

CITY OF RICHLAND/PORT OF BENTON

1,341 ACRE MASTER PLAN URBAN GROWTH AREA EXPANSION CAPITAL FACILITIES ANALYSIS

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In Coordination with the City of Richland and Port of Benton

INTRODUCTION 1

PROPOSED LAND USE DESIGNATION 3

DEFINITIONS 4

 Category 1 - Locally Provided Regulatory Concurrency 6

 Category 2 - Locally Provided Planning Concurrency 6

 Category 3 - Provided by others Planning Concurrency 6

LEVELS OF SERVICE 8

CAPITAL FACILITY INVENTORY 9

 Transportation 9

 Streets 9

 Traffic Volumes 9

 Level of Service 12

 Sanitary Sewer Service 13

 Wastewater Treatment Plant 13

 Collection System 14

 Potable Water Service 14

 Source Capacity 14

 Distribution System 14

 Surface and Storm Water Management 17

 Other Governmental Services 17

 Power 17

 Natural Gas 17

 Communications 17

 Telecommunications 17

 Irrigation 19

FACILITY REQUIREMENTS 20

 Transportation 20

 2022 Without UGA Expansion Conditions 20

 2022 with UGA Expansion 21

 2036 With UGA Expansion 25

 Sanitary Sewer Service 25

 Estimated Sewer Flows 25

 Facility Improvements Required Outside the UGA Study Area 26

 Collection System 26

 Wastewater Treatment Plant 27

 Estimated Water Demands 29

 Facility Improvements 29

 System-Wide Water Demands 29

 Source Capacity 30

 Distribution System 30

 Storage Capacity 32

 Power 32

 Surface and Storm Water Management 32

 Other Governmental Services 34

 Natural Gas 34

 Telecommunications 34

 Irrigation 34

FUNDING SOURCES 35

 Taxes 35

Intergovernmental Revenues	36
Charges for Services	38
Bonds.....	39
Grants and Loans	40
CAPITAL FACILITIES FUNDING.....	43
Projected Capital Facility Cost	43
Projected Capital Facilities Revenue Sources	44
Revenue Projections.....	44
Developer Contributions	45
Income/Expense Analysis	45
Summary.....	46

LIST OF FIGURES

Figure 1. UGA Study Area.....	2
Figure 2. Existing Lane Configuration, Traffic Control, & Traffic Volumes	11
Figure 3. Existing Sanitary Sewer Facilities	15
Figure 4. Existing Domestic Water Facilities	16
Figure 5. Stormwater Restriction Area	18
Figure 6. 2022 Trip Distribution Percentages and Site Generated Trips.....	23
Figure 7. 2022 Traffic Volumes with UGA Expansion.....	24
Figure 8. Future Sanitary Sewer Facilities.....	28
Figure 9. Future Domestic Water Facilities.....	31
Figure 10. Proposed Industrial Roadway Section	33

LIST OF TABLES

Table 1. LOS Standards	8
Table 2. Level-of-Service Criteria for Intersections.....	12
Table 3. Summary of Existing PM Peak Hour Delay (sec) and Level of Service.....	13
Table 4 – Design Criteria – 2016 NPDES Permit.....	14
Table 5. Summary of 2022 PM Peak Hour Delay (sec) and Level of Service	20
Table 6. Summary of 2022 PM Peak Hour Delay (sec) and Level of Service	22
Table 7. Estimated Capital Facilities Costs 2016-2022.....	43
Table 8: Tax Revenue Assumptions	44
Table 9: Income from Excise Tax	44
Table 10: Sales Taxes on Construction	44
Table 11: Income from Property Taxes.....	45
Table 12. Revenue Assumptions	46

INTRODUCTION

The City of Richland and Port of Benton recently acquired 1,341 acres of federally transferred property from the Department of Energy (DOE). Approximately 884 of the 1,341 acres are located outside of the current City of Richland Urban Growth Boundary (UGB). As a result, the City of Richland and the Port of Benton have requested to expand the UGB to include this additional property. The request includes adding an additional 300 acres of land recently acquired by Energy Northwest from DOE. The total Urban Growth Area (UGA) request covers approximately 1,184 acres. However, included in the request is to remove approximately 283 acres of DOE property that is located within the existing City UGB. This property is generally known as a portion of the 300 area. DOE has no plans to incorporate a portion of the 300 area into the City of Richland in the near future.

As a result, this report evaluates the capacity of the City of Richland to provide the necessary capital facilities to service the expanded proposed UGA, an area of approximately 1,184 acres, shown in Figure 1. With 283 acres of existing UGA to be removed, the net overall UGA expansion to the City of Richland is approximately 901 acres. Capital facility requirements and service capacities for this area are projected for the both the 6-year and 20-year time periods. In addition, capital facility costs are projected for the 6-year time period.

The Washington State Growth Management Act (GMA) of 1990 requires that cities conduct a Capital Facilities Analysis (CFA), that shows they have the capacity to serve the Urban Growth Area (UGA) within their jurisdiction and that they adopt a Capital Facilities Plan (CFP) as part of their comprehensive plans, in order to ensure that utilities, transportation, and other public facilities will be reasonably available to accommodate planned growth over the next twenty years. Capital facilities provide the basic infrastructure of the community and are critical if growth is to be accommodated.

This CFP complies with the Growth Management Act (RCW 36.70A.070 (3) and WAC 365-195-315) in order to assure that the 1,341 Acre Master Plan Urban Growth Area (UGA) can meet the concurrency requirements of RCW 36.70A.020 (12), and WAC 365-195-210. RCW 36.70A.020 (12) of the Growth Management Act includes a goal to:

“..ensure that those public facilities and services necessary to support development shall be adequate to service the development at the time the development is available for occupancy and use without decreasing current service levels below locally established minimum standards”.

WAC 365-196-415(1) and RCW 36.70A.070 (3) requires that CFPs must address at least the following:

- (a) An inventory of existing capital facilities owned by public entities, also referred to as "public facilities," showing the locations and capacities of the capital facilities;*
- (b) A forecast of the future needs for such capital facilities based on the land use element;*
- (c) The proposed locations and capacities of expanded or new capital facilities;*
- (d) At least a six-year plan that will finance such capital facilities within projected funding capacities and clearly identifies sources of public money for such purposes; and*
- (e) A requirement to reassess the land use element if probable funding falls short of meeting existing needs and to ensure that the land use element, capital facilities plan element, and financing plan within the capital facilities plan element are coordinated and consistent. Park and recreation facilities shall be included in the capital facilities plan element.*

Figure 1

UGA Study Area

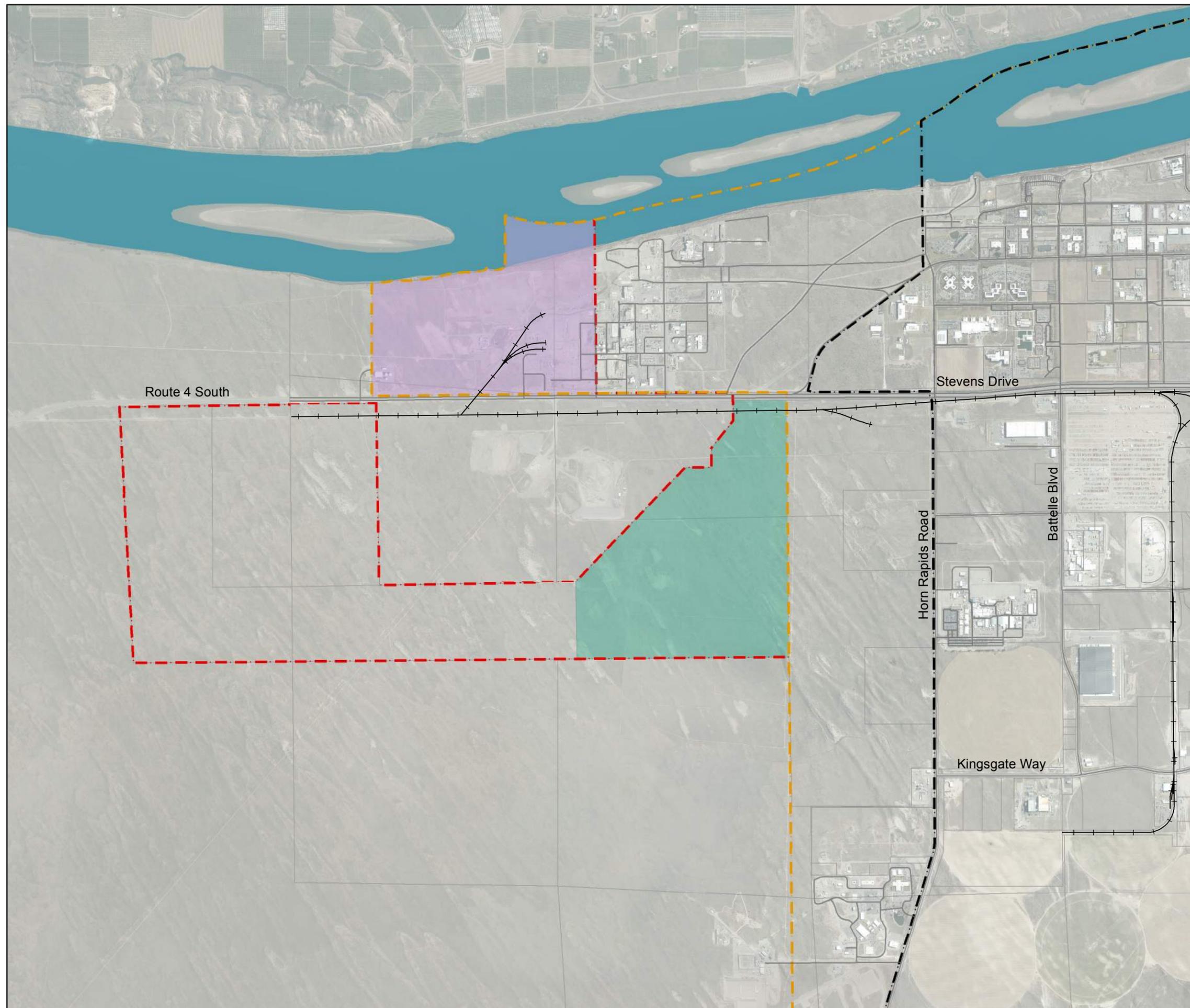
Legend

-  City Limits
-  Existing UGA Boundary
-  Proposed UGA Boundary (1,188 acres)
-  Existing UGA To Be Removed (315 acres)
-  6-Year Planning Area (385 acres)

0 2,000 4,000 Feet



Date: Oct 18, 2016



PROPOSED LAND USE DESIGNATION

Currently the City of Richland has designated a majority of an area in North Richland as Industrial west of Stevens Drive and Business Research Park east of Stevens Drive. It is anticipated that there is a need for future Industrial land in this area to accommodate expanding population.

The entire proposed UGA expansion area is proposed for Industrial land use. Several inquiries to develop this area for large lot (200+ acres sites) light industrial and public uses over the past few years also occurred due to the site features. As the City continues to develop the Horn Rapids Industrial Area to the south of the UGA Expansion area, the amount of large industrial sites is unavailable. This issue continues to increase the need to expand urban services to this site where large 200+ acre lots are available for single users to develop. It is anticipated that potential users would purchase large lots for the ability to expand and/or to allow for property buffering if needed in the future. Specific industrial, manufacturing, and/or research related uses are anticipated to be located in this area.

DEFINITIONS

While the GMA requires jurisdictions to prepare a Capital Facilities Plan it does not specifically define what a Capital Facility is. The GMA defines public facilities as including “streets, roads, highways, sidewalks, street and road lighting systems, traffic signals, domestic water systems, storm and sanitary sewer systems, parks and recreational facilities, and schools.” It defines public services as including “fire protection and suppression, law enforcement, public health, education, recreation, environmental protection, and other governmental services.” The GMA also defines “urban governmental service” or “urban service” in WAC 365-196-200 (19) to include:

“...those public services and public facilities at intensity historically and typically provided in cities, specifically including storm and sanitary sewer systems, domestic water systems, street cleaning services, fire and police protection services, public transit services, and other public utilities associated with urban areas and normally not associated with rural areas.”

While the Growth Management Act does not specifically define a Capital Facility, over the years the Growth Management Hearings Board (GMHB) has provided the following guidance:

For purposes of conducting the inventory required by RCW 36.70A.070(3)(a), “public facilities” as defined in RCW 36.70A.030(13) are synonymous with “capital facilities owned by public entities.” *West Seattle Defense Fund v. City of Seattle, CPSGMHB Case 94-3-0016, FDO April 4, 1995, as cited in EWGMHB Case 06-1-0009c, FDO March 12, 2007.*

The board further defined capital facilities as what is required to fulfill the GMA obligation:

“The Board holds that a Capital Facilities Element (CFE) must include all facilities that meet the definition of public facilities set forth in RCW 36.70A.030(12). All facilities included in the CFE must have a minimum standard [level of service] (LOS) clearly labeled as such (i.e., not “guidelines” or “criteria”), must include an inventory and needs assessment and include or reference the location and capacity of needed, expanded, or new facilities. (RCW 36.70A.070(3)(a), (b) and (c). In addition, a CFE must explicitly state which of the listed public facilities are determined to be “necessary for development” and each of the facilities so designated must have either a “concurrency mechanism” or an “adequacy mechanism” to trigger appropriate reassessment if service falls below the baseline minimum standard. Transportation standards are the only facilities required to have a concurrency mechanism, although a local government may choose to adopt a concurrency mechanism for other facilities.” Jody L. McVittie v. Snohomish County, CPSGMHB Case No. 01-3-0002, FDO, July 25, 2001, as cited in EWGMHB Case 06-1-0009c, FDO March 12, 2007.

And in *Wilma et al v. Stevens County, EWGMHB Case 06-1-0009c, FDO March 12, 2007*, the Eastern Board included:

“streets, roads, highways, sidewalks, street and road lighting systems, traffic signals, domestic water systems, storm and sanitary sewer systems, parks and recreational facilities, and schools...fire protections and suppression, law enforcement, public health, education, recreation, environmental protection and other governmental services. (WAC 365-195-200(12) and (13).”

The Washington Administrative Code (WAC) was updated in 2010, after the cases above were determined. WAC 365-196-415 provides guidance as to which capital facilities should be included in the inventory. At a minimum, they should include water systems, sanitary sewer systems, storm water

facilities, reclaimed water facilities, schools, parks and recreational facilities, police and fire protection facilities.

“Public Facilities” are defined by WAC 365-196-200 (14) to include:

“..streets, roads, highways, sidewalks, street and road lighting systems, traffic signals, domestic water systems, storm and sanitary sewer systems, parks and recreational facilities, and schools.”

“Public Services” are defined by WAC 365-196-200 (15) to include:

“..fire protection and suppression, law enforcement, public health, education, recreation, environmental protection, and other governmental services.”

In addition, WAC 395-196-210 provides the following definitions:

"Concurrency" means that adequate public facilities are available when the impacts of development occur, or within a specified time thereafter. This definition includes the concept of "adequate public facilities"...".

"Adequate public facilities" means facilities which have the capacity to serve development without decreasing levels of service below locally established minimums.

"Utilities" or "public utilities" means enterprises or facilities serving the public by means of an integrated system of collection, transmission, distribution, and processing facilities through more or less permanent physical connections between the plant of the serving entity and the premises of the customer. Included are systems for the delivery of natural gas, electricity, telecommunications services, and water, and for the disposal of sewage.

The GMA further requires each jurisdiction to define capital facilities and identify which capital facilities and public services are included in their CFP. Additionally, each jurisdiction should clearly identify which capital facilities and public services are necessary to support development.

For the purposes of preparing this CFP, a “Capital Facility”, as identified in the City of Richland Capital Improvement Plan, is an existing City facility/infrastructure or new construction projects that add to the City’s infrastructure assets. The minimum threshold for a Capital Facility project is \$25,000 and may span over several years with multiple funding sources.

In order to limit capital facilities to major components which can be analyzed at a level of detail which is both manageable and reasonably accurate for this initial CFP, this report does not include capital outlay for such items as equipment, or the city's rolling stock. In addition, capital facilities that are normally provided by a private developer to service individual lots or businesses, such as minor streets and side sewers as a normal part of the subdivision or land development permit process, are not included.

Based on this, the City of Richland has determined that capital facilities must be in place or funding available, within six years to meet this concurrency requirement as required by RCW 36.70A.070(6). Using the above requirements and definitions, the City has identified the following is a list of the types of capital facilities that are required to meet the concurrency requirement:

- Parks and Recreation Facilities
- Schools
- Municipal Facilities
- Fire and Emergency Service Facilities
- Police Service Facilities
- Emergency Dispatch Communications Facilities
- Library Facilities

- Irrigation District Facilities.
- Transportation
- Sewers
- Surface and Stormwater Management
- Domestic Water
- Other Governmental Services
- Solid Waste
- Electrical

The capital facilities listed above are further divided into three main categories that classify the level of concurrency required. These categories are identified as follows:

Category 1 - Locally Provided Regulatory Concurrency

A public facility or service, owned and operated by the City of Richland, that is either in place, or for which there is a financial commitment in place, to provide the service within six (6) years. All Category 1 capital facilities will be subject to City of Richland GMA concurrency requirements.

Based on the wording of WAC 360.196.840(2) the City of Richland may determine which public facilities and services will be required to “support development” and therefore meet the concurrency requirements of the GMA. Consequently, after reviewing all of the capital facilities that will be required for growth when the expanded urban growth area comes under city control, the City of Richland has determined that **streets and roads, domestic water, sanitary sewers, and electric power** are Category 1 capital facilities and will be subject to the concurrency requirements of the Growth Management Act.

Streets and roads are included under this category as a result of both the requirements of RCW 36.70A.070(6)(a) of the Growth Management Act and because of concerns relating to traffic congestion and safety. Sewer, water, and power are included because of both the requirements and recommendations of WAC 365.196.840(2) and because of their critical relationship to public health and safety, and environmental quality.

