



HEARING EXAMINER EXHIBIT LIST

PROJECT:	Public Hearing for Preliminary Plat for Blueberry Meadows
FILE NUMBER(S):	PL2019-01
APPLICANT:	The Blair Group, LLC
HEARING DATE AND LOCATION:	February 27, 2020 at approximately 11:00 AM Monroe City Hall Council Chambers 806 West Main Street, Monroe, WA 98272

EXHIBITS

1. Staff Analysis
2. Vicinity Map
3. Preliminary Plat Map
4. Preliminary Plat Application and Project Narrative
5. Letter of complete application
6. Notice of Application
 - 6- A Affidavit of Publication
 - 6- B Affidavit of Mailing
 - 6-C Affidavit of Posting (On Site)
 - 6- C Affidavit of Posting (CH_Library)
 - 6- E Email to Public Agencies (NOA)
7. Public Comments
 - A. Letter from Snohomish County Public Utility District #1
 - B. Stillaguamish Tribe
 - C. Snohomish County
8. SEPA – Mitigated Determination of Non Significance (MDNS)
 - 8- A Affidavit of Publication
 - 8- B Affidavit of Mailing
 - 8- C Email to Public Agencies (DNS)
 - 8- D Affidavit of Posting (CH_Library)
 - 8- E Affidavit of Posting (On Site)

9. Notice of Public Hearing
 - 9- A Affidavit of Publication NOPH
 - 9- B Affidavit of Mailing
 - 9- C Affidavit of Posting (On Site)
 - 9- D Affidavit of Posting CH)
10. Stormwater Site Plan
11. Geotechnical Report

	STAFF REPORT AND RECOMMENDATION <hr/> Blueberry Meadows <hr/> Public Hearing for Blueberry Meadows Preliminary Plat
HEARING EXAMINER:	Mr. Phil Obrechts, City of Monroe Hearing Examiner
DATE:	February 18, 2020
FILE NUMBERS:	PL2019-01
DESCRIPTION:	The proposal is a request for preliminary plat approval for a 36-lot subdivision on approximately 3.0 acres in the Multi-Family Residential (R25) zoning district with associated grading, drainage improvements, landscaping, and street frontage improvements.
APPLICANT:	David Remlinger The Blair Group, LLC P.O. Box 177 Carnation, WA 98014
PROJECT LOCATION:	The site is located in the 18900 block of Blueberry Lane, Monroe, Washington, 98272. It is identified by Snohomish County tax parcel identification number 27060100107100.
HEARING DATE:	February 27, 2020 at 10:00 AM
HEARING LOCATION:	Monroe City Hall Council Chambers 806 West Main Street Monroe, WA 98272
STAFF CONTACT:	Shana Restall, Principal Planner

A. PROJECT DESCRIPTION

The applicant, the Blair Group, LLC, has submitted an application for preliminary plat approval of a 36-lot, zero lot-line subdivision. The subject project is zoned Multifamily Residential (R25) and is addressed within the 18900 Block of Blueberry Lane, Monroe, WA 98272; The site is identified by Snohomish County Tax Parcel Number 27060100107100. The subject site is currently vacant. Conceptual, preliminary site improvements, clearing and grading, and installation of all utilities (sewer, water, storm, power, gas, telephone, cable and telecommunications, etc.) have been reviewed for compliance with the development standards in the applicable sections of the Monroe Municipal Code, as well as other pertinent documents adopted by reference in the code.

B. GENERAL INFORMATION

1. Applicant and Owner:
David Remlinger
The Blair Group, LLC
P.O. Box 177
Carnation, WA 98014

2. Contact Person:
David Harmsen, P.E.
Vice President/Director of Engineering

Harmsen
P.O. Box 516
Monroe, WA 98272

3. General Location:

The site is located on the 18900 block of Blueberry Lane, Monroe, Washington, 98272. The site is identified by Snohomish County tax parcel number 27060100107100.

4. Site Address:

18900 Block of Blueberry Lane, Monroe, WA 98272

5. Description of Proposal:

The applicant, the Blair Group, LLC, is requesting preliminary plat approval for a 36 zero lot-line townhome subdivision on a three (3) acre site in the Multi-Family Residential (R25) zoning district with associated grading, drainage improvements, landscaping, and street frontage improvements. The site currently does not contain any structures.

6. Critical Areas:

The City's critical areas map does not indicate critical areas on the subject site.

7. Comprehensive Plan Land Use Designations, Zoning Designations, and Existing Land Uses of the Project Site and Surrounding Area:

AREA	EXISTING LAND USE DESIGNATION	ZONING	EXISTING USE
Project Site	Multifamily	Multifamily Residential (R25)	Vacant
North of Site <i>Across railroad tracks</i>	General Commercial	General Commercial (GC)	Commercial
South of Site	Multifamily	Multifamily Residential (R25)	Single-family residential, Multi-family residential
East of Site <i>Across North Kelsey Street</i>	Multifamily	Multifamily Residential (R25)	Single-family residential, Commercial, Industrial
West of Site	Multifamily	Multifamily Residential (R25)	Multi-family residential

8. Public Utilities and Services Provided by:

Water:	City of Monroe	Gas:	Puget Sound Energy
Sewer:	City of Monroe	Cable TV:	Comcast
Garbage:	Republic Services	Police:	City of Monroe
Stormwater:	City of Monroe	Fire:	Snohomish County Fire District No. 7
Telephone:	Verizon	School:	Monroe Public Schools
Electricity:	Snohomish County PUD No. 1	Hospital:	Evergreen Health

C. APPLICATION REVIEW PROCESS

1. Regulatory Requirements for Review of Quasi-Judicial Actions:

Pursuant to Monroe Municipal Code (MMC) sections 22.84.030(C)(8) and 22.84.060, preliminary plats are quasi-judicial actions subject to a public hearing with the Hearing Examiner as the final decision body for the application.

