



## CITY OF RICHLAND NOTICE OF APPLICATION, PUBLIC HEARING AND OPTIONAL DNS (S2020-102 & EA2020-103)

Notice is hereby given that Spink Engineering, applicant, on behalf of Dennis Sawby, owner, has filed an application for a 54 lot residential subdivision referred to as Skyline South. The site is located north of Interstate I-182 and east of Hills Mobile Home Park. The Richland Hearings Examiner will conduct a public hearing and review of the application at 6:00 p.m., Monday, April 13, 2020 in the Richland City Hall Council Chambers, 625 Swift Boulevard. All interested parties are invited to attend and present testimony at the public hearing.

**Environmental Review:** The proposal is subject to environmental review. The City of Richland is lead agency for the proposal under the State Environmental Policy Act (SEPA) and has reviewed the proposed project for probable adverse environmental impacts and expects to issue a determination of non-significance (DNS) for this project. The optional DNS process in WAC 197-11-355 is being used. This may be your only opportunity to comment on the environmental impacts of the proposed development. The environmental checklist and related file information are available to the public and can be viewed at [www.ci.richland.wa.us](http://www.ci.richland.wa.us).

Any person desiring to express their views or to be notified of any decisions pertaining to this application should notify Mike Stevens, Planning Manager, 625 Swift Boulevard, MS-35, Richland, WA 99352. Comments may also be faxed to (509) 942-7764 or emailed to [mstevens@ci.richland.wa.us](mailto:mstevens@ci.richland.wa.us). Written comments should be received no later than 5:00 p.m. on Friday, March 20, 2020 to be incorporated into the staff report. Comments received after that date will be entered into the record at the hearing.

The application will be reviewed in accordance with the regulations in RMC Title 19 Development Regulations Administration and Title 24 Plats and Subdivisions. Appeal procedures of decisions related to the above referenced application are set forth in RMC Chapter 19.70. Contact the Richland Planning Division at the above referenced address with questions related to the available appeal process.





### Preliminary Plat Application

Note: A Pre-Application meeting is required prior to submittal of an application.

**PROPERTY OWNER INFORMATION**  Contact Person

Owner: Dennis Sawby  
Address: 12904 Grandview Ln., Kennewick, WA 99338  
Phone: 509-308-1423 Email: dennis@sawbyconstruction.com

**APPLICANT/CONTRACTOR INFORMATION (if different)**  Contact Person

Company: Spink Engineering UBI#  
Contact: Steve Spink  
Address: 1623 Terminal Dr., Richland, WA 99354  
Phone: 509-946-1581 Email: steve@spinkeng.com

**SURVEYOR INFORMATION**

Contact: Derek Inglesbe, Stratton Surveying  
Address: 313 N. Morain, Kennewick, WA, 99336  
Phone: 509-735-7364 Email: derek@strattonsurvey.com

**ENGINEER INFORMATION**

Contact: Steve Spink, Spink Engineering  
Address: 1623 Terminal Dr., Richland, WA 99354  
Phone: 509-946-1581 Email: steve@spinkeng.com

**PROJECT DESCRIPTION**

56 Lot town home residential subdivision.  
54

**PROPERTY INFORMATION** 115983012926002, 122982012926002

Parcel #: 122982012925003 Zoning: R3  
Legal Description: See Attached Preliminary Plat  
Proposed Subdivision Name: Skyline South  
Gross Plat Acreage: 9.79 Number of Lots: 56 Smallest Lot Size: 3,006  
Net Lot Area Acreage: 4.46 Avg Lot Size: ~~3,469~~ 3,469 Largest Lot Size: 11,594  
Domestic Water Supply:  City  Private Well Sewage Disposal:  City  Septic  
Irrigation Source:  City  Private Well  Columbia Irrig District  Kennewick Irrig District  
SEPA Checklist Submitted?  Yes  No Title Report (Subdivision Guarantee) Submitted?  Yes  No

**APPLICATION MUST INCLUDE**

1. Completed Application and Filing Fee
2. 6- Full Size Copies & the .pdf file
3. 1 – 11" x 17" copy of proposed survey
4. Title Report showing ownership, easements, restrictions and accurate legal description of the property involved
5. SEPA Checklist
6. Other information as determined by the Administrator

I authorize employees and officials of the City of Richland the right to enter and remain on the property in question to determine whether a permit should be issued and whether special conditions should be placed on any issued permit. I have the legal authority to grant such access to the property in question.

I also acknowledge that if a permit is issued for land development activities, no terms of the permit can be violated without further approval by the permitting entity. I understand that the granting of a permit does not authorize anyone to violate in any way any federal, state, or local law/regulation pertaining to development activities associated with a permit.

I hereby certify under penalty of perjury under the laws of the State of Washington that the following is true and correct:

1. I have read and examined this permit application and have documented all applicable requirements on the site plan.
2. The information provided in this application contains no misstatement of fact.
3. I am the owner(s), the authorized agent(s) of the owner(s) of the above referenced property, or I am currently a licensed contractor or specialty contractor under Chapter 18.27 RCW or I am exempt from the requirements of the Chapter 18.27 RCW.
4. I understand this permit is subject to all other local, state, and federal regulations.

*Note: This application will not be processed unless the above certification is endorsed by an authorized agent of the owner(s) of the property in question and/or the owner(s) themselves. If the City of Richland has reason to believe that erroneous information has been supplied by an authorized agent of the owner(s) of the property in question and/or by the owner(s) themselves, processing of the application may be suspended.*

Applicant Printed Name: Steve Spink

Applicant Signature: Steve Spink Date 10-9-19



1623 Terminal Drive ▪ PO Box 922 ▪ Richland, WA 99352 ▪ 509-946-1581 ▪  
www.spinkeng.com

February 6, 2020

Mike Stevens  
Planning Manager  
City of Richland Development Services  
625 Swift Blvd. MS#35  
Richland, WA 99352

RE: Skyline South Preliminary Plat  
Roadway Standard Variance

Dear Mr. Stevens:

The entrance roadway corridor to this proposed development is constrained by the existence of three Bonneville Power, high voltage overhead power poles. These power poles are located in the center of the property approximately 180-feet east of the proposed street connection point to existing Skyline Dr. Clearance to the north or south of these power poles will not allow a City standard 34-foot wide, 54-foot right-of-way street. We propose a City standard, 27-foot wide, 40-foot right-of-way, single frontage local street. As shown on the preliminary plat, approximately 550-feet of this street standard would be utilized. The entrance roadway would widen prior to the first intersection. This portion of roadway would be constructed per City standard drawing ST14 and include curb & gutter on both sides, 5-foot sidewalk on the north side only and be posted no parking on the south side.

This proposal to utilize a narrower street standard meets the intent of City standard ST14 for single access only and meets fire code for minimum roadway width. There are two existing homes located on the north side of this proposed roadway that will have access to this street.

Thank you for consideration of this variance.

Sincerely:

  
Steve Spink  
Spink Engineering

**NOTES**

1. THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION. THE SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM THE INFORMATION AVAILABLE. THIS SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES. LOCATIONS OF SAID UTILITIES WERE DERIVED FROM FIELD ASBUILT OBSERVATIONS.

2. THE CONTOURS SHOWN WERE DERIVED FROM DIRECT FIELD OBSERVATIONS. ACCURACY OF SHOWN CONTOURS MEET OR EXCEED THE US NATIONAL MAP ACCURACY STANDARDS, OF ONE-HALF THE CONTOUR INTERVAL.

3. THIS SURVEY DOES NOT CONSTITUTE A TITLE SEARCH BY STRATTON SURVEYING AND MAPPING PC. FOR ALL INFORMATION REGARDING EASEMENTS, RIGHTS-OF-WAY AND TITLE OF RECORD SEE TITLE SEARCH REPORT PREPARED BY CASCADE TITLE COMPANY, ORDER NUMBER 62241800251, DATED 02/12/18, OF WHICH WAS RELIED UPON TO PLOT SAID ITEMS.

STRATTON SURVEYING AND MAPPING MAKES NO WARRANTIES AS TO MATTERS OF UNWRITTEN TITLE, SUCH AS, ADVERSE POSSESSION, ACQUESCENCE, ESTOPPEL, ETC.

Z. FIELD WORK COMPLETED 01/30/18

**SURVEY REFERENCES**

- WSDOT PLANS, GOOSE GAP TO ROAD 66, DATED 1978
- RECORD OF SURVEY VOL 1, PAGE 1638
- RECORD OF SURVEY VOL 1, PAGE 2926
- RECORD OF SURVEY VOL 1, PAGE 4409
- SHORT PLAT VOL 1, PAGE 2925
- BADGER HEIGHTS SUBDIVISION

**LOTS**

NUMBER OF LOTS: 54 LOTS  
 NUMBER OF TRACTS: 4  
 SMALLEST LOT: 3006 SF  
 LARGEST LOT: 9781 SF  
 AVERAGE LOT: 3600 SF  
 TOTAL PLAT ACREAGE: 9.8 ACRES

**TRACT USE AND OWNERSHIP**

TRACTS A B AND C ARE RESERVED FOR OPEN SPACE.  
 TRACT D IS RESERVED FOR OPEN SPACE & STORM RETENTION.  
 ALL TRACTS WILL BE OWNED BY THE FUTURE HOME OWNERS ASSOCIATION.

**ROADS**

ROAD LINEAR FEET: 2186'  
 ROAD AREA: 106,180 SF/2.44 ACRES

**UTILITIES**

WATER: CITY OF RICHLAND  
 POWER: CITY OF RICHLAND  
 TELEPHONE: COMCAST  
 SEWER: CITY OF RICHLAND  
 GAS: CASCADE NATURAL GAS

**OWNER/DEVELOPER**

DENNIS SAWBY CONSTRUCTION 12904 S. GRANDVIEW LN, KENNEWICK, WA.

**ENGINEER**

SPINK ENGINEERING  
 RICHLAND, WA  
 PHONE: (509) 946 1581  
 FAX: (509) 946-6483

CURVE TABLE					
CURVE	LENGTH	RADIUS	Δ	CH DIRC.	CHORD
C1	43.60	150.00	16°39'20"	N74°56'27"E	43.45
C2	60.33	150.00	23°02'43"	S78°08'09"W	59.93
C3	100.99	250.00	23°08'43"	N78°05'08"E	100.31
C4	87.01	100.00	49°51'21"	N41°35'06"E	84.30
C5	121.90	100.00	69°50'28"	N18°15'48"W	114.49
C6	77.88	35.00	127°29'50"	S63°04'03"W	62.78
C7	87.00	100.00	49°50'48"	S25°36'16"E	84.28
C8	117.68	100.00	67°25'30"	N16°48'55"W	111.01
C9	37.51	50.00	42°59'05"	S04°35'42"E	36.64

**DESCRIPTIONS**

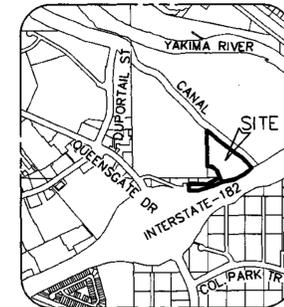
LOT 3 OF THE SHORT PLAT RECORDED IN VOLUME 1 OF SHORT PLATS, AT PAGE 2923, RECORDS OF BENTON COUNTY, WASHINGTON.

LOT 2 OF THE SHORT PLAT RECORDED IN VOLUME 1 OF SHORT PLATS, AT PAGE 2926, RECORDS OF BENTON COUNTY, WASHINGTON.

TOGETHER WITH AND SUBJECT TO EASEMENTS, RESERVATIONS, COVENANTS AND RESTRICTIONS, OF RECORD AND IN VIEW.

THE PRELIMINARY PLAT OF  
**SKYLINE SOUTH**

S.W. 1/4 OF SEC. 15, T.09N., R.28E., W.M.,  
 & THE N.W. 1/4 OF SEC. 22, T.09N., R.28E. W.M.  
 CITY OF RICHLAND,  
 BENTON COUNTY, WASHINGTON

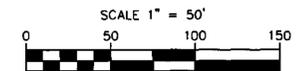
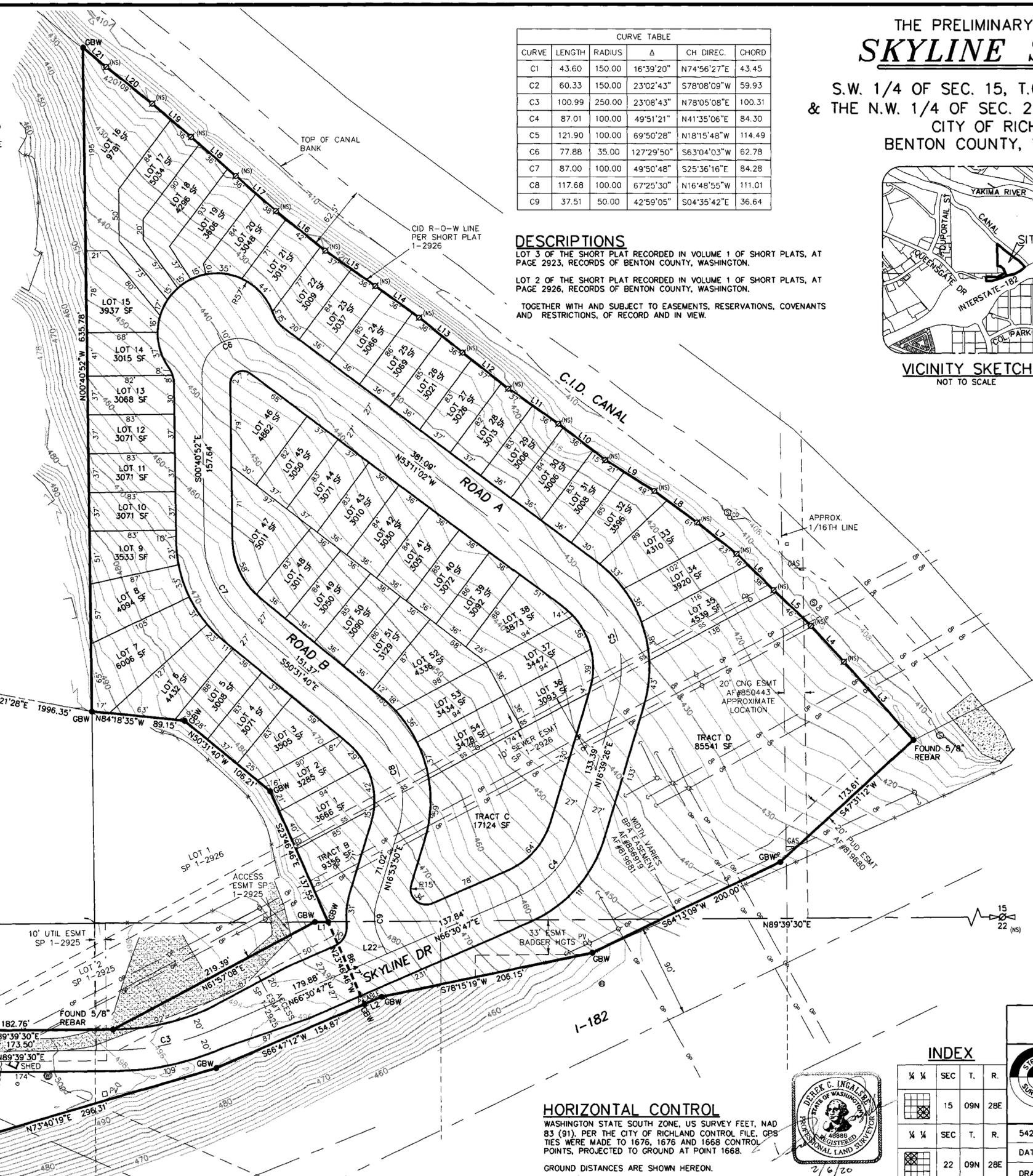
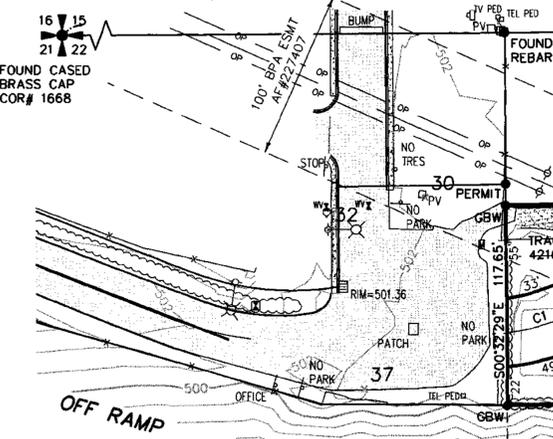


VICINITY SKETCH  
 NOT TO SCALE

LINE TABLE		
LINE	LENGTH	BEARING
L1	12.73	S89°39'30"W
L2	17.74	S66°47'12"W
L3	100.05	S41°36'37"E
L4	46.64	S42°30'09"E
L5	49.49	S46°20'45"E
L6	49.81	S45°21'00"E
L7	48.37	S51°22'04"E
L8	50.95	S53°35'34"E
L9	55.38	S57°56'06"E
L10	56.61	S52°19'28"E
L11	58.45	S54°46'27"E
L12	55.65	S51°44'03"E
L13	53.50	S50°59'06"E
L14	51.75	S54°19'32"E
L15	58.57	S54°48'19"E
L16	60.73	S50°59'21"E
L17	51.31	S48°39'54"E
L18	57.02	S48°29'04"E
L19	49.20	S49°22'39"E
L20	55.99	S51°46'32"E
L21	29.26	S50°11'51"E
L22	15.41	N26°05'15"W

**LEGEND**

- = FOUND AS INDICATED
- = FOUND 5/8" REBAR MARKED "GBW 30440"
- = FOUND 5/8" REBAR MARKED "JAB 21384"
- = FOUND 5/8" REBAR MARKED "PERMIT 13173"
- (NS) = NOT FOUND OR SET
- = FOUND CASED MONUMENT
- = CONCRETE CURB AND GUTTER
- = CONCRETE CURB EXTRUDED
- = IRRIGATION CONTROL VALVE
- = LIGHT POLE, PARKING
- = LIGHT POLE, STREET
- = MAILBOX
- = POWER JBOX
- = POWER METER
- = POWER POLE W/ GUY WIRE
- = POWER TRANSFORMER
- = POWER CABINET
- = POWER VAULT
- = SANITARY SEWER MANHOLE
- = SANITARY SEWER CLEAN-OUT
- = SIGN
- = STORM CATCH BASIN
- = TELEPHONE PEDESTAL
- = WATER FIRE HYDRANT
- = WATER AIR RELEASE VALVE
- = WATER VALVE
- = WATER STOP
- = WATER METER
- = WATER WELL
- = WATER VAULT
- = FENCE
- = EASEMENT
- = PROPERTY BOUNDARY
- = CENTERLINE
- = SANITARY SEWER LINE
- = POWER LINE OVERHEAD
- = TELEPHONE UNDERGROUND
- = ROW OF BUSHES
- = TREE
- = EVERGREEN
- = CONCRETE
- = ASPHALT
- = GRAVEL ROAD



SCALE 1" = 50'  
 BASIS OF BEARING  
 WA STATE GRID  
 NAD 83 SOUTH ZONE  
 PER C.O.R. CONTROL  
 BASIS OF ELEVATION  
 CITY OF RICHLAND  
 PNT NO.1676  
 DUPORTAIL AND QUEENSGATE S.I.  
 NAVD 88 DATUM  
 ELEV=523.20'  
 EQUIPMENT USED  
 A THREE-SECOND TOTAL STATION  
 SPECTRA PRECISION RTK GPS

**INDEX**

1/4	1/4	SEC	T.	R.
15	09N	28E		
22	09N	28E		

**HORIZONTAL CONTROL**

WASHINGTON STATE SOUTH ZONE, US SURVEY FEET, NAD 83 (91). PER THE CITY OF RICHLAND CONTROL FILE. GPS TIES WERE MADE TO 1676, 1676 AND 1668 CONTROL POINTS, PROJECTED TO GROUND AT POINT 1668.

GROUND DISTANCES ARE SHOWN HEREON.



**PRELIMINARY PLAT FOR DENNIS SAWBY**

**STRATTON SURVEYING & MAPPING, PC**  
 313 NORTH MORAIN STREET  
 KENNEWICK, WA 99336  
 (509) 735-7364  
 FAX: (509) 735-6560  
 stratton@strattonsurvey.com

5420PP1.DWG © 2020  
 DATE: 02/06/20 SHT. 1 OF 1  
 DRAWN BY: DCI JOB # 5420









# SUBDIVISION

Issued By:



CHICAGO TITLE INSURANCE COMPANY

Guarantee/Certificate Number:

62241800251

**CHICAGO TITLE INSURANCE COMPANY**  
a corporation, herein called the Company

## GUARANTEES

Dennis Sawby Construction, LLC

herein called the Assured, against actual loss not exceeding the liability amount stated in Schedule A which the Assured shall sustain by reason of any incorrectness in the assurances set forth in Schedule A.

### LIABILITY EXCLUSIONS AND LIMITATIONS

1. No guarantee is given nor liability assumed with respect to the identity of any party named or referred to in Schedule A or with respect to the validity, legal effect or priority of any matter shown therein.
2. The Company's liability hereunder shall be limited to the amount of actual loss sustained by the Assured because of reliance upon the assurance herein set forth, but in no event shall the Company's liability exceed the liability amount set forth in Schedule A.

Please note carefully the liability exclusions and limitations and the specific assurances afforded by this guarantee. If you wish additional liability, or assurances other than as contained herein, please contact the Company for further information as to the availability and cost.

Chicago Title Company of Washington  
6416 W. Okanogan Avenue  
Kennewick, WA 99336

Countersigned By:

Authorized Officer or Agent



Chicago Title Insurance Company

By:

President

Attest:

Secretary

ISSUING OFFICE:		
Title Officer: Mykee Hall Chicago Title Company of Washington 6416 W. Okanogan Avenue Kennewick, WA 99336 Phone: 509-783-7833 Main Phone: (509)783-7833 Email: mykee.hall@ctt.com		

**SCHEDULE A**

Liability	Premium	Tax
\$1,000.00	\$350.00	\$30.10

Effective Date: February 12, 2018 at 08:00 AM

The assurances referred to on the face page are:

That, according to those public records which, under the recording laws, impart constructive notice of matter relative to the following described property:

SEE EXHIBIT "A" ATTACHED HERETO AND MADE A PART HEREOF

Title to said real property is vested in:

Dennis Sawby Construction, LLC, a Washington limited liability company

subject to the matters shown below under Exceptions, which Exceptions are not necessarily shown in the order of their priority.

**END OF SCHEDULE A**

**EXHIBIT "A"**  
Legal Description

**For APN/Parcel ID(s): 122982012925003, 122982012926002 and 115983012926002**

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**Parcel A:**

Lot 3, Short Plat 2925, according to the Survey thereof recorded under Auditor's File No. 2006-002922, records of Benton County, Washington.

**Parcel B:**

Lot 2, Short Plat 2926, according to the Survey thereof recorded under Auditor's File No. 2006-002922, records of Benton County, Washington.

**SCHEDULE B**

1. General and special taxes and charges, payable February 15, delinquent if first half unpaid on May 1, second half delinquent if unpaid on November 1 of the tax year (amounts do not include interest and penalties):

Year: 2018  
 Tax Account No.: 122982012925003  
 Levy Code: R3  
 Assessed Value-Land: \$87,900.00  
 Assessed Value-Improvements: \$0.00

General and Special Taxes:  
 Billed: \$1,195.97  
 Paid: \$0.00  
 Unpaid: \$1,195.97

2. General and special taxes and charges, payable February 15, delinquent if first half unpaid on May 1, second half delinquent if unpaid on November 1 of the tax year (amounts do not include interest and penalties):

Year: 2018  
 Tax Account No.: 122982012926002  
 Levy Code: R3  
 Assessed Value-Land: \$12,850.00  
 Assessed Value-Improvements: \$0.00

General and Special Taxes:  
 Billed: \$186.47  
 Paid: \$0.00  
 Unpaid: \$186.47

3. General and special taxes and charges, payable February 15, delinquent if first half unpaid on May 1, second half delinquent if unpaid on November 1 of the tax year (amounts do not include interest and penalties):

Year: 2018  
 Tax Account No.: 115983012926002  
 Levy Code: R5  
 Assessed Value-Land: \$335,450.00  
 Assessed Value-Improvements: \$0.00

General and Special Taxes:  
 Billed: \$4,480.69  
 Paid: \$0.00  
 Unpaid: \$4,480.69

4. Easement(s) for the purpose(s) shown below and rights incidental thereto, as granted in a document:

Granted to: State of Washington  
 Purpose: Electric Transmission and/or distribution line  
 Recording Date: December 11, 1948  
 Recording No.: 227407

**SCHEDULE B**

(continued)

5. Covenants, conditions, restrictions, recitals, reservations, easements, easement provisions, dedications, building setback lines, notes, statements, and other matters, if any, but omitting any covenants or restrictions, if any, including but not limited to those based upon race, color, religion, sex, sexual orientation, familial status, marital status, disability, handicap, national origin, ancestry, or source of income, as set forth in applicable state or federal laws, except to the extent that said covenant or restriction is permitted by applicable law, as set forth on Badger Heights Subdivision:

Recording No: 317551

6. Exceptions and reservations contained in deed:

From: United States of America

Recorded: March 15, 1954

Recording No.: 320076

As follows:

Right-of-way not exceeding 33 feet in width, for roadway and public utilities purposes, to be located across said land or as near as practicable to the exterior boundaries

7. Exceptions and reservations contained in deed:

From: United States of America

Recorded: November 20, 1957

Recorded in Volume 3 of Deeds, page 494

As follows:

Right-of-way not exceeding 33 feet in width, for roadway and public utilities purposes, to be located across said land or as near as practicable to the exterior boundaries

8. Right of way contract, including the terms, covenants and provisions thereof:

Recorded: March 18, 1960

Recording No.: 433723

In favor of: Cascade Natural Gas Corporation, its successors and/or assigns

For: To construct, maintain, inspect, operate, protect, repair, replace, alter or remove a pipeline or pipelines for the transportation of oil, gas and the products thereof

9. Relinquishment of all existing, future or potential easements for access, light, view and air, and all rights of ingress, egress and regress to, from and between said premises and the highway or highways to be constructed on lands conveyed by deed:

To: State of Washington

Recorded: May 12, 1980

Recording No.: 819679

10. Easement(s) for the purpose(s) shown below and rights incidental thereto, as granted in a document:

Granted to: State of Washington

Purpose: Relocation of Transmission lines

Recording Date: May 12, 1980

Recording No.: 819680

Note: Interest of State of Washington assigned to Benton Rural Electric Association by instrument recorded November 19, 1982 under Auditor's File No. 896216

**SCHEDULE B**

(continued)

11. Easement(s) for the purpose(s) shown below and rights incidental thereto, as granted in a document:

Granted to: State of Washington  
Purpose: Relocation of Transmission Lines  
Recording Date: May 12, 1980  
Recording No.: 819681  
Affects: Portion of said premises

12. Right of way contract, including the terms, covenants and provisions thereof:

Recorded: October 7, 1981  
Recording No.: 850443  
In Favor of: Cascade Natural Gas Corporation, its successors and assigns  
For: To construct, maintain, inspect, operate, protect, repair, replace, alter or remove a pipeline or pipelines for the transportation of oil, gas and the products thereof  
Affects: The East 20 feet of Lot 3, Block 2, Badger Heights Subdivision

13. Easement(s) for the purpose(s) shown below and rights incidental thereto, as granted in a document:

Granted to: State of Washington and its assigns  
Purpose: Electric Transmission and/or distribution line  
Recording Date: February 22, 1982  
Recording No.: 856919  
Affects: Portion of said premises

Note: Interest of State of Washington assigned to Benton Rural Electric Association by instrument recorded June 21, 1984, under Auditor's File No. 897688

14. Relinquishment of all existing, future or potential easements for access, light, view and air, and all rights of ingress, egress and regress to, from and between said premises and the highway or highways to be constructed on lands conveyed by deed:

To: State of Washington  
Recorded: November 9, 1990  
Recording No.: 90-19123

15. Covenants, conditions, restrictions, recitals, reservations, easements, easement provisions, dedications, building setback lines, notes, statements, and other matters, if any, but omitting any covenants or restrictions, if any, including but not limited to those based upon race, color, religion, sex, sexual orientation, familial status, marital status, disability, handicap, national origin, ancestry, or source of income, as set forth in applicable state or federal laws, except to the extent that said covenant or restriction is permitted by applicable law, as set forth on Short Plat No. 2925 and 2926:

Recording No: 2006-002922 and 2006-002923

16. Terms and conditions as contained in the Road Maintenance Agreement::

Between: Johnathan P. Vetter and Willow Wilkerson  
Recorded: April 12, 2011  
Auditor's File No.: 2011-010666

**END OF SCHEDULE B**

When recorded return to:

**DENNIS SAWBY CONSTRUCTION, LLC**  
12904 S Grandview Lane  
Kennewick, WA 99338

132095 - \$6,395.20 - AV - 12/27/2017 - Benton County

**BENTON FRANKLIN TITLE CO.**

**STATUTORY WARRANTY DEED**

BF5437

The Grantor, **WILLO E WILKERSON**, as her separate estate

for and in consideration of Ten Dollars and other valuable consideration

in hand pays, conveys, and warrants to **DENNIS SAWBY CONSTRUCTION, LLC**, a Washington Limited Liability Company

the following described real estate, situated in the County of Benton, State of Washington:

**Parcel A**

Lot 3, Short Plat 2925, according to the Survey thereof recorded under Auditor's File No. 2006-002922 records of Benton County, Washington.

**Parcel B**

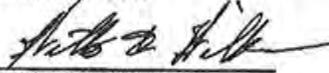
Lot 2, Short Plat 2926, according to the Survey thereof recorded under Auditor's File No. 2006-006923, records of Benton County, Washington.

Abbreviated Legal: **LOT 3, SP 2925 & LOT 2, SP 2926**

Tax Parcel Numbers(s): 1-2298-201-2925-003; 1-2298-201-2926-002;  
1-1598-301-2926-002

**SUBJECT TO** covenants, conditions, restrictions, reservations, easements and agreements of record, if any.

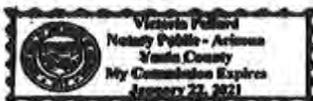
Dated: 12/27/2017

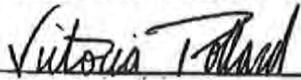
  
\_\_\_\_\_  
**WILLO E WILKERSON**

STATE OF *Arizona*  
COUNTY OF *Yuma* ) ss.

I certify that I know or have satisfactory evidence that **WILLO E WILKERSON** is/are the person who appeared before me, and said person acknowledged that she signed this instrument and acknowledged it to be her free and voluntary act for the uses and purposes mentioned in this instrument.

Dated: 12/27/2017



  
\_\_\_\_\_  
Notary Public in and for the State of *Arizona*  
Residing at *YUMA*  
My appointment expires: 01/22/2021

AFTER RECORDING RETURN TO:  
STATE OF WASHINGTON  
DEPARTMENT OF TRANSPORTATION  
TRANSPORTATION BUILDING KF-01  
OLYMPIA, WA 98504

VOL 538 PAGE 1951  
90-19123

FILED BY  
Nov 9 3 37 PM '90

BOBBIE CACHER  
BENTON COUNTY, AUDITOR

QUITCLAIM DEED

IN THE MATTER OF SR 82, Goose Gap Road to Road 68 Interchange Vicinity

KNOW ALL MEN BY THESE PRESENTS, that the STATE OF WASHINGTON, for and in consideration of FIFTY AND NO/100 DOLLARS (\$50.00), hereby conveys and quitclaims unto NOAH L. WILKERSON AND WILLO E. WILKERSON, husband and wife, all right, title, and interest under the jurisdiction of the Department of Transportation, in and to the following described real property situated in Benton County, State of Washington:

That part of Lot 3, Block 2, BADGER HEIGHTS SUBDIVISION, according to the plat thereof recorded in Volume 5 of Plats, page 11, records of Benton County, lying Northwesterly of a line described as BEGINNING AT A POINT opposite Highway Engineer's Station LE 1233+00 on the LE Line Survey of SR 182, Goose Gap Road to Road 68 Interchange Vicinity, and 240 feet Northwesterly therefrom; thence Northeasterly to a point opposite Highway Engineer's Station LE 1235+00 on said LE Line Survey and 190 feet Northwesterly therefrom; thence Northeasterly parallel with said LE Line Survey to a point opposite Highway Engineer's Station LE 1237+00 thereon and the END of this line description.

The grantees herein, their successor or assigns, shall have no right of ingress and egress to, from, and between said SR 82, and the lands herein conveyed; nor shall the grantees herein, their successors or assigns, be entitled to compensation for any loss of light, view, and air occasioned by the location, construction, maintenance, or operation of said highway.

The specific details concerning all of which may be found on sheet 8 and 9 of that certain plan entitled SR 82, Goose Gap Road to Road 68 Interchange Vicinity, now of record and on file in the office of the Secretary of Transportation at Olympia, Washington, bearing date of approval December 29, 1978.

The grantee as part consideration herein does hereby agree to comply with all civil rights and anti-discrimination requirements of RCW Chapter 49.60, as to the lands herein described.

The lands herein described are not required for State highway purposes and are conveyed pursuant to the provisions of RCW Chapter 47.12.063.

BENTON COUNTY  
EXCISE TAX PAID

OLYMPIA, WA  
EXCISE TAX PAID

NOV 9 1990

Please return to:

STATE OF WASHINGTON  
Department of Transportation KF-01  
Land Management Office  
Transportation Building  
Olympia, Washington 98504

Dated at Olympia, Washington, this 5<sup>th</sup> day of November, 1990

STATE OF WASHINGTON

Duane Berentson

DUANE BERENTSON  
Secretary of Transportation

APPROVED AS TO FORM:

By: Margaret Smith  
Assistant Attorney General

REVIEWED AS TO FORM:

By: Noah L. Wilkerson  
Noah L. Wilkerson or  
Willie E. Wilkerson

STATE OF WASHINGTON )

) : ss

County of Thurston )

On this 5<sup>th</sup> day of November, 1990, before me personally appeared DUANE BERENTSON, known to me as the Secretary of Transportation, Washington State Department of Transportation, and executed the foregoing instrument, acknowledging said instrument to be the free and voluntary act and deed of the State of Washington, for the uses and purposes therein mentioned, and on oath stated that he is authorized to execute said instrument.

Given under my hand and official seal the day and year last above written.



John B. [Signature]  
Notary Public in and for the State  
of Washington, residing at Olympia

My Commission Expires 5/30/92

10656 et al

819680

EASEMENT FOR

Transfer to Rural Electrical Association of Benton County

FA No. I-182-3(7)101  
55142C  
Parcel: 5-04307

In the Matter of SR 182, Goose Gap Road to Road 68 Interchange Vicinity

KNOW ALL MEN BY THESE PRESENTS, that the grantors N. L. Wilkerson and Willo E. Wilkerson, also shown of record as Willow Wilkerson, husband and wife

for and in consideration of ten (\$10.00) dollars and other valuable considerations

grant and convey unto the STATE OF WASHINGTON and its assigns, an easement over, under, upon and across the hereinafter described lands for the purpose of relocation of transmission lines.

