." No survey report or site form is associated with this resource. SHPO records also indicate that Native American archaeological sites exist in the Plan Area.

In addition to the SHPO database, the records of the Oregon Commission on Historic Cemeteries indicate that another nameless cemetery is located in Section 14 of Township 1 South, Range 2 West, Willamette Meridian. The cemetery is documented in the Oregon Burial Site Guide. The cemetery is located south of Reedville, on the Ladd-Reed farm. The guide states that the gravestones were intentionally covered with 2 to 3 feet of soils so that farming could continue in the area. It is estimated that the cemetery consists of 10 to 12 graves. Issues associated with cultural resources will be addressed in more detail as part of the development process and as the City updates its Goal 5 inventory or environmental, cultural and historic resources for the plan area subsequent to annexation.

Figure A-21: Natural Resources



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7

Implementation Actions and Strategies

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7.1. Overview

A variety of different types of actions will be needed to implement the planning strategies and policies incorporated in this document and Chapter 31 of the Comprehensive Plan, including but not limited to the following actions.

Amendments to implementing plans and ordinances

Proposed amendments to the Hillsboro Community Development Code will be submitted to the City's Planning Commission and City Council for concurrent review and adoption.

Infrastructure Financing Plans

The City is preparing a transportation financing program to describe the cost and phasing of major transportation facility improvements and private development and the sources of funds and financing mechanisms that will be used to pay for their design and construction. The City is also preparing a financing plan to describe the cost and financing of parks, recreation, and open space amenities and other infrastructure.

Key, catalytic public and private investments.

A number of key infrastructure and other projects can help the City and property owners reach priority development and community goals. Examples in South Hillsboro include the following, among others:

- Purchase of land for and construction of public facilities, including parks, schools, and designated open space.
- Construction of roads, trails, and other transportation infrastructure.
- Creation of key gateways and wayfinding elements to identify and brand South Hillsboro.
- Creation of initial phases of the Reed's Crossing Town Center, Butternut Creek Village Center, and South Hillsboro West development that will spur additional, future investment and development.
- Initial development of lower-density housing products in the western portion of South Hillsboro, addressing the City's current demand for these types of "executive housing" products.

Annexation and application of zoning

After adoption of the updated Community Plan and associated Community Development Code provisions, proposed development areas will need to be annexed into the City and specific zoning will need to be applied prior to development.

Public Infrastructure Availability.

Annexation of South Hillsboro property requires the assurance that adequate public services and facilities are available, or will be made available, to accommodate the added burdens imparted by development. To assure timely availability of infrastructure, such as multi-modal transportation capacity and downstream sewer capacity, technical evaluations including detailed transportation and municipal utility impact studies will be required of proposed development to advise Annexation Agreements and/or Development Agreements.

Identifying and securing the commitments to assure adequacy of municipal facilities, including public transportation and other utility systems, either in advance of or in conjunction with proposed development,

will assure operational capacity in accordance with adopted performance standards. Funding for needed improvements, including its phased development, will be integrated with Infrastructure Financing Plans to ensure that necessary on-and-off-site transportation improvements, along with other capital improvements, are constructed in time to serve new development.

South Hillsboro transportation studies

Assuring that the cumulative impacts of transportation growth associated with development in South Hillsboro are monitored and managed effectively will be essential to providing timely construction of identified new transportation capacity improvements within the South Hillsboro transportation impact area. Amendments to the Community Development Code will be adopted to assure that the transportation studies required with each development are cumulative in nature, consistent with trip distribution patterns and multi-modal useage assumptions of the comprehensive transportation impact study, and sufficiently expansive as to address monitoring of operational performance throughout the South Hillsboro impact area which extends between Rock Creek and 185th Avenue, from Farmington Road to north of TV Highway.

Annexation and/or development agreements

The City previously signed two memoranda of understanding (MOUs) with each of the major landowners in the area – Hagg Lane LLC (Butternut Creek area) and Newland Communities (Reed's Crossing area). The City will use these MOUs and subsequent discussions to enter into legally binding agreements with these property owners at the time of annexation that will specify the roles and responsibilities of the City, property owner, and potentially other properties. These agreements and new agreements with other South Hillsboro property owners will establish allowable levels of development, consistent with limits on development impacts to public transportation and utility infrastructure associated with such development. Agreements will be consistent with the policies outlined in Section 31 of the Hillsboro Comprehensive Plan.

