CITY OF RICHLAND DEVELOPMENT SERVICES DIVISION STAFF REPORT TO THE HEARING EXAMINER

GENERAL INFORMATION:

PROPOSAL NAME: Preliminary Plat of Wellhouse Heights II

LOCATION: 404 Thayer Drive

APPLICANT: Paul Knutzen

PROPERTY

OWNER: Bush Trustees Timothy & Kathryn

FILE NO.: S2022-104, EA202-128

DESCRIPTION: Request to divide approximately 0.43 acres into five (5)

residential lots.

PROJECT TYPE: Type III Preliminary Plat Approval

HEARING DATE: October 20, 2022

REPORT BY: Matthew Howie, Senior Planner

RECOMMENDED

ACTION: Approval subject to completion of proposed conditions



Figure 1 - Vicinity Map

PROJECT DATA

Gross Plat Area: 0.43 acres
Net Planning Area: 0.43 acres

Number of Lots: 5 Land for Streets/Other: None

Gross Density: 10 units/acre
Net Density: 10 units/acre

DESCRIPTION OF PROPOSAL

Paul Knutzen has submitted Preliminary Plat Application for the development of an approximately 0.43-acre site, with five (5) residential townhome buildings. Figure 1 (above) shows the site within its larger context.

REASON FOR REQUEST

Richland Municipal Code (RMC) Chapter 19.20 requires preliminary plat approval by the Hearing Examiner. Likewise, RMC 24.12.050 states "After public hearing and review the hearing examiner shall decide whether the preliminary plat is in accordance with the comprehensive plan and other applicable code requirements." Additional guidance, below:

24.12.053 Preliminary plat – Required findings.

The hearing examiner shall not approve any preliminary plat application, unless the approval is accompanied by written findings that:

- A. The preliminary plat conforms to the requirements of this title;
- B. Appropriate provisions are made for the public health, safety and general welfare and for such open spaces, drainage ways, streets or roads, alleys, other public ways, transit stops, potable water supplies, sanitary wastes, parks and recreation, playgrounds, schools and school grounds and all other relevant facts, including sidewalks and other planning features that assure safe walking conditions for students who only walk to and from school;
- C. The public use and interest will be served by the platting of such subdivision and dedication; and
- D. The application is consistent with the requirements of RMC 19.60.095. [Ord. 03-00; Ord. 27-14 § 1.01; Ord. 01-18 § 1; Ord. 51-19 § 9].

24.12.055 Preliminary plat – Hearing examiner consideration and action.

- A. The application for preliminary plat approval shall be approved, disapproved or returned to the applicant for modification or correction within 90 days of the date of acceptance.
- B. Hearing examiner approval of a preliminary plat shall not guarantee final approval of the plat or subdivision and shall not constitute an acceptance of the subdivision, but shall authorize the subdivider to proceed with the preparation of the final plat along the lines indicated in the preliminary plat.
- C. Approval of the preliminary plat shall be operative for five years from the date of approval by the hearing examiner during which time a final plat or plats may be submitted.
- D. The subdivision administrator may extend the approval period or may require that the preliminary plat must be resubmitted after the expiration of the approval period. [Ord. 13-96; Ord. 23-03; Ord. 27-14 § 1.01; Ord. 01-18 § 1; Ord. 51-19 § 10].

19.60.095 Required findings.

No development application for a Type II or Type III permit shall be approved by the city of Richland unless the decision to approve the permit application is supported by the following findings and conclusions:

- A. The development application is consistent with the adopted comprehensive plan and meets the requirements and intent of the Richland Municipal Code.
- B. Impacts of the development have been appropriately identified and mitigated under Chapter 22.09 RMC.
- C. The development application is beneficial to the public health, safety and welfare and is in the public interest.
- D. The development does not lower the level of service of transportation facilities below the level of service D, as identified in

the comprehensive plan; provided, that if a development application is projected to decrease the level of service lower than level of service D, the development may still be approved if improvements or strategies to raise the level of service above the minimum level of service are made concurrent with development. For the purposes of this section, "concurrent with development" means that required improvements or strategies are in place at the time of occupancy of the project, or a financial commitment is in place to complete the required improvements within six years of approval of the development.

E. Any conditions attached to a project approval are as a direct result of the impacts of the development proposal and are reasonably needed to mitigate the impacts of the development proposal. [Ord. 02-00; Ord. 29-12 § 1.01; Ord. 29-12(A) § 1.01].

SITE DESCRIPTION & ADJACENT LAND USES

Wellhouse Heights II is comprised of one parcel totaling approximately 0.43-acres at the corner of Thayer Drive and Duportail Street. The parcel rounds off at the south parallel to the new right-of-way created for Duportail Street. It measures approximately 198 feet in its longest diagonal dimension, with the easternmost bound 180 feet from Thayer Drive and its northernmost bound 119 feet from Duportail Drive.

The site slopes down eight (8) feet from the northwest corner of the lot to the southeast. The area will be accessed off the existing right-of-way with no new public roadway required.

The northern boundary is approximately 231 feet from the corner of Thayer Drive and Fries Street. The western boundary is directly opposite 403 and 405 Thayer Drive. The southern boundary of the site is opposite 390 Thayer Drive. The eastern boundary is 337 feet from the intersection of Duportail Street and Wellhouse Loop.

The site is zoned R-3 Residential, a multiple-family residential use district, per RMC 23.18.010.

SURROUNDING ZONING AND LAND USES:

North: R-1-12, single-family residential, current site of the Richland Masonic Lodge

East: R-3, multiple-family residential use, future site of Wellhouse Heights **South:** R-1-12, single-family residential, current site of the New Heights Church

West: R-2, medium-density residential, existing residential properties

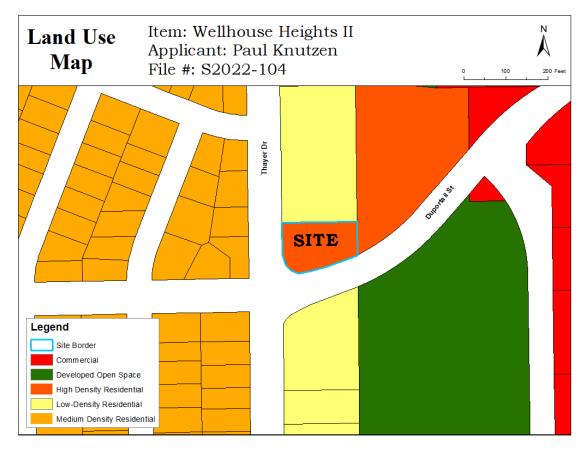


Figure 2 - Comprehensive Plan Land Use Map

COMPREHENSIVE PLAN

As illustrated in Figure 2 (above), Richland's Comprehensive Plan designates the site for High Density Residential (or multiple-family residential) zoning (RMC 23.18.010).

Applicable Goals & Policies

Provided below is a set of Comprehensive Plan goals & policies which are particularly applicable to the subject residential subdivision.

Land Use Goal 3: Maintain a broad range of residential land use designations to accommodate a variety of lifestyles and housing opportunities.

Policy 1: Distribute residential uses and densities throughout the urban growth area consistent with the City's vision.

Policy 3: Innovative and non-traditional residential developments can occur through the use of planned unit developments, density bonuses, new types of housing, and multi-use or mixed-use developments.

Land Use Goal 8: Address unique land use situations in the urban area with policies specific to those situations that ensure compatibility between land uses without infringing on private property rights.

Policy 4: Identify and encourage the preservation of lands, sites, and structures that have historical or archaeological significance.

Natural Environment Goal 1: Promote the protection, conservation, and restoration of natural areas, shorelines, and critical areas as unique assets to the community, and provide public access for enjoyment of such facilities based on the ability of the resource to support the use.

Policy 1: Use the critical areas ordinance, SMP, the state environmental policy act (SEPA), and other ordinances, as applicable, to designate and protect the critical areas and natural environment.

CURRENT ZONING

The subject site is zoned R-3, multiple-family residential use. Surrounding parcels are zoned as follows:

North: R-1-12, single-family residential East: R-3, multiple-family residential use South: R-1-12, single-family residential West: R-2, medium-density residential

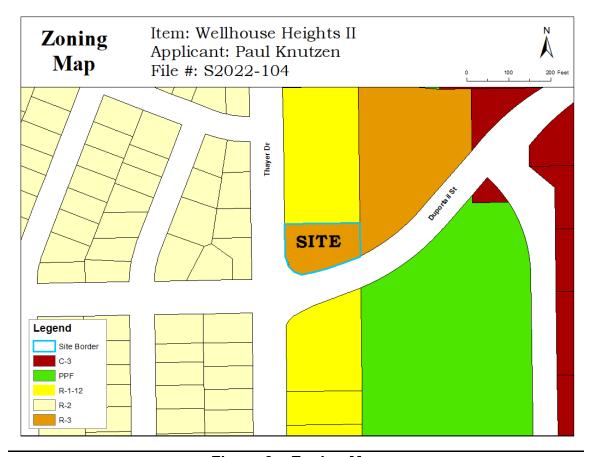


Figure 3 - Zoning Map

The multiple-family residential use district (R-3) is a residential zone classification allowing for the location of multiple-family dwellings, duplexes and attached and detached one-family dwellings and providing a high degree of protection for such uses and adjacent low-density residential development. This classification shall be designed to give protection from hazards, objectionable influences, building congestion, and lack of light, air, and privacy. Certain essential and compatible public service facilities and installations are permitted in this district. This zoning classification is intended to be applied to some portions of the city that are designated high-density residential (10.1 or more dwellings per acre) under the city of Richland comprehensive plan [RMC 23.22.010(E)].

23.18.020 Residential performance standards and special requirements.

- B. Multiple-Family Residential Use District Special Requirements. In any multifamily residential (R-3) zoning district that directly abuts a single-family zoning district, the following buffer, setback and building height regulations shall apply to all multifamily residential structures:
 - 1. Buildings shall maintain at least a 35-foot setback from any property that is zoned for single-family residential use. Single-family residential zones include R-1-12 single-family residential, R-1-10 single-family residential, R-2 medium-density residential, R-2S medium-density residential small lot or any residential planned unit development that is comprised of single-family detached dwellings.
 - 2. Buildings that are within 50 feet of any property that is zoned for single-family residential use (as defined in subsection (B)(1) of this section) shall not exceed 30 feet in height. Beyond the area 50 feet from any property that is zoned for single-family residential use, building height may be increased at the rate of one foot in building height for each additional one foot of setback from property that is zoned for single-family residential use to the maximum building height allowed in the multifamily zoning district.
 - 3. A six-foot-high fence that provides a visual screen shall be constructed adjacent to any property line that adjoins property that is zoned for single-family residential use. Additionally, a 10-foot landscape strip shall be provided adjacent to the fence. This landscape strip may be used to satisfy the landscaping requirements established for the landscaping of parking facilities as identified in RMC 23.54.140.
 - 4. Recreational vehicle parks are permitted in the multifamily residential district (R-3) subject to the issuance of a special use permit meeting the requirements of RMC 23.42.220 and 23.42.240. Further, applicants must demonstrate that their proposed recreational vehicle parks are immediately adjacent to a state highway and that appropriate provisions are put in place to protect adjacent land uses. [Ord. 28-05 § 1.02].

Note that the performance standards from 23.18.020(B) (above) will not pertain to this project since there is no neighboring single-family housing.

R-3 DIMENSIONAL STANDARDS

The following standards apply in the R-3 zone per RMC 23.18.040:

Minimum Lot Area Requirement	One-Family Detached Dwelling	4,000 feet
	Two-Family Detached Dwelling	7,000 feet
	One-Family Attached Dwellings	3,000 feet
Maximum Density	Multifamily Dwellings (Units/SF)	1 / 3,000
Minimum Lot Width	One-Family Detached Dwelling	42 feet
	Two-Family Detached Dwelling	64 feet
	One-Family Attached Dwelling	30 feet
Average Lot Size Requirement		None
Minimum Front Yard Setback		20 feet
Minimum Side Yard Setback		Depends
Minimum Alley/Private Access		6 feet
Easement Setback:		
Minimum Rear Yard Setback		25 feet
Maximum Lot Coverage		33%/45%
Maximum Building Height	Main Building	40 feet
	Detached Accessory Buildings	16 feet

Note 1: For multiple-family dwellings and other allowable uses other than one-family attached and one-family and two-family detached dwellings, front yards shall be 20 feet, side yards shall be equal to one foot of side yard for each three feet or portion thereof of building height, and rear yards shall be 25 feet, except as required by RMC 23.18.020(B) when multifamily development is located adjacent to a single-family residential zoning district or development.

Note 2: Buildings in an R-3 district shall cover not more than 33 percent of the area of the lot except one-family attached dwellings, which may cover up to 45 percent of the area of the lot.

ZONING REVIEW AUTHORITY

RMC Section 19.20.030 designates the Hearing Examiner as the hearing body responsible for conducting the review of preliminary plat approval applications.

PUBLIC NOTICE

Application Date:

Combined Notice of Hearing/Optional DNS Mailed:

Combined Notice of Hearing/Optional DNS Posted:

Combined Notice of Hearing/Optional DNS Published:

Public Hearing:

August 23, 2022

September 28, 2022

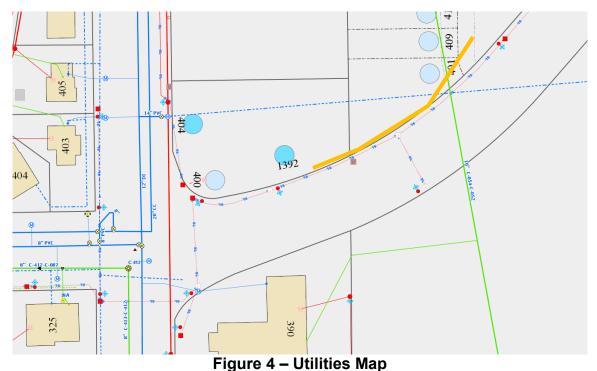
September 30, 2022

October 20, 2022

A combined notice of application and SEPA Optional DNS determination was provided by mailing notices to property owners within 300 feet. Public hearing notices were distributed through posting of the property, mailing of notice to property owners within 300 feet of the site and publication in the Tri-City Herald newspaper. Copies of the notices and affidavits are included in *Exhibit 4*.

UTILITY AVAILABILITY

There are existing domestic water, sewer, and electrical power line connections in place, available within existing rights-of-way near the site with adequate capacity to supply the proposed project.



(Blue = water, Green = EXISTING sewer, Red = Electrical power)

(Orange = FUTURE sewer)

Sewer

Wellhouse Heights II had one pre-existing 10-inch gravity sewer main 122-feet northeast of where the site's eastern boundary meets the Duportail Street right-of-way. This infrastructure has been replaced in development of Wellhouse Heights, Phase 1 immediately to the east. Until this work has been completed, it will not be updated on available City maps. For that reason, site plans have been reviewed and the above orange line superimposed on Figure 4 shows the approximate location of the future 8-inch sewer connection available to the new development for Phase 2 within the Duportail Street right-of-way. Lastly, the site is also 102-feet from an angle point of an 8-inch main within the Thayer Drive/Duportail Street. That said, the sewer connection east of Wellhouse Heights II is available and of adequate capacity to serve future development of the site.

Water

The site has an existing 14-inch PVC water connection T'ed off the 12-inch Distribution Main that roughly follows the centerline of Thayer Drive, north to south. The 14-inch PVC connection at the former 404 Thayer Drive is available and of adequate capacity to serve future development of the site.

Power

The site currently has electric service in overhead lines along the east side of Thayer Drive and underground secondary service both along the east side of Thayer and the north side of Duportail Streets right-of-way. All of these electrical facilities are inplace and are of adequate capacity to serve the additional load demand created by this development.

TRANSPORTATION & ACCESS

Access into the site will come from Thayer Drive, a classified "Major Collector".

Employment opportunities from commercial uses exist along the Wellsian Way corridor, easily within walking distance less than 1,000-feet east. Pedestrian mobility is enhanced with adjacent Ben Franklin Transit bus routes in the area, one making the corner westbound down Duportail Street and northbound on Thayer Drive. The nearest marked stop on Duportail is approximately 830-feet from Wellhouse Heights II, while only approximately 745-feet north on Thayer. Additional routes are in place north-and-south along nearby Wellsian Way.

Significant active transportation for both destination-oriented travel or recreation also exist with marked bike lanes along Duportail Street, and access to a multi-use soft trail approximately 343-feet east of Wellhouse Heights II. [Note: the below mapped (Green) bike lanes indicated along Thayer Drive were proposed but are not as of this date, installed.]



Figure 5 – Transportation Map

(Green = On-Street Bike Lane, Solid-Red = Multi-Use Trail, Dashed Red = BFT Route)

SEPA

A SEPA checklist addressing potential impacts of the proposed subdivision was included in the preliminary plat application. On October 13, 2022 staff issued a Determination of Non-Significance (DNS) (*Exhibit 3*) using the Optional DNS process available under the provisions of WAC 197-11-355.

FIRE SAFETY

The City of Richland Fire Department will provide fire protection services to the subject property and resulting development. Currently, there is a fire hydrant at the southwest corner of Duportail St and Wellhouse Loop, which is across Duportail Street from the project site.

SCHOOLS

The plat falls within the boundaries of the Richland School District. The proposed plat was routed to the district for review and commenting as part of the standard referral process. No comments from the district were received by the City. Standard city streets with appropriate sidewalks will be constructed as part of the proposed development and it is anticipated that Richland School District will make the necessary arrangements to accommodate the pickup and delivery of students residing in the new subdivision.

PARKS

The site falls within Parks District 1. The public park nearest the site, James J. Lawless Park, lies immediately south of the site. Lawless Park is a primitive park; meaning that it is unimproved, only containing a soft-surface pedestrian trail. Several other small neighborhood parks exist within less than 1-mile surrounding the site.

AGENCY COMMENTS

A variety of public agencies and City departments were given an opportunity to comment on the proposal. Copies of all agency comments received by the City are included as *Exhibit 5*.

PUBLIC COMMENTS

Owners of all properties within 300-feet of the plat site were directly notified of the project by way of USPS mailing. At the time this report was prepared, the City had not received any public comment.

ANALYSIS

The criteria for approval of a preliminary plat application (RMC 24.12.053) are reprinted here, with a summary of how the application complies with the requisite standard:

- A. The preliminary plat conforms to the requirements of this title (RMC Title 24)
 - The City's subdivision regulations set forth specific requirements for the filing of an application, show notice of the application is to be provided and requires that the Hearing Examiner conduct a public hearing and make recommendation to the City Council. These steps have been followed by City staff.
- B. Appropriate provisions are made for the public health, safety and general welfare and for such open spaces, drainage ways, streets or roads, alleys, other public ways, transit stops, potable water supplies, sanitary wastes, parks and recreation, playgrounds, schools and school grounds and all other

relevant facts, including sidewalks and other planning features that assure safe walking conditions for students who only walk to and from school;

- Several city parks and other recreational opportunities exist within approximately one mile of the project site.
- The Ben Franklin Transit Authority provides bus service to the area along Duportail Street and along nearby Thayer Drive.
- The plat will be served by City domestic water lines currently existing adjacent to the project site. Water lines have capacity to provide for the proposed project.
- The plat will be served by City sanitary sewer service currently existing adjacent to the project site. Sewer lines have capacity to provide for the proposed project.
- The plat will be served by Richland Energy Services currently existing adjacent to the project site. Electric lines have capacity to provide for the proposed project.
- Irrigation water will be the City's domestic water system. Kennewick Irrigation District indicated that the development site is not within their district.
- In accordance with City development standards, storm water drainage will have to be retained and managed on-site. Project specific designs have not been created yet; however, prior to the city allowing construction of the subdivision to occur, the development will need to be designed by a licensed civil engineer and meet the requirements of the city and state storm water regulations.
- Richland School District was given the opportunity to comment and chose not to comment. The Richland School District currently serves approximately 13,000 children within a multitude of school facilities some of which are new or have been recently remodeled to accommodate the increasing student enrollment.
- C. The public use and interest will be served by the platting of such subdivision and dedication:
 - The proposed project is consistent with the Comprehensive Plan in terms of the proposed land use and density of the plat. The project is consistent with the City's zoning regulations. The additional housing units will contribute to meeting the housing demand experienced in the Tri-Cities thereby serving public interest.
- D. The application is consistent with the requirements of RMC 19.60.095, which states: No development application for a Type II or Type III permit shall be approved by the city of Richland unless the decision to approve the permit application is supported by the following findings and conclusions:
 - a. The development application is consistent with the adopted Comprehensive Plan and meets the requirements and intent of the Richland Municipal Code.
 - The proposal is generally consistent with the intent of the Comprehensive Plan and as conditioned will meet requirements of the Municipal Code as outlined above.

- b. Impacts of the development have been appropriately identified and mitigated under RMC Chapter 22.09.
- Chapter 22.09 is the City's adoption of the State Environmental Policy Act provisions. The applicant filed an environmental checklist (*Exhibit 3*) for which the City issued and distributed a Determination of Non-Significance (*Exhibit 7*) after utilizing the Optional DNS process.
 - c. The development application is beneficial to the public health, safety and welfare and is in the public interest.
- The project is consistent with the City's Comprehensive Plan and development regulations and it therefore would be considered beneficial to public health, safety and welfare and would be in the public interest. As mentioned above, staff is recommending several requirements in the form of conditions, aimed at ensuring the development does not generate any significant impacts which would be detrimental to the peaceful enjoyment of existing land uses in the surrounding vicinity.
- E. The development does not lower the level of service of transportation facilities below the level of service D, as identified in the Comprehensive Plan; provided, that if a development application is projected to decrease the level of service lower than level of service D, the development may still be approved if improvements or strategies to raise the level of service above the minimum level of service are made concurrent with development. For the purposes of this section, "concurrent with development" means that required improvements or strategies are in place at the time of occupancy of the project, or a financial commitment is in place to complete the required improvements within six years of approval of the development.
 - The project would add five (5) new lots/units to be accessed from a private street from Thayer Drive
- F. Any conditions attached to a project approval are as a direct result of the impacts of the development proposal and are reasonably needed to mitigate the impacts of the development proposal.
 - The conditions of approval recommended for this project are a direct result of imposing City development standards as contained in City code and are directly related to the development proposal. Additional conditions have been included as a result of comments received by other agencies.

Building Height

Future building heights would need to meet guidelines set forth in RMC 23.18.040, with the main structures no more than 40-feet in height, and detached accessory structures no more than 16-feet in height.

Parking

Two (2) off-street parking spaces "shall be provided in all residential zones in compliance with RMC 23.54.020".

Critical Areas

Wellhouse Heights II is located completely within an Aquifer Recharge Critical Area, (part of City's Wellhead Protection Program) 1-year time of travel zone for the Wellsian Way Wellfield. Richland's Critical Areas Ordinance (CAO) considers Critical Aquifer Recharge Areas (CARAs) are defined as those areas having a critical recharging effect on aquifer use for potable water in community systems and include areas designated as "wellhead protection areas" pursuant to WAC 246-290-135(3). These CARAs were established "to protect the public health and safety, prevent degradation of ground water and for potentially usable potable water, and to provide for regulations that prevent and control risks to the degradation of ground water quality and quantity" (RWC 22.10.300). Application materials were submitted September 2, 2022, to fulfill reporting requirements of RMC 22.10.370.

Shoreline Master Program

The subject site lies outside of the jurisdiction of the Shoreline Master Program. This project will have no effect on shorelines of statewide significance. Shoreline permitting requirements are not applicable in this case.

FINDINGS, CONCLUSION, AND RECOMMENDATION:

Findings of Fact

- Richland's Comprehensive Plan designates the plat site for high-density residential development with an average allowable residential density of 15 units per acre, which could not be reached under the R-3 zoning lot size limits). The plat of Wellhouse Heights II proposes a net (and gross) residential density of 10 dwelling units/acre.
- 2. R-3 (Multiple Family Residential) zoning is applied to the site. R-3 zoning regulations permit residential densities of up to 14.5 dwelling units per acre and a 3,000ft² min lot size in the case of townhomes.
- 3. The Wellhouse Heights II preliminary plat consists of 5 residential lots. Proposed residential lot sizes range from 3,049 square feet to 5,985 square feet, with a 3,768 square foot average lot size.
- 4. Section 24.12.053 of the RMC sets forth standards for review of preliminary plats that require the Hearing Examiner to consider whether appropriate provisions are made for the public health, safety and general welfare and for such open spaces, drainage ways, streets or roads, alleys other public ways, transit stops, potable water supplies, sanitary wastes, parks and recreation, playgrounds, schools and school grounds and all other relevant facts, including sidewalks and other planning features that assure safe walking conditions for students who only walk to and from school.
- 5. The proposed preliminary plat provides for the extension of one private street built to City public road design standards, includes provisions for the extension of public domestic water, sewer, and electrical power lines.
- 6. Improvements proposed to serve the preliminary plat will be consistent with the City's development standards by applying municipal code provisions.
- 7. The Richland School District was invited to comment but expressed no concerns with the plat.

- 8. City staff and other utility providers reviewed the project and have recommended specific conditions of approval as set forth in this report.
- 9. The applicant filed an environmental checklist along with their preliminary plat application as required under the State Environmental Policy Act.
- 10. After review of the checklist, application materials and receipt of agency and public comments, staff issued a Determination of Non-Significance on Thursday, October 13, 2022 after utilizing the Optional DNS process.
- 11. The site is located within a Critical Aquifer Recharge Area critical area as defined by the city's critical areas regulations contained within RMC 22.10. The hydro-geologic report submitted with the preliminary plat application materials, indicates there will be no impact to groundwater quality.
- 12. The applicant submitted a Critical Aquifer Recharge Area hydrologic report as complies with 22.10 RMC.
- 13. RMC 19.60.095(D) requires that development not lower the level of service standard for transportation facilities below a level of service D.

Conclusions of Law

- 1. The lots within the proposed subdivision are consistent with the provisions of the City's respective (R-3) zoning regulations.
- 2. The proposed preliminary plat conforms to the density and type of land use envisioned in the land use and transportation elements of the adopted Comprehensive Plan.
- 3. Pursuant to RMC Chapters 22.09 and 22.10, the procedures required under the State Environmental Policy Act have been followed.
- 4. As conditioned, the proposed preliminary plat makes appropriate provisions for the public health, safety and general welfare and for such open spaces, drainage ways, streets or roads, alleys, other public ways, transit stops, potable water supplies, sanitary wastes, parks and recreation, playgrounds, schools and school grounds and all other relevant facts, including sidewalks and other planning features that assure safe walking conditions for students who only walk to and from school.