The decision of the Hearing Examiner shall be final and conclusive, unless appealed as provided by law, in accordance with MMC Chapter 22.84.080. Appeals of final decisions on preliminary plats may be appealed to Snohomish County Superior Court (MMC 22.84.060).

2. Application Submittal and Completeness:

The Blueberry Meadows Preliminary Plat application was received by the City of Monroe on April 10, 2019 (Exhibit 4). The application was deemed complete and vested on May 7, 2019 (Exhibit 5).

3. Public Notification and Comments:

Public notice for the application was provided in accordance with the requirements of MMC section 22.84.050(A). A Notice of Application was published, mailed, and posted on May 20, 2019 (Exhibits 6 - 6E). A public comment period was provided from May 20, 2019 through 5:00 PM on June 3, 2019. Two (2) comment letters were received from public agencies – Snohomish County Public Utility District # 1 (Exhibit 7A) and the Stillaguamish Tribe (Exhibit 7B).

A Notice of Public Hearing was published, mailed, and posted on February 13, 2020 (Exhibits 9 – 9D). The date of the open record public hearing with the Hearing Examiner is set for February 27, 2020 at 10:00 AM.

4. Environmental Review:

A Mitigated Determination of Non-Significance (MDNS) was issued, published, posted, and mailed on January 27, 2020 (Exhibits 8 - 8E). One mitigation condition is required by the MDNS, as follows:

The applicant must provide an archaeological survey of the project area to the City, the DAHP, and all interested Tribes. This survey shall be conducted and provided to the above specified parties prior to development permit issuance for site improvements and prior to any ground disturbing activities.

The MDNS provided a concurrent comment and appeal period, which ended at 5:00 PM on February 10, 2020. No appeals regarding the SEPA threshold determination were received by the City during the specified appeal period.

D. FINDINGS OF FACT

1. Application Submittal and Completeness:

The application was submitted on April 10, 2019 and determined to be complete on May 7, 2019.

2. Environmental Review:

A SEPA Mitigated Determination of Non-Significance (MDNS) was issued on January 27, 2020. A comment letter was submitted by Snohomish County (Exhibit 7C). No appeals on the SEPA threshold determination were received.

3. Bulk Requirements and Dimensional Standards:

Per MMC Table 22.18.040(G): R25 Residential Zoning District Bulk Requirements, the development shall comply with the following standards for attached residential development in the Multifamily Residential (R25) zone:

**Table 22.18.040(G): R25 Residential Zoning District Bulk Requirements
(For Attached Dwelling Units)**

Minimum Lot Area ⁽¹⁾	
Minimum Lot Area	N/A
Residential Density ⁽¹⁾	
Maximum Dwelling Units per Lot	N/A ⁽²⁾
Minimum Number of Attached Units	3 dwelling units
Minimum Allowed Density	12 units per acre
Maximum Allowed Density	25 units per acre
Street Frontage ⁽¹⁾	
Minimum Street Frontage	30 feet
Minimum Street Frontage for Panhandle Lots	20 feet
Minimum Street Frontage for Cul-de-Sac Lots	30 feet
Minimum Street Frontage for Lots with Public Street Access from a Private Access Tract or Easement	20 feet
Lot Dimensions ⁽¹⁾	
Minimum Lot Width	30 feet
Yard Setbacks ⁽¹⁾	
Minimum Front Yard Setback Width	10 feet
Minimum Side Yard Setback Width	10 feet
Minimum Side Yard Setback Width for Attached Dwelling Units on the Attached Side(s)	0 feet
Minimum Side Yard Setback Width Attached Dwelling Units on a Side Abutting a ROW, Separate Detached Unit(s), or Different Zone	10 feet
Minimum Setback Width for Corner Lot Side Yards Abutting a Street ⁽³⁾	10 feet
Minimum Setback Width for Corner Lot Side Yards Not Abutting a Street ⁽³⁾	10 feet
Minimum Rear Yard Setback Width	10 feet
Minimum Setback from Private Access Tracts	10 feet
Minimum Setback from Private Access Easements	10 feet
Lot Coverage ⁽¹⁾	
Maximum Lot Coverage	80%
Building Height ⁽¹⁾	
Maximum Building Height	45 feet

Table Notes:

- ¹ See MMC 22.16.040, Bulk requirements, for more information regarding the bulk requirements in the above table.
- ² The maximum number of attached dwelling units per lot is the maximum number of dwelling units permitted by the maximum allowed density for the specific zoning district in which the dwelling units are located.
- ³ On a corner lot, the yard adjacent to the widest dimension of the lot abutting a street is a side yard. The opposite yard is also a side yard.

4. Residential Density Calculations:

Section 22.18.040(A) of the MMC delineates how an applicant can determine the minimum required and maximum allowed residential densities for the R25 zoning district.

To calculate the minimum required residential density for a site in the R25 zone (12 - 25 dwelling units per acre), multiply the gross site area, in acres, by the units allowed per acre. The minimum required residential density for the subject site, with a gross site area of 3.0 acres, would be calculated as follows.

Step 1. Gross site area (in acres) * 12 (12 dwelling units per acre in the R25 zone):

$$3.0 \text{ acres} * 12 = \underline{36 \text{ dwelling units}}$$

The maximum allowed residential density is calculated the same way, as shown below.

Step 2. Gross site area (in acres) * 25 (25 dwelling units per acre in the R25 zone):

$$3.0 \text{ acres} * 25 = \underline{75 \text{ dwelling units}}$$

The applicant is proposing 36 dwelling units, which meets the residential density requirements of the R25 zone. Thus, the density is consistent with that allowed by the Unified Development Regulations.