Branding and marketing

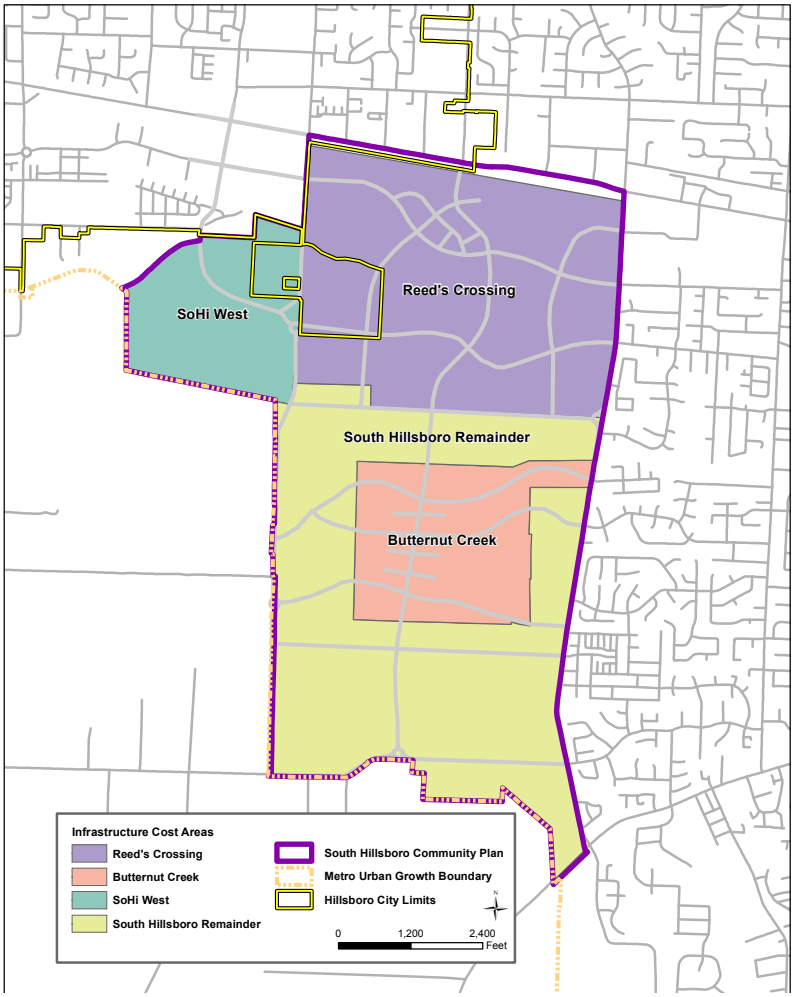
As the City is interested in proactively attracting residents and business owners to locate in South Hillsboro and attracting developers or builders to develop portions of the area, the City will continue to collaborate with major property owners in initiating their own City marketing and branding efforts. For example, the City is exploring the creation of a Citywide wayfinding system that includes gateway elements, which would be extended to the South Hillsboro plan area. Developers have also indicated their desire to separately brand their individual developments, which should align with Citywide visions for the sense of place in South Hillsboro and the overall wayfinding system design.

7.2. Infrastructure Costs

Costs for public facilities have been estimated for water, sanitary sewer, stormwater, parks and recreation and transportation facilities in South Hillsboro. Costs have been broken out by major sub-area (see Figure A-22), including:

- Reed's Crossing
- Butternut Creek
- South Hillsboro West
- Remaining portions of South Hillsboro

Figure A-22: South Hillsboro Sub-Areas



The following text and tables summarize these cost and the methods and assumptions that were used to estimate them.

Following is a summary of cost methodologies and estimates for transportation, water, sanitary sewer, parks and other facilities.

7.2.1. Cost Estimating Methods and Assumptions

Costs were estimated for specific facilities identified in Chapter 6 of this Plan. Costs are "planning level" estimates based on unit costs, though transportation system costs are considerably more advanced yet not final. They are not based on detailed design of specific facilities and will need to be refined in the future as part of subsequent detailed design processes. Additional assumptions include the following:

- Costs for water and sanitary sewer pipes only include major distribution and collection pipes located along collector and arterial roads or along drainages associated with sanitary sewer collection. Smaller pipes located on local streets will be constructed and paid for by developers as part of the development process and those costs are not included here.
- Costs for water and sanitary sewer pipes include the cost of materials and construction, including piping,

bedding, backfill and surface preparation. They also include costs associated with overhead and profit, engineering and construction management and contingency. Right-of-way costs are not included for these facilities because they are expected to be located within street rights-of-way which are already included in transportation cost estimates or with utility easements.

- In general, sanitary sewer pipe sizes were developed based on the land use anticipated flows and the existing contours along the roadways.
- Sanitary sewer pump station cost estimates are based on preliminary pump station locations developed by Clean Water Services (CWS). Because the pump station locations have not been finalized, CWS has not developed anticipated construction costs for the pump stations. Therefore, the City's consultant made an assumption regarding the pump station costs. The complete pump station cost includes wet well, piping, pumps, control building, and backup generator. Once CWS finalizes the locations, these costs can be updated.
- For water and sanitary sewer facilities, the City has calculated projected costs for publicly-funded oversizing to ensure that facilities are large enough to serve the study area, as well as any other nearby areas that contribute water or sewer flows to the system within South Hillsboro. Cost tables show these figures which are also part of the overall cost figures shown.

