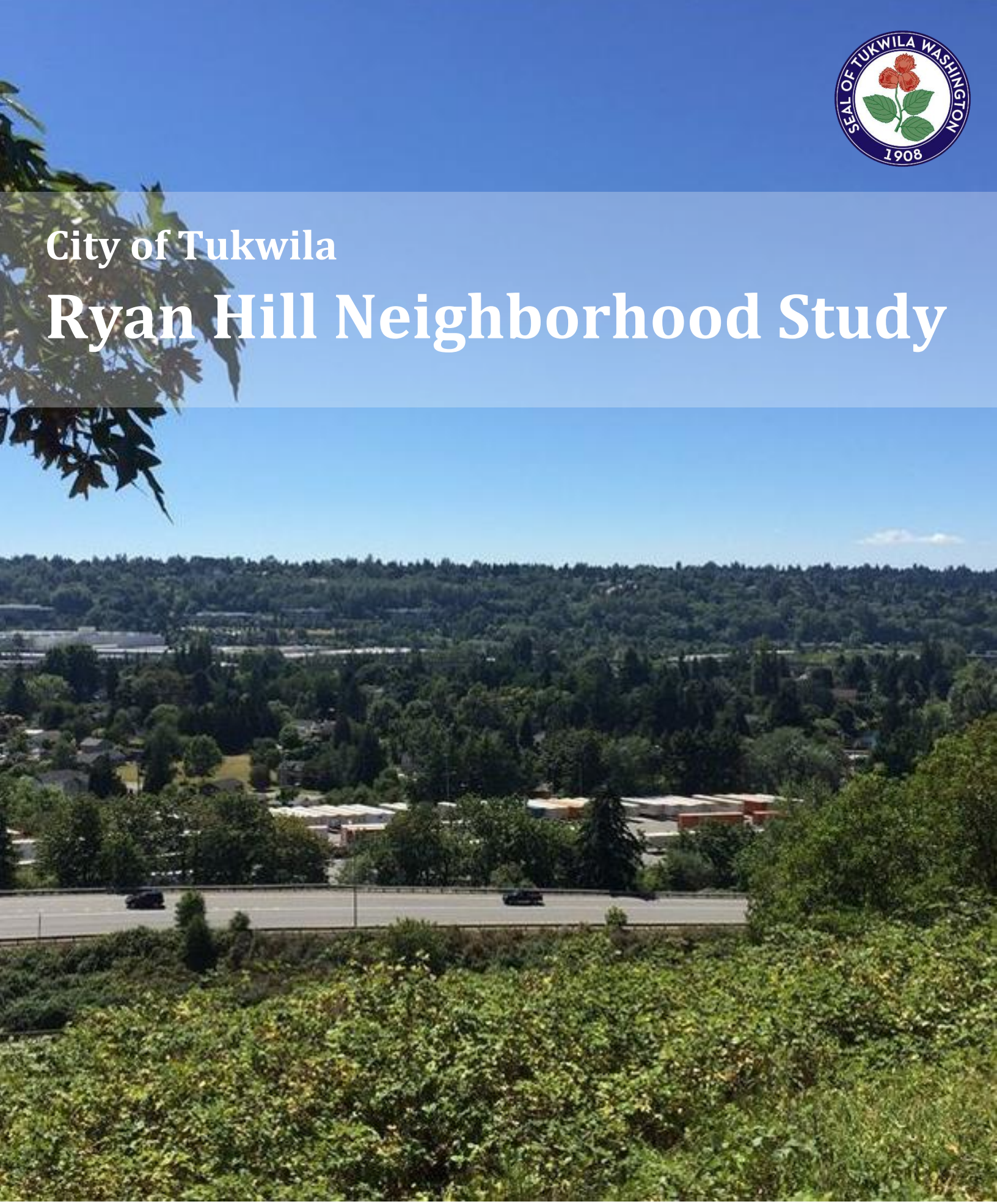
City of Tukwila

Ryan Hill Neighborhood Study



MARCH 2018

LDC Surveying Engineering Planning

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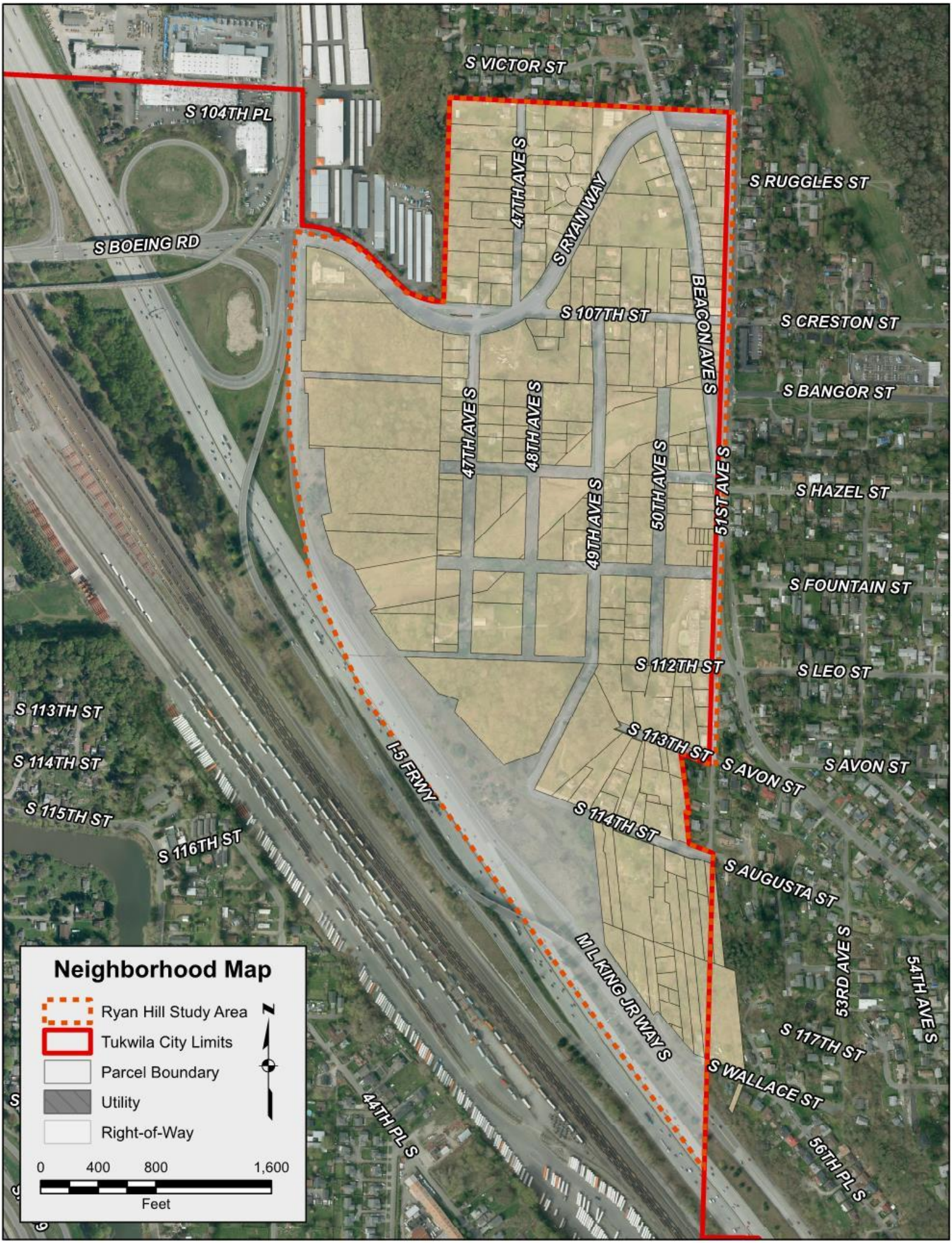
Neighborhood Map
Ryan Hill Study Area
Tukwila City Limits
Parcel Boundary
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56TH PL S

INTRODUCTION

Background

The Ryan Hill neighborhood is located on the northeastern edge of the City of Tukwila. It is bordered by Interstate 5 on the west and by the City of Seattle on the north and east. The Ryan Hill neighborhood was annexed into the City of Tukwila in 1989 as part of the Fire District #1 annexation. Over the past 30 years, there have been small additions to the neighborhood but, as a whole, the neighborhood has remained relatively unchanged.

The neighborhood is located on the eastern wall of the Duwamish River basin and contains extensive sensitive features such as wetlands, streams, and slopes. The neighborhood also has limited sewer, water, and transportation infrastructure and is dissected by a 200-foot wide Seattle Power & Light utility easement. The neighborhood's existing character is predominantly single-family residential, with residents describing portions of the neighborhood as a rural oasis within the greater urban area.

Development interest within the Ryan Hill neighborhood has gradually been increasing. The renewed interest in development has created the need for a comprehensive look at what, if any, land use changes should be made and what types of infrastructure improvements would be required to support potential redevelopment. The intentions of this study are to ensure that any development decisions work collectively to achieve neighborhood-driven goals and to ensure that development-driven infrastructure improvements, such as sewer, water, and roadways, are coordinated and maximized.

Study Objectives

Change is inevitable and, with our roaring regional economy, is happening very quickly. We may not be able to stop change, but we can certainly coordinate how and to what extent it happens. There are many areas of the Ryan Hill neighborhood that will likely remain the same, but there may be opportunities where development could support neighborhood goals. The primary objective of this study is to engage the neighborhood in an effort to determine what, if any, land use changes should be made and the types of water, sewer, roadway, and public facility improvements that would be required to support such changes, should they occur. This study is a proactive approach to understanding the realities of the area and the desires of its property owners and residents.

Tukwila Comprehensive Plan Neighborhood Goals:

- *Land use patterns that encourage a strong sense of community*
- *Physical features that preserve and strengthen neighborhood character and enhance neighborhood quality*
- *Enhancement and revitalization that encourages long-term residency and environmental sustainability*
- *High quality pedestrian character with a variety of housing options for residents in all stages of life*
- *Supportive neighborhood commercial areas and protections from noise impacts*

- *Goals from Element 7, Residential Neighborhoods, in the City of Tukwila Comprehensive Plan*

How Will the Study be Used?

The Ryan Hill Neighborhood study provides information that can be used to assist with the coordination of development-driven infrastructure improvements should any land use changes and development or redevelopment within the neighborhood take place. To that end, this study is different than a traditional neighborhood study that would typically examine design-related issues and would determine goals and objectives to guide future development and redevelopment. This study was commissioned to determine what, if any, land use changes could be made based upon input from residents and property owners and how infrastructure could be coordinated to ensure maximum benefit.

While this study assesses new land use scenarios, it should also be noted that the purpose of this study is not to implicitly make any changes to the neighborhood – it is a "what if" assessment that analyzes existing conditions and constraints to develop scenarios that can be used during discussions regarding the neighborhood's future. Making minimal or no change to the neighborhood is reflected in the Baseline Scenario and is one of the future scenarios considered.

This study can be used by city staff and leaders as a basis for decision-making regarding land use changes, capital facility planning, and quality of life enhancements. It is not, however, a stand-alone planning document intended to guide all decisions related to the future of the neighborhood but should be supplementary to those discussions.

Contents

The Ryan Hill Neighborhood Study has been divided into five sections that include:

Neighborhood Input – A neighborhood input meeting and neighborhood survey were used to engage residents and property owners on what the future of the neighborhood should be. The general themes from the neighborhood meeting and survey are outlined in this section.

Existing Conditions – This is the baseline analysis that assessed many of the physical, environmental, and infrastructure limitations to future development within the neighborhood. Maps and background information that served as the basis for scenario development is located within this section.

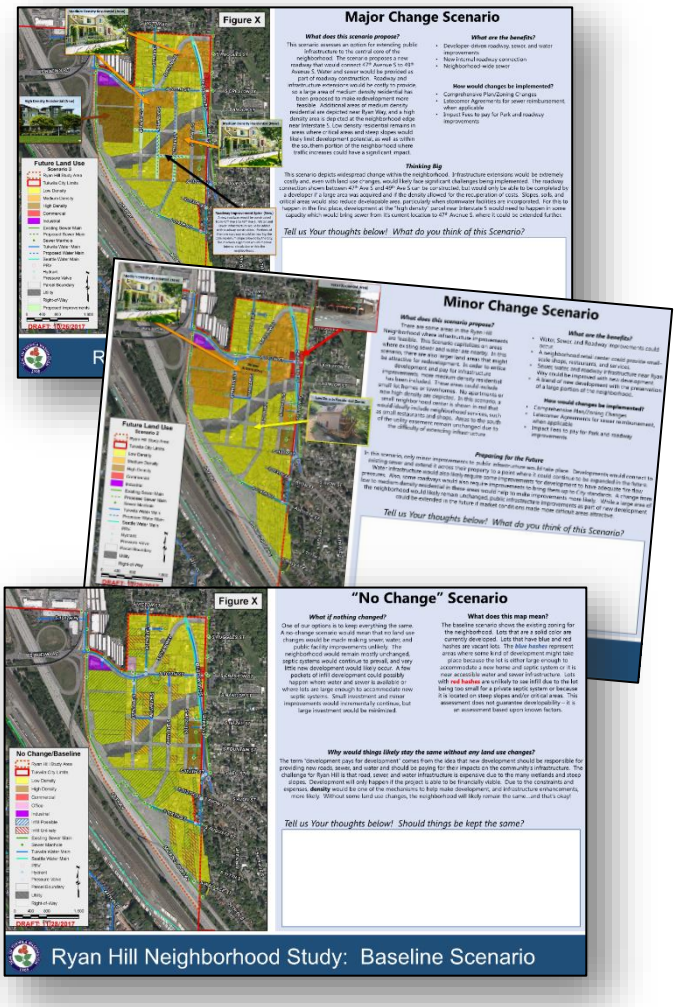
Development Scenarios – This section outlines the various scenarios developed including opportunities, input received, challenges, and planning-level cost estimates for infrastructure improvements.

Cost Estimate Matrix – This section provides a summary of the scenarios and an overview of the cost estimate breakdown for each.

Conclusions – A summary of the opportunities and challenges for the neighborhood, property owners, and the City.

NEIGHBORHOOD INPUT

On November 15, 2017, a neighborhood input meeting for the Ryan Hill Neighborhood Study was held at the Tukwila Community Center from 5 to 7 pm. Approximately 30 individuals attended the meeting where input on the future of the neighborhood was solicited. In addition to numerous existing conditions maps, three future scenario maps, along with a summary on each, were provided for input.



Overall themes from the neighborhood input meeting are summarized on the following page, but generally the key takeaways from the meeting include the following:

- The rural atmosphere is an asset that many want to preserve and protect
- Many residents & property owners wanted to see neighborhood change and new development
- Many residents also expressed a desire to preserve and keep the neighborhood the same
- Generally, attendees from the northern half of the neighborhood, near Ryan Hill Way, were more likely to support some degree of change where residents in the middle and southern portions of the neighborhood were more likely to support keeping the neighborhood the same, with a few exceptions
- New sewer infrastructure is needed
- New parks and recreation space is needed
- Improved bicycle and pedestrian facilities are needed

As part of neighborhood engagement, a mailer with a link to a survey was sent out to neighborhood residents and property owners. Additionally, a project webpage[1] was developed to host the survey and provide updates on the project's progress. Survey results depicted an even split in the neighborhood between those wanting to keep the neighborhood the same and those wanting some degree of change. The following are some of the most notable responses to the survey:

- 50% of respondents lived in Ryan Hill and 50% of respondents owned property but did not live in Ryan Hill.
- 75% of respondents indicated that they intended to keep living or owning property in Ryan Hill.
- 43% of respondents want the neighborhood to remain the same, 14% would support minor changes, and 43% supported neighborhood-wide changes.
- Generally speaking, respondents supported new single-family housing, were evenly divided on new townhomes, and were apprehensive to multifamily.
- For those on septic, 57% indicated they were interested in connecting to public sewer, 29% indicated they were not interested in connecting, and 14% indicated they might be interested in connecting to public sewer.

[1] Project Website: http://www.tukwilawa.gov/departments/community-development/community-planning/ryan-hill-neighborhood-study/.

What the Neighborhood Said…

Ryan Hill's Assets

- Close to everything yet far enough away to be peaceful
- Wooded, nice neighbors, proximity to transit and airport
- Close proximity to the City
- Convenient access to Interstate 5, Interstate 405, and Highway 167

Opportunities

- More Retail
- Preserving the neighborhood as it exists today
- Safe bicycle & pedestrian access, especially to light rail and transit
- More parks & greenspace
- Sewer improvements & enhancements
- More development, new neighbors, and activity

Challenges

- Maintaining the neighborhood's character and feel
- Keeping areas of the neighborhood the same / no change
- Impacts of additional traffic should growth occur

EXISTING CONDITIONS

Existing conditions within the Ryan Hill neighborhood are diverse. They range from traditional single-family neighborhoods served by public sewer to areas that remain largely untouched with large parcels and homes served by private septic systems. One multifamily senior living facility is located on 51st Avenue S. and a few retail/service uses are located on 51st Avenue S. at 107th Street. No significant public facilities are present within the neighborhood and no public parks currently exist; however, the City has identified a future park as part of its Parks, Recreation, and Open Space Plan.