5. Chapter 22.68 MMC: Subdivisions:

The Zoning Administrator, City Engineer, Fire Marshal, and Building Official have all reviewed and commented on the proposed project. Their comments are included in the body of this report and in the project permit conditions of approval.

6. Chapter 22.68 MMC: Preliminary Plat Review Criteria:

Pursuant to MMC 22.68.040(A)(2), Review Criteria, each proposed subdivision or short subdivision shall be reviewed to ensure that the following criteria are met. Listed below are the criteria for reviewing the proposed preliminary plat along with findings regarding the consistency of the proposal with said criteria.

Criteria	Analysis	Consistency with Criterion
<p>a. The proposal conforms to the goals, policies, and plans set forth in the Monroe comprehensive plan;</p>	<p>The City of Monroe’s 2015-2035 Comprehensive Plan Future Land Use Map designates the project site as “Multifamily.” The proposed preliminary plat, under R25 zoning, which provides for 12 - 25 dwelling units per acre, conforms to the City of Monroe’s 2015-2035 Comprehensive Plan “Multifamily” designation for density. Table 3.07 in the City of Monroe 2015-2035 Comprehensive Plan provides the following description of the “Multifamily” land use plan designation:</p> <p><i>Multifamily. This designation shall provide for multiple-family residential developments at a range of densities between 12 and 25 dwelling units per acre where the full range of public facilities and services to support urban</i></p>	<p>The proposal is consistent with the criterion.</p>

	<i>development exist. Generally, this designation is appropriate for land that is located convenient to principal arterials and to business and commercial activity centers. This designations intended for areas of infill housing such as the Downtown and the western area of the West Main Street corridor as well as for senior housing developments and other special housing groups.</i>	
b. The proposal conforms to the site and design requirements set forth in this title. No final subdivision or short subdivision shall be approved unless the requirements are met;	The proposal conforms to all of the site requirements set forth in MMC Title 22, Unified Development Regulations. Compliance with specific design standards set forth in MMC 22.42 will be assessed at the time of site plan and building permit review, as proposed building elevations will not submitted to the City until then.	The proposal is consistent with the criterion.
c. The proposed street system and pedestrian system conform to the Monroe comprehensive plan, Chapter 22.42 MMC, Design Standards, and applicable public works design standards, and is laid out in such a manner as to provide for the safe, orderly and efficient circulation of vehicular and pedestrian traffic;	The proposed streets and pedestrian circulation system have been reviewed by planning and engineering staff, and, as described in this staff report, are consistent with the Monroe comprehensive plan, Chapter 22.42 MMC, Design Standards, and applicable public works design standards. The layout also provides for the safe, orderly and efficient circulation of vehicular and pedestrian traffic.	The proposal is consistent with the criterion.
d. The proposed subdivision or short subdivision will be adequately served with city-approved water and sewer, and other utilities appropriate to the nature of the subdivision or short subdivision;	The proposed plat will be served by City water and sewer. The facilities have adequate capacity to accommodate the additional units. Exhibit 7A from Snohomish County Public Utility District # 1 verifies that there is sufficient electrical system capacity for the proposed development.	The proposal is consistent with the criterion.
e. The layout of lots, and their size and dimensions, takes into account topography and vegetation on the site in order that buildings may be reasonably sited, and that the least disruption of the site, topography and vegetation will result from development of the lots;	The subject site does not have any identified critical areas, including those classified as geohazards. Therefore, topographic disruption will be minimal. The vegetation on site is comprised mainly of grasses, and the proposed landscaping plan will provide a greater diversity of vegetation. The layout of the development will accommodate 36 dwelling units, which is the minimum required for residential construction on the site.	The proposal is consistent with the criterion.
f. Identified hazards and limitations to development have been considered in the design of streets and lot layout to assure street and building sites are on geologically stable soil, considering the stress and loads to which the soil may be subjected; and	As stated above, no geohazards have been identified on the subject site. However, soil amendments designed to handle the additional load of the development will be used when necessary. The proposed plat is designed to be accessed from Blueberry Lane, which appears to be the only feasible location for points of ingress and egress. Internal streets have been designed to maximize vehicle and pedestrian circulation.	The proposal is consistent with the criterion.

g. Lack of compliance with the criteria set forth in this section and in subsection (B) of this section, Subdivision Standards, shall be grounds for denial of a proposed subdivision or short subdivision, or for the issuance of conditions necessary to more fully satisfy the criteria.	Staff finds that the proposal complies with the review criteria in MMC 22.68.040(A)(2) and recommends that preliminary approval be granted.	The proposal is consistent with the criterion.
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7. RCW 58.17.110 - Approval or disapproval of subdivision and dedication-factors to be considered-Conditions of approval-Finding-Release from damages:

1) *The city, town, or county legislative body shall inquire into the public use and interest proposed to be served by the establishment of the subdivision and dedication. It shall determine:*

(a) If appropriate provisions are made for, but not limited to, the public health, safety, and general welfare, for 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 shall consider all other relevant facts, including sidewalks and other planning features that assure safe walking conditions for students who only walk to and from school; and

The preliminary plat map (Exhibit 3) confirms that the preliminary plat application includes provisions for the public health, safety, and general welfare including open spaces, drainage ways, streets or roads, potable water, sanitary wastes, parks and recreation, playgrounds, schools and school grounds, and sidewalks that assure safe walking conditions for students who only walk to and from school. The Monroe School District was notified of the development application. No comments were received from the Monroe School District on the proposal.

(b) Whether the public interest will be served by the subdivision and dedication.

The public interest would be served by the subdivision and dedication, provided that the subdivision and dedication were developed under the provisions for the current zoning district (R25). Under this scenario, an existing parcel in the City would be developed allowing for efficient provision of public services, consistent with densities identified in the Monroe 2015-2035 Comprehensive Plan.