Transportation system costs have been developed for off-site identified deficiencies, as well as internal and edge Collector and Arterial class roadways based upon unit costs from public bid projects, adjusted to reflect anticipated cost savings for significant elements that are likely to be constructed by private development. In addition, the costs directly associated with design, right of way, and construction of bicycle lanes on neighborhood routes within South Hillsboro have been included. Local streets that service commercial and residential areas and are funded directly by development, thus are not evaluated, as they do not provide direct benefit to the broader travelling public.

Costs reflect anticipated use of asphaltic concrete paving meeting a 20-year design life on roadways slated for County jurisdiction, and use of a mix of Asphaltic Concrete and Portland Cement Concrete streets meeting a 40-year design life on roadways slated for City jurisdiction. Varying contingencies are included for hard costs and soft costs, reflecting the range of complexity of individual roadway segments. For instance, improvements on SW 209th Avenue will be more complex to design and construct than a similarly sized roadway in the greenfields of new South Hillsboro development.

Roadway costs have been segregated into their "Local Street" costs and their "Added Capacity" costs. "Local Street" component costs specifically assume 34 feet of pavement curb-to-curb with roadside planters, streetlights, street trees, and sidewalks within a 56 foot right of way. Additional roadway travel lane widening, and added costs associated with thicker pavement structural sections, are reflected in the "Added Capacity" cost components. For both, the current value of right of way has been established at $6 per square foot. Separation of "Local Street" costs from "Added Capacity" costs allows for determination of "Regional Share" cost allocation, which recognizes that regional traffic will utilize a portion of the "Added Capacity" built on the new and improved roadways in South Hillsboro.

Traffic modeling has been utilized to establish for each roadway segment the share of projected 2012 urban growth boundary buildout traffic which does not have a trip origin or destination in South Hillsboro. The resulting "Regional Share", which varies by roadway segment, has been applied to the "Added Capacity" costs to determine a reasonable estimate of the public road infrastructure costs which may need to be identified from sources outside of new South Hillsboro development. Final establishment of transportation system costs, and the revenue structure to fund those costs, will be adopted through a South Hillsboro Financing Program and potential System Development Charge Methodology Report.

7.2.2. Cost & Revenue Tables

Cost and revenue tables on subsequent pages illustrate improvements necessary to implement planned development in South Hillsboro. Tables A-3 through A-6 summarize costs for each facility type by major sub-area, as illustrated in Figure A-22. Table A-7 summarizes off-site improvement costs, and Table A-8 summarizes projected civic improvements in South Hillsboro. Table A-9 consolidates improvements in each sub-area to show overall costs for necessary improvements across South Hillsboro, based on projected residential units and commercial building square footage.

7.3. Infrastructure Funding Strategies and Responsibilities

In Oregon, jurisdictions can impose System Development Charges (SDCs) for water, wastewater, storm drainage, transportation, and parks and schools. Two types of SDCs are allowed: improvement (new infrastructure that must be provided to serve new development); and reimbursement (a portion of the existing remaining capacity within existing infrastructure that new development will utilize). SDC fees can be structured to recover 'other costs' (planning, compliance reporting) and annual inflation. Beyond SDCs, other funding options may also provide adequate revenue to complete necessary infrastructure improvements. These funding strategies are discussed below for each category of improvement.

7.3.1. Transportation

Funding for transportation system improvements will come primarily from new private development in South Hillsboro, with supplemental funding anticipated from potential "Regional Share" sources which could include in part funding through the County's Major Streets Transportation Improvement Program ("MSTIP"), as well as other non-South Hillsboro funding sources. The composition of South Hillsboro development funding source(s) should be established prior to annexation of properties within South Hillsboro, and would be adopted through the South Hillsboro Financing Program, a potential supplemental System Development Charge Methodology Report and implementing Ordinance, and other potential adopted funding mechanisms.

As described in Section 7.1, transportation system costs were calculated to differentiate between "Local Street" costs and "Added Capacity" costs. This was done both to create a foundation for evaluating the "Regional Share" costs, as well as to establish a necessary understanding of "Local Street" costs. These costs would need to be collected from South Hillsboro development to fund "Local Street" right of way acquisition, design, and construction cost components of anticipated gaps in the required Collector/Arterial roadway network where it

Table A-3: Reed's Crossing Conceptual Cost Summary

Reed's Crossing Conceptual Cost Summary	
ITEM	2014 TOTAL
OPEN SPACE AMENITIES	
NEIGHBORHOOD/COMMUNITY PARKS	$7,080,485
NATURE PARKS	$7,048,371
DEVELOPED GREENWAYS/TRAILS	$1,760,077
INDOOR FACILITIES/CENTERS/AQUATICS	$0
SUBTOTAL FOR AMENITIES	$15,888,933
TRANSPORTATION	
SYSTEM IMPROVEMENTS	$55,837,000
SUBTOTAL FOR TRANSPORTATION	$55,837,000
SANITARY SEWER	
15" TRUNK LINE	$3,874,255
BUTTERNUT CREEK PUMP STATION	$914,094
SUBTOTAL FOR SANITARY SEWER	$4,788,349
WATER SYSTEM	
SW CORNELIUS PASS ROAD EXTENSION	$2,009,280
SW KINNAMAN ROAD	$1,584,000
SW 209TH AVENUE	$1,071,360
SW 229TH AVENUE	$135,360
SW ALEXANDER / BLANTON STREET	$2,524,560
SW 212 AVENUE / INDUSTRIAL WAY	$394,560
SW MCINNIS LANE	$551,520
SUBTOTAL FOR WATER	$8,270,640