Said lands being situated in Benton County, State of Washington, and described as follows:

All that portion of the hereinafter described Parcel "A" lying within a 20 foot strip of land being northwesterly, parallel, and contiguous to a line beginning at a point 190 feet northwesterly and opposite Highway Engineer Station (hereinafter referred to as HES) LE 1235+00 on the LE line centerline of SR 182, Goose Gap Road to Road 68 Interchange Vicinity; thence northeasterly parallel with said LE line centerline to a point opposite HES LE 1237+00; thence northeasterly to a point 250 feet northwesterly and opposite HES LE 1239+00; thence northeasterly to a point 300 feet northwesterly and opposite HES LE 1246+68.16; said strip extending from a line projected northwesterly at right angles to the centerline of said LE line centerline from HES LE 1235+25 northeasterly to a line projected northwesterly at right angles from HES LE 1240+00.

PARCEL "A": That portion of the southeast quarter of southwest quarter in Section 15, Township 9 North, Range 28 east, W.M., lying south and west of Columbia Irrigation District Canal.

The lands herein described contain an area of 1.04 acre, more or less, the specific details concerning all of which are to be found in that certain map of definite location now of record and on file in the office of the Secretary of Transportation at Olympia and bearing date of approval December 29, 1978, revised April 18, 1980.

It being understood and agreed that upon completion of construction, the easement rights granted herein are to be transferred to the Rural Electric Association of Benton County by an appropriate instrument to be placed of record and that thereafter the rights of the State shall cease and terminate.

The undersigned elects to surrender possession of the rights herein conveyed on the date of the State's acceptance of this instrument.

MAR 12 3 35 AM '80  
39A

INDEXED BY  
CHECKED BY



It is understood and agreed that the delivery of this Easement is hereby tendered and that the terms and obligations hereof become binding upon the State of Washington unless and until accepted and approved hereon in writing for the Washington State Department of Transportation by its Secretary or his duly authorized representative.

Accepted and Approved:

Dated this 25th day of March 1980

Date: 4/18/80  
WASHINGTON STATE  
Department of Transportation  
By: [Signature]  
Title: CHIEF RIGHT OF WAY AGENT

[Signature]  
[Signature]

(INDIVIDUAL ACKNOWLEDGEMENT FORM)

STATE OF WASHINGTON  
County of Benton

On this 25th day of March 1980 before me personally appeared N. L. Wilkerson and Willo E. Wilkerson to me known to be the individuals described in and who executed the foregoing instrument, and acknowledged that they signed and sealed the same as their free and voluntary act and deed, for the uses and purposes therein mentioned.

Given under my hand and official seal the day and year last above written.



[Signature]  
Notary Public in and for the State of Washington  
Residing at Yakima

(CORPORATION ACKNOWLEDGEMENT FORM)

STATE OF  
County of

On this day of before me personally appeared to me known to be the of the corporation that executed the foregoing instrument, and acknowledged said instrument to be the free and voluntary act and deed of said corporation, for the uses and purposes therein mentioned, and on oath stated that authorized to execute said instrument and that the seal affixed is the corporate seal of said corporation.  
Given under my hand and official seal the day and year last above written.

Notary Public in and for the State of  
Residing at

1980

EASEMENT FOR  
Transfer to REA, Benton County  
FROM  
N. L. Wilkerson, et ux  
TO  
STATE OF WASHINGTON  
IN  
Benton County

SR 182, Goose Gap Road to Road 68  
Interchange Vicinity  
Parcel No. 5-04307  
FORM 202-102  
DOT REVISED 10/77



Return Name and Address:  
CASCADe TITLE CO.  
8203. W. Quinault  
Kenn. WA 94334

CASCADe TITLE  
PLEASE PRINT OR TYPE INFORMATION: 114.

190521

<b>Document Title:</b> <p style="text-align: center;">Road Maintenance Agreement.</p>
<b>Grantor(s)</b> (Last name first, first name, middle initials): 1. Jonathan P. Vetter 2. Will D Wilkerson 3. Additional names on page _____ of document.
<b>Grantee(s)</b> (Last name first, first name, middle initials): 1. Jonathan P. Vetter 2. Willow Wilkerson. 3. Additional names on page _____ of document.
<b>Legal description</b> (abbreviated: i.e., lot, block, plat or section, township, range, qtr./qtr.) Lot 1 Short Plat 2925. Additional legal is on page _____ of document.
<b>Reference Number(s)</b> of documents assigned or released: Additional numbers on page _____ of document.
<b>Assessor's Property Tax Parcel/Account Number:</b> <u>(MUST HAVE 15 DIGITS)</u> Property Tax Parcel ID is not yet assigned. Additional parcel numbers on page _____ of document.
<b>The Auditor/Recorder will rely on the information provided on the form. The staff will not read the document to verify the accuracy or completeness of the indexing information.</b>

I am requesting an emergency nonstandard recording for an additional fee as provided in RCW 36.18.010. In understand that the recording processing requirements may cover up or otherwise obscure some part of the text of the original document.

Wuxnia Gallegos for Rachael Hannah.  
Signature of Requesting Party

ROAD MAINTENANCE AGREEMENT

**CASCADE TITLE CO.**

R190521KJS.

113

Agreement made this 5 day of April 2011 by and between  
Jonathan P. Vetter, Willo Wilkerson

RECITALS

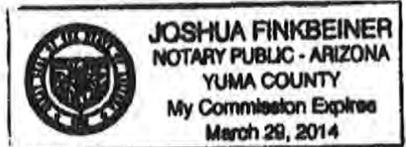
1. The undersigned parties are currently served by a road as delineated on Lot 1, Short Plat 2925  
records of Benton County, Washington, serving the following lots:  
  - Lot 2 Short Plat 2925
  - Lot 3 Short Plat 2925
  - Lot 1 Short Plat 2926
  - Lot 2 Short Plat 2926
2. Said road is currently a gravel road in a good state of maintenance and repair.
3. The parties hereto desire to share in the maintenance of said road and as such, it is hereby agreed as follows:
  - A. All parties hereto shall equally share the expense or labor of maintaining or repairing said road in order to keep it in a good and passable state of repair and condition.
  - B. All parties hereby covenant to work together to establish rules and regulations if necessary with respect to the maintenance, repair, sharing and/or regulation of road use.
  - C. In the event of a dispute hereunder or in the event of suit to enforce rights hereunder, the prevailing party shall be entitled to costs and reasonable attorney fees.
  - D. This agreement shall inure to and be binding upon the heirs, assigns, personal representatives and successors of the parties and shall run with the land being benefited thereby or subservient thereto.

DATED THIS 5 DAY OF April, 2011.

Jonathan P. Vetter  
Jonathan P. Vetter  
 \_\_\_\_\_  
 \_\_\_\_\_

Willo Wilkerson personally appeared before me  
this 5th day of April, 2011.

[Signature]  
Notary Public

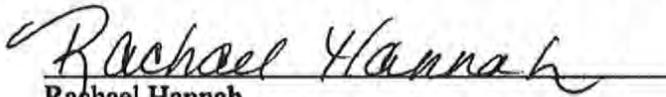


STATE OF WASHINGTON )

COUNTY OF BENTON )

On this day personally appeared before me JONATHAN P. VETTER to me known to be the individual(s) described in and who executed the within and foregoing instrument and acknowledged to me that he signed the same as his free and voluntary act and deed for the purposes therein mentioned.

Given under my hand and official seal this 11th day of April, 2011



Rachael Hannah  
Notary Public in and for the State of Washington,  
Residing at Kennewick  
My Commission Expires: 7-9-11



ATTACHED TO ROAD MAINTENANCE AGREEMENT

320076

4-1222  
(Jan. 1953)  
Washington 0686

THE UNITED STATES OF AMERICA, TO ALL TO WHOM THESE PRESENTS SHALL COME, GREETING:

WHEREAS, A Certificate of the Land Office at Spokane, Washington is now deposited in the Bureau of Land Management, whereby it appears that full payment has been made by the claimant William Thomas Vestal pursuant to the provisions of the Act of Congress approved June 1, 1938 (52 Stat. 609), entitled "An Act to provide for the purchase of public lands for home and other sites," and the acts supplemental thereto, for the following-described land:

Willamette Meridian, Washington.

T. 9 N., R. 28 E.,

Sec. 22, NE $\frac{1}{4}$  NE $\frac{1}{4}$  NW $\frac{1}{4}$  NW $\frac{1}{4}$ .

The area described contains 2.50 acres, according to the Official Plat of the Survey of the said Land, on file in the Bureau of Land Management:

NOW KNOW YE, That the UNITED STATES OF AMERICA, in consideration of the premises, and in conformity with the several Acts of Congress in such case made and provided, HAS GIVEN AND GRANTED, and by these presents DOES GIVE AND GRANT unto the said claimant and to the heirs of the said claimant the Tract above described; TO HAVE AND TO HOLD the same, together with all the rights, privileges, immunities, and appurtenances, of whatsoever nature, thereunto belonging, unto the said claimant and to the heirs and assigns of the said claimant forever; subject to any vested and accrued water rights for mining, agricultural, manufacturing,

or other purposes, and rights to ditches and reservoirs used in connection with such water rights, as may be recognized and acknowledged by the local customs, laws, and decisions of courts; and there is reserved from the lands hereby granted, a right-of-way thereon for ditches or canals constructed by the authority of the United States. Excepting and reserving, also, to the United States, all coal, oil, gas, and other mineral deposits, in the land so patented, together with the right to prospect for, mine, and remove the same according to the provisions of said Act of June 1, 1938. This patent is subject to a right-of-way not exceeding 33 feet in width, for roadway and public utilities purposes, to be located across said land or as near as practicable to the exterior boundaries.

Excepting and reserving, also to the United States, pursuant to the provisions of the Act of August 1, 1946 (60 Stat. 755), all uranium, thorium, or any other material which is or may be determined to be peculiarly essential to the production of fissionable materials, whether or not of commercial value, together with the right of the United States through its authorized agents or representatives at any time to enter upon the land and prospect for, mine, and remove the same.

IN TESTIMONY WHEREOF, the undersigned authorized officer of the Bureau of Land Management, in accordance with the provisions of the Act of June 17, 1948 (62 Stat. 476), has, in the name of the United States, caused these letters to be made Patent, and the Seal of the Bureau to be hereunto affixed.

Given under my hand, in the District of Columbia, the FIFTH day of FEBRUARY in the year of our Lord one thousand nine hundred and FIFTY-FOUR and of the Independence of the United States the one hundred and SEVENTY-EIGHTH.

Patent No. 1142738

(Seal)  
U. S. Department of the Interior  
Bureau of Land Management

For the Director, Bureau of Land Management.

By Rose M. Beall, Acting Chief, Patents Section

Filed for record MAR 18 1960  
Record of

VERNER MILLER, County Auditor

433723

RIGHT OF WAY CONTRACT

Line No. \_\_\_\_\_  
R/W No. \_\_\_\_\_  
State Washington  
County Benton  
Rods 20  
W. O. No. \_\_\_\_\_

For and in consideration of the sum of ~~Two Thousand~~ <sup>250.00</sup> Dollars cash, the receipt of which is hereby acknowledged, and in addition thereto, an aggregate sum equal to ~~One Hundred Dollars~~ <sup>250.00</sup> per lineal rod of pipeline constructed under the terms hereof, to be paid at the time and in the manner hereinafter set forth.

John Walter Vanderbeek and Barbara Yoder Vanderbeek  
1609 Davison Street  
whose address is Richland, Washington

hereinafter referred to as Grantors, (whether one or more), do hereby grant and convey unto CASCADE NATURAL GAS CORPORATION, its successors and assigns, hereinafter referred to as Grantee, the right to select the route for and construct, maintain, inspect, operate, protect, repair, replace, alter and remove a pipeline or pipelines for the transportation of oil, gas and the products thereof, on, over and through the following described lands, of which Grantors warrant that they are the owners in fee simple, situated in the County of

Benton : State of Washington to-wit:

That portion of the southeast quarter of the southwest quarter, section 15, township 9 north, range 28 east, W. M., in Benton County, Washington, lying south and west of Columbia Irrigation District canal right of way.

Pipe to be installed approximately 650 feet west of center section line of section 15, township 9 north, range 28 east, W. M. through a right of way 20 ( twenty ) feet wide and parallel to the center section line previously described.

Section 15, Township 9 north, Range 28 east, together with the right of ingress and egress to and from said line or lines, or any of them, for the purposes aforesaid; hereby releasing and waiving as to Grantee, all rights under and by virtue of the homestead exemption laws of said state.

Grantee agrees that after it has completed its survey of the route for its pipeline and has established the route thereof and before pipeline construction is commenced, it will pay Grantors, in proportion to Grantors' respective interests, a total sum equivalent to ~~One Hundred Dollars~~ <sup>250.00</sup> per lineal rod of pipeline so surveyed and established.

Grantors shall have the right to use and enjoy the above described premises, except as to the rights herein granted; and Grantors agree not to build, create or construct or to permit to be built, created or constructed any obstruction, building, engineering works or other structures over or that would interfere with said pipeline or lines or Grantee's rights hereunder. Grantee hereby agrees to pay any damages which may arise to growing crops, pasturage, timber, fences or buildings of said Grantors from the exercise of the rights herein granted; said damages, if not mutually agreed upon, shall be ascertained and determined by three disinterested persons, one to be appointed by the undersigned Grantors, their successors, heirs or assigns, one to be appointed by the Grantee, its successors or assigns, and the third by the two so appointed, and the written award of such three persons shall be final and conclusive.

Should more than one pipeline be laid under this grant, at any time, an additional consideration, calculated on the same basis per lineal rod as specified above, shall be paid for each such line laid.

It is agreed that the obligation of Grantee to make any payment hereunder shall be satisfied by delivery of such payment to any of the Grantors for the benefit of all Grantors.

Any pipeline constructed by Grantee across lands under cultivation shall, at the time of construction thereof, be buried to such depths as will not interfere with such cultivation.

The Grantee shall have the right to assign this grant in whole or in part including, without limitation, the right of assignment under any presently outstanding or future mortgage or mortgages given to secure any bonds or other bona fide indebtedness of the Grantee.

It is agreed that this grant covers all the agreements between the parties hereto and that no representations or statements, verbal or written, have been made, modifying or adding to or changing the terms of this agreement.

The terms, conditions and provisions of this contract shall extend to and be binding upon the heirs, executors, administrators, personal representatives, successors and assigns of the parties hereto.

TO HAVE AND TO HOLD said right-of-way and easement unto said Grantee, its successors and assigns until such first pipeline be constructed and so long thereafter as a pipeline is maintained thereon.

IN WITNESS whereof the Grantors herein have executed this conveyance this 7th day of March 1960

COUNTY EXCISE TAX

WITNESSES:  
John Walter Vanderbeek  
Barbara Yoder Vanderbeek

Paid \$ 2.50 Date 3-18-60 (Seal)  
Interest Paid \$ \_\_\_\_\_ (Seal)  
Rec. No. 1575A (Seal)  
C. W. NESSLY  
Benton County Treasurer (Seal)  
By C. W. Nessly Deputy Treasurer (Seal)

D-10656 et al

819681

EASEMENT FOR  
Transfer to Bonneville Power  
Administration

55142c  
FA No. I-182-3(7)101  
Parcel 5-04307

In the Matter of SR 182, Goose Gap Road to Road 68 Interchange Vicinity

KNOW ALL MEN BY THESE PRESENTS, that the grantor s N. L. Wilkerson and Willo E. Wilkerson,  
also shown of record as Willow Wilkerson, husband and wife

for and in consideration of ten (\$10.00) dollars and other valuable considerations

grant and convey unto the STATE OF WASHINGTON and its assigns, an easement over, under, upon and  
across the hereinafter described lands for the purpose of relocation of transmission lines

Said lands being situated in Benton County, State of Washington, and described as follows:

All that portion of the hereinafter described Parcel "A" lying within the following described tract:

Beginning at a point 110 feet northwesterly and opposite Highway Engineers Station (hereinafter referred to as HES) W-TF 11+20 on the W-TF line centerline of SR 182, Goose Gap Road to Road 68 Interchange Vicinity; thence South 73°40'11" West 119.95 feet; thence North 66°07'00" West 171.13 feet; thence North 61°57'00" East 2392.46 feet; thence South 35°51'00" West, 461.08 feet; thence South 70°00'24" West 203.08 feet; said point also being 300 feet northwesterly and opposite HES LE 1246+68.16 on the LE line centerline of said project; thence southwesterly to a point 250 feet northwesterly and opposite HES LE 1239+00; thence southwesterly to a point 190 feet northwesterly and opposite HES LE 1237+00; thence southwesterly parallel with said LE centerline to a point opposite HES LE 1235+00; thence southwesterly to a point 240 feet northwesterly and opposite HES LE 1233+00; thence southwesterly to the point of beginning

PARCEL "A": That portion of the southeast quarter of southwest quarter in Section 15, Township 9 North, Range 28 East, W.M., lying south and west of Columbia Irrigation District Canal, AND

W

Lot 1, Block 1, Badger Heights, according to Plat thereof recorded in Volume 5, page 11 of plats, records of Benton County; situate in the County of Benton, State of Washington, AND

Lot 4, Block 2, Badger Heights Subdivision, according to plat thereof recorded in Volume 5 of plats, page 11, records of Benton County, State of Washington, AND

Lot 5, Block 2, Badger Heights Subdivision, according to plat thereof recorded in Volume 5 of plats, page 11, records of Benton County, State of Washington.

The lands herein described contain an area of 3.99 acres, more or less, the specific details concerning all of which are to be found in that certain map of definite location now of record and on file in the office of the Secretary of Transportation at Olympia and bearing date of approval December 29, 1978, revised April 18, 1980.

It being understood and agreed that, upon completion of construction, the easement rights granted herein are to be transferred to the Bonneville Power Administration by an appropriate instrument to be placed of record and that thereafter the rights of the State shall cease and terminate.

The undersigned elects to surrender possession of the rights herein conveyed on the date of the State's acceptance of this instrument.

MAR 12 3 20 PM '80

394



INDEXED BY [signature]  
RECEIVED BY [signature]

It is understood and agreed that the conveyance of this easement is hereby tendered and that the terms and obligations hereof shall not become binding upon the State of Washington unless and until accepted and approved hereon in writing for the Washington State Department of Transportation by its Secretary or his duly authorized representative.

Accepted and Approved:

Dated this 25th day of March 1980

Date: 4/14/80  
WASHINGTON STATE  
Department of Transportation  
By: [Signature]  
Title: CHIEF ENGINEER OF HIGHWAYS

[Signature]  
[Signature]

(INDIVIDUAL ACKNOWLEDGEMENT FORM)

STATE OF WASHINGTON )  
County of Benton ) ss.

On this 25th day of March 1980 before me personally appeared N. L. Wilkerson and Willo E. Wilkerson to me known to be the individual s described in and who executed the foregoing instrument, and acknowledged that they signed and sealed the same as their free and voluntary act and deed, for the uses and purposes therein mentioned.



Given under my hand and official seal the day and year last above written.  
[Signature]  
Notary Public in and for the State of Washington  
Residing at Yakima

(CORPORATION ACKNOWLEDGEMENT FORM)

STATE OF \_\_\_\_\_ )  
County of \_\_\_\_\_ ) ss.

On this \_\_\_\_\_ day of \_\_\_\_\_ before me personally appeared \_\_\_\_\_ to me known to be the \_\_\_\_\_ of the corporation that executed the foregoing instrument, and acknowledged said instrument to be the free and voluntary act and deed of said corporation, for the uses and purposes therein mentioned, and on oath stated that authorized to execute said instrument and that the seal affixed is the corporate seal of said corporation.  
Given under my hand and official seal the day and year last above written.

Notary Public in and for the State of \_\_\_\_\_  
Residing at \_\_\_\_\_

8\*J  
9\*H

EASEMENT FOR  
Transfer to Bonneville Power Admin.  
FROM  
N. L. Wilkerson, et ux  
TO  
STATE OF WASHINGTON  
IN  
Benton County

SR 102, Goose Gap Rd. to Rd. 68  
Interchange Vic.



# CHICAGO TITLE

COMPANY OF WASHINGTON

62241800251

**Remit Payment To:**

Chicago Title Company of Washington  
1111 3rd Avenue, Suite320  
Seattle, WA 98101  
Phone: (509)783-7833 Fax: (509)735-6297  
**Due upon receipt**

## INVOICE

Dennis Sawby Construction LLC  
82913 Summit View Drive  
Kennewick, WA 99338

<b>Order Number:</b>	62241800251	<b>Invoice Date:</b>	February 15, 2018
		<b>Invoice Number:</b>	62241800251-1
		<b>Operation:</b>	02150.622451
<b>Buyer/Borrower(s):</b>	Dennis Sawby Construction, LLC		
<b>Title Officer:</b>	Mykee Hall		

**Property Description:**

612 & 638 Skyline Dr., Richland, WA 99352  
Lot(s): 3 2 Short Plat No. 2925 & Short Plat No. 2926

**Policies Applied For:** Subdivision Guarantee/Certificate 1,000.00

Bill Code	Description	Amount
TP	Loan Policy (Coverage \$1,000.00) (Subdivision Guarantee/Certificate)	350.00 *
		<b>Subtotal:</b> \$ 350.00
		<b>Tax:</b> \$ 30.10
		<b>Invoice total amount due:</b> <u>\$ 380.10</u>

**Thank you for the opportunity to serve you.  
Please return a copy of this invoice with your payment**

819679

WARRANTY DEED

I-182-3(7)101  
55142C  
Parcel 5-04307

In the Matter of State Route SR 182, Goose Gap Road to Road 68 Interchange Vicinity

KNOW ALL MEN BY THESE PRESENTS, That the Grantor N. L. Wilkerson and Willo E. Wilkerson, also shown of record as Willow Wilkerson, husband and wife,

for and in consideration of the sum of ten (\$10.00) - - - - - Dollars, and other valuable consideration hereby convey and warrant to the STATE OF WASHINGTON, the following described real estate situated in Benton County, in the State of Washington, to the same extent and purpose as if the rights herein granted had been acquired under Eminent Domain statute of the State of Washington:

All that portion of the hereinafter described Parcel "A" lying between the following described Line 1 and Line 2.

LINE 1: Beginning at a point 191.70 feet northeasterly and opposite Highway Engineers Station (hereinafter referred to as HES) W-TF 17+66.69 on the W-TF line centerline of SR 182, Goose Gap Road to Road 68 Interchange Vicinity; thence northeasterly to a point 213.40 feet northeasterly and opposite HES W-TF 16+49.72; thence southeasterly to a point 84.68 feet northeasterly and opposite HES W-TF 16+ 28.24; thence northeasterly to a point 90 feet northerly and opposite HES W-TF 14+50; thence northeasterly to a point 110 feet northwesterly and opposite HES W-TF 11+20; thence northeasterly to a point 240 feet northwesterly and opposite HES LE 1233+00 on the LE line centerline of said project; thence northeasterly to a point 190 feet northwesterly and opposite HES LE 1235+00; thence northeasterly parallel with said LE line centerline to a point opposite HES LE 1237+00; thence northeasterly to a point 250 feet northwesterly and opposite HES LE 1239+00; thence northeasterly to a point 300 feet northwesterly and opposite HES LE 1246+68.16 and end of Line 1 description.

LINE 2: Beginning at a point 80 feet southeasterly and opposite Highway Engineer's Station (hereinafter referred to as HES) TF-E 11+00 on the TF-E line centerline of SR 182, Goose Gap Road to Road 68 Interchange Vicinity; thence northeasterly parallel with said centerline to a point opposite HES TF-E 14+31.69; thence northeasterly to a point 110 feet southeasterly and opposite HES TF-E 15+57.38; thence northeasterly parallel with said centerline to a point opposite HES TF-E 21+57.41; thence northeasterly to a point 150 feet southeasterly and opposite HES LE 1234+00 on the LE line centerline of said project; thence northeasterly to a point 100 feet southeasterly and opposite HES LE 1236+00; thence northeasterly parallel with said LE line centerline to a point opposite HES LE 1238+00; thence northeasterly to a point 180 feet southeasterly and opposite HES LE 1240+15; thence northeasterly to a point 180.27 feet southeasterly and opposite HES LE 1240+28.96; thence northeasterly to a point 182.84 feet southeasterly and opposite HES LE 1241+65.03; thence northeasterly to a point 180 feet southeasterly and opposite HES LE 1244+40 and the end of Line 2 description.

*Handwritten initials*

PARCEL "A": TRACT A: That portion of the southeast quarter of southwest quarter in Section 15, Township 9 North, Range 28 East, W.M., lying south and west of Columbia Irrigation District Canal.

TRACT B: Lot 1, Block 1, Badger Heights, according to Plat thereof recorded in Volume 5, page 11 of plats, records of Benton County; situate in the County of Benton, State of Washington.

TRACT C: Lot 4, Block 2, Badger Heights Subdivision, according to plat thereof recorded in Volume 5 of plats, page 11, records of Benton County, State of Washington.

TRACT D: Lot 5, Block 2, Badger Heights Subdivision, according to plat thereof recorded in Volume 5 of plats, page 11, records of Benton County, State of Washington.

Also, the grantors herein convey and grant to the State of Washington all rights of ingress and egress (including all existing, future or potential easements of access, light, view and air) to, from and between SR 182, Goose Gap Road to Road 68 Interchange Vicinity and the remainder of said Parcel "A". EXCEPT that the grantors herein reserve for themselves their heirs, successors or assigns, the right of reasonable access to the AL line cul-de-sac.

The lands herein described contain an area of 5.04 acres, more or less, the specific details concerning all of which are to be found in that certain map of definite location now of record and on file in the office of the Secretary of Transportation and bearing date of approval December 29, 1976, revised, April 18, 1980.

The undersigned hereby agrees to surrender possession of the lands herein conveyed 90 days after receipt of payment.

BENTON COUNTY  
EXCISE TAX-PAID

11/12 8 55 AM '80  
CHECKED BY  
CHECKED BY  
331

89028  
MAY 12 1980  
5-04307

It is understood and agreed that the delivery of this deed is hereby tendered and that the terms and obligations hereof shall not become binding upon the State of Washington unless and until accepted and approved hereon in writing for the State of Washington, Department of Transportation, by its Secretary or his duly authorized representative.

Dated this 25th day of March 1980

x N. L. Wilkerson  
x Willo E. Wilkerson

Accepted and approved:

Date 4/14/80

STATE OF WASHINGTON  
DEPARTMENT OF TRANSPORTATION

By [Signature]  
Title Chief Eng. of WY 1212

(Individual acknowledgment form)

STATE OF WASHINGTON, }  
County of Benton } ss.

I, the undersigned, a notary public in and for the State of Washington, hereby certify that on this 25th day of March 1980 personally appeared before me

N. L. Wilkerson and Willo E. Wilkerson

to me known to be the individuals described in and who executed the foregoing instrument, and acknowledged that they signed and sealed the same as their free and voluntary act and deed, and purposes therein mentioned.



Given under my hand and official seal the day and year last above written.

[Signature]  
Notary Public in and for the State of Washington,  
Residing at Yakima

(Corporation acknowledgment form)

STATE OF WASHINGTON, }  
County of \_\_\_\_\_ } ss.

On this \_\_\_\_\_ day of \_\_\_\_\_ before me personally appeared \_\_\_\_\_ and \_\_\_\_\_

to me known to be the \_\_\_\_\_ and \_\_\_\_\_ of the corporation that executed the foregoing instrument, and acknowledged said instrument to be the free and voluntary act and deed of said corporation, for the uses and purposes therein mentioned, and on oath stated that \_\_\_\_\_ authorized to execute said instrument and that the seal affixed is the corporate seal of said corporation.

Given under my hand and official seal the day and year last above written.

Notary Public in and for the State of Washington.

Residing at \_\_\_\_\_

8★1 3★0

WARRANTY DEED

FROM

N. L. Wilkerson, et ux

TO

STATE OF WASHINGTON

IN

Benton County

( SH No. \_\_\_\_\_ )

State Route 182, Goose Gap Road to

road 68 Interchange Vicinity

5-01301

856919

EASEMENT FOR TRANSMISSION LINE

IN THE MATTER OF SR 182, Goose Gap Road to Road 68 Interchange Vicinity

KNOW ALL MEN BY THESE PRESENTS, that the grantors N. L. Wilkerson and Villo E. Wilkerson, also shown of record as Willow Wilkerson, husband and wife

THIS IS AN INSTRUMENT OF THE STATE OF WASHINGTON... (mirrored text from reverse side)

for and in consideration of monies previously paid and other benefits

grant and convey unto the STATE OF WASHINGTON and its assigns, an easement over, under, upon and across the hereinafter described lands for the purpose of entering and erecting, maintaining, repairing, rebuilding, operating and patrolling one or more lines(s) of electric power transmission structures and appurtenant signal lines, including the right to erect such poles, transmission structures, wires, cables and appurtenances as are necessary thereto, together with the present and future right to clear said right of way and keep the same clear of brush, timber, structures, and fire hazards, provided that fire hazards shall not be interpreted to include any growing crops other than trees. Said lands being situated in Benton County, State of Washington, and described as follows:

109

All that portion of the hereinafter described Parcel "A" lying within the following described tract:

Beginning at a point 110 feet northwesterly and opposite Highway Engineers Station (hereinafter referred to as HES) W-TF 11+20 on the W-TF line centerline of SR 182, Goose Gap Road to Road 68 Interchange Vicinity; thence South 73°40'11" West 119.95 feet; thence North 66°07'00" West 171.13 feet; thence North 61°57'00" East 2392.46 feet; thence South 35°51'00" West, 461.08 feet; thence South 70°00'24" West 203.08 feet; said point also being 300 feet northwesterly and opposite HES LE 1246+68.16 on the LE line centerline of said project; thence southwesterly to a point 250 feet northwesterly and opposite HES LE 1239+00; thence southwesterly to a point 190 feet northwesterly and opposite HES LE 1237+00; thence southwesterly parallel with said LE centerline to a point opposite HES LE 1235+00; thence southwesterly to a point 240 feet northwesterly and opposite HES LE 1233+00; thence southwesterly to the point of beginning.

PARCEL "A": That portion of the southeast quarter of southwest quarter in Section 15, Township 9 North, Range 28 East, W.M., lying south and west of Columbia Irrigation District Canal, AND

FILED BY

FEB 22 9 47 AM '82

VERNE HILLER, AUDITOR DEPUTY RECORDED IN VOL. 420

Lot 1, Block 1, Badger Heights, according to Plat thereof recorded in Volume 5, page 11 of plats, records of Benton County; situate in the County of Benton, State of Washington, AND

Lot 4, Block 2, Badger Heights Subdivision, according to plat thereof recorded in Volume 5 of plats, page 11, records of Benton County, State of Washington, AND

Lot 5, Block 2, Badger Heights Subdivision, according to plat thereof recorded in Volume 5 of plats, page 11, records of Benton county, State of Washington.

The lands herein described contain an area of 3.99 acres, more or less, the specific details concerning all of which are to be found in that certain map of definite location now of record and on file in the office of the Secretary of Transportation, State of Washington, at Olympia and bearing date of approval December 29, 1978, revised August 14, 1981

This conveyance is intended to supplement and further define the terms and conditions of that certain easement granted to the State of Washington and recorded May 12, 1980 under Auditor's File Number 819681, records of Benton County.

It is understood and agreed that the delivery of this easement is hereby tendered and that the terms and obligations hereof shall not become binding upon the State of Washington unless and until accepted and approved hereon in writing for the Washington State Department of Transportation by its Secretary or his duly Authorized representative.

Accepted and Approved:

Date: 2-16-82

WASHINGTON STATE

Department of Transportation

By: [Signature]

Title: CHIEF RIGHT OF WAY AGENT

Dated this 15 day of February 1982

[Signatures]





Transmission Ln Esmt Dec 11 1948 9:34  
Nov 29 1948 \$400.00 .55 Federal

227383 to 227406 ng  
227407

A. S. Murray and Elizabeth Murray, h & w, naat  
to United States of America.

Form 52.

That ptn of North 150' of Govt Lot 3 of Section 22 and the SE $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  and Govt Lot 7 of Sec 15-9-28, which lies within a strip of land 100' in width, the bdris of sd strip ly 50' distant from, on each side of, and plt survey lnof the Grandview-Richland transmission ln as now located and staked on the ground over, across, upon and/or adjacent to above desc prop, sd survey ln being desc as fol:

beg at survey station 1487+07.7 a pt on N ln of Sec 22-9-28, sd pt being N 89° 39' E 820.5' from NW corner of sd Sec 22; th S 66° 07' E 1479.4' to survey station 1501+87.1; th N 35° 51' E a distance of 3062.9' to survey station 1532+50.0 a pt on the Sly bdy ln of the Bonneville Power Admr' Richland Substation site, sd pt being N 54° 09' W a distance of 169.0' from the Bonneville Power Admr monument marking the SEly corner of sd Substation Site, sd monument being N a distance of 1757.0' and West a distance of 1206.2' from SE corner of Section 15-9-28.

We, Austin J. Murray and Ramona A. Murray, h & w, lessess, under an unkrd lease, for a val con from gtor herein, hby ack, join in this instr for the sole and specific purp of subordinating any int we may have in the above desc prem to the Esmt being acq by the USA, and are not entering into or becoming a party in any degree or manner to the warranty cont herein.

The Gtee agrees that it will cause to be repaired any and all irrig structures damaged in the use of above esmt by it or anyone ~~ya~~ under its direction at the time of orig constr or subsequent repair, and will maintain its structures so that a maximum of cultivation may be practiced in the right of way. All areas not susceptible of cultivation by the gtors will be kept free of noxious weeds by the gtee.

A. S. Murray Elizabeth Murray

Austin J. Murray Ramona A. Murray

BCW Nov 29 1948 A. S. Murray and Elizabeth Murray, h & w, bef Floyce Paulson, NP Sl. Aug 28, 1950.

BCW Nov 29 1948 Austin J. Murray and Ramona A. Murray, h & w, bef Floyce Paulson, NP Sl. Aug 28, 1950.

Fld BCAT Co. Ml Bonneville, Portland.

Mtg Dec 11 1948 9:35

Dec 9 1948

H. A. Zoda and Vida C. Zoda, naat h & w,  
to Wylie N. Cox and Lucile J. Cox, h & w.

Sal 253250  
S-5766

R - 227408

WTI form L 7.

Mortgages tsp \$596.00 ac 1 pn bed, covering:  
Govt Lot 2, Except the North 966' thof, and the East 330' of Govt Lot 3, Except the North 966' thof; all in Section 32-9-25, except that ptn condemned by the Kennewick Irrig District for canal rtw; tgw an esmt for roadway over a 25' strip in the North 966' of sd Govt Lot 2.



15:22-9-28

# SHORT PLAT NO. 2920

PREPARED UNDER CITY OF RICHLAND SHORT PLAT ORDINANCE LOCATED IN A PORTION OF SW 1/4 OF SECTION 15, AND ALSO LOCATED IN A PORTION OF NW 1/4 OF SECTION 22, TOWNSHIP 9 NORTH, RANGE 28 EAST, W.M. CITY OF RICHLAND, BENTON COUNTY, WASHINGTON

SEE SHEET 1 OF 2 FOR APPROVALS  
SEE SHEET 1 OF 2 FOR OWNERS CERTIFICATE  
SEE SHEET 2 OF 2 FOR ACKNOWLEDGMENTS  
SEE SHEET 2 OF 2 FOR NOTES

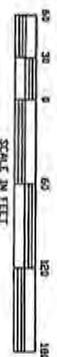
## RECORD LEGAL DESCRIPTION

PARCEL 1 (TAX PARCEL NO. 1-1948-200-0001-000) SECTION 15, TOWNSHIP 9 NORTH, RANGE 28 EAST, W.M. OF THE COUNTY OF BENTON, WASHINGTON, LYING SOUTH AND WEST OF THE COLUMBIA IRRIGATION DISTRICT CANAL, EXCEPT THAT PORTION DEED TO THE STATE OF WASHINGTON BY INSTRUMENT RECORDED MAY 12, 1980, UNDER AUDITOR'S FILE NO. 816473.