Most homes in the neighborhood were constructed prior to 1970, with a few infill homes constructed over the past 20 years. Recently, a new townhome development was completed on 51st Avenue S. directly adjacent to the senior living facility. The new townhome development represents the growing pressures for change.

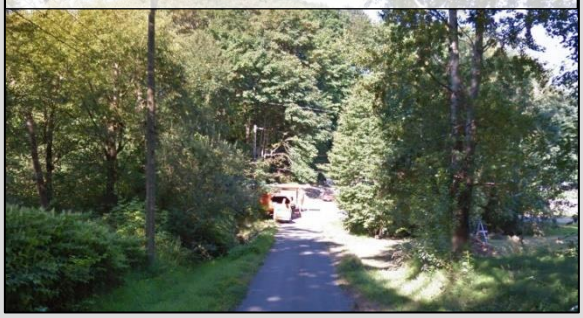
The following section outlines in greater detail the existing conditions that were evaluated as part of the neighborhood analysis, including the existing land use framework, critical areas, transportation network, and public utilities. The existing conditions analysis serves as a baseline from which planning-level decisions can be made and is a critical step in creating a framework for decision-making by neighbors and City leaders.

49th Avenue S. Streetscape

Townhome Development Along 51st Avenue S.

S. Ryan Hill Way at Beacon Avenue S.

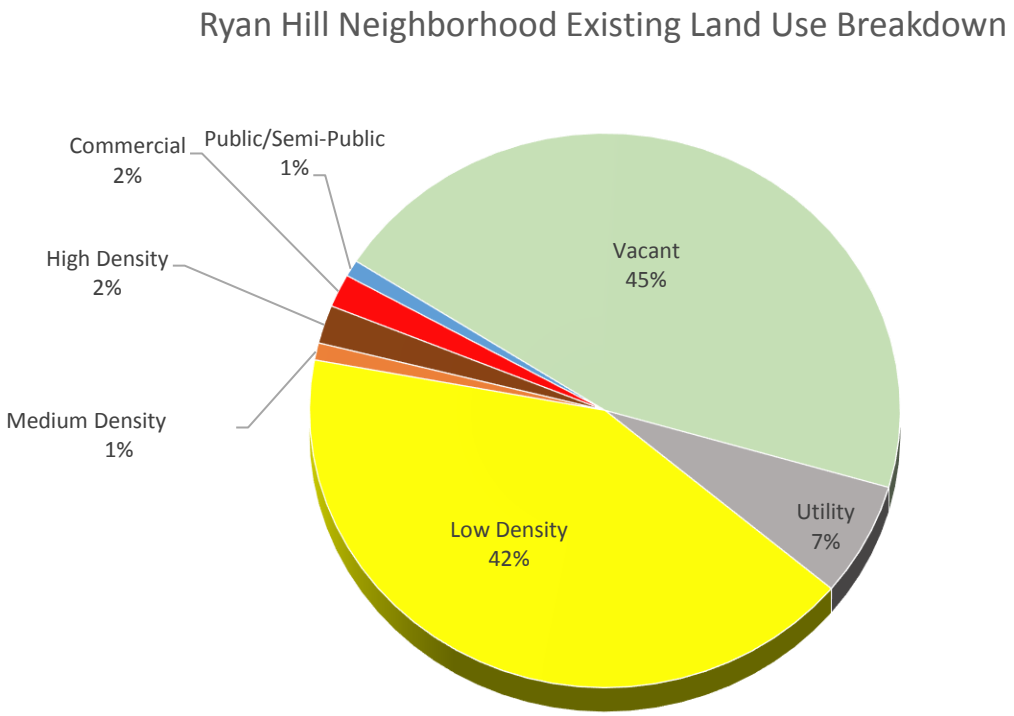
Rural Characteristics along S. 109th Street



Existing Land Use

The Existing Land Use Map on the adjacent page provides a visual on how land use within the neighborhood is currently being used. Land use is guided by the City's zoning ordinance and the current land use pattern generally coincides with existing zoning. The most predominant land use in Ryan Hill is single-family residential, shown in yellow, which represents traditional single-family detached homes. The area of high density residential along 51st Avenue S. represents the senior housing facility. The medium density residential in orange represents new townhomes recently constructed along 51st Avenue S. The largest commercial area in the neighborhood is the southeast corner of MLK R. Way S. at S. Ryan Way where Raisbeck Engineering is currently located, with other small service establishments located along 51st Avenue S.

The figure below shows the existing land use breakdown for the neighborhood based on the Existing Land Use Map. Almost half of neighborhood parcels are currently vacant, largely coinciding with areas where steep slopes, critical areas, and limited infrastructure have hindered development potential. A total of 42 percent of the neighborhood land area contains detached single-family homes. The 200-foot wide Seattle City Light easement that runs east-to-west through the neighborhood accounts for approximately 7 percent of the total land area. High and medium density residential uses along with commercial and public/semi-public uses account for the remaining 6 percent of the existing land use breakdown.



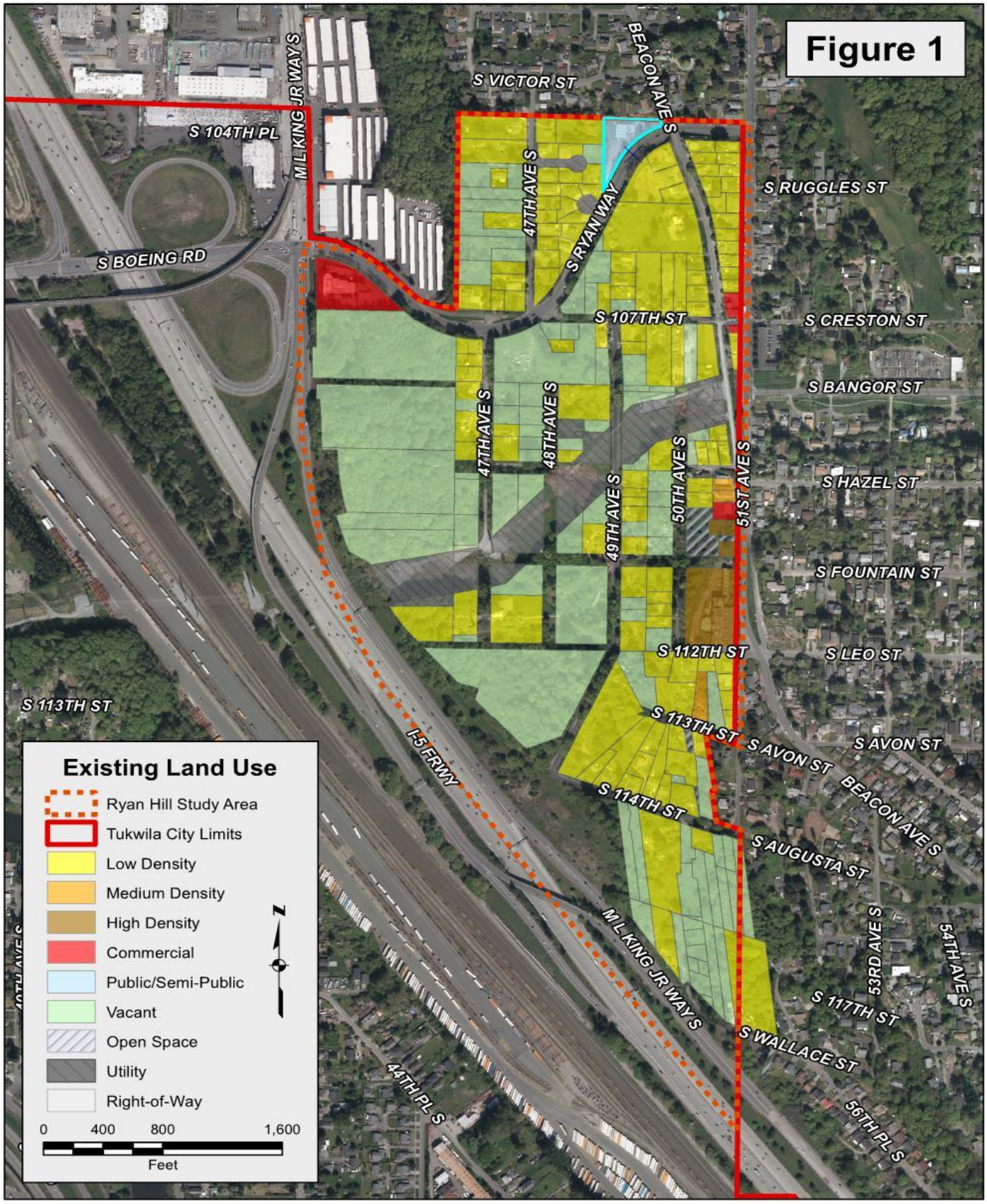


Figure 1
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44TH PL S
56TH PL S
Existing Land Use
Ryan Hill Study Area
Tukwila City Limits
Low Density
Medium Density
High Density
Commercial
Public/Semi-Public
Vacant
Open Space
Utility
Right-of-Way
0 400 800 1,600
Feet
N

Critical Areas

The Ryan Hill neighborhood is located on the eastern wall of the Duwamish River basin, which creates many limitations and challenges for future development. There is a 300-foot elevation change between the western and eastern portions of the study area as the terrain rapidly rises eastward from the Duwamish River. While there are many mitigation efforts that can be taken to facilitate development, should that be desired, encumbrances by streams, wetlands, and slopes will make any future development difficult across most of the neighborhood area – many vacant parcels depicted on the previous page directly coincide with areas where slopes, streams, or wetlands are present. Any future land use changes should seek to balance growth with the preservation of sensitive areas per City goals and policies.

Wetlands

There are several wetland areas within the study area, the largest of which is located across the west central portions of the neighborhood, near the southern end of 47th Avenue S. There are three additional wetland areas identified on iMAP, the City's GIS data and mapping system, and would require additional reconnaissance should a property owner seek to develop their property.

Streams

There are several identified streams located across the western half of the study area. These streams, and their buffers, also present challenges and limitations for future development. Based on available data, it does not appear that the identified streams within the Ryan Hill neighborhood are fish-bearing streams. Similar to wetlands, any development would require additional analysis to verify type and exact location. Development near or within streams and buffers would be required to mitigate development impacts in accordance with Washington State Department of Ecology and City of Tukwila standards. In many cases, these encumbrances limit future development.

Slopes

Steep slopes are the greatest development-related issue impacting the Ryan Hill neighborhood. The steep slopes present attractive views, including views of downtown Seattle from portions of the study area – they also create barriers and limitations. The Critical Areas Map on the adjacent page depicts pink and red areas where slopes over 15% are present. Steep slopes identified in red are those with impermeable soils likely composed of Vashon Till or other hard soils. While the impermeable surfaces would potentially be more conducive for structural development since the solid foundation reduces the landslide hazard risk, impermeable soils do not allow infiltration meaning that sites on impermeable soils would likely need to include detention facilities, an expensive addition.

Steep slopes depicted in pink are those with permeable soils where stormwater infiltration is more likely. Typically, flat, permeable soils are the most attractive for development since they can infiltrate stormwater runoff. Infiltration is a cost advantage because some of the rainwater is able to be immediately infiltrated into the soils and that infiltration ability reduces the sizing of infiltration vaults which can preserve more buildable area. When infiltration is not feasible, all stormwater must be detained on site and released at a pre-development rate. The detention vaults are often significantly larger than infiltration vaults and the detention vaults can sometimes reduce the developable area of a site and are, at a minimum, costly to build. As mentioned above, impermeable soils generally indicate a solid foundation which is good for a structure but bad for infiltration. Permeable soils on slopes often lack this solid foundation and are therefore more prone to landslides. When there is any landslide risk, infiltration is not feasible because infiltration can further saturate and destabilize slopes that are already at risk. There is an interesting dichotomy between permeable soils on slopes being better for infiltration but less conducive for development and impermeable soils generally being better for structures but less conducive for infiltration. Different approaches to development would be required based upon the underlying soils of a site.

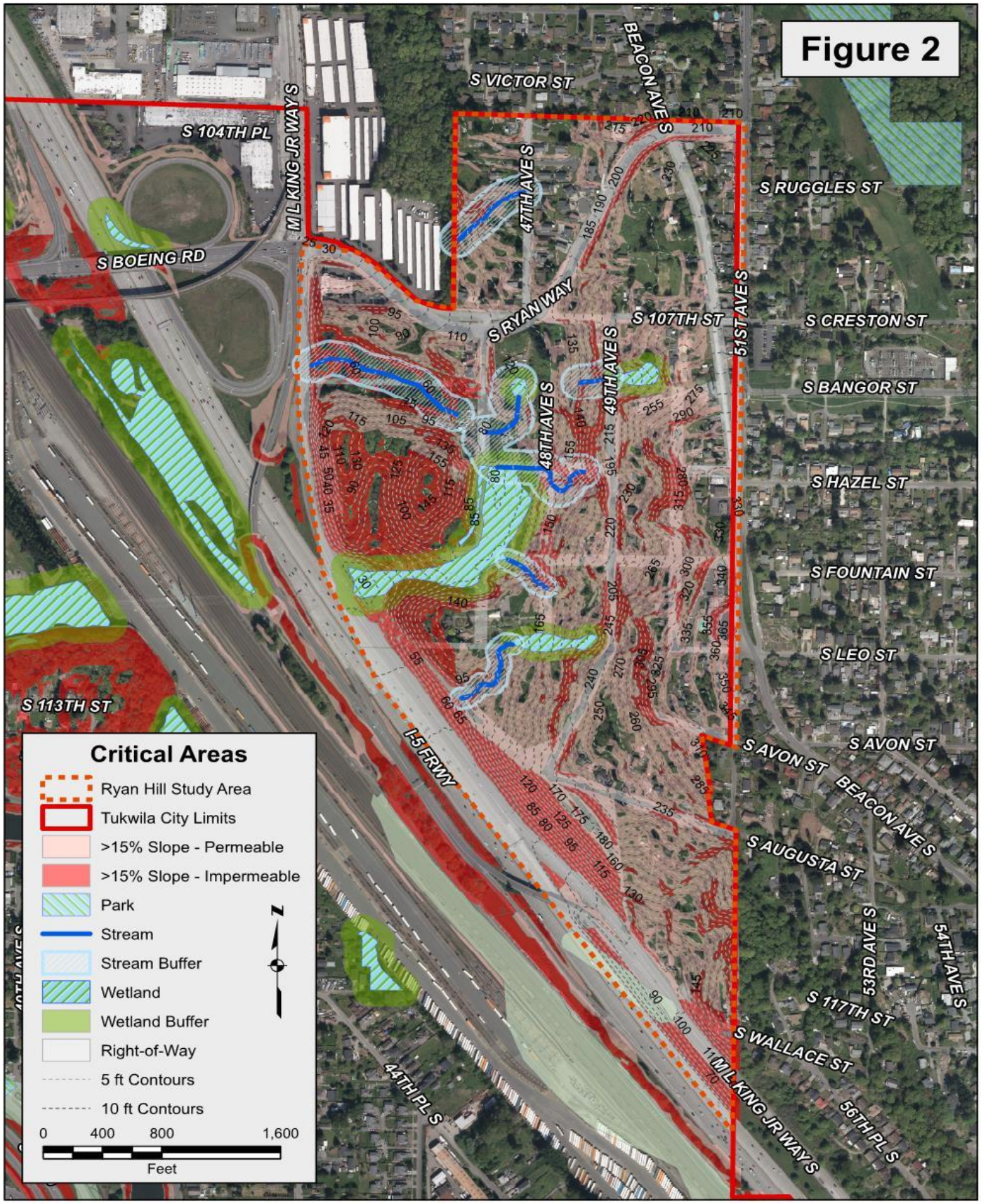
Figure 2
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56TH PL S
Critical Areas
Ryan Hill Study Area
Tukwila City Limits
>15% Slope - Permeable
>15% Slope - Impermeable
Park
Stream
Stream Buffer
Wetland
Wetland Buffer
Right-of-Way
5 ft Contours
10 ft Contours
0 400 800 1,600
Feet
N

Transportation

Existing Network

S. Ryan Way is the primary east/west arterial through the neighborhood and provides access to Interstate 5. 51st Avenue S. is the primary north/south arterial through the neighborhood and also serves as the border between the City of Tukwila and the City of Seattle. While the roadway serves as the City limit boundary between the two cities, the roadway from the centerline eastward is within the City of Seattle's jurisdiction and the area from the centerline to the west property line is under King County's jurisdiction leaving no portion of the 51st Avenue S. ROW within the City of Tukwila's control. This has complicated efforts to make improvements to 51st Avenue S. 49th Avenue S. also provides an additional north/south connection and was recently resurfaced. With the exception of S. Ryan Way and 51st Avenue S., most of the existing roadways do not meet current City standards. They generally lack sufficient pavement widths, storm drainage infrastructure, and have little to no pedestrian or bicycle infrastructure.

Gaps

The Transportation Network Map, Figure 3, contains numerous connectivity gaps. As platting occurred in the past, right-of-way was provided, but much of the existing right-of-way set aside for future roadways has not been improved. The Transportation Network map on the adjacent page shows this connectivity gap well. Grey areas depict where current right-of-way exists. The grey areas form a great roadway grid, but steep slopes and critical areas significantly limit the ability for this roadway network to be achieved. Yellow areas highlight existing roadway pavement and the limited connectivity that has actually been realized. One outcome for scenario development is reviewing the existing roadway network and determining where additional connectivity can be achieved.