Category 2 - Locally Provided Planning Concurrency

A public facility or service, owned and operated by the City of Richland for which goals and policies have been adopted, capital facilities planned, and funding needs projected, which is not required to either be in place or have a financial commitment at time of development.

The City of Richland has determined that **fire protection, law enforcement, parks and recreation, solid waste, and storm water management** are all Category 2 capital facilities. For fire protection this decision is based on the ability of current laws to assure that new growth will meet minimum fire protection standards. For the remaining facilities and services, it is based on the range of acceptability in service levels for these facilities, and the less quantifiable impacts these facilities have directly on public health and safety. Upon the annexation of this urban growth area by the City of Richland, these capital facilities will be funded as part of the City’s ongoing adopted capital facilities budget. This budget process, upon approval of the Richland City Council, will then become the funding level for these facilities.

Category 3 - Provided by others Planning Concurrency

A public facility or service, which is either owned or operated by the state or federal government, or an independent district or utility, and that: 1) is in place or has a financial commitment in place to provide the service within six (6) years; or 2) for which goals and policies have been adopted, capital facilities planned, and funding needs projected, which is not required to be in place or have a financial commitment at the time of development.

The City of Richland has determined that **schools** (Kennewick & Richland School Districts), **libraries** (Richland Public Library), **transit** (Ben Franklin Transit), **natural gas** (Cascade Natural Gas and Williams-Northwest Pipeline), and **communications** (Frontier and other local providers) are all Category 3 capital facilities and are not subject to concurrency requirements. The City will work with these service providers to reach an agreement on ways to ensure that these services are reasonably available when needed to serve projected growth. This decision was based on: 1) The inability of the City of Richland to allocate the required funding for these facilities; 2) The broader range of acceptability in service levels for some of these facilities as determined through public involvement; and, 3) The less quantifiable impacts some of these facilities have on public health and safety.

As identified in Categories 2 and 3 these public facilities and services only require planning concurrency by the City of Richland. The City of Richland has established goals and policies regarding the siting of these capital facilities, and has determined whether these capital facilities have sufficient capacity to serve the projected growth. The City is not required to commit financing for the development of these facilities, for Category 2 facilities, only a general financial commitment needs to be in place, and a general commitment is all that is required for a Category 3. Coordination with the purveyors of these facilities and services to assure that adequate facilities are available to accommodate growth is required. Where the City of Richland does not have the authority to commit financing for the maintenance of Category 2 and 3 public facilities and services, there is not a requirement for concurrency.

The purpose of this analysis is to identify whether the City of Richland has the capacity to provide Category 1 services to the proposed UGA expansion area and to identify the financial commitment required by the City to provide these services within six (6) years.

LEVELS OF SERVICE

As established above, the levels of service standards, for regulatory concurrency purposes, apply only to Category 1 capital facilities (streets and roads, water, sewer, and electrical power). The following paragraphs and tables define and establish levels of service for the Category 1 capital facilities.

“Level of service” (LOS) means an established minimum capacity for public facilities or services that must be provided per unit of demand or other appropriate measure of need, and is used as a gauge for measuring the quality of service. Levels of service need to be consistent with the growth projections of the Land Use Element of the City of Richland Comprehensive Plan. Under the concurrency requirements of GMA, if levels of service are set too high, it may result in the community not achieving its growth objectives. On the other hand, if levels of service are set too low, it may adversely impact the quality of life in the community. Even if concurrency is not required, LOS standards are valuable planning and budgetary tools.

LOS standards were initially established under the City of Richland Comprehensive Plan. These standards were reviewed, evaluated, and approved by the Richland City Council as a balance between economic feasibility and community benefit. For the purposes of this analysis, the City of Richland’s Level-of-Service criteria contained in their 2008 Comprehensive Plan were used. This was based on the assumption that Richland will have the ultimate responsibility for providing the necessary capital facilities for this area.

Table 1 defines LOS standards for Category 1 public facilities including; roads, water, and sewer. These LOS standards have been adopted as the standards that the City of Richland will use to evaluate future development approvals and will establish the basis for the future submission of capital budgets for approval within the UGA area.

Table 1. LOS Standards

Facility	Adopted LOS
Streets and Roads	
Local Roads	LOS D
Arterials	LOS D
Signalized Intersections	LOS D
Unsignalized Intersections	LOS D
Domestic Water	
Commercial Unit Flows	1,000 gallons/acre/day
Industrial Unit Flows	1,000 gallons/acre/day
Commercial Fire Flow	3,500 gpm for 3 hours
Industrial Fire Flow	4,000 gpm for 4 hours
Heavy Industrial Fire Flow	4,500 gpm for 5 hours
Sewer	
Residential Unit Flows	160 gallons/dwelling unit
Commercial Unit Flows	625 gallons/acre/day
Industrial Unit Flows	1,250 gallons/acre/day
Manning Pipe Roughness Coefficient	0.012
Minimum Sewer Velocity	2 feet/second

CAPITAL FACILITY INVENTORY

This section discusses existing facilities, owned by public entities, and provides information about the service provider, along with the location and capacity of the existing facilities.

Transportation

Streets

There is no existing roadway network internal to the proposed Urban Growth Area (UGA) Expansion Area. Only Stevens Drive, running north-south along the eastern side of the proposed Urban Growth Expansion Area provides immediate access. Roadways that will provide service to the proposed Urban Growth Area are described below.

Stevens Drive is a principal arterial roadway with a speed limit of 55 MPH that serves the Hanford area to the north of the proposed UGA Expansion Area. It has 6 lanes south of Horn Rapids Road and 4 lanes north of Horn Rapids Road. There are acceleration and deceleration lanes at intersections. North of Horn Rapids Road, Stevens Drive enters the Hanford Area and becomes Route 4 South.

Horn Rapids Road is a 2 lane minor arterial roadway that runs east-west within the existing Urban Growth Boundary approximately one-half mile to the south of the existing northern boundary of the UGA.

Kingsgate Way is a north-south minor arterial roadway with one lane in each direction and a two-way left turn lane. It has curb and gutter and a detached sidewalk on the east side just north of SR 240 along the RV Park frontage, but is a rural section further to the north. There are streetlights the full length of the roadway. It has a posted speed limit of 40 MPH. It provides access to residential development to the south of SR 240 but is discontinuous further south, with plans to extend it to Van Giesen Street (SR 224).

SR 240 is also known as the Vantage Highway west of Stevens Drive and is an east-west expressway that connects the City of Richland to areas to the west including the Hanford Site. It has a single through lane in each direction but at the intersection of Kingsgate Way it has deceleration lanes for right turns and, exclusive left turn lanes as well as acceleration lanes in both directions for vehicles turning onto the highway. A traffic signal will be constructed at the SR 240/Kingsgate Way intersection in 2017. The speed limit is 55 MPH. There are no sidewalk facilities as it has roadside ditches for stormwater. The City has programmed a multi-use pathway on the north side from Stevens Drive to Kingsgate Way.

George Washington Way parallels Stevens Drive to the east and serves the Tri-Cities Research District, the Port of Benton and the Pacific Northwest National Laboratories and Washington State University Tri-Cities. It is a 5 lane principal arterial through the heart of Richland. North of Horn Rapids Road, George Washington Way curves to the west to join Stevens Drive. Northbound, as it approaches Stevens Drive the only movement allowed is the northbound merge. Southbound Stevens Drive provides a left turn lane to access George Washington Way.

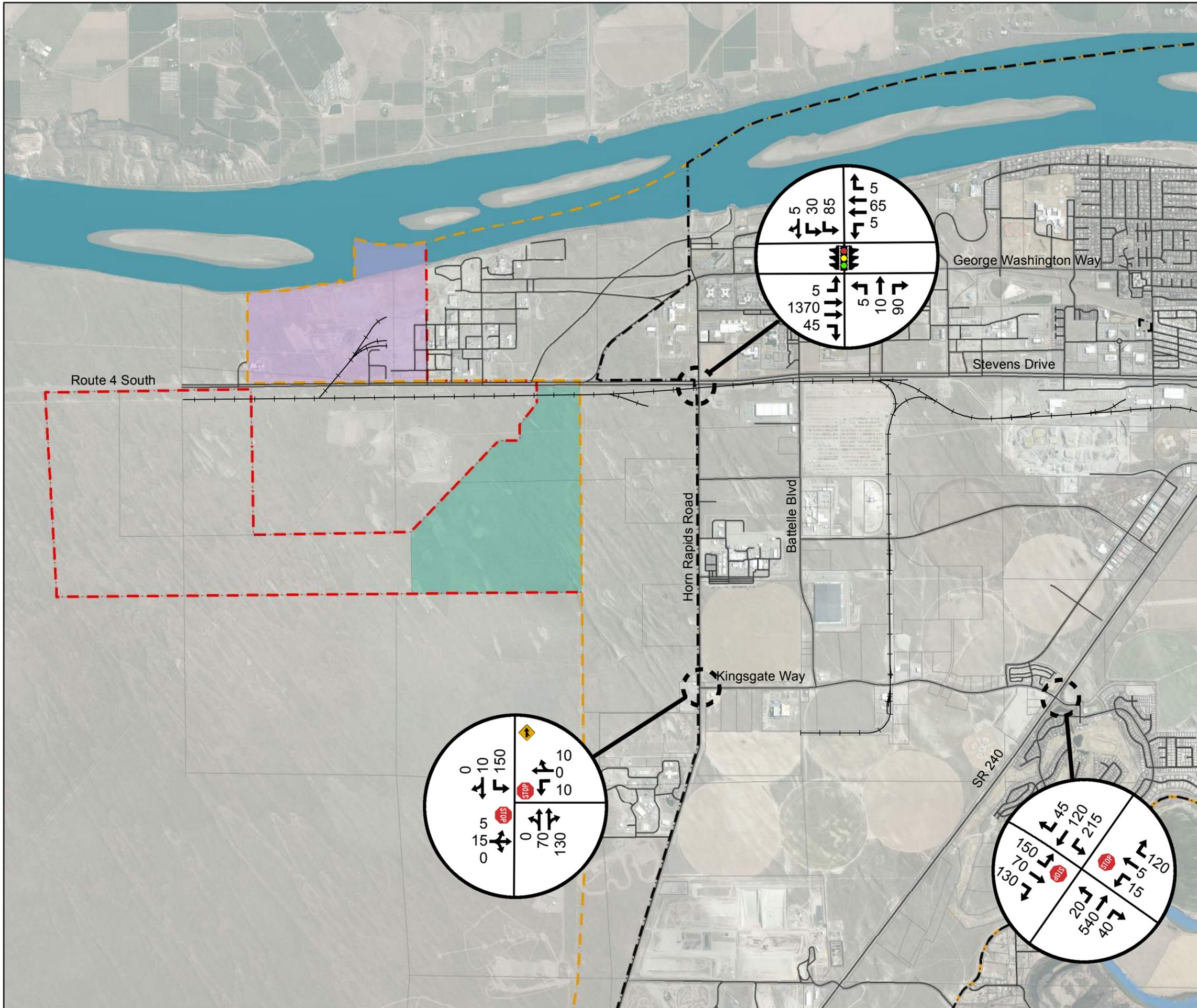
Traffic Volumes

Three existing intersections will provide primary access to the proposed UGA Expansion area and were evaluated for capacity purposes as part of this Capital Facilities Plan. Manual PM peak period turning movement volumes were collected in July 2016 at the three existing study intersections from 3:30 –

5:30 PM. Existing intersection lane configurations, traffic control and PM peak hour traffic volumes are depicted in Figure 2.

Figure 2

Existing Lane Configuration, Traffic Control and Volumes



Legend

- City Limits
- Existing UGA Boundary
- Proposed UGA Boundary (1,188 acres)
- Existing UGA To Be Removed (315 acres)
- 6-Year Planning Area (385 acres)

Level of Service

The analysis of Level-of-Service (LOS) is a means of quantitatively describing the quality of operational conditions of a roadway segment or intersection, and the perception by motorists and passengers. Service levels are identified by letter designation, A to F, with LOS “A” representing the best operating conditions and LOS “F” the worst. Each LOS represents a range of operating conditions, and one or more measures of effectiveness (MOE) are used to quantify the LOS of a roadway element. For intersections, the MOE used is average control delay (seconds) per vehicle. While there are several methodologies for estimating the LOS of intersections, the most commonly used is that presented in the Highway Capacity Manual and is the methodology used in this study (HCM 2010). The Highway Capacity Manual LOS criteria for signalized and unsignalized intersections are summarized in Table 2.

Table 2. Level-of-Service Criteria for Intersections

Level of Service (LOS)	Average Control Delay (seconds/vehicle)	
	Signalized Intersections	Unsignalized Intersections
A	< =10	< =10
B	>10 - < 20	>10 - < 15
C	>20 - < 35	>15 - < 25
D	>35 - < 55	>25 - < 35
E	>55 - < 80	>35 - < 50
F	>80	>50

Source: Highway Capacity Manual 2010, Transportation Research Board, National Research Council, Washington, D.C., 2000.

The signalized method is based on the capacity available to service the various movements at a signalized intersection, based on the amount of green time provided for each movement. The impacts of any conflicting movements, etc. for unsignalized intersections delay is based on the availability of gaps in the major street to allow minor street movements to occur. Delay results in driver frustration and anxiety, loss of time, unnecessary fuel consumption, and contributes to unnecessary air pollution.

The Benton Franklin Council of Governments and the City of Richland have adopted regional standards for intersection service standards at LOS “D”. These proposed criteria will be the basis for determining appropriate mitigation actions for future traffic volumes.

Peak hour traffic volumes and intersection geometry from Figure 2 were used to determine the delay and Level of Service at the intersections. The results of the capacity analysis and intersection delay for existing conditions are shown in Table 3.

Table 3. Summary of Existing PM Peak Hour Delay (sec) and Level of Service

Intersection	PM Peak Hour	
	Overall Intersection	Worst Approach
Stevens Drive/Horn Rapids	13.8/B	WB—68.3/E
Horn Rapids Road/Kingsgate Way	*	SB—12.9/B
SR 240/Kingsgate Way	* (1)	SB-268/F

LEGEND

60.8/E Delay and Level of Service using existing lane configurations

* Uncontrolled Movements (major street through) not provided for overall intersection Analysis for Two-way Stop Controlled Intersections

NB = northbound, SB = southbound, WB = westbound, EB = eastbound

- (1) The LOS with the traffic signal installed in 2017 will result in much improved service, providing LOS B and 15 seconds of delay for the overall intersection and LOS C with 22 seconds of delay for the worst (NB approach).

As shown in Table 3, the intersections of Stevens Drive/Horn Rapids Road and Horn Rapids Road/Kingsgate Way function with good Levels of Service. However, the intersection of SR 240/Kingsgate Way currently functions with an unacceptable Level of Service during the PM peak hour. This is caused by a steady stream of traffic on SR 240 during peak hours, this limits gaps which side-street traffic can cross or enter the flow of mainline traffic and has been the situation for several years. The City has funded, and the Washington State Department of Transportation has committed to constructing a traffic signal at the intersection of sr 240/Kingsgate Way in 2017..

Sanitary Sewer Service

Currently, there is no sanitary sewer service in the UGA Expansion Area. Sanitary sewer service in this area will be provided by the City of Richland. The City of Richland updated its General Sewer Plan (GSP) in 2016. The GSP update discusses the total capacity, utilized capacity, and remaining capacity of both the Wastewater Treatment Plant (WWTP) and the sanitary sewer collection system. The following is a summary of the WWTP capacity and the sanitary sewer collection system based upon this planning document.

Wastewater Treatment Plant

The City of Richland operates a wastewater treatment plant (WWTP) with primary sedimentation and secondary activated sludge treatment. Chlorine is injected prior to discharge to the Columbia River for disinfection. Solids are thickened with rotary drum thickner, anaerobically digested, dewatered on belt presses, and transported to the City composting facility to attain a Class A compost which is sold to the public through wholesale distributors.

The WWTP is sized for 11.4 million gallons per day (mgd) of sewer flow as noted in Table 4. According to the GSP, the maximum monthly flow for 2015 was 6.3 mgd (55% of rated capacity) and maximum monthly flow is projected to reach approximately 9 mgd (80% of rated capacity) in the next 20 years. The GSP identifies that Biological Oxygen Demand (BOD) and Total Suspended Solids (TSS) loading are both currently at approximately 80% of rated capacity. The Washington State Department of Ecology (WDOE) recommends improvement planning begin once average flow/load exceeds 85% for three

consecutive months or exceeds 100% design capacity for one month. Based upon this requirement, the GSP projects the need for a WWTP re-rating study to occur in 2020.

Table 4 – Design Criteria – 2016 NPDES Permit

Parameter	Design Criteria	85% of Design
Average flow for maximum month	11.4 mgd	9.7 mgd
BOD ₅ loading for maximum month	17,250 lbs/day	14,663 lbs/day
TSS loading for maximum month	21,200 lbs/day	18,020 lbs/day
NH ₃ -N loading for maximum month	2,750 lbs/day	2,338 lbs/day

Collection System

The City of Richland sanitary sewer collection system consists of over 262 miles of pipe ranging in size from 6-inch to 54-inch in diameter. The total area that can be provided with public sewer service totals over 25,000 acres. The existing collection system also includes 14 sanitary sewer lift stations, which are classified as either local service or interceptor service depending on the area they serve.

The natural ground topography of the UGA Study Area is a gentle slope of 0.5% towards the south. Therefore, the entire UGA Study Area will have only one drainage basin to be served by one sanitary sewer gravity interceptor pipe. There is an existing 24-inch diameter sewer interceptor (Logston Interceptor) that extends as far north as Battelle Boulevard. Figure 3 depicts the existing sanitary sewer collection system in the vicinity of the UGA Study Area.

Potable Water Service

The UGA Study Area is outside of the current water service area of the City of Richland water system. The City of Richland prepared an update to its Water System Plan (WSP) in 2016, which provides 20-year planning numbers for water supply, demand, and distribution. The following is a summary of the City’s potable water source capacity and the distribution system based upon this planning document.