Table A-4: Butternut Creek Conceptual Cost Summary

Butternut Creek Conceptual Cost Summary	
ITEM	2014 TOTAL
OPEN SPACE AMENITIES	
NEIGHBORHOOD/COMMUNITY PARKS	$3,876,565
NATURE PARKS	$2,733,589
DEVELOPED GREENWAYS/TRAILS	$950,442
INDOOR FACILITIES/CENTERS/AQUATICS	$0
SUBTOTAL FOR AMENITIES	$7,560,596
TRANSPORTATION	
SYSTEM IMPROVEMENTS	$21,487,000
SUBTOTAL FOR TRANSPORTATION	$21,487,000
SANITARY SEWER	
15" TRUNK LINE	$813,450
21" TRUNK LINE	$1,974,550
CREEK CROSSING	$16,300
BUTTERNUT CREEK PUMP STATION	$1,387,440
SUBTOTAL FOR SANITARY SEWER	$4,191,740
WATER SYSTEM	
SW CORNELIUS PASS ROAD EXTENSION	$1,383,360
SW 209TH AVENUE	$135,360
TO/FROM SW CORNELIUS PASS ROAD EXTENSION	$995,760
CREEK CROSSING	$44,000
SUBTOTAL FOR WATER	$2,558,480

Table A-7: Off-Site Conceptual Cost Summary

South Hillsboro Off-Site Conceptual Cost Summary	
ITEM	2014 TOTAL
TRANSPORTATION	
SYSTEM IMPROVEMENTS	$99,348,000
SUBTOTAL FOR TRANSPORTATION	$99,348,000

Table A-5: South Hillsboro West Conceptual Cost Summary

South Hillsboro West Conceptual Cost Summary	
ITEM	2014 TOTAL
OPEN SPACE AMENITIES	
NEIGHBORHOOD/COMMUNITY PARKS	$3,540,242
NATURE PARKS	$0
DEVELOPED GREENWAYS/TRAILS	$0
INDOOR FACILITIES/CENTERS/AQUATICS	$0
SUBTOTAL FOR AMENITIES	$3,540,242
TRANSPORTATION	
SYSTEM IMPROVEMENTS	$10,388,000
SUBTOTAL FOR TRANSPORTATION	$10,388,000
SANITARY SEWER	
15" TRUNK LINE	$669,900
18" TRUNK LINE	$1,083,240
CREEK CROSSING	$11,000
SUBTOTAL FOR SANITARY SEWER	$1,764,140
WATER SYSTEM	
SW 234TH AVENUE	$990,720
SW KINNAMAN ROAD EXTENSION	$135,360
SW 229TH AVENUE	$135,360
SW MCINNIS LANE	$40,320
CREEK CROSSING	$5,500
SUBTOTAL FOR WATER	$1,307,260

Table A-6: Remainder of South Hillsboro Conceptual Costs

Remainder of South Hillsboro Conceptual Cost Summary	
ITEM	2014 TOTAL
OPEN SPACE AMENITIES	
NEIGHBORHOOD/COMMUNITY PARKS	$27,731,899
NATURE PARKS	$24,347,699
DEVELOPED GREENWAYS/TRAILS	$800,035
INDOOR FACILITIES/CENTERS/AQUATICS	$25,502,600
SUBTOTAL FOR AMENITIES	$78,382,233
TRANSPORTATION	
SYSTEM IMPROVEMENTS	$67,965,000
SUBTOTAL FOR TRANSPORTATION	$67,965,000
SANITARY SEWER	
12" TRUNK LINE	$831,600
15" TRUNK LINE	$3,250,610
21" TRUNK LINE	$617,780
24" TRUNK LINE	$2,044,845
CREEK CROSSING	$5,400
BUTTERNUT CREEK PUMP STATION	$2,558,559
ROSEDALE PUMP STATION	$1,918,600
SUBTOTAL FOR SANITARY SEWER	$11,227,394
WATER SYSTEM	
SW CORNELIUS PASS ROAD EXTENSION	$1,700,160
SW MCINNIS LANE	$966,240
SW HAGG LANE	$276,480
SW MURPHY LANE	$1,391,040
SW 209TH AVE.	$1,549,440
SW 229TH AVE.	$3,200,220
SW ROSEDALE ROAD	$1,452,960
CREEK CROSSING	$33,100
SUBTOTAL FOR WATER	$10,559,640