In addition to roadways, connectivity and transportation also involves pedestrian and bicycle infrastructure. With the exception of 51st Avenue S. and S. Ryan Way, no significant pedestrian or bicycle infrastructure exists. Neighborhood input identified these improvements as needed, particularly if any additional development occurs.

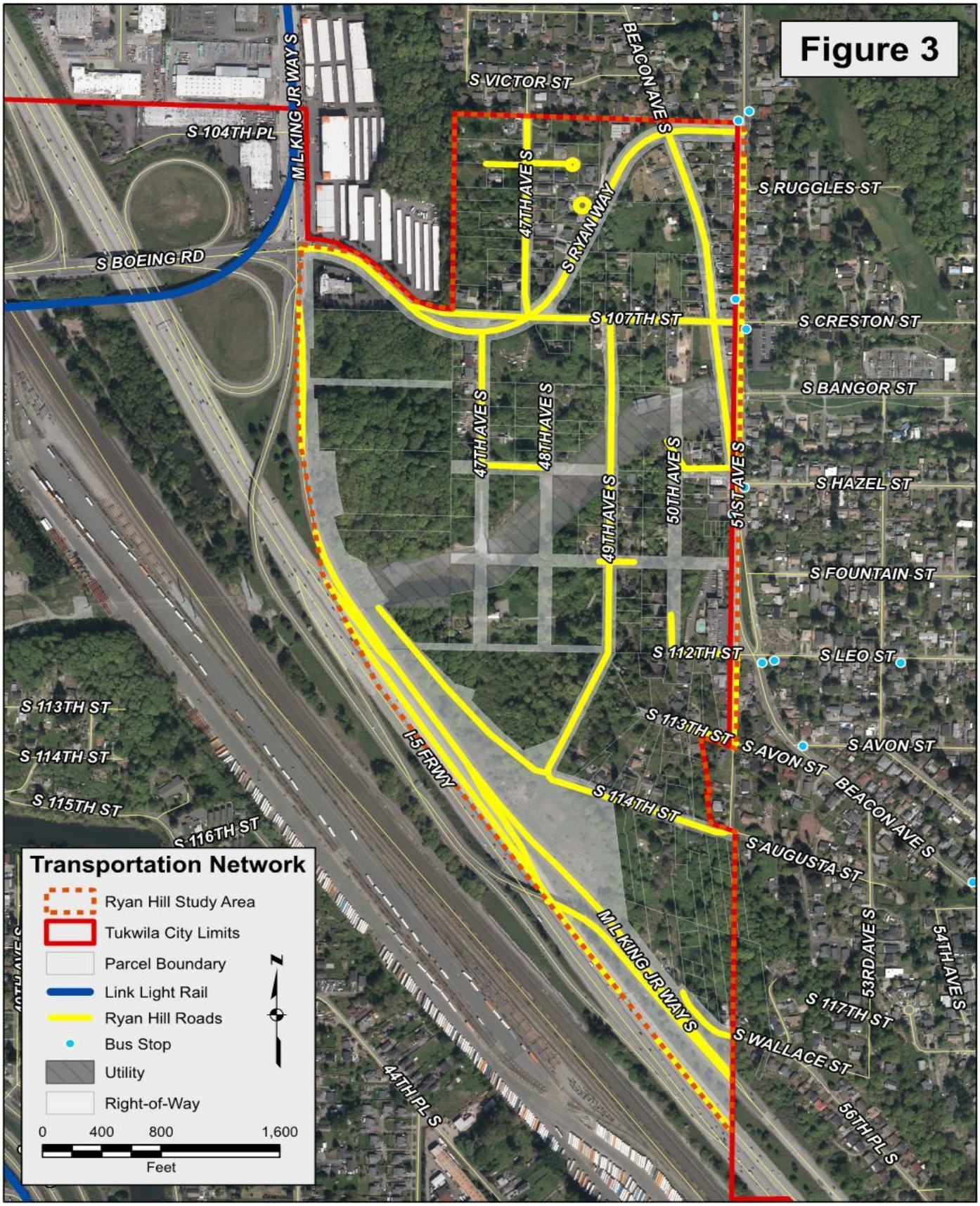
Figure 3
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Transportation Network
Ryan Hill Study Area
Tukwila City Limits
Parcel Boundary
Link Light Rail
Ryan Hill Roads
Bus Stop
Utility
Right-of-Way
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400
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1,600
Feet
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Utilities

Sewer

Existing sewer service within the neighborhood is limited, as depicted on the Utility Map, Figure 4 on the adjacent page. Public sewer is primarily confined to MLK JR. Boulevard, S. Ryan Way (west of 47th Avenue S.), 47th Ave S. (north of S. Ryan Way), S. 114th Street, and along 51st Avenue S. Topography across the neighborhood has played a large part in limiting public sewer extensions. Elevations decreases rapidly west of 51st Avenue S. which limits the service potential from the existing sewer main at that location. All future sewer service will require additional sewer main extensions from mains located on MLK Jr. Way S., S. 114th Street, and S. Ryan Way. The condition of existing sewer mains within the neighborhood is unknown, but no capacity issues have been identified.

Water

The neighborhood water system is primarily served by the City of Seattle water main located along Beacon Avenue S. and a 12-inch City of Tukwila water main along portions of S. Ryan Way. Public water mains within the interior of the neighborhood is extremely limited with several dead-end water mains (mains where no looping is available). The interior network of 8-inch water mains serves several hydrants, primarily along 47th Avenue S., 48th Avenue S., and S. 107th Street. Should any future development occur, a key infrastructure objective would be the looping of the 8-inch water main to support water quality and increase fire flow capacities. Additionally, many homes in the neighborhood are served by "spaghetti lines" which are private, two-inch service lines that extend from a water meter box placed off a public water main to the individual home. Spaghetti lines are private service lines owned and maintained by the individual property owner. As water mains are expanded and looped, many of the long private service lines will likely be reduced. Discussions with City Staff indicate that future capacity is needed and could be accomplished through construction of a costly reservoir, or through an agreement with the City of Seattle, in cooperation with the Cascade Water Alliance (Tukwila's water provider) for an intertie and Master Meter, ideally at the northern border with the City of Seattle at MLK Jr. Way S.

Septic

Due to the limited sewer infrastructure, a large number of neighborhood residents are currently on private septic systems. In most cases, septic systems can be designed and utilized without a significant impact to public health given percolating soils and sufficient room to infiltrate within designated septic drainfields. The Septic/Sewer Map, Figure 5, provides an overview of parcels that are either connected to sewer or are utilizing private septic systems. The map breaks down septic systems into two categories – functional septic systems and problematic septic systems.

The Seattle/King County Department of Health data was analyzed to provide a high-level assessment of the current status of existing septic systems. Those identified as functional septic systems in yellow are currently shown as being in good condition by the Department of Health. The data indicates that an inspection has occurred and no issues were detected, or could mean that the septic system obtained required permits from the Department of Health and no issues have since been reported. Problematic septic systems in red are those where either no permit data for the system exists, potentially because the system was installed prior to 1970, or where issues have been reported. It's important to note that properties identified as problematic septic systems do not necessarily have failing septic systems.

Input received through the neighborhood meeting and the neighborhood survey indicates that the sewer/septic situation in Ryan Hill is one of the most pressing needs. Many with septic systems expressed a desire to voluntarily connect to public sewer in the future.

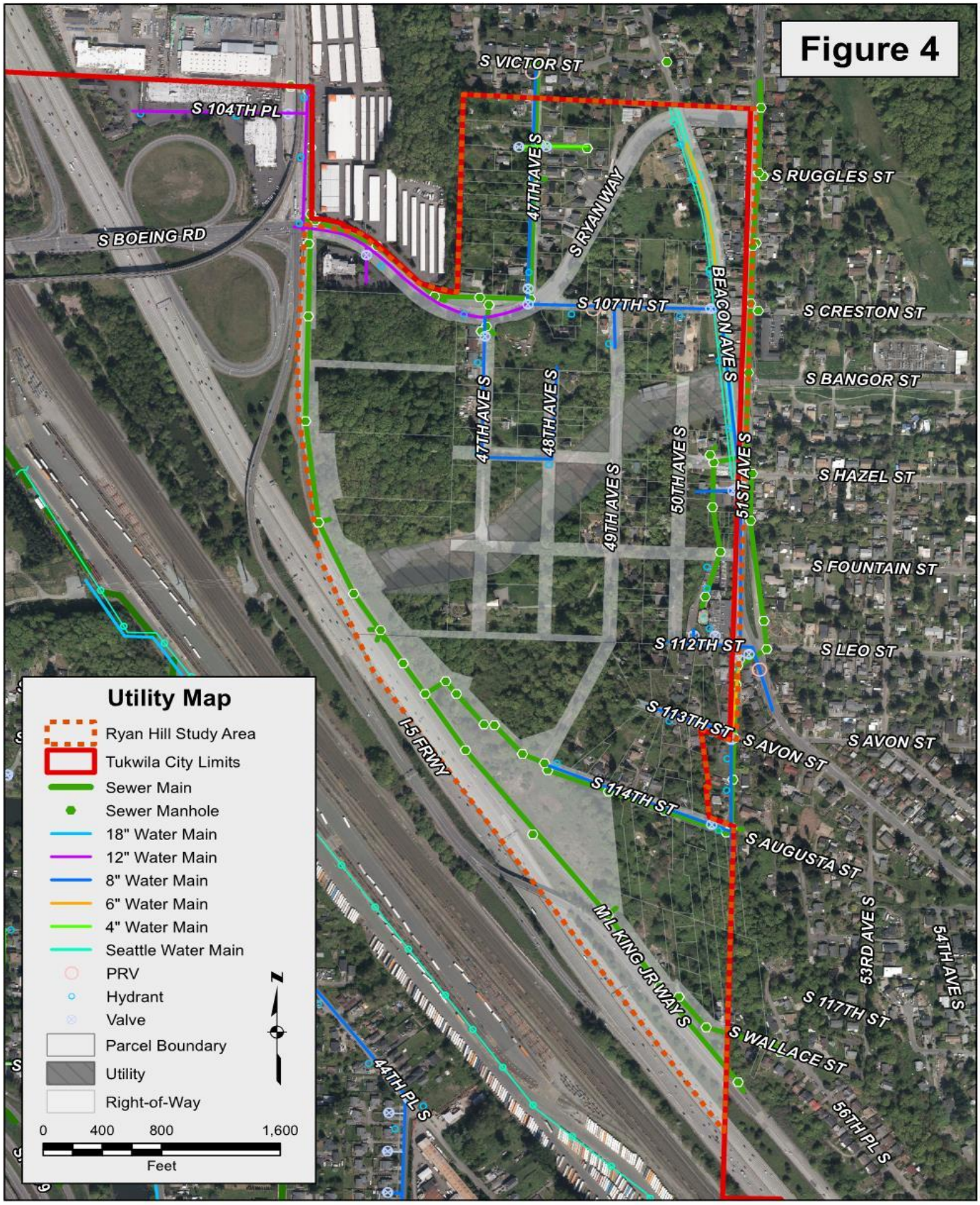
Figure 4
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Utility Map
Ryan Hill Study Area
Tukwila City Limits
Sewer Main
Sewer Manhole
18" Water Main
12" Water Main
8" Water Main
6" Water Main
4" Water Main
Seattle Water Main
PRV
Hydrant
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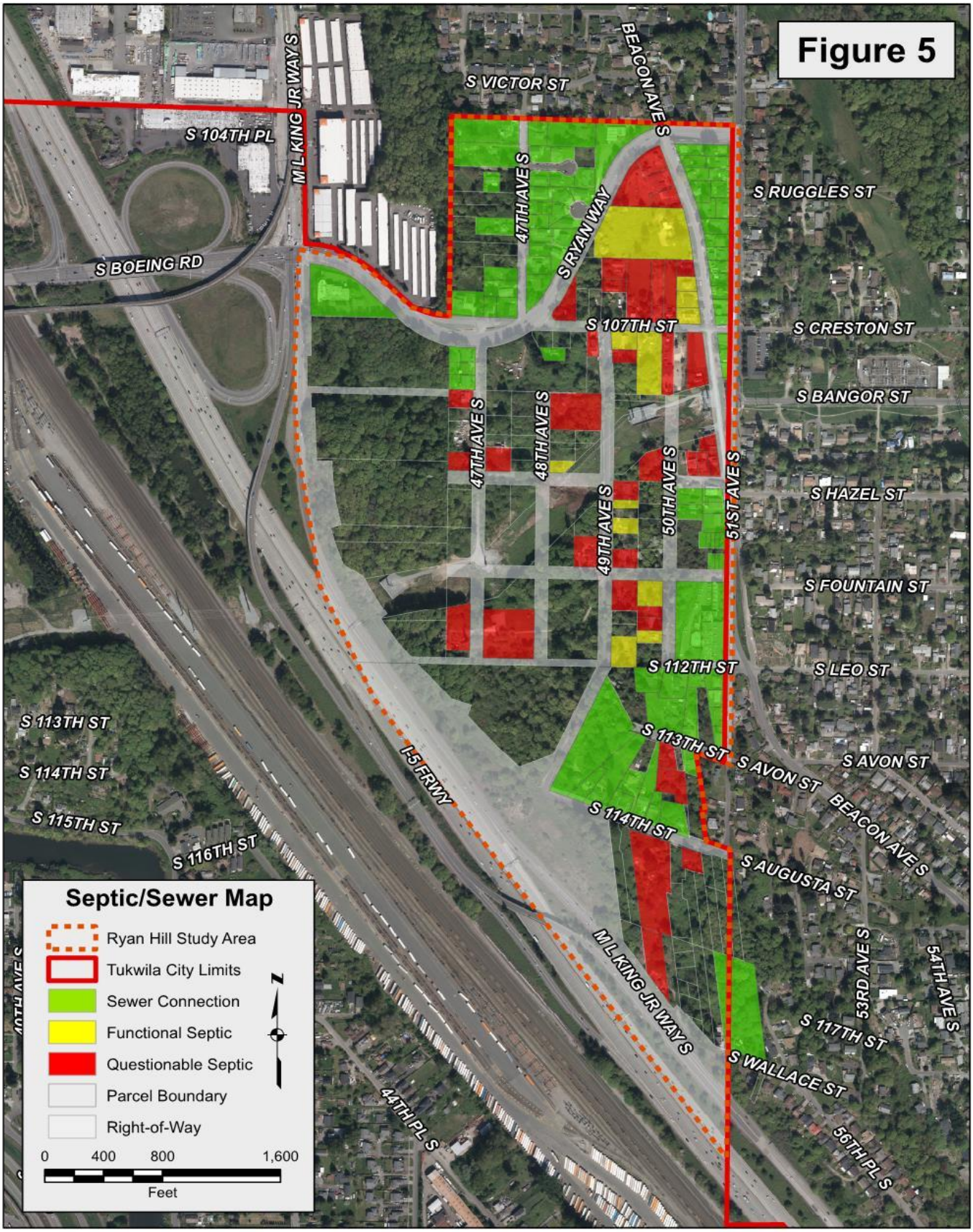
Figure 5
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Septic/Sewer Map
Ryan Hill Study Area
Tukwila City Limits
Sewer Connection
Functional Septic
Questionable Septic
Parcel Boundary
Right-of-Way
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DEVELOPMENT SCENARIOS

Overview

As part of the analysis, a total of four land use scenarios were developed. At the onset of the project, a baseline scenario and two land use scenarios were developed to promote neighborhood input on the possible future scenarios for their neighborhood. These initial scenarios were presented at the November 15th neighborhood input meeting and feedback on the options was solicited. The three scenarios included:

- **Baseline/No Change Scenario** – Assumed no changes to the neighborhood's land use pattern and no significant infrastructure improvements. Certain infill development would occur, but the neighborhood would likely remain relatively unchanged.
- **Minor Change Scenario** – Assumed new medium density residential near Ryan Hill Way where existing access and minor infrastructure improvements could support change, if desired. An expanded retail node was also shown along 51st Avenue S. at 107th Street.
- **Major Change Scenario** – Depicted pockets of medium density residential, an area of high density residential along MLK Jr. Way S., and an area of new medium density residential along 49th Avenue S. served by a new roadway that connects 47th Avenue S. to 49th Avenue S within the city's existing roadway design standards.

Neighborhood input on these three scenarios was received and was combined into the creation of a new scenario that attempted to blend neighborhood input into a consolidated approach. This final scenario adjusted new medium density residential to only be located north of the Seattle City Light utility easement, where residents were generally supportive of change, and kept all land use to the south of the utility easement the same in response to feedback from residents regarding the protection of the rural character in that portion of the neighborhood. A high-density area was depicted along MLK Jr. Way S. to facilitate the roadway connection between 47th Avenue S. and 49th Avenue S.

This section outlines in greater detail the specifics related to each of these development options.