(2) A proposed subdivision and dedication shall not be approved unless the city, town, or county legislative body makes written findings that:

(a) 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; and

The preliminary plat map (Exhibit 3) confirms that the preliminary plat application includes provisions for the public health. The Staff Analysis addresses the provisions made for safety and general welfare, including open spaces, drainage ways, streets or roads, potable water supplies, sanitary wastes, parks and recreation, playgrounds, schools and school grounds, and sidewalks that assure safe walking conditions for students who only walk to and from school.

(b) The public use and interest will be served by the platting of such subdivision and dedication. If it finds that the proposed subdivision and dedication make such appropriate provisions and that the public use and interest will be served, then the legislative body shall approve the proposed subdivision and dedication. Dedication of land to any public body, provision of public improvements to serve the subdivision, and/or impact fees imposed under RCW 82.02.050 through 82.02.090 may be required as a condition of subdivision approval. Dedications shall be clearly shown on the final plat. No dedication, provision of public improvements, or impact fees imposed under RCW 82.02.050 through 82.02.090 shall be allowed that constitutes an unconstitutional taking of private property. The legislative body shall not as a condition to the approval of any subdivision require a release from damages to be procured from other property owners.

The proposed preliminary plat includes provisions for the public health, safety, and general welfare including open spaces, drainage ways, streets or roads, potable water supplies, sanitary wastes, parks and recreation, playgrounds, schools and school grounds, and sidewalks that assure safe walking conditions for students who walk to and from Frank Wagner Elementary School and Park Place Middle School and the residents of the City of Monroe. The subject proposal does not include dedication of a public park. Private recreation space has been provided in Tract 999. Required site improvements and impact fees will be required as conditions of plat approval.

8. Critical Areas:

The City's critical areas map does not indicate critical areas on the subject site.

9. Utilities:

There is sufficient capacity available in the City's public water and sanitary sewer system to serve the proposed subdivision. All lots will connect to the City's water and sewer system. The applicant is proposing to connect to existing sanitary sewer and water lines in the Blueberry Lane right-of-way (Exhibit 3, Sheet 2.0), in accordance with the current City's Public Works Design and Construction Standards. The conceptual utilities plan is attached as Sheet 2.0 of Exhibit 3.

As part of the civil plan review process, the applicant will install improvements to the stormwater system. Stormwater management will be designed to meet the requirements of the 2014 Department of Ecology Storm Water Management Manual for Western Washington as administered by the City Engineer. Any future permitted activities, such as building permits, will also have to comply with the provisions of the

Storm Water Management Manual in effect at the time of the vesting of the permit application.

10. Streets and Traffic:

Access to the subdivision is proposed via Blueberry Lane. Internal access to individual lots will be provided through a private road, shown as Tract 998. The proposed private road design was approved by the Public Works Director.

Traffic control devices and street signs shall be installed prior to final plat approval, and all private roads within the subdivision shall be constructed in accordance with the City's Public Works Design and Construction Standards and installed by the developer to the satisfaction of the City Engineer prior to final plat approval.

Impacts to the City's transportation system are mitigated through the collection of traffic mitigation fees. In accordance with the City's traffic impact fee program under MMC Chapter 3.54, impact fees require a standard fee amount per dwelling unit as a condition of residential development within the City. Traffic impact fees shall be paid in accordance with MMC Chapter 3.54 and shall be based on the amount in effect at the time of payment. Frontage improvements and paving, including curb, gutter, sidewalk, and street trees shall be installed along all private streets within the subdivision in accordance with the City's Public Works Design and Construction Standards.

11. Park and Recreation Usable Open Space:

Per MMC 22.42.070(G) , for each proposed dwelling unit in a multifamily structure, complex or development, recreational space shall be provided per the following table:

Type of Dwelling Unit	Open Space
Studio and one bedroom	90 square feet per unit
Two bedrooms	130 square feet per unit
Three or more bedrooms	170 square feet per unit

The proposed subdivision provides within the development Tract 999 (7,546 sq. ft.), which is a private recreation space. If it is assumed that all units constructed will be three or more bedrooms, the applicant is required to provide 6,120 sq. ft. or recreational open space. The area of Tract 999 is proposed to be 7,546 sq. ft., which exceeds the minimum requirement by 1,426 square feet. Maintenance of Tract 999 shall be the responsibility of the homeowner's association.

Impacts to the City park and recreation system from the anticipated additional public park users will be mitigated. In accordance with the City's park impact mitigation fees established under MMC Chapter 3.52, impact fees require a standard fee amount per dwelling unit as a condition of residential development within the city. Park impact fees shall be paid in accordance with MMC 3.52. Park impact fees shall be based on the fee amount in effect at the time of payment.

12. Schools:

Impacts to the Monroe Public Schools and the Snohomish School District in the form of additional students are addressed through mitigation programs. The City of Monroe has adopted the Monroe and Snohomish School Districts' 2018 - 2023 Capital Facilities Plan, and imposes impact fees for schools in accordance with the plan and MMC Chapter 3.50. School impact fees require a standard fee amount per

dwelling unit as a condition of residential development within the city. School impact fees are based on the amount in effect at the time of payment.

RCW 58.17.110(2) requires the City to make a finding that the proposed subdivision assures “safe walking conditions for students who only walk to and from school.” Students will walk from the development to Frank Wagner Elementary School and Park Place Middle School. Students will be bussed from the development to Monroe High School by the Monroe School District. There are existing sidewalks immediately to the south and east of the subject property, and, as shown in Exhibit 3, sidewalks will be installed throughout the plat to provide for pedestrian circulation and safe walking conditions.

13. Impact Fees and Capital Improvements:

Development shall be subject to all applicable MMC requirements specifically including and without limitations, all applicable impact fees, and capital improvement charges pursuant to MMC section or chapter 13.04.025, 13.08.272, 3.50, 3.52, and 3.54.