Table A-8: Civic Amenities Conceptual Cost Summary

Civic Amenities Conceptual Cost Summary	
ITEM	2014 TOTAL
1 SCHOOL SITE, SOUTH HILLSBORO WEST	Constructed
3 SCHOOL SITES, REED'S CROSSING	Land Purchased
1 SCHOOL SITE, BUTTERNUT CREEK	Optioned
1 COMMUNITY POLICING OFFICE	$4,953,000
1 LIBRARY BRANCH, REED'S CROSSING	$8,034,000
SUBTOTAL FOR CIVIC AMENITIES, (EXCLUDING SCHOOLS)	$12,987,000

Table A-9: Conceptual Cost & Revenue Comparison

	Units	Square Feet	Water	Sanitary Sewer	Transportation	Open Space Amenities
Reed's Crossing						
Cost Estimate			$8,270,640	$4,788,349	$55,837,000	$15,888,933
Non-Creditable Local Streets					$21,228,000	
Oversizing Cost Estimate			$1,675,080	$2,722,079	$34,609,000	
Oversizing Revenue Estimate (Existing SDC)						
Residential	3,856		$23,837,792	$18,894,400	$23,964,782	$15,701,632
Commercial		300,000	$831,333	$755,883	$3,857,940	$0
Civic/Parks					$829,140	
Total	3,856	300,000	$24,669,625	$19,650,283	$28,651,862	$15,701,632
Surplus (Deficit)			**$22,994,545**	**$16,928,204**	**($5,957,138)**	**($187,301)**
Butternut Creek						
Cost Estimate			$2,558,480	$4,191,740	$21,487,000	$7,560,596
Non-Creditable Local Streets					$7,834,000	
Oversizing Cost Estimate			$851,680	$2,996,998	$13,653,000	
Oversizing Revenue Estimate (Existing SDC)						
Residential	1,221		$7,548,222	$5,982,900	$7,514,203	$4,971,912
Commercial		50,000	$98,000	$78,944	$915,030	$0
Civic/Parks					$762,408	
Total	1,221	50,000	$7,646,222	$6,061,844	$9,191,641	$4,971,912
Surplus (Deficit)			**$6,794,542**	**$3,064,846**	**($4,461,359)**	**($2,588,684)**
South Hillsboro West						
Cost Estimate			$1,307,260	$1,764,140	$10,388,000	$3,540,242
Non-Creditable Local Streets					$3,430,000	
Oversizing Cost Estimate				$920,531	$6,958,000	
Oversizing Revenue Estimate (Existing SDC)						
Residential	541		$3,344,462	$2,650,900	$4,110,187	$2,202,952
Commercial		0	$0	$0	$0	$0
Civic/Parks					$8,274	
Total	541		$3,344,462	$2,650,900	$4,118,461	$2,202,952
Surplus (Deficit)			**$3,344,462**	**$1,730,369**	**($2,839,539)**	**($1,337,290)**

	Units	Square Feet	Water	Sanitary Sewer	Transportation	Open Space Amenities
Remainder of South Hillsboro						
Cost Estimate			$10,569,640	$11,227,394	$67,965,000	$78,382,233
Non-Creditable Local Streets					$8,799,000	
Oversizing Cost Estimate			$1,933,370	$8,020,317	$59,166,000	
Oversizing Revenue Estimate (Existing SDC)						
Residential	2,087		$12,901,834	$10,226,300	$16,043,042	$8,498,264
Commercial		0	$0	$0	$0	$0
Civic/Parks						
Total	2,087		$12,901,834	$10,226,300	$16,060,969	$8,498,264
Surplus (Deficit)			**$10,968,464**	**$2,205,983**	**($43,105,031)**	**($69,883,969)**
South Hillsboro Off-Site						
Cost Estimate					$99,348,000	
Non-Creditable Local Streets						
Oversizing Cost Estimate					$99,348,000	
Surplus (Deficit)					**($99,348,000)**	
ALL AREAS						
Cost Estimate			$22,706,020	$21,971,623	$255,025,000	$105,372,004
Non-Creditable Local Streets					$41,291,000	
Oversizing Cost Estimate			$4,460,130	$14,659,925	$213,734,000	
Oversizing Revenue Estimate (Existing SDC)						
Residential	7,705		$47,632,310	$37,754,500	$51,632,214	$31,374,760
Commercial		350,000	$929,833	$834,827	$4,772,970	$0
Civic/Parks					$1,617,749	
Total	7,705	350,000	$48,562,143	$38,589,327	$58,022,933	$31,374,760
Surplus (Deficit)			**$44,102,013**	**$23,929,402**	**($155,711,067)**	**($73,997,244)**
Supplemental Revenue Estimate					**$84,098,067**	**$73,997,244**
Regional Share					**$71,613,000**	

is anticipated that re-development is unlikely to occur in the timeframe necessary to accommodate needed roadway capacity expansion.