Recommendation

Staff has completed its review of the request for site plan approval (S2022-104, EA2022-128) and recommends approval of the request subject to conformance with the conditions of approval, below, which are warranted because the project conforms to the City's adopted Comprehensive Plan and zoning regulations; has followed the required State Environmental Policy Act procedures; and is consistent with the requirements of the City's subdivision regulations.

RECOMMENDED CONDITIONS OF APPROVAL

Public Works

General Conditions

1. All final, approved plans for public improvements shall be submitted prior to pre-con on a 24" x 36" hardcopy format and also electronically. Addendums are not allowed, all information shall be supplied in full size (and electronic) format. When construction of the public infrastructure has been substantially

completed, the applicant shall provide paper and electronic record drawings in accordance with the City's "Record Drawing Requirements". The electronic record drawings shall be submitted in an AutoCAD format compatible with the City's CAD software. The final record drawings shall be submitted and approved by the City before the final punchlist inspection will be performed. All final punchlist items shall be completed or financially guaranteed prior to final platting.

- 2. A copy of the construction drawings shall be submitted for review to the appropriate jurisdictions by the developer and his engineer. All required comments / conditions from all appropriate reviewing jurisdictions shall be incorporated into one comprehensive set of drawings and resubmitted (if necessary) for final permit review and issuance. Any and all necessary permits that may be required by jurisdictional entities outside of the City of Richland shall be the responsibility of the developer to obtain.
- 3. Any work within the public right-of-way or easements or involving public infrastructure will require the applicant to obtain a right-of-way construction permit prior to beginning work, per RMC Chapter 12.08. The applicant shall pay a plan review fee based on a cost-per-sheet of engineering infrastructure plans. This public infrastructure plan review fee shall apply each time a project is submitted for review. A permit fee in the amount equal to 3% of the construction costs of the work within the right-of-way or easement will be collected at the time the construction permit is issued.
- 4. Public utility infrastructure located on private property will require recording of a City standard form easement prior to final acceptance of the infrastructure. The City requires preparation of the easement legal description by the developer two weeks prior to the scheduled date of final occupancy. Once received, the City will prepare the easement document and provide it to the developer. The developer shall record the easement at the Benton County Assessor and return a recorded original document to the City.
- 5. A pre-construction conference will be required prior to the start of any work within the public right-of-way or easement. Contact the Public Works Engineering Division at 942-7500 to schedule a pre-construction conference.
- 6. All plan sheets involving construction of public infrastructure shall have the stamp of a current Washington State licensed professional engineer.
- 7. A copy of the preliminary plat shall be supplied to the Post Office and all locations of future mailbox clusters approved prior to final platting.

Design Standards

- 8. Public improvement design shall follow the following general format:
 - a. All materials and workmanship shall be in conformance with the latest revision of the City of Richland Standard Specifications and Details, Public Infrastructure Design Guidelines and the current edition of the State of Washington Standard Specifications for Road, Bridge, and Municipal Construction. Please confirm that you have the latest set of standard specs and details by visiting the City's web page.
 - b. Fire hydrant location shall be reviewed and approved by the City Fire Marshal.

- c. All utilities shall be extended to the adjacent property (properties) at the time of construction, if necessary.
- d. Final design of the public improvements shall be approved at the time of the City's issuance of a Right-of-way Construction Permit for the proposed construction.
- e. All public improvements shall comply with the State of Washington and City of Richland requirements, standards and codes.
- f. The contractor shall be responsible for any and all public infrastructure construction deficiencies for a period of one year from the date of the letter of acceptance by the City of Richland.

Traffic and Streets

- 9. The existing access point off of Thayer Drive is not acceptable for this project. It shall be relocated further north to provide for adequate left-turn movements.
- 10. A note will be shown on the face of the final plat stating that Duportail Street is classified as a "Minor Arterial" street. Subsequently, no driveways will be allowed directly onto it.
- 11. Item 14f of the SEPA Report (Pg. 106): Reference Land Use Code 220 of the latest version of the ITE Trip Generation Manual to answer the question. As for the PM Peak traffic generation, the estimated trips are approximately 23 trips for the development. Even with the updated information, no TIA or Trip Generation Distribution Letter will be required.
- 12. Street names are not reviewed or vested until construction plans are submitted for review.
- 13. All pedestrian ramps, driveway entrances and sidewalks shall be designed to current City standard details and A.D.A. standards.
- 14. The vision-clearance triangle needs to be shown on all corner lots on both the construction plans and the final plat document, in accordance with RMC Chapter 12.11.020.
- 15. If the proposed private roadway is narrower than 34-feet it shall have parking restricted on one side, and narrower than 27-feet shall have parking restricted on both sides. Signs indicating restricted parking shall be installed prior to final platting at the developer's expense. The restricted parking areas shall be indicated on the final plat.
- 16. All roads shall be constructed to provide for adequate fire truck access & turnaround movements.

Domestic Water

- 17. A 10-foot wide exclusive domestic water easement shall be provided for any water main that is outside of the public Right-of-Way.
- 18. The fire hydrant locations shall be approved by the City Fire Marshal.

Sanitary Sewer

19. A 10-foot wide exclusive sanitary sewer easement shall be provided for any sewer main that is outside of the public Right-of-Way. If any manholes are located outside of the public Right-of-Way, maintenance truck access to said structure may be required.

Storm Water

- 20. The proposed storm drainage and grading of all areas within the proposed development shall be shown on the plans (most grading and drainage plans must be prepared by a licensed civil engineer). If site contains at least 1,000 sq.ft. of new asphalt, and/or contains 30% or more impervious surfaces, storm drainage calculations from a licensed civil engineer are required. Stormwater shall be kept on-site (on the developing property that generated it). Stormwater shall not be flowed onto adjacent properties, or to the public Right-of-Way, without first obtaining written permission.
- 21. The private on-site storm drainage system shall be designed following the core elements defined in the latest editions of the Stormwater Management Manual for Eastern Washington, the current Richland municipal codes, the Phase II Municipal Stormwater Permit, and the City's "Public Infrastructure Construction Plan Requirements and Design Guidelines". Calculations shall be stamped by a registered professional Civil Engineer. The applicant's design shall provide runoff protection to downstream property owners.
- 22. The amount of post-development storm runoff from the proposed site shall be in compliance with RMC Chapter 16.06.

Solid Waste

23. Due to limited turnaround space, these homes may need to transport their garbage cans to a location acceptable for solid waste pick-up.

Final Platting / Project Acceptance Requirements

- 24. When the construction is substantially complete a paper set of "record drawings" shall be prepared by a licensed surveyor and include all changes and deviations. Please reference the Public Works document "RECORD DRAWING REQUIREMENTS & PROCEDURES" for a complete description of the record drawing process. All final punchlist items shall be completed or financially guaranteed prior to recording of the final plat.
- 25. Public utility infrastructure located on private property will require recording of a City standard form easement prior to acceptance of the infrastructure and release of the final plat. The City requires preparation of the easement legal description by the developer two weeks prior to the scheduled date of final acceptance. Off-site ("third party") easements or right-of-ways for City infrastructure are the responsibility of the developer to obtain. Once received, the City will prepare the easement document and provide it to the developer. The developer shall record the easement at the Benton County Assessor and return a recorded original document to the City prior to application for final occupancy.
- 26. Any off-site easements or permits necessary for this project shall be obtained and secured by the applicant and supplied to the City at the time of plat construction and prior to final plat acceptance by the City.
- 27. Ten-foot wide public utility easements along the Duportail and Thayer right-of-ways are required on the final plat.

- 28. The vision-clearance triangle needs to be shown on all corner lots on the final plat document, in accordance with RMC Chapter 12.11.020. If the intersection is in a curve, it will have to be evaluated per AASHTO guidelines.
- 29. The final plat shall include notes identifying all common areas including the private streets and tracts and acknowledging the ownership and maintenance responsibility by the homeowners association. A note shall be added to the face of the final plat that states: "The private roads are for the use and benefit of the homeowners that abut said roads, and are to be maintained by the benefitting owners. The City of Richland accepts no maintenance responsibility for these private roads".
- 30. A note shall be added to the face of the plat that states: "The private road within this plat is a fire lane and parking is restricted. The required no-parking signs shall be installed by the developer where applicable." Any restricted parking areas shall be indicated on the final plat.
- 31. All landscaped areas within the plat that are in the public Right of Way shall be the responsibility of the property owners to maintain.
- 32. A one-foot "No access easement" will be required along the Duportail Street Right of Way.

Buildings

33. Applicant shall provide Geotechnical Investigation Report for Wellhouse Heights II prior to the approval of the Final Plat.

Benton County Assessor's Office

34. Owners shall be listed as trustees on the plat map.

Addressing

- 35. Street names will be reviewed when construction drawings are submitted to the Public Works Department. When construction drawings are submitted, please include two (2) street name options for the access easement and the City will review to determine acceptable street names.
- 36. Addressing brackets [] are needed on all lots and tracts.

Benton Clean Air Agency

37. Benton Clean Air Agency (BCAA) requires the applicant submit a Proof of Contact: Soil Destabilization Notification for this project prior to any excavation/construction taking place. This will ensure that the proponent has the ability and resources to control fugitive dust emissions that may be created as a result of construction activities. This will also inform them of the regulations and requirements of the BCAA. Additionally, a written dust control plan must be developed and maintained for all soil destabilization projects and must be readily available upon request by the BCAA. Part of this plan is submitting the name of at least one person for the project so that the BCAA has a point of contact should we receive any dust complaints from the project.

EXHIBIT LIST

- 1. Application Materials
- 2. Plat Map
- 3. SEPA Checklist
- 4. Public Notice and Affidavits
- 5. Agency Comments
- 6. Determination of Non-Significance



Exhibit I

Application Materials

CITY OF RICHLAND NOTICE OF APPLICATION, PUBLIC HEARING & OPTIONAL DNS (S2022-104 & EA2022-128)

Notice is hereby given that Paul Knutzen has submitted Preliminary Plat Application for the development of an approximately 0.43-acre site, with five (5) residential townhome buildings. The project site is located at property formerly known as 400/404 Thayer Drive (at the NE corner of intersection of Thayer Drive and Duportail Street) and is zoned R-3 (multiple-family residential use district). The property is described as Assessor's Parcel Nos. 115981013704001 located in Section 15, Township 9, North, Range 28 East, W.M., Benton County WA.

A public hearing on the proposed site plan review will be held before the Hearing Examiner on Thursday, October 20, 2022 at 6:00 PM within the City Council Chambers located at 625 Swift Blvd. All interested parties are invited to attend and present testimony at the public hearing or via Zoom by visiting the City's website: www.ci.richland.wa.us.

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.

Any person desiring to express their views or to be notified of any decisions pertaining to this application should notify Matthew Howie, Senior Planner, 625 Swift Boulevard, MS-35, Richland, WA 99352. Comments may emailed to mhowie@ci.richland.wa.us. The deadline for written comments is 6:00 p.m., Wednesday, October 19th. However, written comments must be received no later than 5:00 p.m. on Wednesday, October 12th to be incorporated into the staff report. Comments received after that time will be entered into the record during the hearing.



*Please note that pursuant to RMC 23.48.010, the purpose of the site plan approval process is to facilitate project design that is compatible with adjacent land uses and is in keeping with the physical constraints of the project site. The site plan review is not intended to determine whether a particular land use activity is appropriate on a particular site. Land uses that are otherwise permitted in this title shall not be denied through the site plan review process unless such uses cannot meet the development and/or performance standards required for the use.



City of Richland Development Services

625 Swift Blvd. MS-35 Richland, WA 99352 \$ 509-942-7794

= 509-942-7764

Preliminary Plat Application

Note: A Pre-Application meeting is required prior to submittal of an application.						
PROPERTY OWNER INFORMATION			☐ Contact Person			
Owner: Bush Trustees Timothy & Kathryn						
Address: 3019 Duportail St #226, Richland,	WA 99352					
Phone: 509-947-7902		Email: tim@bushdevelo	pments.com			
APPLICANT/CONTRACTOR INFORMATION (if	different)		☑ Contact Person			
Company: Knutzen Engineering		UBI#: 603-	538-277			
Contact: Paul Knutzen						
Address: 5401 Ridgeline Dr, Suite 160, Ken	newick, WA 99	9338				
Phone: 509-222-0959		Email: paul@knutzenengineering.com				
SURVEYOR INFORMATION						
Contact: Rogers Surveying Inc.						
Address: 1455 Columbia Park Trail, Suite 201, Richland, WA 99352						
Phone: 509-783-4141		Email: dbaalman@rogerssurveying.com				
ENGINEER INFORMATION						
Contact: Paul Knutzen						
Address: 5401 Ridgeline Dr, Suite 160, Kenr	newick, WA 99	338				
Phone: 509-222-0959		Email: paul@knutzenengineering.com				
PROJECT DESCRIPTION						
5-lot residential development. Each lot will be serviced by City of Richland public utilities. The lots will be accessed off existing public ROW and will not require the construction of new roads.						
PROPERTY INFORMATION						
Parcel #: 115981013704001 Zoning: R-3						
Legal Description: Lot 1, Short plat 3704, recorded in volume 01 of short plats 3704, records of Benton County, WA, AF#2021-037940, 08/12/2021.						
Proposed Subdivision Name: Wellhouse Heig	hts					
Gross Plat Acreage: 0.43 acres	Number of Lots: 5		Smallest Lot Size: 3,049 sf			
Net Lot Area Acreage: 0.43 acres	Avg. Lot Size: 3,768 sf		Largest Lot Size: 5,985 sf			
Domestic Water Supply: 🗵 City 🗆 Private	Domestic Water Supply: ☑ City ☐ Private Well Sewage Disposal: △ City ☐ Septic					
Irrigation Source: ⊠ City □ Private Well □ Columbia Irrig. District □ Kennewick Irrig. District □ Other						
SEPA Checklist submitted? ⊠ Yes □ No		Title Report (Subdivision Guarantee) submitted? $\ oxdots$ Yes $\ oxdots$ No				

APPLICATION MUST INCLUDE

- 1. Completed application and filing fee
- 2. 2 Full-size copies of proposed survey
- 3. $1-11'' \times 17''$ copy of proposed survey
- 4. 1 PDF file of proposed survey
- 5. Title Report showing ownership, easements, restrictions and accurate legal description of the property involved
- SEPA Checklist
- 7. 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.

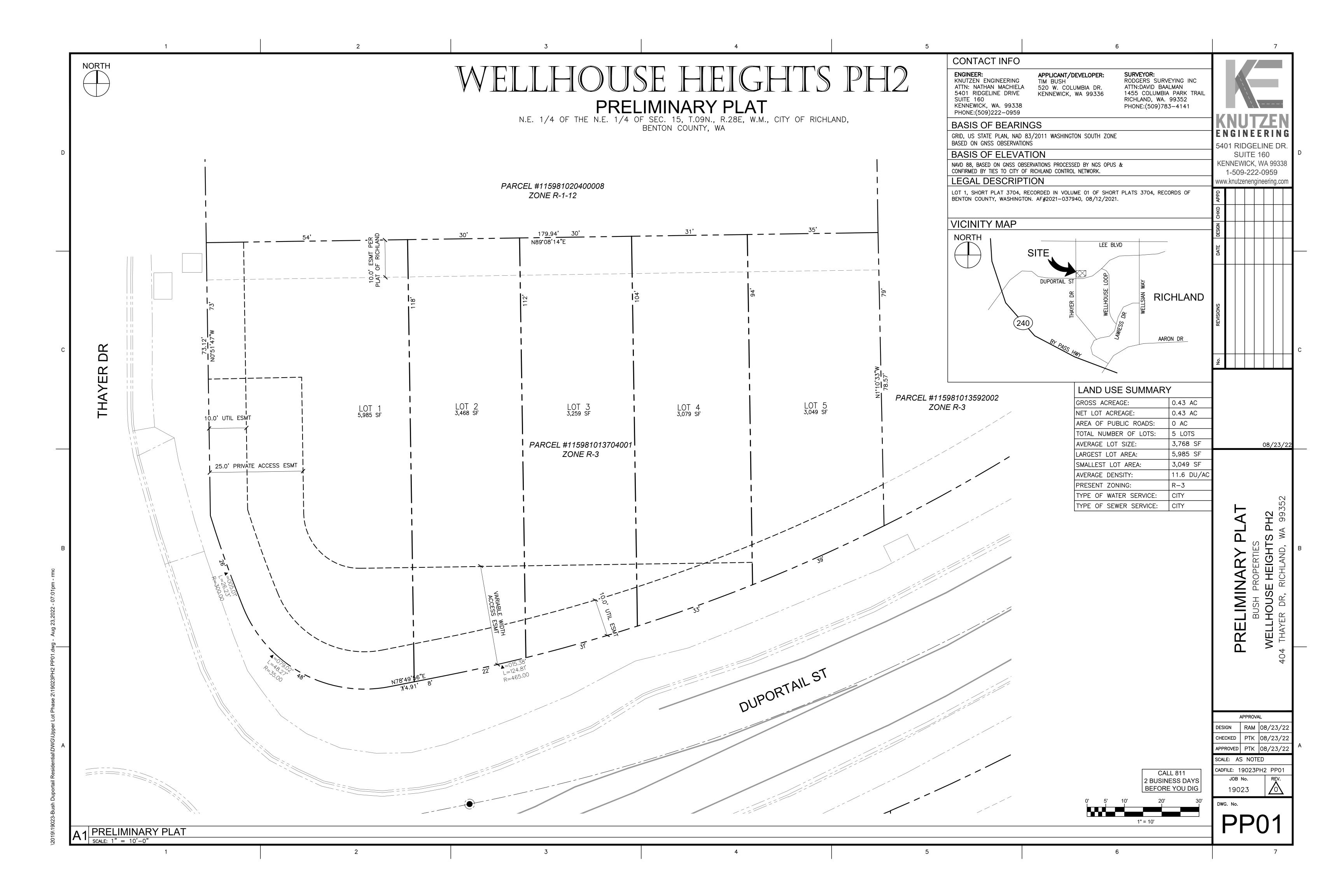
I also acknowledge that if a permit is issued for land development activities, no terms of the permit can be violated without further approval by the permitting entity. I understand that the granting of a permit does not authorize anyone to violate in any way any federal, state, or local law/regulation 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 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:	Paul Knutzen		
Applicant Signature:	Paul Kmyn	 Date _	08/23/2022





Critical Aquifer Recharge Area Report

Wellhouse Heights Ph2 404 Thayer Dr Richland, WA 99352

Prepared For:

Bush Trustees, Timothy T & Kathryn L 3019 Duportail St, #226 Richland, WA 99352

Prepared By:

Paul Knutzen, PE Robert McLeod Project No. 19023



Preparation Date: September 2, 2022

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APPENDIX B – PRELIMINARY PLAT

APPENDIX C – WELLHEAD MAP

 ${\bf APPENDIX\ D-GEOTECHNICAL\ REPORT}$

APPENDIX E – USGS MAPS

1.0 Project Overview

The Wellhouse Heights Phase 2 project is located at 404 Thayer Dr, Richland, WA 99352. The site encompasses Benton County parcel #115981013704001. The existing 0.43-acre site is undeveloped and zoned R-3, Multiple Family Residential. The property is bordered by R-2 single-family residential housing, Wellhouse Heights Phase 1, religious buildings, and Lawless Park. The project proposes 5 lots intended for single-family townhouse units. The units will access off Duportail St and Thayer Dr via shared private driveways. The project will cover approximately 57% of the site with impervious surfaces. Construction for the proposed improvements is expected to take place in Spring of 2023. Refer to Appendix A for the Vicinity Map and Appendix B for the preliminary plat map.

The site is located completely within an Aquifer Recharge Critical Area, as shown by the City of Richland's online critical area mapping. As identified in the City's Wellhead Protection Program, the site is near the edge of the 1-year time of travel zone for the Wellsian Way Wellfield (SO2). See Appendix C for the map taken from the City's Wellhead Protection Program.

2.0 Site Geology

With previous construction, the existing site was graded relatively flat, approximately level in elevation with Thayer Dr. There is no evidence of storm runoff flowing from the site, or onto the site from an off-site source.

White Shield, Inc. prepared a geotechnical investigation report for the adjacent property for the Wellhouse Heights Phase 1 project, on September 25, 2020. (White Shield Project No. 119-054-01) They performed fifteen exploration test pits and two infiltration test pits on-site. They encountered varying amounts of uncontrolled fill and debris, which was removed with the construction of Phase 1. Underneath the fill, the native soils were predominantly fine to medium sand with occasional thin layers of gravel. No bedrock or groundwater was encountered in any of the test pits. White Shield used air entry permeameter testing and grain size analysis to calculate infiltration rates for the on-site soils. They calculated rates of 6.0 in/hr and 8.0 in/hr for the on-site soils.

3.0 Groundwater

No groundwater was encountered during the test pit explorations. White Shield, Inc. identifies the groundwater depth as approximately 79 feet below the existing surface elevation, based on nearby well logs. The groundwater level is likely to rise and fall with the change of seasons and irrigation.

A report provided by USGS identifies the general hydraulic gradient in the area as towards the northeast. See Appendix E for exhibits showing shallow water table level contours, Saddle Mountain basalt water level contours and Wanapum basalt contours.

4.0 Project Impact and Mitigation Plan

It is possible that stormwater produced by the site's impervious surfaces could enter the belowground aquifer. It is unlikely that pollutants in the stormwater could enter the belowground aquifer due to the significant depth of the groundwater. The large barrier, comprised of native soils in the vadose zone, provides natural filtration, preventing pollutants from entering groundwaters. Furthermore, no storage or usage of chemicals are proposed on-site. The principal component of the site's mitigation plan is ensuring pollutants do not enter groundwater through the stormwater management plan and pretreatment practices.



The stormwater management plan for the site will collect and infiltrate all stormwater runoff through conveyance systems and underground infiltration facilities. The plan compliant with the Stormwater Management Manual for Eastern Washington. The site is classified as a low pollutant loading site, per table 5.22 of the SMMEW. Based on the soil type and the infiltration rate provided by White Shield, onsite soils are classified as low treatment capacity soils, per table 5.21 of the SMMEW. The Wellhouse Heights construction drawings will instruct the contractor to install 18" of high treatment capacity soil around all underground infiltration facilities, per table 5.21. Therefore, per table 5.23 of the SMMEW, the required pre-treatment is a two-stage drywell. Catch basins with inverted tees are proposed at the entrances of the underground infiltration facilities, satisfying the requirement of a two-stage drywell.

Proper stormwater facility maintenance instructions are provided on the corresponding construction drawings for the project. Based on the site conditions found and the proposed pre-treatment facilities, the proposed project should have no significant impact to the Critical Aquifer Recharge Area. No additional plans are proposed to limit the impact on the aquifer at this time.