PARCEL 2 (TAX PARCEL NO. 1-1948-200-0002-000) LOT 2, BLOCK 2, RANGER WILKERSON SUBDIVISION, RECORDED IN VOLUME 5 OF PLATS, PAGE 11, RECORDS OF BENTON COUNTY, WASHINGTON, MAY 12, 1980, UNDER AUDITOR'S FILE NO. 816473.

TOGETHER WITH THAT PORTION OF LOT 2, BLOCK 2, RANGER WILKERSON SUBDIVISION, AS CONVEYED TO THE STATE OF WASHINGTON UNDER INSTRUMENT NO. 80-19123 AND APPROVED BY AFFILIANT OF SCHEMERS EDSON RECORDED UNDER 90-20826.

This map/plat is being furnished as an aid in locating the herein described land in relation to adjoining streets, natural boundaries and other land, and it is not a survey of the land depicted. Except to the extent a policy of insurance is expressly modified by endorsement, if any, the Company does not insure dimensions, distances, location of easements, acreage or other matters shown thereon.



## SURVEYOR'S CERTIFICATION

I, GARY B. WILKERSON, A PROFESSIONAL LAND SURVEYOR IN THE STATE OF WASHINGTON, (GARY B. WILKERSON) HEREBY CERTIFY THAT THE SURVEY DESCRIBED ON THIS SHORT PLAT IS AN ACTUAL FIELD SURVEY OF THE LAND DESCRIBED AND THAT ALL CORNERS AND DIMENSIONS ARE CORRECTLY SHOWN AND THAT SAID SHORT PLAT IS STAKED ON THE GROUND AS INDICATED THEREON.

GARY B. WILKERSON  
11-09-05



## AUDITOR'S CERTIFICATE

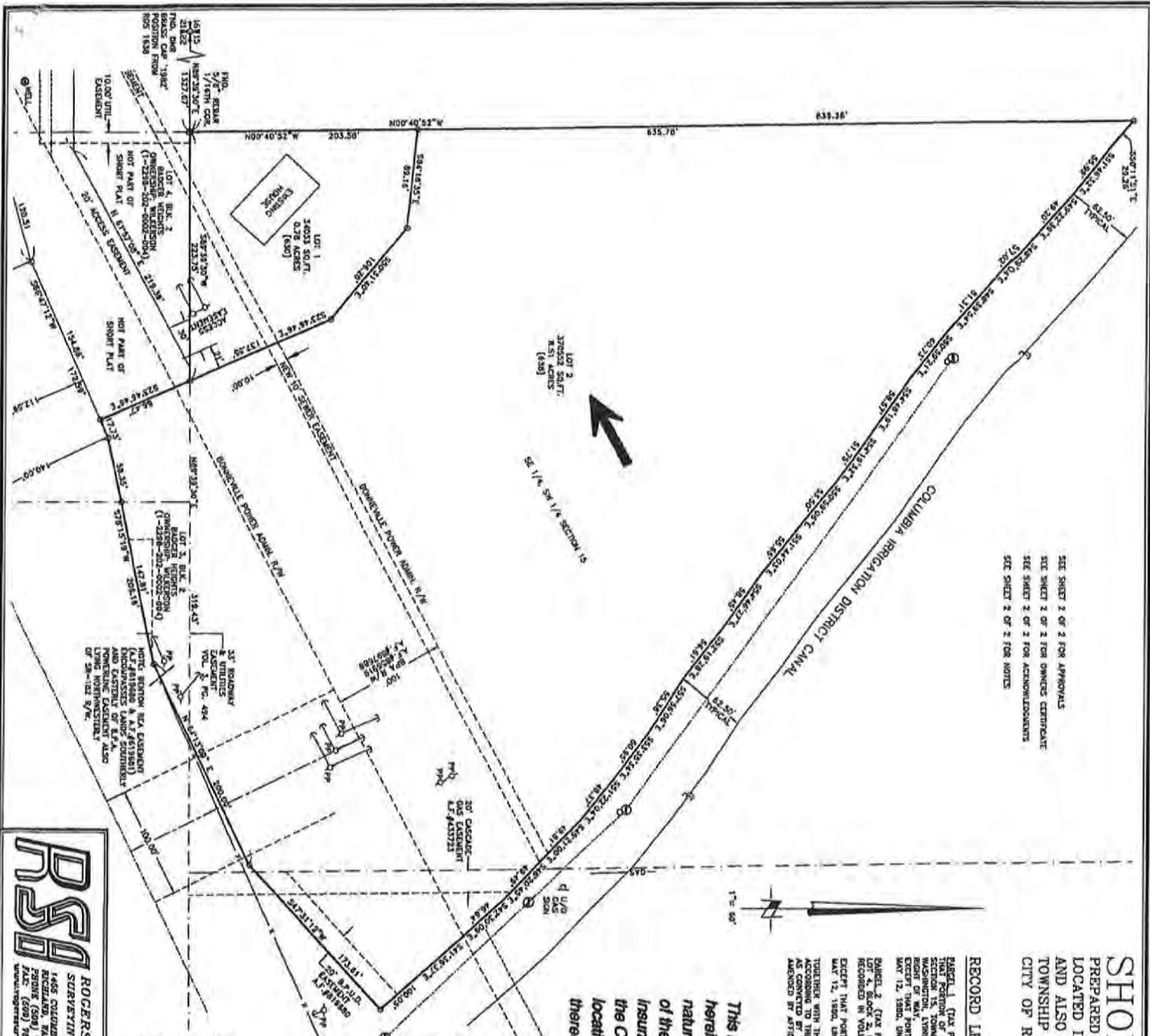
FIELD FOR RECORD AT THE REQUEST OF ROGERS SURVEYING & ENGINEERING, INC., THIS 27 DAY OF July, 2006, A.D., AND RECORDED IN VOLUME 1 OF SHORT PLATS, AT PAGE 2920, RECORDS OF BENTON COUNTY, WASHINGTON.

Robin Gaar, by Robin Gaar 2006-002923  
BENTON COUNTY AUDITOR



ROGERS SURVEYING INC., P.S.  
1405 FORDLAND PARK TRAIL  
BENTON COUNTY, WASHINGTON  
PHONE (509) 783-4141  
FAX (509) 783-8884  
www.rogerssurveying.com

CLIENT	GRADY WILKERSON	DATE	1-22-05
PROJECT	SHORT PLAT	SCALE	1" = 60'
PROJECT	PORTION SW 1/4, SEC. 15, T.9N., R.28E., W.M.	S. E. NO. NODE	14-23104
APPROVED BY		DATE	1-22-05





**CRITICAL AREAS REPORT  
SKYLINE SOUTH DEVELOPMENT**

**Report No. C19-202-COM-0919-001, Revision 0  
September 2019**

**Prepared for:  
Sawby Construction, LLC  
12904 S. Grandview Dr  
Kennewick, WA 99338**

**Contract C19-202**

**Prepared by:  
TerraGraphics Environmental Engineering, Inc.  
428 W. Shoshone St.  
Pasco, WA 99301**

  
[www.terragraphics.com](http://www.terragraphics.com)

### Approval Form

**Prepared by:**

Approved electronically 9/30/19

\_\_\_\_\_

Danielle Adams

Date: \_\_\_\_\_

**Reviewed by:**

Approved electronically 9/30/19

\_\_\_\_\_

Shanna Cozad

Date: \_\_\_\_\_

**Approved by:**

Approved electronically 9/30/19

\_\_\_\_\_

Randy Hermann

Date: \_\_\_\_\_

**Record of Revision**

Revision	Date	Pages/Sections Changed	Brief Description
0	9/30/19	N/A	Initial release

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## Acronyms and Abbreviations

BMP	best management practice
CARA	Critical Aquifer Recharge Area
FEMA	Federal Emergency Management Agency
KID	Kennewick Irrigation District
NWI	National Wetlands Inventory
PHS	Priority Species and Habitat
RCW	<i>Revised Code of Washington</i>
Skyline South	22-lot subdivision development
SMP	City of Richland Shoreline Master Program
TerraGraphics	TerraGraphics Environmental Engineering, Inc.
WAC	<i>Washington Administrative Code</i>
WAFWS	State of Washington Department of Fish and Wildlife

## 1.0 INTRODUCTION

### 1.1 Purpose

TerraGraphics Environmental Engineering, Inc. (TerraGraphics) prepared this Critical Areas Report in support of construction of a proposed 22 lot subdivision (Skyline South) located in Richland, Washington. This Critical Areas Report (1) describes the current site conditions, (2) addresses Wetland and Fish and Wildlife Conservation, Critical Aquifer Recharges Areas (CARAs) Protection, and Geological Hazard Areas, and (3) describes proposed site management at this location, pursuant to the requirements of State Environmental Protection Act and Growth Management Act (Chapter 36.70A *Revised Code of Washington* [RCW]) and Richland Municipal Code Chapter 22.10, *Critical Areas*.

### 1.2 Project Description

The proposed development of the Skyline South site is located within parcels 115983012926002 and 122982012925003 in Richland, Washington as shown in Figure 1, and will include site grading and construction of associated roadways, utilities, stormwater infrastructure, and buildings.

### 1.3 Scope

TerraGraphics performed the following services in completion of this project:

- **Literature Review:** Review of relevant, readily available publications and resources pertaining to site conditions, wetlands, fish and wildlife conservation, CARAs, and the Geotechnical Investigation Report (Appendix A) at or near the Skyline South site.
- **Site Reconnaissance:** Performance of a site visit to document current site conditions including an existing infrastructure and access, physical features, vegetative covers, and site biodiversity/habitat, fish and wildlife species (if present), and to locate exploration test pits excavated at the sites as part of the geotechnical investigation previously performed (Appendix A).
- **Critical Areas Management Analysis:** Review and analysis of data and information relevant to potential critical areas at Skyline South site to develop site and project management recommendations to avoid or otherwise probable environmental impacts of the proposed site and project activities.
- **Report Preparation:** Preparation of a Critical Areas Report specific to the Skyline South site and relevant areas adjacent to the Skyline South site to meet the Process Permit and Application Requirements as outlined in Richland Municipal Code Chapter 22.10, *Critical Areas*.

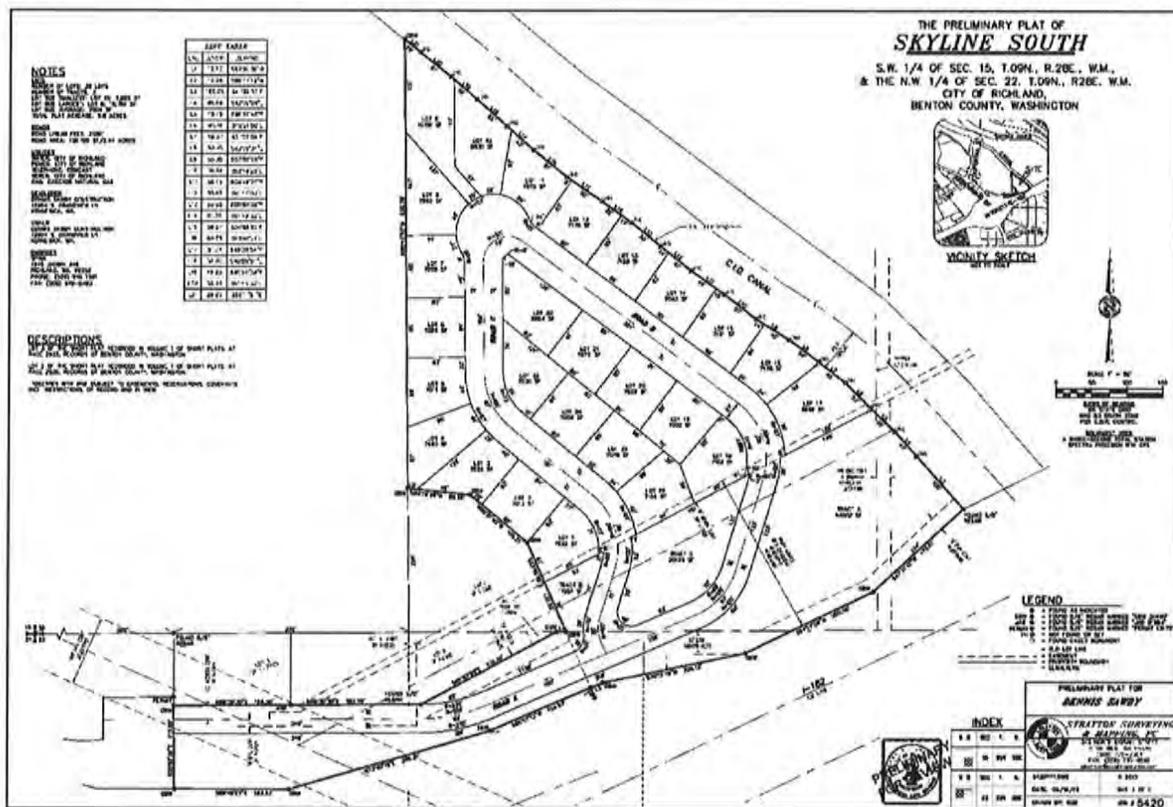
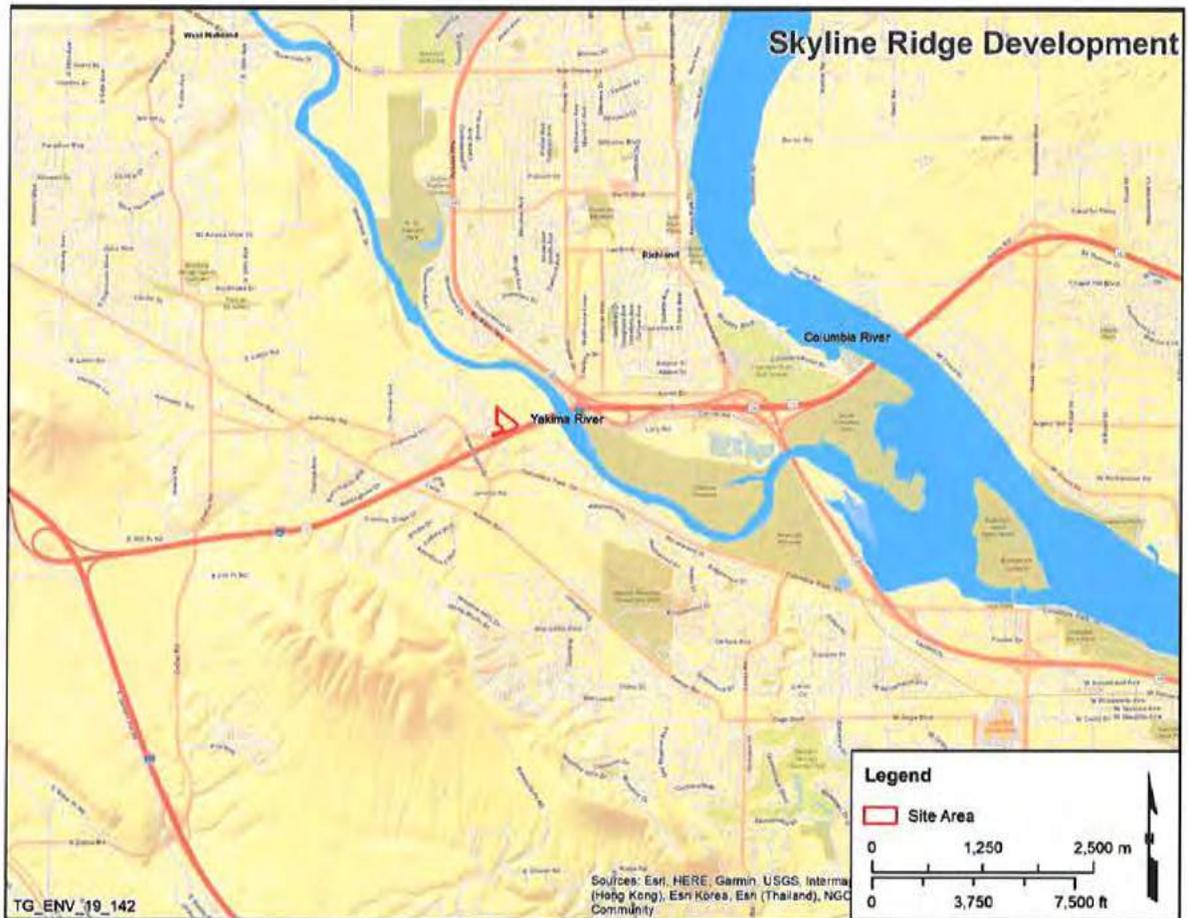


Figure 1. Preliminary Plat Map

## 2.0 SITE CONDITIONS

### 2.1 General Site Conditions and Location

The Skyline South site is located in southeast Richland, Washington, adjacent to Interstate 182 near the Yakima River as shown in Figure 2. The site is approximately 9.6 acres with proposed site access from Skyline Drive. The site is undeveloped land with disturbed and undisturbed soils with grassland cover with various outcroppings of sagebrush.



**Figure 2. Vicinity Map**

The Skyline South site is adjacent to existing single resident housing located on the southwestern site boundary. Interstate 182 bounds the property on the southeastern side. Large electric poles and lines run north-south through the property parallel to Interstate 182.

The northeastern project boundary is approximately 20 ft from the Kennewick Irrigation District (KID) canal of which an access road and the “biodiversity corridor” run parallel to on the north side. Skyline South located within 300 ft of the Richland “biodiversity (riparian) corridor” that is present adjacent to the Yakima River. The “biodiversity corridor” is located in the floodplains of the Yakima river, which consists of native vegetation and wildlife habitat. Figure 3 through

Figure 6 show the current conditions of the site as present during the site visit conducted on September 10, 2019.



**Figure 3. Skyline South Entrance**



**Figure 4. Skyline South looking Northeasterly**



**Figure 5. Skyline South looking Westward along KID Canal**



**Figure 6. Skyline South looking Southward**

## 2.2 Legal Description

The following legal description for the subject parcels was obtained from the Benton County, Washington Assessor's Real Property records<sup>1</sup>:

Parcel 115983012926002: Section 15 Township 9 Range 28 Quarter SW; SHORT PLAT #2926, LOT 2, Lying within Section 15, RECORDED 1/27/2006, UNDER AUDITOR'S FILE NO. 2006-002923. RECORDED IN VOLUME 1 OF SHORT PLATS, AT PAGE 2926, RECORDS OF BENTON COUNTY, WASHINGTON. (linked with 1-2298-201-2926-002, different TCA's).

Parcel 122982012925003: Section 22 Township 9 Range 28 Quarter NW; SHORT PLAT #2925, LOT 3, RECORDED 1/27/2006, UNDER AUDITOR'S FILE NO. 2006-002922. RECORDED IN VOLUME 1 OF SHORT PLATS, AT PAGE 2925, RECORDS OF BENTON COUNTY, WASHINGTON.

## 2.3 Site Features

The Skyline South site is undeveloped with no occupied buildings or structures. At the site, there is a small shed with an electric meter attached but no other built structures. Along the northeastern site boundary, there are existing City of Richland utilities, of which the new development will be connected to. Multiple electrical lines and poles are present at the site running north-south. At the site entrance, there is an unpaved road and plantings of large bushes and shrubs. Vegetative cover at the site is primary grassland with sagebrush outcroppings with no trees present.

The Skyline South site generally slopes downhill northeasterly towards the adjacent KID canal and Richland "biodiversity corridor." Figure 7 shows the current topography, site features, and critical areas.

### 2.3.1 Critical Areas

"Critical areas" are defined in RCW 36.70A.030(5) and as stated in the Richland Municipal Code 22.10.010, as critical areas "perform many important and physical function and values that benefit the City of Richland and its residents." Critical areas include the following areas and ecosystems: wetlands, Critical Aquifer Recharge Areas (CARAs), fish and wildlife habitat conservation area, and frequently flooded areas, and geologically hazardous areas. Section 3.0 through Section 6.0 provide discussion of critical areas relevant to the Skyline South site as required by Richland Municipal Code 22.10.370. The critical areas in the vicinity of the Skyline South site include geologic hazards, floodplains, and wetlands (Figure 7). Geological hazards shown on this map contains steep slope greater than or equal to 15 percent. Also, the Richland "biodiversity corridor" present in the area between the KID canal and Yakima River located northeast of the site are defined as a geologic hazard for moderate to high liquefaction potential. Further discussion of geologic hazards is found in Section 5.5.

---

<sup>1</sup> <https://property.spatalest.com/wa/benton/#/>

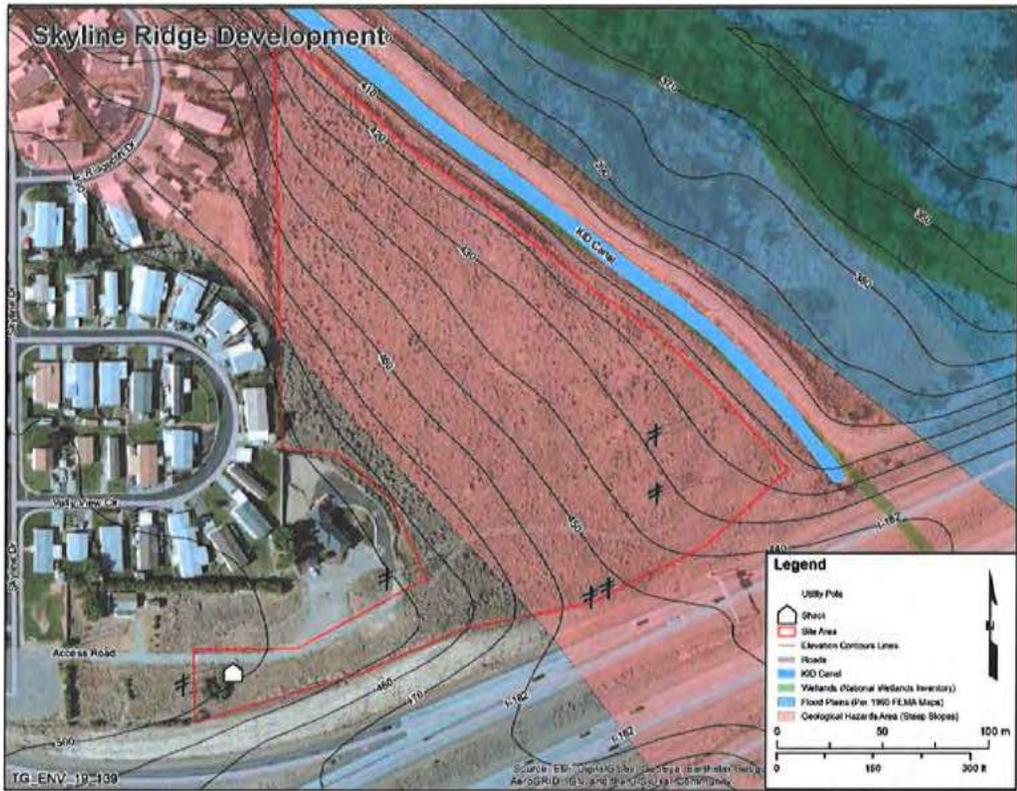


Figure 7. Site Map with Critical Areas

### 3.0 FISH AND WILDLIFE CONSERVATION

#### 3.1 Vegetation Covers

The vegetative cover at the Skyline South site was primarily observed to be disturbed grassland with sagebrush outcroppings as shown in Figures 8 and 9. The specific vegetation observed at the Skyline South site is further described in Section 3.3.

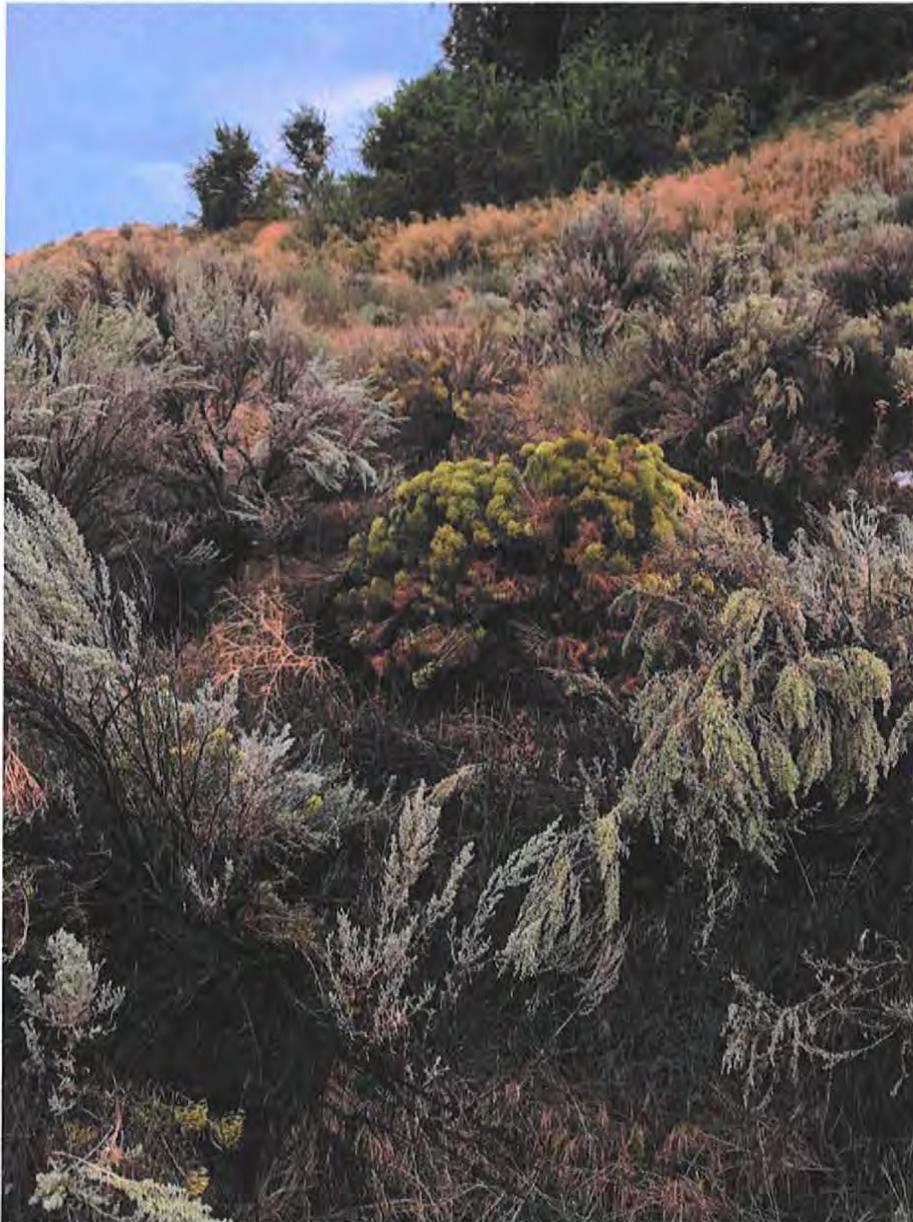
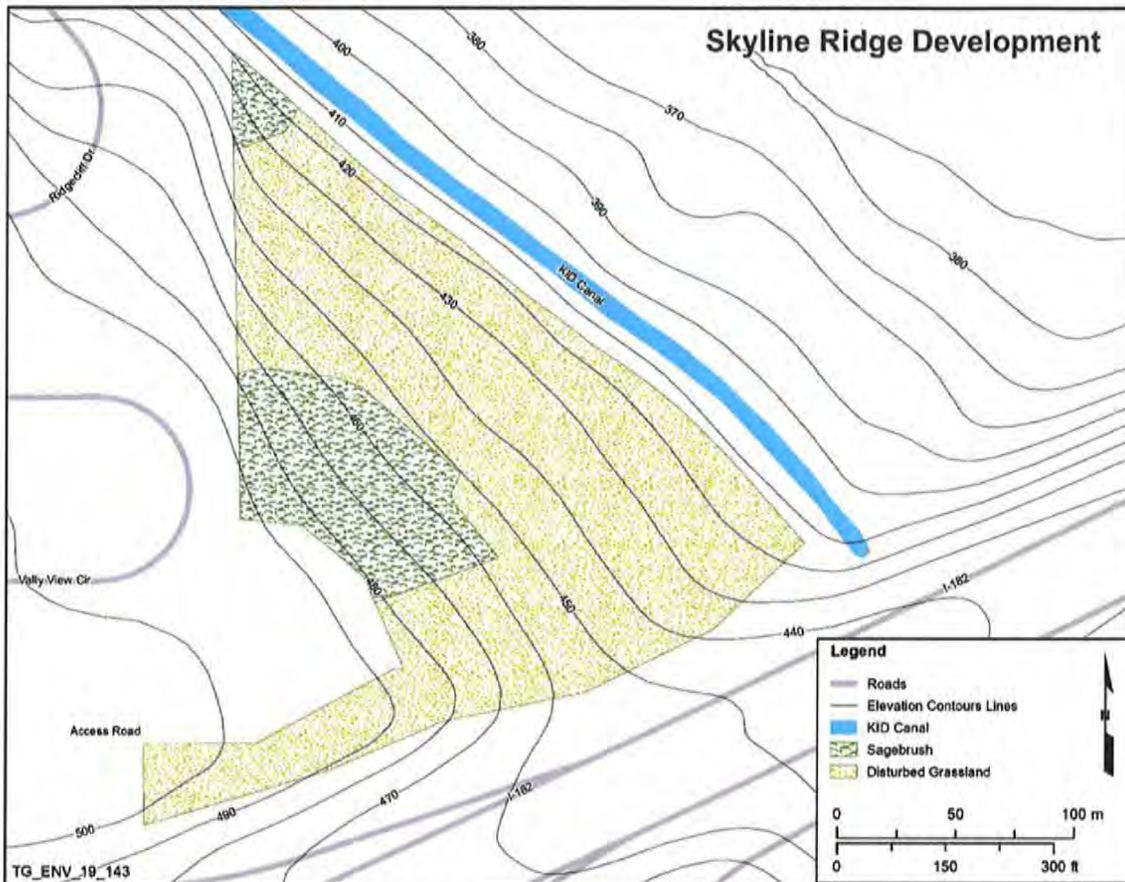


Figure 8. Sagebrush Outcroppings



**Figure 9. Site Vegetative Cover Map**

In the sagebrush outcropping, sagebrush, and green rabbitbrush are prevalent. To document the prevalence of sagebrush and green rabbitbrush in these areas, a shrub survey was conducted in a 100 ft by 100 ft area within the larger sagebrush outcropping shown in Figure 9. Approximately 125 sagebrush and 20 green rabbitbrush were observed in the cordoned off area. Other vegetation described in Section 3.3 was mostly evenly distributed throughout the site with a high prevalence of Russian Thistle. During the summer of 2018, a wildfire consumed nearly all of the property. The larger stands of shrubs observed on the property along the western boundary were not impacted by the fire.

### 3.2 Hydrologic Features

There are no hydrologic features located at the Skyline South site. Adjacent to the multiple hydrologic features are present including the KID canal located along the northeastern boundary, farther north are various wetlands located in the Richland “biodiversity corridor” and the Yakima river. Based on the vicinity of the site to the Yakima river, the project is located in the Zone C flood plains as designated by Federal Emergency Management Agency (FEMA) as “areas of minimal flooding (no shading)” and thus falls outside of the 100-year and 500-year flood event boundaries, which corresponds to a less than 0.2 percent annual chance of a flood. FEMA determines flood elevations and flood plain boundaries. These are published in Flood Hazard

Boundary Maps based on a 100-year flood event. The FEMA designated flood plains for the Skyline South site are shown in Figure 10.



Figure 10. FEMA Flood Zones

### 3.3 Site Species and Habitat

The Skyline South site is disturbed grassland and shrub-steppe land. Previously, the property was designated as Mountain Basins Big Sagebrush Shrubland and priority Shrub-Steppe habitat but has since been reclassified as disturbed lands by the State of Washington Department of Fish and Wildlife (WAFWS), as documented in Appendix B and discussed in Section 3.3.1. In the summer of 2018, a majority vegetation at the Skyline South site was burnt by a fire of unknown cause. Most vegetation has since been reestablished at the site and evidence of the fire was not noted during the site visit conducted on September 10, 2019. During the site visit, no animal species were observed at the Skyline South site. However, the area and biodiversity corridor is likely home to some small mammals and birds typically of the area. The adjacent Richland “biodiversity corridor” is likely the primary habitat to wildlife in the area.

The plant species described below were observed at the Skyline South site during the site visit.

**Big Sagebrush (*Artemisia tridentata*):** Big sagebrush are evergreen shrubs with blue-gray to blue-green leaves and are native to the Columbia Basin. Plants have spreading branches from numerous main stems. Big sagebrush range in size from 2 ft up to 13 ft. Plants are adapted to arid areas of the West. Its evergreen leaves provide food and habitat for numerous species of animals (Tilley et al., 2008). Big sagebrush observed at the Skyline South site is shown in Figure 11.



**Figure 11. Big Sagebrush (*Artemisia tridentata*) at Skyline South**

**Bluebunch Wheatgrass (*Pseudoroegneria spicata*):** Bluebunch wheatgrass is a native perennial wheatgrass and is the state grass of Washington. Bluebunch wheatgrass is a large bunchgrass and grow from 1.5 ft to 4 ft in height. This grass begins to grow in March and forms seed spikes in late-June. Plants have extensive root systems and spread by seed. Bluebunch wheatgrass can be found on thin, rocky site and on very steep slopes. Bluebunch wheatgrass provide forage for large mammals and other wildlife (Ogle et al., 2010). Bluebunch wheatgrass was observed at the Skyline South site is shown in Figure 12.

**Common Yarrow (*Achillea millefolium*):** Common yarrow is a member of the sunflower family (Asteraceae) and is a perennial herb. Plants product several stems from an underground horizontal rootstock (rhizome). Leaves have varying degrees of hairiness and are evenly distributed along the stems. Plants flower May through June with whiteish to yellowish-white clusters of flowers. Yarrow is commonly found in mildly disturbed soil in grasslands. It is may be invasive in some regions and habitats (Hurteau, 2006). Yarrow was observed at the Skyline South site is shown in Figure 12.



**Figure 12. Bluebunch Wheatgrass (*Pseudoroegneria spicata*) and Yarrow (*Achillea millefolium*) at Skyline South**

**Canadian Horseweed (*Conyza canadensis*):** Canadian horseweed is herbaceous winter or summer annual native to North America. Canadian horseweed produce numbers flowers that results in windborne seed. Flowers hears are very small are white or purplish. Plants are members of the sunflower family (Asteraceae). Plants commonly grow in grasslands and disturbed sites (Tilley, 2012a).

**Cheatgrass (*Bromus tectorum*):** Cheatgrass is a prevalent, non-native, annual or winter annual grass, with “softly downy to short-hairy throughout, and generally 4 in. to 24 in. tall. The roots are shallow, and flowering occurs from April to mid-June depending on climate and location. Cheatgrass is reproduced by seen with germination in the fall and winter to early spring. It is considered noxious in roadsides, cropland, hayland, pastureland, etc. Cheatgrass is common in the Columbia Basin and is abundant over larges areas of sagebrush plant communities (Skinner et al., 2008).