Assumptions

At the onset of the process, meetings were conducted with various City of Tukwila departments to determine whether infrastructure, planning, parks, police, and fire issues exist and what, if any, improvements are planned. Based upon those discussions, the following assumptions were used during the drafting of land use scenarios:

- All water and sewer infrastructure improvements within the neighborhood would need to be development-driven.
- There is only one source of water through the City of Seattle intertie and the lack of water main looping is a concern. Additional water storage/capacity would likely be needed with new development and this could be achieved with an additional intertie and master meter with the City of Seattle.
- While right-of-way for future roadways exists, there is currently an overall lack of connectivity and nonmotorized facilities such as sidewalks. Improved connectivity is desired and should be examined.
- There were no identified deficiencies or needs with police coverage, other than minor issues occasionally reported.
- Concerns have been expressed by the Tukwila Fire Chief about being able to provide adequate emergency medical service for any increase in demand. Response times could be improved through a mutual aid agreement, which is currently being negotiated with the City of Seattle. The primary challenge for fire relates to fire flow for fighting fires and for sprinkler systems, upgrading hydrants as development occurs, and difficult access for fire trucks due to the lack of street connectivity.
- The Parks, Open Space, and Recreation Plan identifies a future park for this neighborhood, but is not currently budgeted.

Baseline / No Change Scenario

Overview

The first scenario assessed outcomes should no land use change or infrastructure improvements take place. The No Change/Baseline, Figure 6, on the adjacent page maintains the existing Future Land Use and Zoning designations and proposes no changes to land use. Additionally, the scenario depicts existing water and sewer infrastructure and also assumes no major changes or upgrades of public infrastructure. Given these assumptions, a parcel-by-parcel analysis was conducted to determine whether infill development on vacant parcels could occur. This review did not account for redevelopment on sites where existing homes are located – it only assessed vacant parcels for infill potential.

On the No Change/Baseline Map, parcels with blue dashed lines are those where infill development could potentially occur. These are sites that have access to public sewer or are large enough to potentially support a private septic system and drainfield. Additionally, these sites could support a new single-family home and are located in areas where driveway access could reasonably be provided. All potential infill is assumed to be the type of development currently permitted by existing zoning.

Parcels in the No change/Baseline Map with red dashed lines are those where infill development would be more challenging and less likely to occur. These are sites that are encumbered by critical areas, located on steep slopes, and are sites where new private septic systems would be challenging. It's important to note that a parcel identified as unlikely to receive infill development does not necessarily mean that infill development is impossible – these are sites where infill development would be considerably more challenging due to physical constraints and infrastructure limitations.

Analysis

Many residents have expressed a strong desire for the neighborhood to remain the same. The neighborhood is a rural oasis within the surrounding urban environment and contains many sensitive environmental areas, scenic views, and rural tranquility. Should no land use changes or infrastructure improvements be made, only limited development and redevelopment would likely occur and the neighborhood's existing characteristics would likely be preserved during this development cycle.

Facility Improvement Costs

This scenario assumes no major public facility improvements; therefore, no infrastructure improvements are depicted.

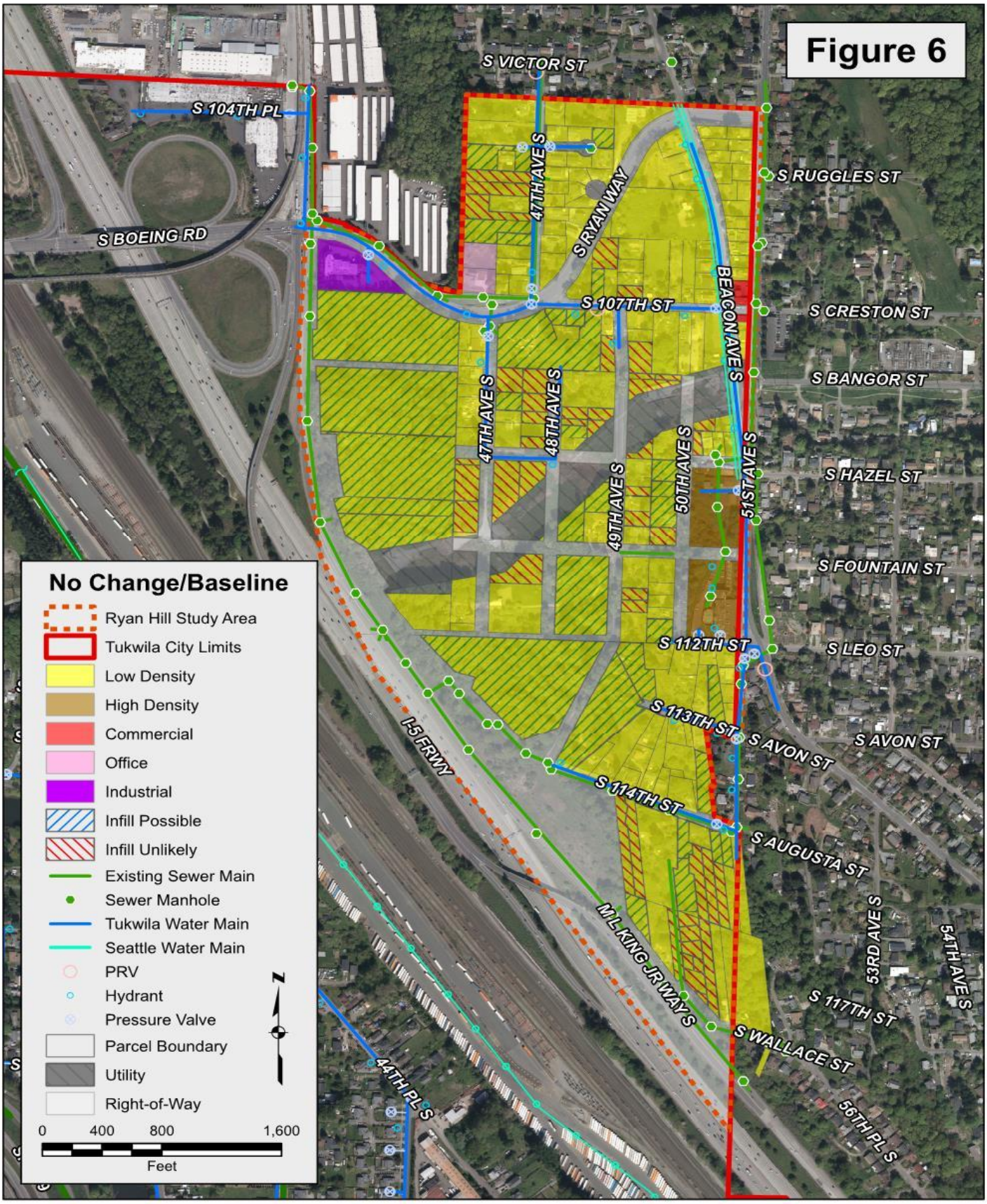
Figure 6
S VICTOR ST
S 104TH PL
S BOEING RD
47TH AVE S
S RYAN WAY
S RUGGLES ST
S 107TH ST
BEACON AVE S
S CRESTON ST
S BANGOR ST
47TH AVE S
48TH AVE S
50TH AVE S
51ST AVE S
S HAZEL ST
49TH AVE S
S FOUNTAIN ST
S 112TH ST
S LEO ST
S 113TH ST
S AVON ST
S AVON ST
I-5 FRWY
S 114TH ST
S AUGUSTA ST
M L KING JR WAY S
53RD AVE S
54TH AVE S
S 117TH ST
S WALLACE ST
44TH PL S
56TH PL S
No Change/Baseline
Ryan Hill Study Area
Tukwila City Limits
Low Density
High Density
Commercial
Office
Industrial
Infill Possible
Infill Unlikely
Existing Sewer Main
Sewer Manhole
Tukwila Water Main
Seattle Water Main
PRV
Hydrant
Pressure Valve
Parcel Boundary
Utility
Right-of-Way
N
0 400 800 1,600
Feet

Scenario One

Overview

Scenario One, Figure 7, was presented at the Neighborhood Input Meeting as the "Minor Change Scenario." Scenario One proposed land use changes between S. Ryan Way and the Seattle City Light utility easement. While improvements would be needed, this portion of the neighborhood is generally more conducive for development and could be more directly served by S. Ryan Way reducing traffic impacts to areas of the neighborhood where the lack of roadway infrastructure would present traffic and cost challenges. An expanded area of commercial/retail was depicted along 51st Avenue S. at 107th Street where a node of neighborhood service retail could be situated to serve existing and future residents.

Given the location of the land use changes, infrastructure improvements would be relatively minimal. Extension of public sewer eastward along S. Ryan Way and S. 107th Street would serve their respective surrounding areas. The most critical infrastructure piece in this scenario would be the extension of sewer main from MLK Jr. Way S eastward to 47th Avenue S. A ridge located to the south of S. Ryan Way limits the ability for areas along 47th Avenue S. to be served from S. Ryan Way which makes a public extension to 47th Avenue S. from MLK Jr. Way south a critical element for future sewer service to the entire center of the neighborhood. Without this extension in some capacity, the expansion of additional sewer service to the central portions of the neighborhood will remain unlikely.

Many of the areas where medium density residential is shown are currently supported by existing water infrastructure. Water main looping within the interior areas of the neighborhood would occur in conjunction with any new development, particularly when internal looping might be required to obtain minimum fire flow requirements set by the fire marshal. Finally, the additional storage/capacity intertie with the City of Seattle would likely be necessary to support the full realization of this scenario.

Analysis

Scenario One proposes land use changes over approximately one third of the neighborhood area. Given the critical areas and slopes, a land use change to medium density residential would provide an incentive for redevelopment to occur and would help to drive the provision of infrastructure improvements. Input received on this scenario at the neighborhood input meeting was generally positive, with a lot of positive feedback on an expanded commercial/retail node. As with other scenarios, many also expressed a strong desire to keep the neighborhood the same. Neighborhood feedback on this scenario also referenced the need for bicycle and pedestrian improvements, especially across the Boeing Access Road. The majority of the neighborhood would remain unchanged in this scenario, but additional traffic would be generated.

Facility Improvement Costs

Due to most of the proposed improvements occurring near S. Ryan Way, facility improvement costs are limited. This cost estimate only includes anticipated public extensions, which in this scenario are confined to sewer extensions, including the wetland mitigation required with the proposed sewer extension. The details for cost estimates are included within Appendix A.

Scenario One Cost Estimate	
Sanitary Sewer Segment	**Cost**
MLK to 47th Ave. S.	$632,250
S. Ryan Way & S. 107th Street Extension	$593,500
Scenario One Total	**$1,225,750**

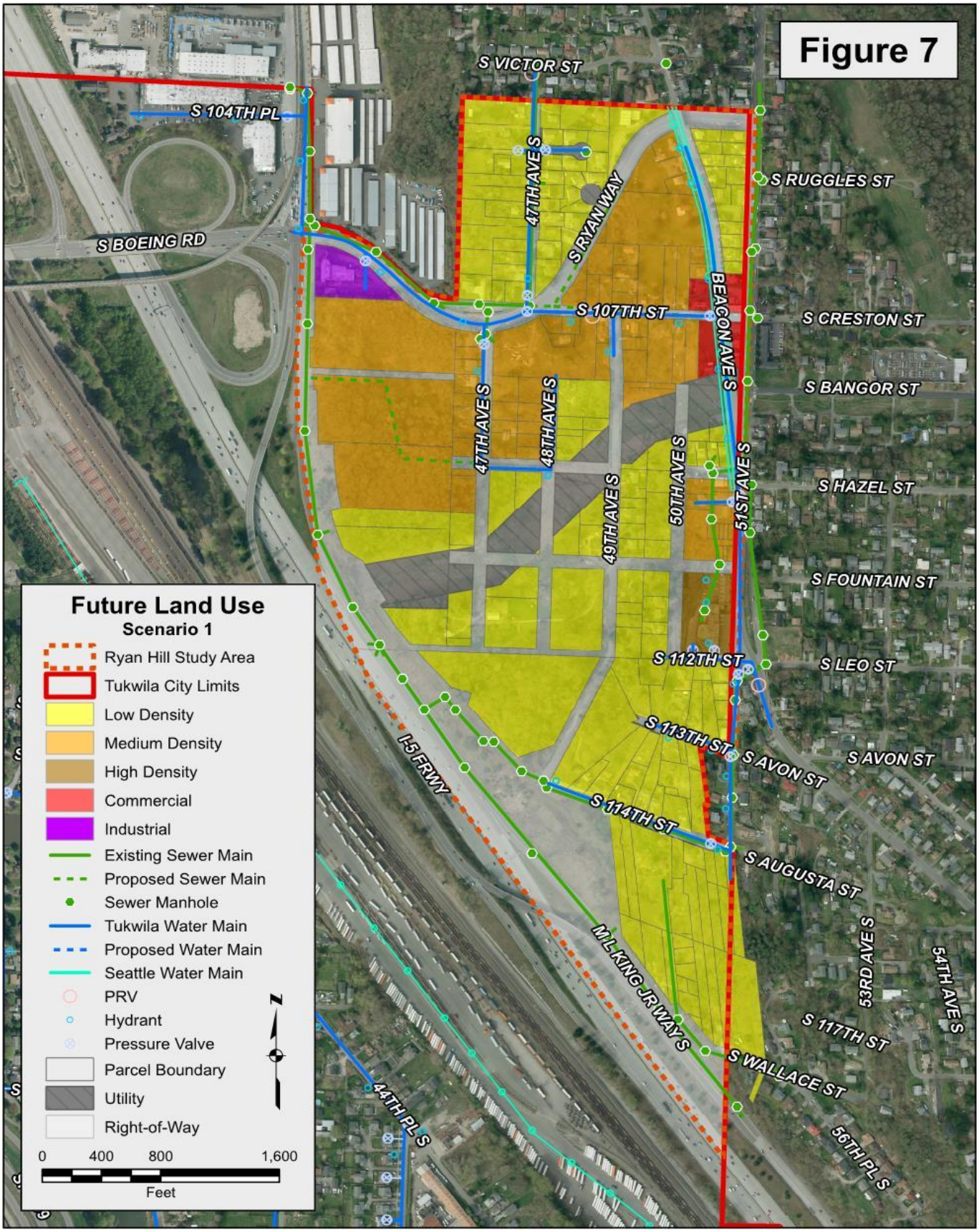
Figure 7
S VICTOR ST
S 104TH PL
S BOEING RD
47TH AVE S
S RYAN WAY
S RUGGLES ST
S 107TH ST
BEACON AVE S
S CRESTON ST
S BANGOR ST
47TH AVE S
48TH AVE S
49TH AVE S
50TH AVE S
51ST AVE S
S HAZEL ST
S FOUNTAIN ST
S 112TH ST
S LEO ST
S 113TH ST
S AVON ST
S AVON ST
I-5 FRWY
S 114TH ST
S AUGUSTA ST
M L KING JR WAY S
53RD AVE S
54TH AVE S
S 117TH ST
S WALLACE ST
44TH PL S
56TH PL S
Future Land Use
Scenario 1
Ryan Hill Study Area
Tukwila City Limits
Low Density
Medium Density
High Density
Commercial
Industrial
Existing Sewer Main
Proposed Sewer Main
Sewer Manhole
Tukwila Water Main
Proposed Water Main
Seattle Water Main
PRV
Hydrant
Pressure Valve
Parcel Boundary
Utility
Right-of-Way
0 400 800 1,600
Feet
N

Scenario Two

Overview

Future Land Use Scenario 2, Figure 8, was drafted based on feedback received from the Neighborhood Input Meeting. The primary themes at the meeting included keeping the neighborhood the same, supporting some neighborhood change, and/or encouraging the commercial/retail node along 51st Avenue S. Attendees from the area north of the Seattle City Light Utility Easement were generally more supportive of some degree of change where attendees from the central and southern portions of the neighborhood generally indicated a desire to keep the neighborhood the same. In order to blend this feedback, medium density land use changes are only shown north of the Seattle City Light easement and no land use changes are proposed south of the easement. In order to address connectivity elements, an area of high density residential has been shown along MLK Jr. Way S. High-density construction at this location could facilitate the new roadway connection between 47th Avenue S. and 49th Avenue S. and the construction of a new traffic signal at 47th Avenue S. Any development at the high-density location would need to extend sewer to 47th Avenue S. to support the higher density to the east. This extension would serve the entire central portion of the neighborhood assuming the sewer line would continue to be extended from this point in the future. Finally, a new roadway connection between S. 114th Street and S. Wallace Street is depicted to help improve connectivity and could be constructed with any future single-family development at that location, as currently allowed by zoning. An additional storage/capacity intertie with the City of Seattle, which would directly increase the neighborhood's storage capacity, would likely be necessary to support the full realization of this scenario.

Analysis

Sewer infrastructure expansions are incrementally proposed under this scenario, as depicted on the Scenario Two map. The two most critical sewer main extensions in this scenario are the extension eastward along S. Ryan Way to serve the area along Beacon Avenue S, and the extension through the high-density site which would bring sewer from MLK Jr. Way S. to 47th Avenue S. Sewer could temporarily terminate at 47th Avenue S. with future extensions eastward as development occurs.

Water infrastructure improvements and expansions are also proposed under this scenario, with water main looping being a major priority. Water main looping along 49th Avenue S. is the most significant proposal in this scenario. Additionally, water main looping between 48th Avenue S. to 49th Avenue S. will significantly improve fire flow and will allow for additional hydrants to be placed throughout the central core of the neighborhood where deficiencies currently exist. As with sewer, even if fire flow requirements at the high-density location are able to be achieved without looping, water main would ideally be constructed in conjunction with the roadway improvement with some financial agreement likely required.