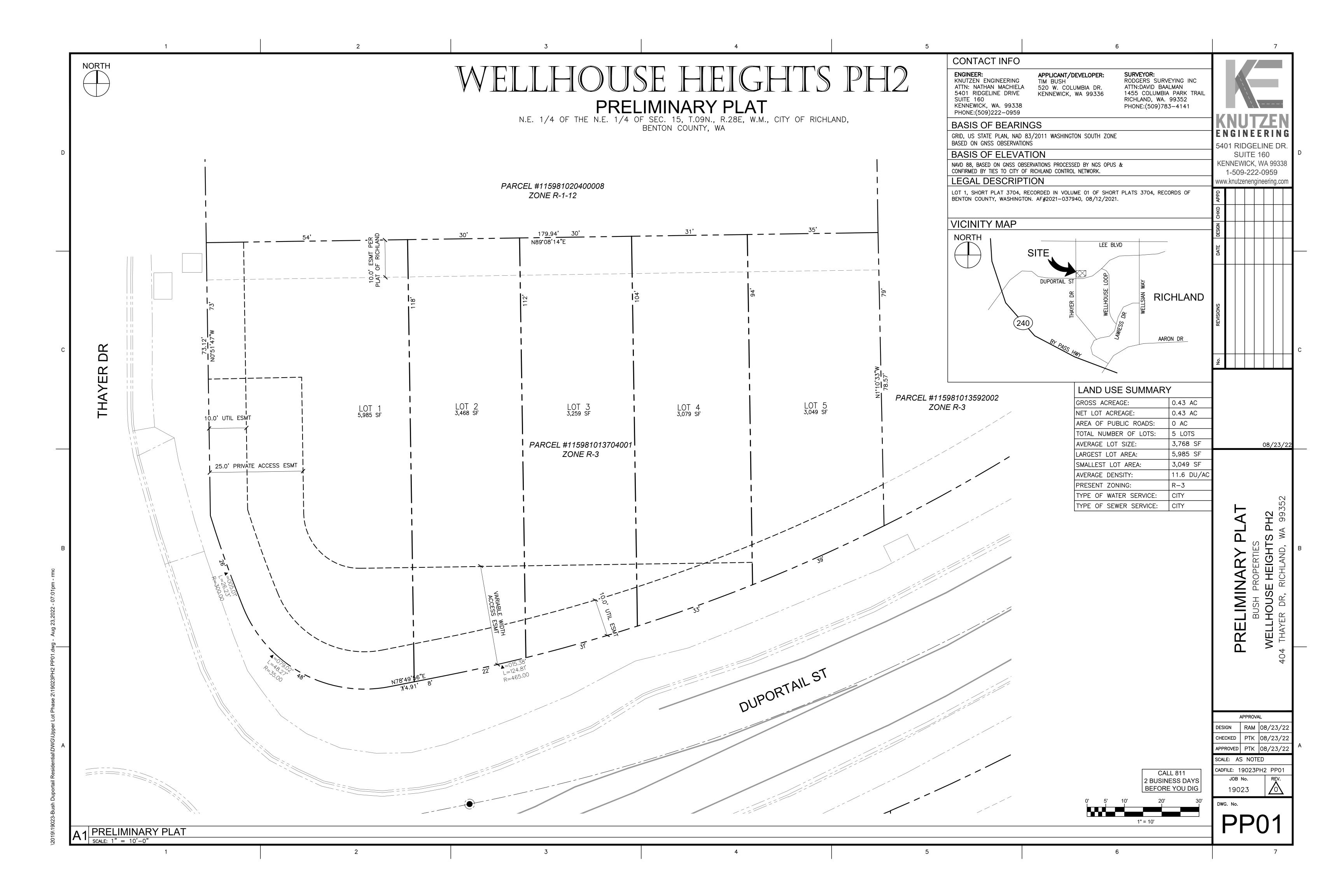


APPENDIX A Vicinity Map



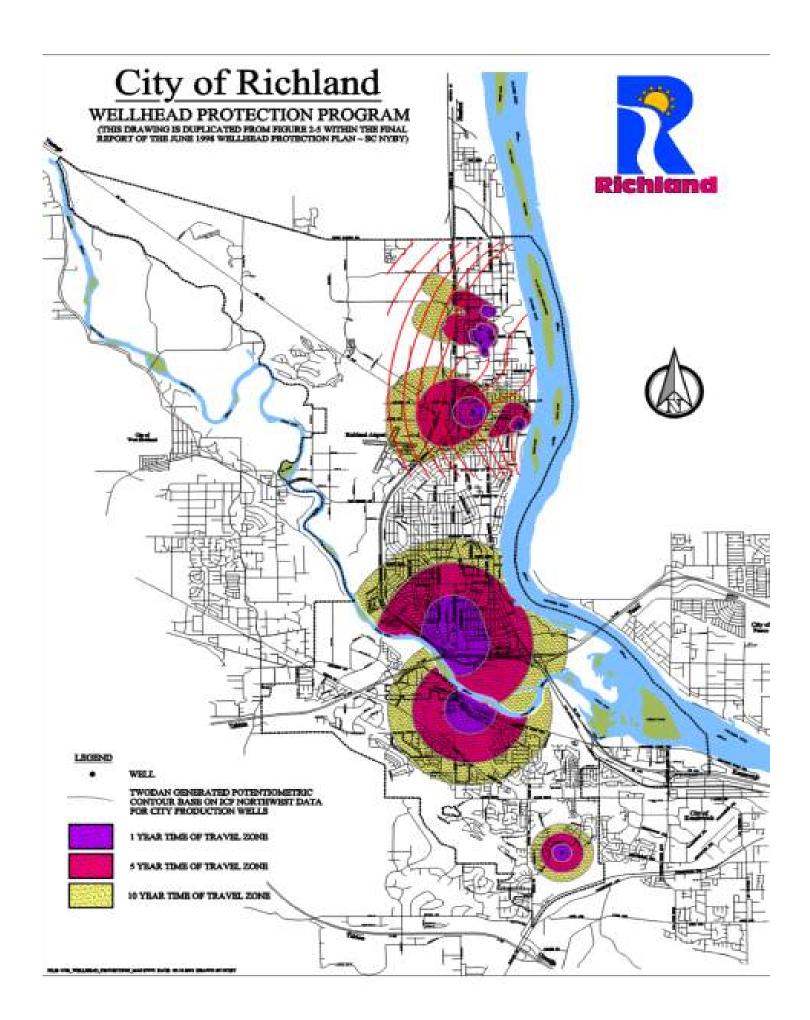


APPENDIX B Preliminary Plat





APPENDIX C Wellhead Map





APPENDIX D Geotechnical Report

Geotechnical Investigation Report Bush Townhome Development 1380 Duportail Street Richland, WA

September 25, 2020

Submitted To:

Tim Bush 520 W Columbia Drive Kennewick, WA 99336



Prepared By:

White Shield, Inc. 320 North 20th Avenue Pasco, WA 99301 509-547-0100 office 509-547-8292 fax

Email: Info@whiteshield.com http://www.whiteshield.com

White Shield, Inc. Project No. 119-054-01

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FIGURES

Figure 1: Site Vicinity MapFigure 2: Site Exploration PlanFigure 3: Soil Classification Chart

APPENDIX A

Test Pits TP-1 through TP-15 and INF TP-1 through INF TP-2

APPENDIX B

Stormwater Memorandum

CERTIFICATE OF ENGINEER

Geotechnical Investigation Report Bush Townhomes 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



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 proposed townhomes at 1380 Duportail Street 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 8 townhome buildings consisting of 19 units with associated parking, utilities, and stormwater infiltration.

The site slopes moderately to the east and is bordered to the west by the Masonic Lodge, the southeast by Duportail Street, the north by undeveloped land and soccer fields, and to the east by a City of Richland storm pond.

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

• **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 fifteen exploration test pits and two infiltration test pits at locations shown on Figure 2.

The test pits were excavated with a tracked excavator. In general, test pits 1-9 encountered varying amounts of concrete and asphalt debris up to 13 feet in depth. Test pit 11 encountered 4 feet of loose gravelly fill soils. Beneath any fill encountered, the site soils are predominantly fine to medium sands with occasional thin layers of gravel, generally at the top of the native soil deposits

INF TP-1 encountered 3.2 feet of fill soils, with fine to medium sands to a depth of 10 feet. INF TP-2 encountered 1 foot of fill soils with fine to medium sands to a depth of 11 feet. Hydrogeologic testing was performed and can be seen in section 6.0 Site Drainage and Infiltration Analysis.

The test pit logs, provided in Appendix A (TP-1 through TP-15 and INF TP-1 through INF TP-2), include detailed descriptions of the subsurface soil types and condition.

2.3 Laboratory Testing and Analysis

All soil samples were classified under the Unified Soil Classification System (USCS). The soil descriptions were prepared according to the Burmister Classification System. All soils were easily classified using visual manual procedures. Laboratory gradation analysis of soils from the infiltration test pits were conducted to aid in the hydrogeologic analysis and are attached to the associated memorandum in Appendix B. Further lab testing will likely be required for soil classification and proctor analysis for use during construction observations.

3.0 SITE CONDITIONS

3.1 Surface Conditions and Lot Slopes

The property is moderately sloping down to the east. The bulk of the site is ungraded native soil deposits. There are some amount of dumped fill soils located along the upper western portion of the site, and just below in the central portion of the site. We discussed these garbage fill areas with Knutzen Engineering and they have incorporated them into their grading plan for removal. Surface or subsurface water was not encountered during our explorations.

3.2 Site Soils

The local soils exposed during our explorations are generally upper outburst flood gravel deposits of the Missoula floods.

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, gravels (Qfg₄).

The Qfg deposits are generally described as gravels, grain size ranges from sand to boulders, size generally decreases away from major Pleistocene outburst flood channels. The Qfg₄ are the youngest of such flood deposits.

Based on our explorations we believe that the majority of the site consists of sand size particles that are consistent with the upper portion of the outburst flood gravel deposits.

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 or be placed on properly prepared structural fill.

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. All dumped garbage fill containing concrete and asphalt debris should be hauled off site. Remove all roots and organic material, loose or soft soil, and old topsoil from all areas to receive fill soil, retaining walls, 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:1.5H (vertical to horizontal) is recommended for all unsupported excavation sidewalls in the silty sand soils 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. 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 property 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.

Knutzen Engineering requested that we analyze site soils from 1383 Lawless Drive in Richland for suitability of these soils for use as import fill. We performed 3 hand auger borings within the site to depths based upon a grading plan provided by Knutzen. We found the soils are similar to those found within the building site and consist mainly of fine to medium sands. These soils should be acceptable for use as import structural fill, however we will need to occasionally observe the soils for continued use as structural fill during construction.

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 Foundations

4.4.1 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.

Per IRC code, all buildings should be set back a minimum of H/3 from the edge of any descending slopes, where H is the overall height of the slope. According to the proposed grading plan, this will be required for buildings 6-8.

WSI recommends using a maximum soil bearing pressure of 2,000 pounds per square foot (lb/ft²) for all footings that bear on the near-surface, or sandy soils 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 1,000 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 lb/ft² 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.

4.4.2 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.

4.4.3 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 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.

4.4.4 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

raises writing out 2 cong. raises con					
Assumed Soil Density		=	120 lb/ft ³		
Assumed Soil Internal Friction Angle		=	32 degrees		
Coefficient of At-Rest Earth Pressure,	Κο	=	0.47		
At-Rest Earth Pressure Equivalent Fluid Density		=	56 lb/ft ³		
Coefficient of Active Earth Pressure,	Ka	=	0.31		
Active Earth Pressure Equivalent Fluid Density		=	37 lb/ft ³		
Coefficient of Passive Earth Pressure,	K_p	=	3.25		
Passive Earth Pressure Equivalent Fluid Density		=	390 lb/ft ³		

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.

4.4.5 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 C", very dense soil and soft rock. For this site, use the following seismic design parameters found in the following Table 2:

Table 2: 2015 IBC Seismic Design Parameters

	Short Period	1 sec
Maximum Credible Earthquake Acceleration	S _s = 0.412	$S_1 = 0.159$
Site Class	C	
Site Coefficient	F _a = 1.200	F _v = 1.641
Adjusted Spectral Acceleration	$S_{MS} = 0.495$	S _{M1} = 0.261
Design Response Acceleration	$S_{DS} = 0.330$	S _{D1} = 0.174
Design Peak Ground Acceleration	0.1	75 g

Based on the design response acceleration (S_{DS} =0.330) the buildings on this site are assigned a Seismic Design Category C consistent with IRC Table R301.2.2.1.1

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

4.5 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.

4.6 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 include a minimum of 6 inches of crushed surfacing base course (CSBC) and 2 inches of hot mix asphalt (HMA). Any paving that will experience heavy loading such as for garbage trucks, should consist of 8 inches of CSBC and 3 inches of HMA placed in 2 lifts.

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:

• 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

We conducted two on-site infiltration test pits within the proposed stormwater infiltration locations during our site visit. The on-site tests were conducted in INFTP-1 and INFTP-2 at 6.0 feet below grade.

As an alternative to recommendations in the WSDOE Stormwater Manual for Eastern Washington (2019), we performed air entry permeameter testing within the upper soil horizon in both test holes. We further collected samples of each different soil horizon encountered to a depth of 5 feet below the bottom of the proposed infiltration locations. We used the grain size analysis to estimate the saturated hydraulic conductivity of the soils, and used this value to calculate an approximate infiltration rate for both locations. This method exceeds the requirements of the WSDOE for infiltration testing.

The results of our testing can be found in detail in Appendix B: Stormwater Memorandum. Based on our analysis, an infiltration rate of **6.0 inches/hour for INF TP-1** and **8.0 inches/hour for INF TP-2** should be used for design of infiltration systems. These rates are design rates, however do not account for the possibility of silting in of the systems, and thus an appropriate correction factor should be used when designing the stormwater system.

We reviewed nearby well logs in the area and found that the approximate depth to static groundwater is approximately 79 feet below grade in this area. We would anticipate basalt formations to be shallower than this, and based on nearby well logs approximately 68 feet below grade.

The recommended infiltration rates are based on our interpretation of the on-site testing. Soil conditions may vary in different locations and depths. WSI should be retained to evaluate the soils exposed in the bottom of the infiltration system excavations during construction.

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 townhomes. 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.

8.0 REFERENCES

Lindsey, K.A. (1996). The Miocene to Pliocene Ringold Formation and Associated Deposits of the Ancestral Columbia River System, South-Central Washington and North-Central Oregon. Washington Department of Natural Resources, Division of Geology and Earth Resources, Open-File Report 96-8, 45 p., 4 Appendices.

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

Figure 1: Vicinity Map

Figure 2: Preliminary Site Plan
Figure 3: Soil Classification Chart

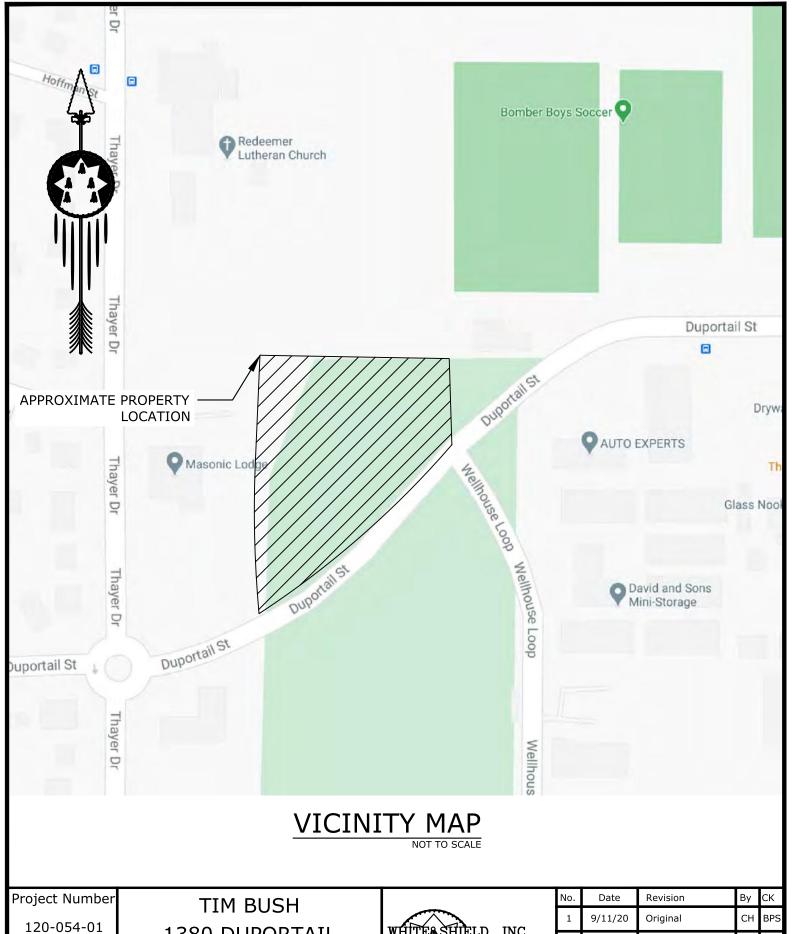


Figure 1

1380 DUPORTAIL RICHLAND, WA VICINITY MAP



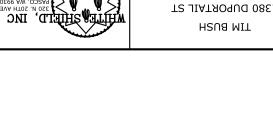
1	9/11/20	Original	СН	BPS

PRELIMINARY SITE PLAN RICHLAND, WA TS JIATAOQUO 08E1

SERVICES TAT SERVICES SERVICES	
PASCO, WA 99301 PASCO, WA 99301	
MHILE SHIETD' INC	

		SENTINGONNENTAL MATERIAL SENTINGONNENTAL MATERIAL SERVICES
		320 N. 20TH AVENUE PHONE 509:547.0100
5	Ţ	HITE SHIELD, INC
	.ONI	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\





BLDG 1 8568 SF 3 UNITS

BLDG 4

P.A.)G 5

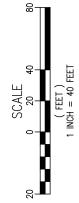


FIGURE 2

120-024-01

Project Number



LEGEND

PRELIMINARY SITE PLAN

Number and approximate location of test pit



Number and approximate location of infiltration test pit

BLDG 8

BLDG 7 4896 SF 3 UNITS

BLDG 6 3264 SF 2 UNITS

NOTE- SITE PLAN FROM "SITE PLAN - BUSH PROPERTIES - DUPORTAIL MULTI-FAMILY" PROVIDED BY KNUTZEN ENGINEERING - 8/4/20.

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS			GROUP SYMBOL	GROUP NAME
COARCE			GW	WELL-GRADED, FINE TO COARSE GRAVEL
COARSE -	GRAVEL	GRAVEL	GP	POORLY-GRADED GRAVEL
GRAINED	MORE THAN 50 % OF COARSE FRACTION	GRAVEL	GM	SILTY GRAVEL
SOILS	RETAINED ON NO. 4 SIEVE	WITH FINES	GC	CLAYEY GRAVEL
	SAND		SW	WELL-GRADED SAND, FINE TO COARSE SAND
MORE THAN 50 %		SAND	SP	POORLY GRADED SAND
RETAINED ON NO. 200 SIEVE	MORE THAN 50 % OF COARSE FRACTION PASSES NO. 4 SIEVE	SAND	SM	SILTY SAND
		WITH FINES	SC	CLAYEY SAND
FINE -	SILT AND CLAY	INORGANIC	ML	SILT
GRAINED	LIQUID LIMIT	INONGANIC	CL	CLAY
SOILS	LESS THAN 50 %		OL	ORGANIC SILT, ORGANIC CLAY
	SILT AND CLAY	INORGANIC	МН	SILT OF HIGH PLASTICITY, ELASTIC SILT
MORE THAN 50 % PASSES NO. 200 SIEVE	LIQUID LIMIT	iivoka/iivic	СН	CLAY OF HIGH PLASTICITY, FAT CLAY
	50 % OR MORE	ORGANIC	ОН	ORGANIC CLAY, ORGANIC SILT
H:	IGHLY ORGANIC SOI	LS	PT	PEAT

NOTES:

- 1) Field classification is based on visual examination of soil in general accordance with ASTM D 2488-93.
- 2) Soil classification using laboratory tests is based on ASTM D 2488-93.
- 3) Descriptions of soil density or consistency are based on interpretation of blowcount data, visual appearance of soils, and/or test data.

SOIL MOISTURE MODIFIERS:

- Dry Absence of moisture, dusty, dry to the touch
- Damp No visible water, leaves hand dry.
- Moist Leaves water or mud on hand.
- Wet Visible free water or saturated, usually soil is obtained from below water table

Date

No.

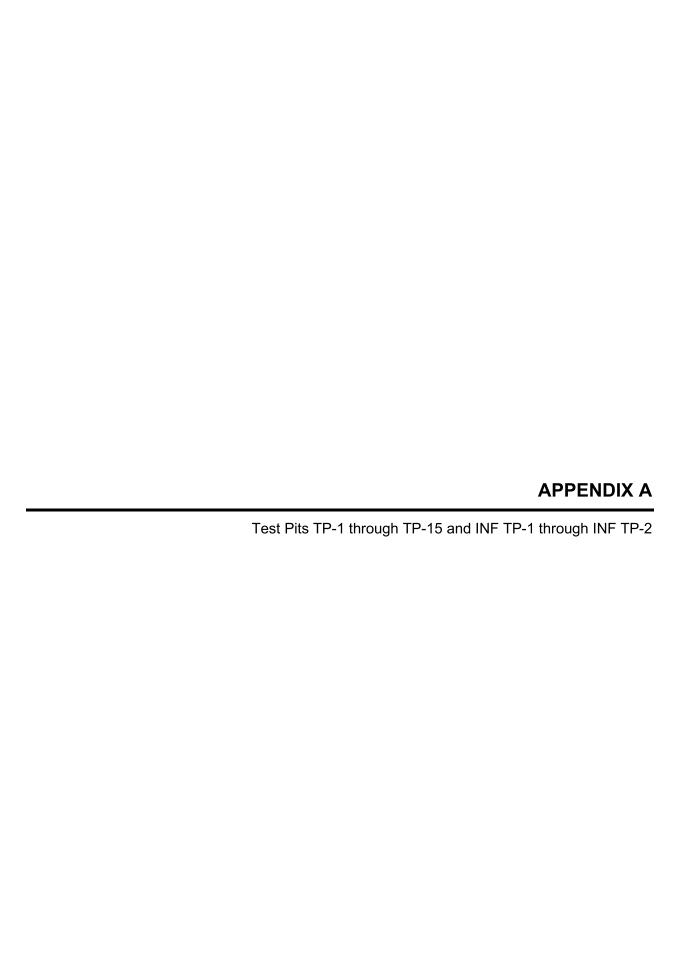
Project Number 120-054-01

Figure 3

TIM BUSH 1380 DUPORTAIL ST RICHLAND, WA SOIL CLASSIFICATION



Revision Ву СК СН 9/11/20 Original BPS IELD, INC 320 N. 20TH AVENUE PASCO, WA 99301





PROJECT NUMBER 120-054-01

PROJECT NAME BUSH- Richland Townhome

CLIENT Tim Bush

ADDRESS 1380 DUPORTAIL RICHLAND, WA 99352

DRILLING DATE 9/1/20

DRILLING METHOD Excavator TOTAL DEPTH 15 FT

COORDINATES 46.270535, -119.289124

COORD SYS GPS

SURFACE ELEVATION 407 FT

LOGGED BY CH $\mathbf{CHECKED}\;\mathbf{BY}\;\mathsf{BPS}$

Depth (ft)	Material Description	Graphic Log	nscs	Blow Count	Samples	Penetration Resistance
	Garbage, concrete asphalt		04			
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13	Medium dense, 5 YR (2.5/1) black, damp medium SAND		SP			
14						
15						
-16			<u> </u>			
	Boring terminated at 15 ft on 9/1/20.		Boring terminat at 15			
	<u> </u>		ı at 15			Page 1 of



PROJECT NUMBER 120-054-01

PROJECT NAME BUSH- Richland Townhomes

CLIENT Bush

ADDRESS XXXX Richland, WA

DRILLING DATE 9/1/20

DRILLING METHOD Excavator **TOTAL DEPTH** 11 FT

COORDINATES 46.270338 , -119.289137

COORD SYS GPS

SURFACE ELEVATION 407 FT

LOGGED BY CH CHECKED BY BPS

ļ						
Depth (ft)	Material Description	Graphic Log	nscs	Blow Count	Samples	Penetration Resistance
	Garbage					
1						
2						
3						
4	Medium dense, 7.5 YR (2.5/2) brown-blackish, dry Fine-medium SAND, little fine gravel, layered black SAND.		SW			
5	,					
6						
7						
8						
9						
10						
11						
12						
13						
14						
-15						
	Boring terminated at 11 ft on 9/1/20.		Boring terminat at 11			



PROJECT NUMBER 120-054-01

PROJECT NAME BUSH- Richland Townhomes

CLIENT Tim Bush

ADDRESS 1380 DUPORTAIL RICHLAND, WA 99352

DRILLING DATE 9/1/20

DRILLING METHOD Excavator TOTAL DEPTH 12 FT

COORDINATES 46.270230 , -119.289181

COORD SYS GPS

SURFACE ELEVATION 409 FT

LOGGED BY CH **CHECKED BY** BPS

Depth (ft)	Material Description	Graphic Log	nscs	Blow Count	Samples	Penetration Resistance
	Garbage					
1						
2						
3						
4						
5						
6						
7						
8						
9	Medium dense, 7.5 YR (2.5/2) brown blackish, dry Fine-medium SAND, little fine gravel, layered black SAND.		SW			
10						
11						
12						
13						
14						
-15	Boring terminated at 12 ft on 9/1/20.		Boring terminat at 12			



PROJECT NUMBER 120-054-01

PROJECT NAME BUSH- Richland Townhomes

CLIENT Tim Bush

ADDRESS 1380 DUPORTAIL RICHLAND, WA 99352

DRILLING DATE 9/1/20

DRILLING METHOD Excavator

TOTAL DEPTH 14.5 FT

COORDINATES 46.270030 , -119.289184

COORD SYS GPS

SURFACE ELEVATION 411 FT

LOGGED BY CH **CHECKED BY** BPS

Depth (ft)	Material Description	Graphic Log	uscs	Blow Count	Samples	Penetration Resistance
1	_Garbage					
2						
3						
4						
5						
6						
7						
8						
9	Medium dense, 7.5 YR (5/3) brown, dry Fine-medium GRAVEL, and Fine-medium SAND.	000	GW			
10 11	Medium dense, 2.5 Y (5/2) brown grayish, damp Fine-medium SAND.		SW			
12	Medium dense, 2.5 Y (2.5/1) black, damp medium SAND, little Medium-coarse GRAVEL.		SP			
14 15						
-16	Boring terminated at 14.5 ft on 9/1/20.		Boring terminat			



PROJECT NUMBER 120-054-01

PROJECT NAME BUSH- Richland Townhomes

CLIENT Tim Bush

ADDRESS 1380 DUPORTAIL RICHLAND, WA 99352

DRILLING DATE 9/1/20

DRILLING METHOD Excavator

TOTAL DEPTH 10 FT

COORDINATES 46.270338, -119.289137

COORD SYS GPS

SURFACE ELEVATION 406 FT

LOGGED BY CH **CHECKED BY** BPS

Depth (ft)	Material Description	Graphic Log	nscs	Blow Count	Samples	Penetration Resistance
	Garbage - Asphalt		04			
-1						
2						
3						
4	Medium dense, 10 YR (4/3) brown, damp Fine-medium SAND.		SW			
5						
6						
7 -	Medium dense, 10 YR (2/1) black, damp medium SAND layered.		SW			
8						
9						
10						
-11						
-12						
-13						
14						
15	Boring terminated at 10 ft on 9/1/20.		Boring			
	-		terminat at 10			



PROJECT NUMBER 120-054-01

PROJECT NAME BUSH- Richland Townhomes

CLIENT Tim Bush

ADDRESS 1380 DUPORTAIL RICHLAND, WA 99352

DRILLING DATE 9/1/20

DRILLING METHOD Excavator TOTAL DEPTH 7.0 FT

COORDINATES 46.269967, -119.288982

COORD SYS GPS

SURFACE ELEVATION 401 FT

LOGGED BY CH CHECKED BY BPS

Depth (ft)	Material Description	Graphic Log	nscs	Blow Count	Samples	Penetration Resistance
	Fill - roots and trash					
1						
2						
3						
	Medium dense, 10 YR (6/1) gray, damp Coarse-fine GRAVEL (0	GP			
4	rounded-elong), some medium black SAND.					
5	Medium dense , 10 YR (5/3) brown, damp Fine-medium SAND.		SW			
6						
7						
8						
9						
10						
11						
12						
13						
.5						
14						
45						
- 15	Boring terminated at 7.0 ft on 9/1/20.		Boring terminat at 7.0			



PROJECT NUMBER 120-054-01

PROJECT NAME BUSH- Richland Townhomes

CLIENT Tim Bush

ADDRESS 1380 DUPORTAIL RICHLAND, WA 99352

DRILLING DATE 9/1/20

DRILLING METHOD Excavator

TOTAL DEPTH 8.7 FT

COORDINATES 46.270114, -119.288965

COORD SYS GPS

SURFACE ELEVATION 401 FT

LOGGED BY CH **CHECKED BY** BPS

Depth (ft)	Material Description	Graphic Log	nscs	Blow Count	Samples	Penetration Resistance
	Garbage - Concrete - Asphalt		04			
1						
2						
3						
4						
5						
6						
7	Medium dense, 2.5 Y (5/1) gray, dry Medium-fine GRAVEL(rounded), some fine SAND.		GM			
8	Medium dense, 7.5 YR (6/3) light brown, dry Fine-medium SAND.		SW			
9						
10						
11						
12						
13						
14						
-15	Boring terminated at 8.7 ft on 9/1/20.		Boring terminat at 8.7			