Source Capacity

According to the WSP, the City of Richland has a total available water right of 34,948 acre-feet per year and 43,786 gpm for instantaneous flow. This total available water right converts to a Maximum Day Demand (MDD) of 63.0 MGD. The 2015 population-based MDD is 38.4 MGD per the WSP. The planning period for the WSP limited the future demand projections to year 2035 when MDD is projected as 55.25 mgd.

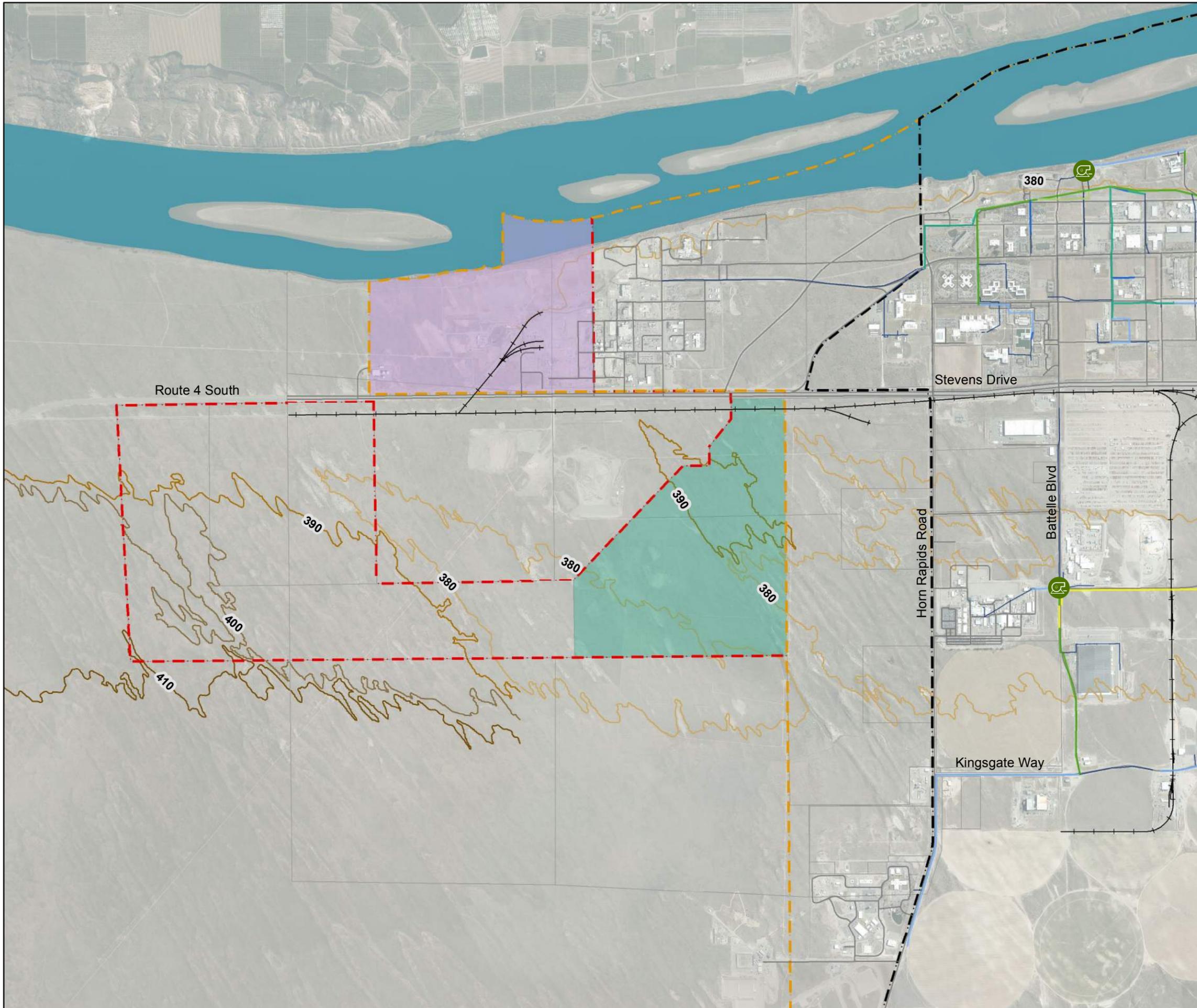
The City of Richland potable water sources include a wellfield and the Columbia River Water Treatment Plant (WTP). According to the WSP update, the wellfield has a total of 15 MGD capacity while the WTP has a capacity of 36 MGD.

Distribution System

There are currently twelve pressure zones in the City’s water distribution system that receive water service. The natural topography of the UGA Study Area (elevation 410’ to 380’) places it within the City’s Core 548 Pressure Zone which serves elevations 353’- 427’. There are existing Core 548 water pipes as far north as Horn Rapids Road. Figure 4 depicts the existing water distribution system near the UGA Study Area.

Figure 3

Existing Sewer System



Legend

- City Limits
- Existing UGA Boundary
- Proposed UGA Boundary
- Existing UGA To Be Removed
- 6-Year Planning Area
- Property Lines
- Sewer Lift Station

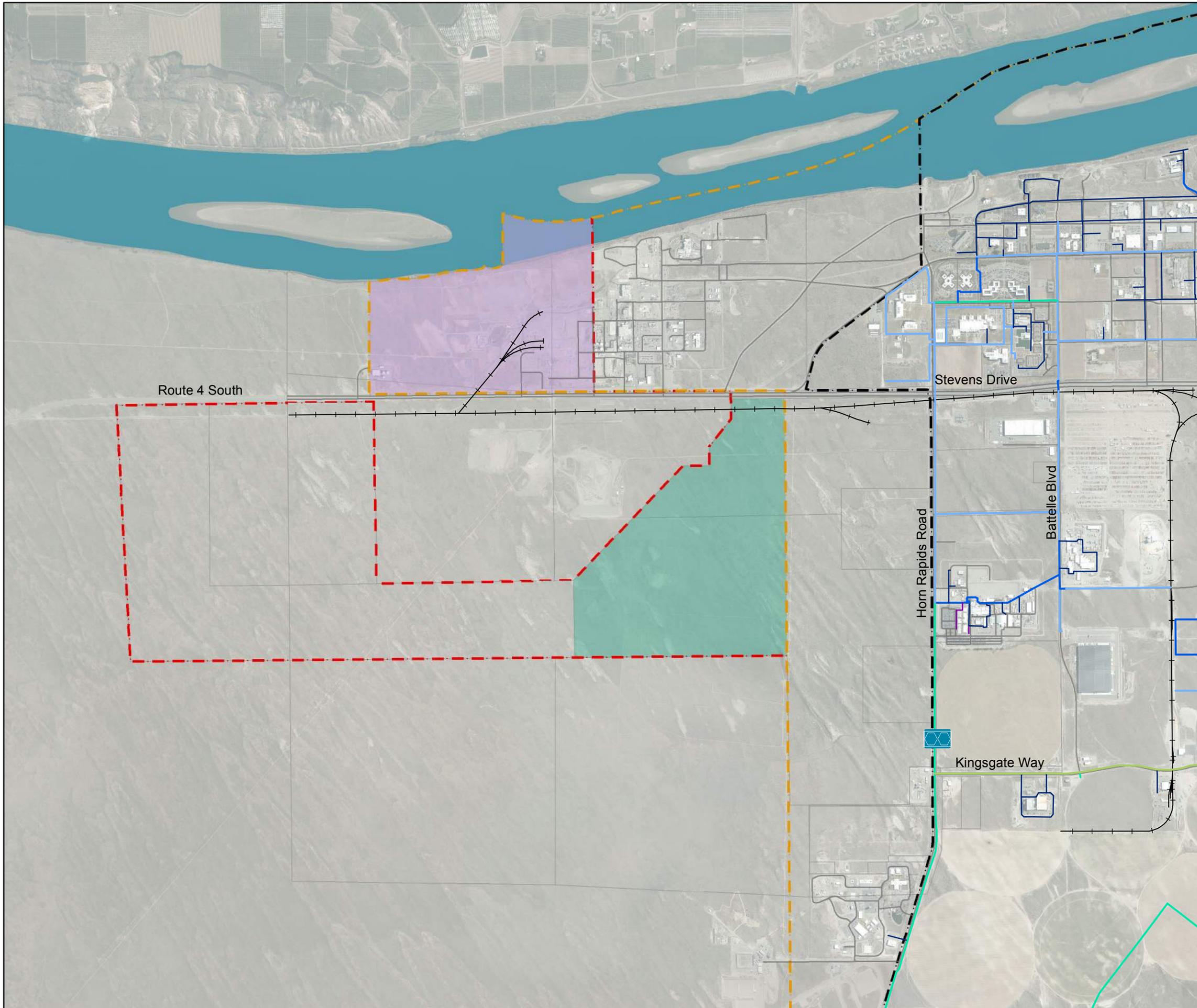
Existing Pipe Size (in)

- Collector
- 10
- 12
- 15
- 18
- 21
- 24
- 27
- 30
- 36
- 42
- 54

0 2,000 4,000 Feet

Figure 4

Existing Water System



Legend

- City Limits
- Existing UGA Boundary
- Proposed UGA Boundary
- Existing UGA To Be Removed
- 6-Year Planning Area
- Booster Pump

Existing Pipe Size (in)

- 6
- 8
- 10
- 12
- 14
- 16
- 18
- 20
- 24
- 27
- 30
- 36

0 2,000 4,000 Feet



Date: Oct 18, 2016

Surface and Storm Water Management

Currently, there are no storm water systems within the UGA Study Area. There is a restriction of the placement of swales, ponds and other storm drainage facilities within the UGA study area. The southerly restriction area is located 1,969 feet north of the centerline of Horn Rapids Road and extends 15,781 feet north of the centerline of Horn Rapids Road. This is noted in the property deed restrictions Exhibit H item 5. Refer to Figure 5 for a graphical representation of the restriction area.

Other Governmental Services

Power

The City of Richland Energy Services currently has no electrical power services specified for the UGA Study Area. There are existing electrical facilities along Horn Rapids Road (east/west) and Stevens Drive (north/south) that provide service to existing developed area. City of Richland Energy Services has the ability to provide electrical service to the UGA Study Area. The Bonneville Power Administration (BPA) has an overhead transmission line that crosses the UGA Study Area east to west. The BPA transmission line cannot be used for electrical services for the UGA Study Area.

Natural Gas

The natural gas utility for the UGA expansion area is Cascade Natural Gas Corporation (CNGC). CNGC has an existing 6-inch steel high-pressure main running north/south along Stevens Drive. There is also a 4-inch intermediate pressure main located along Horn Rapids Road (east/west). CNGC has stated that their existing natural gas services are currently 100% utilized and that no further natural gas services can be accounted for in the UGA Study Area. CNGC is currently working on plans to provide additional natural gas services so that the UGA Study Area can account for natural gas utility services. They have estimated additional natural gas services can be accounted for by the middle/end of 2017.

Communications

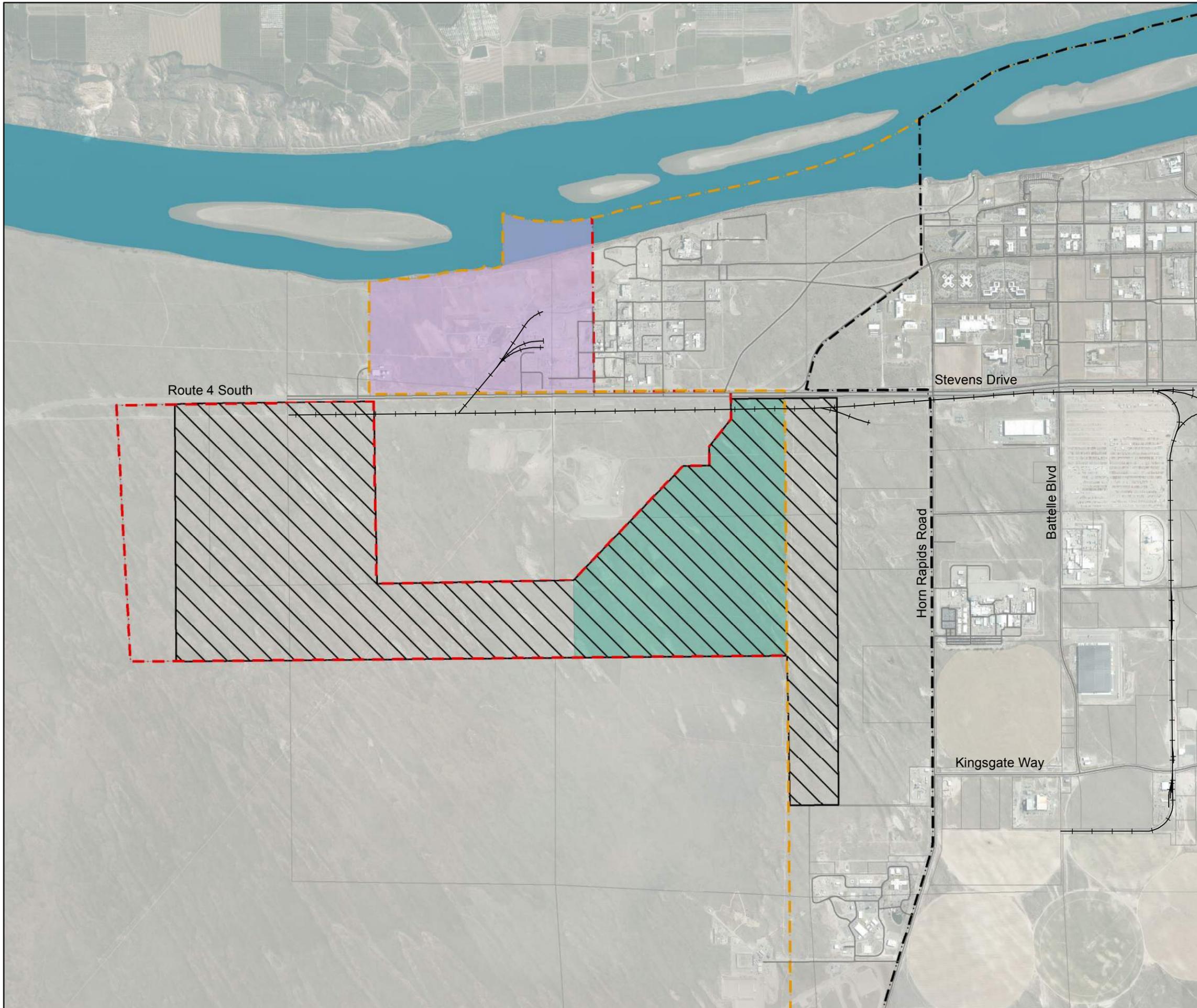
In regards to landline telecommunication service, the UGA Study Area is located in Frontier Communication's service area. Landline telecommunication service to the UGA Study Area is not currently available and would require additions to Frontier's current network. Other landline telecommunication providers would need to make similar improvements. Service coverage for cellular telecommunication is expected to be available in the UGA Study Area as nearby urban areas receive cellular service. Internet service to the UGA Study Area would be limited to wireless internet service providers (ISPs) until a fiber optic network connection could be extended to the area.

Telecommunications

Telecommunications includes the transmission of information by wire, radio, optical cable, electromagnetic, or other similar means. This includes telephone, cellular telephone and cable and satellite television.

Changes in technology are having a major impact on telecommunications. Much of these technologies are merging with much less distinction between data, video, and voice technologies. Some of these utilities are regulated by the Washington State Utilities and Transportation Commission to meet a specific level of service to their service areas.

Figure 5
Stormwater Restriction Area



- Legend**
- City Limits
 - Existing UGA Boundary
 - Proposed UGA Boundary (1,188 acres)
 - Existing UGA To Be Removed (315 acres)
 - 6-Year Planning Area (385 acres)
 - Stormwater Restriction



Date: Oct 18, 2016



Frontier Communications provides standard phone service to the UGA Study Area. There are existing communication services along Horn Rapids Road (east/west) and along Stevens Drive (north/south). There are no communications services within the UGA Study Area.

U.S. Cellular, AT&T, Sprint, Verizon and Nextel currently provide cellular phone service within the Tri-Cities area. Due to the close proximity to urban areas, it is anticipated that all of these services will have acceptable reception.

Irrigation

Separate irrigation services are not provided by an irrigation district within the UGA Study Area. All irrigation within this the UGA Study area will need to be provided through the City of Richland Domestic Water System or via a private on site well source(s). It is noted that non-potable water is available with an existing irrigation pipeline at the corner of Stevens and Horn Rapids Road. It's not anticipated that the targeted developments will need this service; however, if a significant non-potable demands are requested by development irrigation service would be provided by this non-potable water system and most likely not from the domestic potable water system.

FACILITY REQUIREMENTS

This section of the UGA Capital Facilities Analysis presents capital improvement projects required by the City of Richland and others, to meet and maintain the level of service standards discussed earlier, based on the land use projections outlined.

Transportation

2022 Without UGA Expansion Conditions

An evaluation of future conditions in year 2022 without the UGA Expansion at study intersections was prepared for comparative purposes. The year 2022 was selected for the analysis year to be consistent with the State of Washington Growth Management Act and the requirement to provide acceptable Levels of Service over a 6-year time frame before allowing developments to proceed.

Although this section does not account for growth within the study area, accounting for background growth is typical for such studies. Traffic volumes in the study area are highly dependent on employment associated with the Department of Energy Hanford site to the north of the study area. Volumes can fluctuate up or down over time. For the purposes of this study, a background growth rate of 1.5% per year was applied to existing traffic volumes to represent year 2022 volumes without the UGA Expansion. For the purposes of this analysis, no reduction in traffic volumes was made associated with the 283 acres proposed to be removed from the UGA

The only significant roadway improvement anticipated during the next 6 years in the study area is the installation of a traffic signal at the intersection of SR 240/Kingsgate Way.