**Green rabbitbrush (*Chrysothamnus viscidiflorus*):** Green rabbitbrush is a native, deciduous shrub with long narrow leaves similar to sagebrush. Plants can range in size from 2 ft to 4 ft tall. They often grow mixed with sagebrush in dry, sandy soils. Green rabbitbrush flower in later summer to early fall with bright yellow clusters of flowers. Shrub are plentiful in the Tri-Cities area, growing abundantly in West Richland and Tri-Cities roadways (O’Conner and Wieda, 2001). Green rabbitbrush was observed during the site visit conducted on September 10, 2019 and is shown in Figure 13.



**Figure 13. Green Rabbitbrush (*Chrysothamnus viscidiflorus*) at Skyline South**

**Prickly lettuce (*Lactuca serriola*):** Prickly lettuce is annual that is native to the Mediterranean region. Prickly lettuce are a member of the sunflower family (Asteraceae) and have a deep tap root. Plants produce a milky latex and produce many seeds. Plants grow from 1 ft to 5 ft in height. Flowering occurs late spring to early summer producing many yellow flowers. Prickly lettuce is considered a common weed throughout the United States (WSU, 2019).

**Western Aster (*Symphyotrichum ascendens*):** Western aster is native to western North America. Western aster occurs throughout western North America and is common in arid areas in sagebrush, rabbitbrush and pinyon juniper communities. Western aster is a rhizomatous perennial forb with flowering stems containing clusters of numerous flower heads. Flowers head bear purplish to violet ray flower surrounding a series of yellow disk flowers (Tilley, 2012b).

**Russian Thistle (*Salsola kali*):** Russian thistle is a bushy annual broadleaf plant that grows from 6 in. (15 cm) to 3 ft (0.9 m) in height. It is best grown in sandy soils and in disturbed soils. Plants produces numerous seeds from green flowers. Flowers bloom from mid-summer to fall. Russian thistle rapidly germinate and are considered to be invasive (UC, 2019).

### 3.3.1 Priority Species and Habitat

Based on a review by WAFWS, there are no Priority Species and Habitat (PHS) issues at the Skyline South site (referred to by WAFWS as Falcon Ridge II). This determination is documented at Appendix B. WAFWS noted that although the PHS database identifies the Skyline South site as priority shrub-steppe habitat, that a majority, “if not all of the land” is previously disturbed and is thus not of issue for development.

### 3.4 Management Recommendations

There are no significant impacts to critical fish and wildlife habitat and conservation, nor any PHS issues at the Skyline South site. However, based on the site topography and its proximity to the KID canal, implementation of best management practices (BMPs) to limit stormwater impacts during construction and post-construction are recommended. For construction, such BMPs for erosion and sediment control, may include:

- Site planning, grading, and construction sequencing
- Preservation of natural vegetation (where possible)
- Implementation of erosion control measure including dust control, geotextiles, seeding, etc.
- Implementation of sediment control measures including sediment traps, silt fences, storm drain inlet protection, etc.
- Good housekeeping and hazardous material management including general construction waste management, spill prevention, and control, etc.
- Inspections and enforcement of stormwater requirements.

In addition to erosion control measures as outlined in Section 5.6.2 and in the Geotechnical Investigation Report (Appendix A), the following BMPs are recommended to mitigate stormwater impacts post-construction:

- Use of infiltration measures such as grassed swales and infiltration trenches, etc. (where applicable)
- Inspection and maintenance of BMPs and erosion control measures for slope management.

### 3.5 Mitigation Issues

There are no significant impacts to critical fish and wildlife habitat and conservation nor any PHS issues at the Skyline South site. Thus, there are no mitigation issues for the Skyline South site.

### 4.0 WETLANDS

Based on a review of the U.S. Fish and Wildlife Service National Wetlands Inventory (NWI) and the determination of no PHS at the site by WAFWS, there are no wetlands present at the Skyline South site. The Critical Areas map which shows the location of wetlands in the vicinity of Skyline South (Figure 7). No surface waters nor apparent depression that would be seasonally inundated with water (based on site topography) are present at the Skyline South site, nor any vegetative cover consistent with wetlands. Adjacent to the site, the NWI identifies multiple Freshwater Forested/Shrub Wetlands present within the Richland "biodiversity corridor."

Although the closest NWI wetland is within 300 ft of the Skyline South site, based on the site topography and the presence of the KID canal and adjacent accessed road, site activities will result in no significant impact to adjacent wetlands.

## 5.0 GEOLOGIC HAZARDS

Geologic hazards are identified and designated consistent with minimum guideline classifications defined in *Washington Administrative Code (WAC) 365-190-080(4)*. Geologically hazardous areas including areas susceptible to the following types of hazards (City of Richland Shoreline Master Program (SMP) Update [Anchor QEA, 2016]):

- Erosion hazard
- Landslide hazard
- Seismic hazard
- Mine hazard

To identify the geologic site conditions, White Shield, Inc. performed a geotechnical investigation comprised of a literature review and field investigation for the Skyline South site. The results of the geotechnical investigation are presented in the Geotechnical Investigation Report (Appendix A).

### 5.1 Site History

The Skyline South site is currently undeveloped land with disturbed and undisturbed soils. There is no previously known development at the Skyline South site, with the exception of the installation of currently present electrical poles and lines. The Geotechnical Investigation Report (Appendix A) describes the Skyline South site geology and geological history as follows:

*"The site is classified as outburst flood deposits of Glacial Lake Missoula, generally comprised of sand and silt (Qfs<sub>3</sub>). There are nearby exposures of outburst flood deposits, sand and silt (Qfs<sub>2</sub>), gravel (Pleistocene to Pliocene) (QP<sub>Lg</sub>), and continental sand, silt and clay beds (Pliocene to Miocene) (P<sub>L</sub>Mc).*

*The Qfs deposits are generally described as lacustrine silt and fine sand a fluvial coarse to fine sand. The Qfs<sub>2</sub> are older deposits, and Qfs<sub>3</sub> younger. The QP<sub>Lg</sub> are fluvial deposits consisting of compact to unconsolidated, clasts include quartzite, gneiss diorite, volcanic porphyries and basalt. The formation is generally referred to as the plio-Pleistocene and underlies the oldest Pleistocene deposits, but overlies the Ringold formation. We have found that this formation can contain any amount of gravels, sands, silts, and clays, some of which we have found to be highly expansive. It is generally impermeable. The P<sub>L</sub>Mc deposits are described as interbedded fluvial and lacustrine facies, local pebbles lenses and stringers. These are the Ringold formation and are generally capped by pedogenic carbonate and are considered impermeable."*

As part of the development of the 22-lot subdivision, site grading and the creation of a stormwater basin and/or infiltration are planned and will result in the disturbance of Skyline South site soils.

## **5.2 Site Soils, Geology, and Drainage**

The Skyline South site slopes moderately downhill northeasterly towards the adjacent Yakima River floodplains which run parallel to the site beyond the canal and access road located at the northeastern Skyline South site boundary. The site has various undulations and a manmade ridge from fill dumped along the northeastern project boundary approximately 20 ft from the adjacent KID canal. As indicated in the Geotechnical Investigation Report (Appendix A), the majority of the site is ungraded native soil deposits. The Pleistocene unit or Ringold Formation were not encountered within the proposed lot grading area but were found to be present in the area proposed for stormwater infiltration use.

No specific stormwater infiltration analysis was performed as part of the critical areas analysis or geotechnical investigation. Based on the site exploration performed as part of the geotechnical investigation, the proposed location of stormwater basin and/or infiltration pond, as shown in Figure 14, should be suitable if constructed by structural fill and property keyed and benched into the location. The use of underlying impermeable soils currently present at this location would not likely provide the infiltration capacity necessary for stormwater management at the Skyline South site.

## **5.3 Site Exploration**

As part of the geotechnical investigation performed by White Shield, Inc., 16 exploration test pits were excavated at the site to perform geotechnical analysis and assess soil conditions at the Skyline South site. Results of the site exploration generally identified fine-sand top soils with little amounts of fine to course gravel and trace cobble with depth. A further description of the site exploration activities performed and specific results for test pit excavations (including test pit logs) are detailed in the Geotechnical Investigation Report (Appendix A). The location of site exploration test pits are shown in Figure 15.

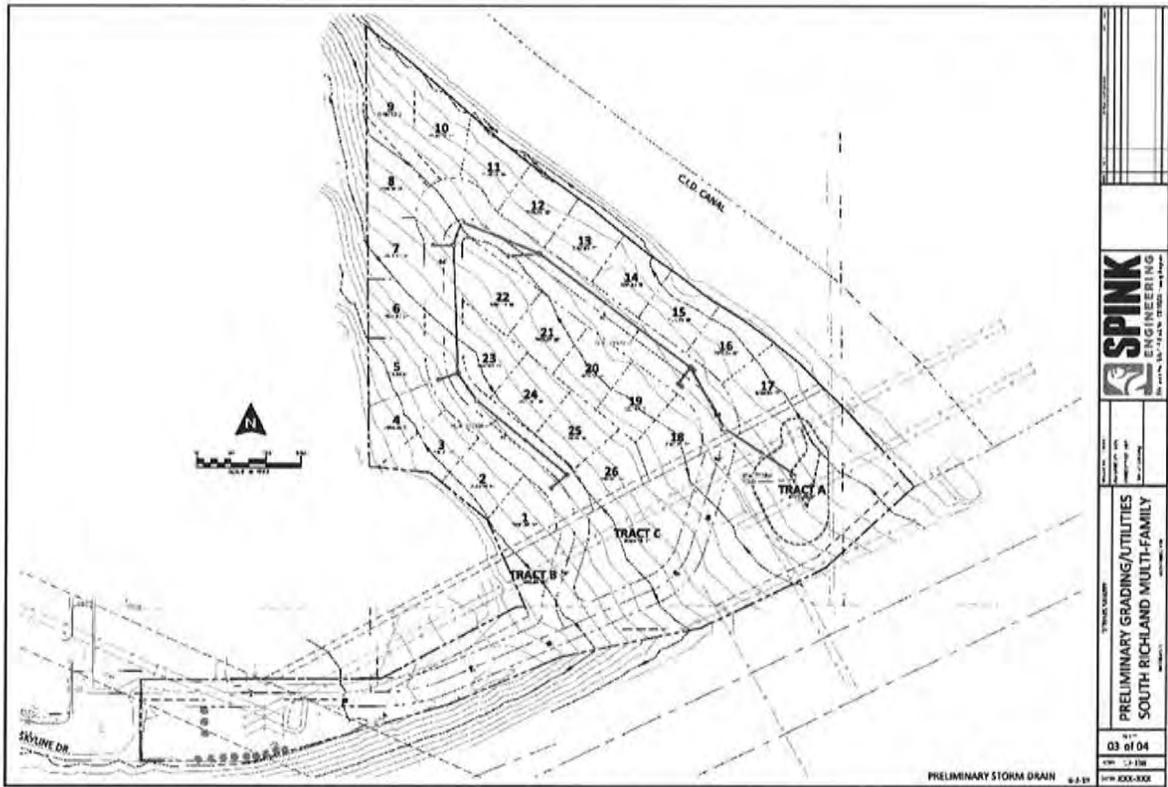


Figure 14. Proposed Stormwater Management Map

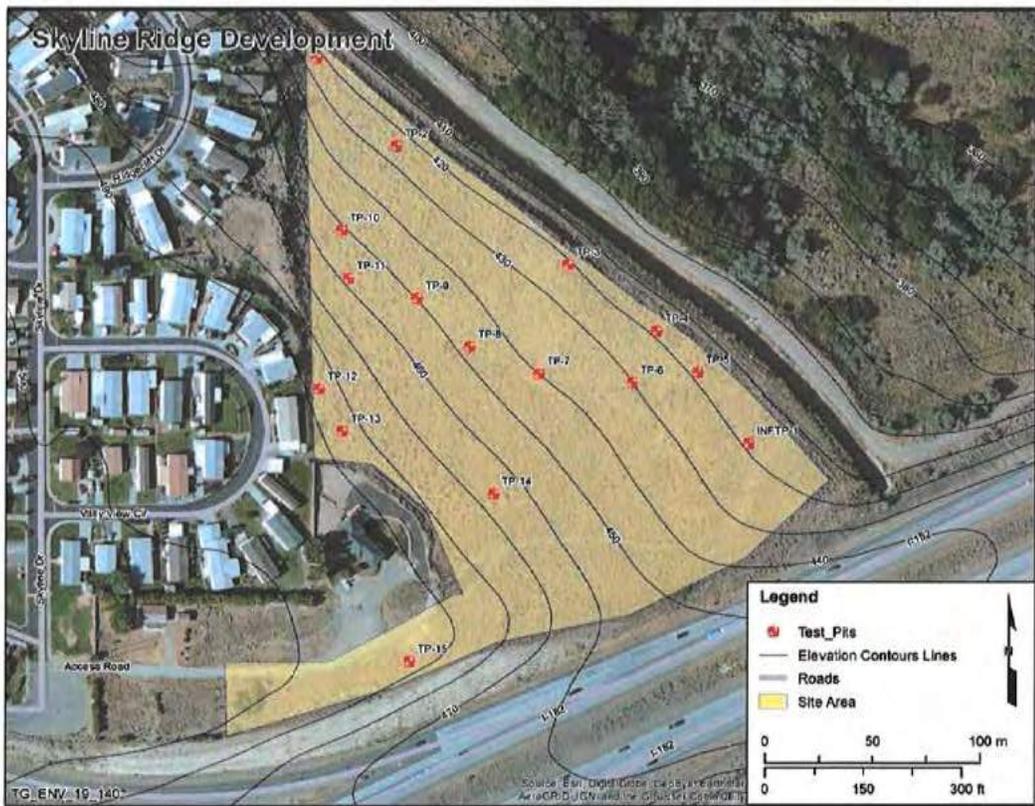


Figure 15. Site Exploration Map

#### 5.4 Groundwater Conditions

Based on the assessment of nearby well logs, groundwater is assumed to be at a depth of 80 ft below ground surface. Groundwater at the Skyline South site in Benton County is part of the Columbia River Plateau regional aquifer system. The Columbia River Plateau regional aquifer systems pans approximately 50,600 square miles, extending from northern Idaho, northeastern Oregon, and southeastern Washington. The aquifer system is made up of four aquifers: the suprabasalt sediment (overburden) aquifer, Saddle Mountain aquifer, Wanapum aquifer, and Grande Ronde aquifer. The Columbia Basin project, which redistributes water through a series of canals for agricultural use, has impacted water levels within the project area and largely influenced groundwater movement within the project area (Anchor QEA, 2016).

Precipitation and irrigation waters (where applicable) are largely the primary sources of groundwater recharge in the area. Local, state, and federal regulations have been established to minimize adverse impacts to groundwater quality. Such regulations govern water wells, septic tanks, storm water, etc. Additionally, to protect groundwater supply as required under the Federal Safe Drinking Water Act, the Washington Department of Health requires Group A water systems to implement wellhead protections programs to prevent contamination to groundwater used as a drinking water source (Anchor QEA, 2016).

#### 5.5 Geologic Hazards

Based on City of Richland's SMP Inventory as documented in the Benton County geographic information system dataset, a review of geologic hazards present at the Skyline South site was performed. Steep slopes (15 percent or greater slope) are present at a majority of the site and thus may be an erosion hazard. Based on the geologic hazard definitions as described in the City of Richland SMP Update (Anchor QEA, 2016), no landslide hazards and mine hazards are present at the site.

Additionally, there is no identified seismic hazards as the site. However, the adjacent Richland "biodiversity corridor" is identified as a geologic hazard due to moderate to high liquefaction potential. The seismic activity in Benton County is low to moderate with a very low-to-high liquefaction susceptibility. Liquefaction can be described as phenomena in which soil strength and structure degrade quickly and act as quicksand as the result of earthquakes or strong vibrational occurrences. Liquefaction typically occurs in saturated loose sandy soils which typically occur in low-lying areas along coastal and lake shorelines and river valleys.

#### 5.6 Proposed Site Management

The mitigate existing geological hazards and allow for site development the Skyline South site will be regarded as shown in Figure 16. As outlined in the Geotechnical Investigation Report (Appendix A), various geotechnical design recommendations for site grading and earthwork, site drainage and stormwater infiltration, foundations, pavements and slabs, and performance of onsite inspection visits by the geotechnical engineer will be performed to monitor earthwork, soil, and groundwater conditions and to document the geotechnical aspects of regrading the site and construction of Skyline South site infrastructure.

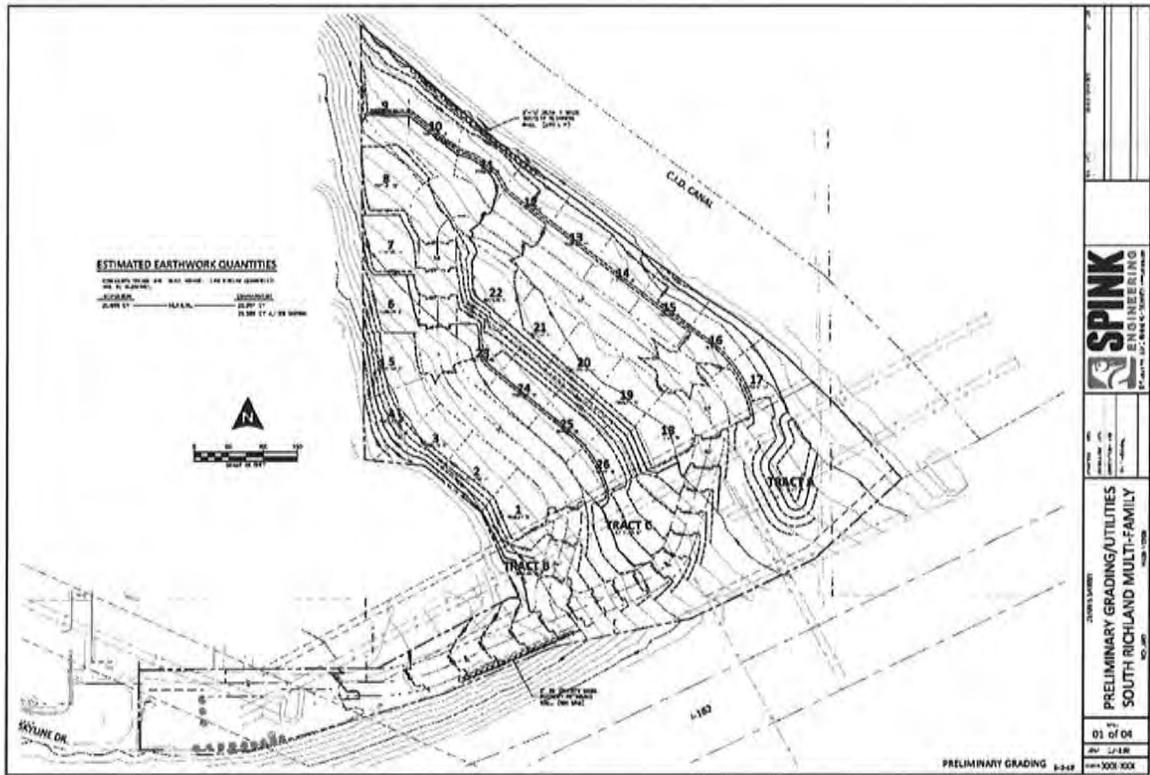


Figure 16. Site Grading Map

### 5.6.1 Site Safety and Appropriateness

Site safety will be managed by Sawby Construction, LLC, and other approved sub-contractors. Sawby Construction is responsible for maintaining a Site Safety Plan and Site Safety Manager as required. It is recommended that site safety meetings be conducted regularly as determined in the Site Safety Plan. Additionally, geotechnical design recommendations as outlined in the Geotechnical Investigation Report (Appendix A) should be adhered to, as applicable, including recommendations for site preparation, earthwork, and foundations. It is noted as part of the Geotechnical Investigation Report (Appendix A), that there is the potential to encounter problem soils, specifically plio-Pleistocene soils which have the potential to be highly expansive. Thus, compliance with appropriate site monitoring and inspection procedures are necessary to prevent foundation and road damage and ensure safe site conditions. Refer to the Geotechnical Investigation Report (Appendix A) for specific recommendations for site preparation, earthwork, and foundations.

### 5.6.2 Surface Water Management

As detailed in the Geotechnical Investigation Report (Appendix A), site grading techniques will be implemented to properly manage site drainage and stormwater. Landscape and lot grading be performed to meet building drainage requirements and to prevent ponding. All impervious surfaces will be sloped to drain into approved catch basins and then be piped to the onsite stormwater basin/infiltration pond as designed. Moisture conditioned and compacted final slope surfaces will be achieved to a maximum slope angle of 1V:2H for smooth slopes and 1V:3H for grassed and mowed slopes. If an onsite slope is steeper than 1V:3H, installation of erosion protection to prevent surface erosion will be designed into the final landscaping plan for the lot. Erosion protection measures for slope protection may include the following:

- Planting of drought-resistant plants (for arid landscapes) and plants to be watered using drip irrigation or light hand watering
- Use of erosion control blankets or geotextiles with sparsely placed suitable vegetation
- Use of landscape fabric covered with decorative gravel, rock, and cobble.

An onsite stormwater system including catch basins and a stormwater basin/infiltration pond will be used manage stormwater onsite. It is recommended in the Geotechnical Investigation Report (Appendix A) that structural fill be used to construct the stormwater basin/infiltration pond.

### 5.6.3 Construction Scheduling

Skyline South site construction will commence when approval of necessary permits, plans, and other necessary documentation is approved and obtained from project stakeholders as required. Construction and engineering inspections will be performed throughout the project. Inspections will be conducted as outlined in Section 5.6.4 to ensure proper site management and inspection and approval onsite activities and conditions.

#### 5.6.4 Site Monitoring and Inspection

Construction and engineering inspections will be performed during site grading and construction to monitor site conditions and identify unexpected soil and groundwater conditions not previously identified during site exploration conducted as part of the geotechnical investigation. As stated in the Geotechnical Investigation Report (Appendix A), a geotechnical engineer, should perform the following onsite engineering inspections:

- Review of building construction plans
- Observation and approval of site grading, soil placement, and compaction
- Inspection, testing, and approval of building foundation sub-grade soil conditions
- Inspection and documentation of foundation and stem-wall backfill
- Inspection and documentation of stormwater collection and infiltration system
- Approval of final site grading.

### 6.0 CRITICAL AQUIFER RECHARGE AREAS

Based on City of Richland's SMP Inventory as documented in the Benton County geographic information system dataset, Skyline South site not identified as CARA. No CARAs are identified within the areas immediately adjacent to the Skyline South site.

#### 6.1 Hydrogeologic Characteristics

##### 6.1.1 Groundwater

Refer to Section 5.4 for the description of groundwater conditions at the Skyline South site.

##### 6.1.2 Existing Water Infrastructure

There are no existing wells at the Skyline South site as confirmed during the site visit and through a search of the State of Washington Department of Ecology Well Report Viewer<sup>2</sup>. City of Richland water lines are present at the northeastern site boundary adjacent to the KID canal. Water will be provided to Skyline South site development and residences through connection to the City of Richland water lines as shown in Figure 17.

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<sup>2</sup> <https://fortress.wa.gov/ecy/wellconstruction/Map/WCLSWebMap/default.aspx>

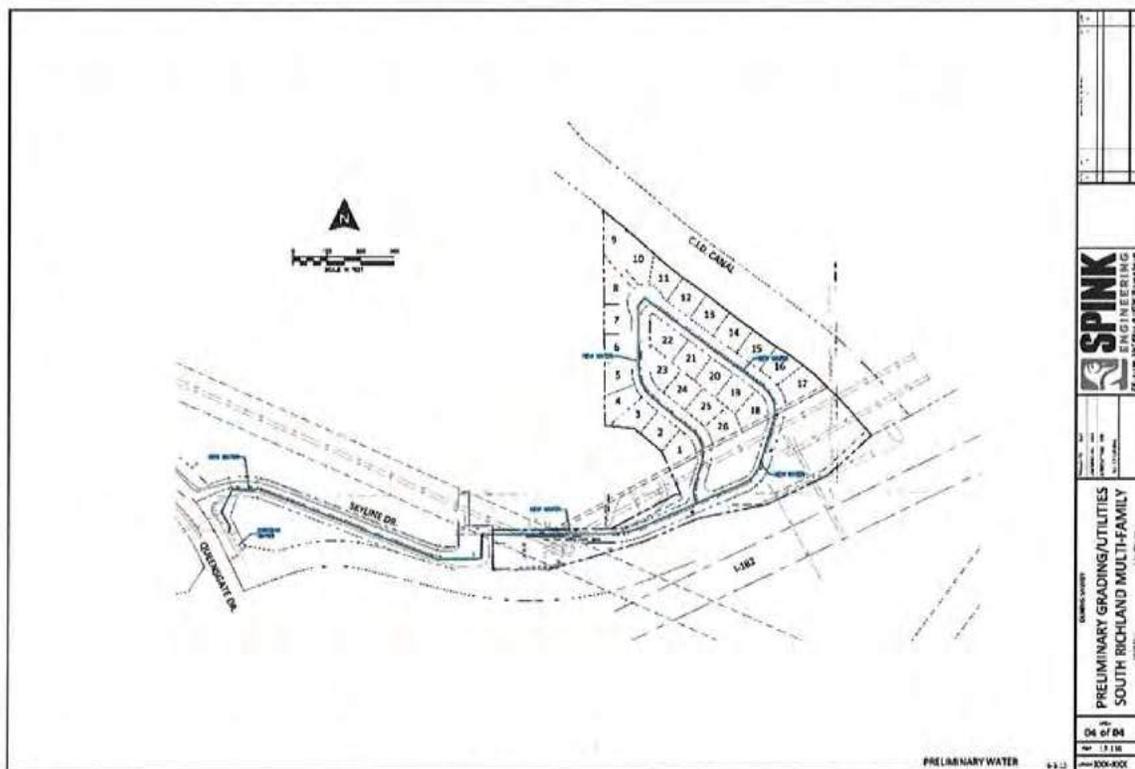


Figure 17. Proposed Water Infrastructure Map

## 6.2 Surface Waters

There are no surface waters at the Skyline South site. The KID canal is adjacent to the site along the northeastern site boundary. Additionally, there are freshwater forested/shrub wetlands located in the Richland “biodiversity corridor” located north of the KID canal and adjacent access road. A stormwater basin/infiltration pond and associated system and catch basin are proposed for permanent Skyline South site stormwater management.

## 6.3 Groundwater Quality and Management

There are no known groundwater quality issues at the Skyline South site. As indicated in Section 6.1.2, there are currently no groundwater wells at the site. Groundwater wells are not intended to be installed as part of development. Water will be provided to the site by the Richland Water Utility, which pumps and purifies water, maintains the water distribution system. Backflow protection for all connections to the City of Richland water distribution system is required. Further information on backflow protection requirements can be found at the City of Richland website’s Water Utility webpage<sup>3</sup>. The water quality report for the City of Richland is also available at this webpage.

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**APPENDIX A**  
**GEOTECHNICAL INVESTIGATION REPORT**

**Geotechnical Investigation Report  
Sawby Richland Development  
12904 S. Grandview Lane  
Kennewick, WA 99338**

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June 27, 2019

Submitted To:

Mr. Dennis Sawby  
Sawby Construction, LLC  
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Sawby Richland Development  
Richland, Washington

Geotechnical Investigation Report  
June 27, 2019

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- Figure 1: Site Vicinity Map
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**APPENDIX A**

Test Pits TP-1 through TP-15 and INF TP-1

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**CERTIFICATE OF ENGINEER**

***Geotechnical Investigation Report  
Sawby Richland Development  
Richland, Washington***

**The technical information and data contained in this report were prepared by, or under the direction and supervision of the undersigned, whose seal, as a professional engineer licensed to practice as such, is affixed below.**

Prepared by:

Benjamin P. Staehr, PE  
Senior Geotechnical Engineer



*Sawby Richland Development  
Richland, Washington*

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June 27, 2019*

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## 1.0 INTRODUCTION

### 1.1 Project Description and Background Information

White Shield, Inc. (WSI) is pleased to present this Geotechnical Investigation Report for the construction of a proposed 22-lot subdivision within parcels 115983012926002 and 122982012925003 in Richland, WA. The location of the site is shown in Figure 1, Vicinity Map and preliminary site plan is provided on Figure 2, Exploration Site Plan. This area will include a 22-lot subdivision with associated roadways, utilities, and stormwater infiltration.

The site slopes moderately from the southwest to northeast and is bordered by the Hills Mobile Home Park to the west, KID irrigation canal to the northeast, and Interstate 182 to the south.

This report presents the results of our geotechnical investigation of this site. It includes a review of the site geology, a description of site soils and subsurface profile, and geotechnical recommendations and specifications for site grading and construction of home foundations consistent with International Residential Code requirements.

### 1.2 Scope of Services

Our scope of services for this project included the following:

- **Geologic Literature Review:** Relevant, readily-available geologic information on the site and surrounding area was reviewed for information regarding geologic conditions at or near the site.
- **Site Exploration:** Sixteen exploration test pits were excavated at the site to assess the soil conditions and to obtain representative soil samples for laboratory testing.
- **Laboratory Testing:** Soil testing included index properties testing, and sieve analyses, as required.
- **Geotechnical Engineering Analysis:** Data collected during the site exploration, literature research, and laboratory testing were analyzed to develop project-specific geotechnical design and construction recommendations for the project.
- **Report Preparation:** This geotechnical report contains the results of our work including information as it relates to the following:
  - Site exploration and laboratory test results
  - Soil/rock conditions and subsurface profile
  - Earthwork and site preparation recommendations
  - Site grading and soil placement recommendations
  - Slope design and construction recommendations
  - Foundation subgrade soil preparation recommendations
  - Allowable soil bearing capacities and maximum foundation bearing pressures
  - Foundation wall design parameters and design earth pressures
  - Pavement and slab-on-grade recommendations
  - International Residential Code (IRC) 2015 seismic design parameters
  - General site grading and drainage control requirements

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- 
- **Geotechnical Construction Observation:** This report includes the outline of basic geotechnical requirements for construction observation and documentation to be performed during the construction process.

## 2.0 SITE INVESTIGATION

### 2.1 Literature Review

Information about the basic geology of the Pasco Basin was obtained from Lindsey (1996) and a discussion of the underlying Miocene-age basalt bedrock structure was provided from Reidel (et al., 1994). Information about the geologic setting of the site comes from many years of exploration work throughout Richland, West Richland, and Kennewick and from correlating the site data with regional geologic conditions.

### 2.2 Field Investigation

The subsurface investigation of this site included excavation of sixteen exploration test pits at locations shown on Figure 2.

The test pits were excavated with a tracked excavator. In general the test pits encountered fine sand top soil with little amounts of fine to coarse gravel and trace cobbles. All test pits heavily sloughed and intermediate gravel layers were encountered dependent in location. TP-14 and 15 near the top of the development included underlying silty sands. TP-15 included concrete rubble and debris to 6 feet. INF TP-1 encountered yellowish-orange soils including some clay content which we interpret as the underlying plio-Pleistocene unit which is exposed in the draw across the interstate. The test pit logs, provided in Appendix A (TP-1 through TP-15 and INF TP-1), include detailed descriptions of the subsurface soil types and condition.

### 2.3 Laboratory Testing and Analysis

Six soil samples were collected for classification and possible laboratory testing. All soil samples were classified under the Unified Soil Classification System (USCS). The soil descriptions were prepared according to the Burmister Classification System.

## 3.0 SITE CONDITIONS

### 3.1 Surface Conditions and Lot Slopes

The property is moderately sloping from the southwest to northeast with slight undulations throughout. The bulk of the site is ungraded native soil deposits. There are varying depths of dumped fill adjacent to the KID canal. Surface or subsurface water was not encountered during our explorations.

### 3.2 Site Soils

The local soils exposed during our explorations are generally outburst flood deposits of the Missoula floods with increasing amounts of gravel at depth. We did not encounter the plio-Pleistocene unit or Ringold formation within the lot grading area, however we did encounter the top of these units in the infiltration location.

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### 3.3 Regional and Local Geology

We reviewed the WADNR Geologic map of the Richland 1:100,000 Quadrangle (Riedel, et al.), 1994. The site is classified as outburst flood deposits of Glacial Lake Missoula, sand and silt (Qfs<sub>3</sub>). There are nearby exposures of outburst flood deposits, sand and silt (Qfs<sub>2</sub>), Gravel (Pleistocene to Pliocene) (QP<sub>Lg</sub>), and continental sand, silt, and clay beds (Pliocene to Miocene) (P<sub>L</sub>Mc).

The Qfs deposits are generally described as lacustrine silt and fine sand an fluvial coarse to fine sand. The Qfs<sub>2</sub> are older deposits, and Qfs<sub>3</sub> younger. The QP<sub>Lg</sub> are fluvial deposits consisting of compact to unconsolidated, clasts include quartzite, gneiss diorite, volcanic porphyries and basalt. This formation is generally referred to as the plio-Pleistocene and underlies the oldest Pleistocene deposits, but overlies the Ringold formation. We have found that this formation can contain any amount of gravels, sands, silts, and clays, some of which we have found to be highly expansive. It is generally impermeable. The P<sub>L</sub>Mc deposits are described as interbedded fluvial and lacustrine facies, local pebble lenses and stringers. These are the Ringold formation and are generally capped by pedogenic carbonate and are considered impermeable.

Based on our explorations we believe that the majority of the site consists of outburst sands and silts, with underlying Ringold soils and varying amounts of plio-Pleistocene soils at depth.

## 4.0 GEOTECHNICAL DESIGN RECOMMENDATIONS

### 4.1 Foundation Configuration

Building foundations should be extended through any fill soils on site and founded on native site soils below.

### 4.2 Site Preparation

Clear and grub all cut and fill areas of all surface vegetation and either use as landscape fill or haul offsite. Remove all roots and organic material, loose or soft soil, and old topsoil from all areas to receive fill soil, rockeries, pavement, foundations, driveways, etc. Positive drainage away from structures and pavement subgrade areas should be constructed and maintained throughout the project.

### 4.3 Earthwork

#### 4.3.1 Excavations

Excavation of the surface fine sand and silt soil can be accomplished with a backhoe with a smooth bucket to prevent disturbance of subgrades or through mass grading equipment such as scrapers or dozers.

A maximum slope of 1V:2.0H (vertical to horizontal) is recommended for all unsupported excavation sidewalls in the sandy soil at the site. Any trenching or excavation over 4.0 feet bgs requires either the previously-mentioned side slopes or shoring and bracing of the excavation.

This information on slope protection is based on Occupational Safety and Health Administration (OSHA) regulations and is provided entirely as a service to our Client.

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Under no circumstances should the Client or their contractors or subcontractors interpret this information to mean, or otherwise imply, that White Shield, Inc. (WSI) assumes responsibility for construction site safety and/or temporary slope stability, or the contractor activities. Such responsibility is not implied and should not be inferred.

#### 4.3.2 Site Grading

All excavated materials will be kept on site and used as backfill around foundation walls and structures and for grading around the homes. All soil fill placed on this lot during construction is considered to be structural fill that must be placed and compacted to the specifications listed in the following section 4.4.4 Structural Fill.

#### 4.3.3 Cut and Fill Slopes

All finish slopes shall be graded to a maximum slope of 1V:2H. All fill slopes shall be constructed from the base upward by compacting the soil in layers, overbuilding the slope, and then finish grading to a maximum slope of 1V:2H. Temporary soil cuts should not exceed four feet unless approved by the geotechnical engineer and plans are made for providing immediate permanent structural support.