Facility Improvement Costs

Sanitary Sewer Segment	**Cost Estimate**
MLK to 49th Ave S.	$517,000
S. Ryan Way & 107th Street Extension	$593,500
49th Ave. S.	$210,000
S. 114th Street to S. Wallace Street	$84,250
Sanitary Sewer Total	**$1,404,750**
Water Main Segment	**Cost Estimate**
49th & 112th	$773,200
S. 114th Street to S. Wallace Street	$109,100
48th Ave. S. to 49th Ave. S.	$80,000
Water Main Total	**$962,300**
New Roadways	**Cost Estimate**
Hazel - 48th - Fountain (47th to 49th Spine)	$2,567,900
S. 114th Street to S. Wallace Street	$1,191,880
New Roadways Total	**$3,759,780**
Scenario Two Total	**$6,126,830**

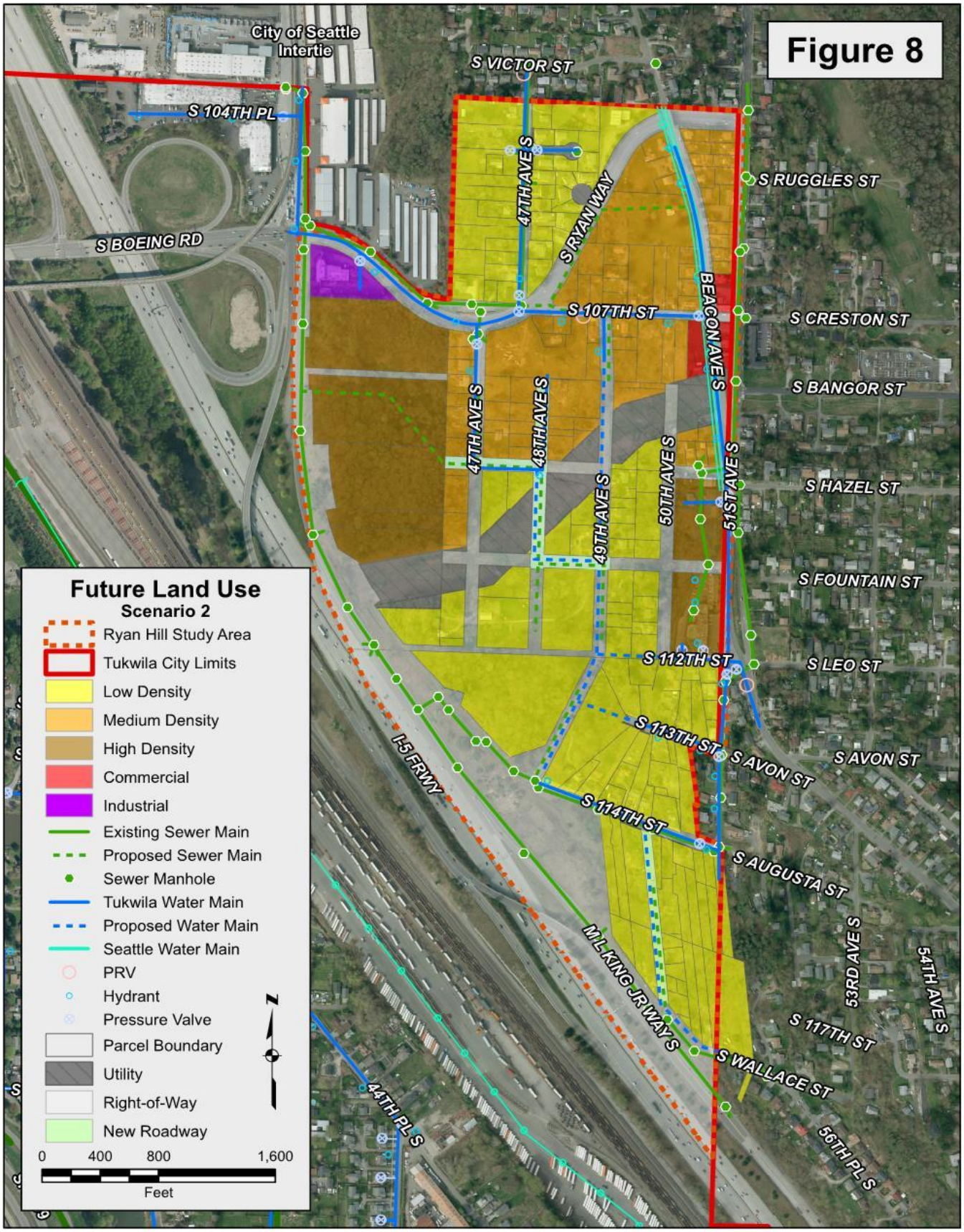
Figure 8
City of Seattle Intertie
S VICTOR ST
S 104TH PL
S BOEING RD
47TH AVE S
S RYAN WAY
S RUGGLES ST
S 107TH ST
BEACON AVE S
S CRESTON ST
S BANGOR ST
47TH AVE S
48TH AVE S
49TH AVE S
50TH AVE S
51ST AVE S
S HAZEL ST
S FOUNTAIN ST
S 112TH ST
S LEO ST
S 113TH ST
S AVON ST
S AVON ST
I-5 FRWY
S 114TH ST
S AUGUSTA ST
M L KING JR WAY S
53RD AVE S
54TH AVE S
S 117TH ST
S WALLACE ST
44TH PL S
56TH PL S
Future Land Use
Scenario 2
Ryan Hill Study Area
Tukwila City Limits
Low Density
Medium Density
High Density
Commercial
Industrial
Existing Sewer Main
Proposed Sewer Main
Sewer Manhole
Tukwila Water Main
Proposed Water Main
Seattle Water Main
PRV
Hydrant
Pressure Valve
Parcel Boundary
Utility
Right-of-Way
New Roadway
0 400 800 1,600
Feet
N

Scenario Three

Overview

Scenario Three, Figure 9, was presented at the Neighborhood Input Meeting as the "Major Change" Scenario. This option was originally created to assess the option of extending public infrastructure through the central core of the neighborhood by creating a new roadway connection between 47th Avenue S. and 49th Avenue S with water and sewer infrastructure. This new infrastructure spine would dramatically increase sewer service potential, water main looping, and roadway connectivity. In order to achieve those objectives, an area of medium density residential was depicted near the existing high density zoned areas. Development-driven infrastructure improvements through the central core would be costly, and higher density would likely be the mechanism to help justify such improvements financially. Additional areas of medium density residential were added along S. Ryan Way and a high-density option was added along MLK Jr. Way S.to assist with the completion of needed infrastructure improvements through development-driven means.

Analysis

The primary purpose of the "Major Change" scenario was to create an option that provides significant infrastructure improvements within the neighborhood. As part of the objective of achieving development-driven improvements, this scenario depicts much higher densities, particularly in the central core of the neighborhood, to offset the costs of new infrastructure. Sewer infrastructure is extended into the central core at 47th Street through the high-density parcel which, from this location, could be extended to serve the vast majority of areas currently not able to be connected to gravity sewer due to ridges and topography. Additionally, significant water main looping is proposed, the most significant of which is located along 49th Avenue S. and along the proposed new roadway.

The most significant issue with Scenario Three, and is also reflected in Scenario Two, is the wetland mitigation that would be required as part of the new roadway between 47th Avenue S. and 49th Avenue S. There are many variabilities associated with the wetland mitigation, but estimates put the wetland mitigation costs alone at approximately $1.25 million.

Neighborhood input received on this scenario expressed concern over how Major Changes could impact the rural feel of the neighborhood and increase traffic congestion. In particular, several comments expressed concern over the medium density residential depicted south of the Seattle City Light easement. Other comments related to the desire for more parks and greenspace with higher densities and the desire for more pedestrian and bicycle connectivity, especially with linkages to transit.

Facility Improvement Costs

Scenario Three Cost Estimate	
Sanitary Sewer Segment	**Cost Estimate**
MLK to 49th Ave S.	$517,000
S. Ryan Way & 107th Street Extension	$593,500
49th Ave. S.	$210,000
Sanitary Sewer Subtotal	**$1,320,500**
Water Main Segment	**Cost Estimate**
49th & 112th	$773,200
48th Ave. S. to 49th Ave. S.	$80,000
Water Main Subtotal	**$853,200**
New Roadways	**Cost Estimate**
Hazel - 48th - Fountain (47th to 49th Spine)	$2,567,900
New Roadways Subtotal	**$2,567,900**
Scenario Three Total	**$4,741,600**

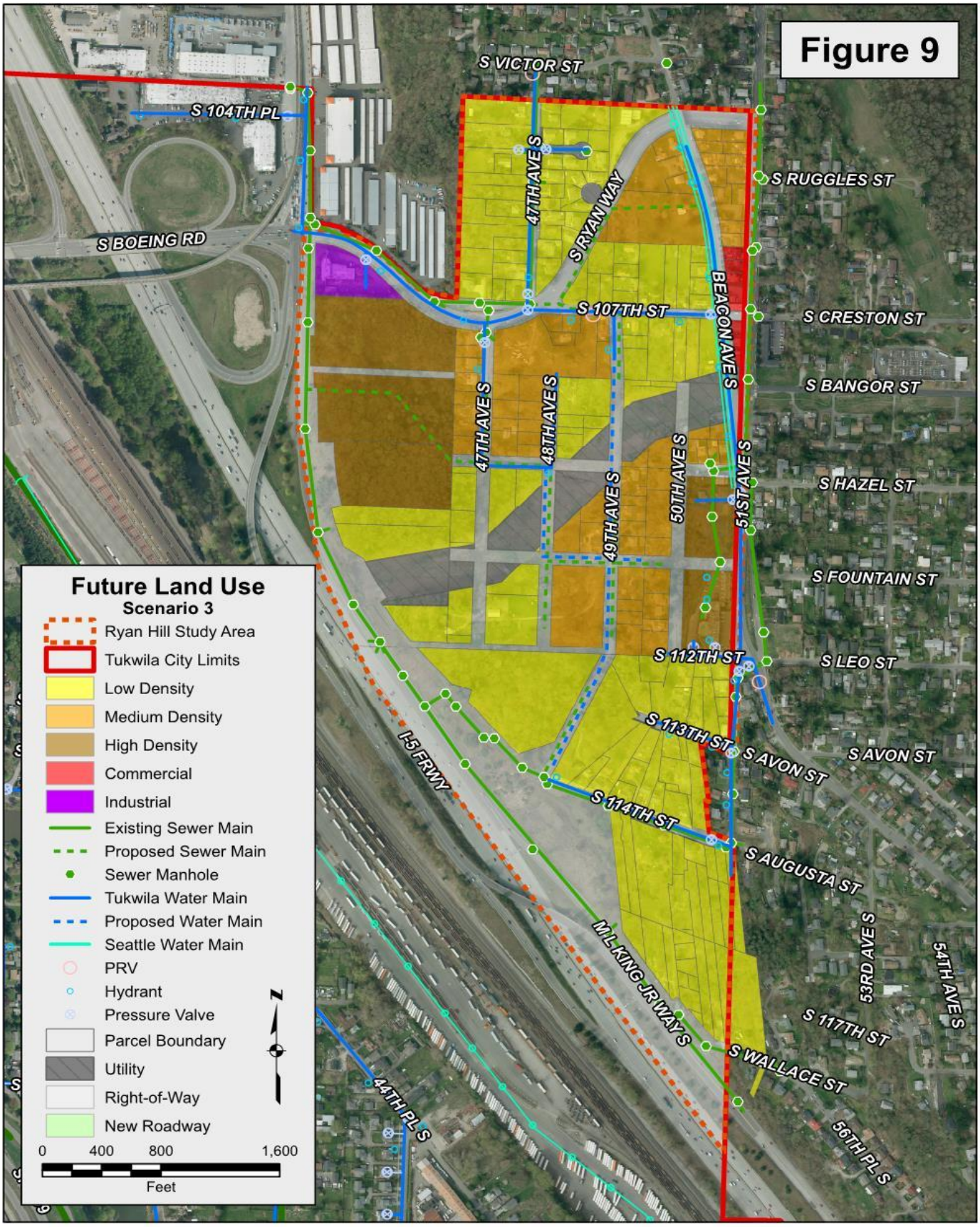
Figure 9
S VICTOR ST
S 104TH PL
S BOEING RD
47TH AVE S
S RYAN WAY
S RUGGLES ST
S 107TH ST
BEACON AVE S
S CRESTON ST
S BANGOR ST
47TH AVE S
48TH AVE S
49TH AVE S
50TH AVE S
51ST AVE S
S HAZEL ST
S FOUNTAIN ST
S 112TH ST
S LEO ST
S 113TH ST
S AVON ST
S AVON ST
I-5 FRWY
S 114TH ST
S AUGUSTA ST
M L KING JR WAY S
53RD AVE S
54TH AVE S
S 117TH ST
S WALLACE ST
44TH PL S
56TH PL S
Future Land Use
Scenario 3
Ryan Hill Study Area
Tukwila City Limits
Low Density
Medium Density
High Density
Commercial
Industrial
Existing Sewer Main
Proposed Sewer Main
Sewer Manhole
Tukwila Water Main
Proposed Water Main
Seattle Water Main
PRV
Hydrant
Pressure Valve
Parcel Boundary
Utility
Right-of-Way
New Roadway
N
0 400 800 1,600
Feet

Land Use Types

The different scenarios developed used the land use categories from the City of Tukwila Comprehensive Plan. Should any changes occur, they would be required to be consistent with the adopted Comprehensive Plan. The following are illustrative examples of the types of development depicted on the various land use scenarios.

Low Density

Low density represents single-family detached neighborhoods and is the predominant land use across the neighborhood. It includes more developed single-family detached neighborhoods and large-lot parcels with a more rural feel.

Medium Density

Medium density reflects areas where cottages, townhomes and similar products that generally have higher dwelling unit per acre allowances than low density areas.

High Density

High density reflects multifamily buildings such as apartments, condominiums, and senior living facilities.

Commercial

For purposes of this study, commercial areas are intended to provide neighborhood services. Areas depicted as commercial in the drafted scenarios are intended to provide a walkable, cohesive node of services for current and future residents.

Industrial

Only one area within the neighborhood is currently designated as Industrial. No additional industrial designates are depicted or anticipated. Raisbeck Engineering occupies the one industrial site within the study area.

Low Density Residential

Medium Density Residential

High Density Residential

Commercial (Neighborhood Services)

Scenario Comparison

Cost estimates prepared for each of the three scenarios were developed as planning-level estimates and are subject to a variety of different factors. The numbers developed used most recent data pertaining to costs within the Seattle metropolitan region. It is important to note that the primary purpose of cost estimate development is to weigh the significance of each of the proposed land use scenarios in light of what major public infrastructure improvements would likely be required for each of those scenarios to be realized. In some cases, no cost estimate is provided. In such cases, it is not being suggested that no improvements would be required, but rather that no major public infrastructure improvements were developed or identified as part of the scenario evaluation.

Water utilities are not as dependent on topography and gravity as sewer systems. Water main scenarios focused on looping of water mains to improve fire flow pressure and alleviate water quality challenges. Public looping is depicted; however, there may be opportunities to accomplish looping objectives at different areas if a new development project presents such an opportunity.

Sewer mains are much more critical due to its reliance on gravity flow for optimal operation. All sewer mains depicted on each of the scenarios accounted for topography and slope. The sewer system is conceptual and is intended for planning purposes only. As with all infrastructure planning, other alternatives or routing of sewer main may prove beneficial and are evaluated on a case-by-case basis. Sewer cost estimates accounted for the construction of new sewer mains but did not account for situations where additional measures must be included, such as in cases where deep sewer must be provided.

New Roadway cost estimates assumed the construction of an entirely new roadway with curb and gutter, storm sewer, and pedestrian facilities. The new spine roadway across the central part of the neighborhood is seen to be the most critical should any new development occur. The scenario considered grades and proposed a route that can be constructed within the City's current roadway design parameters, including maximum slope. As with all other cost estimates, unknown circumstances may change the actual costs of construction, but these estimates provide an overview for planning decision-making.

Ryan Hill Scenario Cost Estimate Summary*

Utility	Baseline/No Change	Scenario One	Scenario Two	Scenario Three
Water	$0	$0	$962,300	$853,200
Sewer	$0	$1,225,750	$1,404,750	$1,320,500
New Roadways	$0	$0	$3,759,780	$2,567,900
Total	**$0**	**$1,225,750**	**$6,126,830**	**$4,741,600**

* All numbers provided are planning-level estimates for public infrastructure only

CONCLUSIONS

Overview

The scenarios drafted within this report are intended to portray a different array of change opportunities as well as the major public infrastructure components that would likely be needed to support those changes. While the intent of this project is to examine growth scenarios, a no-change scenario is entirely possible. Should a no-change path forward be selected, information contained within this report can still be used to guide the provision of infrastructure through an incremental, case-by-case evaluation of proposed projects.