Within Washington County, the Transportation Development Tax ("TDT") functions as the adopted System Development Charge for transportation. Development is typically required to fund "out-of-pocket" the "Local Street" cost elements, including dedication of right of way, for improvements which are contiguous, or within, the development. As such, private development will fund "out-of-pocket" an estimated $41.3 Million of the identified $255 Million transportation system expansion costs. "Local Street" costs estimated to be required for roadway segments in gap areas where publicly delivered improvements are anticipated total approximately $16.4 Million. These funds would need to be secured through assessed TDT fees and other revenue sources. "Added Capacity" costs of approximately $197.3 Million have been estimated to split as roughly $71.6 Million attributable to "Regional Share" and $125.7 Million resulting from cumulative impacts of new South Hillsboro development. Together, the identified funding need estimated to cover "Added Capacity" and "Local Street" gap funding totals an estimated $213.7 Million.

In addition to the estimated $41.3 Million of development "out-of-pocket" funding, revenues projected from assessment of existing TDT rates on new South Hillsboro development are estimated to accrue an additional $58 Million. If "Regional Share" funding is able to be reasonably established to meet the identified $71.6 Million "Regional Share" cost apportionment, a funding deficit of approximately $84.1 Million would result, which would need to be funded through new transportation revenue sources collected on South Hillsboro development. It is anticipated that a supplemental Transportation Systems Development Charge ("TSDC") would be required, though other potential funding sources could also be considered. Funding options are being evaluated in coordination with Washington County and development interests, with resolution of funding source(s) anticipated prior to annexation of property in South Hillsboro.

7.3.2. Water

The City of Hillsboro is currently served by two water entities. Areas north of US Highway 26 (Sunset Highway) and east of Cornelius Pass Road are served by Tualatin Valley Water District (TVWD); addresses west of Cornelius Pass and south of US Highway 26 are served by the Hillsboro Water Department (HWD). In accordance with the Urban Service Agreement between TVWD and the city, the service area boundary between TVWD and HWD follows TV Highway east from Cornelius Pass Road and then turns south along SW 209th Avenue, such that the proposed South Hillsboro Plan Area is entirely within the HWD service area. Both districts maintain their own distribution systems and reservoirs but utilize a treatment plant maintained by the Joint Water Commission, to which the Cities of Beaverton, Tigard and Forest Grove also belong.

Current Revenue Sources generally include the following:

- Developer contributions. These direct developer incurred costs are negotiated, but generally encompass all on-site and nearby off-site costs. Over-sizing pipes to provide capacity for future off-site development is typically not the developer's responsibility, but may be reimbursed.
- System Development Charges (SDCs). In Oregon, jurisdictions can impose SDCs for water, wastewater, storm drainage, transportation, and parks and schools.

Two types of SDCs are allowed: improvement (new infrastructure that must be provided to serve new development); and reimbursement (a portion of the existing remaining capacity within existing infrastructure that new development will utilize). In addition, SDC fees can be structured to recover 'other costs' (planning, compliance reporting) and annual inflation.

7.3.3. Sanitary Sewer

Hillsboro provides sanitary sewer service through a collaborative service delivery arrangement. By intergovernmental agreement with Clean Water Services (CWS), the City of Hillsboro is responsible for operation and maintenance of the sanitary sewer collection system, which is comprised of gravity sanitary sewer lines and facilities smaller than 24 inches in diameter. The City is also responsible for approving the installation of new collection system components and for approving and inspecting new service connections within City limits. CWS is responsible for all wastewater treatment and for the construction and operation of the conveyance system (public pump stations and force mains and gravity sanitary sewer lines 24 inches in diameter and larger).

Current revenue sources include the following:

- Developer contributions. These are negotiated, but typically include all on-site and off-site improvements as necessary to connect to existing system and through the development to the furthest property line to serve upstream properties. Again, over-sizing to accommodate other future off-site or area-wide development is one cost that would be excluded from this category, but may be reimbursable. SDCs. Sanitary sewer SDCs are dedicated to projects listed in City of Hillsboro or Clean Water Service's Master Plans.

7.3.4. Stormwater

Construction of stormwater treatment, detention, and conveyance infrastructure is typically the responsibility of private developers as a condition of the development approval. For this reason the sub-area conceptual cost summaries in Tables A-3 through A-6 and conceptual cost and revenue comparison in Table A-8 do not include numbers associated with stormwater.

If a developer constructs a local water quality facility for the development that serves multiple lots (regional facility) or expands an existing regional facility for the development, the developer receives a credit for a portion of the system development fee for constructing the facility in accordance with the City adopted CWS rate structure. Historically, the City has not been able to easily identify large regional stormwater facilities within mostly developed areas of Hillsboro due to limited availability of land and funding for advance purchase of favorable sites.

North Bethany is the only example in the Portland region of a growth area with a regional stormwater facility fee that allows for advance purchase of large regional stormwater facility sites. Since Clean Water Services collects all stormwater system development charges (SDCs) in North Bethany, CWS provided $1 million of seed money to jump start this first regional stormwater facility. The City will collect all stormwater SDCs in South Hillsboro; however the City does not have sufficient stormwater SDC reserves to fund the advance purchase of regional stormwater facility sites.