#### 4.3.4 Structural Fill

For structural fill, use existing onsite soil or imported granular soil. The onsite soil can be used as structural fill provided it is free of organics, it is installed in maximum 8-inch-loose lifts and it is compacted in place. Structural fill soil shall not contain boulders exceeding 6 inches in diameter. Backfill soil next to building foundations shall be classified as primarily sand and gravel with no boulders or clasts exceeding 3 inches in diameter.

Imported fill should be well graded between coarse and fine with a maximum particle size of 1 inch and contain no deleterious materials. Imported fill should have a less than 20 percent by weight passing the No. 200 sieve. Imported soil fill shall be approved for use by a geotechnical engineer and soil compaction criteria shall be established for the specific material.

All structural fill shall be installed in 8-inch, maximum loose lifts, it shall be moisture conditioned to optimum moisture content and it shall be compacted to a dry density of at least 95 percent of its maximum dry density as determined by the modified proctor test using ASTM International (ASTM) D1557 or per onsite specification and approval by the geotechnical engineer.

Vibratory roller compactors or wheel roller compaction equipment will produce the best soil compaction results at this site. For backfilling next to the foundation walls, we recommend using a hand-operated jumping jack.

#### 4.4 Potential Problem Soils

*Though we did not encounter any of the plio-Pleistocene soils within the main area of the development, we did observe the top of this formation in the lower infiltration basin. These soils have exposures to the south near Tagaris Winery. These soils have a potential for being highly expansive based on our past experience. Although not encountered, due to the limited nature of test pit explorations it is possible that these*

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*soils may be uncovered during mass grading. We recommend that we be retained to monitor grading activities and contacted immediately if these soils are encountered. They contrast from the overlying sand and silt soils in both color and texture and are generally easily identified. If these soils are encountered, we need to be contacted immediately for further evaluation. There is the potential need for further treatment of these soils to prevent foundation and road damage if they are found to be expansive.*

#### 4.5 Foundations

##### 4.5.1 Design

The proposed buildings can be supported on conventional spread footings. All footings should be supported on properly prepared subgrade in native soils or on structural fill as discussed in the previous paragraphs. If we are retained to monitor mass grading, there is no need for further geotechnical evaluation of individual lots.

The minimum widths of the continuous wall footings shall be consistent with current IRC standards. The bottom exterior of all footings shall be at least 24 inches below the lowest adjacent exterior grade for frost protection.

WSI recommends using a maximum soil bearing pressure of 1,500 pounds per square foot ( $\text{lb/ft}^2$ ) for all footings that bear on the near-surface, or silty sand soil consistent with current IRC standards. Please note that this allowable soil bearing pressure assumes a minimum confinement depth, or depth of burial, of 2.0 feet bgs. For interior footings placed directly on the prepared subgrade and not backfilled, reduce the allowable bearing pressure to 750 psf.

An assessment of loading on the foundation system by the home designer, architect, or structural engineer is required to verify that the footing sizes comply with the previously-mentioned requirements and the footings are correctly proportioned for the specified bearing capacity.

For consideration of short period seismic and wind pressures, the allowable footing bearing pressure values provided in this section may be increased by one-third. Use a dynamic bearing capacity of  $2,000 \text{ lb/ft}^2$  when sizing footings for transient forces. For lateral forces, use a friction coefficient of 0.4 between the base of the footings and the underlying subgrade soil.

##### 4.5.2 Settlement

WSI estimates a maximum total settlement of less than 0.5 inch and a maximum differential settlement on the order of 30 percent of the maximum settlement over 50 feet. Our settlement estimate assumes that no disturbance of the foundation soil would be permitted during excavation and construction and the footings are prepared as described previously.

##### 4.5.3 Foundation Backfill

The clear space around the exterior of all foundations and between the stem walls and footing trenches shall be backfilled in lifts and compacted to a minimum of 90 percent of maximum dry density per ASTM D1557, or per onsite inspection and approval by

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the geotechnical engineer. Care must be taken with the backfilling operation to provide foundation subgrade soil confinement pressure and to help limit infiltration and future settlement around the foundation. At this site, careful backfilling behind the basement walls is critical for preventing any storm drainage inflow into the foundation area.

**4.5.4 Foundation Walls and Lateral Earth Pressure**

For the design of elevated stem walls and garage foundation walls, use the data in the following Table 1:

Table 1: Native Soil Design Parameters

Assumed Soil Density	=	110 lb/ft <sup>3</sup>
Assumed Soil Internal Friction Angle	=	30 degrees
Coefficient of At-Rest Earth Pressure,	$K_0$ =	0.50
At-Rest Earth Pressure Equivalent Fluid Density	=	55 lb/ft <sup>3</sup>
Coefficient of Active Earth Pressure,	$K_a$ =	0.33
Active Earth Pressure Equivalent Fluid Density	=	37 lb/ft <sup>3</sup>
Coefficient of Passive Earth Pressure,	$K_p$ =	3.00
Passive Earth Pressure Equivalent Fluid Density	=	330 lb/ft <sup>3</sup>

Basement foundation walls should generally be designed using the at-rest lateral earth pressure value.

All foundation walls must be backfilled with compacted soil to fully mobilize the passive earth resistance. Backfill placed within 3 feet of foundation walls should be placed in maximum 12-inch, loose lifts and compacted to at least 90 percent of the maximum dry density, as determined by ASTM D1557.

**4.5.5 Seismic Design Criteria**

The soil profile at the site consists of silty sand surface soil underlain by dense fine to medium sand followed by dense sandy gravels. This soil profile conforms to a seismic design "Site Class D", still soil. For this site, use the following seismic design parameters found in the following Table 2:

Table 2: 2012 IBC Seismic Design Parameters

	Short Period	1 sec
Maximum Credible Earthquake Acceleration	$S_s = 0.422$	$S_1 = 0.161$
Site Class	D	
Site Coefficient	$F_a = 1.462$	$F_v = 2.277$
Adjusted Spectral Acceleration	$S_{MS} = 0.617$	$S_{M1} = 0.367$
Design Response Acceleration	$S_{DS} = 0.412$	$S_{D1} = 0.245$
Design Peak Ground Acceleration	0.186 g	

Based on the design response acceleration ( $S_{DS}=0.412$ ) the buildings on this site are assigned a Seismic Design Category D consistent with IRC Table R301.2.2.1.1

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Additionally, due to a lack of near surface water, the potential for liquefaction of site soils under seismic loading is considered low to moderate for this site.

#### **4.6 Slabs on Grade**

Slabs-on-grade should be supported on subgrade soils prepared as described in Section 4.3.2 Site Grading subsection of this report. Clean crushed rock, at least 6 inches thick and compacted into place should be placed throughout the planned slab areas and over the exposed native soils. We recommend that all floor slabs be underlain by at least four inches of free-draining gravel with less than three percent by weight of the material passing Sieve No. 200 for use as a capillary break. A suitable vapor barrier, such as heavy plastic sheeting (6-mil minimum), should be placed over the capillary break material. An additional 2-inch thick moist sand layer may be used to cover the vapor barrier. This sand layer is optional and is intended to protect the vapor barrier membrane during construction.

#### **4.7 Pavements**

Pavement subgrade preparation, and structural filling where required, should be completed as recommended in the 4.3.2 Site Grading and 4.3.4 Structural Fill subsections of this report. The pavement subgrade should be proof-rolled with a heavy, rubber-tired piece of equipment to identify soft or yielding areas that require repair. We anticipate the areas needed for repair can be removed and replaced with clean crushed rock, compacted into place. We should be retained to observe the proof rolling and recommend repairs prior to placement of the asphalt or hard surfaces. WSI should approve all pavement subgrades.

Pavement sections should meet the City of Richland standard details for this development. As stated before, if any fine grained clayey soils are encountered within roadway excavations we should be notified immediately.

### **5.0 FINAL SITE GRADING AND EROSION CONTROL**

The ground surface adjacent to the building shall slope away from the slab, stem walls, or foundation walls at 5 percent for a minimum distance of 10 feet from the structure per the requirements of the IRC, or an alternative drainage method shall be designed into the site drainage plan. Landscaping and lot grading should consider drainage requirements of the building and prevent ponding of water near the structures or in landscaped areas. All impervious surfaces shall be sloped to drain into an approved catch basin and piped to an appropriate infiltration system on-site.

All final slope surfaces should be moisture conditioned and compacted with a track dozer or some other compaction method that will work on the slope to achieve a smooth slope with a maximum slope angle of 1V:2H. A maximum slope of 1V:3H should be used if the slope will be maintained in grass and mowed. Finish soil slopes that are steeper than 1V:3H require some form of erosion protection to prevent water erosion at the surface in the event of an irrigation or domestic water line break. Erosion protection of these slopes should be designed into the final landscaping plan for the lot. Several options exist for slope protection and erosion control including but not limited to the following:

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- The slope can be planted with drought-resistant plants (desert landscape) and watered with drip irrigation systems or light hand watering.
  - Erosion control blankets or geotextile can be utilized along with sparsely-placed suitable vegetation. The erosion control blanket provides more immediate slope protection with the vegetation and will aid in long-term stability.
  - The slope can be covered with a landscape fabric and then covered with decorative gravel, cobble, or rock.

Existing slopes that are undisturbed and covered with native desert vegetation are all less than 1V:3H and do not require any form of erosion control.

#### **6.0 SITE DRAINAGE AND STORMWATER INFILTRATION**

No specific stormwater infiltration analysis was performed at this site. We collected representative soil samples from the site and can provide approximate infiltration values based on gradation analysis, if requested. If specific site infiltration rates are required further explorations will be necessary.

Based on our explorations, the proposed area within Tract A should be suitable for a storage basin and/or infiltration pond. However, we would not recommend excavating material from this location to construct the pond due to the underlying impermeable soils we found roughly 12-feet below grade. We would recommend the pond be constructed by structural fill that is properly keyed and benched into the location.

For stormwater design purposes, assume groundwater depth of approximately 80-feet below grade based on nearby well logs.

#### **7.0 CONSTRUCTION OBSERVATION AND ENGINEERING INSPECTIONS**

Geotechnical engineering construction observation is required during construction of both homes to monitor earthwork, soil, and groundwater conditions and to document the geotechnical aspects of constructing the homes. Construction observation will allow us to identify unexpected soil or groundwater conditions that were not identified in our site explorations and will allow us to adjust our geotechnical recommendations as required.

This project will require several onsite inspection visits by the geotechnical engineer to observe field conditions and verify the following items:

- Geotechnical engineering review of the building construction plans.
- Geotechnical engineering observation and approval of site grading, soil placement, and compaction.
- Geotechnical engineering inspection, testing, and approval of the building foundation subgrade soil conditions.
- Geotechnical engineering inspection and documentation of the backfill around foundation and stem walls.
- Geotechnical engineering inspection and documentation of the stormwater collection and infiltration system.
- Geotechnical engineering approval of final site grading.

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#### 8.0 REFERENCES

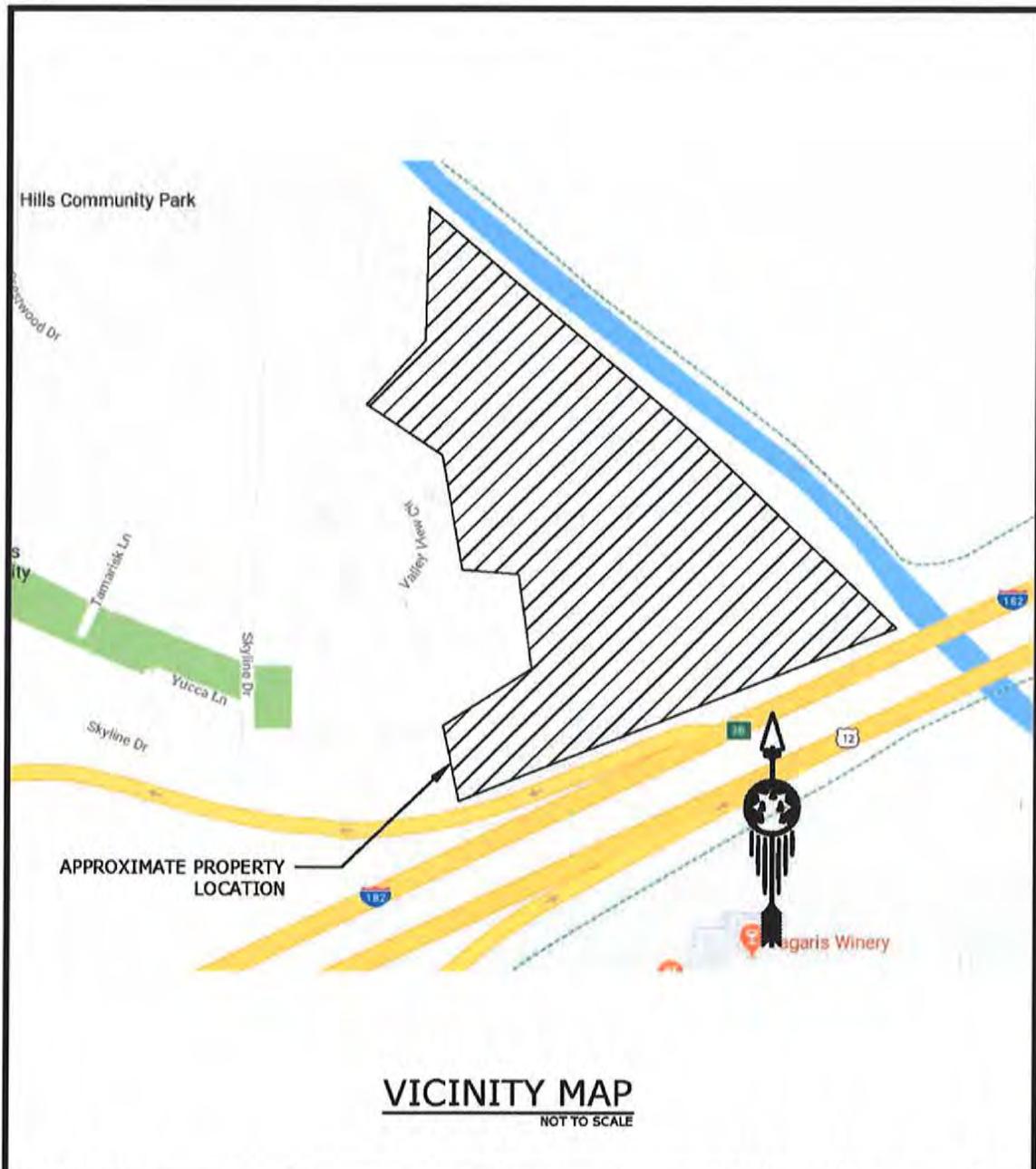
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Reidel, S.P., N.P., Campbell, K.R. Fecht, and K.A. Lindsey (1994). *Late Cenozoic Structure and Stratigraphy of South-Central Washington*. Bulletin 80, Washington Division of Geology and Earth Resources, Washington Department of Natural Resources

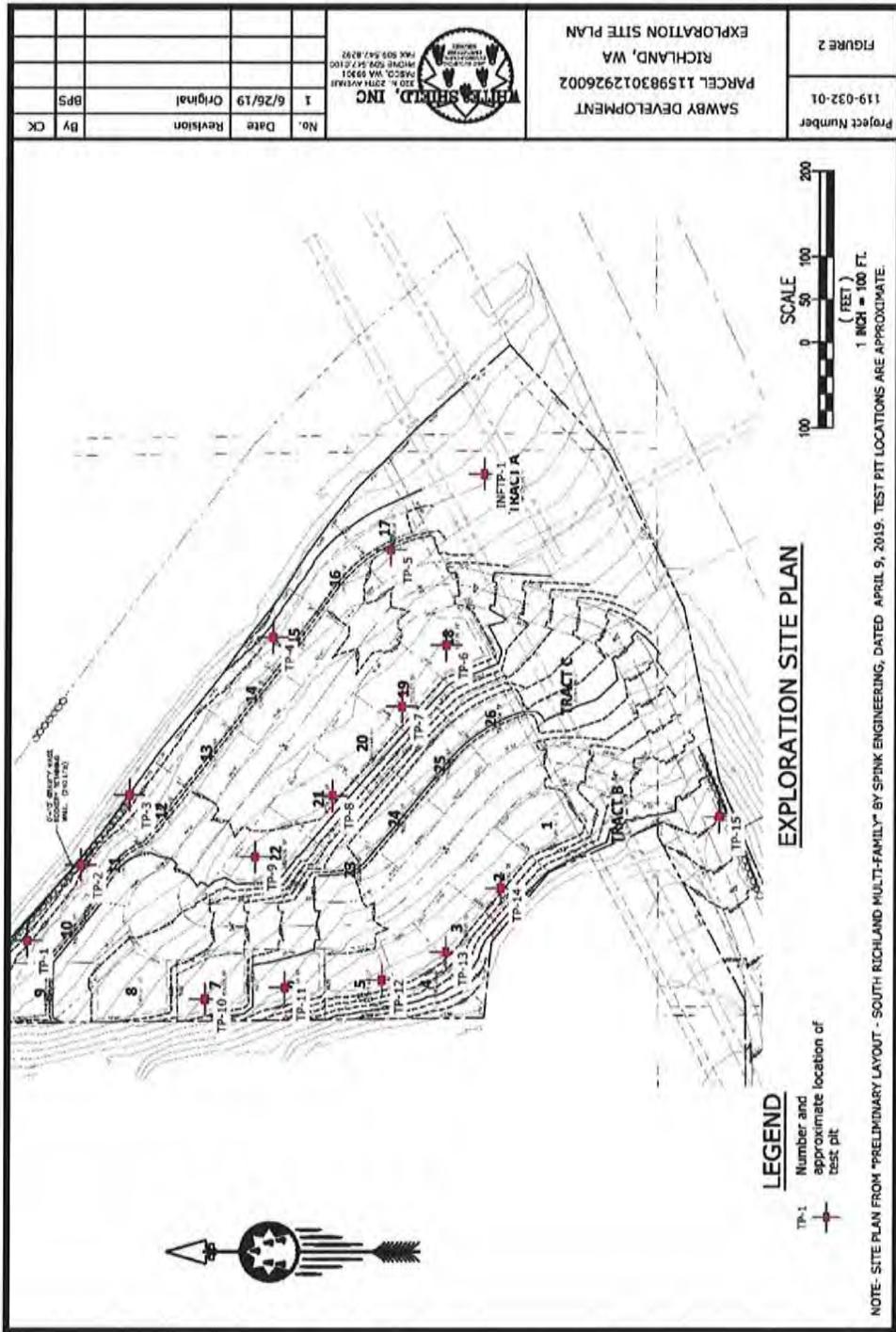
**FIGURES**

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- Figure 1: Vicinity Map
- Figure 2: Preliminary Site Plan
- Figure 3: Soil Classification Chart



Project Number 119-032-01	SAWBY DEVELOPMENT PARCEL 115983012926002 RICHLAND, WA VICINITY MAP	 WHITE SHIELD, INC 320 N. 20TH AVENUE PASCO, WA 99301 PHONE: 509.547.0100 FAX: 509.547.8292	No.	Date	Revision	By	CK
Figure 1			1	6/26/19	Original	BPS	



UNIFIED SOIL CLASSIFICATION SYSTEM							
MAJOR DIVISIONS			GROUP SYMBOL	GROUP NAME			
<b>COARSE - GRAINED SOILS</b>  MORE THAN 50 % RETAINED ON NO. 200 SIEVE	<b>GRAVEL</b>  MORE THAN 50 % OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVEL	GW	WELL-GRADED, FINE TO COARSE GRAVEL			
		GRAVEL	GP	POORLY-GRADED GRAVEL			
		GRAVEL WITH FINES	GM	SILTY GRAVEL			
			GC	CLAYEY GRAVEL			
	<b>SAND</b>  MORE THAN 50 % OF COARSE FRACTION PASSES NO. 4 SIEVE	CLEAN SAND	SW	WELL-GRADED SAND, FINE TO COARSE SAND			
			SP	POORLY GRADED SAND			
		SAND WITH FINES	SM	SILTY SAND			
			SC	CLAYEY SAND			
			<b>HIGHLY ORGANIC SOILS</b>				
			PT	PEAT			
<b>FINE - GRAINED SOILS</b>  MORE THAN 50 % PASSES NO. 200 SIEVE	<b>SILT AND CLAY</b>  LIQUID LIMIT LESS THAN 50 %	INORGANIC	ML	SILT			
			CL	CLAY			
		ORGANIC	OL	ORGANIC SILT, ORGANIC CLAY			
		<b>SILT AND CLAY</b>  LIQUID LIMIT 50 % OR MORE	INORGANIC	MH	SILT OF HIGH PLASTICITY, ELASTIC SILT		
	CH			CLAY OF HIGH PLASTICITY, FAT CLAY			
	ORGANIC		OH	ORGANIC CLAY, ORGANIC SILT			
	<b>NOTES:</b>			<b>SOIL MOISTURE MODIFIERS:</b>			
	1) Field classification is based on visual examination of soil in general accordance with ASTM D 2488-93.			Dry - Absence of moisture, dusty, dry to the touch			
2) Soil classification using laboratory tests is based on ASTM D 2488-93.			Damp - No visible water, leaves hand dry.				
3) Descriptions of soil density or consistency are based on interpretation of blowcount data, visual appearance of soils, and/or test data.			Moist - Leaves water or mud on hand.				
Wet - Visible free water or saturated, usually soil is obtained from below water table							
Project Number	SAWBY DEVELOPMENT PARCEL 115983012926002		No.	Date	Revision	By	CK
119-032-01	RICHLAND, WA USCS CLASSIFICATION		1	6/26/19	Original	BPS	
Figure 3							

**APPENDIX A**

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Test Pits TP-1 through TP-15 and INF TP-1



TEST PIT TP-1

PROJECT NUMBER 119-032-01	DRILLING DATE 5/15/19	COORDINATES 46.259050, -119.300540
PROJECT NAME Sawby Richland Development		COORD SYS GPS
CLIENT Sawby Construction		SURFACE ELEVATION 428 ft
ADDRESS Skyline Drive, Richland WA	DRILLING METHOD Track Hoe	LOGGED BY EC
	TOTAL DEPTH 9.5	CHECKED BY BPS

COMMENTS

Depth (ft)	Material Description	Graphic Log	USCS	Blow Count	Samples	Laboratory Test	Penetration Resistance
0							60
1	Loose, Brown, Damp, fine SAND, trace F-c Gravel (FILL)		SP				
2	**Soil heavily sloughed						
3							
4							
5							
6							
7	Medium dense, Brown, Damp, fine SAND, trace F-c Gravel		SP				
8	**Soil heavily sloughed						
9							
10	TEST PIT terminated at 9.5 ft on 5/15/2019						
11							
12							
13							
14							



TEST PIT TP-2

<b>PROJECT NUMBER</b> 119-032-01	<b>DRILLING DATE</b> 5/15/19	<b>COORDINATES</b> 46.258878, -119.300069
<b>PROJECT NAME</b> Sawby Richland Development		<b>COORD SYS</b> GPS
<b>CLIENT</b> Sawby Construction		<b>SURFACE ELEVATION</b> 428 ft
<b>ADDRESS</b> Skyline Drive, Richland WA	<b>DRILLING METHOD</b> Track Hoe	<b>LOGGED BY</b> EC
	<b>TOTAL DEPTH</b> 9.5	<b>CHECKED BY</b> BPS

COMMENTS

Depth (ft)	Material Description	Graphic Log	USCS	Blow Count	Samples	Laboratory Test	Penetration Resistance
0							60
1	Loose, Brown, Dry, fine SAND, trace F-c Gravel (FILL)		SP				
2	**Soil heavily sloughed						
3							
4							
5							
6							
7	Medium Dense, Brown, Damp, fine SAND, trace F-c Gravel		SP				
8	**Soil heavily sloughed						
9							
10	TEST PIT terminated at 9.5 ft on 5/15/2019						
11							
12							
13							
14							



TEST PIT TP-3

PROJECT NUMBER 119-032-01	DRILLING DATE 5/15/19	COORDINATES 48.258174, -119.299047
PROJECT NAME Sawby Richland Development		COORD SYS GPS
CLIENT Sawby Construction		SURFACE ELEVATION 428 ft
ADDRESS Skyline Drive, Richland WA	DRILLING METHOD Track Hoe	LOGGED BY EC
	TOTAL DEPTH 10.5	CHECKED BY BPS

COMMENTS

Depth (ft)	Material Description	Graphic Log	USCS	Blow Count	Samples	Laboratory Test	Penetration Resistance
1	Loose, Brown, Damp, fine SAND, trace F-c Gravel (FILL)		SP				0
2	**Soil heavily sloughed						
3							
4							
5							
6							
7	Medium Dense, Brown, Damp, fine SAND, trace f-c Gravel		SP				
8							
9							
10							
11	TEST PIT terminated at 10.5 ft on 5/15/2019						
12							
13							
14							



TEST PIT TP-4

PROJECT NUMBER 119-032-01	DRILLING DATE 5/15/19	COORDINATES 48.257891, -119.298519
PROJECT NAME Sawby Richland Development		COORD SYS GPS
CLIENT Sawby Construction		SURFACE ELEVATION 424 ft
ADDRESS Skyline Drive, Richland WA	DRILLING METHOD Track Hoe	LOGGED BY EC
	TOTAL DEPTH 10.0	CHECKED BY BPS

COMMENTS

Depth (ft)	Material Description	Graphic Log	USCS	Blow Count	Samples	Laboratory Test	Penetration Resistance
0							60
1	Loose, Brown, Damp, fine SAND, trace F-c Gravel (FILL) **Soil heavily Sloughed		SP				
2	Medium Dense to Loose, Brown, Damp, fine SAND, trace F-c Gravel **Soil heavily Sloughed		SP				
6	Medium Dense, Grayish Brown, Damp, fine SAND, trace F-c Gravel		SP				
10	TEST PIT terminated at 10.0 ft on 5/15/2019						
11							
12							
13							
14							



TEST PIT TP-5

PROJECT NUMBER 119-032-01	DRILLING DATE 5/15/19	COORDINATES 46.257717, -119.298276
PROJECT NAME Sawby Richland Development		COORD SYS GPS
CLIENT Sawby Construction		SURFACE ELEVATION 432 ft
ADDRESS Skyline Drive, Richland WA	DRILLING METHOD Track Hoe	LOGGED BY EC
	TOTAL DEPTH 10.0	CHECKED BY BPS

COMMENTS

Depth (ft)	Material Description	Graphic Log	USCS	Blow Count	Samples	Laboratory Test	Penetration Resistance
0							60
1	Loose, Brown, Damp, fine SAND, trace F-c Gravel (FILL)		SP				
2	**Soil heavily sloughed Loose, Brown, Damp, fine SAND, trace F-c Gravel		SP				
3	**Soil heavily sloughed						
4							
5	Medium Dense, Brown, Damp, fine SAND, trace F-c Gravel		SP				
6							
7							
8							
9							
10	TEST PIT terminated at 10.0 ft on 5/15/2019						
11							
12							
13							
14							



TEST PIT TP-6

PROJECT NUMBER 119-032-01	DRILLING DATE 5/15/19	COORDINATES 46.257677, -119.298871
PROJECT NAME Sawby Richland Development		COORD SYS GPS
CLIENT Sawby Construction		SURFACE ELEVATION 432 ft
ADDRESS Skyline Drive, Richland WA	DRILLING METHOD Track Hoe	LOGGED BY EC
	TOTAL DEPTH 13.0	CHECKED BY BPS

COMMENTS

Depth (ft)	Material Description	Graphic Log	USCS	Blow Count	Samples	Laboratory Test	Penetration Resistance
0							60
1	Loose to Medium Dense, Brown, Damp, fine SAND, trace F-c Gravel		SP				
2	**Soil heavily sloughed						
3							
4							
5							
6							
7							
8							
9							
10							
11							
12	Loose to Medium Dense, Pale Brown, Dry, fine SAND, some F-c Gravel, trace Cobbles		SP				
13	TEST PIT terminated at 13.0 ft on 5/15/2019						
14							



TEST PIT TP-7

<b>PROJECT NUMBER</b> 119-032-01	<b>DRILLING DATE</b> 5/15/19	<b>COORDINATES</b> 48.257720, -119.299231
<b>PROJECT NAME</b> Sawby Richland Development		<b>COORD SYS</b> GPS
<b>CLIENT</b> Sawby Construction		<b>SURFACE ELEVATION</b> 436 ft
<b>ADDRESS</b> Skyline Drive, Richland WA	<b>DRILLING METHOD</b> Track Hoe	<b>LOGGED BY</b> EC
	<b>TOTAL DEPTH</b> 13.0	<b>CHECKED BY</b> BPS

COMMENTS

Depth (ft)	Material Description	Graphic Log	USCS	Blow Count	Samples	Laboratory Test	Penetration Resistance
0							0
1	Loose to medium Dense, Brown, Damp, fine SAND, trace F-c Gravel		SP				
2	**Soil heavily sloughed						
3							
4							
5							
6							
7							
8							
9							
10							
11							
12	Medium Dense, Brown, Damp, fine SAND, some F-c Gravel		SP				
13	TEST PIT terminated at 13.0 ft on 5/15/2019						
14							



TEST PIT TP-8

<b>PROJECT NUMBER</b> 119-032-01	<b>DRILLING DATE</b> 5/15/19	<b>COORDINATES</b> 46.258042, -119.299954
<b>PROJECT NAME</b> Sawby Richland Development		<b>COORD SYS</b> GPS
<b>CLIENT</b> Sawby Construction		<b>SURFACE ELEVATION</b> 436 ft
<b>ADDRESS</b> Skyline Drive, Richland WA	<b>DRILLING METHOD</b> Track Hoe	<b>LOGGED BY</b> EC
	<b>TOTAL DEPTH</b> 13.5	<b>CHECKED BY</b> BPS

COMMENTS

Depth (ft)	Material Description	Graphic Log	USCS	Blow Count	Samples	Laboratory Test	Penetration Resistance
0							60
1	Loose, Brown, Damp, fine SAND, trace F-c Gravel		SP				
2	**Soil heavily sloughed						
3							
4							
5	Loose to Medium Dense, Dark Grayish Brown, Damp, fine SAND, some F-c Gravel		SP				
6							
7							
8							
9							
10							
11							
12							
13							
14	TEST PIT terminated at 13.5 ft on 5/15/2019						



TEST PIT TP-9

PROJECT NUMBER 119-032-01	DRILLING DATE 5/15/19	COORDINATES 46.258042, -119.299954
PROJECT NAME Sawby Richland Development		COORD SYS GPS
CLIENT Sawby Construction		SURFACE ELEVATION 436 ft
ADDRESS Skyline Drive, Richland WA	DRILLING METHOD Track Hoe	LOGGED BY EC
	TOTAL DEPTH 14.5	CHECKED BY BPS

COMMENTS

Depth (ft)	Material Description	Graphic Log	USCS	Blow Count	Samples	Laboratory Test	Penetration Resistance
1	Loose to Medium Dense, Brown, Damp, fine SAND, trace F-c Gravel		SP				60
2	**Soil heavily sloughed						
3							
4							
5							
6							
7							
8							
9							
10							
11							
12	Medium Dense, Brown, Damp, fine SAND, some F-c Gravel			SP			
13	** 6-inch gravel layer encountered at 12 feet						
14							
TEST PIT terminated at 14.5 ft on 5/15/2019							



TEST PIT TP-10

PROJECT NUMBER 119-032-01	DRILLING DATE 5/15/19	COORDINATES 46.258345, -119.300683
PROJECT NAME Sawby Richland Development		COORD SYS GPS
CLIENT Sawby Construction		SURFACE ELEVATION 456 ft
ADDRESS Skyline Drive, Richland WA	DRILLING METHOD Track Hoe	LOGGED BY EC
	TOTAL DEPTH 15.0	CHECKED BY BPS

COMMENTS

Depth (ft)	Material Description	Graphic Log	USCS	Blow Count	Samples	Laboratory Test	Penetration Resistance
1	Loose to Medium Dense, Brown, Damp, fine SAND, trace F-c Gravel		SP				0
2	**Soil heavily sloughed						
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14	Medium Dense to Dense, Pale Yellowish Brown, Damp, fine SAND, some F-c Gravel, trace Clay		SP				
	** 6-inch gravel layer encountered at 13.5 feet						
15	TEST PIT terminated at 15.0 ft on 5/15/2019						



TEST PIT TP-11

PROJECT NUMBER 119-032-01	DRILLING DATE 5/15/19	COORDINATES 46.258144, -119.300646
PROJECT NAME Sawby Richland Development		COORD SYS GPS
CLIENT Sawby Construction		SURFACE ELEVATION 460 ft
ADDRESS Skyline Drive, Richland WA	DRILLING METHOD Track Hoe	LOGGED BY EC
	TOTAL DEPTH 14.5	CHECKED BY BPS

COMMENTS

Depth (ft)	Material Description	Graphic Log	USCS	Blow Count	Samples	Laboratory Test	Penetration Resistance
0							60
1	Loose to Medium Dense, Brown, Damp, fine SAND, trace F-c Gravel		SP				
2	**Soil heavily sloughed						
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13	Medium Dense, Pale Yellowish Brown, Damp, fine SAND, some F-c Gravel			SP			
14	** 4-inch gravel layer encountered at 14.5 feet						
	TEST PIT terminated at 14.5 ft on 5/15/2019						



TEST PIT TP-12

PROJECT NUMBER 119-032-01	DRILLING DATE 5/15/19	COORDINATES 48.257871, -119.300550
PROJECT NAME Sawby Richland Development		COORD SYS GPS
CLIENT Sawby Construction		SURFACE ELEVATION 468 ft
ADDRESS Skyline Drive, Richland WA	DRILLING METHOD Track Hoe	LOGGED BY EC
	TOTAL DEPTH 15.0	CHECKED BY BPS

COMMENTS

Depth (ft)	Material Description	Graphic Log	USCS	Blow Count	Samples	Laboratory Test	Penetration Resistance
0							0
1	Loose to Medium Dense, Brown, Damp, fine SAND, trace F-c Gravel		SP				
2	**Soil heavily sloughed						
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14	Medium Dense, Pale Yellowish Brown, Damp, fine SAND, some F-c Gravel	SP					
15	TEST PIT terminated at 15.0 ft on 5/15/2019						



TEST PIT TP-13

PROJECT NUMBER 119-032-01	DRILLING DATE 5/15/19	COORDINATES 48.257492, -119.300414
PROJECT NAME Sawby Richland Development		COORD SYS GPS
CLIENT Sawby Construction		SURFACE ELEVATION 472 ft
ADDRESS Skyline Drive, Richland WA	DRILLING METHOD Track Hoe	LOGGED BY EC
	TOTAL DEPTH 15.0	CHECKED BY BPS

COMMENTS

Depth (ft)	Material Description	Graphic Log	USCS	Blow Count	Samples	Laboratory Test	Penetration Resistance
0							60
1	Loose, Brown, Damp, fine SAND, trace F-c Gravel		SP				
2	**Soil heavily sloughed						
3	** 6-inch gravel layer encountered at 7.0 feet						
4							
5							
6							
7	Medium Dense, Yellowish Brown, Damp, fine SAND, some F-c Gravel, trace Cobbles			SP			
8							
9							
10							
11							
12							
13							
14							
15	TEST PIT terminated at 15.0 ft on 5/15/2019						



TEST PIT TP-14

PROJECT NUMBER 119-032-01	DRILLING DATE 5/15/19	COORDINATES 46.257223, -119.299507
PROJECT NAME Sawby Richland Development		COORD SYS GPS
CLIENT Sawby Construction		SURFACE ELEVATION 430 ft
ADDRESS Skyline Drive, Richland WA	DRILLING METHOD Track Hoe	LOGGED BY EC
	TOTAL DEPTH 15.0	CHECKED BY BPS

COMMENTS

Depth (ft)	Material Description	Graphic Log	USCS	Blow Count	Samples	Laboratory Test	Penetration Resistance
0							60
1	Loose to Medium Dense, Brown, Damp, fine SAND, trace F-c Gravel		SP				
2	**Soil heavily sloughed						
3							
4							
5	Medium Dense to Dense, Yellowish Brown, Dry, fine Silty SAND, some F-c Gravel, trace Clay, weakly cemented		SP				
6							
7							
8							
9							
10							
11							
12					Bag Sample		
13							
14	Dense, Dry, Yellowish Brown, fine Silty SAND, some F-c gravel, trace Clay, moderately cemented		SP		Bag Sample		
15	TEST PIT terminated at 15.0 ft on 5/15/2019						



TEST PIT TP-15

PROJECT NUMBER 119-032-01	DRILLING DATE 5/15/19	COORDINATES 46.256529, -119.300028
PROJECT NAME Sawby Richland Development		COORD SYS GPS
CLIENT Sawby Construction		SURFACE ELEVATION 488 ft
ADDRESS Skyline Drive, Richland WA	DRILLING METHOD Track Hoe	LOGGED BY EC
	TOTAL DEPTH 13.0	CHECKED BY BPS

COMMENTS

Depth (ft)	Material Description	Graphic Log	USCS	Blow Count	Samples	Laboratory Test	Penetration Resistance
1	Loose to Medium Dense, Brown, Dry, F-c Sandy GRAVEL, trace cobbles, Rubble (concrete and rocks)  (Fill)		GP		Bag Sample		
2							
3							
4							
5							
6	Medium Dense, Brown, Dry, F-c Sandy GRAVEL, trace Cobbles		GP				
7							
8							
9							
10	Dense, Dry, Yellowish Brown, fine Silty SAND, some F-c gravel, trace Clay, moderately cemented		SP		Bag Sample		
11							
12	TEST PIT terminated at 13.0 ft on 5/15/2019						
13							
14							



TEST PIT INF TP-1

PROJECT NUMBER 119-032-01	DRILLING DATE 5/15/19	COORDINATES 46.257417, -119.297976
PROJECT NAME Sawby Richland Development		COORD SYS GPS
CLIENT Sawby Construction		SURFACE ELEVATION 430 ft
ADDRESS Skyline Drive, Richland WA	DRILLING METHOD Track Hoe	LOGGED BY EC
	TOTAL DEPTH 14.0	CHECKED BY BPS

COMMENTS

Depth (ft)	Material Description	Graphic Log	USCS	Blow Count	Samples	Laboratory Test	Penetration Resistance
1	Loose to Medium Dense, Dark Yellowish Brown, Damp, fine SAND, trace F-c Gravel, weak cementation		SP				
2	**Soil heavily sloughed						
3							
4							
5						Bag Sample	
6							
7							
8							
9							
10	Medium Dense, Brown, Damp, fine Silty SAND, some F-c Gravel, trace Cobbles		SM				
11							
12	Medium Dense to Dense, Dry, Pale Brown with rust Orange layering, fine Silty SAND, trace C-f Gravel, trace Clay		SM				
13					Bag Sample		
14	Test Pit terminated at 14.0 ft on 5/15/2019						

**APPENDIX B**

**WASHINGTON FISH AND WILDLIFE SERVICES LETTER**



State of Washington  
**Department of Fish and Wildlife**  
Habitat Program  
2620 North Commercial Avenue, Pasco, WA 99301  
Phone: (509) 543-3319, E-mail: Michael.Ritter@dfw.wa.gov

MWR-10-19

June 5, 2019

Spink Engineering  
Steve Spink  
Richland, WA 99352

Dear Mr. Spink,

Thank you for contacting the Washington Department of Fish and Wildlife (WDFW) regarding the plat submittal packages in the City of Richland for Skyline South and Falcon Ridge II.