Table 5. Summary of 2022 PM Peak Hour Delay (sec) and Level of Service Without UGA Expansion

Intersection	PM Peak Hour	
	Overall Intersection	Worst Approach
Stevens Drive/Horn Rapids	16/B	WB—71.3/E
Horn Rapids Road/Kingsgate Way	*	SB—12.9/B
SR 240/Kingsgate Way	15.2/B	NB-22.1/C

LEGEND

60.8/E Delay and Level of Service using existing lane configurations

* Uncontrolled Movements (major street through) not provided for overall intersection Analysis for Two-way Stop Controlled Intersections

NB = northbound, SB = southbound, WB = westbound, EB = eastbound

As shown in Table 5, all intersections in the study area are anticipated to operate with good overall Levels of Service. The high delay for the westbound approach at the intersection of Stevens Drive/Horn Rapids Road is for a relatively small number of vehicles. In order to maximize the throughput of the high demand volume on Stevens Drive which feeds the SR 240 By-Pass Highway, a long signal cycle length of 150 seconds is used. These long cycle lengths can cause lengthy delay for side street movements which is the case at Stevens Drive/Horn Rapids Road resulting in existing LOS E for some movements.

2022 with UGA Expansion

The proposed UGA Expansion Area consists of approximately 1,184 acres. There are also 283 acres that are proposed to be removed from the existing UGA on the east side of Stevens Drive, as previously discussed and shown in Figure 1.

The portion of the UGA Expansion area anticipated to be developed during the next six years comprises approximately 385 acres at the southern end. The land use of the entire site would be for light industrial purposes. Currently, the City has very few sites which can accommodate large industrial type development greater than 50 acres, such as is common in the Horn Rapids Industrial Park immediately to the south of the UGA Expansion area. Similarly, there are very few sites in the state that can accommodate industry with needs greater than 100 acres. The City and Port of Benton have been approached by businesses with needs similar to the AREVA site of 100 acres situated on Horn Rapids Road between Kingsgate Way and Stevens Drive. The intent of the UGA Expansion is to serve as many such businesses as possible.

Given the intent of the type of development anticipated for the UGA Expansion area, a relatively light roadway network, is proposed for the 6-year time period. It would consist of the following roadways that would be constructed consistent with the Horn Rapids Industrial Park Industrial Roadway section with 40' of paved roadway including 3 12' lanes and 2' shoulders:

- An east-west roadway (Road "A") connecting with Stevens Drive near its existing intersection with George Washington Way approximately 1-mile north of Horn Rapids Road, just north of and parallel to the existing BPA power lines, and extending west approximately 3 miles to a future extension of Kingsgate Way to the north. The western portion of this roadway within the existing UGA is approximately 3,260' and estimated to cost \$2.28 million.
- A Kingsgate Way extension (Road "B") to the north approximately 1 mile to connect with a new east-west roadway (Road "A"), a length of approximately 3,220' at a cost of approximately \$2.18 million.
- One additional north-south roadway (Road "C") along the western boundary of the UGA Expansion area that will provide access to the area north of the new east-west roadway (Road "A") in order to preserve maximum lot size capabilities. This roadway is outside the existing UGA and will be paid for by development of the UGA.

Depending on the actual development that occurs, and the lot acreage sizes incorporated into the UGA Expansion area, it may be meaningful for secondary or emergency services access or for phasing purposes to extend the north-south roadway from Horn Rapids Road rather than beginning at the new east-west roadway. For the 20-year time period, the new north-south roadway (Road "C") would be extended to the northern portion of the UGA Expansion area to connect with an additional east-west roadway (Road "D") that would connect to Stevens Drive.

In order to determine potential future roadway traffic volumes, the ITE 9th Edition of "Trip Generation" was consulted. This publication is produced based on national research that provides typical trip generation rates for various types of land uses. The trip generation rates for General Light Industrial and General Heavy Industrial were examined. A traffic count was also conducted at the entrance to the AREVA site during the PM peak hour to estimate the trip generation of these large facilities. A combination of these three land uses was felt to best estimate potential future trips generated within the next 6 years on the 385 acres. Trip generation rates for the land uses used are as follows:

- Light Industrial: 51.8 trips per acre on a typical weekday
- Light Industrial: 7.26 trips per acre during the PM peak hour (22% inbound, 78% outbound)
- Heavy Industrial: 6.75 trips per acre on a typical weekday
- Heavy Industrial: 2.16 trips per acre during the PM peak hour (22% inbound 78% outbound)

- AREVA Site: 0.69 trips per acre during the PM peak hour (5% inbound, 95% outbound)

For the purposes of this analysis it was assumed that 200 acres of the 385 would develop with similar trip generation characteristics as the AREVA site, and that 125 acres would develop with trip generation similar to that of typical heavy industrial and the remaining 60 acres would develop with Light Industrial trip generation characteristics. This would result in a total of 162 new inbound trips and 682 outbound trips from the UGA Expansion area.

In order to add the new trips to the roadway network, some assumptions were made as to the travel routes that the trips would use. Existing traffic patterns were examined in light of a knowledge of the housing available in the region for future workers in order to determine likely travel routes to and from the UGA Expansion area. The percentages of trips using the various potential travel routes are shown in Figure 6 along with the resulting Site Generated Trips. Traffic volumes shown in Figure 6 were added to the 2022 No-Build traffic volumes to represent the year 2022 Traffic Volumes with UGA Expansion and are shown in Figure 7.

Using the 2022 Traffic Volumes with UGA Expansion developed and shown in Figure 7, capacity analysis was again performed. The results of the analysis are shown in Table 6.

Table 6. Summary of 2022 PM Peak Hour Delay (sec) and Level of Service With UGA Expansion

Intersection	PM Peak Hour	
	Overall Intersection	Worst Approach
Stevens Drive/Horn Rapids	8.3/A	WB—73.3/E
Horn Rapids Road/Kingsgate Way	*	WB—32.4/D
SR 240/Kingsgate Way	21.2/C	SB-30.2/C
Stevens Drive/George Washington Way/New east-west Road	18.9/B	EB-41.8/D

LEGEND

60.8/E Delay and Level of Service using existing lane configurations

* Uncontrolled Movements (major street through) not provided for overall intersection Analysis for Two-way Stop Controlled Intersections

NB = northbound, SB = southbound, WB = westbound, EB = eastbound

In addition to the roadway improvements needed to provide access to the new UGA Expansion area described above, the following intersection improvements will be needed to provide acceptable Levels of Service as described below:

- At the intersection of Kingsgate Way/Horn Rapids Road two lanes for each approach will be needed, to reduce delay for various movements. Also, with the higher traffic volumes coming from the north leg rather than the east leg, conversion from north-south being STOP controlled to east west being STOP controlled will be needed at some point during the six year time period to reduce delay for southbound traffic. These improvements are estimated at \$165,000.

Figure 6

2022 PM Peak Hour Site Generated Trips

Legend

-  City Limits
-  Existing UGA Boundary
-  Proposed UGA Boundary (1,188 acres)
-  Existing UGA To Be Removed (315 acres)
-  6-Year Planning Area (385 acres)
-  Road "A"
-  Road "B"
-  Road "C"
-  Road "D"
-  Future 20-Year Road Extension

X% Inbound
(X%) Outbound

0 2,500 5,000 Feet



 N
E
S
W

Date: Oct 19, 2016

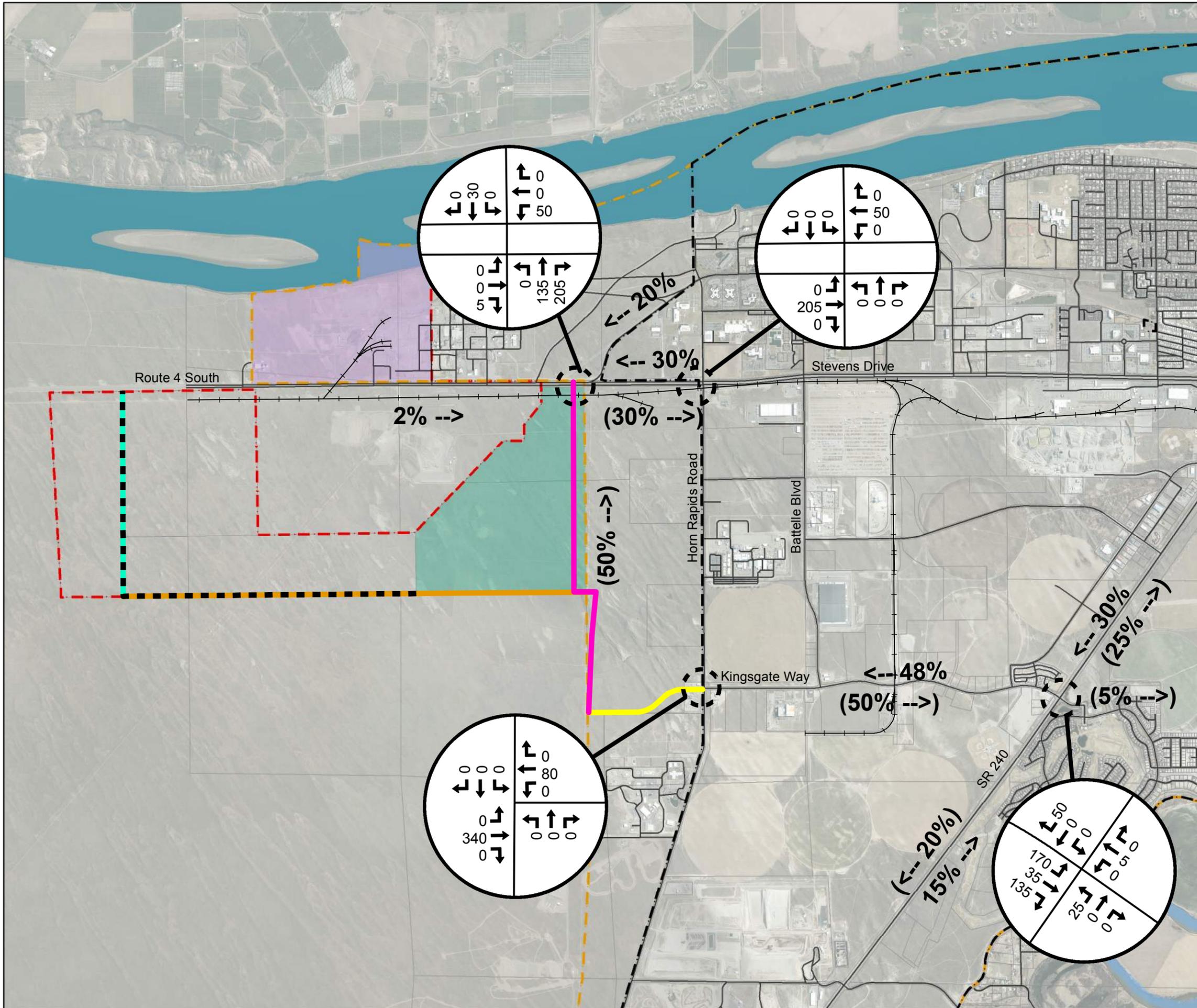
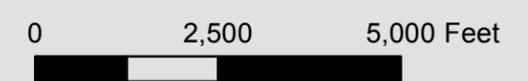
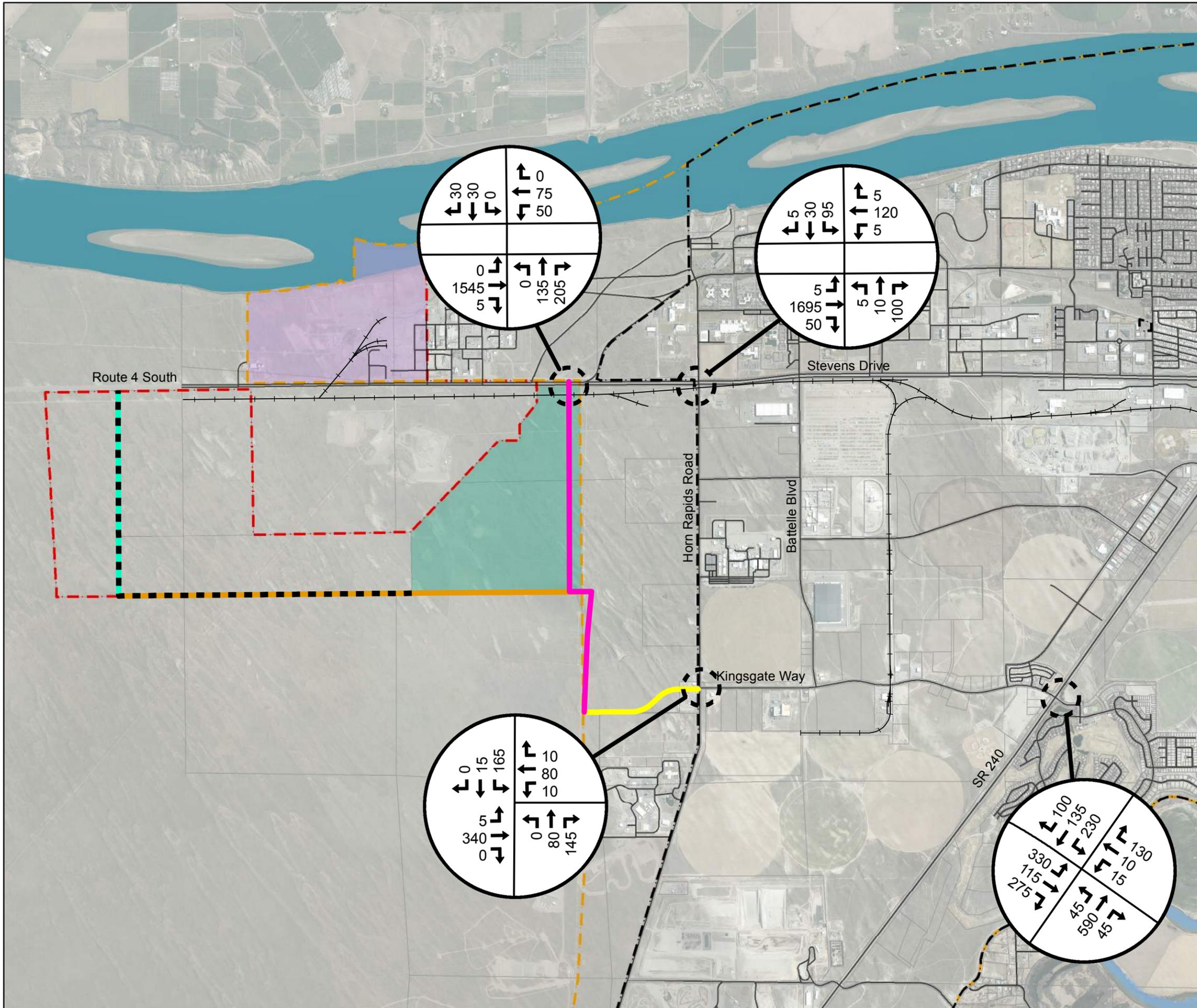



Figure 7

2022 PM Peak Hour Volumes with UGA Expansion

Legend

-  City Limits
-  Existing UGA Boundary
-  Proposed UGA Boundary (1,188 acres)
-  Existing UGA To Be Removed (315 acres)
-  6-Year Planning Area (385 acres)
-  Road "A"
-  Road "B"
-  Road "C"
-  Road "D"
-  Future 20-Year Road Extension



- At the new intersection at Stevens Drive/George Washington Way/new east-west road, a traffic signal will be needed in order to provide adequate gaps in the Stevens Drive flow of traffic for other movements to occur. It is anticipated that this intersection would have exclusive left and right turn lanes on all approaches and that the existing sweeping right turn for George Washington Way to northbound Stevens Drive could be retained. At some point in the future, development on the east side of Stevens Drive could incorporate network changes that would more closely represent a grid network without the need to modify this intersection further. These improvements are estimated at \$755,000.

2036 With UGA Expansion

For the 20 year traffic analysis general roadway capacity was examined to determine what potential large capacity capital projects might be anticipated. It is inherent in this analysis that intersection improvements will need to occur over time, but specific improvements for the 20-year period at the intersection level are difficult to determine for such a long-range forecast with so many variables.

There are an additional 1,317 acres within the proposed UGA Expansion area beyond those evaluated for the year 2022 discussed above. One known future land use is associated with 300 acres owned by Energy Northwest who anticipates placing solar panels on 100 acres. These 100 acres would generate very few trips for maintenance purposes.

If similar land development assumptions are made for the 1,317 acres, such that 50% or 650 acres develops with similar trip making characteristics to those explained earlier with the AREVA site, and 600 acres of heavy industrial with 67 acres of light industrial, it could be expected that 415 inbound and 1,816 outbound trips could be made during the PM peak hour. It is likely, due to the proximity to Stevens Drive that the vast majority of these trips would access Stevens Drive.

Part of the purpose of the transfer of the 1,341 acres from the Department of Energy to the City of Richland and the Port of Benton is to provide alternate opportunities for employment as the Hanford Site clean-up eventually draws to a close in the long term. As a result of this shift in employment, the southbound traffic volumes on Stevens Drive are likely to decrease somewhat, however the extent and timing of this shift is unknown.

More detailed evaluation will be required in the future, when specific site proposals are presented, to better understand future traffic patterns and impacts of proposed developments. However, It is anticipated that Stevens Drive would need to be widened to 6 lanes north from Horn Rapids road through the UGA Expansion area to the northernmost new access roadway. A traffic signal would be needed at that northernmost roadway as well, which would provide gaps for other potential large parcel development on the west side of Stevens Drive. Traffic signalization may also be needed at Kingsgate Way/Horn Rapids Road.

Sanitary Sewer Service

Sanitary sewer service will be provided by the City of Richland. The following sections describe the projected flows and necessary expansion of the sanitary sewer system to serve the UGA Study Area for both the 6-year (2022) and the 20-year (2036) planning periods.

Estimated Sewer Flows

The GSP suggests using 1,250 gallons per acre per day (gpad) for industrial areas. This is consistent with the reference text Wastewater Engineering: Treatment and Reuse, by Metcalf & Eddy, gross-area sewer flows for industrial areas are estimated to be between 1,000 and 1,500 gpad. Therefore, for the purposes of this study, an average discharge of 1,250 gpad is assumed for the UGA Study Area.

Infiltration and inflow were considered low and therefore excluded due to the location of the study area being high in elevation and thus less affected by groundwater and because the age of the collection system piping will be new.