PROJECT NUMBER 120-054-01

PROJECT NAME BUSH- Richland Townhomes

CLIENT Tim Bush

ADDRESS 1380 DUPORTAIL RICHLAND, WA 99352

DRILLING DATE 9/1/20

DRILLING METHOD Excavator TOTAL DEPTH 7.5 FT

COORDINATES 46.270448, -119.288917

COORD SYS GPS

SURFACE ELEVATION 400 FT

LOGGED BY CH **CHECKED BY** BPS

				Ι	I	
Depth (ft)	Material Description	Graphic Log	nscs	Blow Count	Samples	Penetration Resistance
	Garbage - Concrete - Asphalt.		04			
1						
2						
3						
4						
5	Medium dense, 7.5 YR (5/2) brown, dry Medium-fine GRAVEL(rounded), some Fine-medium SAND.		GW			
5	Medium dense, 7.5 YR (5/2) brown, dry Fine-medium SAND(bedded).		SW			
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
	Boring terminated at 7.5 ft on 9/1/20.		Boring terminat at 7.5			
						Page 1 of 1



PROJECT NUMBER 120-054-01

PROJECT NAME BUSH- Richland Townhomes

CLIENT Tim Bush

ADDRESS 1380 DUPORTAIL RICHLAND, WA 99352

DRILLING DATE 9/1/20

DRILLING METHOD Excavator TOTAL DEPTH 8.0 FT

COORDINATES 46.270589, -119.288981

COORD SYS GPS

SURFACE ELEVATION 403 FT

LOGGED BY CH **CHECKED BY** BPS

Depth (ft)	Material Description	Graphic Log	nscs	Blow Count	Samples	Penetration Resistance
	Garbage - Concrete					
1						
2						
3						
4						
5	Medium dense, 10 YR (2/2) brown blackish, dry Fine-medium		SW			
	SAND, layered black SAND.		""			
6						
7						
8						
9						
10						
11						
12						
14						
10						
13						
14						
-15	Boring terminated at 8.0 ft on 9/1/20.		Boring			
			terminat at 8.0			Page 1 of



PROJECT NUMBER 120-054-01

PROJECT NAME BUSH- Richland Townhomes

CLIENT Tim Bush

ADDRESS 1380 DUPORTAIL RICHLAND, WA 99352

DRILLING DATE 9/1/20

DRILLING METHOD Excavator TOTAL DEPTH 7.0 FT

COORDINATES 46.270374, -119.288640

COORD SYS GPS

SURFACE ELEVATION 392 FT

LOGGED BY CH **CHECKED BY** BPS

Medium dense, 7.5 YR (6/3) light brow, dry Fine-medium SAND, some Fine-medium GRAVEL. SP							
Medium dense, 7.5 YR (8/3) light brow, dry Fine-medium SAND, some Fine-medium GRAVEL. Medium dense, 10 YR (5/2) brown grayish, dry Fine-medium SAND, BEDDED. SW SW 10 11 12 13 14 Boring terminated at 7.0 ft on 9/1/20. Boring	Depth (ft)	Material Description	Graphic Log	nscs	Blow Count	Samples	Penetration Resistance
SAND, BEDDED. 5 6 7 8 9 10 11 12 13 Boring terminated at 7.0 ft on 9/1/20. Boring	1	some Fine-medium GRAVEL.					
8 9 10 11 12 13 14 Boring terminated at 7.0 ft on 9/1/20. Boring	4 5	Medium dense, 10 YR (5/2) brown grayish, dry Fine-medium SAND, BEDDED.		SW			
10 11 12 13 14 15 Boring terminated at 7.0 ft on 9/1/20. Boring							
12 13 14 15 Boring terminated at 7.0 ft on 9/1/20. Boring							
13							
Boring terminated at 7.0 ft on 9/1/20. Boring							
Dorning terminated at 7.0 it on 9/1/20.		Roying terminated at 7.0 ft on 9/1/20		Boring			
terminal		Borning terminated at 7.0 ft on 9/1/20.		terminat at 7.0			



PROJECT NUMBER 120-054-01

PROJECT NAME BUSH- Richland Townhomes

CLIENT Tim Bush

ADDRESS 1380 DUPORTAIL RICHLAND, WA 99352

DRILLING DATE 9/1/20

DRILLING METHOD Excavator TOTAL DEPTH 9.0 FT

COORDINATES 46.270079, -119.288775

COORD SYS GPS

SURFACE ELEVATION 392 FT

LOGGED BY CH **CHECKED BY** BPS

Depth (ft)	Material Description	Graphic Log	nscs	Blow Count	Samples	Penetration Resistance
1	Loose, 7.5 YR (6/3) light brown, dry Fine-coarse GRAVEL and Fine-medium SAND(FILL).		GW			
2						
3						
4 5	Medium dense, 7.5 YR (4/3) brown, dry Fine - medium SAND, BEDDED.		SW			
6						
7						
8 9						
10						
11						
12						
13						
14 — 15						
10	Boring terminated at 9.0 ft on 9/1/20.		Boring terminat at 9.0			Page 1 of ²



PROJECT NUMBER 120-054-01

PROJECT NAME BUSH- Richland Townhomes

CLIENT Tim Bush

ADDRESS 1380 DUPORTAIL RICHLAND, WA 99352

DRILLING DATE 9/1/20

DRILLING METHOD Excavator TOTAL DEPTH 7.0 FT

COORDINATES 46.269956, -119.288737

COORD SYS GPS

SURFACE ELEVATION 392 FT

LOGGED BY CH **CHECKED BY** BPS

Depth (ft)	Material Description	Graphic Log	nscs	Blow Count	Samples	Penetration Resistance
	Loose, 7.5 YR (5/2) brown, dry Fine-medium SAND (FILL).		sw			
1						
2	Medium dense, 7.5 (5/2) brown, damp Fine-medium SAND.		SW			
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
-15			Borin ~			
			Boring terminat at 7.0			
			ı at 7.0			Page 1 of 1



PROJECT NUMBER 120-054-01

PROJECT NAME Bush- Richland Townhomes

CLIENT Tim Bush

ADDRESS 1380 DUPORTAIL RICHLAND, WA 99352

DRILLING DATE 9/1/20

DRILLING METHOD Excavator TOTAL DEPTH 4.0 FT

COORDINATES 46.270119, -119.288546

COORD SYS GPS

SURFACE ELEVATION 385 FT

LOGGED BY CH CHECKED BY BPS

Depth (ft)	Material Description	Graphic Log	nscs	Blow Count	Samples	Penetration Resistance
	Medium dense, 7.5 YR (2.5/2) brown blackish, dry Fine-medium BEDDED SAND.		SP			
1						
2						
0						
3						
4						
5						
6						
7						
8						
9						
10						
10						
11						
12						
40						
13						
14						
-15	Boring terminated at 4.0 ft on 9/1/20		Boring terminat			
			terminat at 4.0			Page 1 of 1



PROJECT NUMBER 120-054-01

PROJECT NAME Bush - Richland Townhomes

CLIENT TIM Bush

ADDRESS 1380 DUPORTAIL RICHLAND, WA 99352

DRILLING DATE 9/1/20

DRILLING METHOD Excavator TOTAL DEPTH 6.0 FT

COORDINATES 46.270395, -119.288396

COORD SYS GPS

SURFACE ELEVATION 379 FT

LOGGED BY CH CHECKED BY BPS

Depth (ft)	Material Description	Graphic Log	nscs	Blow Count	Samples	Penetration Resistance
1	Medium dense, 7.5 YR (4/3) brown, dry Fine-medium BEDDED SAND.		SP			
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12 13						
14						
-15	Boring terminated at 6.0 ft on 9/1/20		Borina			
	5 · · · · · · · · · · · · · · · · · · ·		Boring termina at 6.0			Page 1 of ²



PROJECT NUMBER 120-054-01

PROJECT NAME Bush - Richland Townhomes

CLIENT Tim Bush

ADDRESS 1380 DUPORTAIL RICHLAND, WA 99352

DRILLING DATE 9/1/20

DRILLING METHOD Excavator TOTAL DEPTH 8.0 FT

COORDINATES 46.270562, -119.288486

COORD SYS GPS

SURFACE ELEVATION 387 FT

LOGGED BY CH CHECKED BY BPS

Depth (ft)	Material Description	Graphic Log	nscs	Blow Count	Samples	Penetration Resistance
	Loose, tan, dry Fine SAND, little silt.		SP			
1						
2						
Ü						
4	Medium dense, 7.5 YR (5/4) brown, dry Fine-medium SAND.		SW			
5						
6 7						
8						
O						
9						
10						
11						
12						
13						
14						
-15	Boring terminated at 8.0 ft on 9/1/20		Boring			
			terminat at 8.0			



INFILTRATION TEST INFTP-1

PROJECT NUMBER 120-054-01

PROJECT NAME BUSH- Richland Townhomes

CLIENT Tim Bush

ADDRESS 1380 DUPORTAIL RICHLAND, WA 99352

DRILLING DATE 9/1/20

TOTAL DEPTH 10 FT

DRILLING METHOD Excavator

COORD SYS GPS

SURFACE ELEVATION 395 FT

COORDINATES 46.269810 , -119.288857

LOGGED BY CH

CHECKED BY BPS

			<u> </u>			
Depth (ft)	Material Description	Graphic Log	nscs	Blow Count	Samples	Penetration Resistance
	Loose, 10 YR (5/2) brown grayish, dry Coarse-fine GRAVEL, some fine SAND.	0.0	GP			
-1	Loose, 10 YR (4/3) brown, dry Fine-medium SAND(FILL).		SP			
2						
3						
4	Medium dense, 10 YR (5/2) brown grayish, damp Fine-medium SAND, trace black SAND.		SW		Sample collected	
-5						
6						
7						
8	Medium dense, 10 YR (5/2) brown gray, damp Fine-medium SAND, trace black SAND.		SM		Sample collected	
9	Medium dense, 10YR(5/2) brow grayish, damp Fine-medium SAND, trace black SAND.		SW		Sample collected	
10		1				
11						
12						
13						
14						
15						
-16	Paring terminated at 10 ft on 9/1/20		Borina			
	Boring terminated at 10 ft on 9/1/20. 2-3 feet : Ash layer in Sand end of the test pit		Boring terminat at 10			
	•					Page 1 o



INFILTRATION INFTP- 2

PROJECT NUMBER 120-054-01

PROJECT NAME BUSH- Richland Townhomes

CLIENT Tim Bush

ADDRESS 1380 DUPORTAIL RICHLAND, WA 99352

DRILLING DATE 9/1/20

DRILLING METHOD Excavator TOTAL DEPTH 7.0 FT

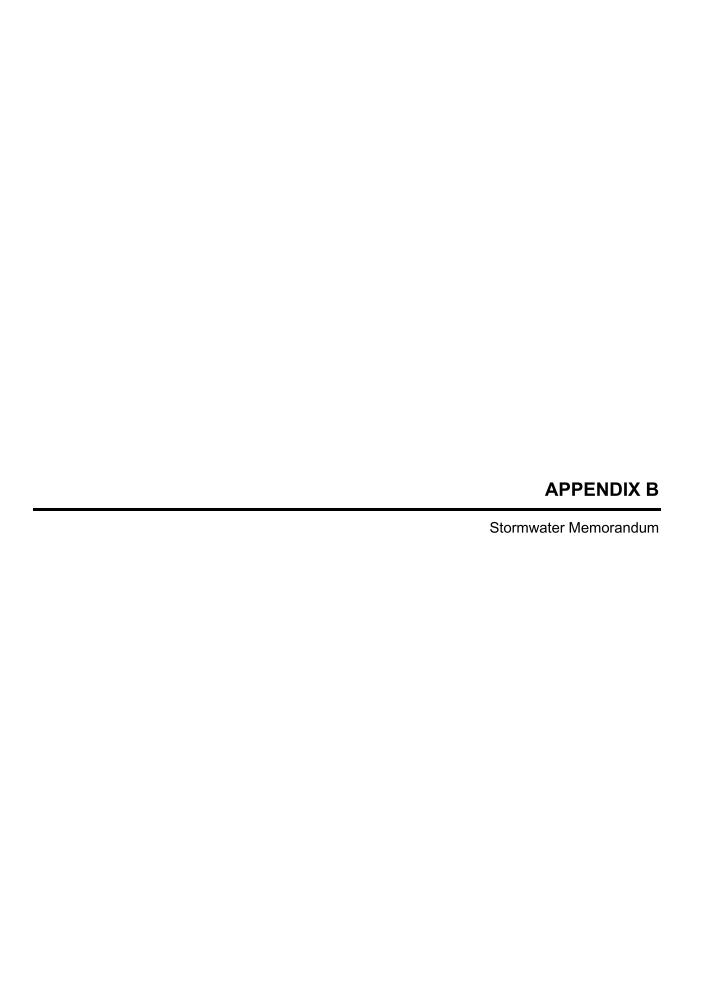
COORDINATES 46.270404, -119.288705

COORD SYS GPS

SURFACE ELEVATION 399 FT

LOGGED BY CH **CHECKED BY** BPS

Loose, 7.5 YR (5/3) brown, dry Fine-medium SAND (FILL) SW							
Loose, 7.5 YR (5/3) brown, dry Fine-medium SAND (FILL) SW	Depth (ft)	Material Description	Graphic Log	nscs	Blow Count	Samples	
Nedium dense, 7.5 YR (s/4) light brown, dry Fine-medium SAND. Sample collected Sample collected Medium dense, 10 YR (5/2) brown grayish, damp Medium-fine SAND. Sample collected Sample collected SW Sample collected SW Sample collected SW Sample collected SW Sample collected Boring terminated at 11 ft on 9/1/20.		Loose, 7.5 YR (5/3) brown, dry Fine-medium SAND (FILL)					00
Sample collected Sample coll	1	Medium dense, 7.5 YR (6/4) light brown, dry Fine-medium SAND.		SW			
3 collected Sample Collected Collected Sample Collected Collecte	2						
4 5 6 7 7 8 8 8 8 8 8 8 8	3					collected Sample	
6	4					00::00:00	
7	5						
8 9 Medium dense, 10 YR (5/2) brown grayish, damp Medium-fine SAND. 11 12 13 14 15 Boring terminated at 11 ft on 9/1/20. Boring terminated at 11 ft on 9/1/20.	6						
Medium dense, 10 YR (5/2) brown grayish, damp Medium-fine SAND. Sample collected 10 11 12 13 14 15 Boring terminated at 11 ft on 9/1/20.	7						
9 SAND. 10 Sample collected 11	8						
10 11 12 13 14 15 Boring terminated at 11 ft on 9/1/20. Boring terminated at 11 ft on 9/1/20.	9	Medium dense, 10 YR (5/2) brown grayish, damp Medium-fine SAND.		SW		Sample collected	
12	10					33,100,100	
13 -14 -15 -16 -18 Boring terminated at 11 ft on 9/1/2019 Boring terminated at 11 ft on 9/1/20.	11						
16 Boring terminated at 11 ft on 9/1/20. Boring terminated at 11 ft on 9/1/20.	12						
Boring terminated at 11 ft on 9/1/20. Boring terminated at 11 ft on 9/1/20.	13						
Boring terminated at 11 ft on 9/1/20. Boring terminated at 11 ft on 9/1/20.	14						
Boring terminated at 11 ft on 9/1/20. Boring terminated at 11 ft on 9/1/20. terminated at 11 ft on 9/1/20.	15						
Boring terminated at 11 ft on 9/1/20. Boring terminated at 11 ft on 9/1/20. terminated at 11 ft on 9/1/20.	-16						
		Boring terminated at 11 ft on 9/1/20.		terminat			



WHITE SHIELD, INC.

Memo

To:

Ben Staehr, P.E.

From:

Michael Black, P.E.

cc:

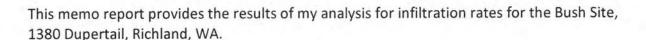
Callixte Hirwa

Date:

9/19/20

Re:

Bush Geohydrology for Stormwater Design



Some common definitions as follows:

- Vadose Zone- geologic media between the land surface and the regional water table. In the case of this project, all considerations are within the vadose zone.
- Saturated Hydraulic conductivity- The ease with which a fluid travels through a given soil (saturated porous medium).
- Unsaturated hydraulic conductivity- The ease with which a fluid travels through a given soil at different soil moistures (i.e. different matric pressures or capillary pressures).
- Infiltration- The movement of water into the soil column based on the following:
 - a. The depth to groundwater or a restrictive layer.
 - b. The physical dimensions of the application source.
 - c. The pressure head (depth) and the application time.
 - d. The saturated and unsaturated hydraulic conductivity.
 - e. The initial and full soil saturation values.

Per your direction, I did not consider groundwater or a restrictive layer as your field investigation determined it was at a substantial depth. You also provided guidance that exfiltration trenches were to be used for this site. The design trench depth is 3 ft. for the Test Pit 1 area and 5 ft. for the Test Pit No. 2 area.



INFILTRATION RATE METHODOLOGY

The salient issue for this evaluation is the infiltration rate as previously defined for the proposed stormwater management device (infiltration trench). While a large number of methods exist to estimate the saturated hydraulic conductivity (K_s) there are few recognized by the engineering/geohydrology practice as follows:

- 1. Performing air-entry permeameter tests in each soil layer accompanied by a field constant head permeameter (K_{sv}) and and Well Pump-In Technique (Ksh), which both are recommended by the ASTM. This is a very expensive protocol.
- Collecting in-situ, un-disturbed samples, oriented in the vertical and horizontal position for either a falling- or constant head permeameter test. This is a very expensive protocol as well.
- 3. Collecting samples, at-depth, for Grain Size Analysis (GSD). GSD analysis uses research derived empirical formulas to determine the K_s. Over the years, the engineering professional has lagged well behind the soil science technical community with respect to water flow in soils. The National Resource Conservation Service (NCRS) has sponsored large research efforts and enjoy a database with over 30,000 soil types. Most of these formulas developed by engineers were developed for sand. While the WSDOE uses a much more simplified technique for estimation, we used the Soil Water Characteristic Curve (NCRS) data for our work. Furthermore, we have found the NCRS methods much more accurate when compared to actual field tests.

We used the Saxton¹ method for application to our models. This method includes the soil texture, approximate density, organic content, and salinity. It also provides the hydraulic conductivity at a range of matrix soil suction, both osmotic and capillary.

Vadose zone flow

We used the Green-Ampt Explicit Model to determine the infiltration rate. This model considers the level of ponding (3 ft. and 5 ft.) Using the saturated hydraulic conductivity (K_{SAT}) the model determines the changes to infiltration, over time, based on overcoming the matric suction.

¹ Saxton, K.E., Rawls, W.J., Soil Water Characteristic Estimates by Texture and Organic Matter for Hydrologic Solutions. Soil Science Society of America Journal, 70:1569-1578, 2006

ANALYSIS

Using the hydrometer data (see Appendix), we calculated the following key information for each soil layer:

- Saturated hydraulic conductivity (Ksat)
- Soil Saturation (% by volume).
- Various other data included in the Excel Sheets in the Appendix.

Once this data was determined, we calculated the Brooks-Corey Grain Size Distribution and the infiltration rate for each trench area using the Green-Ampt Explicit Model. We used the lowest calculated K_{SAT} is it would provide the controlling layer.

For the Test Pit No. 1 area (3 ft. deep trench), the infiltration rate with start at 15.38 cm/hr (6.1 in/hr) and rise to 70.45 cm/hr (27.7 in/hr) after 1.5 hrs. This assumes a constant 3 ft. head.

For the Test Pit No. 2 area (5 ft. deep trench), the infiltration rate with start at 20.24 cm/hr (8.0 in/hr) and rise to 90.72 in/hr (35.7 in/hr) after 1.5 hours. This assumes a constant 5 ft. head.

CONCLUSIONS AND RECOMMENDATIONS

Depending on the maintenance of the trenches, silt build up over time will decrease the exfiltration capacity. The recommended infiltration rate does not include consideration of silting in. We recommend the following infiltration values:

- Test Pit No. 1 Area; 6.0 inches/hr
- Test Pit No. 2 Area; 8.0 inches/hr

JULY 2020

The pore size distribution is used in many infiltration models. The Brooks-Corey parameter is most commonly used and is calculated here. The variables include the following:

- C= percent clay (5<%<60)
- S= percent sand (5<%<70)
- \$\phi\$ = porosity (volume fraction)

INPUT VARIABLES

$$C := 0.024$$

$$S = 84$$

$$\phi := 0.402$$

$$\begin{split} \lambda := \exp & \left[-0.7842831 + 0.0177544 \cdot S - 1.062498 \cdot \varphi - 0.00005304 \cdot S^2 - 0.00273493 \cdot C^2 \ldots \right] = 0.52 \\ & + 1.1113496 \cdot \varphi^2 - 0.03088295 \cdot S \cdot \varphi + 0.00026587 \cdot S^2 \cdot \varphi^2 - 0.00610522 \cdot C^2 \cdot \varphi^2 \ldots \right] \\ & + \left(-0.00000235 \cdot S^2 \cdot C \right) + 0.00798746 \cdot C^2 \cdot \varphi - 0.00674491 \cdot \varphi^2 \cdot C \end{split}$$

Green-Ampt Explicit Model (GAEXP)

A. Description

The Green-Ampt model is the first physically-based equation describing the infiltration of water into a soil. It has been the subject of considerable developments in soil physics and hydrology owing to its simplicity and satisfactory performance for a great variety of water infiltration problems. This model yields cumulative infiltration and infiltration rate as implicit functions of time, *i.e.*, given a value of time, t, q and I cannot be obtained by direct substitution. The equations have to be solved in an iterative manner to obtain these quantities. Therefore, the required functions are q(t) and I(t) instead of t(q) and t(I). The Green Ampt explicit model (GAEXP) for q(t) and I(t), developed by Salvucci and Entekhabi (1994), facilitated a straight forward and accurate estimation of infiltration for any given time. This model supposedly yield less than 2% error at all times when compared to the exact values from the implicit Green-Ampt model. A scenario was chosen to simulate the water infiltration into a sandy soil under ponding conditions by using the GAEXP model. A ponding depth of 1 cm was applied at the soil surface. Input parameters and simulation results were given below.

B. Definition of Variables

$h_e := -82$	Air entry head from test (cm)
$\lambda := 0.52$	The exponent of the Brooks-Corey water retention model
$\theta_s := 0.402$	Saturated volumetric water content (cm³/cm³)
$\theta_0 := 0.04$	Initial volumetric water content (cm³/cm³)
$K_s := 14.0$	Saturated hydraulic conductivity (cm/h)
$h_s := 91.4$	Ponding depth or capillary pressure head at the surface (cm)
t := 0.1, 0.2 1.5	Duration of infiltration (h)

Values given above were obtained from Carsel and Parrish (1988) for a sandy soil.

C. Equations

$$\eta := (2 + 3 \cdot \lambda) \tag{1}$$

$$h_f := \frac{\eta}{(\eta - 1)} \cdot h_e$$
 Capillary pressure head at the wetting front (2)

$$\chi := \frac{\left(h_s - h_f\right) \cdot \left(\theta_s - \theta_0\right)}{K_s}$$
(3)

$$\tau(t) := \frac{t}{(t+\chi)} \tag{4}$$

$$q(t) := \left[\left(\frac{\sqrt{2}}{2} \right) \cdot \tau(t)^{\left(-\frac{1}{2} \right)} + \left(\frac{2}{3} \right) - \left(\frac{\sqrt{2}}{6} \right) \cdot \tau(t)^{\frac{1}{2}} + \left(\frac{1 - \sqrt{2}}{3} \right) \cdot \tau(t) \right] \cdot K_s \qquad \text{Infiltration rate}$$
 (5)

$$I(t) := \left[\left(1 - \frac{\sqrt{2}}{3}\right) \cdot t + \frac{\sqrt{2}}{3} \cdot \sqrt{\chi \cdot t + t^2} + \left(\frac{\sqrt{2} - 1}{3}\right) \cdot \chi \cdot \left(\ln(t + \chi) - \ln(\chi)\right) + \frac{\sqrt{2}}{3} \cdot \chi \cdot \left(\ln\left(t + \frac{\chi}{2} + \sqrt{\chi \cdot t + t^2}\right) - \ln\left(\frac{\chi}{2}\right)\right) \right] \cdot K_s$$
 (6)

D. Results

t =	q(t) =	I(t) =
0.1	81.68	15.38
0.2	60.6	22.31
0.3	51.28	27.86
0.4	45.73	32.69
0.5	41.95	37.06
0.6	39.16	41.11
0.7	36.99	44.91
0.8	35.25	48.52
0.9	33.8	51.97
1	32.58	55.29
1.1	31.54	58.5
1.2	30.62	61.6
1.3	29.82	64.62
1.4	29.1	67.57
1.5	28.46	70.45

Cumulative infiltration

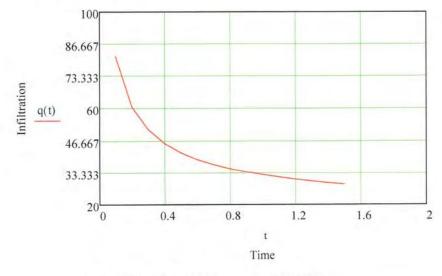


Figure 1. Soil infiltration as a function of time.

9/19/20

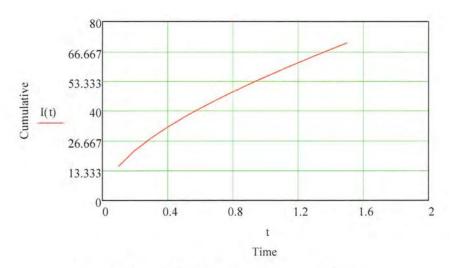


Figure 2. Cumulative Infiltration as a function of time.

E. Discussion

Figures 1 and 2 show the soil water infiltration rate and cumulative infiltration as a function of time, respectively. A rapid decrease in water infiltration rate was observed within the first hour.

F. Sensitivity Analysis of Infiltration Rate to Saturated hydraulic Conductivity

This section shows the sensitivity coefficient (S_s) and the relative sensitivity (S_r) of the surface infiltration rate, q, to the saturated hydraulic conductivity (K_s) at the time of 1 hours. The expressions were obtained by applying Equations 3 and 4 in Section B2 (PHILIP2T model) to Equation 5 in this section.