WDFW appreciates the foresight by the City to have you contact us as an initial step to identify and address any issues related to Priority Habitats and Species (PHS), and other important natural resources.

Based on my review of the WDFW PHS database and Google Earth, there are no PHS issues such as shrub-steppe habitat or animal species occurrences associated with either preliminary plat.

While the PHS databases identifies that entire ridgeline and hill sides of Falcon Ridge II as priority shrub-steppe habitat, Google earth reveals that most if not all of the land are for Falcon Ridge II was previously disturbed.

Please contact me with any questions.

Sincerely,

A handwritten signature in cursive script that reads "Michael Ritter".

Michael Ritter  
Habitat Biologist



State of Washington  
**Department of Fish and Wildlife**  
Habitat Program  
2620 North Commercial Avenue, Pasco, WA 99301  
Phone: (509) 543-3319, E-mail, Michael.Ritter@dfw.wa.gov

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While the PHS databases identifies that entire ridgeline and hill sides of Falcon Ridge II as priority shrub-steppe habitat, Google earth reveals that most if not all of the land are for Falcon Ridge II was previously disturbed.

Please contact me with any questions.

Sincerely,

Michael Ritter  
Habitat Biologist

# South Richland Multi-Family Development

## Traffic Impact Analysis

February 2018

Prepared by:

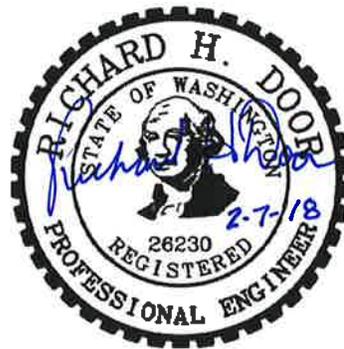


J-U-B ENGINEERS, Inc.  
2810 W. Clearwater Avenue, Suite 201  
Kennewick, Washington 99336

# South Richland Multi-Family Development

## Traffic Impact Analysis

February 2018



Prepared by:

Spencer Montgomery  
Richard H. Door, PE



J-U-B ENGINEERS, Inc.  
2810 W. Clearwater Avenue, Suite 201  
Kennewick, Washington 99336

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- Appendix A– Collision History
- Appendix B – Traffic Volumes
- Appendix C – Capacity Analysis Worksheets
- Appendix D – Conceptual Site Plan

## Introduction and Background

Located in the south part of the City of Richland, between Queensgate Drive and the Yakima River, and north of I-182, lies an undeveloped parcel of land adjacent to The Hills Mobile Home Park. The owner desires to develop the approximately 10 acre parcel as a multi-family residential development with approximately 35 duplexes or 70 residential units. The sole access to the property will be from Skyline Drive which connects to Queensgate Drive where full movement of traffic is currently allowed.

The City of Richland has requested that a Traffic Impact Analysis (TIA) be performed to determine if the existing intersection of Queensgate Drive/Skyline Drive can provide acceptable Levels of Service for all movements with the additional traffic associated with the proposed development. If Levels of Service fall below acceptable standards certain movements may need to be restricted, such as left turns out of Skyline Drive and/or left turns into Skyline Drive. There is also concern that with the proximity of the Wal-Mart entrance to the north that queues for the northbound left turns into the Wal-Mart and queues for the southbound left turns onto Skyline Drive will have adequate storage space since they share the two-way-left-turn-lane.

In addition to existing conditions, this TIA has been performed to evaluate two future year scenarios:

- 1) Opening Year – which does not include the Duportail Extension over the Yakima River.
- 2) Year 2023 – which will include the future extension of Duportail Street over the Yakima River, connecting to Queensgate Drive north of the study area.

## Existing Conditions

This section will document existing conditions with respect to land use, roadway characteristics, accident history, traffic volumes and traffic operations.

### Land Use

East of Queensgate Drive, north of I-182 and south of Duportail Street, is primarily zoned as Multi-Family Residential east to the Columbia Irrigation District canal, except for the southeast corner of Duportail Street/Queensgate Drive which is zoned as General Retail. East of the CID canal is zoned as Natural Open Space. West of Queensgate Drive is zoned as Retail Business south of Duportail Street and General Retail with some Limited Business and Parks and Public Facilities north of Duportail Street.

### Roadway Characteristics

**Queensgate Drive** is a minor arterial roadway with a speed limit of 35 MPH. North of the I-182 westbound ramps Queensgate Drive has 5 lanes including a two-way-left-turn lane. One of the northbound lanes is added from the I-182 westbound off-ramp, while one of the southbound lanes is dropped and becomes a westbound on-ramp. There is also one lane added southbound that comes from an I-182 westbound loop ramp resulting in two southbound and one northbound lane on the I-182 mainline overpass. There is curb, gutter, sidewalk and streetlights north of Skyline Drive, except for approximately a 170' missing piece of sidewalk on the east side immediately north of Skyline Drive. South of Skyline Drive there are no sidewalks through the I-182 interchange, but there are shoulders for pedestrians and disabled vehicles on the bridge over I-182. There is a driveway entrance to WalMart on Queensgate Drive approximately 475' north of Skyline Drive. Thus, northbound left turns into the WalMart must share the same turning space as the southbound left turns onto Skyline Drive. The intersection of Queensgate Drive/I-182 Westbound ramps is quite unique in that there is no traffic control – the added and dropped lanes at the intersection create the ability for every movement to be freeflowing with the exception of the northbound left turn to the westbound on-ramp which must yield to one southbound through lane. This left turning volume is relatively small, as discussed below

**Skyline Drive** is a 2-lane local street that connects to Queensgate Drive on the west, approximately 275' north of the I-182 westbound off-ramp, and to the Hills Mobile Home Park approximately 800 feet to the east. The westbound approach at the intersection is stop controlled. Skyline Drive is unstriped and is approximately 28' wide for most of its length, but at the intersection at Queensgate Drive is approximately 42' wide, and although unstriped, it does allow for two westbound vehicles to be side by side if the first arriving vehicle is positioned to accommodate another vehicle. There is curb and gutter on both sides but has no sidewalks or street lights. The speed limit is 25 MPH.

### Crash History

At some busy unsignalized intersections drivers from minor street approaches may become frustrated and take risks that they might not otherwise take in order to enter or cross the flow of major street traffic, thus accepting smaller gaps in major street traffic resulting at times in crashes. A brief review of the crashes occurring at the intersection of Queensgate Drive/Skyline Drive over the five most recent years of available data reveals a total of 11 crashes within 100' of the intersection as shown in Table 1.

Table 1. Crash History at Queensgate Drive/Skyline Drive

Year	Number of Crashes
2012	2
2013	1
2014	1
2015	3
2016	4
Total	11

Detailed data on the collisions is included in Appendix A and shows that two collisions were associated with vehicles entering from the minor street. All the others were associated with vehicles traveling the same direction on Queensgate Drive and either a rear-end collision or a sideswipe accident.

### Traffic Volumes

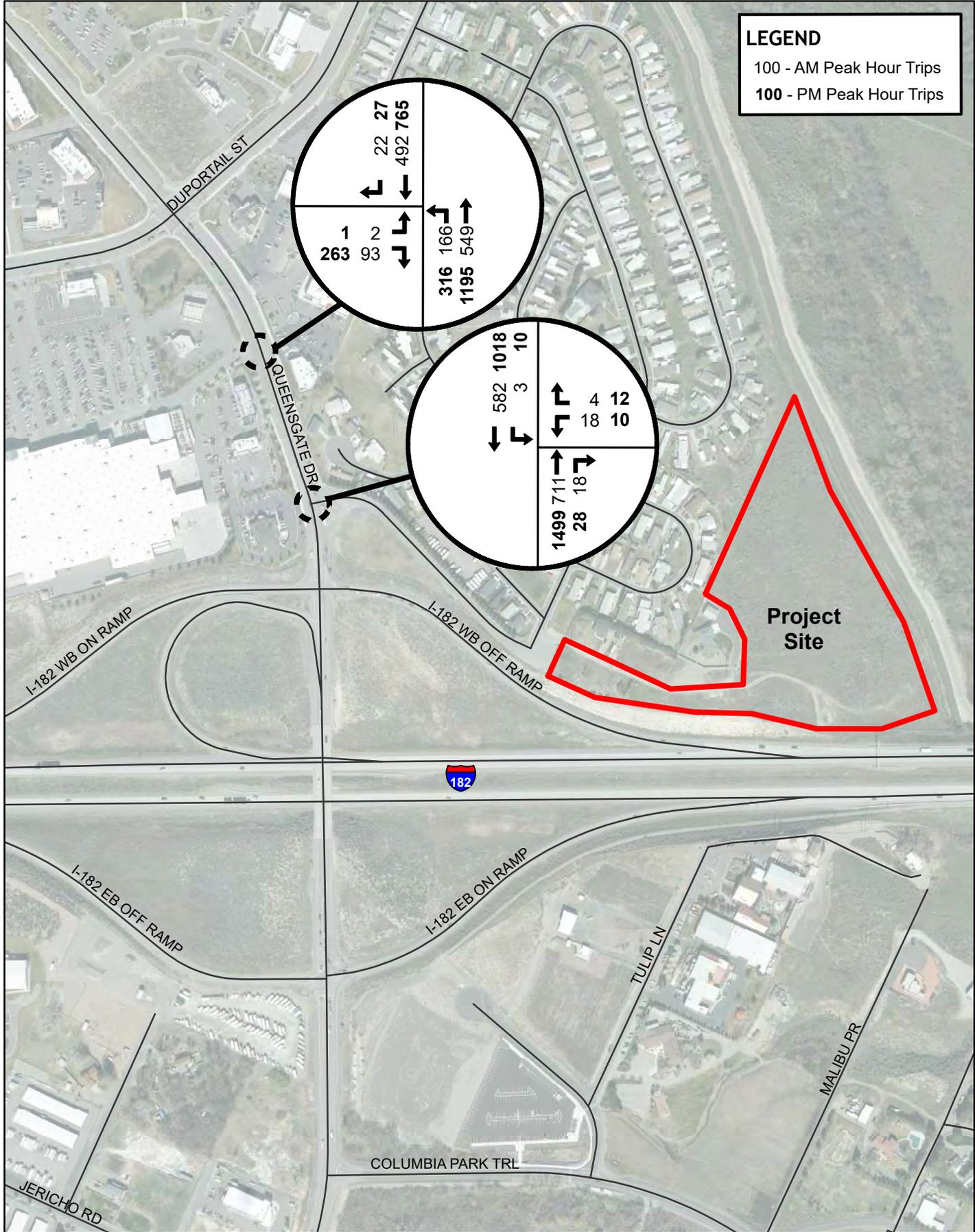
Manual turning movement counts were collected in 15 minute increments at the intersections of Queensgate Drive/Skyline Drive and at the WalMart Entrance from Queensgate Drive during the AM and PM peak hours on December 6, 2017. These peak hour traffic volumes are shown in Figure 1, with the 15-minute data included in Appendix B. There were 1,336 vehicles at the Queensgate Drive/Skyline Drive intersection during the AM peak hour, while in the PM peak hour the traffic volume was nearly double at 2,577.

Of the northbound vehicles approximately 80% come from the I-182 westbound off-ramp during both peak hours. (For the AM there was 587 vehicles existing the I-182 westbound off-ramp of the total 729 vehicles northbound at Skyline Drive. For the PM there were 1,218 vehicles existing the I-182 westbound off-ramp of the total 1,527 vehicles northbound at Skyline Drive.) This puts the majority of traffic in the curb lane making it somewhat more challenging for Skyline Drive traffic to turn right to join the northbound flow. In the southbound direction a similar phenomenon occurs, with only 8 % of AM and 11% of PM traffic exiting Queensgate Drive to go west on I-182 (as counted in the 2014 Corridor Study, see Appendix B), again leaving the majority of traffic in the closest through lane for any left turns from Skyline Drive to go southbound on Queensgate Drive. The two-way-left-turn-lane does provide the opportunity for westbound left turns from Skyline Drive to make a two-staged left turn to merge with the southbound traffic flow, this is further facilitated by the fact that there are no northbound left turns at Skyline Drive since it is a 3-legged intersection.

### Operational Analysis

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 – 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’s) 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 presented in the Highway Capacity Manual and is the methodology used in this study (HCM 2010). The Highway Capacity Manual LOS criteria for unsignalized intersections are summarized in Table 2.

**LEGEND**  
 100 - AM Peak Hour Trips  
 100 - PM Peak Hour Trips



**FIGURE 1:**  
 EXISTING PEAK HOUR  
 TRAFFIC VOLUMES

**SOUTH RICHLAND  
 MULTI-FAMILY DEVELOPMENT  
 Traffic Impact Analysis**

Table 2. Level of Service Criteria for Unsignalized Intersections

Level of Service (LOS)	Average Control Delay (seconds/vehicle)
A	< =10
B	>10 - < 15
C	>15 - < 25
D	>25 - < 35
E	>35 - <50
F	>50
Source: <i>Highway Capacity Manual 2010</i> , Transportation Research Board, National Research Council, Washington, D.C., 2010.	

For unsignalized intersections “delay” is based on the availability of gaps in the major street to allow minor street movements to occur. As traffic volumes continue to increase, the availability of gaps will decrease and greater delay tends to result in driver frustration and anxiety, loss of time, unnecessary fuel consumption, and contributes to unnecessary air pollution. The City of Richland standard for Level of Service is LOS “D” for minor street approaches at unsignalized intersections, meaning the overall intersection LOS must be “D” or better.

Peak hour traffic volumes and existing intersection geometry were input into the Highway Capacity Software (HCS) to determine the delay and Level of Service at the intersection. The analysis allows for the input of the percentage of traffic using the shared through/right-turn lane. In this case 75% northbound and 10% southbound were used. (In order to input these factors to HCS the southbound lane had to be coded as a shared thru/right-turn lane. These factors do not show up in the printed report.) The results of the capacity analysis and intersection delay for the minor street approach as well as the major street left turn movements and are shown in Table 3 for the two study intersections, with the capacity worksheets included in Appendix C.

As shown in Table 3 all movements currently provide acceptable Levels of Service, with the westbound approach at Skyline Drive being the worst with LOS “D” and 22.3 seconds of average vehicle delay during the PM peak hour.

Queues lengths in the Highway Capacity Software are reported as 95% queue in terms of number of vehicles. An average vehicle length of 25’ was used, while rounding the number of vehicles up to the nearest whole vehicle for both the southbound left turn at Skyline Drive and the northbound left turn at the WalMart entrance. The combined queue lengths are 25’ in the AM and 100’ in the PM peak hour. The distance between the two access points on Queensgate Drive allows for approximately 475 feet of storage, thus the queues currently are easily accommodated within the storage available.

Table 3. Summary of Existing Intersection Delay (sec) and Level of Service

Intersection	Movement	Time Period	2017 Existing Conditions
Skyline Drive/ Queensgate Drive	Minor Street Approach	AM	WB--16.3/C
		PM	WB--22.3/C
	Major Street Left Turn	AM	SB--9.8/A
		PM	SB--15.1/C
Walmart Entrance/ Queensgate Drive	Minor Street Approach	AM	EB--11.1/B
		PM	EB--18.2/C
	Major Street Left Turn	AM	NB--9.5/A
		PM	NB--13.8/B

**LEGEND**

15.9/B      Delay and Level of Service using existing lane configurations  
 NB= northbound, SB = Southbound, EB= eastbound, WB = Westbound

## Future Conditions

### Proposed Development

The proposed development includes up to 35 duplexes with 70 residential units. One internal loop road that connects to Skyline Drive will provide the only access to the development. The Conceptual Site Plan is included in Appendix D. The site has some topographical challenges thus the total number of units will be determined in final design phases. The Site Plan shows 32 duplexes, however this study is prepared for a maximum of 35 duplexes.

### Trip Generation and Trip Distribution

An estimate of the new trips that the development might generate was made using the Institute of Transportation Engineers (ITE) Trip Generation Manual (9<sup>th</sup> Edition). Several residential land uses were examined and the rate for single family detached (Land Use 210) was determined to be the most appropriate. The Manual indicates that rates for various apartment uses apply when buildings have 4 or more units. Single Family Residential has the highest trip generation rate of all residential uses, and is thus conservatively high. ITE rates are as follows:

- Average Weekday Traffic – average rate of 9.52 trips per unit. With 70 residences this would result in 666 trips.
- AM Peak Hour of the adjacent roadway network – average rate of 0.75 trips per unit, resulting in 53 AM Peak Hour trips (13 inbound, 40 outbound).
- PM Peak Hour of the adjacent roadway network – average rate of 1.0 trips per unit, resulting in 70 PM Peak Hour trips (44 inbound, 26 outbound).

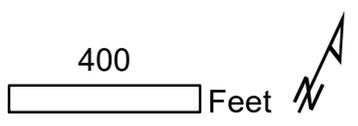
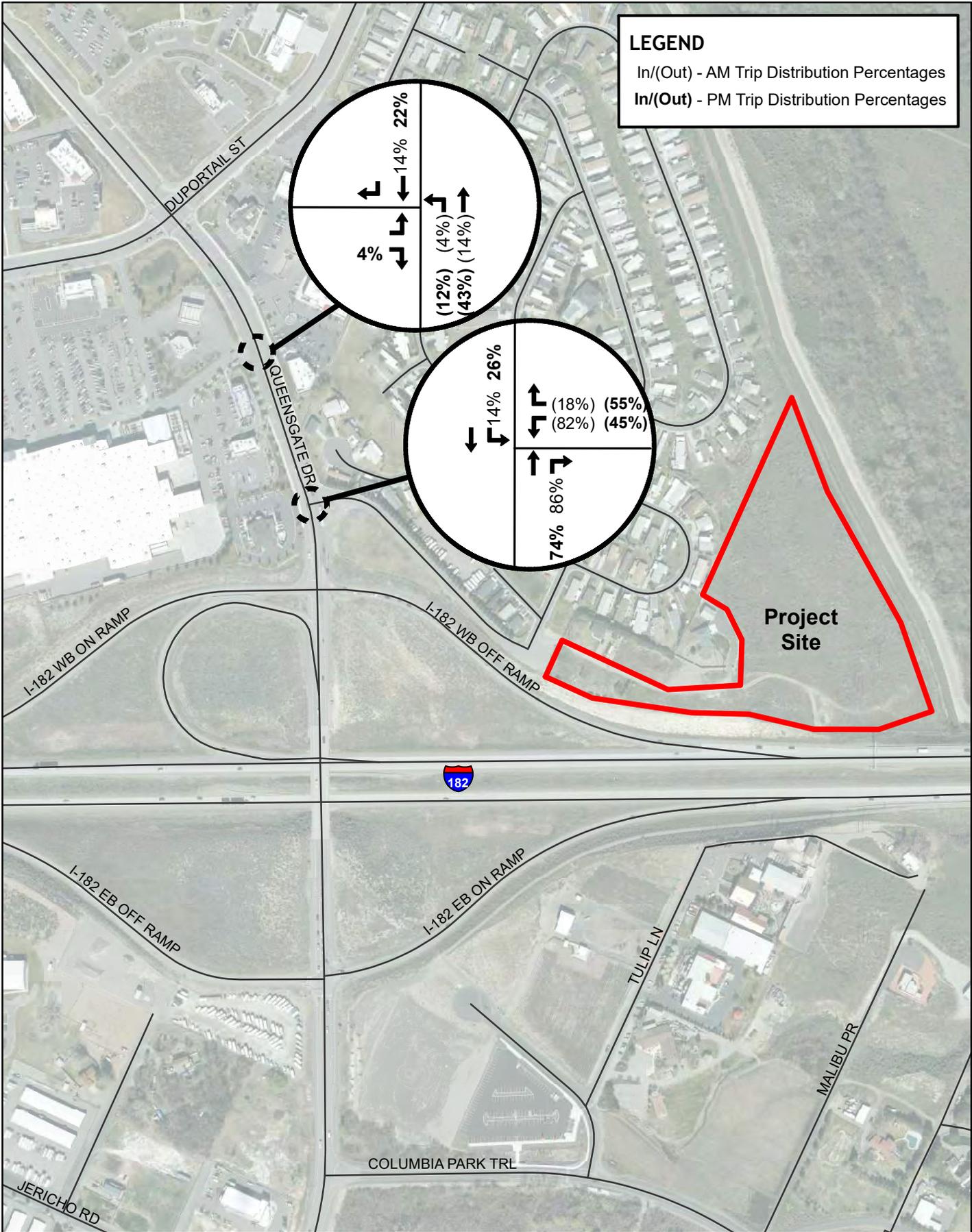
Trip distribution was calculated using existing traffic patterns and the number of vehicles to/from Skyline Drive at Queensgate Drive. In the morning over 80% of trips are to/from the south, while during the PM peak hour nearly 75% of trips are from the south but less than 50% make westbound left turns to go south on Queensgate Drive. The AM and PM peak hour trip distribution percentages are shown in Figure 2, with the resulting Site Generated Trips being shown in Figure 3. These site generated trips will be used for each of the future year scenarios described below.

### Opening Year Conditions

The 2017 traffic counts collected as part of this study were compared with the 2014 traffic counts to determine a background traffic growth rate. Traffic volumes on Queensgate Drive north of the I-182 westbound ramps had grown at an annual rate of approximately 1.5%. Traffic volumes at the study intersections were increased by 1.5% and the site generated trips shown in Figure 3 were added as well to arrive at opening year traffic volumes shown in Figure 4. This assumes build-out of the site in 2018, which would be an aggressive schedule, but gives an understanding of how traffic operations may be without significant roadway network changes anticipated in the next few years.

Opening year traffic volumes shown in Figure 4 and existing intersection geometry were input into the Highway Capacity Software (HCS) to determine the delay and Level of Service at the intersection. The results of the capacity analysis and intersection delay are shown in Table 4 for the two study intersections with the capacity worksheets included in Appendix C.

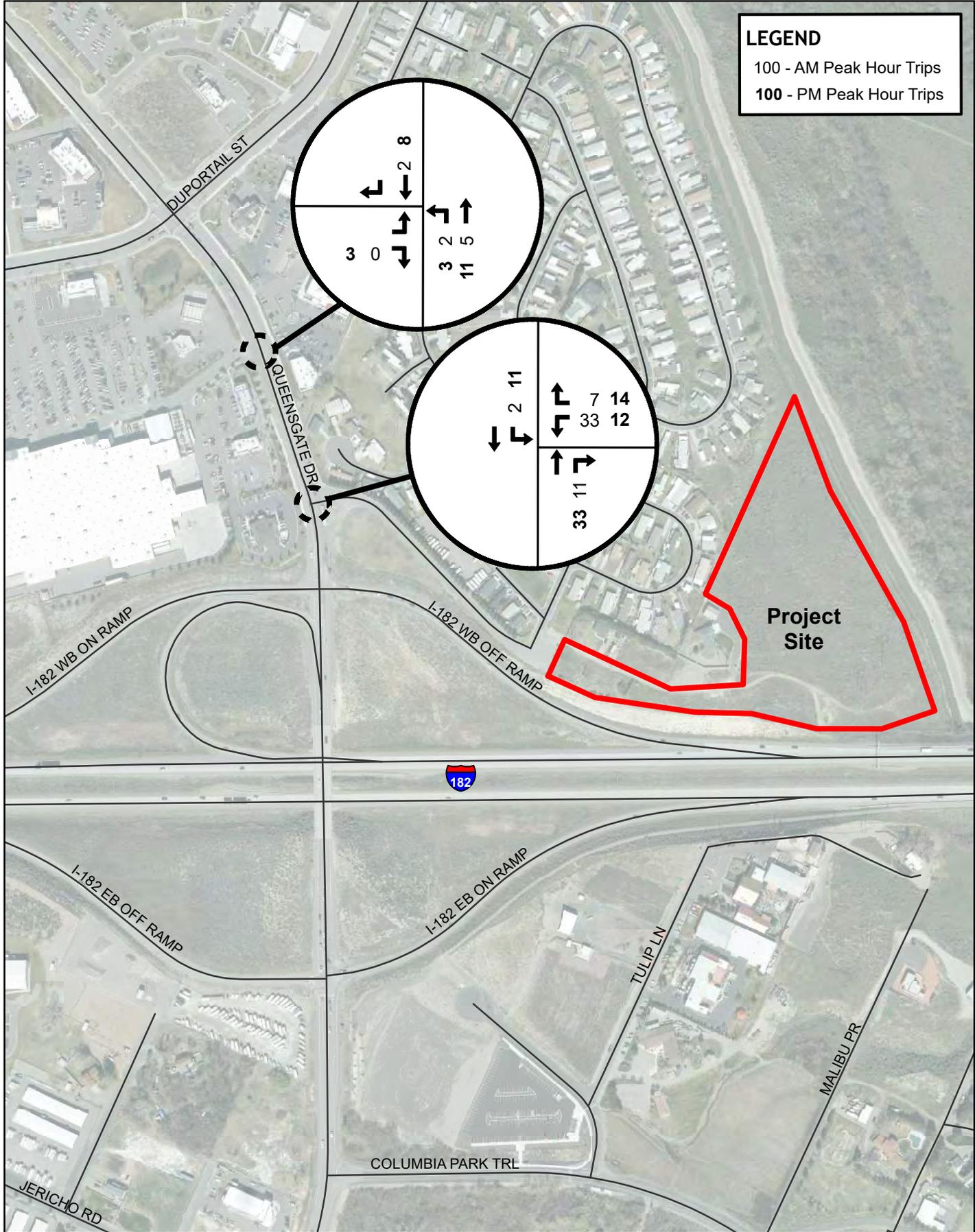
**LEGEND**  
 In/(Out) - AM Trip Distribution Percentages  
 In/(Out) - PM Trip Distribution Percentages



**FIGURE 2:**  
 TRIP DISTRIBUTION  
 PERCENTAGES

**SOUTH RICHLAND  
 MULTI-FAMILY DEVELOPMENT  
 Traffic Impact Analysis**

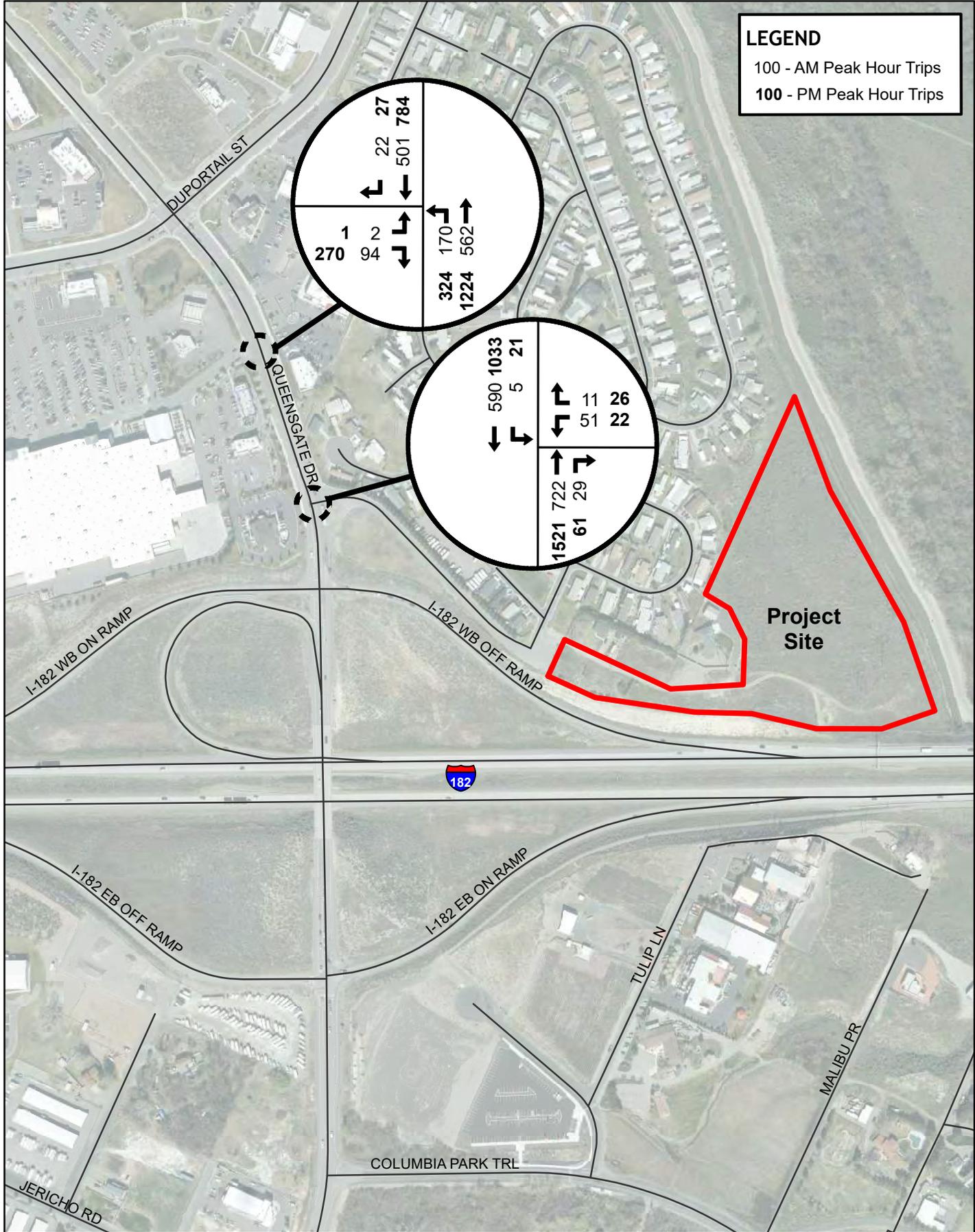
**LEGEND**  
 100 - AM Peak Hour Trips  
 100 - PM Peak Hour Trips



**FIGURE 3:**  
 SITE GENERATED TRIPS

**SOUTH RICHLAND  
 MULTI-FAMILY DEVELOPMENT  
 Traffic Impact Analysis**

**LEGEND**  
 100 - AM Peak Hour Trips  
 100 - PM Peak Hour Trips



**FIGURE 4:**  
 OPENING TRAFFIC VOLUMES  
 1.5% GROWTH

**SOUTH RICHLAND  
 MULTI-FAMILY DEVELOPMENT  
 Traffic Impact Analysis**

Table 4. Summary of Opening Year Intersection Delay (sec) and Level of Service

Intersection	Movement	Time Period	2017 Existing Conditions	2018 Opening Year
Skyline Drive/ Queensgate Drive	Minor Street Approach	AM	WB--16.3/C	WB--19.1/C
		PM	WB--22.3/C	WB--26.5/D
	Major Street Left Turn	AM	SB--9.8/A	SB--9.9/A
		PM	SB--15.1/C	SB--16.1/C
WalMart Entrance/ Queensgate Drive	Minor Street Approach	AM	EB--11.1/B	EB--11.2/B
		PM	EB--18.2/C	EB--19.0/C
	Major Street Left Turn	AM	NB--9.5/A	NB--9.5/A
		PM	NB--13.8/B	NB--14.3/B

**LEGEND**

15.9/B Delay and Level of Service using existing lane configurations  
 NB= northbound, SB = Southbound, EB= eastbound, WB = Westbound

As shown in the table, all movements are anticipated to function with acceptable Levels of Service, with slight increases in delay over existing conditions. The Skyline Drive approach adds 4 seconds of average vehicle delay to a total of 26.5 seconds, falling to LOS “D” in the PM peak hour.