Master planning of sanitary sewer service for non-residential land uses is difficult because of the wide range of potential discharges. It should be noted that the 2015 General Sewer Plan Update identified that some of the heavy industrial permitted users contributed sewer flows of 3,000 gpad while some light industrial users contributed only 60 gpad. Therefore, each potential industrial use should be analyzed separately at the time of development to determine effects their specific industry will have on the collection system and the wastewater treatment plant.

2016-2022 with UGA Expansion

The total area for the 6-year study area is 385 acres. For 6-year planning purposes, maximum daily sewer flow for the UGA Study Area will be approximately 0.48 MGD for industrial use. This is based upon a gross-area approximation of 1,250 gpad and the extent of development planned for 6 years.

- Maximum Daily Flow = 1,250 gpad x 385 acres = 481,250 gpd (0.48 MGD)

2016-2036 with UGA Expansion

The 20-year planning period assumes full build-out of the UGA Study Area. The total area is approximately 1,702 acres. Based upon the 1,250 gpad assumption the following is the estimated sewer flow for 20-year planning purposes:

- Maximum Daily Flow = 1,250 gpad x 1,702 acres = 2,127,500 gpd (2.13 MGD)

Facility Improvements Required Outside the UGA Study Area

The following sections address the impacts to two major facility categories of the sanitary sewer system: the collection system and the wastewater treatment plant. It is assumed that utilities will be extended only as far as the southern boundary of the UGA Study Area.

Collection System

As previously noted, the natural ground topography of the UGA Study Area creates one singular sanitary sewer service area. A strategy for providing gravity sanitary sewer service to this UGA Study Area was included in the 2015 GSP. The 24-inch diameter Logston Interceptor will be extended at minimum slope (0.10%) northward to the edge of the study boundary.

It should be noted that although 6-year flows and pipe sizes are provided below, any sanitary sewer extensions to these areas that are constructed should be sized for the expected build-out flows from the study area, which are calculated to be the 20-year flows in this study. Modern materials and installation/inspection techniques are expected to result in 50-100 year lifespans for sewer pipe that is installed today. Because the majority of the capital cost is in the installation rather than the materials, it is recommended to size pipes for long-term planning needs. The following are the recommended improvements to the collection system:

2016-2022 with UGA Expansion

For the 6-year planning period, the service area consists of approximately 385 acres. For 6-year flows, approximately 7,500 LF of 12-inch diameter pipe would be need to be extended from the Logston interceptor. However, this pipe should be upsized to 24-inch in order to accommodate master plan flows per the GSP. Figure 8 depicts the alignment proposed for the sewer trunk extension. The

Engineer's Opinion of Probable Cost in Year 2016 dollars for this improvement is estimated to be \$1.8 million.

The GSP confirms that the existing sewer collection system has available capacity for the estimated 6-year flows from the UGA Study Area.

2016-2036 with UGA Expansion

For the 20-year planning period, the service area consists of approximately 1,702 acres. The 7,500 LF of 12-inch diameter pipe needed for 6-year flows will need to be upsized to 24-inch for buildout flow – which matches the size and grade selected in the GSP. Figure 8 depicts the alignment proposed for the sewer trunk extension.

The GSP confirms that the existing sewer collection system has available capacity for the estimated 20-year buildout flows from the UGA Study Area.

Wastewater Treatment Plant

2016-2022 with UGA Expansion

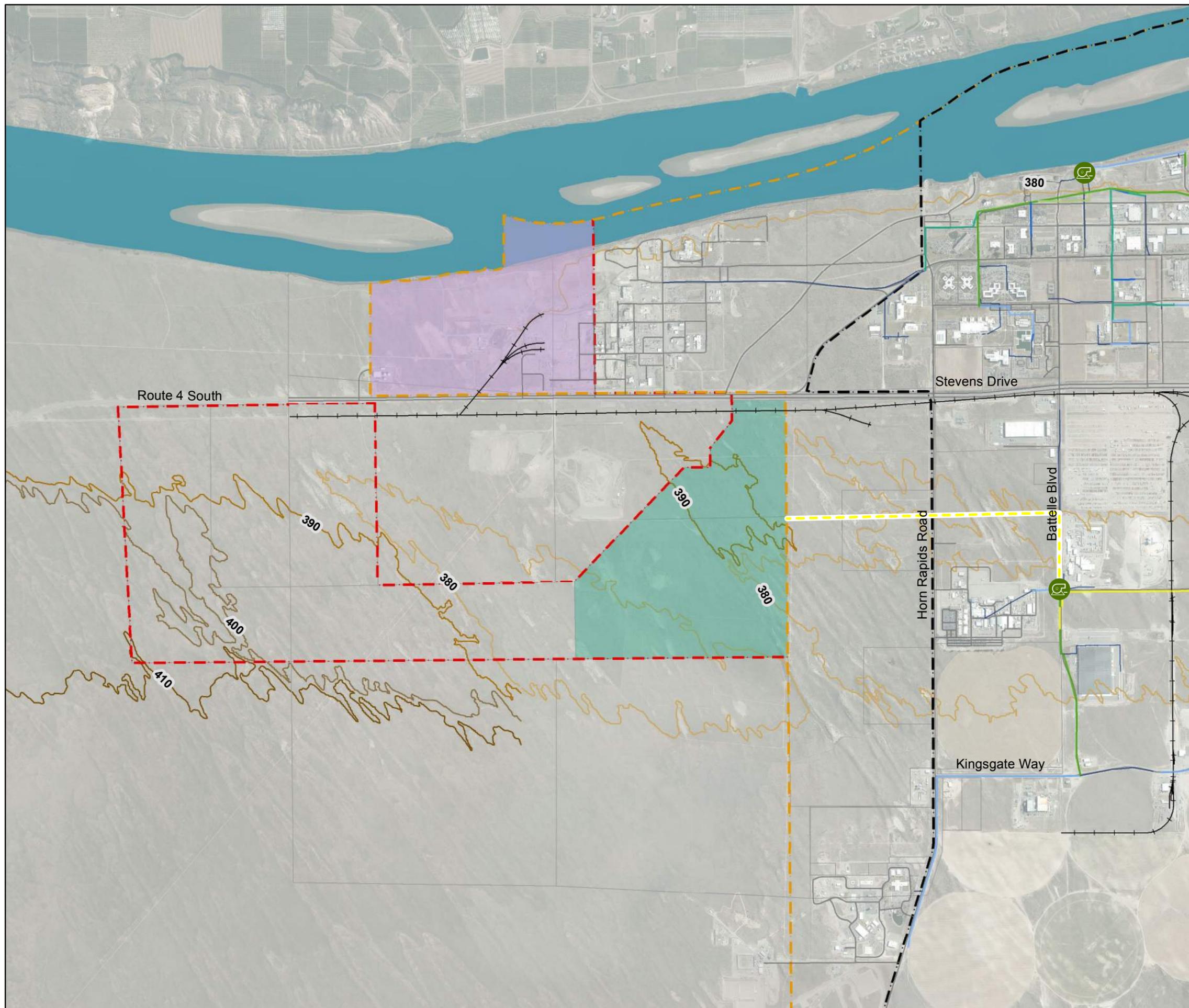
For 6-year planning purposes, average daily sewer flow for the UGA Study Area will be approximately 0.48 mgd for industrial use. The GSP projects that maximum month flows for the WWTP in 2022 will be approximately 7.2 MGD; therefore, the UGA Study Area will add approximately 6% to the total peak monthly flows at the WWTP for 6-year planning purposes. This peak monthly flow will be 7.68 MGD – which is 67% of the WWTP design capacity. Therefore, the WWTP has available capacity for the 6-year sanitary sewer flows from the UGA Study Area.

2016-2036 with UGA Expansion

For 20-year planning purposes, average daily sewer flow for the UGA Study Area will be approximately 2.13 MGD for industrial use. The GSP identifies that peak month flows for the WWTP in 2036 will be approximately 9.1 MGD; therefore, the UGA Study Area will add approximately 20% to the total peak monthly flows at the WWTP for 20-year planning purposes. This peak monthly flow will be 11.23 MGD - which approaches the current design capacity of the WWTP (11.4 MGD). The WWTP has available capacity for the buildout sanitary sewer flows from the UGA Study Area; however, it may trigger the need for expansion planning to begin sooner than otherwise planned.

Figure 8

Sewer Improvements



Legend

- City Limits
- Existing UGA Boundary
- Proposed UGA Boundary
- Existing UGA To Be Removed
- 6-Year Planning Area
- Property Lines
- Sewer Lift Station

Existing Pipe Size (in)	MP Pipe Size (in)
Collector	Collector
10	10
12	12
15	15
18	18
21	21
24	24
27	27
30	30
36	36
42	42
54	54

0 2,000 4,000 Feet



Date: Oct 18, 2016



Potable Water Service

Potable water service will be provided by the City of Richland. The following sections describe the projected water demands and necessary expansion of the potable water system to serve the UGA Study Area for both the 6-year (2022) and the 20-year (2036) planning periods.

Estimated Water Demands

Master planning of potable water service for non-residential land uses is difficult because of the wide range of potential industrial water needs. For the purposes of this study, a gross-area demand of 1,250 gallons per acre per day (gpad) is assumed, which is consistent with the estimated sewer demand. It is recommended that each potential industrial user should be analyzed separately at the time of development to determine effects on the distribution system and source capacity.

2016-2022 with UGA Expansion

The total area for the 6-year study area is 385 acres. For 6-year planning purposes, water demands for the UGA Study Area will be approximately 0.48 mgd for the 385 acres of industrial use.

- Maximum Daily Demand = 1,250 gpad x 385 acres = 481,250 gpd (0.48 MGD)

2016-2036 with UGA Expansion

The 20-year planning period assumes full build-out of the UGA Study Area. The total area is approximately 1,702 acres. Based upon the 1,250 gpad assumption the following is the estimated water demand for 20-year planning purposes:

- Maximum Daily Demand = 1,250 gpad x 1,702 acres = 2,127,500 gpd (2.13 MGD)

Facility Improvements

The following sections address the impacts to four major areas of the City of Richland's potable water system: system-wide water demands, source capacity, distribution system performance, and storage requirements. It should be noted that although 6-year planning and buildout infrastructure sizes are provided, any domestic water improvements to the UGA Study Area that are constructed should be sized for the expected build-out demands for the study area, which are calculated to be the 20-year demands in this study.

System-Wide Water Demands

As previously identified, the total available water rights for the City allow for 54 MGD of maximum daily flow. Currently, the City uses 38 MGD maximum daily flow and plans to be using approximately 46 MGD in the year 2022 and 55 MGD in the year 2036. The six-year maximum daily demands for the UGA Study Area are 0.48 MGD while buildout demands are 2.13 MGD. The addition of the 2.13 MGD peak flows at buildout for the Study Area will have little impact on the instantaneous water rights.

Encroachment toward the total available water right can be relieved through the use of the Quad-Cities water right. The Quad-Cities were issued a water right in 2003 that provides a maximum of 86 mgd to be developed and put into use by the Quad-Cities by 2051. The permit has specific requirements that limit water appropriations at various times per year and include mitigation of the consumptive portion of water use. Through the use of the Quad City water right, the City has adequate maximum day water rights for the Study Area.

Source Capacity

According to the WSP update, the City's two largest sources of water, the wellfield and the WTP, each pump directly into the Core 548 Zone and have a combined capacity of 51 MGD. Currently, the City uses 38 MGD maximum daily flow and plans to be using approximately 46 MGD in the year 2022 and 55 MGD in the year 2036. The six-year maximum daily demands for the UGA Study Area are 0.48 MGD while buildout demands are 2.13 MGD. Therefore, there is adequate capacity for the 6-year projections but the addition of the UGA Study Area may trigger the need for increased source capacity within the next 20 years.

Distribution System

A hydraulic analysis was performed in order to determine impacts on the existing distribution system as well as proposed sizing for distribution system expansion to serve the UGA Study Area. This hydraulic analysis is documented in a letter from RH2 Engineering, Inc. dated April 23, 2015. The results from the analysis are incorporated and summarized below.

2016-2022 with UGA Expansion

The UGA Study Area will be served by the City's Core 548 Pressure Zone. Water supply will be provided directly from the WTP and wellfield sources. The closest Core 548 Zone transmission main is located on Horn Rapids Road.

A connection to the 16-inch Core 548 Zone transmission main in Horn Rapids Road is proposed to be extended on the west side of the UGA Study Area. To ensure the reliability of service, a redundant source of water is needed. A second service location, on the east side of the UGA Service Area, would connect to the 12-inch transmission main in Horn Rapids Road. These two service connections must be looped within the UGA Study Area in order to provide the required fire flow capacity as well as a reliable source of water. The hydraulic analysis identified this improvement as a 12-inch diameter pipe loop. It should be noted that this analysis assumes the cost of the loop will be an onsite cost and only the cost of the two service extensions to the UGA Study Area boundary is hereby included in the costs. Figure 9 depicts the alignment proposed for the water transmission main extensions.

The Engineer's Opinion of Probable Cost in Year 2016 dollars for the 12-inch water pipe connections is estimated to be \$2.5 million.

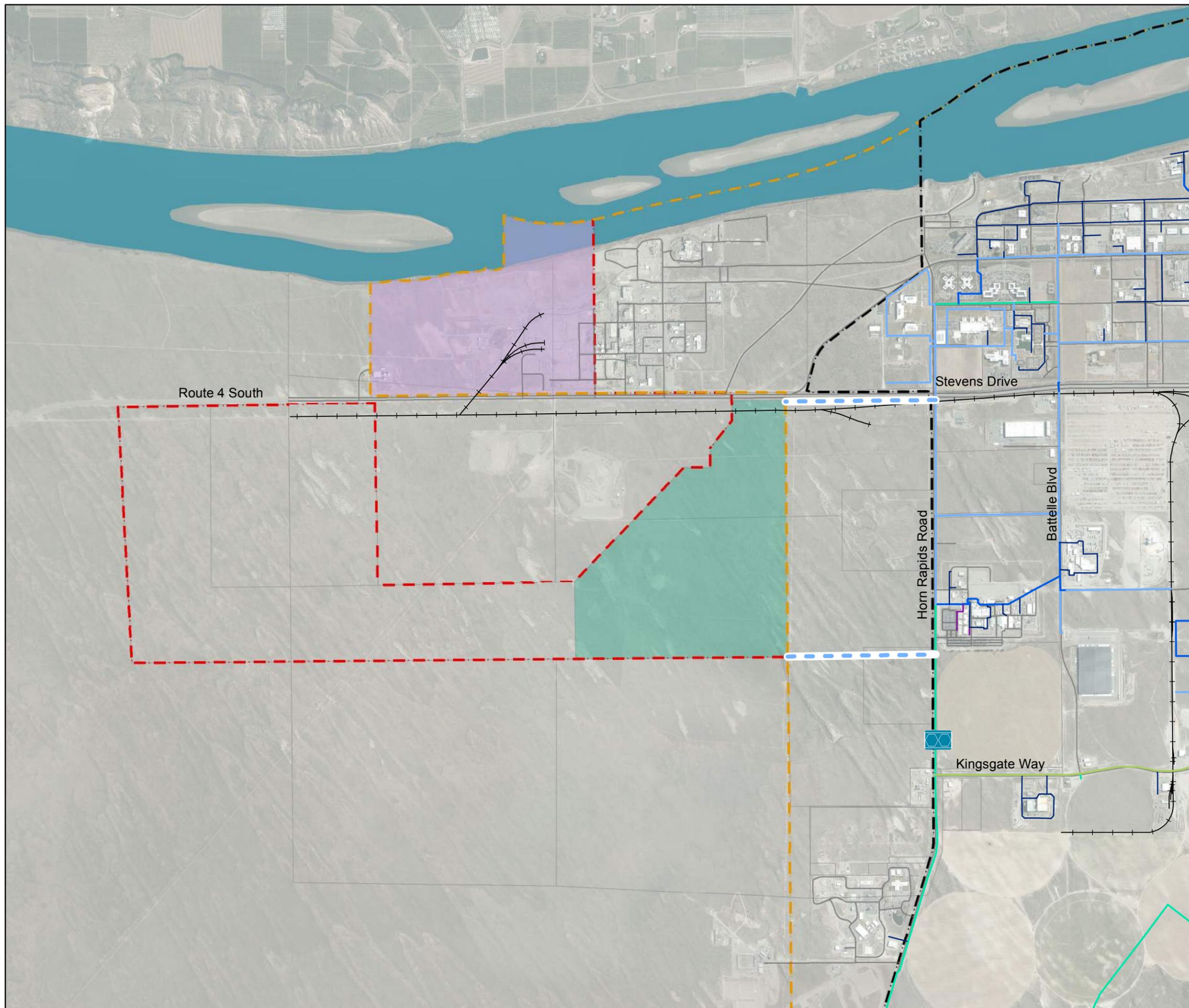
The hydraulic analysis indicates that the pipe loop alone will not provide the required fire flow for the UGA Study Area. An elevated onsite storage tank will be required in order to provide the required fire flow – as discussed below.

2016-2036 with UGA Expansion

The distribution system improvements identified for 6-year improvements are also adequate to meet buildout needs. This is because the required fire flow dictates a minimum pipe size of a 12-inch loop to serve the UGA Study Area.

Figure 9

Water Improvements



Legend

- City Limits
- Existing UGA Boundary
- Proposed UGA Boundary
- Existing UGA To Be Removed
- 6-Year Planning Area
- Property Lines
- Booster Pump

Existing Pipe Size (in)	MP Pipe Size (in)
6	6
8	8
10	10
12	12
14	14
16	16
18	18
20	20
24	24
27	27
30	30
36	36

0 2,000 4,000 Feet



Date: Oct 18, 2016



Storage Capacity

The WSP indicates that the City has a surplus of storage in the Core 548 Zone for both 6-year and 20-year planning horizons. However, the hydraulic analysis indicates that onsite storage is needed at the UGA Study Area in order to provide the required fire flow for the UGA Study Area. Several alternative storage tank locations have been identified; however, the option that provides the most reliable service to the UGA Study Area is an elevated tank located on the UGA Study Area site. The elevated tank could be located anywhere in the UGA Study Area.