14. Preliminary Plat Expiration:

Per MMC section 22.68.040(A)(5)(c), preliminary approval of a proposed plat shall be effective for a period not to exceed five years from the date of Hearing Examiner approval, or concurrently with the expiration of the preliminary plat, whichever occurs earlier.

E. CONCLUSIONS OF LAW

1. The City of Monroe 2015-2035 Comprehensive Plan Future Plan Map designation for the site is “Multifamily,” which assumes an overall density of up to 25 dwelling units per acre. The site’s present zoning designation of Multifamily Residential (R25) is in compliance with the future land use designation adopted in the current Comprehensive Plan.
2. The proposed subdivision, as conditioned herein, will be consistent with the pertinent development goals and policies outlined in the Monroe 2015-2035 Comprehensive Plan.
3. The proposed subdivision, as conditioned herein, will be consistent with the pertinent development standards outlined in MMC Title 22, Unified Development Regulations.
4. The proposed subdivision, as conditioned herein, will make appropriate provisions for public use and interest, health, safety, and general welfare.
5. The proposed preliminary plat as conditioned meets all MMC requirements for a subdivision.
6. The preliminary plat should be approved subject to the conditions noted below.
7. The preliminary plat approval shall expire five years from the date of Hearing Examiner approval.

F. STAFF RECOMMENDATION

Based on the Findings of Fact and Conclusions of Law detailed in the staff report, staff recommends that the Hearing Examiner **APPROVE** the Blueberry Meadows Preliminary Plat (project number PL2019-01), subject to the following conditions of preliminary approval:

1. All improvements shall be constructed in accordance with the approved preliminary plat map with the date stamp of December 11, 2019. Minor modifications of the plans submitted, as described in MMC 22.68.040(G), may be approved by the

- Community Development Director or his/her designee if the modifications do not change the Findings of Fact or the Conditions of Approval.
2. Final engineering drawings depicting the street improvements, water and sewer improvements, and drainage design shall be submitted to the City's Public Works Director for final review and approval before issuance of any grading permits. The street, water and sewer, and drainage improvements shall be designed in accordance with the City's most current Public Works Design and Construction Standards.
 3. The applicant must provide an archaeological survey of the project area to the City, the DAHP, and all interested Tribes. This survey shall be conducted and provided to the above specified parties prior to development permit issuance for site improvements and prior to any ground disturbing activities.
 4. The project shall implement all of the applicable recommendations contained in the following technical reports submitted to the City:
 - a. Conceptual Stormwater Site Plan, prepared by Harmsen and Associates, Inc., dated February 22, 2019, and revised September 20, 2019 and November 12, 2019 (Exhibit 10).
 - b. Geotechnical Report, prepared by Geotest Services, Inc., dated December 28, 2017 (Exhibit 11).

CLEARING AND GRADING

1. A comprehensive erosion and sedimentation control plan to ensure appropriate on-site and off-site water quality control shall be developed and implemented for all construction activities. The Best Management Practices outlined in the 2014 DOE Stormwater Management Manual for Western Washington shall be incorporated into the design. At a minimum, the plan shall include the following elements:
 - a. Exposed soils shall be stabilized and protected with straw, hydro-seeding or other appropriate materials to limit the extent and duration of exposure;
 - b. Disturbed areas shall be protected from storm water runoff impacts through the use of silt fence. Other means of filtration of storm water runoff and for limiting erosion/sedimentation such as check dams, and sediment traps may be required and are recommended.
 - c. Clearing and grading activities shall not be performed in the winter-wet season when soils are unstable.

STORM DRAINAGE IMPROVEMENTS

1. The stormwater system design and stormwater discharge shall utilize the Best Management Practices of the 2014 DOE Stormwater Management Manual for Western Washington.
2. Stormwater pollution prevention measures shall be employed per the approved Stormwater Pollution Prevention Plan and as necessary to ensure appropriate on-site and off-site water quality control. Site runoff during construction shall be handled and treated as to quantity and quality impacts by utilizing Best Management Practices, as defined in the 2014 DOE Stormwater Management Manual for Western Washington.
3. The developer shall obtain a General Construction Stormwater NPDES Permit from the WA Department of Ecology (DOE) prior to beginning construction.

ROAD IMPROVEMENTS

1. Frontage improvements, including curb, gutter, sidewalk, street trees, and traffic control devices shall be provided for all streets within the subdivision; shall be constructed in accordance with the City's most current Public Works Design and

Construction Standards; and are to be installed by the developer to the satisfaction of the City Engineer prior to final plat application.

LANDSCAPING

1. Street trees shall be provided per the approved landscape plan. Street trees shall be planted when a street frontage is fully owner occupied and as directed by the City of Monroe. The City will coordinate tree plantings to the most favorable time of the year for plant survival. All street frontage landscaping/irrigation improvements shall be bonded until such time that housing construction is completed and bonded work may be completed without risk of construction damage.
2. Irrigation is required for all street trees and newly planted vegetation. The applicant shall construct said irrigation system as consistent with a City-approved irrigation plan prior to construction.

FIRE

1. The following requirements shall be adhered to during construction and completed before occupancy of any structure in accordance with the 2015 International Fire Code:
 - a. Fire hydrants shall be provided in accordance with city standards and the direction of the Fire Marshal
 - b. Fire Hydrants shall be installed as per fire flow and spacing requirements specified for the type of development with regards to distances to structures;
 - c. Fire hydrants shall be equipped with four (4) inch quarter-turn Storz adapters;
 - d. An access route, for firefighting apparatus, must be provided at the start of construction. Minimum access route requirements include a 20' width, 13'6" vertical height clearance, and the ability to support a load up to 75,000 pounds;
 - e. All buildings must be addressed visibly and legibly from the road. When buildings are not visible from the street, appropriate provisions must be made to identify clearly which road or drive serves the appropriate address including private roads.
 - f. No parking signs are required, as directed by the Fire Marshal, for all streets with a width less than 32' and within turnaround areas.