Queues were examined again for this scenario with the total combined queues for the southbound left turn at Skyline Drive and the northbound left turn at the WalMart entrance being the same as existing conditions with 25’ queue in the AM and 100’ queue in the PM peak hour.

**2023 Conditions with the Duportail Street Extension**

The City of Richland has worked for several years to identify improvements to connect south Richland to the downtown and other areas north of the Yakima River. The result of these considerable efforts is the Duportail Street Bridge which will connect from SR 240 north of the Yakima River to Queensgate Drive and the City View commercial area south of the Yakima River. The project has recently been awarded and construction will commence soon, with completion in a few years. This significant project is anticipated to alter traffic patterns in the City View area.

As mentioned earlier, a corridor study was completed in 2014 for the portion of Queensgate Drive south of I-182. The study forecast traffic volumes for year 2034 that accounted for regional growth in traffic and included roadway network changes which included not only the Duportail Street Extension but the extension of Queensgate Drive south to connect to the Badger South Sub-Area.

A comparison of the directional split of traffic volumes was made for three scenarios to show the anticipated change in traffic patterns on Queensgate Drive between the I-182 westbound ramps and Skyline Drive due to the construction of the Duportail Bridge. The comparison is shown in Table 5 and shows that a shift in the directional distribution of traffic in the AM peak hour of nearly 10% is expected while in the PM peak hour the shift is 5%.

Table 5. Comparison of Directional Split on Queensgate Drive

Year	AM PEAK HOUR		PM PEAK HOUR	
	Total Volume	Percent of Traffic Northbound	Total Volume	Percent of Traffic Northbound
2014	1238	52%	2453	60%
2017	1329	55%	2555	60%
2034	2120	46%	3580	55%

In order to forecast traffic volumes for year 2023 conditions with the Duportail Bridge, the recent growth rate of 1.5% per year was carried forward for 6 years from 2017 for the through volumes on Queensgate Drive, both directions combined. Then the directional split of total traffic forecast in the corridor study for year 2034 was applied to each time period being evaluated. Traffic Volumes on Skyline Drive were held constant from the build scenario discussed earlier. The resulting Traffic Volumes are shown in Figure 5

The 2023 traffic volumes shown in Figure 5 and existing intersection geometry were input into the Highway Capacity Software (HCS) to determine the delay and Level of Service at the intersection for this scenario. The results of the capacity analysis and intersection delay are shown in Table 6 for the two study intersections with the capacity worksheets included in Appendix C.

Table 6. Summary of 2023 Intersection Delay (sec) and Level of Service

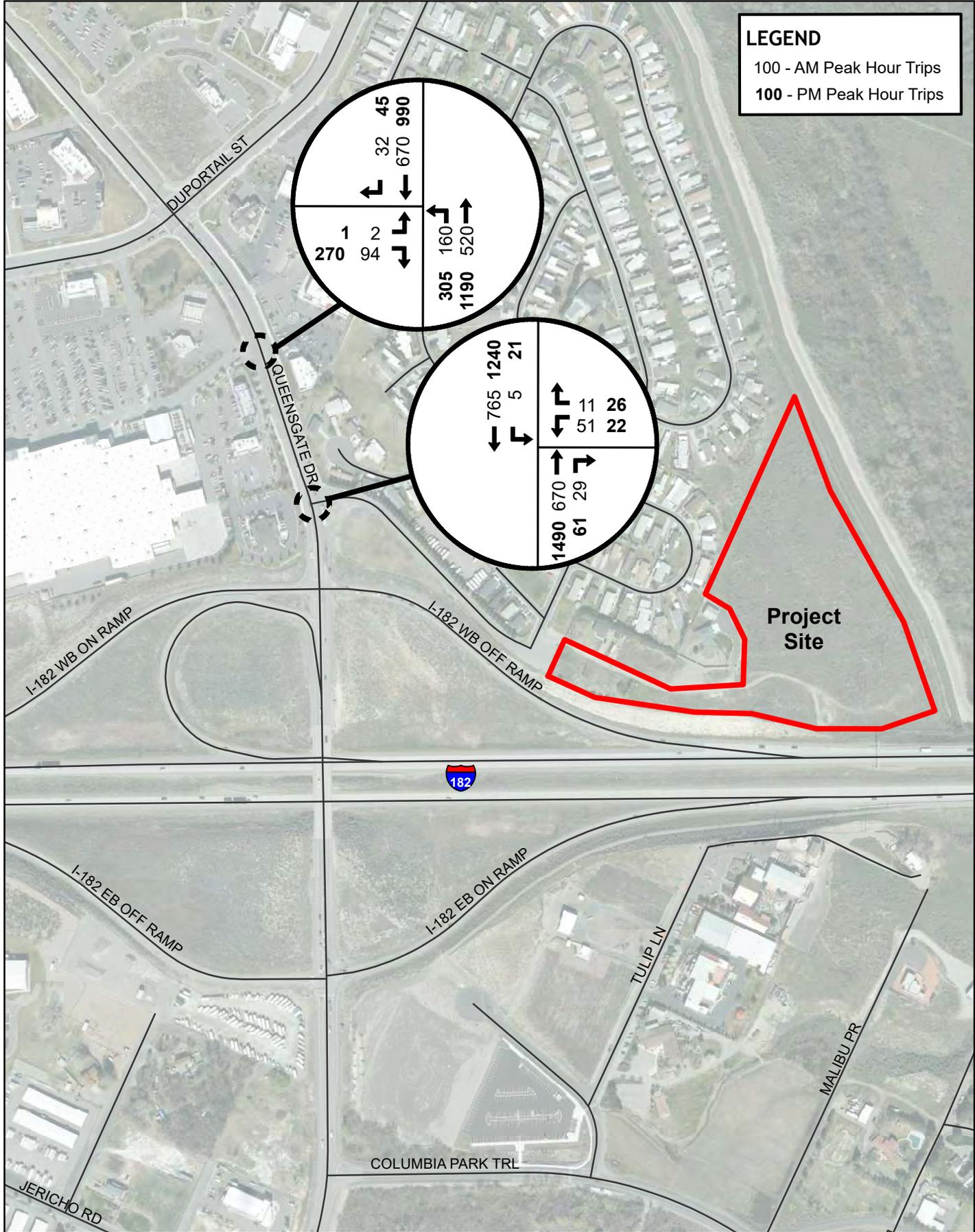
Intersection	Movement	Time Period	2017 Existing Conditions	2018 Opening Year	2023 with Duportail Extension
Skyline Drive/ Queensgate Drive	Minor Street Approach	AM	WB--16.3/C	WB--19.1/C	WB--17.1/C
		PM	WB--22.3/C	WB--26.5/D	WB--26.5/D
	Major Street Left Turn	AM	SB--9.8/A	SB--9.9/A	SB--9.4/A
		PM	SB--15.1/C	SB--16.1/C	SB--15.7/C
WalMart Entrance/ Queensgate Drive	Minor Street Approach	AM	EB--11.1/B	EB--11.2/B	EB--12.3/C
		PM	EB--18.2/C	EB--19.0/C	EB--26.6/D
	Major Street Left Turn	AM	NB--9.5/A	NB--9.5/A	NB--10.5/C
		PM	NB--13.8/B	NB--14.3/B	NB--18.6/C

**LEGEND**

15.9/B      Delay and Level of Service using existing lane configurations  
 NB= northbound, SB = Southbound, EB= eastbound, WB = Westbound

Interestingly, although there is growth in total traffic, the change in directional distribution of traffic on Queensgate Drive causes the delay for all movements at the Skyline intersection to go down slightly or stay the same during both AM and PM peak hours. At the WalMart Entrance all movements are forecast to have slightly higher delay, with the minor street approach falling to LOS “D” during the PM peak hour, even though this approach is dominated by right turn only vehicles.

**LEGEND**  
 100 - AM Peak Hour Trips  
 100 - PM Peak Hour Trips



**FIGURE 5:**  
 2023 TRAFFIC VOLUMES

**SOUTH RICHLAND  
 MULTI-FAMILY DEVELOPMENT  
 Traffic Impact Analysis**

Queues were examined again with the total combined queues for the southbound left turn at Skyline Drive and the northbound left turn at the WalMart entrance being the same as existing conditions with 25' queue in the AM and 125' queue in the PM peak hour.

## Summary and Recommendations

Located in the south part of the City of Richland, between Queensgate Drive and the Yakima River, and north of I-182, lies an undeveloped parcel of land adjacent to The Hills Mobile Home Park. The owner desires to develop the approximately 10 acre parcel as a multi-family residential development with approximately 35 duplexes or 70 residential units. The sole access to the property will be from Skyline Drive which connects to Queensgate Drive where full movement of traffic is currently allowed.

This Traffic Impact Analysis (TIA) has been performed to determine if the existing intersection of Queensgate Drive/Skyline Drive can provide acceptable Levels of Service for all movements with the additional traffic associated with the proposed development. There is also concern that with the proximity of the Wal-Mart entrance to the north that queues for the northbound left turns into the Wal-Mart and queues for the southbound left turns onto Skyline Drive will have adequate storage space since they share the two-way-left-turn-lane.

The proposed development is anticipated to generate 53 AM peak hour trips and 70 PM peak hour trips. In addition to existing conditions, this TIA has been performed to evaluate three future year scenarios:

- 1) Opening Year – which does not include the Duportail Extension over the Yakima River.
- 2) Year 2023 – which will include the future extension of Duportail Street over the Yakima River, connecting to Queensgate Drive north of the study area.

The existing intersection of Skyline Drive at Queensgate Drive functions with acceptable Level of Service “C” during AM and PM peak hours, with 16.3 and 22.3 seconds of average vehicle delay respectively. Opening year the delay will be slightly higher with the PM adding 4 seconds and falling to LOS “D”.

By year 2023 the Duportail Street Bridge will be completed which is anticipated to cause changes in traffic patterns. In this scenario, even though there is projected continued growth of 1.5% per year in the corridor, the delay is slightly lower at the Skyline Drive intersection due to the anticipated change in the directional distribution of traffic on Queensgate Drive. The intersections will work well for several years to come.

Queues were examined for all scenarios to determine if adequate storage is provided in the two-way-left-turn-lane between Skyline Drive and the WalMart Entrance. Existing queues are a total of 125’, as are the opening year queues. The year 2023 queues total 150’. and are easily accommodated by the 475’ of storage space between the two left turn movements.

# **Appendix A**

## **Collision History**

Collision History at Queensgate Drive/Skyline Drive Intersection 2012 - 2016

PRIMARY TRAFFICWAY	INTERSECTING TRAFFICWAY	DIST FROM REF POINT	MI or FT	COMP DIR FROM REF POINT	REFERENCE POINT NAME	REPORT NUMBER	DATE	TIME	MOST SEVERE INJURY TYPE	JUNCTION RELATIONSHIP	FIRST COLLISION TYPE / OBJECT STRUCK	VEHICLE 1 ACTION	DRIVER CONTRIBUTING CIRCUMSTANCES 1 (UNIT 2)	VEHICLE 1 COMPASS DIRECTION FROM	VEHICLE 1 COMPASS DIRECTION TO	VEHICLE 2 COMPASS DIRECTION FROM	VEHICLE 2 COMPASS DIRECTION TO
QUEENSGATE DR		50	F	NW	SKYLINE	E198171	10/14/2012	14:11	No Injury	Not at Intersection and Not Related	From same direction - both going straight - both moving - sideswipe	Did Not Grant RW to Vehicle	South	North	South	Lane of Primary Trafficway	
QUEENSGATE DR		100	F	SE	SKYLINE	E206652	11/17/2012	18:10	No Injury	Not at Intersection and Not Related	From same direction - both going straight - both moving - sideswipe	Did Not Grant RW to Vehicle	North	South	North	Lane of Primary Trafficway	
QUEENSGATE DR		100	F	NW	SKYLINE	E295427	12/23/2013	17:11	Possible Injury	Not at Intersection and Not Related	From same direction - both going straight - one stopped - rear-end	Driver Interacting with Passengers, Anim	South	Vehicle Stopped	Vehicle Stopped	Lane of Primary Trafficway	
QUEENSGATE DR	SKYLINE DR					E314548	3/16/2014	11:36	No Injury	At Intersection and Related	Entering at angle	Did Not Grant RW to Vehicle	South	South	North	Lane of Primary Trafficway	
QUEENSGATE DR		40	F	NW	SKYLINE	E396931	01/30/2015	15:26	No Injury	Not at Intersection and Not Related	From same direction - both going straight - one stopped - rear-end	Going Straight Ahead	None	North	South	Vehicle Stopped	Vehicle Stopped
QUEENSGATE DR		40	F	NW	SKYLINE	E428441	05/29/2015	15:07	Possible Injury	Not at Intersection and Not Related	From same direction - both going straight - both moving - rear-end	Going Straight Ahead	None	West	East	West	East
QUEENSGATE DR	SKYLINE DR					E447382	07/30/2015	09:22	No Injury	At Intersection and Related	Entering at angle	Making Left Turn	None	East	South	North	South
QUEENSGATE DR		70	F	S	SKYLINE	E503371	01/07/2016	17:10	Possible Injury	Not at Intersection and Not Related	From same direction - both going straight - both moving - sideswipe	Changing Lanes	None	North	South	North	South
QUEENSGATE DR	SKYLINE DR					E519171	02/23/2016	18:30	No Injury	At Intersection and Related	From same direction - both going straight - both moving - rear-end	Going Straight Ahead	None	North	South	North	South
QUEENSGATE DR	SKYLINE DR					E521996	03/05/2016	12:12	Possible Injury	At Intersection and Not Related	From same direction - both going straight - one stopped - rear-end	Going Straight Ahead	None	South	North	South	North
QUEENSGATE DR	SKYLINE DR					E586767	09/20/2016	17:10	No Injury	At Intersection and Not Related	From same direction - both going straight - one stopped - rear-end	Going Straight Ahead	None	North	South	North	Vehicle Stopped

# **Appendix B**

## **Traffic Volumes**

Existing Hour Period Turning Movement Volumes

6-Dec-17

Queensgate/Skyline Drive

AM PEAK HOUR	Northbound			Southbound			Eastbound			Westbound			Total Volume		
	Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	15 minute	Hourly
	7:00 - 7:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 - 7:30	0	0	0	0	0	0	0	0	0	0	0	0	0	337
	7:30 - 7:45	0	0	0	0	0	0	0	0	0	0	0	0	0	621
	7:45 - 8:00	0	0	0	0	0	0	0	0	0	0	0	0	0	954
	8:00 - 8:15	0	162	6	1	159	0	0	0	0	8	0	1	337	<b>1336</b>
	8:15 - 8:30	0	157	4	1	120	0	0	0	0	1	0	1	284	
	8:30 - 8:45	0	170	4	0	153	0	0	0	0	4	0	2	333	
	8:45 - 9:00	0	222	4	1	150	0	0	0	0	5	0	0	382	
	<b>TOTAL</b>	<b>0</b>	<b>711</b>	<b>18</b>	<b>3</b>	<b>582</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>18</b>	<b>0</b>	<b>4</b>	<b>1336</b>	

Peak Hr Total	0	711	18	3	582	0	0	0	0	18	0	4	1336	
pk Period	729	715		585	600		0	21		22	0		1336	1336
	IN	OUT		IN	OUT		IN	OUT		IN	OUT		IN	OUT
Pk Hr	729	715		585	600		0	21		22	0		1336	1336

PM PEAK HOUR	Northbound			Southbound			Eastbound			Westbound			Total Volume		
	Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	15 minute	Hourly
	4:00 - 4:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 - 4:30	0	0	0	0	0	0	0	0	0	0	0	0	0	664
	4:30 - 4:45	0	0	0	0	0	0	0	0	0	0	0	0	0	1331
	4:45 - 5:00	0	0	0	0	0	0	0	0	0	0	0	0	0	1972
	5:00 - 5:15	0	382	8	4	265	0	0	0	0	3	0	2	664	<b>2577</b>
	5:15 - 5:30	0	416	6	0	238	0	0	0	0	1	0	6	667	
	5:30 - 5:45	0	355	7	1	272	0	0	0	0	2	0	4	641	
	5:45 - 6:00	0	346	7	5	243	0	0	0	0	4	0	0	605	
	<b>TOTAL</b>	<b>0</b>	<b>1499</b>	<b>28</b>	<b>10</b>	<b>1018</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>10</b>	<b>0</b>	<b>12</b>	<b>2577</b>	

Peak Hr Total	0	1499	28	10	1018	0	0	0	0	10	0	12	2577	
pk Period	1527	1511		1028	1028		0	38		22	0		2577	2577
	IN	OUT		IN	OUT		IN	OUT		IN	OUT		IN	OUT
	1527	1511		1028	1028		0	38		22	0		2577	2577

Queensgate/WalMart Entrance

AM PEAK HOUR	Northbound			Southbound			Eastbound			Westbound			Total Volume		
	Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	15 minute	Hourly
	7:00 - 7:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 - 7:30	0	0	0	0	0	0	0	0	0	0	0	0	0	333
	7:30 - 7:45	0	0	0	0	0	0	0	0	0	0	0	0	0	616
	7:45 - 8:00	0	0	0	0	0	0	0	0	0	0	0	0	0	945
	8:00 - 8:15	37	126	0	0	135	9	1	0	25	0	0	0	333	<b>1324</b>
	8:15 - 8:30	41	117	0	0	109	4	0	0	12	0	0	0	283	
	8:30 - 8:45	44	128	0	0	122	3	1	0	31	0	0	0	329	
	8:45 - 9:00	44	178	0	0	126	6	0	0	25	0	0	0	379	
	<b>TOTAL</b>	<b>166</b>	<b>549</b>	<b>0</b>	<b>0</b>	<b>492</b>	<b>22</b>	<b>2</b>	<b>0</b>	<b>93</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1324</b>	

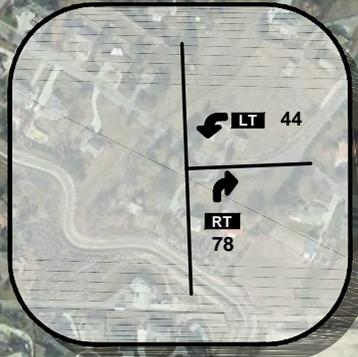
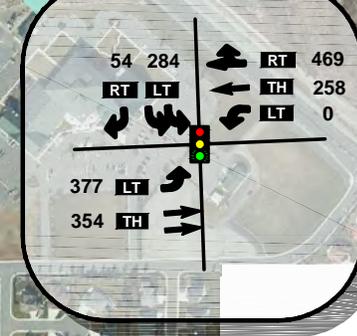
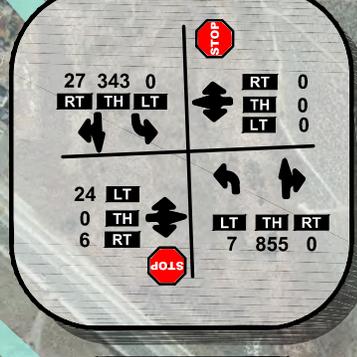
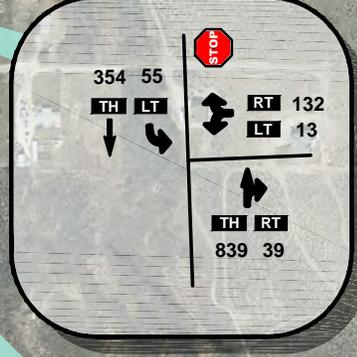
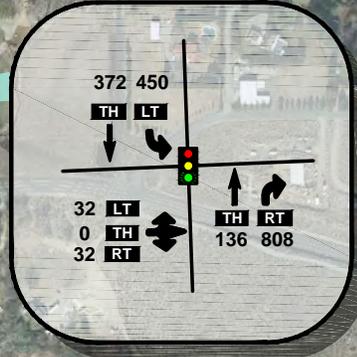
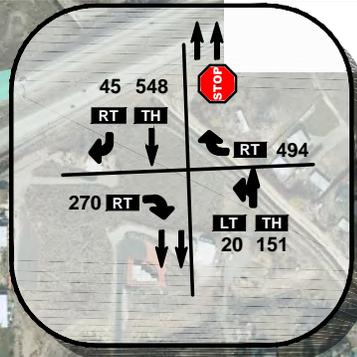
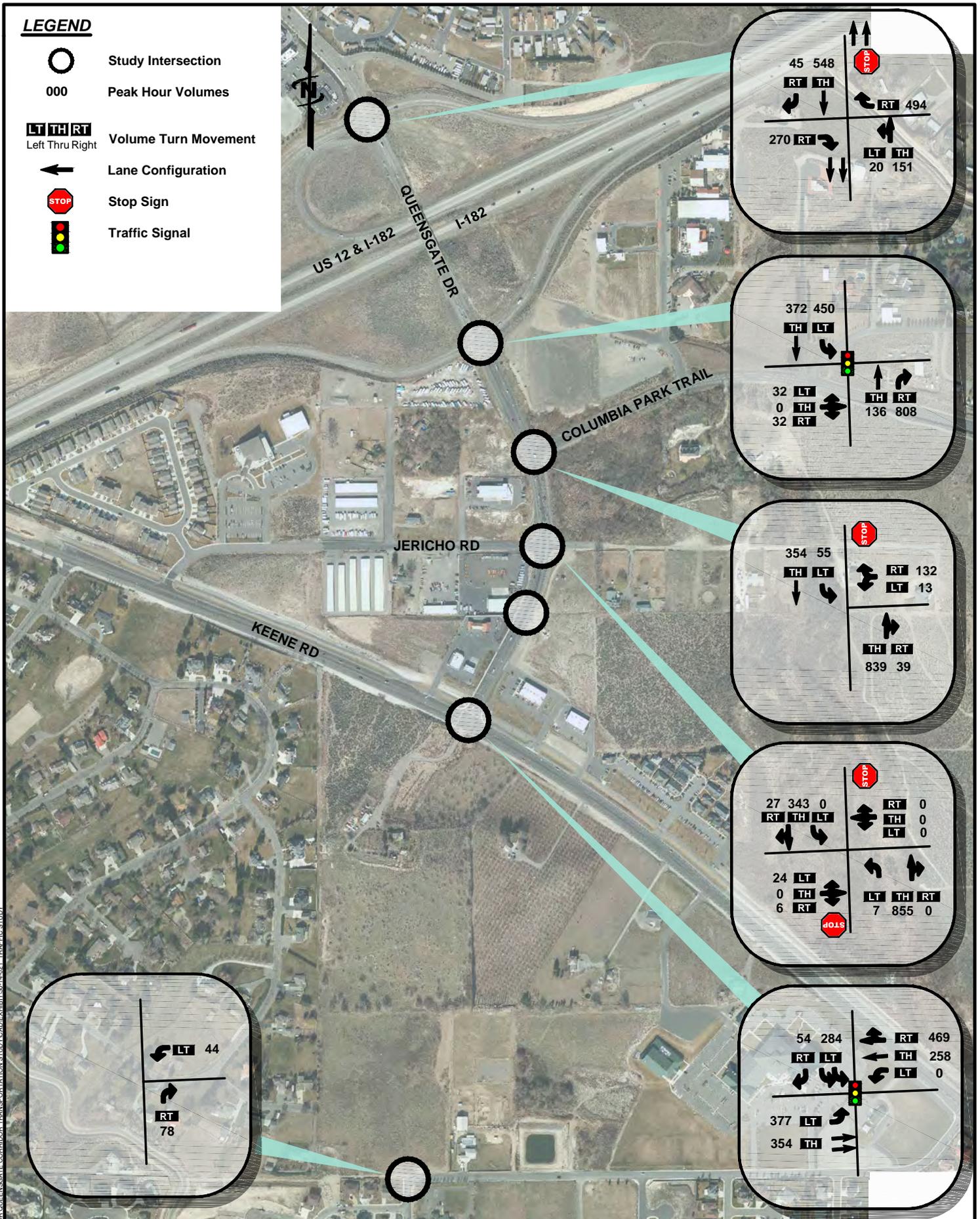
Peak Hr Total	166	549	0	0	492	22	2	0	93	0	0	0	1324	
pk Period	715	551		514	585		95	0		0	188		1324	1324
	IN	OUT		IN	OUT		IN	OUT		IN	OUT		IN	OUT
Pk Hr	715	551		514	585		95	0		0	188		1324	1324

PM PEAK HOUR	Northbound			Southbound			Eastbound			Westbound			Total Volume		
	Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	15 minute	Hourly
	4:00 - 4:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 - 4:30	0	0	0	0	0	0	0	0	0	0	0	0	0	660
	4:30 - 4:45	0	0	0	0	0	0	0	0	0	0	0	0	0	1327
	4:45 - 5:00	0	0	0	0	0	0	0	0	0	0	0	0	0	1961
	5:00 - 5:15	81	303	0	0	204	7	0	0	65	0	0	0	660	<b>2567</b>
	5:15 - 5:30	80	342	0	0	176	6	1	0	62	0	0	0	667	
	5:30 - 5:45	82	277	0	0	205	2	0	0	68	0	0	0	634	
	5:45 - 6:00	73	273	0	0	180	12	0	0	68	0	0	0	606	
	<b>TOTAL</b>	<b>316</b>	<b>1195</b>	<b>0</b>	<b>0</b>	<b>765</b>	<b>27</b>	<b>1</b>	<b>0</b>	<b>263</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2567</b>	

Peak Hr Total	316	1195	0	0	765	27	1	0	263	0	0	0	2567	
pk Period	1511	1196		792	1028		264	0		0	343		2567	2567
	IN	OUT		IN	OUT		IN	OUT		IN	OUT		IN	OUT
	1511	1196		792	1028		264	0		0	343		2567	2567

**LEGEND**

- Study Intersection
- 000 Peak Hour Volumes
- LT TH RT**  
Left Thru Right Volume Turn Movement
- Lane Configuration
- Stop Sign
- Traffic Signal



2014 AM PEAK TRAFFIC VOLUMES

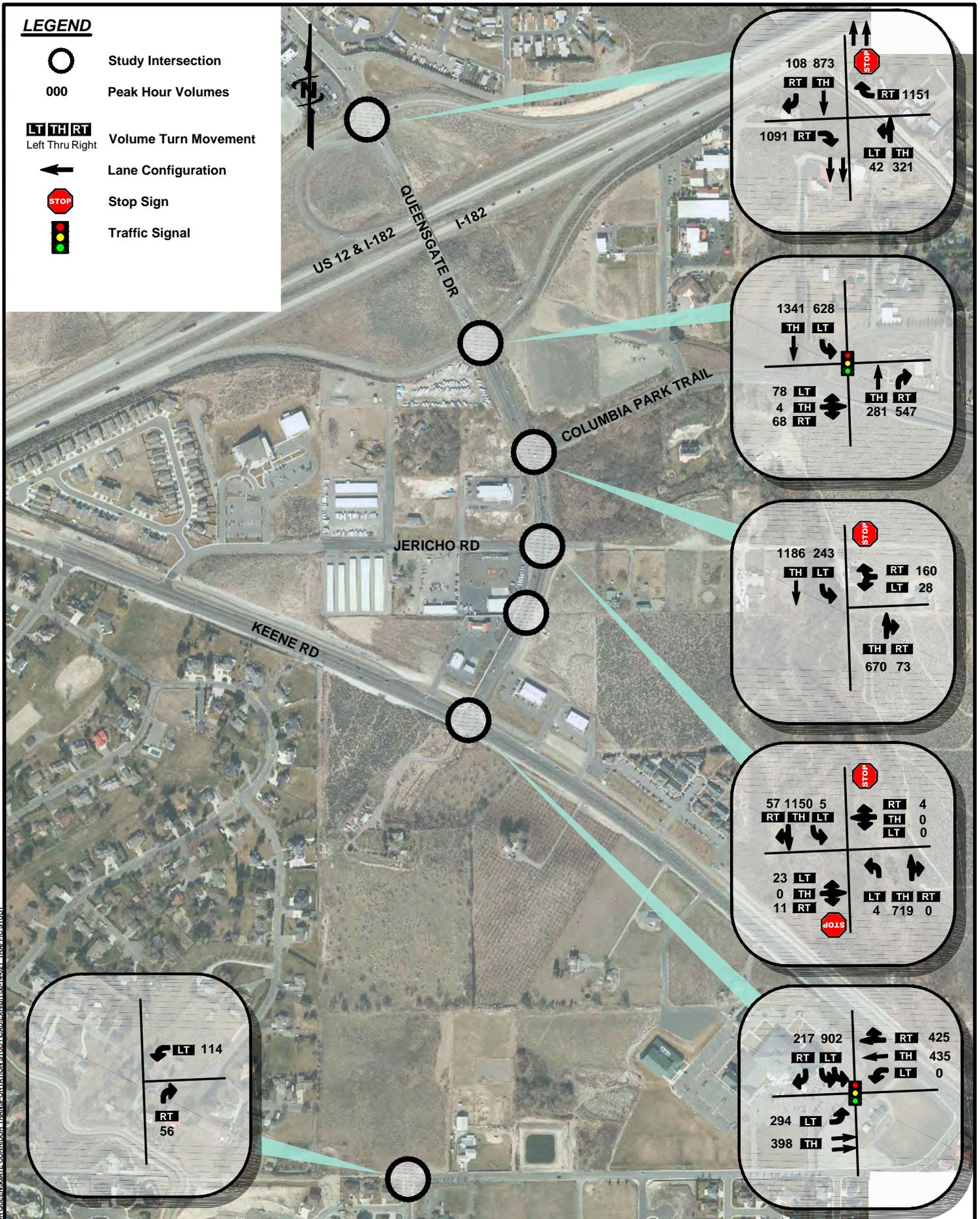
FIGURE 2

QUEENSGATE DRIVE CORRIDOR TRAFFIC STUDY

PROJECT: 14-021 - COR. QUEENSGATE CORRIDOR TRANSPORTATION STUDY; CAD: EXHIBIT 130-14-021 - TRAFFIC STUDY

**LEGEND**

- Study Intersection
- 000 Peak Hour Volumes
- LT TH RT**  
Left Thru Right Volume Turn Movement
- Lane Configuration
- Stop Sign
- Traffic Signal



PROJECT NUMBER: 14-021-COR-QUEENSGATE CORRIDOR TRANSPORTATION STUDY/GADEX/IBIT/30-14-021 TRAFFIC STUDY



2014 PM PEAK TRAFFIC VOLUMES

FIGURE 3

QUEENSGATE DRIVE CORRIDOR TRAFFIC STUDY





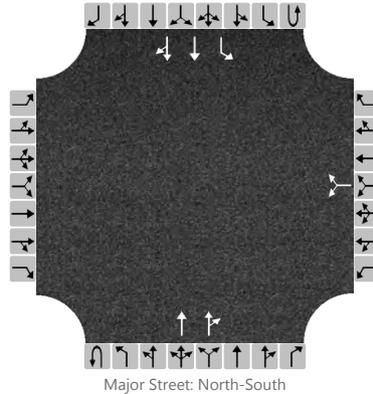
## **Appendix C**

### **Capacity Analysis Worksheets**

# HCS 2010 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	Montgomery	Intersection	Queensgate Dr/Skyline Dr
Agency/Co.	JUB Engineers	Jurisdiction	City of Richland
Date Performed	2/17/2018	East/West Street	Skyline Drive
Analysis Year	2017	North/South Street	Queensgate Drive
Time Analyzed	AM Peak	Peak Hour Factor	0.82
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Sawby Duplex Development		

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound				
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R	
Movement																	
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6	
Number of Lanes		0	0	0		0	0	0		0	2	0		0	1	2	0
Configuration							LR				T	TR		L	T	TR	
Volume, V (veh/h)						18		4			711	18		3	582	0	
Percent Heavy Vehicles (%)						3		3						3			
Proportion Time Blocked																	
Percent Grade (%)							0										
Right Turn Channelized		No				No				No				No			
Median Type/Storage		Left Only										1					

## Critical and Follow-up Headways

Base Critical Headway (sec)						7.5		6.9						4.1		
Critical Headway (sec)						6.86		6.96						4.16		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.53		3.33						2.23		

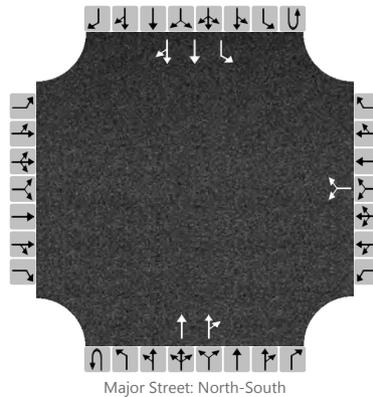
## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						27								4						
Capacity, c (veh/h)						345								752						
v/c Ratio						0.08								0.01						
95% Queue Length, Q <sub>95</sub> (veh)						0.3								0.0						
Control Delay (s/veh)						16.3								9.8						
Level of Service, LOS						C								A						
Approach Delay (s/veh)							16.3										0.1			
Approach LOS							C													

# HCS 2010 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	Montgomery	Intersection	Queensgate Dr/Skyline Dr
Agency/Co.	JUB Engineers	Jurisdiction	City of Richland
Date Performed	2/7/2018	East/West Street	Skyline Drive
Analysis Year	2017	North/South Street	Queensgate Drive
Time Analyzed	PM Peak	Peak Hour Factor	0.90
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Sawby Duplex Development		

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound				
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R	
Movement																	
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6	
Number of Lanes		0	0	0		0	0	0		0	2	0		0	1	2	0
Configuration							LR				T	TR		L	T	TR	
Volume, V (veh/h)						10		12			1499	28		10	1018	0	
Percent Heavy Vehicles (%)						3		3						3			
Proportion Time Blocked																	
Percent Grade (%)							0										
Right Turn Channelized		No				No				No				No			
Median Type/Storage				Left Only								1					

## Critical and Follow-up Headways

Base Critical Headway (sec)						7.5		6.9						4.1		
Critical Headway (sec)						6.86		6.96						4.16		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.53		3.33						2.23		

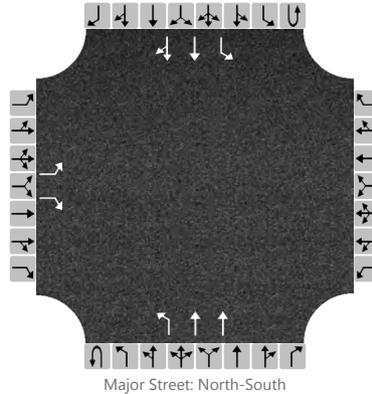
## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						24								11		
Capacity, c (veh/h)						232								367		
v/c Ratio						0.10								0.03		
95% Queue Length, Q <sub>95</sub> (veh)						0.3								0.1		
Control Delay (s/veh)						22.3								15.1		
Level of Service, LOS						C								C		
Approach Delay (s/veh)						22.3								0.1		
Approach LOS						C										

# HCS 2010 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	Montgomery	Intersection	Queensgate Dr/WalMart
Agency/Co.	JUB Engineers	Jurisdiction	City of Richland
Date Performed	12/13/2017	East/West Street	WalMart Driveway
Analysis Year	2017	North/South Street	Queensgate Drive
Time Analyzed	AM Peak	Peak Hour Factor	0.90
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Sawby Duplex Development		

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound					
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R		
Movement																		
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6		
Number of Lanes		1	0	1		0	0	0	0	1	2	0	0	1	2	0		
Configuration		L		R						L	T			L	T	TR		
Volume, V (veh/h)		2		93						166	549			0	492	22		
Percent Heavy Vehicles (%)		3		3						3				3				
Proportion Time Blocked																		
Percent Grade (%)		0																
Right Turn Channelized		No					No					No						
Median Type/Storage		Left Only									1							