F.1. Input Data

$$K_{s} := 7.5, 7.6... 8.9$$
 $t := 5$

F.2. Sensitivity Calculation Equations

$$\chi(K_s) := \frac{(h_s - h_f) \cdot (\theta_s - \theta_0)}{K_s}$$
(7)

$$\pi(K_s) := \frac{t}{(t + \chi(K_s))}$$
(8)

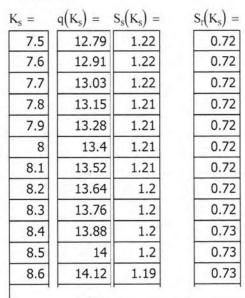
$$g(K_s) := \left[\left(\frac{\sqrt{2}}{2} \right) \cdot \tau(K_s)^{\left(-\frac{1}{2} \right)} + \left(\frac{2}{3} \right) - \left(\frac{\sqrt{2}}{6} \right) \cdot \tau(K_s)^{\frac{1}{2}} + \left(\frac{1 - \sqrt{2}}{3} \right) \cdot \tau(K_s) \right] \cdot K_s$$

$$(9)$$

$$S_s(K_s) := \frac{d}{dK_s}q(K_s)$$
 Sensitivity (10)

$$S_{r}(K_{s}) := \left(\frac{d}{dK_{s}}q(K_{s})\right) \cdot \left(\frac{K_{s}}{q(K_{s})}\right)$$
 Relative Sensitivity (11)

F.3. Results



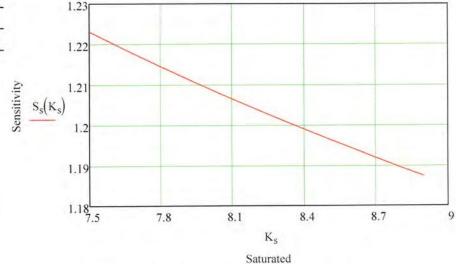


Figure 3. Sensitivity of infiltration rate for different values of saturated hydraulic conductivity at t = 5 hours.

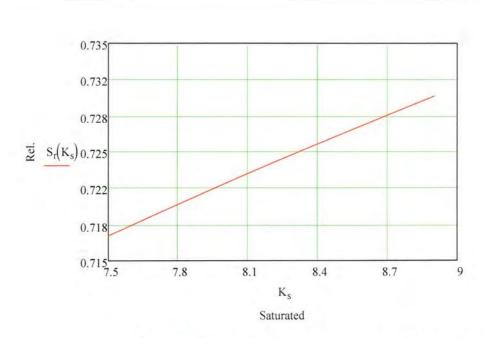


Figure 4. Relative sensitivity of infiltration rate for different values of saturated hydraulic conductivity at t = 5 hours.

F.4. Discussion

Figure 3 shows a sensitivity of the infiltration rate for different values of saturated hydraulic conductivity. The sensitivity decreased as the saturated hydraulic conductivity increased. Figure 4 shows the relative sensitivity of the infiltration rate for different values of saturated hydraulic conductivity. The relative sensitivity increased as the saturated hydraulic conductivity increased.

Project: Bush		Sample ID:	INFTP-1	Depth: 4.0 -	Depth: 4.0 - 4.5 ft		
SAND %	CLAY %	SILT %	Saturation % (vol.)	Bulk Density (lb/ft³)	Effective Porosity % (vol.)	Saturated Hydraulic Conductivity K _s (in/hr)	In-Situ Soil Moisture %
87.6	2.4	10.0	41.4	96.86	5.2	7.31	2.82

Water %	Matric Potential (bars)	Matic Potential (ft)	K (in/hr)
0.4	13.56	453.67	9.57E-12
3.0	0.73	24.42	1.38E-06
6.0	0.33	11.04	8.22E-05
9.0	0.30	10.04	8.98E-04
12.0	0.27	9.03	4.90E-03
15.0	0.24	8.03	1.82E-02
18.0	0.22	7.36	5.35E-02
21.0	0.19	6.36	1.33E-01
24.0	0.16	5.35	2.92E-01
27.0	0.13	4.35	5.84E-01
30.0	0.11	3.68	1.09E+00
33.0	0.08	2.68	1.91E+00
36.0	0.05	1.67	3.18E+00
41.0	0.01	0.33	6.85E+00

Figure-1:

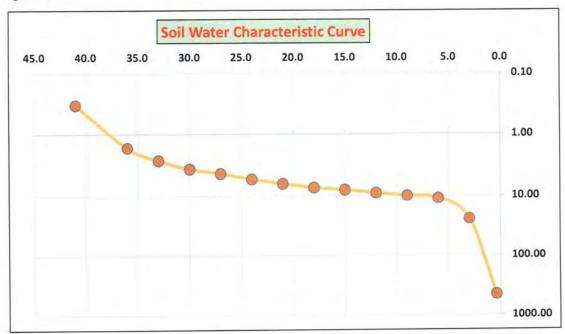
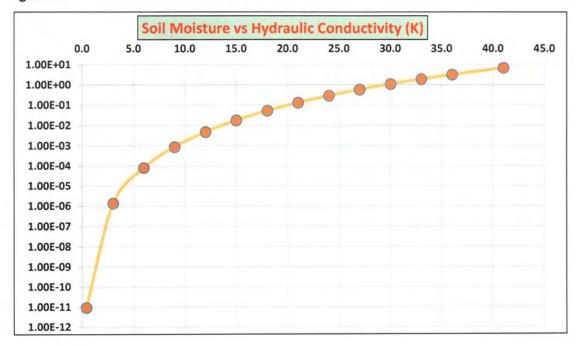


Figure-2:



Project: Bus	Project: Bush		Sample ID: INFTP-1		Depth: 8.0 - 8.5 ft		
SAND %	CLAY %	SILT %	Saturation % (vol.)	Bulk Density (lb/ft³)	Effective Porosity % (vol.)	Saturated Hydraulic Conductivity K _s (in/hr)	In-Situ Soil Moisture %
77.6	2.4	20.0	40.2	98.91	7.3	5.53	3.48

Water %	Matric Potential (bars)	Matic Potential (ft)	K (in/hr)	
0.6	14.68	491.14	5.78E-11	
3.0	1.33	44.50	7.23E-07	
6.0	0.45	15.06	4.98E-05	
9.0	0.32	10.71	5.93E-04	
12.0	0.29	9.70	3.43E-03	
15.0	0.26	8.70	1.34E-02	
18.0	0.23	7.69	4.09E-02	
21.0	0.20	6.69	1.05E-01	
24.0	0.17	5.69	2.37E-01	
27.0	0.14	4.68	4.86E-01	
30.0	0.11	3.68	9.25E-01	
33.0	0.08	2.68	1.65E+00	
36.0	0.05	1.67	2.82E+00	
40.1	0.01	0.33	5.44E+00	

Figure-1:

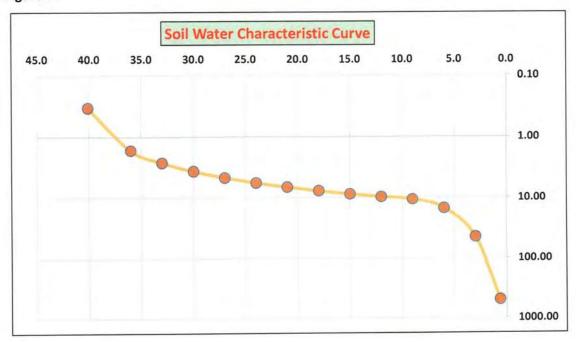
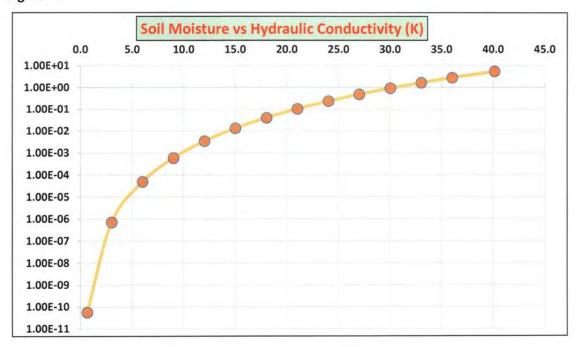


Figure-2:



Project: Bus	Project: Bush		INFTP-1	Depth: 9.0 - 9.5 ft			July 1
SAND %	CLAY %	SILT %	Saturation % (vol.)	Bulk Density (lb/ft ³)	Effective Porosity % (vol.)	Saturated Hydraulic Conductivity K _s (in/hr)	In-Situ Soil Moisture %
89.6	2.4	8.0	41.7	96.42	4.8	7.76	2.86

Water %	Matric Potential (bars)	Matic Potential (ft)	K (in/hr)
0.3	14.46	483.78	4.43E-12
3.0	0.64	21.41	1.70E-06
6.0	0.32	10.71	9.64E-05
9.0	0.30	10.04	1.02E-03
12.0	0.27	9.03	5.47E-03
15.0	0.24	8.03	2.01E-02
18.0	0.21	7.03	5.80E-02
21.0	0.19	6.36	1.42E-01
24.0	0.16	5.35	3.10E-01
27.0	0.13	4.35	6.16E-01
30.0	0.11	3.68	1.14E+00
33.0	0.08	2.68	1.98E+00
36.0	0.05	1.67	3.29E+00
41.2	0.01	0.33	7.22E+00

Figure-1:

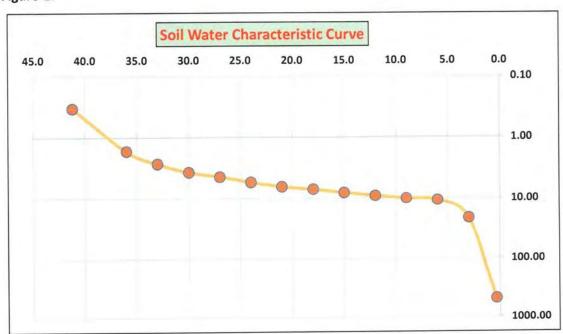
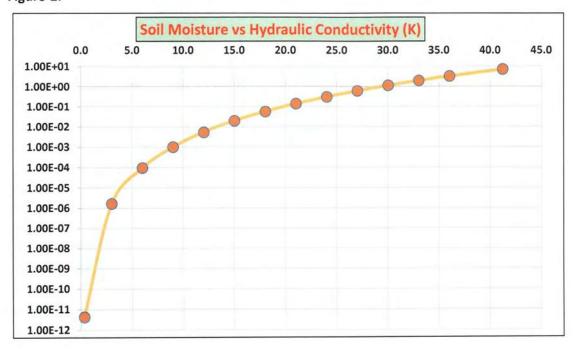


Figure-2:



BROOKS-COREY GRAIN SIZE DISTRIBUTION-BUSH RICHLAND

The pore size distribution is used in many infiltration models. The Brooks-Corey parameter is most commonly used and is calculated here. The variables include the following:

- C= percent clay (5<%<60)
- S= percent sand (5<%<70)
- φ= porosity (volume fraction)

INPUT VARIABLES

$$C := 0.24$$

$$S = 90.6$$

$$\phi := 0.418$$

$$\begin{split} \lambda := \ \exp & \begin{bmatrix} -0.7842831 + 0.0177544 \cdot S - 1.062498 \cdot \varphi - 0.00005304 \cdot S^2 - 0.00273493 \cdot C^2 \ ... \\ + 1.1113496 \cdot \varphi^2 - 0.03088295 \cdot S \cdot \varphi + 0.00026587 \cdot S^2 \cdot \varphi^2 - 0.00610522 \cdot C^2 \cdot \varphi^2 \ ... \\ + \left(-0.00000235 \cdot S^2 \cdot C \right) + 0.00798746 \cdot C^2 \cdot \varphi - 0.00674491 \cdot \varphi^2 \cdot C \end{split} \right] = 0.52$$

Green-Ampt Explicit Model (GAEXP)

A. Description

The Green-Ampt model is the first physically-based equation describing the infiltration of water into a soil. It has been the subject of considerable developments in soil physics and hydrology owing to its simplicity and satisfactory performance for a great variety of water infiltration problems. This model yields cumulative infiltration and infiltration rate as implicit functions of time, *i.e.*, given a value of time, *t.*, q and I cannot be obtained by direct substitution. The equations have to be solved in an iterative manner to obtain these quantities. Therefore, the required functions are q(t) and I(t) instead of t(q) and t(I). The Green Ampt explicit model (GAEXP) for q(t) and I(t), developed by Salvucci and Entekhabi (1994), facilitated a straight forward and accurate estimation of infiltration for any given time. This model supposedly yield less than 2% error at all times when compared to the exact values from the implicit Green-Ampt model. A scenario was chosen to simulate the water infiltration into a sandy soil under ponding conditions by using the GAEXP model. A ponding depth of 1 cm was applied at the soil surface. Input parameters and simulation results were given below.

B. Definition of Variables

 $h_a := -104$ Air entry head from test (cm)

 $\lambda := 0.51$ The exponent of the Brooks-Corey water retention model

 $\theta_s := 0.418$ Saturated volumetric water content (cm³/cm³)

 $\theta_0 := 0.029$ Initial volumetric water content (cm³/cm³)

K_s := 15.9 Saturated hydraulic conductivity (cm/h)

h_s := 152 Ponding depth or capillary pressure head at the surface (cm)

t := 0.1, 0.2..1.5 Duration of infiltration (h)

Values given above were obtained from Carsel and Parrish (1988) for a sandy soil.

C. Equations

$$\eta := (2 + 3 \cdot \lambda) \tag{1}$$

$$h_f := \frac{\eta}{(\eta - 1)} \cdot h_e$$
 Capillary pressure head at the wetting front (2)

$$\chi := \frac{\left(h_s - h_f\right) \cdot \left(\theta_s - \theta_0\right)}{K_s} \tag{3}$$

$$\tau(t) := \frac{t}{(t + \chi)} \tag{4}$$

$$q(t) := \left[\left(\frac{\sqrt{2}}{2} \right) \cdot \tau(t)^{\left(-\frac{1}{2} \right)} + \left(\frac{2}{3} \right) - \left(\frac{\sqrt{2}}{6} \right) \cdot \tau(t)^{\frac{1}{2}} + \left(\frac{1-\sqrt{2}}{3} \right) \cdot \tau(t) \right] \cdot K_s \qquad \text{Infiltration rate} \tag{5}$$

$$I(t) := \left[\left(1 - \frac{\sqrt{2}}{3} \right) \cdot t + \frac{\sqrt{2}}{3} \cdot \sqrt{\chi \cdot t + t^2} + \left(\frac{\sqrt{2} - 1}{3} \right) \cdot \chi \cdot \left(\ln(t + \chi) - \ln(\chi) \right) + \frac{\sqrt{2}}{3} \cdot \chi \cdot \left(\ln\left(t + \frac{\chi}{2} + \sqrt{\chi \cdot t + t^2}\right) - \ln\left(\frac{\chi}{2}\right) \right) \right] \cdot K_s$$
 (6)

D. Results

t =	q(t) =	I(t) =
0.1	1.07·102	20.24
0.2	78.63	29.27
0.3	66.24	36.45
0.4	58.86	42.68
0.5	53.83	48.3
0.6	50.11	53.49
0.7	47.23	58.35
0.8	44.91	62.95
0.9	42.99	67.34
1	41.36	71.56
1.1	39.96	75.62
1.2	38.75	79.56
1.3	37.67	83.38
1.4	36.72	87.09
1.5	35.86	90.72

Cumulative infiltration

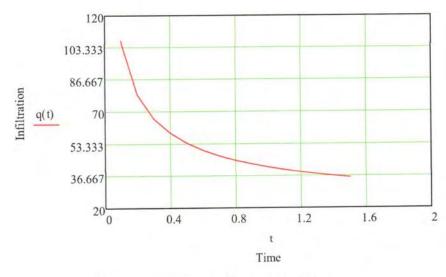


Figure 1. Soil infiltration as a function of time.

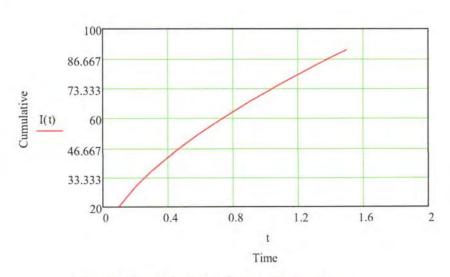


Figure 2. Cumulative Infiltration as a function of time.

E. Discussion

Figures 1 and 2 show the soil water infiltration rate and cumulative infiltration as a function of time, respectively. A rapid decrease in water infiltration rate was observed within the first hour.

F. Sensitivity Analysis of Infiltration Rate to Saturated hydraulic Conductivity

This section shows the sensitivity coefficient (S_s) and the relative sensitivity (S_r) of the surface infiltration rate, q, to the saturated hydraulic conductivity (K_s) at the time of 1 hours. The expressions were obtained by applying Equations 3 and 4 in Section B2 (PHILIP2T model) to Equation 5 in this section.

F.1. Input Data

$$K_{\infty} := 7.5, 7.6...8.9$$
 $t := 5$

F.2. Sensitivity Calculation Equations

$$\chi(K_s) := \frac{\left(h_s - h_f\right) \cdot \left(\theta_s - \theta_0\right)}{K_s} \tag{7}$$

$$\chi(K_s) := \frac{t}{(t + \chi(K_s))}$$
(8)

$$g(K_s) := \left[\left(\frac{\sqrt{2}}{2} \right) \cdot \tau(K_s)^{\left(-\frac{1}{2} \right)} + \left(\frac{2}{3} \right) - \left(\frac{\sqrt{2}}{6} \right) \cdot \tau(K_s)^{\frac{1}{2}} + \left(\frac{1 - \sqrt{2}}{3} \right) \cdot \tau(K_s) \right] \cdot K_s$$

$$(9)$$

$$S_s(K_s) := \frac{d}{dK_s} q(K_s)$$
 Sensitivity (10)

$$S_{r}(K_{s}) := \left(\frac{d}{dK_{s}}q(K_{s})\right) \cdot \left(\frac{K_{s}}{q(K_{s})}\right)$$
 Relative Sensitivity (11)

F.3.Results

K _s =	$q(K_s) = S$	$S_s(K_s) =$	$S_r(K_s) =$
7.5	14.59	1.34	0.69
7.6	14.72	1.33	0.69
7.7	14.85	1.33	0.69
7.8	14.99	1.32	0.69
7.9	15.12	1.32	0.69
8	15.25	1.32	0.69
8.1	15.38	1.31	0.69
8.2	15.51	1.31	0.69
8.3	15.64	1.31	0.69
8.4	15.77	1.3	0.69
8.5	15.9	1.3	0.7
00	10.00	1 2	0.7

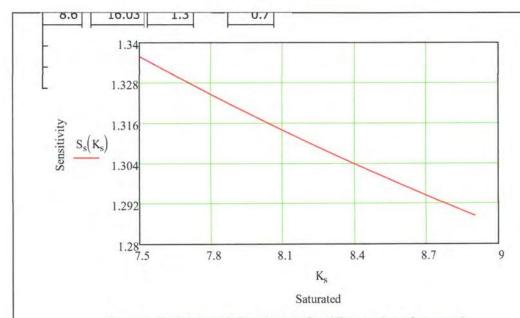


Figure 3. Sensitivity of infiltration rate for different values of saturated hydraulic conductivity at t = 5 hours.

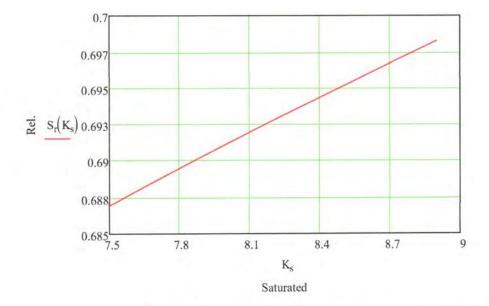


Figure 4. Relative sensitivity of infiltration rate for different values of saturated hydraulic conductivity at t = 5 hours.

F.4. Discussion

Figure 3 shows a sensitivity of the infiltration rate for different values of saturated hydraulic

relative sensitivity increase		

Project: Bus	Project: Bush		Sample ID: INFTP-2		Depth: 2.5 - 3.0 ft		
SAND %	CLAY %	SILT %	Saturation % (vol.)	Bulk Density (lb/ft³)	Effective Porosity % (vol.)	Saturated Hydraulic Conductivity K _s (in/hr)	In-Situ Soil Moisture %
90.6	2.4	7.0	41.8	96.20	4.6	8.01	2.90

Water %	Matric Potential (bars)	Matic Potential (ft)	K (in/hr)
0.3	14.70	491.81	3.16E-12
3.0	0.60	20.07	1.92E-06
6.0	0.32	10.71	1.06E-04
9.0	0.29	9.70	1.10E-03
12.0	0.27	9.03	5.83E-03
15.0	0.24	8.03	2.12E-02
18.0	0.21	7.03	6.08E-02
21.0	0.19	6.36	1.48E-01
24.0	0.16	5.35	3.21E-01
27.0	0.13	4.35	6.35E-01
30.0	0.11	3.68	1.17E+00
33.0	0.08	2.68	2.03E+00
36.0	0.05	1.67	3.35E+00
41.4	0.01	0.33	7.52E+00

Figure-1:

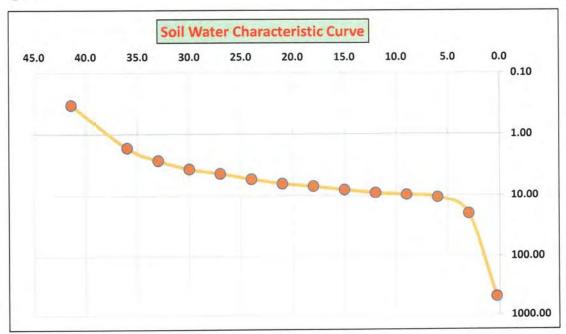
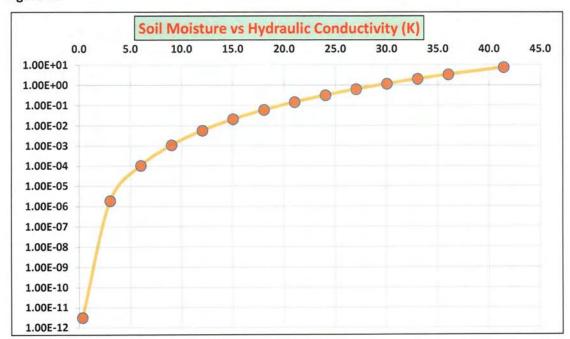


Figure-2:



Project: Bus	h	Sample ID:	INFTP-15	Depth: 3.0 -	3.5 ft		
SAND %	CLAY %	SILT %	Saturation % (vol.)	Bulk Density (lb/ft ³)	Effective Porosity % (vol.)	Saturated Hydraulic Conductivity K _s (in/hr)	In-Situ Soil Moisture %
95.6	2.4	2.0	42.5	95.05	3.6	9.61	2.93

Water %	Matric Potential (bars)	Matic Potential (ft)	K (in/hr)
0.2	11.96	400.14	1.62E-12
3.0	0.41	13.72	4.61E-06
6.0	0.31	10.37	2.07E-04
9.0	0.29	9.70	1.91E-03
12.0	0.26	8.70	9.26E-03
15.0	0.24	8.03	3.15E-02
18.0	0.21	7.03	8.57E-02
21.0	0.18	6.02	2.00E-01
24.0	0.16	5.35	4.15E-01
27.0	0.13	4.35	7.92E-01
30.0	0.11	3.68	1.41E+00
33.0	0.08	2.68	2.38E+00
36.0	0.06	2.01	3.84E+00
39.0	0.03	1.00	5.96E+00
42.0	0.01	0.33	8.95E+00

Figure-1:

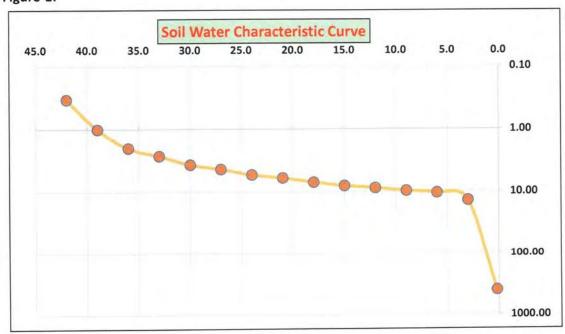
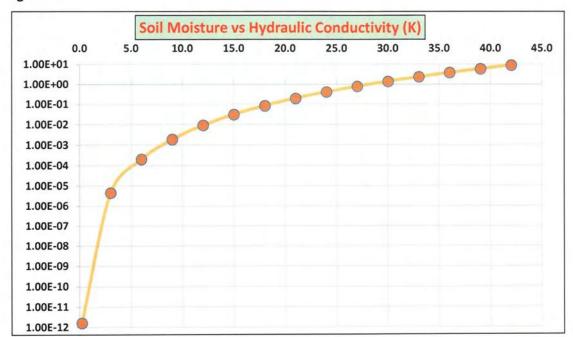


Figure-2:



Project: Bus	h	Sample ID:	: INFTP-2	Depth: 9.0 -	9.5 ft		
SAND %	CLAY %	SILT %	Saturation % (vol.)	Bulk Density (lb/ft ³)	Effective Porosity % (vol.)	Saturated Hydraulic Conductivity K _s (in/hr)	In-Situ Soil Moisture %
95.6	3.4	1.0	42.1	95.84	4.3	6.25	2.82

Water %	Matric Potential (bars)	Matic Potential (ft)	K (in/hr)
0.8	15.00	501.84	5.92E-13
3.0	0.75	25.09	1.15E-08
6.0	0.32	10.71	2.25E-06
9.0	0.29	9.70	4.94E-05
12.0	0.27	9.03	4.42E-04
15.0	0.24	8.03	2.42E-03
18.0	0.21	7.03	9.71E-03
21.0	0.19	6.36	3.14E-02
24.0	0.16	5.35	8.69E-02
27.0	0.13	4.35	2.13E-01
30.0	0.11	3.68	4.76E-01
33.0	0.08	2.68	9.84E-01
36.0	0.05	1.67	1.91E+00
39.0	0.03	1.00	3.51E+00
40.6	0.01	0.33	3.80E+00

Figure-1:

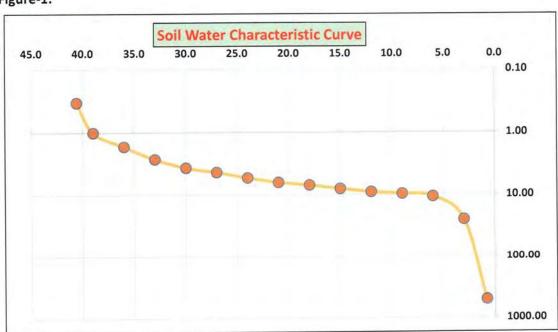
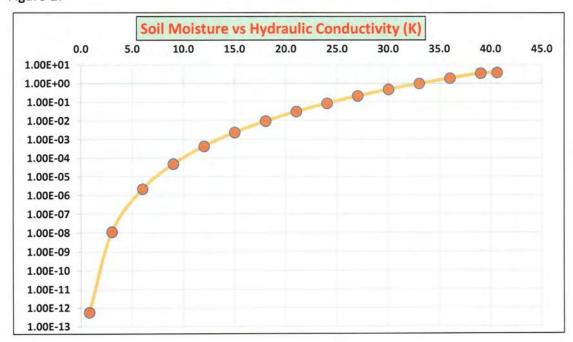


Figure-2:





337 1st Ave, Othello, WA 99344 1300 Sixth St., Suite J, Umatilla, OR 97882 1320 E Spokane St., Pasco, WA 99301

(509) 488-0112

info@kuotestinglabs.com

Sample Analysis Report

 Date:
 September 4, 2020
 Sample Date:
 9/1/2020

 Report No:
 64818
 Sample ID:
 INFTP-1 4-4.5ft

 Grower:
 Bush
 Sample Type:
 Lab No:
 370122

 Sampler:
 Michael Black
 Depth:
 48-54

Analysis	Unit	Result	
Clay	%	2.4	
Moisture-Soil	%	2.82	
Sand	%	87.6	
Silt	%	10	
Texture		Sand	



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(509) 488-0112

info@kuotestinglabs.com

Sample Analysis Report

Date: September 4, 2020
Report No: 64818

Grower: Bush

Client: White Shield, Inc.