FEES

1. Prior to approval of the final plat, all landscaping associated with the plat shall require the submittal of an acceptable warranty surety to warrant all required landscaping improvements against defects in labor materials for a period of 24 months after acceptance of those improvements by the City. The warranty amount shall be equal to fifteen (15) percent of the costs of the improvements, as determined by the Zoning Administrator.
2. Prior to approval of the final plat, the developer shall submit an acceptable warranty surety to warrant all required public improvements, installed, against defects in labor and materials for a period of 24 months after acceptance of those improvements by the City. The warranty amount shall be equal to ten (10) percent of the costs of the improvements, as determined by the Public Works Director. The surety shall be submitted to and approved by the City of Monroe and executed prior to final plat approval.
3. School, park, and traffic impact fees assessed in accordance with MMC Chapters 3.50, 3.52, and 3.54, respectively, shall be required and paid at the rate in effect at the time of building permit issuance.
4. The water system capital improvement charge, in accordance with MMC Section 13.04.025, shall be required and paid prior to building permit issuance.

5. The wastewater system capital improvement charge, in accordance with MMC Section 13.08.272, shall be required and paid prior to building permit issuance.

FINAL PLAT

1. Prior to Final Plat submittal, all improvements shall be installed, inspected, and approved by the City Engineer per the approved plans. All improvements shall be constructed in accordance with the approved engineering plans and preliminary plat map. Minor modifications of the plans submitted may be approved by the Zoning Administrator if the modifications do not change the Preliminary Plat Findings of Fact and/or Conditions of Approval.
2. All lot corners shall be installed with rod and cap or other City-approved survey method prior to Final Plat approval.
3. All existing and proposed easements and maintenance agreements shall be clearly shown and labeled on the final plat.
4. The following note shall appear on the face of the Final Plat Map: "The Homeowners Association is responsible for maintaining, in a uniform manner, all landscaping and irrigation within all commonly owned Tracts and easements."
5. As this plat includes a dedication, the following Waiver of Claims for Damages Statement shall appear on the face of the Final Plat Map:

This dedication includes conveyance of roads, tracts, utility and storm drainage infrastructure, and other areas of right-of-way intended for public use and/or ownership as shown on or otherwise referenced by the plat. The [insert name here] hereby waives all claims against the City of Monroe and/or any other governmental authority for damages which may occur to the adjacent land as a result of the construction, drainage and maintenance of such facilities and improvements.

6. If the final plat contains dedication of land for public purposes, it shall contain the following statement:

Know all men by these presents that (name of developer) do hereby declare this plat and dedicate to the public forever all roads and ways and other public property shown hereon, and the use thereof for any and all public purposes, with the right to make all necessary slopes for cuts and fills, and the right to continue to drain the roads and ways over and across any lot or lots, where water might take a natural course, in the original reasonable grading of the roads and ways shown hereon.

Following original reasonable grading of roads and ways hereon, no drainage waters on any lot or lots shall be diverted or blocked from their natural course so as to discharge upon any public road rights-of-way, or to hamper proper road drainage. Any enclosing of drainage waters in culverts or drains or rerouting thereof across any lot as may be undertaken by or for the owner of such lot shall be done by and at the expense of such owner, but only after approval by the city engineer.

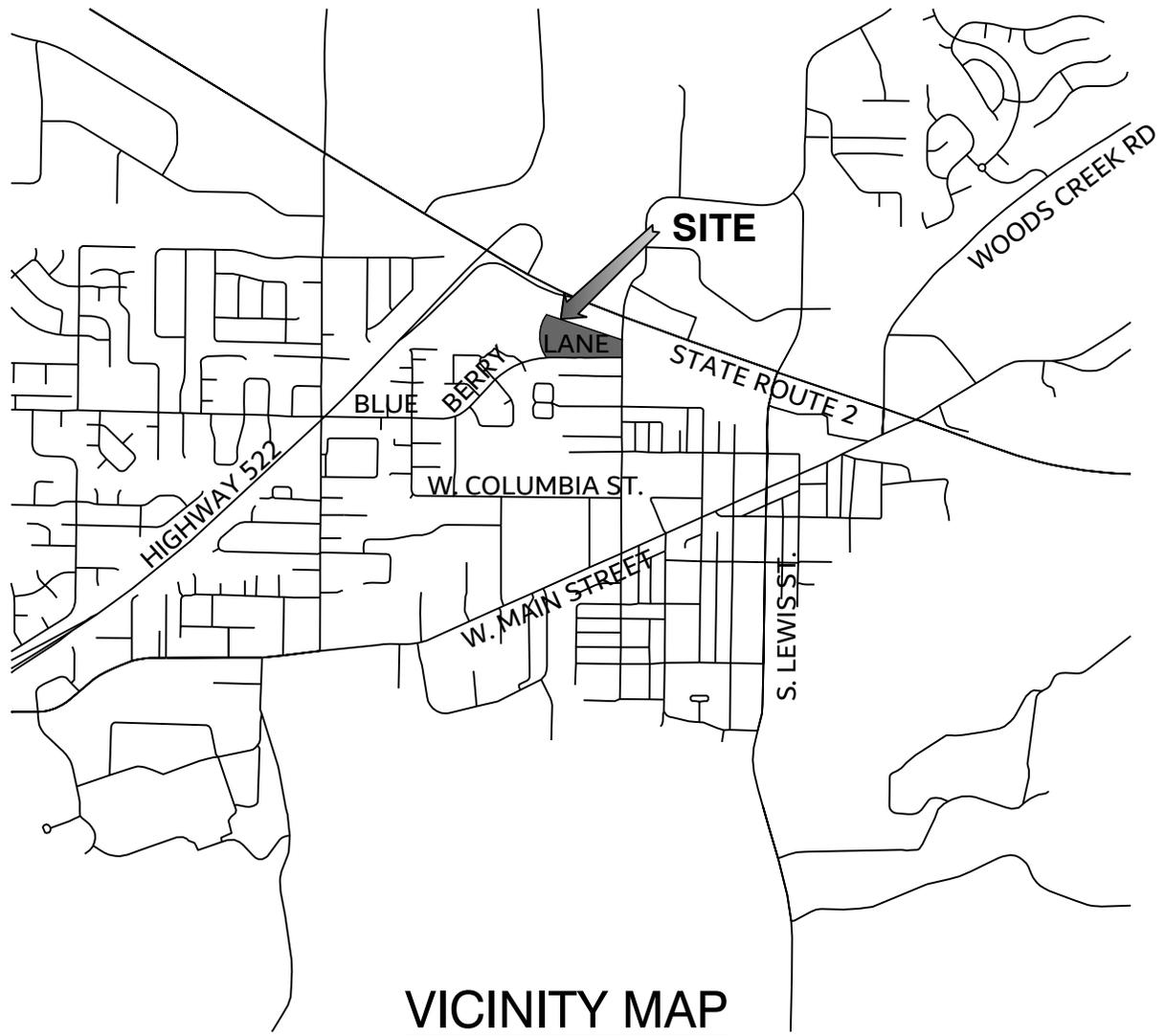
7. The final plat shall provide space for the approving signatures of the zoning administrator, city engineer, and the mayor. The city clerk shall attest the signatures.
8. The title block on the final plat map shall have the names of all the legal owners of the property named on the plat and the name of the surveyor/engineering firm which prepared the final plat map.
9. An Auditor's Certificate shall be shown on the final plat map.
10. The following are required to be shown on the face of the final plat map:
 - c. Surveyor Certificate;
 - d. Correct legal description of all lots as set out in Chapter 58.17 RCW;
 - e. Owners Statement;