Reservoir storage has three main components: Standby Storage, Equalizing Storage, and Fire Flow Storage. Standby Storage provides a supply of water during emergency conditions such as a transmission main failure. Equalizing Storage ensures that peak instantaneous demands can be met at any time. Fire Flow Storage ensures meeting fire flow planning level requirements under all conditions including power outages and/or the loss of the source supply. Typically, fire flow storage is the largest driver for tank sizing. The WSP used assumptions of 4,000 gpm for four hours for industrial land use and 4,500 gpm for five hours for heavy industrial land use. To be conservative, the required fire flow storage for the UGA Study Area is planned for the heavy industrial requirement of 4,500 gpm for 5 hours, which is 1,350,000 gallons. The Total Required Storage value is the sum of each of the three reservoir storage components. These storage value calculations are based on the planning assumptions discussed in the WSP and can be further adjusted with a more specific study.

2016-2022 with UGA Expansion

For 6-year planning, the UGA Study Area will require a storage volume of 1.5 MG; however, it should be sized for 2 MG in order to serve the buildout demands of the Study Area. The Engineer's Opinion of Probable Cost in Year 2016 dollars for a 2.0 MG reservoir is estimated to be \$7.0 million as shown in Table 7

2016-2036 with UGA Expansion

For 20-year buildout planning, the UGA Study Area will require a storage volume of 1.7 MG. A 2.0 MG tank was used for cost estimating purposes.

Power

The City of Richland Energy Services has reviewed the UGA Study Area and they have determined it will require additional electrical infrastructure to support the UGA Study Area. Additional electrical services will be necessary along the frontage of the proposed roadway network within the UGA Study Area. Electrical services are to be looped from Horn Rapids Road to Stevens Drive. Until more specific power requirements of UGA Study Area have been further identified, it is not possible to accurately predict total power demand for the UGA Study Area. The City of Richland Energy Services has anticipated that a substation will be required further to the north of the UGA Study Area and that the necessary infrastructure will be required to be installed as part of the UGA Study Area. Estimated electrical power costs are included in the Engineer's Opinion of Probable Cost in Year 2016 dollars are included in the streets and roads section located in Table 7.

Surface and Storm Water Management

The public roadway network within the UGA Study Area shall have roadside ditches to convey and retain storm water runoff from the public roadway network. Storm water runoff shall be retained in the roadside ditches. Refer to the industrial roadway section shown in Figure 10 for the drainage ditch section. Storm water runoff from the public roadway network into roadside ditches are not considered a

part of the storm water restriction as shown in Figure 5; however, no underground infiltration facilities and/or large retention ponds will be allowed for the development of the public roadways. The roadway network shall avoid large drainage basins that would concentrate large amounts of storm water runoff.

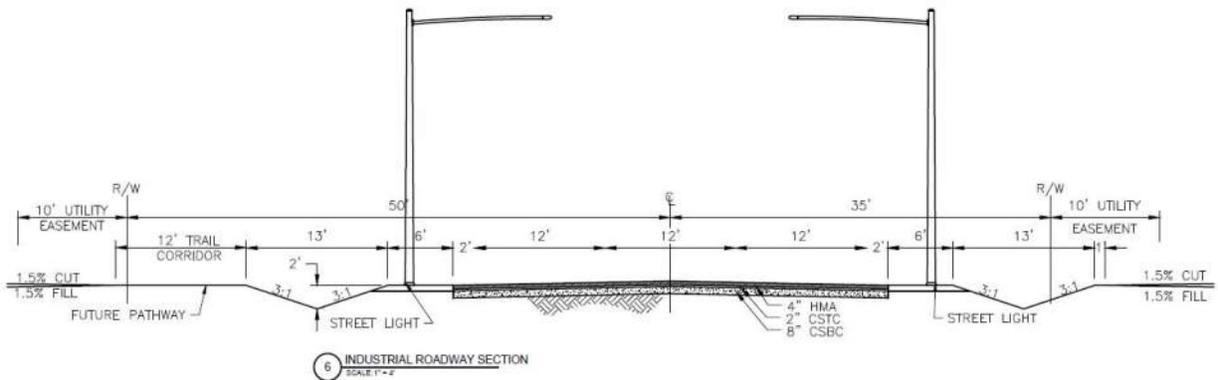
The City of Richland has adapted the Storm Water Management Manual for Eastern Washington (SWMMEW) as the basis for storm water management. For hydrologic volume control, roadside ditches shall be designed based upon the following criteria: Washington, Region 2, Benton County; SCS Type 1A – 24 Hour storm for storm volume with a 25-year return period. The flow-rate of the public storm drainage system shall be designed using the 2-Year, 3-Hour short duration Eastern Washington storm for pipe and inlet sizing using SCS or Santa Barbra method. Refer to Section 3 – Design Guidelines item C-Storm Drainage Collection Systems of the City of Richland Public Infrastructure Construction Plan Requirements and Design Guidelines for additional storm water design information.

The UGA Study Area has no defined upstream and/or downstream drainage channels. Therefore, no upstream and/or downstream storm water improvements for the UGA Study Area are anticipated

Any storm water costs associated with the development of the public right of way facilities are included in the costs of those facilities in the streets and road section in Table 7.

All development considered as private and/or non-public is not a part of the UGA Study Area. All private and/or non-public storm water facilities shall be retained on-site and the private developer shall encumber all associated costs. Storm water restrictions will be applicable to all private and/or non-public developments. It is anticipated that private and/or non-public storm water facilities will be collected and conveyed on-site to lined evaporation ponds for those developments within the storm water restriction area. Maintenance and operation of the private storm water facilities will be provided by Owner/Developer.

Figure 10. Proposed Industrial Roadway Section



Other Governmental Services

Natural Gas

CNGC has stated that their existing natural gas services are currently 100% utilized and that no further natural gas services can be currently accounted for in the UGA Study Area. CNGC is currently working on plans to provide additional natural gas services so that the UGA Study Area can account for natural gas utility services. They have estimated additional natural gas services can be accounted for by the middle/end of 2017. No estimated costs to extend natural gas to the UGA Study Area are included in this plan since the cost to extend natural gas sewer service would be incurred by CNGC and/or private development.

Telecommunications

Telecommunications includes the transmission of information by wire, radio, optical cable, electromagnetic, or other similar means. This includes telephone, cellular telephone and cable and satellite television.

Changes in technology are having a major impact on telecommunications. Much of these technologies are merging with much less distinction between data, video, and voice technologies. Some of these utilities are regulated by the Washington State Utilities and Transportation Commission to meet a specific level of service to their service areas.

Frontier Communications can provide standard phone service to the UGA Study Area. There are existing communication services along Horn Rapids Road (east/west) and along Stevens Drive (north/south). Communications services will need to be extended to the UGA Study Area. Communication services will parallel the City of Richland Energy Services facilities along the proposed public roadway network frontage in the UGA Study Area. Estimated costs to extend communication services in the UGA Study Area are included in the streets and roads section located in Table 7

U.S. Cellular, AT&T, Sprint, Verizon and Nextel currently provide cellular phone service within the Tri-Cities area. Due to the close proximity to urban areas, it is anticipated that all of these services will have acceptable reception.

Irrigation

All irrigation within this the UGA Study area will need to be provided through the City of Richland Domestic Water System or via a private on site well source(s). It is noted that non-potable water is available with an existing irrigation pipeline at the corner of Stevens and Horn Rapids Road. It's not anticipated that the targeted developments will need this service; however, if a significant non-potable demands are requested by development irrigation service would be provided by this non-potable water system and most likely not from the domestic potable water system. No estimated costs to provide irrigation service to the UGA Study Area from the existing non-potable water service are included in this plan since it is anticipated that minimal non-potable water service demand will be requested and would ultimately be provided by the domestic potable water system.

FUNDING SOURCES

This section discusses many of the existing and potential revenue sources, debt capacity and options for using debt financing by the City of Richland to fund needed capital improvements related to growth.

The City of Richland uses a number of different financing sources to pay for capital projects. Typically, large capital projects are financed through long-term bonded debt and grants and loans. For the purposes of this CFP, it is assumed that the cost of capital improvements will be funded by a variety of funding sources which range from the City of Richland, Port of Benton, late comer agreements and grants and loans.

The following discusses the various revenue sources available to the City of Richland. Not all of these sources are currently being used by the City to fund capital improvements. Those that are being currently used are identified.

Taxes

Property Taxes

RCW 84.52 authorizes this tax on the assessed valuation of real and personal property, subject to two limitations: Initiative 747 limits growth of regular property taxes to 1% of the highest amount levied in the previous year, before adjustments for new construction and annexations; and, The State Constitution limits the total regular property taxes to 1% of assessed valuation or \$10.00 per \$1,000 of value (if the taxes of all districts exceed this amount, each is proportionately reduced until the total is at or below the 1% limit).

Voters may approve excess property tax levies over the constitutional and statutory limits for a number of years to pay off general obligation bonds for construction, or a single year levy (two years for school districts) for general operating purposes. The constitution requires 40% voter turnout in the previous general election and a 60% favorable majority vote (RCW 41 and 84).

RCW 85.55 allows cities that are levying property taxes at a rate lower than the statutory maximum, to lift the levy lid by more than 1%. A simple majority vote is required. The purpose for which the money will be used does not need to be specified. Cities that are levying at their statutory maximum rate can raise their rate for one year. This is called an Operations and Maintenance Levy and also requires 40% voter turnout in the previous general election and a 60% favorable majority vote. The purpose for which the money will be used does not need to be specified.

Retail Sales and Use Tax

There is levied a total of 8.6% on all retail sales, except for off-premise food and drugs. The allocation of the 8.6% is as follows:

- State - 6.5%
- County - 0.15%
- County - Criminal Justice - 0.10%
- City - 0.85%
- City - Criminal Justice - 0.10%
- City – 2015 – Criminal Justice - 0.30%
- Ben Franklin Transit - 0.60%

The City does not need to designate how their portion of the sales taxes will be spent.

Real Estate Excise Taxes

The state authorizes a tax of 1.28% on the sale of all real estate. RCW 82.46 authorizes cities, planning under the GMA, to assess an additional tax on real estate sales of .25%. These funds must be spent on capital projects listed in the capital facilities plan. A second .25% may also be levied to help defray the costs of development and rehabilitation. The City levies both .25% taxes for use in funding capital projects.

Lodging Excise Taxes

RCW 67.28 authorizes a 2% tax on all charges for lodging furnished for a continuous period of less than one month. This tax is taken as a credit against the 6.5% State sales tax assessed on the lodging charges for the promotion of tourism, acquisition and or operation of tourism related facilities (i.e. specific stadium, convention, performance or visual arts facilities). An additional 2% tax can be levied for a total rate of 4%. The additional 2% levy does not reduce the sales tax rate.

Leasehold Excise Tax

RCW 82.29A authorizes a 12.84% tax on the permanent occupancy of publicly-owned premises for private use for 30 days or more. The tax is a substitute for regular property taxes to compensate for services provided. The tax is sent to the Department of Revenue which keeps 6.84%, with 2% of the remaining 6% going to the County and 4% going to the City. The purpose for which the money will be used does not need to be specified.

Commercial Parking Tax

The Transportation Improvement Act authorizes a tax on commercial parking based on either gross proceeds, the number of parking stalls or on the number of users. Revenues must be spent for general transportation purposes, including highways, public transportation, high capacity transportation, transportation planning, etc. Currently, the City of Richland does not impose a Commercial Parking Tax.

Business and Occupation Tax

RCW 35.11 authorizes cities to collect this tax on gross or net income of businesses, not to exceed a rate of 0.2 percent. Revenue may be used for capital facility acquisition, construction, maintenance, and operations. Voter approval is required to initiate the tax or increase the tax rate. Currently, the City of Richland does not impose a Business and Occupation Tax.

Gambling Tax

RCW 9.46 provides for a tax on gambling revenues. Currently the City collects 5% of the gross revenue less the amount paid for prizes for bingo and raffles, 5% of gross receipts for punch boards and pull-tabs, and 10% of gross receipts on all card games. Funding is primarily used for gambling enforcement.

Admission Tax

5% of all for profit admission feed within the city.

Intergovernmental Revenues

Liquor Revenues and Liquor Excise Taxes:

The City receives distributions from the state for liquor related taxes through Liquor Excise Taxes and Liquor Board Profits. 2% of all liquor revenues received must be used for an approved alcohol and drug addiction program under RCW 71.24.555. Initiative 1183 passed November 2011 privatized the distribution and retail sale of liquor effective June 1, 2012.

Liquor Excise Taxes:

In 2012, the state legislature diverted all liquor excise tax revenue to the state general fund for FY2013. For FY2014, \$10 million was permanently diverted to the state general fund, the majority of which comes from the City portion. For the 2013-2015 budget, the state legislature increased the share of liquor taxes collected and remitted under RCW 82.08 that is deposited into the state general fund effectively decreasing the local share to 17.5%. The increased share for the state general fund will end on June 30, 2015, however, the permanent diversion of \$10 million per year will not.

Liquor Board Profits:

The markups on liquor have been replaced as a state revenue source by license fees that are paid to the state by retailers and distributors. A portion of these fees goes to cities, counties and border cities and counties. They are apportioned in a manner that provides that each category of recipients received in the aggregate, no less than it received from the liquor revolving fund during comparable periods prior to December 8, 2011. An additional distribution of \$10 million per year from the spirits license fees must be provided to border areas, counties, cities and towns for the purpose of enhancing public safety programs.

The result is a 0.3% of the total amount distributed to border cities and counties. Of the remaining 97%, 80% goes to cities and 20% to counties. The City must use 20.23% of its distribution for public safety programs.

Motor Vehicle Fuel Tax

The State of Washington provides a state-collected gasoline tax that is shared with cities (RCW 82.36). The base tax in Washington State is 37.5 cents per gallon. Of this amount, the City receives 10.6961% of 23 cents and 8.3333% of 3 cents. These funds are placed in the city street fund and can be used for general new construction, repair or reconstruction of streets identified in the City's six-year street improvement program and approved by the state. Cities are required to spend 0.42% of gas tax receipts on paths and trails unless the amount is less than \$500.

Local Option Fuel Tax

The Transportation Improvement Act authorizes the County, with voter approval, to levy a local option tax equivalent to 10% of the statewide Motor Vehicle Fuel Tax and a special fuel tax of 2.3 cents per gallon. Revenues are distributed to the County and cities on a weighted per capita basis, i.e. 1.5 County/1.0 City. City of Richland does not have a local option fuel tax at this time. These revenues must be spent for highway purposes, including construction, maintenance and operation.

City Assistance

RCW 43.08.290 authorizes a distribution of up to \$100,000 annually to those cities who collect less than 50% of the state-wide average per capita level of sales and use tax revenues or those cities whose per capita assessed property is less than 55% of the statewide average per capita assessed property value. These funds can be used for any municipal purpose. The \$100,000 can be increased each year by the increase in the July implicit price deflator for personal consumption expenditures. Total distributions can be proportionally decreased if funds are not available statewide to fund all entities eligible for these distributions.

Licenses and Permits

The City collects fees for a number of licenses and permits, including Business Licenses, Building Permits and permit fees for zoning plan review and inspections.

Utility Taxes and Franchise Fees

RCW35A.82 authorizes the collection of taxes on the operating revenues of private and public utilities within the City. The City levies taxes on electric, gas, telephone, cable, water, sewer, irrigation, stormwater and garbage utilities operating within the City.

The maximum statutory rate that can be collected is 6% for electric, gas and telephone utilities. Additional taxes can be levied on these utility operations with a vote of the electorate. There are no restrictions on the rate levied for water, sewer, irrigation, stormwater and garbage utility operations. For cable utilities, the rate levied is governed by the Cable Communications Policy Act of 1984 which requires the rate to be comparable to the rates levied for other utility operations.

The following are the rates levied by the City by type of utility:

- Water – 12.26%
- Sewer – 10.5%
- Solidwaste – 10.5%
- Electric - 8.5%
- Storm Water - 8.5%
- Ambulance – 1.0%
- Telephone – 8.5%
- Natural Gas – 8.5%
- Brokered Natural Gas – 8.5%
- Cable TV – 7.5%

Additional franchise fee charges can be levied on electric, gas and telephone utilities for administrative costs for permitting, reviewing plans, monitoring construction and preparing SEPA documents. Cable TV franchise fees are governed by federal law. Rates may be levied at 5% of gross revenues without a restriction on the purpose. Cable TV franchise fees with in the City is 5%.

Privilege Taxes

The state levies a privilege tax on electric generating facilities of public utility districts for the privilege of operating. The tax is measured by gross income derived from the sale of electric energy, the number of kilowatt hours of self-generated energy distributed to consumers or resold to other utilities and the wholesale value of energy produced in thermal plants. A rate of 1.5% is levied on Energy Northwest's WNP#2 operated on the Hanford Reservation. The 1.5% is distributed as follows:

- 10.2% - State General Fund
- 44.9% - State General Fund for public schools
- 19.8% - Counties within the impacted area
- 20.6% - Cities within the impacted area
- 2.7% - Fire districts within the impacted area
- 1.8% - Certain Library districts within the impacted area

The City is impacted by the operation of WNP#2 and therefore receives a distribution of privilege taxes.

Charges for Services

Park User Fees and Program Fees

The City charges fees for using park facilities, or for participating in recreational programs.

Sewer User Fees

The state authorizes sewer charges to wastewater generators. In the City of Richland, these fees are usually based on the amount of potable water consumed based on the assumption that there is a correlation between water consumption and wastewater generation. Residential customers pay flat (base) rate only. Commercial customers pay base and consumption rate. Revenue may be used for capital facilities, operations and maintenance.

Water User Fees

State authorized rate charged to each residential and commercial customer, based on the volume of water used. Revenue may be used for capital facilities, operations and maintenance.