Sampler: Michael Black

Sample Date: 9/1/2020

Sample ID: INFTP-1 8-8.5ft

Sample Type: _

Lab No: 370123

Depth: 96-102

Analysis	Unit	Result
Clay	%	2.4
Moisture-Soil	%	3.48
Sand	%	77.6
Silt	%	20
Texture		Loamy Sand



337 1st Ave, Othello, WA 99344

1300 Sixth St., Suite J, Umatilla, OR 97882 1320 E Spokane St., Pasco, WA 99301

(509) 488-0112

info@kuotestinglabs.com

Sample Analysis Report

 Date:
 September 4, 2020
 Sample Date:
 9/1/2020

 Report No:
 64818
 Sample ID:
 INFTP-1 9-9.5ft

 Grower:
 Bush
 Sample Type:
 Lab No:
 370124

 Sampler:
 Michael Black
 Depth:
 108-114

Analysis	Unit	Result	
Clay	%	2.4	
Moisture-Soil	%	2.86	
Sand	%	89.6	
Silt	%	8	
Texture		Sand	



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(509) 488-0112

info@kuotestinglabs.com

Sample Analysis Report

Date:	September 4, 2020	Sample Date: 9/1/2020	
Report No:	64818	Sample ID: INFTP-2 2.5-3ft	
Grower:	Bush	Sample Type:	
Client:	White Shield, Inc.	Lab No: 370125	
Sampler:	Michael Black	Depth: 30-36	

Analysis	Unit	Result	
Clay	%	2.4	
Moisture-Soil	%	2.9	
Sand	%	90.6	
Silt	%	7	
Texture		Sand	



Main Office:

337 1st Ave, Othello, WA 99344

Oregon Office: Pasco Office: 1300 Sixth St., Suite J, Umatilla, OR 97882 1320 E Spokane St., Pasco, WA 99301

(509) 488-0112

info@kuotestinglabs.com

Sample Analysis Report

Date: September 4, 2020

Report No: 64818 Grower: Bush

Client: White Shield, Inc.

Sampler: Michael Black

Sample Date: 9/1/2020

Sample ID: INFTP-2 9-9.5ft

Sample Type:

Lab No: 370126

Depth: 108-114

Analysis	Unit	Result
Clay	%	3.4
Moisture-Soil	%	2.82
Sand	%	95.6
Silt	%	1
Texture		Sand



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(509) 488-0112

info@kuotestinglabs.com

Sample Analysis Report

 Date:
 September 4, 2020

 Report No:
 64818

 Grower:
 Bush

 Client:
 White Shield, Inc.

 Sample ID:
 INFTP-15 3-3.5ft

 Sample Type:
 Lab No:

 Sample Type:
 Depth:

 370127
 Depth:

 Depth:
 36-42

Analysis	Unit	Result
Clay	%	2.4
Moisture-Soil	%	2.93
Sand	%	95.6
Silt	%	2
Texture		Sand

Project: Air Entry Permeameter Test

BUSH Client: 9/1/2020 Date:

	7.70 in H20 (0.64 ft)	Time (in Min)	Level of reservoir(Drop)
	1.77 ft	0:00	0.50 ft
	1.01 ft	0:30	0.47 ft
	1.03 ft	1:00	0.44 ft
	Pmin + G + Lf	1:30	0.42 ft
Pa =	0.64 ft + 1.01 ft + 1.03 = 2.68 ft	2:00	0.40 ft

2.68 ft (Expressed in negative water-pressure head) Permeameter =

Beem

Vertical Hydraulic Conductivity

 $K = (Lf(dHr/dt)(rr/rc)^{\Lambda}2)/(Hr+Lf-0.5Pa)$

 $K = [(1.03 \text{ ft})((0.03 \text{ ft}/30 \text{ sec})(3600 \text{ sec}/1\text{hr}))((0.5 \text{ ft})/(1.0 \text{ ft}))^2]/\{(1.77 \text{ ft} + 1.03 \text{ ft}-0.5(2.68 \text{ft})\} = 0.635 \text{ ft}/\text{hr} = 7.62 \text{in/hr} = 7.62 \text{i$

Vertical Hydraulic Conductivity = 0.635 ft/hr = 7.62 in/hr

INFTP-2

Pmin=	11.40 in H20 (0.95 ft)	Time (in Min)	Level of reservoir(Dro
Hr.	1.81 ft	0:00	0.49 ft
5	1.02 ft	0:30	0.39 ft
Lf =	1.45ft	1:00	0.31 ft
Pa =	Pmin + G + Lf	1:30	0.23 ft
Pa =	0.95 ft +1.02 ft +1.45 ft = 3.42 ft	2:00	0.15 ft
Permeameter =	3.42 ft(expressed in negative water-pressure head)	ure head)	
	The Dail		

Vertical Hydraulic Conductivity (K)

 $K = (Lf(dHr/dt)(rr/rc)^{\Lambda}2)/(Hr+Lf-0.5Pa)$

 $K = [(1.45 \text{ ft})((0.08 \text{ft}/30 \text{ sec})(3600 \text{ sec}/1\text{hr}))((0.5 \text{ ft})/(1.0 \text{ ft}))^{\lambda}]/\{(1.81 \text{ ft} + 1.45 \text{ ft} - 0.5(3.24 \text{ft})\} = 2.12 \text{ ft}/\text{hr} = 25.44 \text{ in}/\text{hr} = 25.44 \text{$

Vertical Hydraulic Conductivity = 2,12 ft/hr = 25.44 in/hr



APPENDIX E USGS Maps

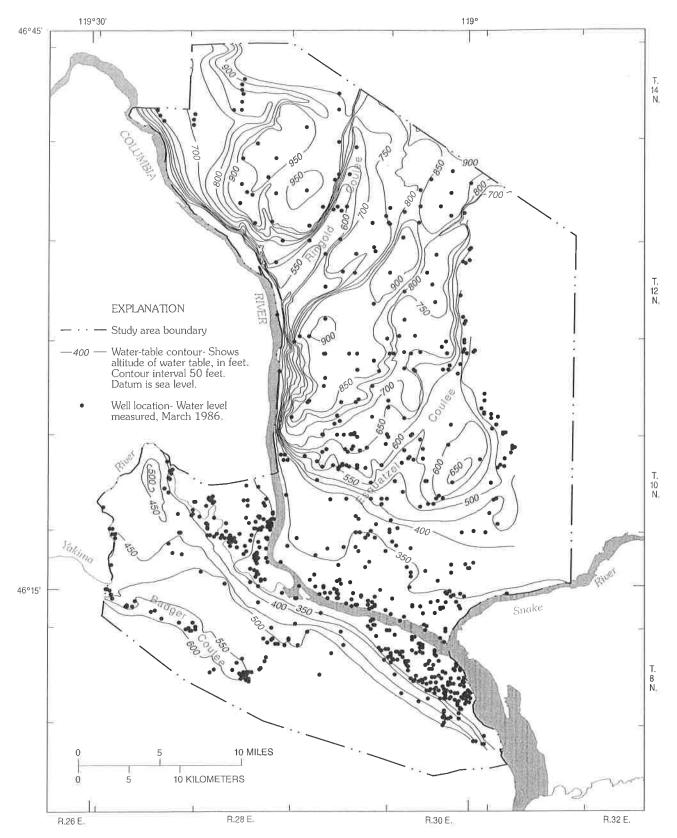


Figure 26.--Water-table altitude, March 1986.



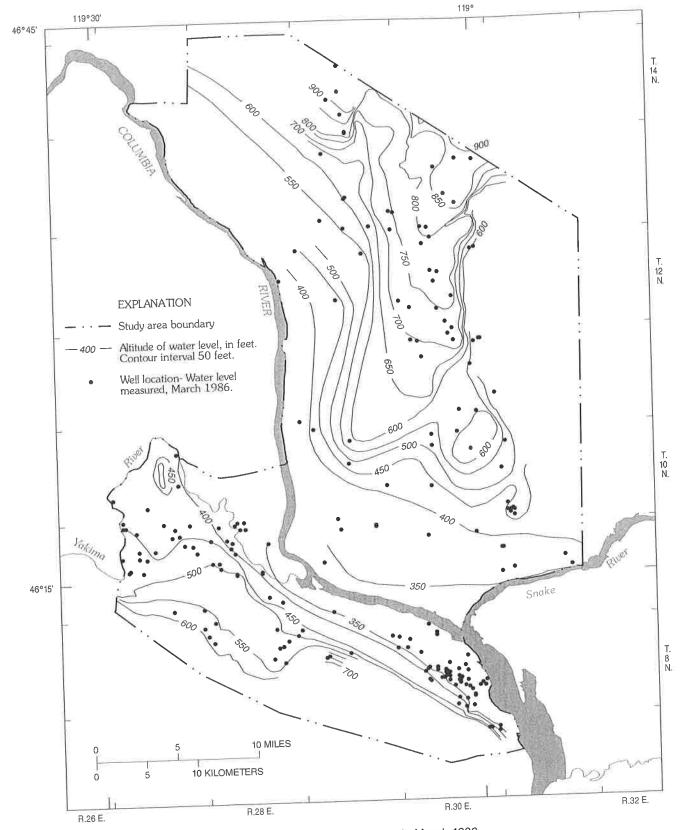


Figure 27.--Water-level altitudes in the Saddle Mountains Basalt, March 1986.

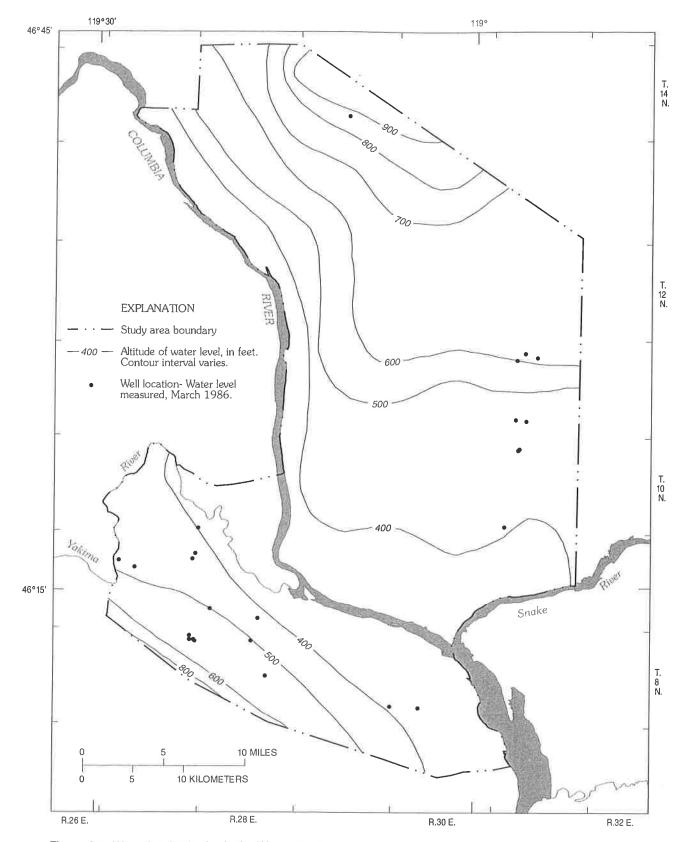


Figure 28.--Water-level altitudes in the Wanapum Basalt, March 1986 (Modified from Bauer, Vaccaro, and Lane, 1985).

Issued By:



Guarantee/Certificate Number:

62242202083

CHICAGO TITLE INSURANCE COMPANY

a corporation, herein called the Company

GUARANTEES

Knutzen Engineering

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

- 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.
- 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:

Gary Duncan Authorized Officer or Agent

Chicago Title Insurance Company

By:

Michael J. Nolan, President

Attest:

Marjorie Nemzura, Secretary

ISSUING OFFICE:

Title Officer: Christopher Hull Chicago Title Company of Washington 6416 W. Okanogan Avenue Kennewick, WA 99336 Phone: (509)735-1575 Fax: (509)735-0707

Main Phone: (509)735-1575 Email: Christopher.Hull@ctt.com

SCHEDULE A

Liability	Premium	Tax
\$1,000.00	\$350.00	\$30.45

Effective Date: August 22, 2022 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:

Timothy T. Bush and Kathryn L. Bush, Trustees under the Bush Living Trust dated August 19, 1999

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): 1	1	59	8	1(01	137	70	40	00	1
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Lot 1, Short Plat 3704, according to the plat thereof recorded in Volume 1 of Plats, Page 3704, recorded under Auditor's File No. 2021-37940, records of Benton County, Washington.

SCHEDULE B

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

Year: 2022

115981013704001 Tax Account No.:

Levy Code: R1

Assessed Value-Land: \$70,000.00 Assessed Value-Improvements: \$0.00

General and Special Taxes:

Billed: \$790.32 Paid: \$790.32 Unpaid: \$0.00

- 2. Easements and limitations as established in the dedication of "plat of richland" or as delineated on the map thereof.
- Reservations and Easement contained in Quit Claim Deed from the United States of America recorded October. 3. 1959 under Auditor's File No. 425136.
- 4. Covenants, conditions, restrictions, recitals, reservations, easements, easement provisions, encroachments, 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 3704:

Recording No: 2021-37940

END OF SCHEDULE B



Exhibit 2

Plat Map

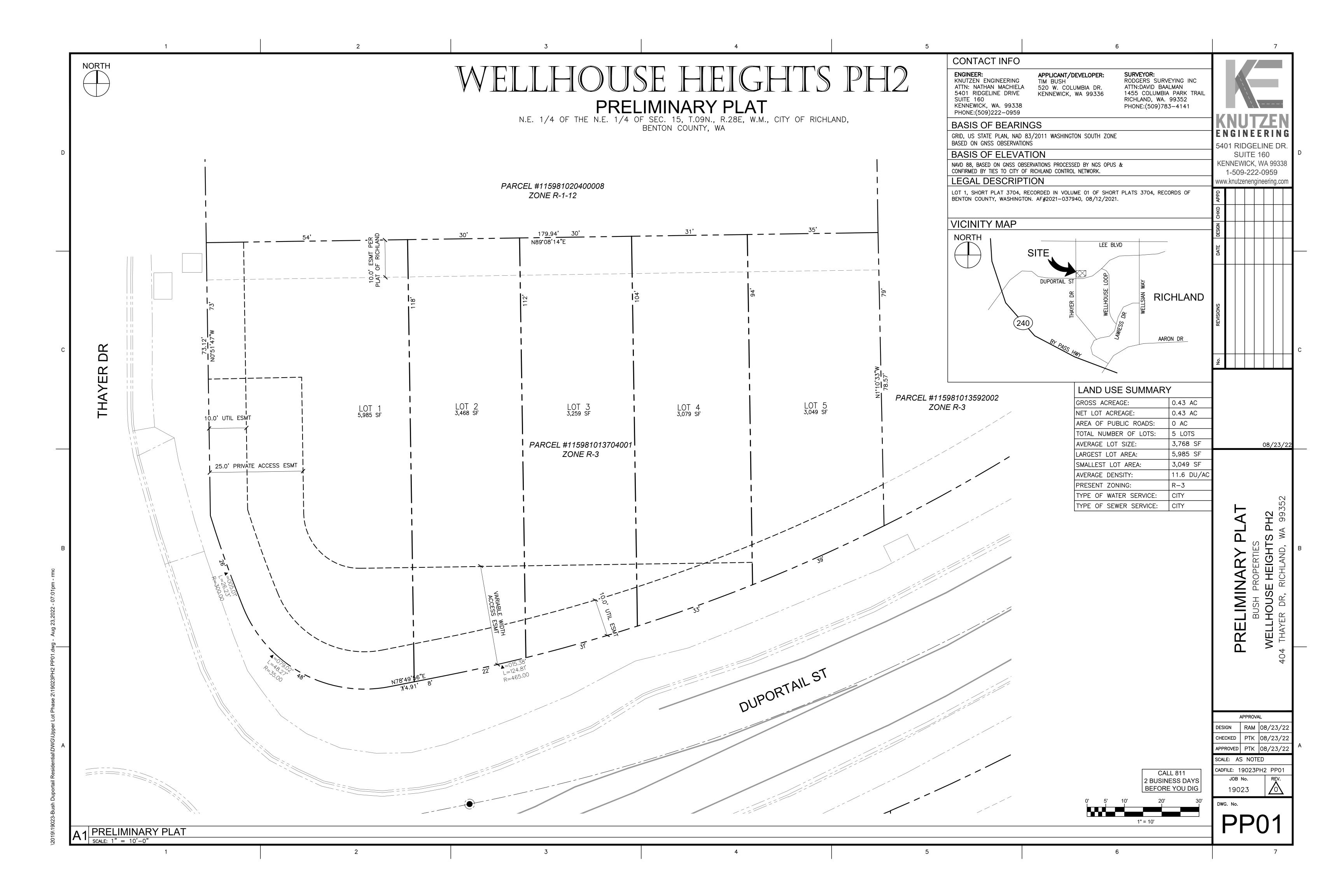




Exhibit 3

SEPA Checklist

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 <u>all parts of your proposal</u>, 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 <u>SUPPLEMENTAL SHEET FOR NONPROJECT ACTIONS (part D)</u>. 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 [HELP]

- 1. Name of proposed project, if applicable: *Wellhouse Heights Phase* 2
- 2. Name of applicant: Robert McLeod (Knutzen Engineering)

- Address and phone number of applicant and contact person: Robert McLeod (Knutzen Engineering)
 5401 Ridgeline Dr, Suite 160, Kennewick, WA 99338
 509-222-0959
- 4. Date checklist prepared:

August 23, 2022

5. Agency requesting checklist: City of Richland

- 6. Proposed timing or schedule (including phasing, if applicable):

 The preliminary plat will be presented at a public hearing and will then be presented to the City of
 Richland's planning commission. Assuming approval of the plat is received, construction of necessary
 improvements will begin approximately 3-months later. The project will be completed in a single phase.
- 7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.

Lots created by the proposed plat will be developed with townhouses. There are no other future plans related to the project at this time.

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.

A geotechnical report and critical aquifer recharge area report have been prepared for the property adjacent to the proposed subdivision, in association with the Wellhouse Heights Ph1 project.

- 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. *None known of.*
- List any government approvals or permits that will be needed for your proposal, if known.
 City of Richland Planning Commission Approval
 City of Richland ROW & Grading Permits.
 Erosivity Waiver through the Department of Environmental Quality (DEQ)
- 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 project site covers 0.43-acres, which will be divided into 5 lots compliant with R-3 zoning standards. City of Richland utilities will be extended to each lot. It is expected that each lot will be developed with residential townhomes, some of which will be duplex units. Paved driveways will be constructed for each lot, accessible from existing public ROWs; Duportail St and Thayer Dr. No construction of new public roads is necessary.

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.

404 Thayer Dr, Richland, WA 99352 Benton County Parcel #115981013704001 (NE corner of Thayer Dr and Duportail St.)

Lot 1 of Shot Plat 3704, recorded in volume 01 of short plats 3704, records of Benton County, Washington. AF#2021-037940, 08/12/2021.

B. Environmental Elements [HELP]

a. General description of the site:	
(circle one): Flat rolling, hilly, steep slopes, mountainous, of	other

- b. What is the steepest slope on the site (approximate percent slope)? Approximately 15%.
- 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.
 A layer of gravel covers a large portion of the site. A geotechnical report prepared for the neighboring property found layers of medium dense sand and gravel. (White Shield Project No. 119-054-01) Unpermitted garbage fill was also found underground. Per the Geotech's recommendations, all uncontrolled fill and garbage will be removed from the site and
- d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.

None known.

disposed of properly.

Earth [help]

- 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. The site would be graded to establish building pads and engineered slopes for stormwater drainage. The site appears to have been graded in the past in association with a previous project, minimal grading is expected to be necessary. The site is expected to balance on-site without the import or export of fill. Approximately 200 cy of soil is expected to be affected throughout the project.
- f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe.

 Erosion could occur during construction activities but will be minimized through implementation of BMPs, including silt fencing, use of a construction entrance, site watering for dust control and catch basin inserts.

 All stormwater runoff will be contained and managed on-site.

- g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)? Approximately 55% of the site.
- h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any: Standard erosion control methods will be used, including catch basin inserts, silt fencing and stabilized construction entrances. Dust during construction will be controlled by the use of a water truck as necessary.

2. Air [help]

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.

During construction, minor amounts of dust and exhaust from equipment activity may occur. The completed project will not affect air quality.

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

None known.

c. Proposed measures to reduce or control emissions or other impacts to air, if any: Dust control measures will be implemented per recommendations by the Department of Ecology and the Benton County Clean Air Authority. Measures include, but are not limited to site watering, lowering vehicle speeds, limit of construction vehicles and reducing the number of dust-generating activities on windy days.

3. Water [help]

- a. Surface Water: [help]
 - 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 approximately 0.5 miles SW of the site. The Columbia River is approximately 1.0 miles E of the 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. Not applicable.
- 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: [help]

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. No waste materials will be discharged into the ground.
- 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.
 - Proposed impervious surfaces will generate stormwater runoff. A stormwater management system will be designed by a licensed engineer to contain and infiltrate all stormwater runoff on-site in accordance with the Stormwater Management Manual for Eastern Washington.
 - 2) Could waste materials enter ground or surface waters? If so, generally describe.

 Pretreatment will be proposed in accordance with the Stormwater Management Manual for Eastern Washington (SMMEW) to limit the amount of pollutant entering infiltration facilities.
 - 3) Does the proposal alter or otherwise affect drainage patterns in the vicinity of the site? If so, describe.
 - No, all runoff will be contained and infiltrated on-site. There are no known off-site runoff sources flowing to the site.
- d. Proposed measures to reduce or control surface, ground, and runoff water, and drainage pattern impacts, if any:

Stormwater runoff generated from impervious surfaces will be collected and conveyed to infiltration systems on-site, per City of Richland standards.

4.	Plants [help]
a.	Check the types of vegetation found on the site:
	deciduous tree: alder, maple, aspen, other
	evergreen tree: fir, cedar, pine, other
	shrubs
	X grass pasture
	pastale 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
b.	What kind and amount of vegetation will be removed or altered? There is an insignificant amount of weeds and grasses on-site, which will be removed during grading activities.
C.	List threatened and endangered species known to be on or near the site. None, per the Washington Department of Fish and Wildlife.
d.	Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:
	Street frontage will be landscaped per City of Richland standards.
e.	List all noxious weeds and invasive species known to be on or near the site.
	None, per the Washington State Noxious Weed Data Viewer.
5.	Animals [help]
a.	<u>List</u> any birds and <u>other</u> 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
b.	List any threatened and endangered species known to be on or near the site. None, per the Washington Department of Fish and Wildlife.
C.	Is the site part of a migration route? If so, explain. Yes, the Columbia Basin is part of a migration route for several species of fowl.
d.	Proposed measures to preserve or enhance wildlife, if any: None currently.

e. List any invasive animal species known to be on or near the site. *None known.*

6. Energy and Natural Resources [help]

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.

Electricity and natural gas will be used to meet the project's lighting and heating needs.

- 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: Proposed buildings will comply with Building Energy Codes, per the 2018 IBC.

7. Environmental Health [help]

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? If so, describe.

None known.

- 1) Describe any known or possible contamination at the site from present or past uses. *None known.*
- 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 known.
- 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.
 - Gas may be stored on-site during construction activities. The completed development will not store any hazardous chemicals on-site.
- 4) Describe special emergency services that might be required.

 The project will utilize typical emergency services provided by the City of Richland.
- 5) Proposed measures to reduce or control environmental health hazards, if any: *None currently.*

b. Noise

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

The major source of noise in the area is from traffic on Duportail St and Thayer Dr.

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)? Indicate what hours noise would come from the site.

Short term: Construction Noise

Long term: Traffic associated with the new housing.

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

Noise volumes will comply with Benton County noise policies. Construction will be limited to designated working hours of the day.

8. Land and Shoreline Use [help]

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 site is currently undeveloped land. Adjacent land uses are single-family residential housing, the Richland Masonic Temple, and the New Heights Church. The project will not affect land uses on nearby or adjacent properties.

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?
No.