- f. All new easement(s) over the property, their legal description(s) and associated dedication block(s);
- g. Recording block/Certification blocks for City approval;
- h. North arrow;
- i. Certification of Payment of Taxes and Assessments;
- j. Auditor's Certificate; and
- k. The survey control scheme, monumentation, basis of bearing and references.

MISCELLANEOUS

1. Preliminary plat approval shall be effective for a maximum time period of five years upon which a final plat that meets all conditions of the preliminary plat approval must be submitted, in accordance with MMC 22.68.040(A)(5)(c)
2. If applicable, at the time of final plat submittal the developer shall submit a group mailbox plan, approved by the U.S. Post Office, to the Planning Department for final addressing.
3. Mail routes, including mailbox types and locations, shall be approved by the Postmaster prior to construction.
4. The developer shall submit a copy of the final plat to the Snohomish County Assessor's at 3000 Rockefeller Avenue, Everett, WA 98201-4060 for recording.
5. All construction equipment, building materials, and debris shall be stored on the applicant's property, out of the public right-of-way. In no case shall the access to any private or public property be blocked or impinged upon without prior consent from the affected property owners and the City of Monroe.
6. If at any time during clearing, grading and construction the streets are not kept clean and clear, all work will stop until the streets are cleaned and maintained in a manner acceptable to the Public Works Director.
7. Pursuant to MMC 6.04.055(B)(1), construction noise is not allowed Monday through Friday between the hours of 8 P.M. and 7 A.M., and from 8 P.M. and 9:00 A.M. on the weekend.
8. All signs, if any, shown on the approved plans for the subdivision are for illustrative purposes only. Pursuant to Monroe Municipal Code 22.50, a sign permit must be obtained for the placement of any non-exempt signage. An application for a sign permit shall include an approved site plan specifying the location of all signs.
9. The developer and contractor shall attend a pre-construction meeting with City staff to discuss expectations and limitations of the project permit before starting construction.

SECTION 01, TOWNSHIP 27 NORTH, RANGE 06 EAST, W.M.



VICINITY MAP

SCALE: 1" = 2000'

NW 1/4, NE 1/4, SECTION 01, TOWNSHIP 27 NORTH, RANGE 06 EAST, W.M.

CITY OF MONROE BLUEBERRY MEADOWS 18900 BLOCK OF BLUEBERRY LANE NO. PL 2019-

RECEIVED
12/11/2019
CITY OF MONROE

OWNER / APPLICANT / CONTACT
BLAIR GROUP, LLC
DAVE HOPKINS
P.O. BOX 177
CARNATION, WA 98014
(425) 231-0219
firmament777@gmail.com

CIVIL ENGINEER
DAVID HARMSEN, PE
HARMSEN AND ASSOCIATES, INC
125 EAST MAIN STREET, SUITE 104
P.O. BOX 516
MONROE, WA 98272
(360) 794-7811
davidh@harmseininc.com

LAND SUVEYOR
SCIPIO M. WALTON, PLS
HARMSEN AND ASSOCIATES, INC
125 EAST MAIN STREET, SUITE 104
P.O. BOX 516
MONROE, WA 98272
(360) 794-7811
skipw@harmseininc.com