## Critical and Follow-up Headways

Base Critical Headway (sec)		7.5		6.9						4.1				4.1		
Critical Headway (sec)		6.86		6.96						4.16				4.16		
Base Follow-Up Headway (sec)		3.5		3.3						2.2				2.2		
Follow-Up Headway (sec)		3.53		3.33						2.23				2.23		

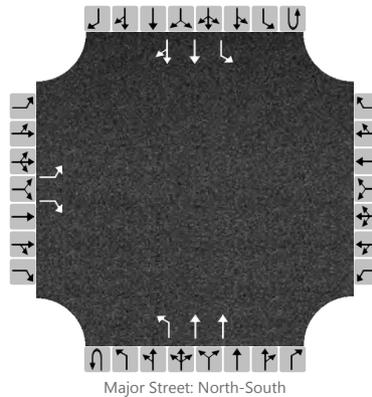
## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		2		103						184				0						
Capacity, c (veh/h)		262		708						991				958						
v/c Ratio		0.01		0.15						0.19				0.00						
95% Queue Length, Q <sub>95</sub> (veh)		0.0		0.5						0.7				0.0						
Control Delay (s/veh)		18.8		10.9						9.5				8.8						
Level of Service, LOS		C		B						A				A						
Approach Delay (s/veh)		11.1										2.2					0.0			
Approach LOS		B																		

# HCS 2010 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	Montgomery	Intersection	Queensgate Dr/WalMart
Agency/Co.	JUB Engineers	Jurisdiction	City of Richland
Date Performed	12/13/2017	East/West Street	WalMart Driveway
Analysis Year	2017	North/South Street	Queensgate Drive
Time Analyzed	PM Peak	Peak Hour Factor	0.90
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Sawby Duplex Development		

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound					
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R		
Movement																		
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6		
Number of Lanes		1	0	1		0	0	0	0	1	2	0	0	1	2	0		
Configuration		L		R						L	T			L	T	TR		
Volume, V (veh/h)		1		263						316	1195			0	765	27		
Percent Heavy Vehicles (%)		3		3						3				3				
Proportion Time Blocked																		
Percent Grade (%)		0																
Right Turn Channelized		No					No					No						
Median Type/Storage		Left Only									1							

## Critical and Follow-up Headways

Base Critical Headway (sec)		7.5		6.9						4.1				4.1		
Critical Headway (sec)		6.86		6.96						4.16				4.16		
Base Follow-Up Headway (sec)		3.5		3.3						2.2				2.2		
Follow-Up Headway (sec)		3.53		3.33						2.23				2.23		

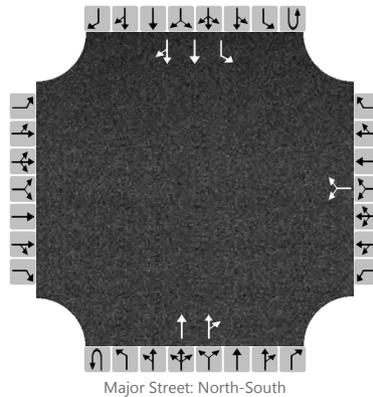
## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		1		292						351				0						
Capacity, c (veh/h)		82		562						758				511						
v/c Ratio		0.01		0.52						0.46				0.00						
95% Queue Length, Q <sub>95</sub> (veh)		0.0		3.0						2.5				0.0						
Control Delay (s/veh)		49.5		18.1						13.8				12.1						
Level of Service, LOS		E		C						B				B						
Approach Delay (s/veh)		18.2										2.9					0.0			
Approach LOS		C																		

# HCS 2010 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	Montgomery	Intersection	Queensgate Dr/Skyline Dr
Agency/Co.	JUB Engineers	Jurisdiction	City of Richland
Date Performed	2/17/2018	East/West Street	Skyline Drive
Analysis Year	2018	North/South Street	Queensgate Drive
Time Analyzed	AM Peak - Opening Year	Peak Hour Factor	0.82
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Sawby Duplex Development		

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound				
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R	
Movement																	
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6	
Number of Lanes		0	0	0		0	0	0		0	2	0		0	1	2	0
Configuration							LR				T	TR		L	T	TR	
Volume, V (veh/h)						51		11			722	29		5	590	0	
Percent Heavy Vehicles (%)						3		3						3			
Proportion Time Blocked																	
Percent Grade (%)							0										
Right Turn Channelized		No				No				No				No			
Median Type/Storage		Left Only										1					

## Critical and Follow-up Headways

Base Critical Headway (sec)						7.5		6.9						4.1		
Critical Headway (sec)						6.86		6.96						4.16		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.53		3.33						2.23		

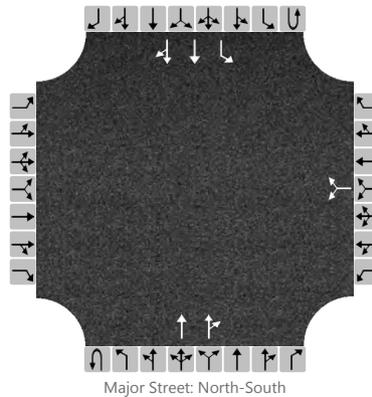
## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						75								6						
Capacity, c (veh/h)						331								735						
v/c Ratio						0.23								0.01						
95% Queue Length, Q <sub>95</sub> (veh)						0.9								0.0						
Control Delay (s/veh)						19.1								9.9						
Level of Service, LOS						C								A						
Approach Delay (s/veh)							19.1										0.1			
Approach LOS							C													

# HCS 2010 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	Montgomery	Intersection	Queensgate Dr/Skyline Dr
Agency/Co.	JUB Engineers	Jurisdiction	City of Richland
Date Performed	2/7/2018	East/West Street	Skyline Drive
Analysis Year	2018	North/South Street	Queensgate Drive
Time Analyzed	PM Peak Opening Year	Peak Hour Factor	0.90
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Sawby Duplex Development		

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound				
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R	
Movement																	
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6	
Number of Lanes		0	0	0		0	0	0		0	2	0		0	1	2	0
Configuration							LR				T	TR		L	T	TR	
Volume, V (veh/h)						22		26			1521	61		21	1033	0	
Percent Heavy Vehicles (%)						3		3						3			
Proportion Time Blocked																	
Percent Grade (%)							0										
Right Turn Channelized		No				No				No				No			
Median Type/Storage				Left Only								1					

## Critical and Follow-up Headways

Base Critical Headway (sec)						7.5		6.9						4.1		
Critical Headway (sec)						6.86		6.96						4.16		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.53		3.33						2.23		

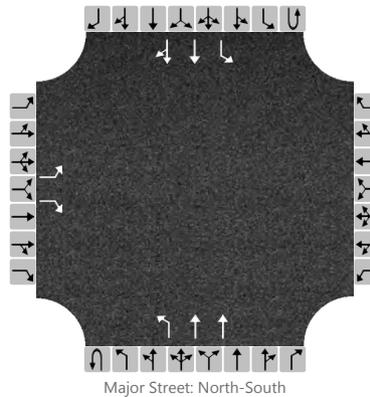
## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						53								23		
Capacity, c (veh/h)						220								348		
v/c Ratio						0.24								0.07		
95% Queue Length, Q <sub>95</sub> (veh)						0.9								0.2		
Control Delay (s/veh)						26.5								16.1		
Level of Service, LOS						D								C		
Approach Delay (s/veh)						26.5								0.3		
Approach LOS						D										

# HCS 2010 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	Montgomery	Intersection	Queensgate Dr/WalMart
Agency/Co.	JUB Engineers	Jurisdiction	City of Richland
Date Performed	2/7/2018	East/West Street	WalMart Driveway
Analysis Year	2018	North/South Street	Queensgate Drive
Time Analyzed	AM Peak Opening	Peak Hour Factor	0.90
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Sawby Duplex Development		

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound					
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R		
Movement																		
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6		
Number of Lanes		1	0	1		0	0	0	0	1	2	0	0	1	2	0		
Configuration		L		R						L	T			L	T	TR		
Volume, V (veh/h)		2		94						170	562			0	501	22		
Percent Heavy Vehicles (%)		3		3						3				3				
Proportion Time Blocked																		
Percent Grade (%)		0																
Right Turn Channelized		No					No					No						
Median Type/Storage		Left Only									1							

## Critical and Follow-up Headways

Base Critical Headway (sec)		7.5		6.9						4.1				4.1		
Critical Headway (sec)		6.86		6.96						4.16				4.16		
Base Follow-Up Headway (sec)		3.5		3.3						2.2				2.2		
Follow-Up Headway (sec)		3.53		3.33						2.23				2.23		

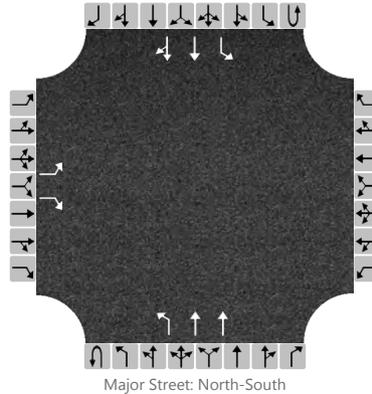
## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		2		104						189				0						
Capacity, c (veh/h)		255		704						982				947						
v/c Ratio		0.01		0.15						0.19				0.00						
95% Queue Length, Q <sub>95</sub> (veh)		0.0		0.5						0.7				0.0						
Control Delay (s/veh)		19.2		11.0						9.5				8.8						
Level of Service, LOS		C		B						A				A						
Approach Delay (s/veh)		11.2										2.2					0.0			
Approach LOS		B																		

# HCS 2010 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	Montgomery	Intersection	Queensgate Dr/WalMart
Agency/Co.	JUB Engineers	Jurisdiction	City of Richland
Date Performed	2/7/2018	East/West Street	WalMart Driveway
Analysis Year	2018	North/South Street	Queensgate Drive
Time Analyzed	PM Peak Opening	Peak Hour Factor	0.90
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Sawby Duplex Development		

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound					
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R		
Movement																		
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6		
Number of Lanes		1	0	1		0	0	0	0	1	2	0	0	1	2	0		
Configuration		L		R						L	T			L	T	TR		
Volume, V (veh/h)		1		270						324	1224			0	784	27		
Percent Heavy Vehicles (%)		3		3						3				3				
Proportion Time Blocked																		
Percent Grade (%)		0																
Right Turn Channelized		No					No					No						
Median Type/Storage		Left Only									1							

## Critical and Follow-up Headways

Base Critical Headway (sec)		7.5		6.9						4.1				4.1		
Critical Headway (sec)		6.86		6.96						4.16				4.16		
Base Follow-Up Headway (sec)		3.5		3.3						2.2				2.2		
Follow-Up Headway (sec)		3.53		3.33						2.23				2.23		

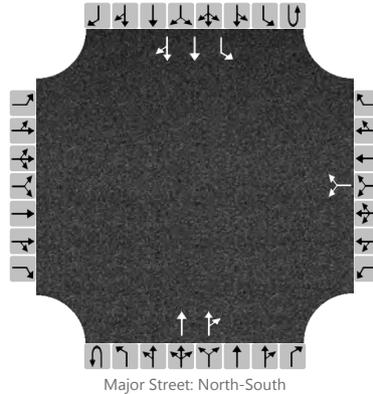
## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		1		300						360				0						
Capacity, c (veh/h)		76		554						744				496						
v/c Ratio		0.01		0.54						0.48				0.00						
95% Queue Length, Q <sub>95</sub> (veh)		0.0		3.2						2.7				0.0						
Control Delay (s/veh)		53.0		18.9						14.3				12.3						
Level of Service, LOS		F		C						B				B						
Approach Delay (s/veh)		19.0										3.0					0.0			
Approach LOS		C																		

# HCS 2010 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	Montgomery			Intersection	Queensgate Dr/Skyline Dr		
Agency/Co.	JUB Engineers			Jurisdiction	City of Richland		
Date Performed	2/17/2018			East/West Street	Skyline Drive		
Analysis Year	2023			North/South Street	Queensgate Drive		
Time Analyzed	AM Peak - Short Term			Peak Hour Factor	0.90		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	Sawby Duplex Development						

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound				
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R	
Movement																	
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6	
Number of Lanes		0	0	0		0	0	0		0	2	0		0	1	2	0
Configuration							LR				T	TR		L	T	TR	
Volume, V (veh/h)						51		11			670	29		5	765	0	
Percent Heavy Vehicles (%)						3		3						3			
Proportion Time Blocked																	
Percent Grade (%)							0										
Right Turn Channelized		No				No				No				No			
Median Type/Storage		Left Only								1							

## Critical and Follow-up Headways

Base Critical Headway (sec)						7.5		6.9						4.1		
Critical Headway (sec)						6.86		6.96						4.16		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.53		3.33						2.23		

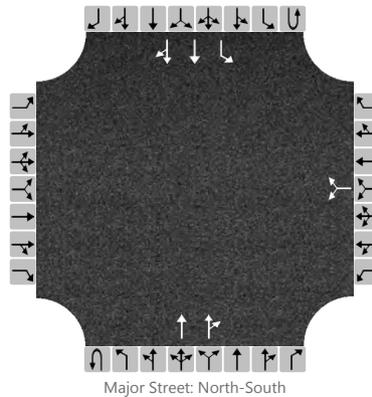
## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						69								6		
Capacity, c (veh/h)						367								830		
v/c Ratio						0.19								0.01		
95% Queue Length, Q <sub>95</sub> (veh)						0.7								0.0		
Control Delay (s/veh)						17.1								9.4		
Level of Service, LOS						C								A		
Approach Delay (s/veh)		17.1								0.1						
Approach LOS		C														

# HCS 2010 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	Montgomery	Intersection	Queensgate Dr/Skyline Dr
Agency/Co.	JUB Engineers	Jurisdiction	City of Richland
Date Performed	2/7/2018	East/West Street	Skyline Drive
Analysis Year	2023	North/South Street	Queensgate Drive
Time Analyzed	PM Peak Short-term	Peak Hour Factor	0.90
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Sawby Duplex Development		

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound				
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R	
Movement																	
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6	
Number of Lanes		0	0	0		0	0	0	0	0	2	0	0	1	2	0	
Configuration							LR				T	TR		L	T	TR	
Volume, V (veh/h)							22	26			1490	61		21	1240	0	
Percent Heavy Vehicles (%)							3	3						3			
Proportion Time Blocked																	
Percent Grade (%)							0										
Right Turn Channelized		No				No				No				No			
Median Type/Storage		Left Only								1							

## Critical and Follow-up Headways

Base Critical Headway (sec)						7.5		6.9						4.1			
Critical Headway (sec)						6.86		6.96						4.16			
Base Follow-Up Headway (sec)						3.5		3.3						2.2			
Follow-Up Headway (sec)						3.53		3.33						2.23			

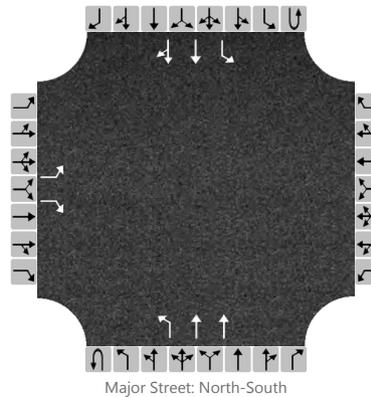
## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						53								23			
Capacity, c (veh/h)						220								358			
v/c Ratio						0.24								0.06			
95% Queue Length, Q <sub>95</sub> (veh)						0.9								0.2			
Control Delay (s/veh)						26.5								15.7			
Level of Service, LOS						D								C			
Approach Delay (s/veh)						26.5								0.3			
Approach LOS						D											

# HCS 2010 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	Montgomery	Intersection	Queensgate Dr/WalMart
Agency/Co.	JUB Engineers	Jurisdiction	City of Richland
Date Performed	12/13/2017	East/West Street	WalMart Driveway
Analysis Year	2023	North/South Street	Queensgate Drive
Time Analyzed	AM Short Rnge (w/Dup)	Peak Hour Factor	0.90
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Sawby Duplex Development		

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound					
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R		
Movement																		
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6		
Number of Lanes		1	0	1		0	0	0	0	1	2	0	0	1	2	0		
Configuration		L		R						L	T			L	T	TR		
Volume, V (veh/h)		2		94						160	520			0	670	32		
Percent Heavy Vehicles (%)		3		3						3				3				
Proportion Time Blocked																		
Percent Grade (%)		0																
Right Turn Channelized		No					No					No						
Median Type/Storage		Left Only									1							

## Critical and Follow-up Headways

Base Critical Headway (sec)		7.5		6.9						4.1				4.1		
Critical Headway (sec)		6.86		6.96						4.16				4.16		
Base Follow-Up Headway (sec)		3.5		3.3						2.2				2.2		
Follow-Up Headway (sec)		3.53		3.33						2.23				2.23		

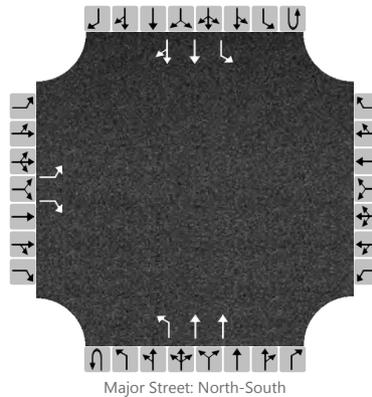
## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		2		104						178				0						
Capacity, c (veh/h)		227		606						827				985						
v/c Ratio		0.01		0.17						0.22				0.00						
95% Queue Length, Q <sub>95</sub> (veh)		0.0		0.6						0.8				0.0						
Control Delay (s/veh)		21.0		12.2						10.5				8.7						
Level of Service, LOS		C		B						B				A						
Approach Delay (s/veh)		12.3										2.5					0.0			
Approach LOS		B																		

# HCS 2010 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	Montgomery	Intersection	Queensgate Dr/WalMart
Agency/Co.	JUB Engineers	Jurisdiction	City of Richland
Date Performed	12/13/2017	East/West Street	WalMart Driveway
Analysis Year	2023	North/South Street	Queensgate Drive
Time Analyzed	PM Short Rnge (w/Dup)	Peak Hour Factor	0.90
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Sawby Duplex Development		

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound				
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R	
Movement																	
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6	
Number of Lanes		1	0	1		0	0	0	0	1	2	0	0	1	2	0	
Configuration		L		R						L	T			L	T	TR	
Volume, V (veh/h)		1		270						305	1190			0	990	45	
Percent Heavy Vehicles (%)		3		3						3				3			
Proportion Time Blocked																	
Percent Grade (%)		0															
Right Turn Channelized		No				No				No				No			
Median Type/Storage		Left Only								1							

## Critical and Follow-up Headways

Base Critical Headway (sec)		7.5		6.9						4.1				4.1			
Critical Headway (sec)		6.86		6.96						4.16				4.16			
Base Follow-Up Headway (sec)		3.5		3.3						2.2				2.2			
Follow-Up Headway (sec)		3.53		3.33						2.23				2.23			

## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		1		300						339				0			
Capacity, c (veh/h)		65		459						598				513			
v/c Ratio		0.02		0.65						0.57				0.00			
95% Queue Length, Q <sub>95</sub> (veh)		0.0		4.6						3.5				0.0			
Control Delay (s/veh)		61.2		26.5						18.6				12.0			
Level of Service, LOS		F		D						C				B			
Approach Delay (s/veh)		26.6								3.8				0.0			
Approach LOS		D															

**Appendix D**

**Conceptual Site Plan**



## **SEPA ENVIRONMENTAL CHECKLIST**

### ***Purpose of checklist:***

Governmental agencies use this checklist to help determine whether the environmental impacts of your proposal are significant. This information is also helpful to determine if available avoidance, minimization or compensatory mitigation measures will address the probable significant impacts or if an environmental impact statement will be prepared to further analyze the proposal.

### ***Instructions for applicants:***

This environmental checklist asks you to describe some basic information about your proposal. Please answer each question accurately and carefully, to the best of your knowledge. You may need to consult with an agency specialist or private consultant for some questions. You may use "not applicable" or "does not apply" only when you can explain why it does not apply and not when the answer is unknown. You may also attach or incorporate by reference additional studies reports. Complete and accurate answers to these questions often avoid delays with the SEPA process as well as later in the decision-making process.

The checklist questions apply to all parts of your proposal, even if you plan to do them over a period of time or on different parcels of land. Attach any additional information that will help describe your proposal or its environmental effects. The agency to which you submit this checklist may ask you to explain your answers or provide additional information reasonably related to determining if there may be significant adverse impact.

### ***Instructions for Lead Agencies:***

Please adjust the format of this template as needed. Additional information may be necessary to evaluate the existing environment, all interrelated aspects of the proposal and an analysis of adverse impacts. The checklist is considered the first but not necessarily the only source of information needed to make an adequate threshold determination. Once a threshold determination is made, the lead agency is responsible for the completeness and accuracy of the checklist and other supporting documents.

### ***Use of checklist for nonproject proposals:***

For nonproject proposals (such as ordinances, regulations, plans and programs), complete the applicable parts of sections A and B plus the [SUPPLEMENTAL SHEET FOR NONPROJECT ACTIONS \(part D\)](#). Please completely answer all questions that apply and note that the words "project,applicant," and "property or site" should be read as "proposal,proponent," and "affected geographic area," respectively. The lead agency may exclude (for non-projects) questions in Part B - Environmental Elements –that do not contribute meaningfully to the analysis of the proposal.

## A. Background

1. Name of proposed project, if applicable:  
Sawby South Richland Multifamily Development
2. Name of applicant:  
Dennis Sawby
3. Address and phone number of applicant and contact person:  
12904 S. Grandview Ln., Kennewick, Wa 99338  
Dennis Sawby (509) 308-1423
4. Date checklist prepared:  
10-9-19
5. Agency requesting checklist:  
City of Richland
6. Proposed timing or schedule (including phasing, if applicable):  
Fall 2019 – Spring/Summer 2020
7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.  
No.
8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.  
SEPA checklist & Critical Areas Report.
9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain.  
No.
10. List any government approvals or permits that will be needed for your proposal, if known.  
City Preliminary Plat Approval.

11. Give brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page. (Lead agencies may modify this form to include additional specific information on project description.)

The property is 9.8 acres. The finished project will consist of 56 residential town home lots served by City streets & utilities.

12. Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist.

The property is located in South Richland at the east end of Skyline Dr. The property is adjacent to and north of I-182 and adjacent to and east of Hills Mobile Home Park. See attached Preliminary Plat exhibit.

## B. ENVIRONMENTAL ELEMENTS

### 1. Earth

a. General description of the site:

(circle one): Flat, rolling, **hilly**, **steep slopes**, mountainous, other \_\_\_\_\_

b. What is the steepest slope on the site (approximate percent slope)?

25%

c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any agricultural land of long-term commercial significance and whether the proposal results in removing any of these soils.

The USDA Natural Resources Conservation Service (NRCS) has mapped the soils on and around the site as Quincy Loamy Sand, 0 to 30 percent (QuE).

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.

No.

e. Describe the purpose, type, total area, and approximate quantities and total affected area of any filling, excavation, and grading proposed. Indicate source of fill.

Total area of site is approximately 9.80 acres. The limits of the mass grading is approximately 6 acres. Approximately 26,000 cubic yards of material will be moved.

- f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe.

General erosion may occur during grading and construction activities. Minor erosion may occur during rain events or dust control watering.

- g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?

38%

- h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any:

Erosion and sedimentation control measures are required by the City of Richland. Typical measures include silt fence installation and dust control plans during construction.

## 2. Air

- a. What types of emissions to the air would result from the proposal during construction, operation, and maintenance when the project is completed? If any, generally describe and give approximate quantities if known.

Equipment exhaust and dust during construction. Typical vehicle exhaust after construction.

- b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.

No.

- c. Proposed measures to reduce or control emissions or other impacts to air, if any:

NONE.

## 3. Water

- a. Surface Water:

- 1) Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.

The Yakima River is located approximately 1,600-feet northeast of the project site.

2) Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans.

No.

3) Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected.

Indicate the source of fill material.

None.

4) Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known.

No.

5) Does the proposal lie within a 100-year floodplain? If so, note location on the site plan.

No.

6) Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.

No.

b. Ground Water:

1) Will groundwater be withdrawn from a well for drinking water or other purposes? If so, give a general description of the well, proposed uses and approximate quantities withdrawn from the well. Will water be discharged to groundwater? Give general description, purpose, and approximate quantities if known.

No.

2) Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: Domestic sewage; industrial, containing the following chemicals. . . ; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve.

None.

c. Water runoff (including stormwater):

1) Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.

After full build-out, storm run-off from impervious surfaces such as asphalt and concrete sidewalks will be captured in drainage conveyance systems and routed to

a storm drainage retention basin. Run-off from roof tops generally infiltrates into landscaping around homes.

2) Could waste materials enter ground or surface waters? If so, generally describe.

No.

3) Does the proposal alter or otherwise affect drainage patterns in the vicinity of the site? If so, describe.

No.

d. Proposed measures to reduce or control surface, ground, and runoff water, and drainage pattern impacts, if any:

Storm run-off conveyance system with drainage retention basin. Soil stabilization on disturbed areas.

#### 4. Plants

a. Check the types of vegetation found on the site:

deciduous tree: alder, maple, aspen, other

evergreen tree: fir, cedar, pine, other

shrubs

grass

pasture

crop or grain

Orchards, vineyards or other permanent crops.

wet soil plants: cattail, buttercup, bullrush, skunk cabbage, other

water plants: water lily, eelgrass, milfoil, other

other types of vegetation

Sage brush and native grasses.

b. What kind and amount of vegetation will be removed or altered?

Native grasses and sage brush will be removed from site where grading construction activities will occur. Limits of grading area is approximately 6 acres.

c. List threatened and endangered species known to be on or near the site.

There are no known threatened or endangered species on or near the project site. Dept. of Fish & Wildlife has reviewed property and found no PHS issues.

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance

vegetation on the site, if any:

At full build-out, landscaping will be typical of residential neighborhood development. Landscaping may include grass, trees, shrubs, bushes, decorative rock, etc.

- e. List all noxious weeds and invasive species known to be on or near the site.  
No known noxious weeds or invasive species.

## 5. Animals

- a. List any birds and other animals which have been observed on or near the site or are known to be on or near the site.

Examples include:

birds: hawk, heron, eagle, songbirds, other:

mammals: deer, bear, elk, beaver, other:

fish: bass, salmon, trout, herring, shellfish, other X

Mice, rabbits, coyotes

- b. List any threatened and endangered species known to be on or near the site.  
There are no known threatened or endangered species on or near the project site. No PHS issues per Dept. of Fish & Wildlife review.

- c. Is the site part of a migration route? If so, explain.  
Richland is in the Pacific Flyway.

- d. Proposed measures to preserve or enhance wildlife, if any: None

- e. List any invasive animal species known to be on or near the site.  
No known invasive species.

## 6. Energy and Natural Resources

- a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc.

Underground electricity will be provided to each lot created on this site. If available, gas will also be provided. I assume both will be used for heating.

- b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.  
No.

c. What kinds of energy conservation features are included in the plans of this proposal?

List other proposed measures to reduce or control energy impacts, if any:

None.

## 7. Environmental Health

a. Are there any environmental health hazards, including exposure to toxic chemicals, risk

of fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal? No.

If so, describe.

1) Describe any known or possible contamination at the site from present or past uses.

None.

2) Describe existing hazardous chemicals/conditions that might affect project development and design. This includes underground hazardous liquid and gas transmission pipelines located within the project area and in the vicinity.

None.

3) Describe any toxic or hazardous chemicals that might be stored, used, or produced during the project's development or construction, or at any time during the operating life of the project.

None.

4) Describe special emergency services that might be required.

None.

5) Proposed measures to reduce or control environmental health hazards, if any:

None.

b. Noise

1) What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)?

General car noise common to a residential neighborhood.

2) What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indi-cate what hours noise would come from the site.

Construction equipment during construction. General car noise common to a residential neighborhood after construction.

3) Proposed measures to reduce or control noise impacts, if any:

None

## 8. Land and Shoreline Use

a. What is the current use of the site and adjacent properties? Will the proposal affect current land uses on nearby or adjacent properties? If so, describe.

The property is currently zoned Multiple Family Residential (R-3). A mobile home park is adjacent and west of the property.

b. Has the project site been used as working farmlands or working forest lands? If so, describe. How much agricultural or forest land of long-term commercial significance will be converted to other uses as a result of the proposal, if any? If resource lands have not been designated, how many acres in farmland or forest land tax status will be converted to nonfarm or nonforest use?

The property appears to be natural open space with no evidence of past usage for anything other than open range land.

1) Will the proposal affect or be affected by surrounding working farm or forest land normal business operations, such as oversize equipment access, the application of pesticides, tilling, and harvesting? If so, how:

No.

c. Describe any structures on the site.

None.

d. Will any structures be demolished? If so, what?

No.

e. What is the current zoning classification of the site?

Multiple Family Residential (R-3)

f. What is the current comprehensive plan designation of the site?

High Density Residential.

g. If applicable, what is the current shoreline master program designation of the site?

Property has no specific designation on the City Shoreline Master Plan.

h. Has any part of the site been classified as a critical area by the city or county? If so, specify.

No.

- i. Approximately how many people would reside or work in the completed project?  
At full build-out, 56 single family town homes will be built on this site. Using 3 people per family, approximately 168 people will live on this site.
- j. Approximately how many people would the completed project displace?  
None.
- k. Proposed measures to avoid or reduce displacement impacts, if any:  
None.
- l. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:  
City zoning regulations.
- m. Proposed measures to reduce or control impacts to agricultural and forest lands of long-term commercial significance, if any:  
None.

## 9. Housing

- a. Approximately how many units would be provided, if any? Indicate whether high, mid-dle, or low-income housing.  
56 middle income units.
- b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.  
None.
- c. Proposed measures to reduce or control housing impacts, if any:  
None.

## 10. Aesthetics

- a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed?  
Maximum structure heights are controlled by City building standards. The principal exterior material will be per City building code.
- b. What views in the immediate vicinity would be altered or obstructed?  
None.
- b. Proposed measures to reduce or control aesthetic impacts, if any:  
None.

## 11. Light and Glare

- a. What type of light or glare will the proposal produce? What time of day would it mainly occur?

General area lighting from homes and street lights.

- b. Could light or glare from the finished project be a safety hazard or interfere with views?

No.

- c. What existing off-site sources of light or glare may affect your proposal?

None.

- d. Proposed measures to reduce or control light and glare impacts, if any:

None.

## 12. Recreation

- a. What designated and informal recreational opportunities are in the immediate vicinity?

None.

- b. Would the proposed project displace any existing recreational uses? If so, describe.

No.

- c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:

None.

## 13. Historic and cultural preservation

- a. Are there any buildings, structures, or sites, located on or near the site that are over 45 years old listed in or eligible for listing in national, state, or local preservation registers? If so, specifically describe.

No.

- b. Are there any landmarks, features, or other evidence of Indian or historic use or occupation? This may include human burials or old cemeteries. Are there any material evidence, artifacts, or areas of cultural importance on or near the site? Please list any professional studies conducted at the site to identify such resources.

No evidence known.

- c. Describe the methods used to assess the potential impacts to cultural and historic resources on or near the project site. Examples include consultation with tribes and the department of archeology and historic preservation, archaeological surveys, historic maps, GIS data, etc.

Washington Information System for Architectural & Archaeological Records Data has no information listed for this site.

- d. Proposed measures to avoid, minimize, or compensate for loss, changes to, and disturbance to resources. Please include plans for the above and any permits that may be required.

No proposed measures and no known permits required.

#### 14. Transportation

- a. Identify public streets and highways serving the site or affected geographic area and describe proposed access to the existing street system. Show on site plans, if any.

Property is located at the east end of Skyline Dr. Access to Queensgate Dr. and Interstate 182 is available near this site.

- b. Is the site or affected geographic area currently served by public transit? If so, generally describe. If not, what is the approximate distance to the nearest transit stop?

The City of Richland is served by the Ben Franklin Transit busing system. This project site is within the City limits.

- c. How many additional parking spaces would the completed project or non-project proposal have? How many would the project or proposal eliminate?

Currently the site is undeveloped land with no parking. At full build-out, Public streets will be constructed adjacent to residential home lots. Vehicle parking will be provided in accordance with general residential subdivision development.

- d. Will the proposal require any new or improvements to existing roads, streets, pedestrian, bicycle or state transportation facilities, not including driveways? If so, generally describe (indicate whether public or private). \_\_\_\_\_

No improvements required at this time. City preliminary plat review may include requirements of street improvements to Skyline Dr.

- e. Will the project or proposal use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.

No.

- f. How many vehicular trips per day would be generated by the completed project or proposal? If known, indicate when peak volumes would occur and what percentage of the volume would be trucks (such as commercial and nonpassenger vehicles).

What data or transportation models were used to make these estimates?

At full build-out, 52 single family residences will generate approximately 10 vehicle trips per day each. Approximately 520 vehicle trips per day will occur. Peak volumes will generally occur in the mornings and around 5pm.

- g. Will the proposal interfere with, affect or be affected by the movement of agricultural and forest products on roads or streets in the area? If so, generally describe.

No.

h. Proposed measures to reduce or control transportation impacts, if any:

No.

**15. Public Services**

a. Would the project result in an increased need for public services (for example: fire protection, police protection, public transit, health care, schools, other)? If so, generally describe.

Increases to all public services will be required to meet the demand of 52 single family residences.

c. Proposed measures to reduce or control direct impacts on public services, if any.

None.

**16. Utilities**

a. Circle utilities currently available at the site:

electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic system, other \_\_\_\_\_

b. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed.

At full build-out, all public services listed above will be extended to each single family residence.

**C. Signature**

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature: Steve Spink

Name of signee Steve Spink

Position and Agency/Organization Principal / Spink Engineering

Date Submitted: 10-10-19

**COMMUNITY DEVELOPMENT DEPARTMENT**

THIS APPLICATION WAS REVIEWED BY THE PLANNING DIVISION OF THE COMMUNITY DEVELOPMENT DEPARTMENT. ANY COMMENTS

OR CHANGES MADE BY THE DEPARTMENT ARE ENTERED IN THE  
BODY OF THE CHECKLIST AND CONTAIN INITIALS OF THE  
REVIEWER

---

Reviewer Signature

Date

**C. Signature** [\[HELP\]](#)

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature: Steve Spink  
Name of signee Steve Spink  
Position and Agency/Organization Owner / Spink Engineering  
Date Submitted: 1/13/20

**D. Supplemental sheet for nonproject actions** [\[HELP\]](#)

(IT IS NOT NECESSARY to use this sheet for project actions)

Because these questions are very general, it may be helpful to read them in conjunction with the list of the elements of the environment.

When answering these questions, be aware of the extent the proposal, or the types of activities likely to result from the proposal, would affect the item at a greater intensity or at a faster rate than if the proposal were not implemented. Respond briefly and in general terms.

1. How would the proposal be likely to increase discharge to water; emissions to air; production, storage, or release of toxic or hazardous substances; or production of noise?

Proposed measures to avoid or reduce such increases are:

2. How would the proposal be likely to affect plants, animals, fish, or marine life?

Proposed measures to protect or conserve plants, animals, fish, or marine life are:

3. How would the proposal be likely to deplete energy or natural resources?

Proposed measures to protect or conserve energy and natural resources are:

4. How would the proposal be likely to use or affect environmentally sensitive areas or areas designated (or eligible or under study) for governmental protection; such as parks,