Road Impact Fees

ESHB 2929 authorizes impact fees to pay for roads required to serve new development. Impact fees must be used for capital facilities needed for growth, and not to meet current deficiencies and cannot be used for operating expenses. Road impact fees must also be directly related to the impacts created by the development and must be utilized within 5 years or returned.

Fire Protection and Emergency Services Impact Fees

ESHB 2929 authorizes impact fees to pay for fire protection and emergency service facilities required due to new development. These fees are usually collected at the issuance of building permits or certificates of occupancy. Fire and emergency services fees are usually based on a flat rate for dwelling units by type and per square foot for non-residential uses. Adjustments must be made to fee calculations to account for fire and Emergency Services costs that are paid by other sources of revenue. Additional credit can also be given to developers that contribute land, improvements or other assets. These impact fees are in addition to any mitigation or voluntary payments authorized by SEPA, local improvement districts, etc. Impact fees must be used for capital facilities needed for growth, and not to meet current deficiencies, and cannot be used for operating expenses. Fire and emergency services impact fees must also be directly related to the impacts created by the development and must be utilized within 5 years or returned. Currently, City of Richland does not impose fire protection and emergency services impact fees.

Park and Recreation Impact Fees

ESHB 2929 authorizes impact fees to pay for park and recreation facilities required due to new development. These fees are usually collected at the issuance of building permits or certificates of occupancy. Adjustments must be made to fee calculations to account for park and recreation costs that are paid by other sources of revenue. Additional credit can also be given to developers that contribute land, improvements or other assets. These impact fees are in addition to any mitigation or voluntary payments authorized by SEPA, local improvement districts, etc. Impact fees must be used for capital facilities needed for growth, and not to meet current deficiencies, and cannot be used for operating expenses. By City Ordinance, Park and Recreation impact fees must also be directly related to the impacts created by the development and must be utilized within 6 years or returned. Currently, the City of Richland charges an impact fee for parks and recreation based on the total population generated.

Bonds

General Obligation/Councilmanic Bonds

There are two types of General Obligation Bonds: Voter approved and Councilmanic. Voter approved bonds are backed by the value of the property within the jurisdiction. They increase the property value rate, with increased tax revenues dedicated to paying the principal and interest on the bonds.

Councilmanic Bonds are authorized without voter approval and paid from general tax sources without an increase in tax revenue. The total amount of local government debt, without a 60% majority vote of qualified electors, is restricted to 2.5% of the taxable value of all property in the jurisdiction for general purpose; 2.5% for utility bonds; and, 2.5% for utilities.

Special Assessment District Bonds

Special assessment districts, such as Local Improvement Districts (LID), Road Improvement Districts (RID) and Utility Local Improvement Districts (ULID), may be formed by the city to finance capital facilities required by other entities (property owners, developers, etc.). These capital facilities are funded through the issuance of special assessment bonds, paid for by the entities benefited. Use of special assessment bonds is restricted to the purpose for which the special assessment district is created.

Grants and Loans

Community Development Block Grants

Department of Community Development grants of up 100% may be available through the Federal Department of Housing and Urban Development for public facilities projects, economic development, housing, etc. which benefit low and moderate income households.

Community Economic Revitalization Board Grants

Department of Trade and Economic Development revenue are available for low interest loans and grants to finance sewer, water, access roads, etc. to facilitate private sector industrial development that supports the trading of goods or services outside of the State, and either creates or maintains jobs.

Public Works Trust Fund Loans

Department of Community Development low interest loan funds are available for capital facilities, emergency planning, and capital improvement planning. Applicants must have a capital facilities plan, must be levying the 1/4% real estate excise tax, and must be in compliance with UGA requirements. Capital improvement planning projects are limited to planning for streets and utilities.

Federal Bridge Replacement Program

Grants (80% Federal/20% Local) issued by the Washington State Department of Transportation (WSDOT) State Aid Division, are available for replacement of structurally deficient or functionally obsolete bridges. The bridge must be on the Washington State Inventory of Bridges.

National Highway System Grants

WSDOT State Aid Division revenue is available for construction and improvement of the National Highway System. The project must be on the Regional Transportation Improvement Program (TIP) list and must be a component of the National Highway System (NHS), including all highways classified as principal arterials. These funds are available on an 86.5% Federal/13.5% Local match, based on the highest ranking projects from the Regional TIP list.

Transportation Improvement Board (TIB) Grants

State Transportation Improvement Board (TIB) grants are available for roadway and sidewalk projects caused by economic development or growth, development activities, and partially funded locally. Grants are funded 80% State/20% Local.

- Urban Arterial Program (UAP) - best suited for roadway projects that improve safety and mobility.

- Urban Sidewalk Program (SP) – Best suited for sidewalk projects that improve safety and connectivity.
- Arterial Preservation Program (APP) – provides funding for overlay of federally classified arterial streets in cities with a assessed valuation less than \$2 billion.

Transportation Partnership Program (TPP)

Transportation Improvement Board grants are available for projects to relieve and prevent traffic congestion. Preference is given to projects that are structurally deficient, congested by traffic, and has geometric deficiencies or accident incidents. Grants are funded 80% State 20% Local.

Surface Transportation Program

WSDOT State Aid Division block grant revenue is available for road construction and maintenance, transit capital projects, bridge projects, transportation planning, research and development, participation in wetland mitigation and wetland banking. Funds are distributed generally at 80% federal/20% local based on the highest ranking projects from Regional Transportation Improvement Program list.

State Parks and Recreation Commission Grants

State Parks and Recreation Commission grants are available for the acquisition of land and capital improvement projects for parks and recreation purposes. Funds come from both State and Federal sources and are granted on a 50% State and 50% Local basis.

Department of Health Grants & Loans

State grants & loans for technical assistance and updating existing water systems, are available for ensuring effective management, and achieving maximum conservation of safe drinking water. Matching requirements for grant vary depending on the program and loan rates for loan programs.

Centennial Clean Water Fund

Department of Ecology grants for the design, acquisition, construction, and improvement of Water Pollution Control facilities (WPC), and related activities, are available to meet state and federal WPC requirements and protect and improve water quality.

Department of Ecology administers low interest loans and loan guarantees. Applicants must show water quality need, have a facility plan, have the ability to repay, and conform to other State and Federal WPC requirements.

Department of Ecology Grants

State of Washington supplies grants for a variety of programs related to solid waste, including Remedial Action Grants to assist with local hazardous waste sites, Moderate Risk/Hazardous Waste Implementation Grants to manage local hazardous waste, and Food and Yard Waste Composting Grants.

Local Revitalization Financing (LRF) program

In the 2009 Legislative Session Senate Bill 2SSB 5045 Chapter 270 was adopted creating the Local Revitalization Financing (LRF) program. The program helps local governments finance public improvement projects that encourage private development within a revitalization area. The LRF program authorizes cities and counties to create “revitalization areas” and allows certain increases in local sales and use tax revenues and local property tax revenues generated from within the revitalization area, additional funds from other local public sources, and a state contribution to be used for payment

of bonds issued for financing local public improvements within the revitalization area. The state contribution is provided through a new local sales and use tax that is credited against the state sales and use tax (sometimes referred to as the “LRF tax”). This tax does not increase the combined sales and use tax rates paid by consumers.

The Department of Revenue administers the LRF program. The state provides money to the local government sponsoring the LRF area through a local sales and use tax under RCW 82.14.510 (commonly referred to as the “LRF tax”). This local sales and use tax is credited against the state sales and use tax, so it does not increase the sales and use tax rate for the consumer. Instead, the LRF tax shifts revenue from the state general fund to the sponsoring local government.

The maximum amount allowed statewide for state contributions to LRF is \$4.75 million per state fiscal year. Of this amount, \$2.25 million is allocated for the seven demonstration projects, and \$2.5 million is allocated for the other projects approved on a first-come basis. The maximum amount of state contribution for each demonstration project is specified in the bill and ranges from \$200,000 to \$500,000 per project. The maximum state contribution for each project approved on a first-come basis is \$500,000.

The City of Richland currently utilizes this financing option for the Richland Revitalization Area for Industry, Science and Education (RAISE) area and anticipates that this will be a viable option for funding the UGA infrastructure in the future as well.

Tiger Grant Funding Program

The Transportation Investment Generating Economic Recovery, or TIGER Discretionary Grant program, provides a unique opportunity for the U.S. Department of Transportation to invest in road, rail, transit and port projects that promise to achieve critical national objectives. Since 2009, Congress had dedicated more than \$4.1 billion to the program: \$1.5 billion for TIGER I, \$600 million for TIGER II, \$527 million for TIGER III, \$500 million for TIGER IV, \$474 million for TIGER V, \$600 million for TIGER VI, and \$500 million for TIGER VII.

\$1.5 billion for TIGER I, \$600 million for TIGER II, \$526.944 million for FY 2011, \$500 million for FY 2012, \$473.847 million for FY2013, and \$600 million for the FY 2014 round of TIGER Grants to fund projects that have a significant impact on the Nation, a region or a metropolitan area.

The competitive structure of the TIGER program and its broad eligibility allow project sponsors at the State and local level to avoid narrow, formula-based categories, and fund multi-modal, multi-jurisdictional projects not eligible for funding through traditional DOT programs. TIGER can fund port and freight rail projects, for example, which play a critical role in our ability to move freight, but which are not eligible for any other sources of Federal funds. Similarly, TIGER can provide capital funding directly to any public entity, including municipalities, counties, port authorities, tribal governments, MPOs, or others in contrast to traditional Federal programs which provide funding to very specific groups of applicants (mostly State DOTs and transit agencies). This flexibility allows TIGER and traditional state and local partners to work directly with a host of entities that own, operate and maintain much of our transportation infrastructure, but otherwise cannot turn to the Federal government for support.

CAPITAL FACILITIES FUNDING

The Growth Management Act requires that funding for capital facilities be reasonably available to meet the projected growth at the adopted level of service for at least a 6-year period. This section discusses the funding for those public facilities for which additional capital improvements will be required over the next 6 years.

Funding for capital facilities, projected growth rates and desired LOS need to be in balance. This balancing effort has been achieved for the UGA with the assistance of City staff and technical consultants.

Projected Capital Facility Cost

Table 7 below summarizes the total public capital facilities costs as well as the proposed amount the city would be required to contribute to serve the UGA Expansion Area for the period 2016 to 2022. These costs are based on the information provided in the previous Section, Facility Requirements, and were calculated based on 2016 construction costs.

Table 7. Estimated Capital Facilities Costs 2016-2022

Capital Facility	Estimated Total Cost
Street and Roads	
Construct Road "A" - 3,260 LF	\$2,281,717
Construct Road "B" - 3,110 LF	\$2,176,000
Kingsgate Way & Horn Rapids Road Intersection Improvements	\$165,000
George Washington Way & Stevens Drive Intersection Improvements	\$755,000
Total Streets and Roads	\$5,377,717
Sanitary Sewer	
Extend 7,500 LF of 24-inch Diameter Water Main	\$1,800,000
Total Sanitary Sewer	\$1,800,000
Domestic Water	
Extend 12-inch Diameter Water Main	\$2,500,000
2.0 MG Reservoir	\$7,000,000
Total Domestic Water	\$9,500,000
TOTAL CAPITAL COST	\$16,677,717

Source: JUB/City of Richland

All costs are in current dollars, are rounded to the nearest hundred, and include all applicable fees and contingency costs. Current costs are used under the assumption that both construction costs and projected income would rise at similar rates because of the difficulty of projecting costs and income into the future. The above costs identify do not include costs for capital facilities normally provided by developers as part of their projects or by non-City utilities such as telephone and cable. Also not included are costs for projects that may be partially funded by developers in order to meet concurrency requirements and to mitigate projected impacts (on-site infrastructure). For City provided utilities, only those capital facilities that are in excess of normal line expansion covered by the City's normal utility hook-up fees are included.

Projected Capital Facilities Revenue Sources

Revenues to fund transportation capital facilities will come from general funds, LID’s, grants, the Motor Vehicle Fuel Tax (both Restricted and Unrestricted), and developer contributions to fund capital improvements. Revenues to fund capital improvements of sewers and water facilities will come from consumer utility rates, developer contributions and state and federal loans and grants. In addition, because the City of Richland and Port of Benton’s own the property, the revenue from the land sale will also be used to pay for capital facility costs.

Revenue Projections

The following forecasts the revenues that are reasonably available to the City to meet projected growth for the 2016 to 2022 planning period. Revenue sources are in current dollars. Table 8 identifies the assumptions made for the identified revenue sources.

Table 8: Tax Revenue Assumptions

General Revenue Factors:			
Market Value:	\$0.75	per	SF
Assessor's Value Adjustment:	93.7%	of	Market
Existing Tax Rate:	\$2.63	per	\$1,000
Excise Tax Rate:	0.0050	per	\$1.00
Sales Tax on Construction:	0.85%		
Land Value	\$0.75	per	SF
Average Structure Value	\$125.00	per	SF
Total Land Area	16,770,600		SF
Total Building Area	2,934,855		SF

Source: JUB/City of Richland

Tables 9 through 12 summarize specific revenue sources available to the City to meet Capital Facility requirements. Not all of the revenue sources will be used to fund any specific capital facility but these sources do provide a range of options for meeting capital facility requirements.

Table 9: Income from Excise Tax

Land Use	Value¹
Total Sale Price	\$12,577,950
Excise Tax Rate	0.0050
Total Excise Tax Return	\$62,890

¹Assumes only property transfer by 2022.

Source: JUB/City of Richland

Table 10: Sales Taxes on Construction

Land Use	Total Costs¹	Tax Rate	City of Richland share of Sales Tax Revenue
Industrial	\$366,856,875	0.85%	\$3,118,283

¹Based on off-site and on-site improvements and structures

Source: JUB/City of Richland

Table 11: Income from Property Taxes

Land Use	Land	Structures	Total Value
Industrial	\$12,577,950	\$366,856,875	\$379,434,835
		90%	\$341,491,343
		Property Tax Rate	0.0026264
Total Annual Property Tax			\$933,7653
Revenue Generated over Development Period			\$5,602,591

Source: City of Richland /JUB

Developer Contributions

Recent State Supreme Court decisions and State law have limited developer contributions to those which directly relate to the impact that a specific development will have on a capital facility. The City must show a direct relationship, or “nexus”, between a specific project and the mitigation measure being imposed. The exception to this is where a development will result in a lack of concurrency in the Level of Service for a Category 1 Capital Facilities. However, due to the unique situation where the City and Port own the property and will most likely be the developer, it is assumed that there will be no developer contributions required related to the future development. Instead, it is assumed that all money generated from the sale of the properties within the Proposed UGA expansion area will be used toward the payment of the capital facilities.

Income/Expense Analysis

Table 12, below, summarizes the total income and expenses for capital facilities over the next 6 years. This table assumes that both income and expenses will be consistent over the 6-year period. Realistically, this will not be the case. Capital expenditures are generally required prior to the development. Property and Sales tax revenues generally lag by one to two years from the date of construction. In addition, State and Federal loans and grants may not be available at the time the capital facility is required. This means that, for any given year, total revenues may be less than capital facility expenditures.

In addition, typically income generated from Real Estate Excise Taxes are assumed as projected revenue for capital facility expenses. Since the property within the proposed UGA expansion area is publicly owned, these taxes are exempt and will not be a viable revenue sources. Instead, it is assumed that all proceeds from the sale of the property will be used to pay for Capital Costs.

Table 12. Revenue Assumptions

Capital Costs		Projected Revenue	
Item	Total Costs	Item	Total Revenues
Streets and Roads	\$5,377,717	Property Taxes	\$5,602,591
Sewers	\$1,800,000	Property Sales	\$12,577,950
Domestic Water	\$9,500,000	Sales Taxes on Construction	\$3,118,283
Storm Drainage	\$0	Retail Sales Taxes	\$0
Sub Total Capital Costs	\$16,677,717	² Developer Contributions	\$0
¹ Interest on Debt	\$500,322	³ Grants	\$1,717,805
Total Capital Costs	\$17,178,049	Total Revenues	\$23,016,629

¹Interest on debt based on projected total historic debt interest at 3% of total capital costs

²Developer Contributions based on requirements to meet concurrency @ 0% of total Capital Costs

³Grants based on Assumed Level of Approximately 10% of the Total Capital Cost

Source: City of Richland/JUB

Summary

Based on Table 12 above, the tax revenues, property sales and grants are expected to be sufficient to provide the capital improvements required to meet the growth projected for the UGA Expansion Area over the next 6 years. In addition, other sources of revenue from the sale of City and Port owned property located adjacent to the study area are anticipated to help pay for addition development fees. Immediately south of the proposed UGA Expansion Area, the City and Port own an addition 454 acres, located within the City of Richland UGA, which will be developed concurrently with the UGA Expansion Area. As a result, the sales of this additional property is estimated to generate an additional \$14,832,180 and \$6,606,691 in property taxes over a 6-year period.