Opportunities for Change

The greatest opportunity identified as part of this study pertains to the extension of public sewer mains. There are opportunities to continue to extend sewer in the northern and southern portions of the neighborhood, areas where public sewer already exists. The central portion of the neighborhood, however, currently lacks public sewer and, due to topography, is not able to be served from the existing sewer on Ryan Way. The only way that sewer service can be provided to the entire central portion of the neighborhood is through a sewer extension from MLK Jr. Blvd. Regardless of what type of development occurs, it is critical to bring public sewer from MLK JR. Blvd. to 47th Avenue S. From this point, sewer can be extended to serve the portion of the neighborhood not currently able to be served by gravity sewer.

The second biggest opportunity is the provision of a new roadway connection through the neighborhood. This new roadway connection is depicted in Scenarios Two and Three. The vacant right-of-way within the neighborhood was assessed to determine if an east-to-west roadway connection through the central portion of the neighborhood was viable, especially considering the significant slopes. Of all the scenarios assessed, the roadway connection depicted in Scenarios Two and Three is feasible from a buildable perspective. The roadway grading performed as part of the analysis indicated that the roadway connection could be provided at grades less than 15 percent and with limited retaining walls. The greatest challenge to construction of the roadway connection pertains to the required wetland mitigation. Planning-level estimates for wetland mitigation are $1.25 million[2]. The specifics of mitigation require an in-depth assessment, but the costs are significant compared to the overall roadway cost estimate.

Water main looping is another opportunity within the neighborhood area. The current system of water mains is extremely disconnected leaving many dead-end water mains. Dead-end water often presents a maintenance hassle as they require the use of blowoffs and fire hydrants to keep water from stagnating, unless a high-water user is located at the dead-end of the main. Water main looping helps to keep water continuously moving within the water mains and also increases fire flow pressure. In areas where no adjacent water main is present, “spaghetti lines” are being used by property owners to get water to their homes. As described earlier, the spaghetti lines are private water lines that extend from the water main (and water meter) to the actual home. Long spaghetti lines are often a maintenance problem for the property owner, especially due to leaks. Water system improvements would help to limit water quality issues, increase fire flow pressures, and reduce the water waste issues associated with spaghetti lines and blow-offs.

Finally, there is an opportunity to establish additional water ties with the City of Seattle to increase water supply and capacity within the Ryan Hill area. Building a reservoir, as recommended by the State Department of Health to provide back-up capacity, is an extremely expensive undertaking and is not likely to be feasible from a development-driven perspective. A new reservoir is also not depicted within the City’s capital facilities plan. Establishing additional interties

[2] Estimates are based upon a $30-$50 per square foot cost to buy wetland mitigation through King County’s Wetland Mitigation Bank (https://www.kingcounty.gov/about/policies/rules/utilities/put811pr.aspx). Stream mitigation would likely be higher and, due to many variabilities, is difficult to estimate and are not applicable to this roadway since only wetland disturbance would be required. The high end of $50 per square foot was used for this mitigation estimate due to the many variabilities and unknowns.

with the City of Seattle with a master meter would help to support additional capacity without the need for the building of a capacity reservoir.

Challenges

There are many challenges to development within the study area. The most significant challenge to future development within the study area is the prevalence of critical areas and steep slopes. While steep slopes are the most visible barrier, portions of the neighborhood also contain wetlands, streams, and their respective buffers. Wetland and stream impact with mitigation is permitted under certain circumstances; however, the mitigation of these areas will pose significant costs, which might impede the realization of development-driven improvements through such areas. Specific mitigation costs and approaches would need to be assessed in detail.

The area currently lacks service by a regional detention facility. This is a significant impediment to development because without a regional detention facility stormwater would need to be retained on individual development sites. The building of on-site storm facilities is a common practice in this region due to the focus on improving run-off flowing into streams, wetlands, and Puget Sound. Many development sites incorporate storm facilities through detention or infiltration vaults, which minimize visual appearance and are often able to be counted as on-site open space if designed for active or passive use. Infiltration, in particular, would be complicated in many areas of the Ryan Hill neighborhood due to steep slopes. Geotechnical assessments would be required to verify whether or not a site on a slope is suitable for development and to what extent on-site infiltration is possible, although infiltration is not typically optimal in areas where steep slopes are present. There are no plans for a regional detention facility in the Ryan Hill neighborhood.

As expressed throughout the report and analysis, the limited sewer infrastructure is a significant barrier for development. Portions of Ryan Hill are served by public sewer or are able to be served by public sewer with an extension from an existing sewer main. The entire central portion of the neighborhood, however, is not able to be served by public sewer without an extension of sewer from the main along MLK Jr. Blvd. Any development that would occur in the central portion of the neighborhood would be required to extend sewer from MLK Jr. Blvd in order to be served by gravity sewer. It is not likely that any smaller development would be able to justify the costs of such an extension and the use of a latecomers agreement for potential reimbursement is not a feasible option for a small development project as there is no guarantee that the costs would be recouped – latecomers are generally used if the builder is able to pencil the project with the infrastructure extension making any reimbursement received additional profit. A developer cannot rely on a reimbursement through a latecomers since such a reimbursement is typically only good for a set time period and is not guaranteed.

At the neighborhood meeting, residents expressed a desire to increase parks and open spaces within the neighborhood. If new residents were added, there would likely be the need to add additional parks and open spaces. There are many challenges with expanding parks and open spaces within the neighborhood as the City's financial obligations are spent operating and maintaining existing facilities. The 200-foot wide Seattle City Light utility easement that extends east to west through the neighborhood does present an opportunity. In the Seattle City Light easement to the north and east within the City of Seattle, the Chief Sealth trail, a major recreational amenity and nonmotorized transportation facility, has been developed. The biggest challenge to providing recreation or park facilities within the easement is the steep slopes and attempting to make facilities ADA compliant.

Roadway, pedestrian, and bicycle infrastructure would need significant upgrades if additional residents were to be added to the Ryan Hill area. The neighborhood is generally within one mile of the Rainier Beach light rail system. An additional light rail station is planned in Tukwila to the west of Interstate 5 near E. Marginal Way S. In order to mitigate increased traffic, new pedestrian and bicycle facilities would need to link the Ryan Hill area with these transit facilities. Within the neighborhood itself, roadways would need to be widened as development occurs. These frontage improvements would

need to incorporate sidewalks and certain roadways would need to provide bicycle facilities. Depending on the size of the site, frontage improvements could be quite costly further complicating the ability for already tough sites to "pencil out" from a development perspective.

The most significant development challenges pertain to infrastructure – water, sewer, roads, pedestrian, bicycle, and stormwater. Without some investment in public infrastructure by the City, it is not likely that significant reinvestment in Ryan Hill will likely occur. Development-driven improvements are a common practice and it is expected that development should pay for the impacts that the development is imposing on the existing infrastructure system, but due to the significant deficiencies within the neighborhood, it is highly likely that some public investment will likely be needed in some capacity. The best approach for change, should that be desired, is to focus on key areas where incremental change can start.

Medium Residential Zone

All development scenarios depict an expansion of Medium Density zoning which would fall under the requirements of Chapter 18.12 - Medium Density Residential (MDR) District. Overall, the requirements specified within Chapter 18.12 are relatively consistent with other jurisdictions in regards to townhome development. The one requirement that might impact redevelopment within the Ryan Hill area in particular is the lot area calculations of 3,000 sq. ft. per unit as part of the density calculations for townhomes. Many jurisdictions allow for medium density calculations of 2,000 sq. ft. per unit for townhomes within medium density zoned areas, as is the standard within the City of Tukwila's High Density Residential (HDR) District. Much of the recent townhome construction within the City has occurred within HDR areas. In regards to townhomes, the MDR and HDR bulk regulations are very similar, but the HDR Zone allows for lot area/density calculations of 2,000 sq. ft. where the MDR zone requires a lot area/density calculation of 3,000 sq. ft. Due to the similar requirements between the two, developers are much more likely to build within the HDR zone due to the additional units they are able to achieve within that zone.

Should zoning changes be made to the Ryan Hill area, developers will likely face many challenges, such as providing new water, sewer, and storm infrastructure and assembling smaller lots to make development feasible. The topographical constraints and new water, sewer, and stormwater infrastructure will be an added cost that might not be seen as economically viable in areas where lots must be assembled in order to build enough units to justify costs. The 3,000 sq. ft. lot area/density calculation within the MDR zone could be assessed to determine if a different standard might facilitate change. Townhome developers will likely continue to favor HDR zones due to the immediate economic gains with MDR areas being left to a later development cycle.

APPENDIX A: COST ESTIMATES

Scenario One Cost Estimates

Sewer

Ryan Hill Neighborhood - Scenario 1

Engineer's Estimate

LDC
www.LDCcorp.com
Tel: (425) 806-1869

Project Name:	Ryan Hill Neighborhood	Project No.:	17-149
Description:	Engineer's Estimate	Date:	2/19/2018
		Calc. By:	JCS

Sanitary Sewer

MLK - East	Unit Price	Unit	Quantity	Cost
Clearing and Grubbing	$ 40,000.00	AC	0.8	$ 32,000.00
8" Sanitary Sewer	$ 85.00	LF	850	$ 72,250.00
Sanitary Manholes	$ 3,000.00	EA	4	$ 12,000.00
Wetland Mitigation	$ 50.00	SF	10000	$ 500,000.00
Restore Native	$ 20,000.00	AC	0.8	$ 16,000.00
			Subtotal	$ 632,250.00

S. Ryan Way & 107th	Unit Price	Unit	Quantity	Cost
8" Sanitary Sewer	$ 85.00	LF	1700	$ 144,500.00
Sanitary Manholes	$ 3,000.00	EA	8	$ 24,000.00
Restore Existing Roadway	$ 250.00	LF	1700	$ 425,000.00
			Subtotal	$ 593,500.00

Summary

MLK - 49th	$	632,250.00
S. Ryan Way & 107th	$	593,500.00
Total:		**$1,225,750.00**

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Scenario Two Cost Estimates

Sewer

Ryan Hill Neighborhood - Scenario 2 Engineer's Estimate	LDC www.LDCcorp.com Tel: (425) 806-1869

Project Name:	Ryan Hill Neighborhood	Project No.:	17-149
Description:	Engineer's Estimate	Date:	1/19/2018
		Calc. By:	JCS

Sanitary Sewer

MLK - 49th	Unit Price	Unit	Quantity	Cost
Clearing and Grubbing	$ 40,000.00	AC	1	$ 40,000.00
8" Sanitary Sewer	$ 85.00	LF	2600	$ 221,000.00
Sanitary Manholes	$ 3,000.00	EA	12	$ 36,000.00
Restore Native	$ 20,000.00	AC	1	$ 20,000.00
Restore Existing Roadway	$ 250.00	LF	800	$ 200,000.00
			Total	$ 517,000.00

S. Ryan Way & 107th	Unit Price	Unit	Quantity	Cost
8" Sanitary Sewer	$ 85.00	LF	1700	$ 144,500.00
Sanitary Manholes	$ 3,000.00	EA	8	$ 24,000.00
Restore Existing Roadway	$ 250.00	LF	1700	$ 425,000.00
			Subtotal	$ 593,500.00

49th from 114th to 112th	Unit Price	Unit	Quantity	Cost
8" Sanitary Sewer	$ 85.00	LF	600	$ 51,000.00
Sanitary Manholes	$ 3,000.00	EA	3	$ 9,000.00
Restore Existing Roadway	$ 250.00	LF	600	$ 150,000.00
			Subtotal	$ 210,000.00

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Ryan Hill Neighborhood - Scenario 2 Engineer's Estimate	LDC www.LDCcorp.com Tel: (425) 806-1869

Project Name:	Ryan Hill Neighborhood	Project No.:	17-149
Description:	Engineer's Estimate	Date:	1/19/2018
		Calc. By:	JCS

Unnamed - From 114th - Wallace	Unit Price	Unit	Quantity	Cost
8" Sanitary Sewer	$ 85.00	LF	850	$ 72,250.00
Sanitary Manholes	$ 3,000.00	EA	4	$ 12,000.00
			Subtotal	$ 84,250.00

Summary

MLK - 49th	$	517,000.00
S. Ryan Way & 107th	$	593,500.00
49th from 114th & 112th		$210,000.00
Unnamed - From 114th - Wallace		$84,250.00
Total:		**$1,404,750.00**

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Water

Ryan Hill Neighborhood - Scenario 2 Engineer's Estimate	LDC www.LDCcorp.com Tel: (425) 806-1869

Project Name:	Ryan Hill Neighborhood	Project No.:	17-149
Description:	Engineer's Estimate	Date:	1/21/2018
		Calc. By:	JCS

Water Main

49th & 112th	Unit Price	Unit	Quantity	Cost
8" D.I. Water Main	$ 70.00	LF	2600	$ 182,000.00
8" Gate Valve	$ 2,500.00	EA	10	$ 25,000.00
Fire Hydrant	$ 3,000.00	EA	10	$ 30,000.00
Blow Off	$ 600.00	EA	2	$ 1,200.00
Clear & Grub	$ 40,000.00	AC	1	$ 40,000.00
Restore Existing Roadway	$ 250.00	LF	1900	$ 475,000.00
Restore Native	$ 20,000.00	AC	1	$ 20,000.00
			Total	$ 773,200.00

S. Wallace to S. 114th	Unit Price	Unit	Quantity	Cost
8" D.I. Water Main	$ 70.00	LF	1200	$ 84,000.00
8" Gate Valve	$ 2,500.00	EA	5	$ 12,500.00
Fire Hydrant	$ 3,000.00	EA	4	$ 12,000.00
Blow Off	$ 600.00	EA	1	$ 600.00
			Subtotal	$ 109,100.00

Summary

49th & 112th		$773,200.00
S. Wallace to S. 114th		$109,100.00
	Total:	**$882,300.00**

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New Roadways

Ryan Hill Neighborhood - Scenario 2 Engineer's Estimate	LDC www.LDCcorp.com Tel: (425) 806-1869

Project Name:	Ryan Hill Neighborhood	Project No.:	17-149
Description:	Engineer's Estimate	Date:	2/19/2018
		Calc. By:	JCS

New Road Construction

Hazel - 48th - Fountain	Unit Price	Unit	Quantity	Cost
Asphalt Pavement	$ 14.00	SF	25000	$ 350,000.00
Concrete Curb & Gutter	$ 36.00	LF	2300	$ 82,800.00
5' Concrete Sidewalk	$ 110.00	LF	2000	$ 220,000.00
12" Storm Drain	$ 60.00	LF	1500	$ 90,000.00
Storm Structures	$ 2,100.00	EA	11	$ 23,100.00
Imported Fill	$ 75.00	CY	1300	$ 97,500.00
Earth Moving	$ 45.00	CY	6100	$ 274,500.00
Clearing & Grubbing	$ 40,000.00	AC	3	$ 120,000.00
Wetland Mitigation	$ 50.00	SF	25000	$ 1,250,000.00
Restore Native	$ 20,000.00	AC	3	$ 60,000.00
			Total	$ 2,567,900.00

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Ryan Hill Neighborhood - Scenario 2

Engineer's Estimate

LDC
www.LDCcorp.com
Tel: (425) 806-1869

Project Name:	Ryan Hill Neighborhood	Project No.:	17-149
Description:	Engineer's Estimate	Date:	2/19/2018
		Calc. By:	JCS

114th - Wallace	Unit Price	Unit	Quantity	Cost
Asphalt Pavement	$ 14.00	SF	21250	$ 297,500.00
Concrete Curb & Gutter	$ 36.00	LF	1955	$ 70,380.00
5' Concrete Sidewalk	$ 110.00	LF	1700	$ 187,000.00
12" Storm Drain	$ 60.00	LF	850	$ 51,000.00
Storm Structures	$ 2,100.00	EA	8	$ 16,800.00
Imported Fill	$ 75.00	CY	1105	$ 82,875.00
Earth Moving	$ 45.00	CY	5185	$ 233,325.00
Clearing & Grubbing	$ 40,000.00	AC	2.55	$ 102,000.00
Restore Native	$ 20,000.00	AC	2.55	$ 51,000.00
Rockery Retaining Walls	$ 25.00	SF	4000	$ 100,000.00
			Total	$ 1,191,880.00

Summary

Hazel -48th - Fountain	$	2,567,900.00
114th - Wallace	$	1,191,880.00
Total:		**$3,759,780.00**

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Scenario Three

Water

Ryan Hill Neighborhood - Scenario 3 Engineer's Estimate	LDC www.LDCcorp.com Tel: (425) 806-1869

Project Name:	Ryan Hill Neighborhood	Project No.:	17-149
Description:	Engineer's Estimate	Date:	2/19/2018
		Calc. By:	JCS

New Road Construction

Hazel - 48th - Fountain	Unit Price	Unit	Quantity	Cost
Asphalt Pavement	$ 14.00	SF	25000	$ 350,000.00
Concrete Curb & Gutter	$ 36.00	LF	2300	$ 82,800.00
5' Concrete Sidewalk	$ 110.00	LF	2000	$ 220,000.00
12" Storm Drain	$ 60.00	LF	1500	$ 90,000.00
Storm Structures	$ 2,100.00	EA	11	$ 23,100.00
Imported Fill	$ 75.00	CY	1300	$ 97,500.00
Earth Moving	$ 45.00	CY	6100	$ 274,500.00
Clearing & Grubbing	$ 40,000.00	AC	3	$ 120,000.00
Wetland Mitigation	$ 50.00		25000	$ 1,250,000.00
Restore Native	$ 20,000.00	AC	3	$ 60,000.00
			Total	$ 2,567,900.00