With limited existing development in South Hillsboro, a number of strategies could be used to facilitate the identifying and purchasing of favorable large regional stormwater facility sites, including the following:

- Consider establishing public-private partnerships with property owners to allow for private sector purchase and construction of regional stormwater facilities in exchange for SDC credits on their developments.
- Consider setting up a supplementary systems development charge for South Hillsboro to finance the purchase of land, construction of regional stormwater facilities and for oversizing major trunk conveyance lines that aren't covered under the general CWS SDC charge.
- Work with intervening or connecting property owners to obtain easements for connecting conveyance facilities where needed to support phased development avoiding delays and added costs in constructing multiple facilities where one would serve more area.

7.3.5. Parks

The City of Hillsboro's Parks Department is responsible for the development and maintenance of all parks and open space within its boundaries. Parks situated outside of incorporated areas are the responsibility of the Washington County Facilities and Parks Services Division (except those within the SB 122 planning area which corresponds to the school district boundary).

Currently, the City's Parks SDC collects funding assessments on new development within the City including anticipated new revenue from development within South Hillsboro. Preliminary planning level cost estimates for identified parks facilities including the cost of parks, developed greenways and trails, and indoor recreation facilities needed in the South Hillsboro Plan area have been identified. A comparison against projected revenue collections from the existing City Parks SDC rate structure anticipates a revenue shortfall. New Parks funding will need to be identified, which may include a supplemental Parks SDC for South Hillsboro and other potential new funding sources.

7.4. Supplemental Funding Options

The Plan Area faces two distinct issues in filling its park and transportation funding gap:

- Locating and likely creating sources of funding to cover costs beyond those covered by existing revenue sources, and
- Establishing a financing mechanism acceptable to both the City and developers that will generate cash flow for infrastructure construction prior to development actually occurring (and receipt of the SDC/TDT funding stream associated with that development).

Each of these issues – the generation of funds and the timing of fund availability – will require attention as South Hillsboro area planning moves forward.

The following list of funding options was generated through conversations with city, county and Metro staff and legal counsel, the Oregon Economic and Community Development Department (OECDD) and the Oregon League of Cities. Documents created for and by other jurisdictions that have faced similar challenges in funding infrastructure have also been reviewed (as for Pleasant Valley, Villebois and North Bethany). The most likely potential funding tools are described in more detail.

Other sources are mentioned briefly, with additional information about them available upon request to the city.

7.4.1. Property Taxes

Both the City of Hillsboro and Washington County have the authority to levy property taxes with double majority voter approval. However, local option levies are limited by several previous ballot measures, and any tax increase must be within those limits. It is unknown at this time whether the city or county has the ability to increases its local option levy due to statutory limitations.

General obligation bonds, in contrast, are not subject to the same limits other than double majority voter approval. These must be used for capital projects, a criterion which infrastructure investment should meet.

While a city or county-wide property tax has the potential to generate significant funds, one disadvantage is the perceived fairness of who pays versus who benefits from growth. A property tax spreads the unmet costs of growth across the entire community. However, this wide base also offers the potential of a relatively lower per property burden. Washington County voters have twice passed property tax measures to fund transportation investments, as described below.

7.4.2. Washington County Major Street Transportation Improvement Program (MSTIP)

This program originated as a voter-approved property tax dedicated to transportation projects geographically distributed throughout the County. As a result of Ballot Measures 47/50, the MSTIP was combined with the general property tax, but the County Board continues to use it as a dedicated transportation funding source. This funding source has twice been renewed by voters, each time with a list of projects that accompanied the vote. The MSTIP is currently projected to generate an average of $35 million in annual funding over the next five years, for a total of $175 million through 2018.

Most MSTIP projects currently in the design and construction stages were funded under the current list of MSTIP projects. Those projects will be substantially complete in 2013. The County is currently going through the process of identifying a recommended list of projects to be funded over the next five years (fiscal years 2013-2014 and 2017-2018). Transportation projects (or portions of them) identified in this Plan could be included in future MSTIP project lists.

7.4.3. Increased SDC/TDT Rates

Metro is moving to encourage this approach, as indicated through its July 2007 document 'Promoting vibrant communities with System Development Charges.' Steps being recommended include "unbundling" SDCs to separate cost elements, encouragement of best management practices, green design SDC discounts, and transition to "impact-based" SDCs (such as higher SDCs for greenfield than urban development to better accomplish real cost recovery objectives). Other ideas suggested by Metro include a differential (or location-based) SDC fee schedule that could reduce fees for higher density development with fewer occupants per unit, as well as lowering the level of service (LOS) standards for urban area infrastructure. Area-specific SDCs are likely to be considered for implementation in South Hillsboro.

The Metro analysis also suggests that SDC rates should be set to aim for full cost recovery and that SDCs can be effective in influencing development patterns

and encouraging development that is less taxing to infrastructure – including in-fill development and development that favors smaller units, lots sizes, and locations adjacent to transit systems.

7.4.4. Supplemental System Development Charge

An area-specific SDC was considered for the recent Witch Hazel Village concept planning area. In the South Hillsboro Plan Area, assigning an additional transportation SDC (versus the current TDT tax) has the potential to generate significant revenue. As with a city or countywide increase in TDT rates, public support for an area-specific approach to increase SDC fees is yet unknown. However, this appears to be a potentially promising approach which will be explored further and may be incorporated in development or other funding agreements for the Plan Area.