- 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. There are no existing structures on-site.
- d. Will any structures be demolished? If so, what? *Not applicable.*
- e. What is the current zoning classification of the site? R-3 (Multiple-Family Residential Use District)
- f. What is the current comprehensive plan designation of the site? HDR (High Density Residential)
- g. If applicable, what is the current shoreline master program designation of the site? *Not applicable.*

- h. Has any part of the site been classified as a critical area by the city or county? If so, specify. Yes, the site is within a Critical Aguifer Recharge Area, as designated by the City of Richland.
- i. Approximately how many people would reside or work in the completed project? Approximately 8 people would reside in the completed housing.
- j. Approximately how many people would the completed project displace? None.
- k. Proposed measures to avoid or reduce displacement impacts, if any: *Not applicable.*
- L. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:

The project will be permitted through the City of Richland, in accordance with all applicable zoning ordinances.

 Proposed measures to reduce or control impacts to agricultural and forest lands of long-term commercial significance, if any: Not applicable.

9. Housing [help]

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.

5 single-family townhome units considered medium to high income housing.

- Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.
 No units will be eliminated.
- c. Proposed measures to reduce or control housing impacts, if any:

 Impact fees will be paid to the City of Richland as required. The new housing will generate additional tax revenue for the City of Richland.

10. Aesthetics [help]

- a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed? Approximately 37-feet.
- b. What views in the immediate vicinity would be altered or obstructed? None.
- c. Proposed measures to reduce or control aesthetic impacts, if any:

 Homes will complete with City of Richland building material requirements, and will match the design and materials of the adjacent property (Wellhouse Heights Ph1).

11. Light and Glare [help]

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

Outdoor building lighting would be active during late evening hours.

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

 No, the proposed lighting will be minimal. Lights will be shielded downwards to prevent glare.
- c. What existing off-site sources of light or glare may affect your proposal? *None known.*
- d. Proposed measures to reduce or control light and glare impacts, if any:

 All lighting will follow City of Richland requirements and will be properly shielded downwards to prevent glare.

12. Recreation [help]

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

 Lawless Park is located approximately 400-feet from the project site, which features a frisbee golf course.

 The Goethals Park Natural Playground is approximately 0.25 E of the site. Richland High School's outdoor soccer fields are located approximately 500-feet NE of the site.
- 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 currently.

13. Historic and cultural preservation [help]

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.
 None known. No evidence was found on the adjacent property (Wellhouse Heights Ph1) during construction. The DAHP's WISAARD mapping identifies the site as High Risk for environmental factors with archaeological resources.
- 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. Internet search for project site. Washington State Department of Archeology and History Preservation, National Register of Historic Places in Benton County.

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. Upon any discover of potential or known archaeological resources at the project site, prior to or during construction, the contractor and/or any other parties involved in construction shall immediately cease all on-site construction, shall act to protect the known historical and cultural resources area from outside intrusion, and shall notify, within a maximum period of twenty-four hours from the time of discovery, City of Richland officials of said discovery.

14. Transportation [help]

- 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.
 - The site can be accessed from Duportail St and Thayer Dr.
- 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 nearest Ben-Franklin Transit bus stop is located 725-feet N of the site on Thayer Dr. Bus Stop ID RC433.
- c. How many additional parking spaces would the completed project or non-project proposal have? How many would the project or proposal eliminate?

 The project will propose a private driveway and garage for each residential unit.
- 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).
 - The project will not require the construction of new roads or sidewalks. Improvements will be made to existing roads & streets as required by the City of Richland.
- 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?

 The project will generate approximately 16 vehicular trips on a typical weekday. (Per Land Use Code 230 of the Trip Generation Manual of the ITE.) Peak traffic volumes are expected to occur between 4pm and 6pm.
- 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:

 Traffic impact fees will be paid to the City of Richland as required. The new housing will generate additional tax revenue for the City of Richland.

15. Public Services [help]

- 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.
 - The new housing will use public services provided by the City of Richland, including fire protection, police protection, public transit, health care and schools.
- b. Proposed measures to reduce or control direct impacts on public services, if any. Impact fees will be paid to the City of Richland as required. The new housing will generate additional tax revenue for the City of Richland.

16. Utilities [help]

- a. Circle utilities currently available at the site:

 electricity, natural gas, water, refuse service telephone, sanitary sewer septic system, other
- 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.

Water - City of Richland

Sewer - City of Richland

Internet - Ziply / Charter

Natural Gas - Cascade Natural Gas Company

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:						
Name of signee	Robert McLeod					
Position and Agency/Organization Junior Engineer / Knutzen Engineering						
Date Submitted: 08/2	23/2022					



Exhibit 4

Public Notice and Affidavits

2	AFFIDAVIT OF POSTING
3 4 5	STATE OF WASHINGTON)) ss. COUNTY OF BENTON)
6 7 8	COMES NOW, Matthew Howie , who, being first duly sworn upon oath deposes and says: 1. I am an employee in the Planning Division of the Development Services Department for the City of Richland.
9 10 11 12 13	2. On the 28 th day of September, 2022, I posted the attached NOTICE OF PUBLIC HEARING, File Number S2022-104 (Site Plan review for Wellhouse Heights, Phase 2) in the following location: 404 Thayer Drive, at the northeast corner of Thayer Drive and Duportail Street
14 15 16 17 18 19 20 21 22	Signed: Matthew Howie Signed: Matthew Howie Signatury of Notary Signatury of Notary Printed Name Notary Public in and for the State of Washington, Residing in (125 SWH Blwd), 99357 My appointment expires: 1-25-23

AFFIDAVIT OF POSTING - 1 (Master File #: S2022-104)

AFFIDAVIT OF MAILING

STATE OF WASHINGTON)
COUNTY OF BENTON) ss)

COMES NOW, Kevin Damrell, who, being first duly sworn upon oath deposes and says:

- I am an employee in the Planning Division of the Development Services Department for the City of Richland.
- On the 28th day of September, 2022, I mailed a copy of the attached NOTICE OF APPLICATION AND PUBLIC HEARING (S2022-104) to the attached list of individuals via regular USPS on the date indicated above. The Richland Hearing Examiner will conduct a public hearing and review of the application on Thursday, October 20, 2022.

Signed: Kevin Damrell

SIGNED AND SWORN to before me this 28th day of September, 2022 by Kevin Damrell.

Notary Public in and for the State of Washington,

Print Name

Residing at US Swift Blud 99352

My appointment expires: 4-25-

AFFIDAVIT OF MAILING - 1 Address list attached.

CITY OF RICHLAND NOTICE OF APPLICATION, PUBLIC HEARING & OPTIONAL DNS (S2022-104 & EA2022-128)

Notice is hereby given that Paul Knutzen has submitted Preliminary Plat Application for the development of an approximately 0.43-acre site, with five (5) residential townhome buildings. The project site is located at property formerly known as 400/404 Thayer Drive (at the NE corner of intersection of Thayer Drive and Duportail Street) and is zoned R-3 (multiple-family residential use district). The property is described as Assessor's Parcel Nos. 115981013704001 located in Section 15, Township 9, North, Range 28 East, W.M., Benton County WA.

A public hearing on the proposed site plan review will be held before the Hearing Examiner on Thursday, October 20, 2022 at 6:00 PM within the City Council Chambers located at 625 Swift Blvd. All interested parties are invited to attend and present testimony at the public hearing or via Zoom by visiting the City's website: www.ci.richland.wa.us.

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.

Any person desiring to express their views or to be notified of any decisions pertaining to this application should notify Matthew Howie, Senior Planner, 625 Swift Boulevard, MS-35, Richland, WA 99352. Comments may emailed to mhowie@ci.richland.wa.us. The deadline for written comments is 6:00 p.m., Wednesday, October 19th. However, written comments must be received no later than 5:00 p.m. on Wednesday, October 12th to be incorporated into the staff report. Comments received after that time will be entered into the record during the hearing.



*Please note that pursuant to RMC 23.48.010, the purpose of the site plan approval process is to facilitate project design that is compatible with adjacent land uses and is in keeping with the physical constraints of the project site. The site plan review is not intended to determine whether a particular land use activity is appropriate on a particular site. Land uses that are otherwise permitted in this title shall not be denied through the site plan review process unless such uses cannot meet the development and/or performance standards required for the use.



Beaufort Gazette
Belleville News-Democrat
Bellingham Herald
Bradenton Herald
Centre Daily Times
Charlotte Observer
Columbus Ledger-Enquirer
Fresno Bee

The Herald - Rock Hill Herald Sun - Durham Idaho Statesman Island Packet Kansas City Star Lexington Herald-Leader Merced Sun-Star Miami Herald el Nuevo Herald - Miami Modesto Bee Raleigh News & Observer The Olympian Sacramento Bee Fort Worth Star-Telegram The State - Columbia Sun Herald - Biloxi Sun News - Myrtle Beach The News Tribune Tacoma The Telegraph - Macon San Luis Obispo Tribune Tri-City Herald Wichita Eagle

AFFIDAVIT OF PUBLICATION

Account #	Order Number	Identification	Order PO	Amount	Cols	Depth
36823	325787	Print Legal Ad-IPL00921730 - IPL0092173	D2586000 4401	\$164.00	1	68 L

Attention: Jennifer Anderson CITY OF RICHLAND/LEGALS 625 SWIFT BLVD. MS-05 RICHLAND, WA 99352

CITY OF RICHLAND NOTICE OF APPLICATION AND PUBLIC HEARING

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Date Published: Friday, September 30, 2022

2022 IPL0092173 Sep 30 2022 COUNTY OF BENTON)

SS

STATE OF WASHINGTON)

Stephanie Hatcher, being duly sworn, deposes and says, I am the Legals Clerk of The Tri-City Herald, a daily newspaper. That said newspaper is a local newspaper and has been approved as a legal newspaper by order of the superior court in the county in which it is published and it is now and has been for more than six months prior to the date of the publications hereinafter referred to. published continually as a daily newspaper in Benton County, Washington. That the attached is a true copy as it was printed in the regular and entire issue of the Tri-City Herald and not in a supplement thereof, ran 1 time(s) commencing on 09/30/2022, and ending on 09/30/2022 and that said newspaper was regularly distributed to its subscribers during all of this period.

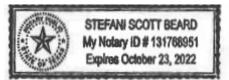
Stephanie Hatcher

(Signature of Legals Clerk)

Sworn to and subscribed before me this 30th day of September in the year of 2022

Stefani Beard

Notary Public in and for the state of Texas, residing in Dallas County



Extra charge for lost or duplicate affidavits. Legal document please do not destroy! Please publish the following:

Type of Legal Ad: Public Hearing Notice

Date(s) of Publication: Friday, September 30, 2022

Richland's TCH Account: 450543

For Invoice Text Box on TCH Invoice HE PHN - S2022-104

(Richland MUNIS Description)

For PO Box on TCH Invoice

(Richland Account No. - MUNIS)

D2586000 4401

Attention: Jen Anderson (TF)

CITY OF RICHLAND NOTICE OF APPLICATION AND PUBLIC HEARING

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Exhibit 5

Agency Comments

From: Westphal, Nichole
To: Howie, Matthew

Subject: RE: Wellhouse Heights, Phase 2

Date: Tuesday, October 11, 2022 12:30:30 PM

Attachments: image001.png

Hi Matthew,

Addressing comments can be found here.

Thanks! Nichole

From: Howie, Matthew <mhowie@ci.richland.wa.us>

Sent: Thursday, September 29, 2022 8:06 AM

To: Acevedo, Mizael <macevedo@CI.RICHLAND.WA.US>; Ashley Garza <agarza3605@gmail.com>; Ashley Morton <AshleyMorton@ctuir.org>; Badger Mountain Irrigation District <bmidmanager@badgermountainirrigation.com>; Benton County - Segregations <Segregations@co.benton.wa.us>; Benton PUD, Broadband <osp@noanet.net>; Benton PUD, Electrical <engservice@bentonpud.org>; Bill Barlow
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Subject: RE: Wellhouse Heights, Phase 2

Good morning,

Made a correction to the Referral Packet from yesterday. Again, this is regarding the Preliminary Plat application at Wellhouse Heights, Phase 2 (S2022-104). Please review and provide comments by 5pm, October 12th.

Thank you,



Matthew Howie Senior Planner 625 Swift Blvd., MS-35 | Richland, WA 99352 (509) 942-7587

From: Howie, Matthew

Sent: Wednesday, September 28, 2022 3:59 PM

To: Acevedo, Mizael <macevedo@CI.RICHLAND.WA.US>; 'Ashley Garza' agarza3605@gmail.com; 'Ashley Morton' Ashley Morton' AshleyMorton@ctuir.org; 'Badger Mountain Irrigation District' <bmidmanager@badgermountainirrigation.com>; 'Benton County Assessor' <<u>Segregations@co.benton.wa.us</u>>; 'Benton PUD, Broadband' <<u>osp@noanet.net</u>>; 'Benton PUD, Electrical' <engservice@bentonpud.org>; 'Bill Barlow'
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Subject: Wellhouse Heights, Phase 2

Hello all,

Please see attached Referral Packet for the Preliminary Plat application at Wellhouse Heights, Phase 2 (S2022-104). Please review and provide comments by 5pm, October 12th.



Matthew Howie Senior Planner 625 Swift Blvd., MS-35 | Richland, WA 99352 (509) 942-7587

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City of Richland Development Services

625 Swift Blvd. MS-35 Richland, WA 99352 \$\infty\$ (509) 942-7794 \$\overline{

DATE: October 10, 2022

TO: Matthew Howie, Senior Planner

REVIEW BY: Nichole Westphal, Permit Technician II

PROJECT NAME: S2022-104 – Preliminary Plat of Wellhouse Heights Ph 2

1. Street names will be reviewed when construction drawings are submitted to the Public Works Department. When construction drawings are submitted, please include two (2) street name options for the access easement and the City will review to determine acceptable street names

2. Addressing brackets [] are needed on all lots and tracts.

From: Noah Lee
To: Howie, Matthew

Subject: BCAA Comment on S2022-104

Date:Tuesday, October 11, 2022 11:47:03 AMAttachments:BCAA Comment on S2022-104.pdf

Hello, attached you will find the BCAA's comment on S2022-104

Thanks,

Noah Lee

Air Quality Specialist

Benton Clean Air Agency 526 S. Steptoe St. Kennewick, WA 99336 509-558-8818 ext. 105 www.bentoncleanair.org

This email may contain privileged or confidential information disclosed only to the addressee. If you have received this email in error, do not copy or distribute without authorization. Please contact the sender at 509-783-1304. Thank you



BENTON CLEAN AIR AGENCY

October 11, 2022

Matthew Howie Senior Planner 625 Swift Blvd., MS-35 Richland. WA 99352 Re: S2022-104

Applicant/Proponent: Knutzen Engineering Attn: Paul Knutzen 5401 Ridgeline Dr. Suite 160

Kennewick, WA 99338

Dear Mr. Howie:

It has come to our attention that you are reviewing a proposal for the above named applicant in which a parcel or parcels will be disturbed for development. Because these activities may cause possible fugitive dust emissions, we would like to take this opportunity to provide information to ensure that the applicant takes reasonable steps to control the dust from his/her project.

The Benton Clean Air Agency (BCAA) requires the applicant submit a Proof of Contact: Soil Destabilization Notification for this project prior to any excavation/construction taking place. This will insure that the proponent has the ability and resources to control fugitive dust emissions that may be created as a result of construction activities. This will also inform them of the regulations and requirements of the BCAA. Additionally, a written dust control plan must be developed and maintained for all soil destabilization projects, and must be readily available upon request by the BCAA. Part of this plan is submitting the name of at least one person for the project so that the BCAA has a point of contact should we receive any dust complaints from the project. The Soil Destabilization Notification form can be found and submitted on our website, www.bentoncleanair.org.

Thank you for the opportunity to comment on this proposal. If you have any questions, or would like further information on this subject, please contact us at (509) 783-1304.

Sincerely,

Noah Lee Inspector

Noah Lee

From: Rodgers, Deborah (CONTR) - TERR-TRI CITIES RMHQ

To: Howie, Matthew

Cc: <u>Cummings, Nicole M (BPA) - TERR-TRI CITIES RMHQ</u>

Subject: RE: Wellhouse Heights, Phase 2

Date: Wednesday, October 12, 2022 4:18:04 PM

Attachments: image001.png

image002.png

Matthew.

Bonneville Power Administration's (BPA) has had the opportunity to review Wellhouse Heights, Phase 2. The proposal is to develop approximately .43 acres with five residential townhomes. The project is generally located at the corner of Thayer Drive and Duportail Street in Richland, WA.

In researching our records, we have found that this proposal will not directly impact BPA facilities approximately 1,034 feet east of the subject property. BPA does not have any objections to the approval of this request at this time.

If you have any questions or need additional information, please feel free to contact Nicole Cummings at (509) 542-5499 or by email at nmcummings@bpa.gov.

Thank you for the opportunity to review this application.



Deborah Rodgers

Realty Technician Contractor

2211 North Commercial Avenue, Pasco, WA 99301

Bonneville Power Administration | TERR/Tri-Cities-RNHQ

Real Property Field Services | (509) 544-4749

From: Howie, Matthew <mhowie@ci.richland.wa.us>

Sent: Thursday, September 29, 2022 8:06 AM

To: Acevedo, Mizael <macevedo@CI.RICHLAND.WA.US>; Ashley Garza <agarza3605@gmail.com>;

Ashley Morton <AshleyMorton@ctuir.org>; Badger Mountain Irrigation District

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Subject: [EXTERNAL] RE: Wellhouse Heights, Phase 2

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Subject: Wellhouse Heights, Phase 2

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Matthew Howie Senior Planner 625 Swift Blvd., MS-35 | Richland, WA 99352 (509) 942-7587



From: Segregations
To: Howie, Matthew

Subject: RE: Wellhouse Heights, Phase 2

Date: Friday, September 30, 2022 8:32:35 AM

Attachments: image002.png

image003.png image004.png

Hello,

Approved - as long at they list owners as trustees on the plat map.



Liliya Savchuk

Office Assistant III Benton County Assessor's Office Kennewick: (509) 735-2394 (ext. 2505)



From: Howie, Matthew <mhowie@ci.richland.wa.us>

Sent: Thursday, September 29, 2022 8:06 AM

To: Acevedo, Mizael <macevedo@CI.RICHLAND.WA.US>; Ashley Garza <agarza3605@gmail.com>; Ashley Morton <AshleyMorton@ctuir.org>; Badger Mountain Irrigation District <bmidmanager@badgermountainirrigation.com>; Segregations <segregations@co.benton.wa.us>; Benton PUD, Broadband <osp@noanet.net>; Benton PUD, Electrical <engservice@bentonpud.org>; Bill Barlow
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Gonseth <gonsetp@wsdot.wa.gov>; Reathaford, Jason <JReathaford@CI.RICHLAND.WA.US>; Review Team <reviewteam@commerce.wa.gov>; Richard Krasner <richard.krasner@rsd.edu>; USPS Richland Postmaster <99352RichlandWA-Postmaster@usps.gov>; Rick Dawson <rickd@bfhd.wa.gov>; Robin Priddy <robin.priddy@bentoncleanair.org>; Schiessl, Joe <JSchiessl@CI.RICHLAND.WA.US>; SEPA Center <sepacenter@dnr.wa.gov>; SEPA Register <separegister@ecy.wa.gov>; SEPA Unit <sepaunit@ecy.wa.gov>; Seth DeFoe <SDefoe@kid.org>; South Central Region Planning <scplanning@wsdot.wa.gov>; T.S. "Max" Platts <PlattsT@wsdot.wa.gov>; Tyutyunnik, Ruvim <rtyutyunnik@CI.RICHLAND.WA.US>; WA Dept of Fish & Wildlife <lopezlal@dfw.wa.gov>; WA Dept of Fish & Wildlife <rittemwr@dfw.wa.gov>; WDFW <R3Planning@dfw.wa.gov>; Westphal, Nichole <nwestphal@ci.richland.wa.us>; Whittier, John <jwhittier@CI.RICHLAND.WA.US>; William Simpson <william.simpson@commerce.wa.gov>; Nancy Lang <langn@bentonpud.org>; AviationLandUse@wsdot.wa.gov

Subject: RE: Wellhouse Heights, Phase 2

Good morning,

Made a correction to the Referral Packet from yesterday. Again, this is regarding the Preliminary Plat application at Wellhouse Heights, Phase 2 (S2022-104). Please review and provide comments by 5pm, October 12th.

Thank you,



Matthew Howie Senior Planner 625 Swift Blvd., MS-35 | Richland, WA 99352 (509) 942-7587

From: Howie, Matthew

Sent: Wednesday, September 28, 2022 3:59 PM

To: Acevedo, Mizael <macevedo@CI.RICHLAND.WA.US>; 'Ashley Garza' <agarza3605@gmail.com>; 'Ashley Morton' <AshleyMorton@ctuir.org>; 'Badger Mountain Irrigation District' <bmidmanager@badgermountainirrigation.com>; 'Benton County Assessor' <5egregations@co.benton.wa.us>; 'Benton PUD, Broadband' <osp@noanet.net>; 'Benton PUD, Electrical' <engservice@bentonpud.org>; 'Bill Barlow' <bbarlow@bft.org>; Buechler, Ken <KBuechler@CI.RICHLAND.WA.US>; 'Carrie Thompson' <carrie.thompson@bnsf.com>; 'Casey Barney, Yakama Nation' <Casey_Barney@Yakama.com>; 'Catherine Dickson' <catherinedickson@ctuir.org>; 'Clark Posey' <clark.posey@co.benton.wa.us>; 'Corrine Camuso, Yakama Nation' <Corrine_Camuso@Yakama.com>; 'Craig Hamilton' <c.hamilton@bces.wa.gov>; 'DAHP SEPA Reviews' <sepa@dahp.wa.gov>; DAlessandro, Carlo <cdalessandro@ci.richland.wa.us>; 'Damrell, Kevin <kdamrell@CI.RICHLAND.WA.US>; 'Darrick Dietrich' <darrick@basindisposal.com>; 'Deanna Davis' <d.davis@bces.wa.gov>; 'Deborah Rodgers' <dxrodgers@bpa.gov>; Deskins, John <iddeskins@CI.RICHLAND.WA.US>; Doan, Charles <cdoan@ci.richland.wa.us>; 'Eric Mendenhall' <emendenhall@westrichland.org>; 'FormerOrchards@ecy.wa.gov' <FormerOrchards@ecy.wa.gov>;

```
'gis@co.benton.wa.us' <gis@co.benton.wa.us>; 'Greg Wendt' <greg.wendt@co.benton.wa.us>;
'Gwen Clear' <gcle461@ecy.wa.gov>; Hill, Kelly <khill@CI.RICHLAND.WA.US>; 'Jason McShane'
<imcshane@kid.org>; 'Jessica Lally, Yakama Nation' <<u>Jessica Lally@Yakama.com</u>>; 'John Lyle'
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<iecottrell@bpa.gov>; 'Junior Campos' <iunior.campos@charter.com>; 'Katherine Cichy'
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<kevin.knodel@rsd.edu>; 'Kevin Sliger' <KSliger@bft.org>; 'KID Development'
<development@kid.org>; 'KID Webmaster' <webmaster@kid.org>; 'M. Deklyne'
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<pmattheus@CI.RICHLAND.WA.US>; 'Michael Tovey' <michael.tovey@ziply.com>; 'Noah Lee'
<noah.lee@bentoncleanair.org>; 'Noah Oliver, Yakama Nation' <Noah Oliver@Yakama.com>; 'Paul
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'Richland Postmaster' <99352RichlandWA-Postmaster@usps.gov>; 'Rick Dawson'
<ri><rickd@bfhd.wa.gov>; 'Robin Priddy' <robin.priddy@bentoncleanair.org>; Schiessl, Joe</ri>
<<u>JSchiessl@CI.RICHLAND.WA.US</u>>; 'SEPA Center' <<u>sepacenter@dnr.wa.gov</u>>; 'SEPA Register'
<separegister@ecy.wa.gov>; 'SEPA Unit' <sepaunit@ecy.wa.gov>; 'Seth DeFoe' <<u>SDefoe@kid.org</u>>;
'South Central Region Planning' <scplanning@wsdot.wa.gov>; 'T.S. "Max" Platts'
<<u>PlattsT@wsdot.wa.gov</u>>; Tyutyunnik, Ruvim <<u>rtyutyunnik@ci.richland.wa.us</u>>; 'WA Dept of Fish &
Wildlife' < lopezlal@dfw.wa.gov>; 'WA Dept of Fish & Wildlife' < rittemwr@dfw.wa.gov>; 'WDFW'
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<jwhittier@ci.richland.wa.us>; 'William Simpson' <william.simpson@commerce.wa.gov>; Nancy
Lang <langn@bentonpud.org>
```

Subject: Wellhouse Heights, Phase 2

Hello all,

Please see attached Referral Packet for the Preliminary Plat application at Wellhouse Heights, Phase 2 (S2022-104). Please review and provide comments by 5pm, October 12th.



Matthew Howie Senior Planner 625 Swift Blvd., MS-35 | Richland, WA 99352 (509) 942-7587

 From:
 Acevedo, Mizael

 To:
 Howie, Matthew

 Cc:
 Stevens, Mike

Subject: RE: Wellhouse Heights, Phase 2

Date: Wednesday, October 5, 2022 11:07:55 AM

Attachments: <u>image001.png</u>

1380 Duportail St.pnq

Matt,

Please have applicant provide Geotechnical Investigation Report for Wellhouse Heights, Phase 2 (404 Thayer Drive). The Geo report included on referral packet pertains to Wellhouse Heights, Phase 1 (1380 Duportail St)

Best regards,

From: Howie, Matthew <mhowie@ci.richland.wa.us>

Sent: Thursday, September 29, 2022 8:06 AM

To: Acevedo, Mizael <macevedo@CI.RICHLAND.WA.US>; Ashley Garza <agarza3605@gmail.com>; Ashley Morton <AshleyMorton@ctuir.org>; Badger Mountain Irrigation District <bmidmanager@badgermountainirrigation.com>; Benton County - Segregations <Segregations@co.benton.wa.us>; Benton PUD, Broadband <osp@noanet.net>; Benton PUD, Electrical <engservice@bentonpud.org>; Bill Barlow

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Subject: RE: Wellhouse Heights, Phase 2

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Matthew Howie Senior Planner 625 Swift Blvd., MS-35 | Richland, WA 99352 (509) 942-7587

From: Howie, Matthew

Sent: Wednesday, September 28, 2022 3:59 PM

To: Acevedo, Mizael <macevedo@CI.RICHLAND.WA.US>; 'Ashley Garza' agarza3605@gmail.com; 'Ashley Morton' Ashley Morton' AshleyMorton@ctuir.org; 'Badger Mountain Irrigation District' <bmidmanager@badgermountainirrigation.com>; 'Benton County Assessor' <<u>Segregations@co.benton.wa.us</u>>; 'Benton PUD, Broadband' <<u>osp@noanet.net</u>>; 'Benton PUD, Electrical' <engservice@bentonpud.org>; 'Bill Barlow'

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```
<iecottrell@bpa.gov>; 'Junior Campos' <junior.campos@charter.com>; 'Katherine Cichy'
<a href="mailto:katherine.cichv@ziplv.com">kelly.cooper</a> (<a href="mailto:kellv.cooper@doh.wa.gov">kevin Knodel</a>
<kevin.knodel@rsd.edu>; 'Kevin Sliger' <KSliger@bft.org>; 'KID Development'
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Lang < langn@bentonpud.org >
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Subject: Wellhouse Heights, Phase 2

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Matthew Howie Senior Planner 625 Swift Blvd., MS-35 | Richland, WA 99352 (509) 942-7587

From: Buechler, Ken
To: Howie, Matthew

Subject: RE: Wellhouse Heights, Phase 2

Date: Thursday, September 29, 2022 7:38:48 PM

Attachments: image002.png image003.png

We are little confused on visualizing the access, but we look forward to seeing it completed. Fire is Good!