Summary

Hazel -48th - Fountain	$	2,567,900.00
	Total:	**$2,567,900.00**

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Sewer

Ryan Hill Neighborhood - Scenario 3 Engineer's Estimate	LDC www.LDCcorp.com Tel: (425) 806-1869

Project Name:	Ryan Hill Neighborhood	Project No.:	17-149
Description:	Engineer's Estimate	Date:	1/19/2018
		Calc. By:	JCS

Sanitary Sewer

MLK - 49th	Unit Price	Unit	Quantity	Cost
Clearing and Grubbing	$ 40,000.00	AC	1	$ 40,000.00
8" Sanitary Sewer	$ 85.00	LF	2600	$ 221,000.00
Sanitary Manholes	$ 3,000.00	EA	12	$ 36,000.00
Restore Native	$ 20,000.00	AC	1	$ 20,000.00
Restore Existing Roadway	$ 250.00	LF	800	$ 200,000.00
			Total	$ 517,000.00

S. Ryan Way & 107th	Unit Price	Unit	Quantity	Cost
8" Sanitary Sewer	$ 85.00	LF	1700	$ 144,500.00
Sanitary Manholes	$ 3,000.00	EA	8	$ 24,000.00
Restore Existing Roadway	$ 250.00	LF	1700	$ 425,000.00
			Subtotal	$ 593,500.00

49th from 114th to 112th	Unit Price	Unit	Quantity	Cost
8" Sanitary Sewer	$ 85.00	LF	600	$ 51,000.00
Sanitary Manholes	$ 3,000.00	EA	3	$ 9,000.00
Restore Existing Roadway	$ 250.00	LF	600	$ 150,000.00
			Subtotal	$ 210,000.00

Summary

MLK - 49th	$	517,000.00
S. Ryan Way & 107th	$	593,500.00
49th from 114th & 112th		$210,000.00
Total:		**$1,320,500.00**

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New Roadways

Ryan Hill Neighborhood - Scenario 3 Engineer's Estimate	LDC www.LDCcorp.com Tel: (425) 806-1869

Project Name:	Ryan Hill Neighborhood	Project No.:	17-149
Description:	Engineer's Estimate	Date:	1/19/2018
		Calc. By:	JCS

New Road Construction

Hazel - 48th - Fountain	Unit Price	Unit	Quantity	Cost
Asphalt Pavement	$ 14.00	SF	25000	$ 350,000.00
Concrete Curb & Gutter	$ 36.00	LF	2300	$ 82,800.00
5' Concrete Sidewalk	$ 110.00	LF	2000	$ 220,000.00
12" Storm Drain	$ 60.00	LF	1500	$ 90,000.00
Storm Structures	$ 2,100.00	EA	11	$ 23,100.00
Imported Fill	$ 75.00	CY	1300	$ 97,500.00
Earth Moving	$ 45.00	CY	6100	$ 274,500.00
Clearing & Grubbing	$ 40,000.00	AC	3	$ 120,000.00
Restore Native	$ 20,000.00	AC	3	$ 60,000.00
			Total	$ 1,317,900.00

Summary

Hazel -48th - Fountain	$	1,317,900.00
Total:		**$1,317,900.00**

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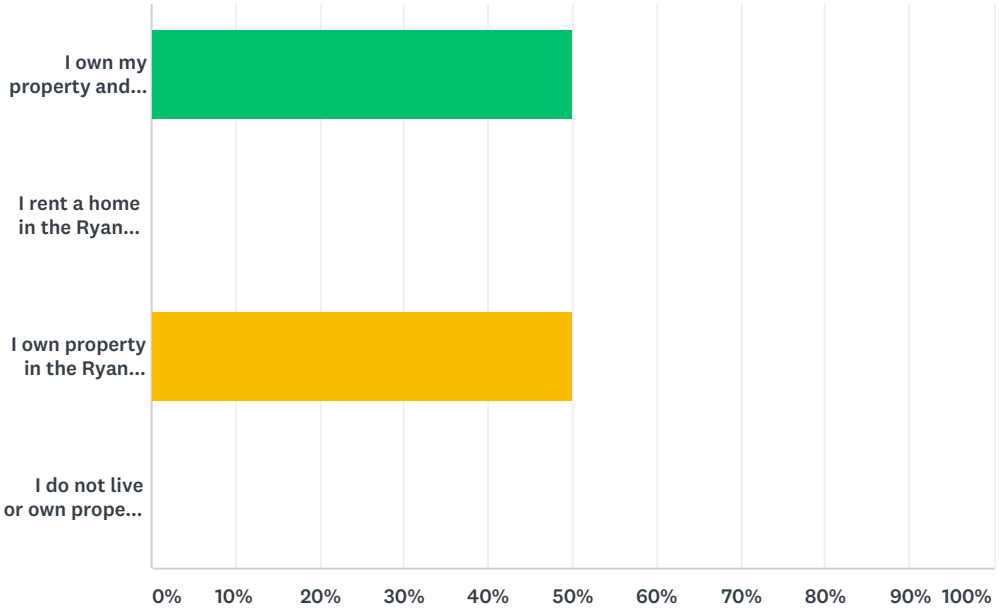
Appendix B: Neighborhood Survey Results

Q1 Which of the following best describes you?

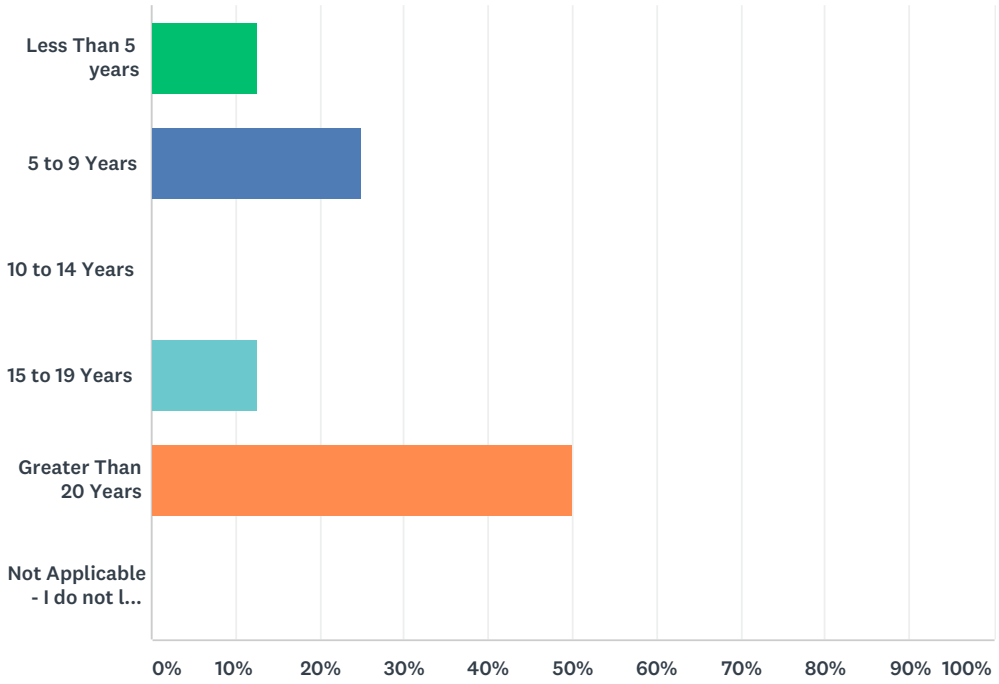
Answered: 8 Skipped: 0



ANSWER CHOICES	RESPONSES	
I own my property and live in the Ryan Hill neighborhood	50.00%	4
I rent a home in the Ryan Hill neighborhood	0.00%	0
I own property in the Ryan Hill neighborhood but do not live there	50.00%	4
I do not live or own property in the Ryan Hill neighborhood	0.00%	0
TOTAL		8

Q2 How long have you lived or owned property in the Ryan Hill neighborhood?

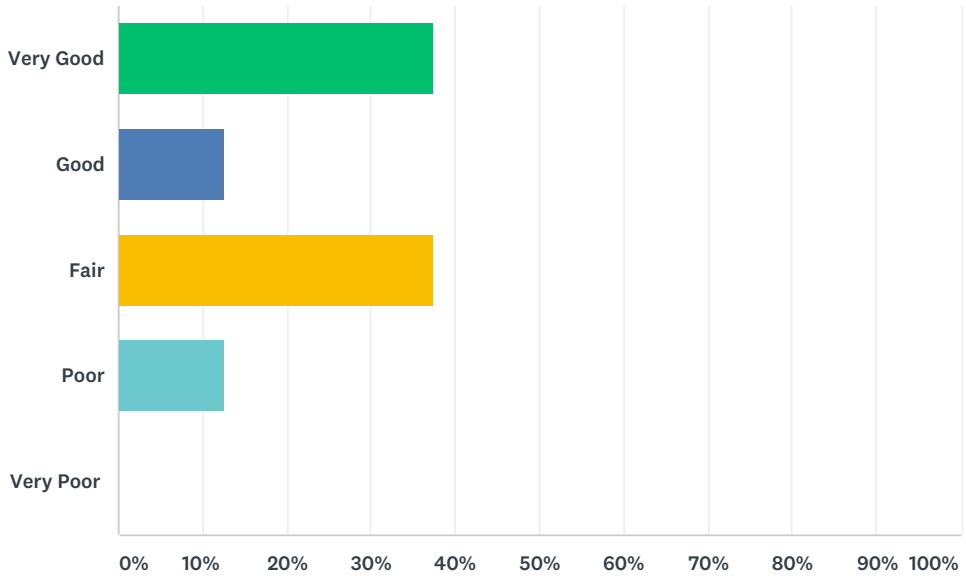
Answered: 8 Skipped: 0



ANSWER CHOICES	RESPONSES	
Less Than 5 years	12.50%	1
5 to 9 Years	25.00%	2
10 to 14 Years	0.00%	0
15 to 19 Years	12.50%	1
Greater Than 20 Years	50.00%	4
Not Applicable - I do not live or own property in the neighborhood	0.00%	0
TOTAL		8

Q3 How would you rate the quality of life in the Ryan Hill Neighborhood?

Answered: 8 Skipped: 0

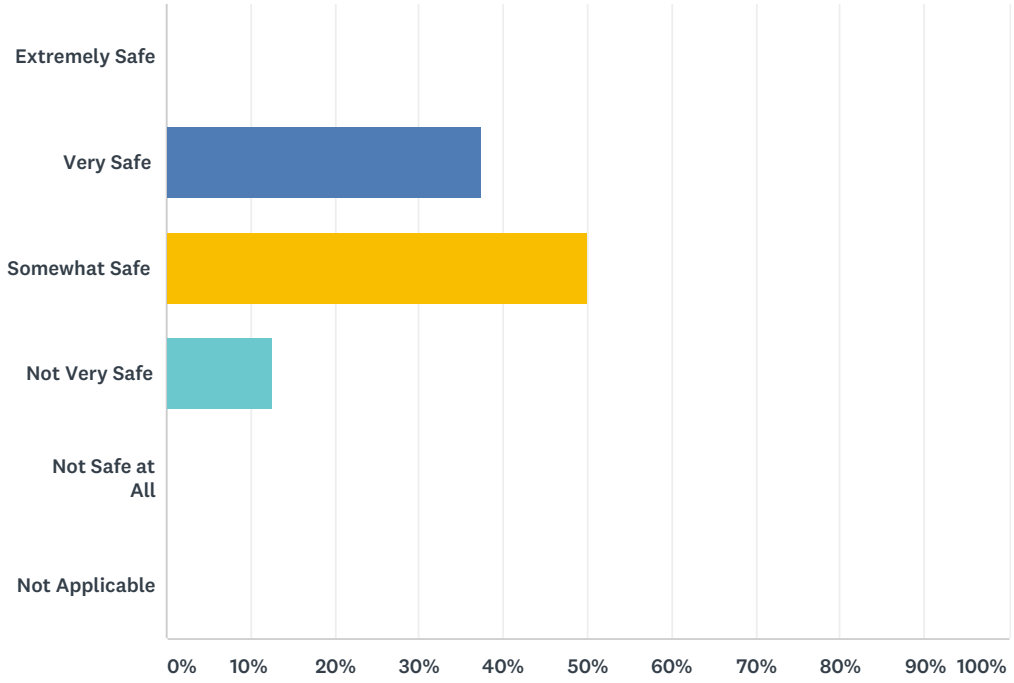


ANSWER CHOICES	RESPONSES	
Very Good	37.50%	3
Good	12.50%	1
Fair	37.50%	3
Poor	12.50%	1
Very Poor	0.00%	0
TOTAL		8

#	IF YOU'D LIKE, PROVIDE COMMENTS ON WHY	DATE
1	Quiet	11/22/2017 3:56 PM
2	Nice and quiet neighborhood. No traffic, noise, or parking problems.	11/22/2017 2:53 PM
3	It's not safely walkable. There are not community parks...if there are I don't know where they are. We have septic tanks.	11/8/2017 2:00 PM

Q4 Overall, how safe do you feel in the neighborhood?

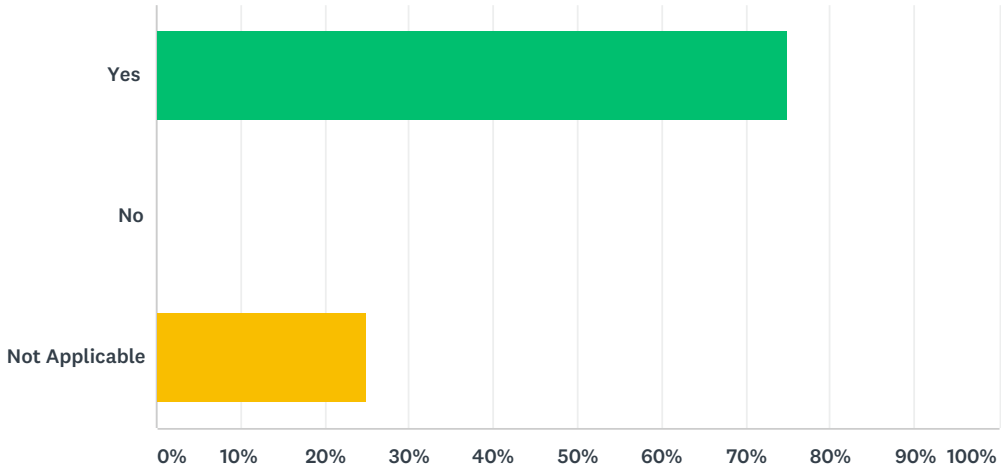
Answered: 8 Skipped: 0



ANSWER CHOICES	RESPONSES	
Extremely Safe	0.00%	0
Very Safe	37.50%	3
Somewhat Safe	50.00%	4
Not Very Safe	12.50%	1
Not Safe at All	0.00%	0
Not Applicable	0.00%	0
TOTAL		8

Q5 Do you see yourself continuing to live in the neighborhood for the foreseeable future?

Answered: 8 Skipped: 0



ANSWER CHOICES	RESPONSES	
Yes	75.00%	6
No	0.00%	0
Not Applicable	25.00%	2
TOTAL		8

#	IF "NO," PLEASE TELL US WHY	DATE
1	just own property, don't actually live there	11/22/2017 3:56 PM

Q6 What would you say is the neighborhood's greatest asset?

Answered: 7 Skipped: 1

#	RESPONSES	DATE
1	Location	11/27/2017 2:20 PM
2	accessibility to Seattle	11/22/2017 3:56 PM
3	not crowded. No parking, traffic or noise problems. Great neighbors!	11/22/2017 2:53 PM
4	rural, country yet in the city. quiet not overcrowded close to freeway and shopping, etc	11/19/2017 1:49 PM
5	The reason we hope to retire there is the rural feeling so close in. We also love the economic racial and cultural diversity.	11/19/2017 11:00 AM
6	Close to everything yet far enough away to feel like you have privacy	11/8/2017 2:00 PM
7	Proximity to Seattle	11/6/2017 1:18 PM

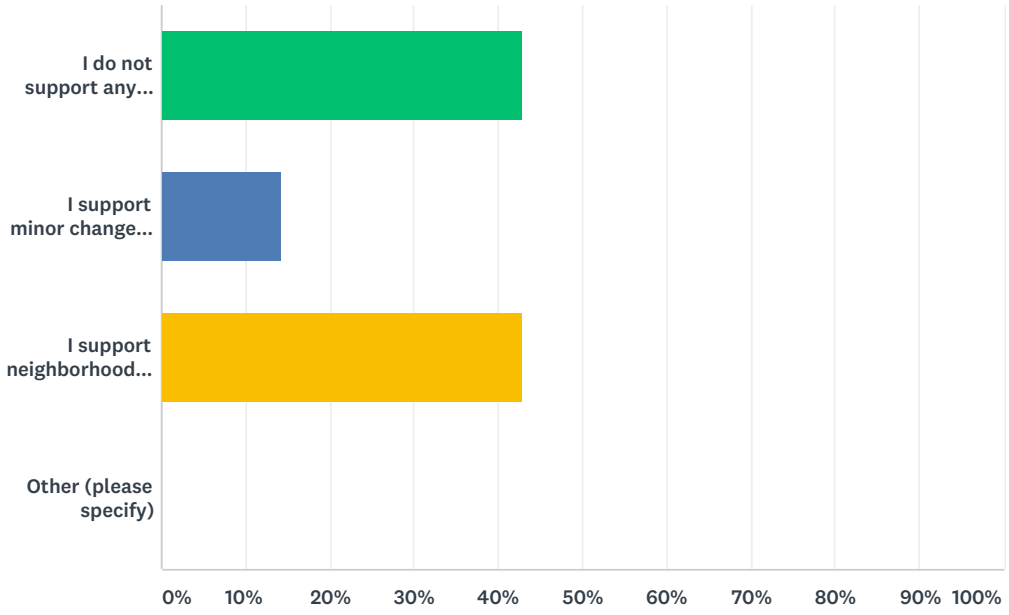
Q7 What changes, if any, are needed in the neighborhood?