ENGINEER'S OPINION OF PROBABLE COST

2810 W. Clearwater Ave. Suite 201, Kennewick, WA 99336

PROJECT: Port of Benton
2016 Master Plan **DATE:** 28-Sep-16

DESCRIPTION: Road "A" - 3,260 Lineal Feet

J-U-B PROJ. NO.: 30-16-045

ITEM No.	DESCRIPTION	SCHEDULE OF VALUES			
		QTY	UNIT	UNIT PRICE	TOTAL COST
1.00	Mobilization			8.0%	\$ 64,302
2.00	Clearing and Grubbing	8	AC	\$ 1,500	\$ 11,364
3.00	Hydroseeding	4	AC	\$ 1,500	\$ 5,682
4.00	Earthwork	19,556	CY	\$ 10	\$ 195,556
5.00	4-Inch HMA	3,267	TON	\$ 92	\$ 300,586
6.00	Soil Residual Herbicide	20,284	SY	\$ 1	\$ 20,284
7.00	SPCC	1	EA	\$ 2,000	\$ 2,000
8.00	2-Inch Crushed Surfacing Top Course	2,241	TON	\$ 20	\$ 44,829
9.00	8-Inch Crushed Surfacing Base Course	6,310	TON	\$ 18	\$ 113,578
10.00	Roadway Striping	13,000	LF	\$ 2	\$ 26,000
11.00	Roadway Monument Case and Cover	2	EA	\$ 750	\$ 1,500
12.00	Roadway Signage	6	EA	\$ 400	\$ 2,400
13.00	Temporary Erosion and Sediment Controls	1	LS	\$ 10,000	\$ 10,000
14.00	Street Lighting System	1	LS	\$ 70,000	\$ 70,000
15.00	Construction Staking	1	LS	3.0%	\$ 24,113
16.00	Materials Testing	1	LS	2.0%	\$ 16,076
17.00	City of Richland ROW Permit Fee	1	LS	5.0%	\$ 40,189
18.00	Primary Electrical Service	1	LS	\$ 330,000	\$ 330,000
19.00	Telecommunications	1	LS	\$ 66,000	\$ 66,000
ESTIMATED CONSTRUCTION SUBTOTAL ⁴⁵					\$ 1,344,459
<i>Contingency</i> ¹					\$ 336,115
<i>Planning, Engineering, & Administrative Costs</i> ²					\$ 420,143
<i>Washington State Sales Tax</i>					\$ 181,000
TOTAL PROBABLE COST IN 2016 DOLLARS ³⁴⁵					\$ 2,281,717

1 Estimated at 25% of construction subtotal

2 Planning, Engineering, & Administrative costs include: Geotechnical Evaluations, Design, Survey, Construction Management, O&M Manuals, Record Drawings, and Administration. Estimated at 25% of construction subtotal, including contingency

3 Costs are in 2016 dollars and should be inflated appropriately to the mid-point of construction for budgeting purposes.

4 Excludes Stevens Drive and Georege Washington Way Intersection Improvements

5 No easement acquisition or legal costs are included.



ENGINEER'S OPINION OF PROBABLE COST

2810 W. Clearwater Ave. Suite 201, Kennewick, WA 99336

PROJECT: Port of Benton
2016 Master Plan **DATE:** 28-Sep-16

DESCRIPTION: Road "B" - 3,110 Lineal Feet

J-U-B PROJ. NO.: 30-16-045

ITEM No.	DESCRIPTION	SCHEDULE OF VALUES			
		QTY	UNIT	UNIT PRICE	TOTAL COST
1.00	Mobilization			8.0%	\$ 61,539
2.00	Clearing and Grubbing	7	AC	\$ 1,500	\$ 10,847
3.00	Hydroseeding	4	AC	\$ 1,500	\$ 5,424
4.00	Earthwork	18,667	CY	\$ 10	\$ 186,667
5.00	4-Inch HMA	3,117	TON	\$ 92	\$ 286,756
6.00	Soil Residual Herbicide	19,351	SY	\$ 1	\$ 19,351
7.00	SPCC	1	EA	\$ 1,500	\$ 1,500
8.00	2-Inch Crushed Surfacing Top Course	2,138	TON	\$ 20	\$ 42,766
9.00	8-Inch Crushed Surfacing Base Course	6,020	TON	\$ 18	\$ 108,352
10.00	Roadway Striping	12,440	LF	\$ 2	\$ 24,880
11.00	Roadway Monument Case and Cover	6	EA	\$ 750	\$ 4,500
12.00	Roadway Signage	8	EA	\$ 400	\$ 3,200
13.00	Temporary Erosion and Sediment Controls	1	LS	\$ 10,000	\$ 10,000
14.00	Street Lighting System	1	LS	\$ 65,000	\$ 65,000
15.00	Construction Staking	1	LS	3.0%	\$ 24,923
16.00	Materials Testing	1	LS	2.0%	\$ 15,385
17.00	City of Richland ROW Permit Fee	1	LS	5.0%	\$ 38,462
18.00	Primary Electrical Service	1	LS	\$ 312,000	\$ 312,000
19.00	Telecommunications	1	LS	\$ 60,000	\$ 60,000
ESTIMATED CONSTRUCTION SUBTOTAL ⁴⁵					\$ 1,282,000
<i>Contingency</i> ¹					\$ 321,000
<i>Planning, Engineering, & Administrative Costs</i> ²					\$ 401,000
<i>Washington State Sales Tax</i>					\$ 172,000
TOTAL PROBABLE COST IN 2016 DOLLARS ³⁴⁵					\$ 2,176,000

1 Estimated at 25% of construction subtotal

2 Planning, Engineering, & Administrative costs include: Geotechnical Evaluations, Design, Survey, Construction Management, O&M Manuals, Record Drawings, and Administration. Estimated at 25% of construction subtotal, including contingency

3 Costs are in 2016 dollars and should be inflated appropriately to the mid-point of construction for budgeting purposes.

4 Excludes Kingsgate Way and Horn Rapids Road Intersection Improvements

5 No easement acquisition or legal costs are included.



ENGINEER'S OPINION OF PROBABLE COST

2810 W. Clearwater Ave. Suite 201, Kennewick, WA 99336

PROJECT: Port of Benton
2016 Master Plan **DATE:** 28-Sep-16

DESCRIPTION: Kingsgate Way and Horn Rapids Road Intersection Improvements

J-U-B PROJ. NO.: 30-16-045

ITEM No.	DESCRIPTION	SCHEDULE OF VALUES			
		QTY	UNIT	UNIT PRICE	TOTAL COST
1.00	Mobilization			8.0%	\$ 3,213
2.00	Clearing and Grubbing	1	AC	\$ 1,500	\$ 1,500
3.00	Hydroseeding	1	AC	\$ 1,500	\$ 1,500
4.00	Earthwork	500	CY	\$ 12	\$ 6,000
5.00	4-Inch HMA	50	TON	\$ 100	\$ 5,011
6.00	Soil Residual Herbicide	311	SY	\$ 2	\$ 622
7.00	SPCC	1	EA	\$ 1,500	\$ 1,500
8.00	2-Inch Crushed Surfacing Top Course	34	TON	\$ 28	\$ 963
9.00	8-Inch Crushed Surfacing Base Course	97	TON	\$ 26	\$ 2,516
10.00	Roadway Striping	1,400	LF	\$ 2	\$ 2,800
11.00	Roadway Monument Case and Cover	1	EA	\$ 750	\$ 750
12.00	Roadway Signage	4	EA	\$ 500	\$ 2,000
13.00	Temporary Erosion and Sediment Controls	1	LS	\$ 5,000	\$ 5,000
14.00	Street Lighting System	1	LS	\$ 10,000	\$ 10,000
15.00	Demolition	1	LS	\$ 20,000	\$ 20,000
16.00	Fence Relocation	1	LS	\$ 15,000	\$ 15,000
17.00	Traffic Control	1	LS	\$ 10,000	\$ 10,000
18.00	Construction Staking	1	LS	3.0%	\$ 2,465
19.00	Materials Testing	1	LS	3.0%	\$ 2,285
20.00	City of Richland ROW Permit Fee	1	LS	5.0%	\$ 3,808
ESTIMATED CONSTRUCTION SUBTOTAL ⁴⁵					\$ 97,000
<i>Contingency</i> ¹					\$ 24,000
<i>Planning, Engineering, & Administrative Costs</i> ²					\$ 30,000
<i>Washington State Sales Tax</i>					\$ 13,000
TOTAL PROBABLE COST IN 2016 DOLLARS ³⁴⁵					\$ 164,000

1 Estimated at 25% of construction subtotal

2 Planning, Engineering, & Administrative costs include: Geotechnical Evaluations, Design, Survey, Construction Management, O&M Manuals, Record Drawings, and Administration. Estimated at 25% of construction subtotal, including contingency

3 Costs are in 2016 dollars and should be inflated appropriately to the mid-point of construction for budgeting purposes.

4 No easement acquisition or legal costs are included.



ENGINEER'S OPINION OF PROBABLE COST

2810 W. Clearwater Ave. Suite 201, Kennewick, WA 99336

PROJECT: Port of Benton
2016 Master Plan **DATE:** 28-Sep-16

DESCRIPTION: George Washington Way and Stevens Drive Intersection Improvements

J-U-B PROJ. NO.: 30-16-045

ITEM No.	DESCRIPTION	SCHEDULE OF VALUES			
		QTY	UNIT	UNIT PRICE	TOTAL COST
1.00	Mobilization			8.0%	\$ 9,520
2.00	Clearing and Grubbing	1	AC	\$ 1,500	\$ 1,500
3.00	Hydroseeding	1	AC	\$ 1,500	\$ 1,500
4.00	Earthwork	1,500	CY	\$ 10	\$ 15,000
5.00	4-Inch HMA	401	TON	\$ 95	\$ 38,084
6.00	Soil Residual Herbicide	1,778	SY	\$ 2	\$ 3,556
7.00	SPCC	1	EA	\$ 1,500	\$ 1,500
8.00	2-Inch Crushed Surfacing Top Course	196	TON	\$ 22	\$ 4,322
9.00	8-Inch Crushed Surfacing Base Course	774	TON	\$ 20	\$ 15,484
10.00	Roadway Striping	1,400	LF	\$ 2	\$ 2,800
11.00	Roadway Monument Case and Cover	3	EA	\$ 750	\$ 2,250
12.00	Roadway Signage	6	EA	\$ 500	\$ 3,000
13.00	Temporary Erosion and Sediment Controls	1	LS	\$ 10,000	\$ 10,000
14.00	Street Lighting System	1	LS	\$ 20,000	\$ 20,000
15.00	Demolition	1	LS	\$ 25,000	\$ 25,000
16.00	Traffic Signal (4-Way)	1	LS	\$ 225,000	\$ 225,000
17.00	Traffic Control	1	LS	\$ 25,000	\$ 25,000
18.00	Construction Staking	1	LS	3.0%	\$ 11,730
19.00	Materials Testing	1	LS	3.0%	\$ 11,280
20.00	City of Richland ROW Permit Fee	1	LS	5.0%	\$ 18,800
ESTIMATED CONSTRUCTION SUBTOTAL ⁴⁵					\$ 445,326
<i>Contingency</i> ¹					\$ 111,000
<i>Planning, Engineering, & Administrative Costs</i> ²					\$ 139,000
<i>Washington State Sales Tax</i>					\$ 60,000
TOTAL PROBABLE COST IN 2016 DOLLARS ³⁴⁵					\$ 755,326

1 Estimated at 25% of construction subtotal

2 Planning, Engineering, & Administrative costs include: Geotechnical Evaluations, Design, Survey, Construction Management, O&M Manuals, Record Drawings, and Administration. Estimated at 25% of construction subtotal, including contingency

3 Costs are in 2016 dollars and should be inflated appropriately to the mid-point of construction for budgeting purposes.

4 No easement acquisition or legal costs are included.



ENGINEER'S OPINION OF PROBABLE COST

2810 W. Clearwater Ave. Suite 201, Kennewick, WA 99336

PROJECT: Port of Benton
2016 Master Plan **DATE:** 20-Sep-16

DESCRIPTION: 600 Area (South) Interceptor

J-U-B PROJ. NO.: 30-16-045

ITEM No.	DESCRIPTION	SCHEDULE OF VALUES			
		QTY	UNIT	UNIT PRICE	TOTAL COST
1.00	Mobilization			8.0%	\$ 75,000
2.00	Construction Traffic Control			5.0%	\$ 47,000
3.00	Gravity Sewer Pipe				
3.01	8" PVC Gravity Sewer Pipe		LF	\$ 16	\$ -
3.02	10" PVC Gravity Sewer Pipe		LF	\$ 18	\$ -
3.03	12" PVC Gravity Sewer Pipe		LF	\$ 20	\$ -
3.04	15" PVC Gravity Sewer Pipe		LF	\$ 30	\$ -
3.05	18" PVC Gravity Sewer Pipe		LF	\$ 40	\$ -
3.06	21" PVC Gravity Sewer Pipe		LF	\$ 50	\$ -
3.07	24" PVC Gravity Sewer Pipe	7,295	LF	\$ 65	\$ 474,175
3.08	30" PVC Gravity Sewer Pipe		LF	\$ 80	\$ -
3.09	36" PVC Gravity Sewer Pipe		LF	\$ 110	\$ -
3.10	Import Bedding and Foundation Material		LF	\$ 15	\$ -
4.00	Gravity Trench Excav./Backfill				
4.01	4-10 ft.		LF	\$ 20	\$ -
4.02	4-10 ft. Alley		LF	\$ 25	\$ -
4.03	10-16 ft.	7,295	LF	\$ 30	\$ 218,850
4.04	10-16 ft. Alley		LF	\$ 40	\$ -
4.05	16-20 ft.		LF	\$ 50	\$ -
4.06	16-20 ft. Alley		LF	\$ 60	\$ -
4.07	20-24 ft.		LF	\$ 70	\$ -
4.08	24-28 ft.		LF	\$ 100	\$ -
4.09	28-30 ft.		LF	\$ 150	\$ -
4.10	Import Backfill and Foundation Material		CY	\$ 25	\$ -
5.00	Surface Repair				
5.01	Natural Ground	7,295	LF	\$ 20	\$ 145,900
5.02	Gravel Roadway		LF	\$ 25	\$ -
5.03	Asphalt - Trench Patch width per City Standards (Required for 4-16' Depth Sewer)		LF	\$ 35	\$ -
5.04	Asphalt - 1/2 Street width per City Standards (Required for 16-20' Depth Sewer)		LF	\$ 50	\$ -
5.05	Asphalt - Full Street width per City Standards (Required for 20-30' Depth Sewer)		LF	\$ 80	\$ -
6.00	Manholes				
6.01	48" Manholes, 4-10 ft.		EA	\$ 3,500	\$ -
6.02	48" Manholes, 10-16 ft.	20	EA	\$ 4,000	\$ 80,000
6.03	48" Manholes, 16-20 ft.		EA	\$ 5,500	\$ -
6.04	60" Manholes, 7-16 ft.		EA	\$ 7,500	\$ -
6.05	60" Manholes, 16-24 ft.		EA	\$ 15,000	\$ -
6.06	60" Manholes, 24-30 ft.		EA	\$ 18,000	\$ -
7.00	Project Specific Considerations				
8.00	Miscellaneous Other				
8.01	Bypass Pumping			0.0%	\$ -
8.03	Bonding / Admin			2.5%	\$ 23,000
ESTIMATED CONSTRUCTION SUBTOTAL					\$ 1,064,000
<i>Contingency</i> ¹					\$ 266,000
<i>Planning, Engineering, & Administrative Costs</i> ²					\$ 333,000
<i>Washington State Sales Tax</i>					\$ 143,000
TOTAL PROBABLE COST IN 2015 DOLLARS ³					\$ 1,806,000

1 Estimated at 25% of construction subtotal

2 Planning, Engineering, & Administrative costs include: Geotechnical Evaluations, Design, Survey, Construction Management, O&M Manuals, Record Drawings, and Administration. Estimated at 25% of construction subtotal, including contingency

3 Costs are in 2015 dollars and should be inflated appropriately to the mid-point of construction for budgeting purposes. No easement acquisition or legal costs are included.



ENGINEER'S OPINION OF PROBABLE COST

2810 W. Clearwater Ave. Suite 201, Kennewick, WA 99336

PROJECT: Port of Benton
2016 Master Plan **DATE:** 20-Sep-16

DESCRIPTION: 600 Area Water Extension

J-U-B PROJ. NO.: 30-16-045

ITEM No.	DESCRIPTION	SCHEDULE OF VALUES			
		QTY	UNIT	UNIT PRICE	TOTAL COST
1.00	Mobilization			8.0%	\$ 395,000
2.00	Construction Traffic Control			5.0%	\$ 247,000
3.00	Water Pipe				
3.01	12" PVC Water Pipe	6,234	LF	\$ 91	\$ 567,294
3.02	Import Bedding and Foundation Material		LF	\$ 15	\$ -
4.00	Trench Excav./Backfill				
4.01	4-10 ft.	6,234	LF	\$ 20	\$ 124,680
4.02	4-10 ft. Alley		LF	\$ 25	\$ -
4.03	10-16 ft.		LF	\$ 30	\$ -
4.04	10-16 ft. Alley		LF	\$ 40	\$ -
4.05	16-20 ft.		LF	\$ 50	\$ -
4.06	16-20 ft. Alley		LF	\$ 60	\$ -
4.07	20-24 ft.		LF	\$ 70	\$ -
4.08	24-28 ft.		LF	\$ 100	\$ -
4.09	28-30 ft.		LF	\$ 150	\$ -
4.10	Import Backfill and Foundation Material		CY	\$ 25	\$ -
5.00	Surface Repair				
5.01	Natural Ground	6,234	LF	\$ 20	\$ 124,680
5.02	Gravel Roadway		LF	\$ 25	\$ -
5.03	Asphalt - Trench Patch width per City Standards (Required for 4-16' Depth Sewer)		LF	\$ 35	\$ -
5.04	Asphalt - 1/2 Street width per City Standards (Required for 16-20' Depth Sewer)		LF	\$ 50	\$ -
5.05	Asphalt - Full Street width per City Standards (Required for 20-30' Depth Sewer)		LF	\$ 80	\$ -
6.00	Project Specific Considerations				
6.01	2 MG Storage Reservoir	2,000,000	GAL	\$ 2.00	\$ 4,000,000
7.00	Miscellaneous Other				
7.01	Bypass Pumping			0.0%	\$ -
7.02	Bonding / Admin			2.5%	\$ 120,000
ESTIMATED CONSTRUCTION SUBTOTAL					\$ 5,579,000
<i>Contingency</i> ¹					\$ 1,395,000
<i>Planning, Engineering, & Administrative Costs</i> ²					\$ 1,744,000
<i>Washington State Sales Tax</i>					\$ 750,000
TOTAL PROBABLE COST IN 2015 DOLLARS ³					\$ 9,468,000

1 Estimated at 25% of construction subtotal

2 Planning, Engineering, & Administrative costs include: Geotechnical Evaluations, Design, Survey, Construction Management, O&M Manuals, Record Drawings, and Administration. Estimated at 25% of construction subtotal, including contingency

3 Costs are in 2015 dollars and should be inflated appropriately to the mid-point of construction for budgeting purposes. No easement acquisition or legal costs are included.