7.4.5. Local Improvement District (LID)

LIDs are similar to SDCs in that they charge only those who will benefit from the infrastructure investment. A LID is a semi-voluntary charge against property values requiring the support of 51% of landowners within the district; the boundaries of a district are flexible. Property owners can opt to pay over as many as 20 years and funds can be used for capital improvements or maintenance.

Unlike SDC or TDT funding, the LID is not triggered by land development and therefore may be viewed as a penalty against those who do not develop (to increase the value/revenue stream associated with their land). In the same vein, it can be a more reliable funding source than funds which would be realized only when and if development occurs.

In Oregon, LIDs have been used for small-scale projects such as local street improvement and for larger transportation improvements, such as the Portland downtown transit mall light rail extension and streetcar development. A key consideration in South Hillsboro's potential use of a LID is land owners' willingness and ability to contribute and the risk associated with possible future real estate downturns.

7.4.6. Grants/Donations

Of the Plan Area's infrastructure needs, parks and open space likely represents the best potential fit for grants and donations. Possible sources would be determined on a project basis and may generate relatively few funds. The initial comparison of infrastructure costs and revenues indicates that there is in fact a parks surplus, although this may change as figures are revised.

7.4.7. Selective Classification of Arterials and Collectors

Study Area roadways will be classified as arterials, collectors, neighborhood routes and local streets according to their projected Average Daily Traffic. Arterial and collector streets constructed by developers qualify for Traffic Impact Fee credits. To qualify for credits, arterial and collector streets must be listed in the TDT Base Report. The City of Hillsboro has suggested not listing planning area arterial and collector streets on the Base Report, to enable TDT funds to focus on off-site roadway systems impacted by Study Area development.

7.4.8. Other Financing Mechanisms

A variety of other funding sources were discussed during the development of this plan. However, the majority of them could not be implemented without changes in state law or significant legislative actions. These mechanisms include but are not limited to a real estate transfer tax, windfall tax, urban renewal or tax increment financing, formation of a county service district, excise tax, vehicle registration surcharge and/or use of state or federal grant or loan programs. Homeowners Associations also can be a source of help in maintaining certain types of facilities once they are constructed.

Acknowledgements

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Andy Braun
Clean Water Services

Chris Brehmer
Kittelson & Associates

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Marah Danielson
Oregon Department of Transportation

Anne Debbaut
Oregon Department of
Land Conservation & Development

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Tom Mills
TriMet

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Union Pacific Railroad

Tim O'Brien
Metro

Lainie Smith
Oregon Department of Transportation

Monica Stafflund
Bonneville Power Administration

Adam Stewart
Hillsboro School District

Gary Stockhoff
Washington County Engineer

Steve Szigethy
Washington County
Transportation Planning

CITY OF HILLSBORO STAFF

Planning Department Staff

Colin Cooper, AICP
Planning Director

Jeannine Rustad, JD
South Hillsboro Project Manager
Long Range Planning Manager

Dan Dias
Current Planning Manager

Don Odermott, PE
Transportation Planning Engineer

Aaron Ray, AICP
Urban Planner

Dan Rutzick
Senior Planner

Emily Tritsch
Urban Planner

John Boren
Urban Planner

David Berniker, AIA AICP
Urban Design Planner

Interdepartmental Advisors

Tom Arnold
Public Works Director

Tina Bailey
Public Works Senior Program Manager

Corinne Bloomfield
Communications & Marketing Manager

Peter Brandom
Sustainability Project Manager

Diana Foesch
Police Sergeant

Mike Gieszler
Chief Plans Examiner

Lisa Goorjian
Parks and Recreation
Senior Development Manager

Kevin Hanway
Water Department Director

Ken Pipher
Parks and Recreation
Program & Support Manager

Mark Prince
Deputy Fire Chief

Bob Reitmajer
Public Works Project Manager

Bob Sanders
Public Works Assistant Director

Mike Smith
Library Director

Tyler Wubbena
Senior Water Manager

CONSULTANT TEAM

Angelo Planning Group

Matt Hastie, AICP
Consultant Project Manager

Cathy Corliss, AICP
Principal

Serah Breakstone, AICP
Planner

Andrew Parish
Planner

Walker Macy

Mike Zilis
Principal

Ken Pirie, AICP CUD
Senior Associate

Saumya Kini
Design Assistant

David Evans & Associates

Scott Harmon, PE
Senior Transportation Engineer

Steve Harrison
Site Development Engineer

Additional Consultants

Matt Brown
Principal, Loci

Jerry Johnson
Principal, Johnson Economics

Brian Vanneman
Principal, Leland Consulting Group

C. Mirth Walker, PWS, CWD
Senior Wetland Scientist, SWCA

Randall Young
President, Henderson Young & Company

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For more information about South Hillsboro, contact the City of Hillsboro Planning Department at 503-681-6153 or visit the project website:

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