Kenneth L Buechler Fire Marshal 625 Swift Blvd., MS-16 | Richland, WA 99352 (509) 942-7556 (509) 578-9321

From: Howie, Matthew <mhowie@ci.richland.wa.us> **Sent:** Wednesday, September 28, 2022 3:59 PM

To: Acevedo, Mizael <macevedo@CI.RICHLAND.WA.US>; Ashley Garza <agarza3605@gmail.com>; Ashley Morton <AshleyMorton@ctuir.org>; Badger Mountain Irrigation District <bmidmanager@badgermountainirrigation.com>; Benton County - Segregations <Segregations@co.benton.wa.us>; Benton PUD, Broadband <osp@noanet.net>; Benton PUD, Electrical <engservice@bentonpud.org>; Bill Barlow <bbarlow@bft.org>; Buechler, Ken <KBuechler@CI.RICHLAND.WA.US>; Carrie Thompson <carrie.thompson@bnsf.com>; Casey Barney, Yakama Nation <Casey_Barney@Yakama.com>; Catherine Dickson <catherinedickson@ctuir.org>; Clark Posey <clark.posey@co.benton.wa.us>; Corrine Camuso, Yakama Nation <Corrine Camuso@Yakama.com>; Hamilton, Craig <C.Hamilton@bces.wa.gov>; DAHP SEPA Reviews <sepa@dahp.wa.gov>; DAlessandro, Carlo <cdalessandro@CI.RICHLAND.WA.US>; Damrell, Kevin <kdamrell@CI.RICHLAND.WA.US>; Darrick Dietrich <darrick@basindisposal.com>; Davis, Deanna <d.davis@bces.wa.gov>; Deborah Rodgers <dxrodgers@bpa.gov>; Deskins, John <jdeskins@CI.RICHLAND.WA.US>; Doan, Charles <cdoan@CI.RICHLAND.WA.US>; Eric Mendenhall <emendenhall@westrichland.org>; FormerOrchards@ecy.wa.gov; gis@co.benton.wa.us; Greg Wendt <greg.wendt@co.benton.wa.us>; Gwen Clear <gcle461@ecy.wa.gov>; Hill, Kelly <khill@CI.RICHLAND.WA.US>; Jason McShane <jmcshane@kid.org>; Jessica Lally, Yakama Nation <Jessica_Lally@Yakama.com>; John Lyle <john.lyle@bentoncleanair.org>; Jordon, Joshua <jojordon@CI.RICHLAND.WA.US>; Joseph Cottrell <jecottrell@bpa.gov>; Junior Campos <junior.campos@charter.com>; Katherine Cichy <katherine.cichy@ziply.com>; Kelly Cooper <kelly.cooper@doh.wa.gov>; Kevin Knodel <kevin.knodel@rsd.edu>; Kevin Sliger <KSliger@bft.org>; KID Development <development@kid.org>; KID Webmaster <webmaster@kid.org>; M. Deklyne <mjdeklyne@bpa.gov>; Map BCES <map@bces.wa.gov>; Mattheus, Pamela <pmattheus@CI.RICHLAND.WA.US>; Michael Tovey <michael.tovey@ziply.com>; Noah Lee <noah.lee@bentoncleanair.org>; Noah Oliver, Yakama Nation <Noah_Oliver@Yakama.com>; Paul Gonseth <gonsetp@wsdot.wa.gov>; Reathaford, Jason <JReathaford@CI.RICHLAND.WA.US>; Review Team <reviewteam@commerce.wa.gov>; Richard Krasner <richard.krasner@rsd.edu>; USPS

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Matthew Howie Senior Planner 625 Swift Blvd., MS-35 | Richland, WA 99352 (509) 942-7587

From: Brett Flippo
To: Howie, Matthew

Subject: RE: Wellhouse Heights, Phase 2

Date: Tuesday, October 4, 2022 2:10:59 PM

Attachments: <u>image001.png</u>

Mr. Howie,

The subject application lies outside of KID district boundaries. KID has no comments.

Thanks,

Brett Flippo, PLS, CFedS

Kennewick Irrigation District

From: Howie, Matthew <mhowie@ci.richland.wa.us>

Sent: Thursday, September 29, 2022 8:06 AM

To: Acevedo, Mizael <macevedo@Cl.RICHLAND.WA.US>; Ashley Garza <agarza3605@gmail.com>; Ashley Morton <AshleyMorton@ctuir.org>; Badger Mountain Irrigation District <bmidmanager@badgermountainirrigation.com>; Benton County - Segregations <Segregations@co.benton.wa.us>; Benton PUD, Broadband <osp@noanet.net>; Benton PUD, Electrical <engservice@bentonpud.org>; Bill Barlow <bbarlow@bft.org>; Buechler, Ken <KBuechler@CI.RICHLAND.WA.US>; Carrie Thompson <carrie.thompson@bnsf.com>; Casey Barney, Yakama Nation <Casey_Barney@Yakama.com>; Catherine Dickson <catherinedickson@ctuir.org>; Clark Posey <clark.posey@co.benton.wa.us>; Corrine Camuso, Yakama Nation <Corrine Camuso@Yakama.com>; Hamilton, Craig <C.Hamilton@bces.wa.gov>; DAHP SEPA Reviews <sepa@dahp.wa.gov>; DAlessandro, Carlo <cdalessandro@CI.RICHLAND.WA.US>; Damrell, Kevin <kdamrell@CI.RICHLAND.WA.US>; Darrick Dietrich <darrick@basindisposal.com>; Davis, Deanna <d.davis@bces.wa.gov>; Deborah Rodgers <dxrodgers@bpa.gov>; Deskins, John <ideskins@CI.RICHLAND.WA.US>; Doan, Charles <cdoan@CI.RICHLAND.WA.US>; Eric Mendenhall <emendenhall@westrichland.org>; FormerOrchards@ecy.wa.gov; gis@co.benton.wa.us; Greg Wendt <greg.wendt@co.benton.wa.us>; Gwen Clear <gcle461@ecy.wa.gov>; Hill, Kelly <khill@CI.RICHLAND.WA.US>; Jason McShane <JMcShane@kid.org>; Jessica Lally, Yakama Nation <Jessica_Lally@Yakama.com>; John Lyle <john.lyle@bentoncleanair.org>; Jordon, Joshua <jojordon@CI.RICHLAND.WA.US>; Joseph Cottrell <jecottrell@bpa.gov>; Junior Campos <junior.campos@charter.com>; Katherine Cichy <katherine.cichy@ziply.com>; Kelly Cooper <kelly.cooper@doh.wa.gov>; Kevin Knodel <kevin.knodel@rsd.edu>; Kevin Sliger <KSliger@bft.org>; Development <development@kid.org>; Matthew Berglund <MBerglund@kid.org>; M. Deklyne <mjdeklyne@bpa.gov>; Map BCES <map@bces.wa.gov>; Mattheus, Pamela <pmattheus@CI.RICHLAND.WA.US>; Michael Tovey <michael.tovey@ziply.com>; Noah Lee <noah.lee@bentoncleanair.org>; Noah Oliver, Yakama Nation <Noah Oliver@Yakama.com>; Paul Gonseth <gonsetp@wsdot.wa.gov>; Reathaford, Jason <JReathaford@CI.RICHLAND.WA.US>; Review Team <reviewteam@commerce.wa.gov>; Richard Krasner <richard.krasner@rsd.edu>; USPS Richland Postmaster <99352RichlandWA-Postmaster@usps.gov>; Rick Dawson <rickd@bfhd.wa.gov>; Robin Priddy <robin.priddy@bentoncleanair.org>; Schiessl, Joe <JSchiessl@CI.RICHLAND.WA.US>; SEPA Center <sepacenter@dnr.wa.gov>; SEPA Register

<separegister@ecy.wa.gov>; SEPA Unit <sepaunit@ecy.wa.gov>; Seth Defoe <SDefoe@kid.org>;
South Central Region Planning <scplanning@wsdot.wa.gov>; T.S. "Max" Platts
<PlattsT@wsdot.wa.gov>; Tyutyunnik, Ruvim <rtyutyunnik@CI.RICHLAND.WA.US>; WA Dept of Fish
& Wildlife <lopezlal@dfw.wa.gov>; WA Dept of Fish & Wildlife <rittemwr@dfw.wa.gov>; WDFW
<R3Planning@dfw.wa.gov>; Westphal, Nichole <nwestphal@ci.richland.wa.us>; Whittier, John
<jwhittier@CI.RICHLAND.WA.US>; William Simpson <william.simpson@commerce.wa.gov>; Nancy
Lang <langn@bentonpud.org>; AviationLandUse@wsdot.wa.gov

Subject: RE: Wellhouse Heights, Phase 2

Some people who received this message don't often get email from mhowie@ci.richland.wa.us. Learn why this is important

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Good morning,

Made a correction to the Referral Packet from yesterday. Again, this is regarding the Preliminary Plat application at Wellhouse Heights, Phase 2 (S2022-104). Please review and provide comments by 5pm, October 12th.

Thank you,



Matthew Howie Senior Planner 625 Swift Blvd., MS-35 | Richland, WA 99352 (509) 942-7587

From: Howie, Matthew

Sent: Wednesday, September 28, 2022 3:59 PM

To: Acevedo, Mizael <macevedo@CI.RICHLAND.WA.US>; 'Ashley Garza' <agarza3605@gmail.com>; 'Ashley Morton' <AshleyMorton@ctuir.org>; 'Badger Mountain Irrigation District' <bmidmanager@badgermountainirrigation.com>; 'Benton County Assessor' <Segregations@co.benton.wa.us>; 'Benton PUD, Broadband' <osp@noanet.net>; 'Benton PUD, Electrical' <engservice@bentonpud.org>; 'Bill Barlow' <bbarlow@bft.org>; Buechler, Ken <KBuechler@CI.RICHLAND.WA.US>; 'Carrie Thompson' <carrie.thompson@bnsf.com>; 'Casey Barney, Yakama Nation' <Casey_Barney@Yakama.com>; 'Catherine Dickson' <catherinedickson@ctuir.org>; 'Clark Posey' <clark.posey@co.benton.wa.us>; 'Corrine Camuso, Yakama Nation' <Corrine_Camuso@Yakama.com>; 'Craig Hamilton' <c.hamilton@bces.wa.gov>; 'DAHP SEPA Reviews' <sepa@dahp.wa.gov>; DAlessandro, Carlo <cdalessandro@ci.richland.wa.us>; Damrell, Kevin <kdamrell@CI.RICHLAND.WA.US>; 'Darrick Dietrich' <darrick@basindisposal.com>; 'Deanna Davis' <d.davis@bces.wa.gov>; 'Deborah Rodgers' <dxrodgers@bpa.gov>; Deskins, John <jdeskins@CI.RICHLAND.WA.US>; Doan, Charles <cdoan@ci.richland.wa.us>; 'Eric Mendenhall'

<emendenhall@westrichland.org>; 'FormerOrchards@ecy.wa.gov' <FormerOrchards@ecy.wa.gov'>;
'gis@co.benton.wa.us' <gis@co.benton.wa.us';
'Greg Wendt' <greg.wendt@co.benton.wa.us';</pre>

```
'Gwen Clear' <gcle461@ecy.wa.gov>; Hill, Kelly <khill@CI.RICHLAND.WA.US>; 'Jason McShane'
<imcshane@kid.org>; 'Jessica Lally, Yakama Nation' <<u>Jessica Lally@Yakama.com</u>>; 'John Lyle'
<iohn.lyle@bentoncleanair.org>; Jordon, Joshua <iojordon@CI.RICHLAND.WA.US>; 'Joseph Cottrell'
<iecottrell@bpa.gov>; 'Junior Campos' <junior.campos@charter.com>; 'Katherine Cichy'
<a href="mailto:kelly.cooper@doh.wa.gov">kelly.cooper@doh.wa.gov">kelly.cooper@doh.wa.gov</a>; 'Kevin Knodel'
<<u>kevin.knodel@rsd.edu</u>>; 'Kevin Sliger' <<u>KSliger@bft.org</u>>; 'KID Development'
<development@kid.org>; 'KID Webmaster' <webmaster@kid.org>; 'M. Deklyne'
<mideklyne@bpa.gov>; 'Map BCES' <map@bces.wa.gov>; Mattheus, Pamela
<pmattheus@CI.RICHLAND.WA.US>; 'Michael Tovey' <michael.tovey@ziply.com>; 'Noah Lee'
<noah.lee@bentoncleanair.org>; 'Noah Oliver, Yakama Nation' <Noah Oliver@Yakama.com>; 'Paul
Gonseth' <gonsetp@wsdot.wa.gov>; Reathaford, Jason <JReathaford@CI.RICHLAND.WA.US>;
'Review Team' < <a href="mailto:reviewteam@commerce.wa.gov">reviewteam@commerce.wa.gov</a>; 'Richard Krasner' < <a href="mailto:richard.krasner@rsd.edu">richard.krasner@rsd.edu</a>;
'Richland Postmaster' <99352RichlandWA-Postmaster@usps.gov>; 'Rick Dawson'
<ri><rickd@bfhd.wa.gov>; 'Robin Priddy' <robin.priddy@bentoncleanair.org>; Schiessl, Joe</ri>
<JSchiessl@CI.RICHLAND.WA.US>; 'SEPA Center' <sepacenter@dnr.wa.gov>; 'SEPA Register'
<separegister@ecy.wa.gov>; 'SEPA Unit' <sepaunit@ecy.wa.gov>; 'Seth DeFoe' <<u>SDefoe@kid.org</u>>;
<<u>PlattsT@wsdot.wa.gov</u>>; Tyutyunnik, Ruvim <<u>rtyutyunnik@ci.richland.wa.us</u>>; 'WA Dept of Fish &
Wildlife' < lopezlal@dfw.wa.gov>; 'WA Dept of Fish & Wildlife' < rittemwr@dfw.wa.gov>; 'WDFW'
<<u>R3Planning@dfw.wa.gov</u>>; Westphal, Nichole <<u>nwestphal@ci.richland.wa.us</u>>; Whittier, John
<jwhittier@ci.richland.wa.us>; 'William Simpson' <william.simpson@commerce.wa.gov>; Nancy
Lang < langn@bentonpud.org>
```

Subject: Wellhouse Heights, Phase 2

Hello all,

Please see attached Referral Packet for the Preliminary Plat application at Wellhouse Heights, Phase 2 (S2022-104). Please review and provide comments by 5pm, October 12th.



Matthew Howie Senior Planner 625 Swift Blvd., MS-35 | Richland, WA 99352 (509) 942-7587

From: <u>ECY RE SEPA REGISTER</u>
To: <u>Howie, Matthew</u>

Subject: RE: 202106711 RE: Wellhouse Heights, Phase 2

Date: Monday, October 3, 2022 8:58:56 AM

Attachments: <u>image001.png</u>

Hi Matthew,

My apologies on the delay. I'd like to confirm that the ODNS for Wellhouse Heights Subdivision was published as 202106711.

The ODNS/NOA for Wellhouse Heights Phase 2 is published as 202204947.

Thank you,

Amber Johnson (she/her)

Administrative Assistant 3

Shorelands & Environmental Assistance Program

Department of Ecology | Central Regional Office

Ph. 509-723-5677 amber.johnson@ecy.wa.gov

Hours: Monday-Thursday 7am-5:30pm

From: Howie, Matthew <mhowie@ci.richland.wa.us>

Sent: Thursday, September 29, 2022 4:03 PM

To: ECY RE SEPA REGISTER < separegister@ecy.wa.gov> **Subject:** 202106711 RE: Wellhouse Heights, Phase 2

Amber,

I have taken over Shane's position here with the City of Richland, so I should get an account. You are welcome to enter this one in the meantime.

And you are correct this Wellhouse Heights, Phase 2 is separate from the prior Wellhouse Heights Subdivision. I did find in our records the issued DNS for 202103202, which I have attached.



Matthew Howie Senior Planner 625 Swift Blvd., MS-35 | Richland, WA 99352 (509) 942-7587

From: ECY RE SEPA REGISTER < separegister@ecy.wa.gov>

Sent: Thursday, September 29, 2022 1:59 PM **To:** Howie, Matthew <<u>mhowie@ci.richland.wa.us</u>>

Subject: RE: Wellhouse Heights, Phase 2

Hi Matthew,

This should be submitted through The SRS portal to be published on the SEPA Register. It looks like Shane and Mike are the two users we have for the City of Richland. **Would you like me to enter this one for today while you create your account?**

If you would like me to enter this, can you please confirm if this is a separate proposal from **202103202** which is an ODNS/NOA named Wellhouse Heights Subdivision. They appear to be different, though I don't see where a DNS was issued on that proposal.

Please be sure to utilize your business email address when you create an account using the information below.

• SEPA Register Submittal lead agency training (for lead agencies):

On July 20, 2021 we launched the new lead agency SEPA Record Submittal portal (SRS). With this new portal, SEPA lead agencies are now able to enter their own SEPA records into the register instead of emailing them to Ecology. Watch this training to learn more about how to use this new online tool.

We also have two user guides available:

- Step-by-Step instructions for How to Register for the SEPA Record Submittal Portal (SRS)
- Lead Agency SEPA Record Submittal Portal (SRS) User Guide

Lead agencies - want to know more about the new SEPA Register Submittal lead agency portal (SRS)? Here is a bit more information. You can also visit <u>our website</u> to find out more.

Thank you,

Amber Johnson (she/her)

Administrative Assistant 3

Shorelands & Environmental Assistance Program

Department of Ecology | Central Regional Office

Ph. 509-723-5677¦ amber.johnson@ecy.wa.gov

Hours: Monday-Thursday 7am-5:30pm

From: Howie, Matthew < mhowie@ci.richland.wa.us >

Sent: Thursday, September 29, 2022 8:06 AM

To: Acevedo, Mizael <<u>macevedo@CI.RICHLAND.WA.US</u>>; Ashley Garza <<u>agarza3605@gmail.com</u>>;

Ashley Morton < Ashley Morton@ctuir.org >; Badger Mountain Irrigation District

<bmidmanager@badgermountainirrigation.com>; Benton County - Segregations

<<u>Segregations@co.benton.wa.us</u>>; Benton PUD, Broadband <<u>osp@noanet.net</u>>; Benton PUD,

Electrical <<u>engservice@bentonpud.org</u>>; Bill Barlow <<u>bbarlow@bft.org</u>>; Buechler, Ken

< <u>KBuechler@CI.RICHLAND.WA.US</u>>; Carrie Thompson < <u>carrie.thompson@bnsf.com</u>>; Casey Barney,

Yakama Nation <<u>Casey Barney@Yakama.com</u>>; Catherine Dickson <<u>catherinedickson@ctuir.org</u>>;

Clark Posey <<u>clark.posey@co.benton.wa.us</u>>; Corrine Camuso, Yakama Nation

<<u>Corrine_Camuso@Yakama.com</u>>; Hamilton, Craig <<u>C.Hamilton@bces.wa.gov</u>>; DAHP SEPA (DAHP)

<<u>sepa@dahp.wa.gov</u>>; DAlessandro, Carlo <<u>cdalessandro@CI.RICHLAND.WA.US</u>>; Damrell, Kevin

kdamrell@CI.RICHLAND.WA.US; Darrick Dietrich darrick@basindisposal.com; Davis, Deanna

```
<<u>d.davis@bces.wa.gov</u>>; Deborah Rodgers <<u>dxrodgers@bpa.gov</u>>; Deskins, John
<ideskins@Cl.RICHLAND.WA.US>; Doan, Charles <cdoan@Cl.RICHLAND.WA.US>; Eric Mendenhall
<emendenhall@westrichland.org>; ECY RE Former Orchards <formerorchards@ECY.WA.GOV>;
gis@co.benton.wa.us; Greg Wendt <greg.wendt@co.benton.wa.us>; Clear, Gwen (ECY)
<<u>GCLE461@ECY.WA.GOV</u>>; Hill, Kelly <<u>khill@CI.RICHLAND.WA.US</u>>; Jason McShane
<imcshane@kid.org>; Jessica Lally, Yakama Nation <<u>Jessica Lally@Yakama.com</u>>; John Lyle
<iohn.lyle@bentoncleanair.org>; Jordon, Joshua <ioiordon@CI.RICHLAND.WA.US>; Joseph Cottrell
<iecottrell@bpa.gov>; Junior Campos <iunior.campos@charter.com>; Katherine Cichy
<a href="mailto:kelly.cooper@DOH.WA.GOV">kelly.cooper@DOH.WA.GOV</a>; Kevin Knodel
<<u>kevin.knodel@rsd.edu</u>>; Kevin Sliger <<u>KSliger@bft.org</u>>; KID Development
<development@kid.org>; KID Webmaster <webmaster@kid.org>; M. Deklyne
<middeklyne@bpa.gov>; Map BCES <map@bces.wa.gov>; Mattheus, Pamela
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<noah.lee@bentoncleanair.org>; Noah Oliver, Yakama Nation <Noah Oliver@Yakama.com>;
Gonseth, Paul <GonsetP@wsdot.wa.gov>; Reathaford, Jason <JReathaford@Cl.RICHLAND.WA.US>;
COM GMU Review Team < reviewteam@commerce.wa.gov>; Richard Krasner
<ri>chard.krasner@rsd.edu>; USPS Richland Postmaster <99352RichlandWA-Postmaster@usps.gov>;</ri>
Dawson, Rick (DOHi) < rickd@bfhd.wa.gov>; Robin Priddy < robin.priddy@bentoncleanair.org>;
Schiessl, Joe <JSchiessl@CI.RICHLAND.WA.US>; DNR RE SEPACENTER <SEPACENTER@dnr.wa.gov>;
ECY RE SEPA REGISTER < separegister@ecy.wa.gov>; ECY RE SEPA REGISTER
<separegister@ecv.wa.gov>; Seth DeFoe <<u>SDefoe@kid.org</u>>; South Central Region Planning
<scplanning@wsdot.wa.gov>; Platts, Max <PlattsT@WSDOT.WA.GOV>; Tyutyunnik, Ruvim
<rtyutyunnik@Cl.RICHLAND.WA.US>; WA Dept of Fish & Wildlife <lopezlal@dfw.wa.gov>; Ritter,
Michael W (DFW) < <a href="mailto:Michael.Ritter@dfw.wa.gov">Michael W (DFW) < <a href="mailto:Michael.Ritter@dfw.wa.gov">Michael W (DFW) < <a href="mailto:Michael.Ritter@dfw.wa.gov">Michael.Ritter@dfw.wa.gov</a>; DFW R3planning <a href="mailto:R3planning@dfw.wa.gov">R3planning@dfw.wa.gov</a>;
Westphal, Nichole <a href="mailto:nuchand.wa.us">nuchand.wa.us</a>; Whittier, John <a href="mailto:nuchand.wa.us">nuchand.wa.us</a>; Whittier <a 
Simpson, William (COM) < william.simpson@commerce.wa.gov >; Nancy Lang
<a href="mailto:</a> <a href="mailto:language-">langn@bentonpud.org</a>; <a href="mailto:AviationLandUse@wsdot.wa.gov">AviationLandUse@wsdot.wa.gov</a>
```

Subject: RE: Wellhouse Heights, Phase 2

Good morning,

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Thank you,



Matthew Howie Senior Planner 625 Swift Blvd., MS-35 | Richland, WA 99352 (509) 942-7587

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Subject: Wellhouse Heights, Phase 2

Lang <<u>langn@bentonpud.org</u>>

Hello all,

Please see attached Referral Packet for the Preliminary Plat application at Wellhouse Heights, Phase 2 (S2022-104). Please review and provide comments by 5pm, October 12th.

<jwhittier@ci.richland.wa.us>; 'William Simpson' <william.simpson@commerce.wa.gov>; Nancy



Matthew Howie Senior Planner 625 Swift Blvd., MS-35 | Richland, WA 99352 (509) 942-7587



Exhibit 6

Determination of Non-Significance





CITY OF RICHLAND Determination of Non-Significance

Description of Proposal: Wellhouse Heights II, Preliminary Plat Application for the

development of an approximately 0.43-acre site, with five (5)

residential townhome buildings.

Proponent: Paul Knutzen

5401 Ridgeline Dr, Suite 160,

Kennewick, WA 99338

Location of Proposal: Northeast of the intersection of Thayer Drive and Duportail Street.

Assessor's Parcel No. 115981013704001 located in Section 15, Township 9, North, Range 28 East, W.M., Benton County WA.

Lead Agency: City of Richland

The lead agency for this proposal has determined that it does not have a probable significant adverse impact on the environment. An environmental impact statement (EIS) is not required under RCW 43.21C.030(2)(c). This decision was made after review of a completed environmental checklist and other information on file with the lead agency. This information is available to the public on request.

() There is no comment for the DNS.

() This DNS is issued under WAC 197-11-340(2); the lead agency will not act on this proposal for fourteen days from the date of issuance.

(**X**) This DNS is issued after using the optional DNS process in WAC 197-11-355. There is no further comment period on the DNS.

Responsible Official: Mike Stevens **Position/Title:** Planning Manager

Address: 625 Swift Blvd., MS #35, Richland, WA 99352

Issued: October 13, 2022

Signature Much Str