Answered: 7 Skipped: 1

#	RESPONSES	DATE
1	Higher density zoning	11/27/2017 2:20 PM
2	NONE	11/22/2017 3:56 PM
3	None!!!!	11/22/2017 2:53 PM
4	too many vehicles parked onto the street and often times rental cars which take up neighborhood parking	11/19/2017 1:49 PM
5	Increase walkability Increase parks	11/8/2017 2:00 PM
6	Sewer line installed	11/6/2017 5:16 PM
7	Sewer	11/6/2017 1:18 PM

Q8 Which of the following best describes your view on the future of the neighborhood?

Answered: 7 Skipped: 1

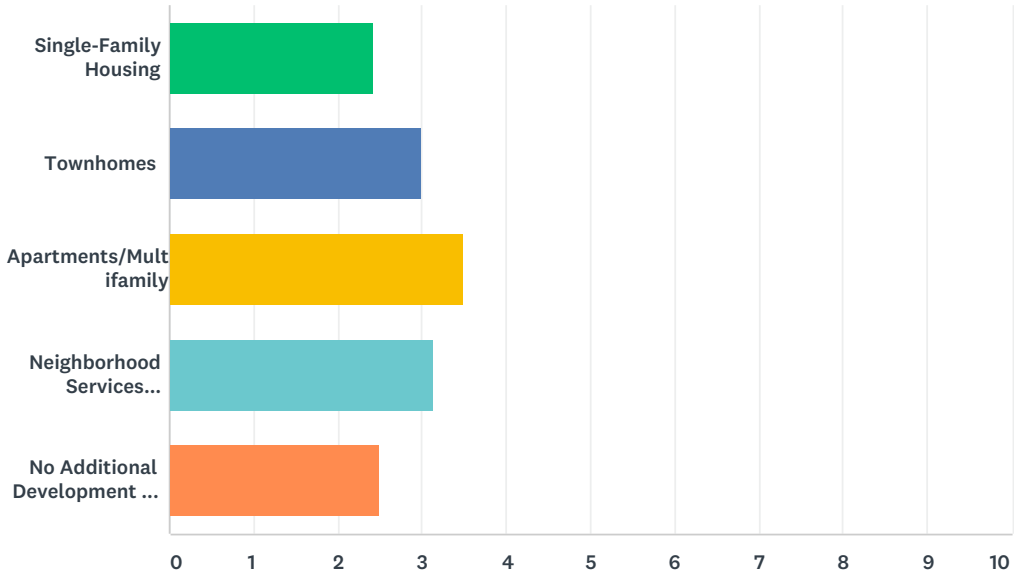


ANSWER CHOICES	RESPONSES	
I do not support any changes - keep the neighborhood the same	42.86%	3
I support minor changes in appropriate areas	14.29%	1
I support neighborhood-wide changes	42.86%	3
Other (please specify)	0.00%	0
TOTAL		7

#	OTHER (PLEASE SPECIFY)	DATE
	There are no responses.	

Q9 How appropriate would the inclusion of the following development types be within the Ryan Hill neighborhood?

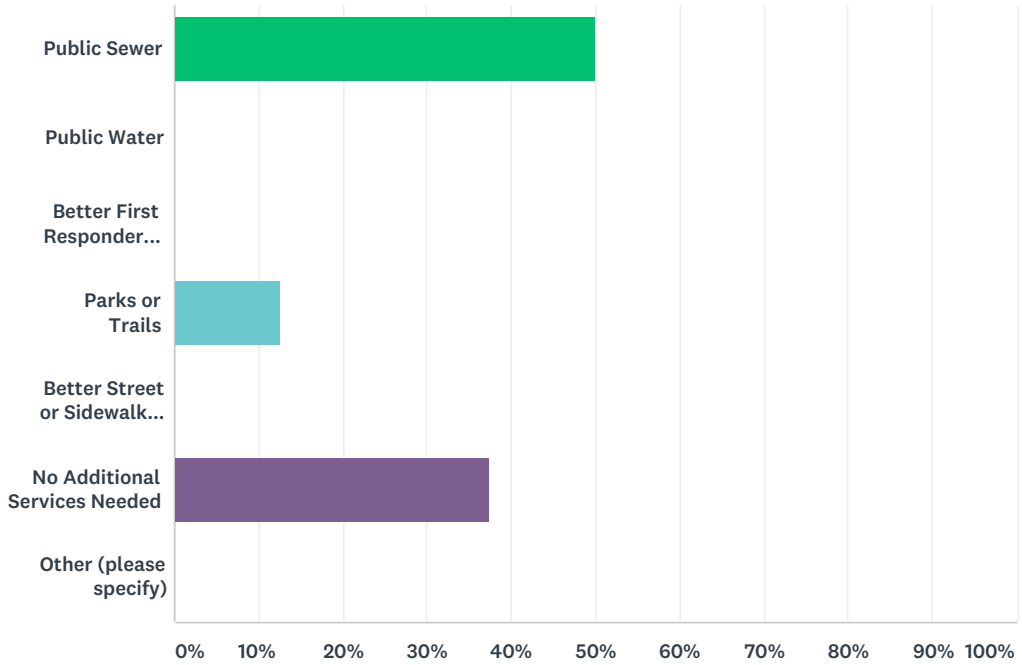
Answered: 8 Skipped: 0



	VERY APPROPRIATE	APPROPRIATE	NEUTRAL	NOT APPROPRIATE	VERY INAPPROPRIATE	TOTAL	WEIGHTED AVERAGE
Single-Family Housing	57.14% 4	0.00% 0	14.29% 1	0.00% 0	28.57% 2	7	2.43
Townhomes	25.00% 2	12.50% 1	25.00% 2	12.50% 1	25.00% 2	8	3.00
Apartments/Multifamily	25.00% 2	0.00% 0	12.50% 1	25.00% 2	37.50% 3	8	3.50
Neighborhood Services (Restaurants, Entertainment, and Shopping)	14.29% 1	28.57% 2	14.29% 1	14.29% 1	28.57% 2	7	3.14
No Additional Development is Needed	33.33% 2	16.67% 1	33.33% 2	0.00% 0	16.67% 1	6	2.50

Q10 Of the following city services, which would you consider to be the greatest neighborhood need?

Answered: 8 Skipped: 0

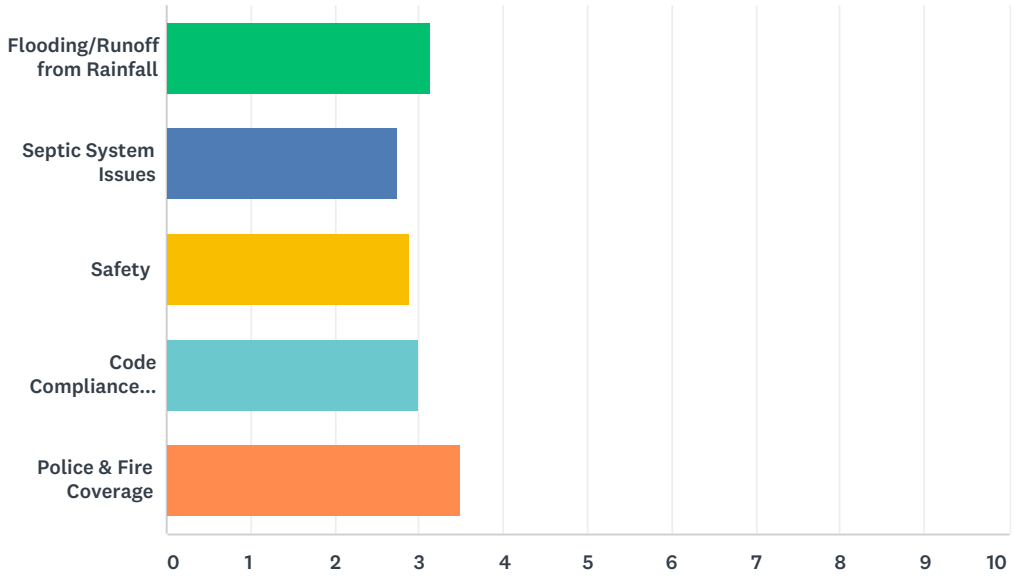


ANSWER CHOICES	RESPONSES	
Public Sewer	50.00%	4
Public Water	0.00%	0
Better First Responder Coverage (i.e., Police or Emergency Medical, Fire)	0.00%	0
Parks or Trails	12.50%	1
Better Street or Sidewalk Access	0.00%	0
No Additional Services Needed	37.50%	3
Other (please specify)	0.00%	0
TOTAL		8

#	OTHER (PLEASE SPECIFY)	DATE
	There are no responses.	

Q11 How concerned are you about any of the following issues within the neighborhood?

Answered: 8 Skipped: 0

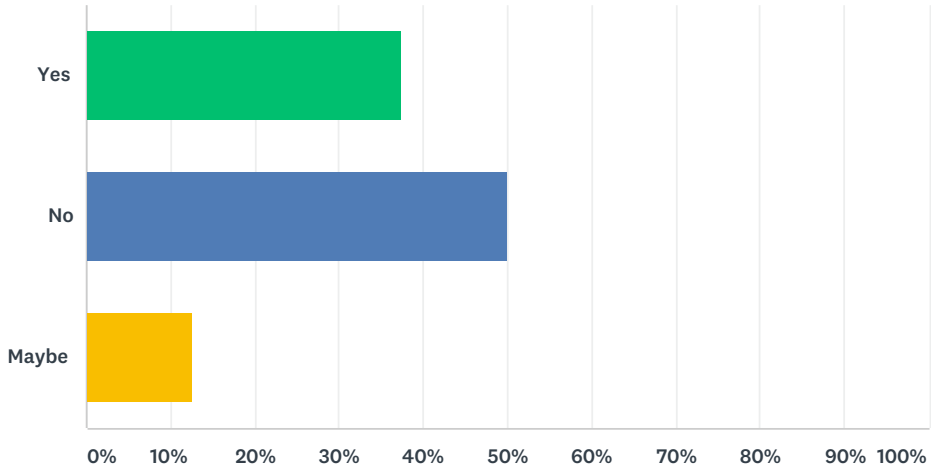


	EXTREMELY CONCERNED	SOMEWHAT CONCERNED	NEUTRAL	NOT CONCERNED / NOT AN ISSUE	TOTAL	WEIGHTED AVERAGE
Flooding/Runoff from Rainfall	12.50% 1	12.50% 1	25.00% 2	50.00% 4	8	3.13
Septic System Issues	25.00% 2	12.50% 1	25.00% 2	37.50% 3	8	2.75
Safety	0.00% 0	50.00% 4	12.50% 1	37.50% 3	8	2.88
Code Compliance (i.e., Weeds, Graffiti, Junked Cars, Trash)	0.00% 0	37.50% 3	25.00% 2	37.50% 3	8	3.00
Police & Fire Coverage	0.00% 0	0.00% 0	50.00% 4	50.00% 4	8	3.50

#	OTHER (PLEASE SPECIFY)	DATE
	There are no responses.	

Q12 Should changes be made to increase the likelihood of development within the neighborhood, such as rezones or incentives?

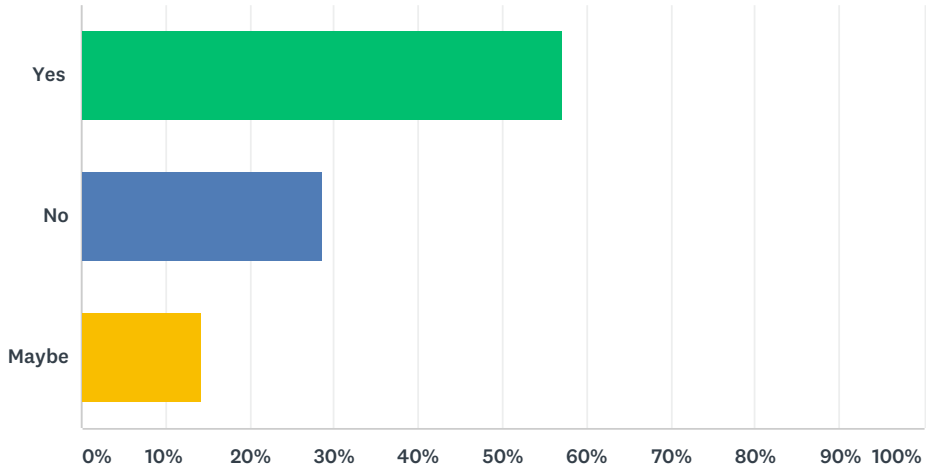
Answered: 8 Skipped: 0



ANSWER CHOICES	RESPONSES	
Yes	37.50%	3
No	50.00%	4
Maybe	12.50%	1
TOTAL		8

Q13 If you are currently served by a private septic system, is connecting to a public sewer system something you would be interested in?

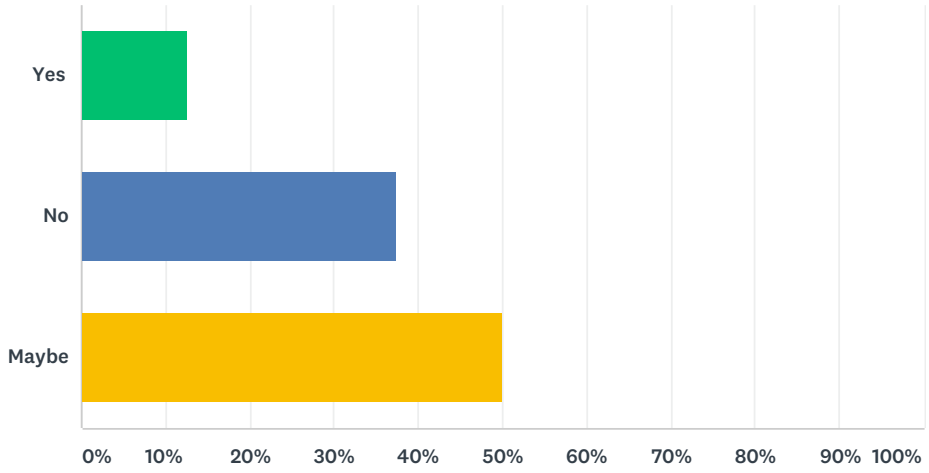
Answered: 7 Skipped: 1



ANSWER CHOICES	RESPONSES	
Yes	57.14%	4
No	28.57%	2
Maybe	14.29%	1
TOTAL		7

Q14 Would you support a self-assessment on your property taxes to pay for water, sewer, and/or roadway improvements within the neighborhood?

Answered: 8 Skipped: 0



ANSWER CHOICES	RESPONSES	
Yes	12.50%	1
No	37.50%	3
Maybe	50.00%	4
TOTAL		8

Q15 Do you have any additional comments regarding the future of the Ryan Hill neighborhood?

Answered: 6 Skipped: 2

#	RESPONSES	DATE
1	No Changes!	11/22/2017 3:56 PM
2	No further development needed!!!!	11/22/2017 2:53 PM
3	i love the quiet rural neighborhood we have more traffic than the roads can adequately hold now and am not interested in having more which would be generated by apartments	11/19/2017 1:49 PM
4	We hope any opportunity to connect the area for pedestrians and bicycles to the planned Boeing Access Road lightrail station is pursued. Connecting the existing bike trail along the river to the Chief Sealth trail or an eastward path would be a cause we would be happy to support financially. Given proximity to the existing trails as well as the light rail, any further development of the area would necessarily involve pursuing non auto dependent transportation to make sense. This is a unique opportunity that should not be missed, and would continue to bolster the diversity and sense of place for the neighborhood, as well as ease the dependence on Ryan Way and I-5. Anecdotally, my family (9 and 11 year olds) can currently bike to an evening at southcenter within 30 minutes, but we have to drive the section over the freeway and MLK. The light rail station will never be able to build enough parking spaces if other modes of travel than the car are allowed. I believe the benefits to the neighborhood's sense of safety, cohesion, and economic diversity, as well as its residents' appreciation of its open spaces won't be fully realized without developing ways of competing with the car. (True for Seattle generally, but even more so in Ryan Hill, as one is forced to leave it for work and shopping, and as it is so close to light rail and excellent bike routes.)	11/19/2017 11:00 AM
5	Thanks for the opportunity to weigh in	11/8/2017 2:00 PM
6	No	11/6/2017 1:18 PM