GEOTECHNICAL ENGINEER
GERRY BAUTISTA
GEOTEST SERVICES INC.
20611 67TH AVE, NE
ARLINGTON, WA 98223
(888) 251-5276

LANDSCAPE ARCHITECT
SCOTT LANKFORD
LANKFORD ASSOCIATES INC.
26915 102ND DR, NW, SUITE 101
STANWOOD, WA 98292

SITE INFORMATION

TAX PARCEL	270601-001-071-00
SITE ADDRESS	18900 BLOCK OF BLUEBERRY LANE MONROE, WA 98272
ZONING	R-25
COMP PLAN	MULTIFAMILY
USE CLASSIFICATION	DWELLINGS, TOWNHOMES
PROPERTY SIZE (TOTAL)	130,685 SF (3.00 AC)
MINIMUM LOT SIZE	2,081 SF
LOT COVERAGE	80,386 SF
BUILDING SETBACKS	FRONT 10', REAR 10', SIDE (INTERIOR) 0' , SIDE (EXTERIOR) 10'
WATER SOURCE	CITY OF MONROE
SEWAGE DISPOSAL	CITY OF MONROE
CABLE	COMCAST
ELECTRICITY	PUBLIC UTILITY DISTRICT #1 OF SNOHOMISH COUNTY
GAS	PUGET SOUND ENERGY
FIRE DISTRICT	SNOHOMISH COUNTY FIRE DISTRICT #7
SCHOOL DISTRICT	MONROE SCHOOL DISTRICT #103
OWNERSHIP INTEREST	BLAIR GROUP, LLC

SHEET INDEX

Sheet Number	Sheet Title
C0.0	OVERVIEW PLAN
C1.0	PRELIMINARY PLAT PLAN
C1.1	EXISTING CONDITIONS
C2.0	UTILITIES OVERVIEW PLAN
C2.1	STORMWATER DETAIL

LEGAL DESCRIPTION
THE LAND REFERRED TO IS SITUATED IN THE COUNTY OF SNOHOMISH, CITY OF MONROE, STATE OF WASHINGTON, AND IS DESCRIBED AS FOLLOWS:

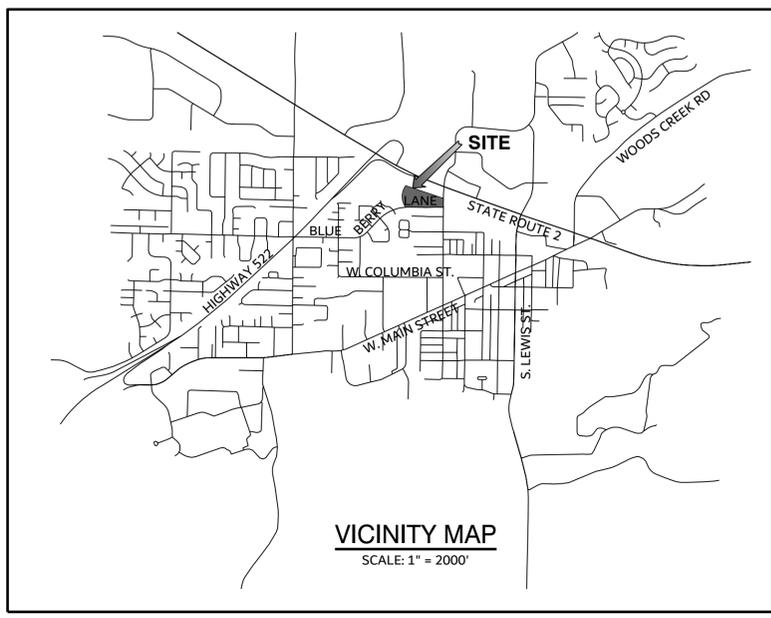
THAT PORTION OF LOT D PER THE CITY OF MONROE SHORT PLAT NUMBER 189002, AS RECORDED UNDER RECORDING NO. 8905085005 IN VOLUME 29 OF SURVEYS, PAGES 28 AND 29, IN SNOHOMISH COUNTY, WASHINGTON, AND AS REVISED UNDER THE CITY OF MONROE BOUNDARY LINE ADJUSTMENT NUMBER 189005 AS RECORDED UNDER RECORDING NO. 9001110283, AND AS DELINEATED ON THAT SURVEY RECORDED UNDER RECORDING NO. 8912085006 IN VOLUME 30 OF SURVEYS, PAGES 229 AND 230, IN SNOHOMISH COUNTY, WASHINGTON, LYING EAST OF THE FOLLOWING DESCRIBED LINE:

COMMENCING AT THE SOUTHEAST CORNER OF AFOREMENTIONED LOT D; THENCE ALONG THE SOUTH LINE THEREOF, SOUTH 89°08'49" WEST 571.15 FEET TO THE TRUE POINT OF BEGINNING;
THENCE NORTH 00°51'11" WEST 198.55 FEET;
THENCE NORTH 29°30'49" EAST 199.72 FEET TO THE NORTH LINE OF SAID LOT D AND THE TERMINUS OF THIS LINE DESCRIPTION;

BEING KNOWN AS LOT D OF CITY OF MONROE BOUNDARY LINE ADJUSTMENT NUMBER 190010, RECORDED UNDER RECORDING NO. 9007260432.

SITUATE IN THE COUNTY OF SNOHOMISH, STATE OF WASHINGTON

TAX ACCOUNT NO. 270601-001-071-00



DENSITY CALCULATION

GROSS DENSITY: 130,685/43,560 = 3 AC
3 AC * 25 = 75 LOTS

PROPOSED NUMBER OF LOTS: 36

AVERAGE LOT SIZE: 2,694 S.F.
PROPOSED NET DENSITY: 12 DU/ACRE

MIN. DENSITY 12 DU/AC * 3 AC = 12 DU MIN.

PARKING SPACE CALCULATIONS

REQUIRED PARKING STALLS:

MCC 22.44
MIXED USE MULTIPLE-DWELLING UNITS
2 OR MORE BEDROOMS REQUIRE 2 PARKING STALLS PER DWELLING UNIT.

36 UNITS - 2 STALLS PER LOT = 72 REQUIRED STALLS
OFF-STREET PARKING 1 PER 7 LOTS = 5 REQUIRED STALLS
77 TOTAL REQUIRED STALLS

PROVIDED PARKING STALLS:
72 GARAGE STALLS
25 EXTERIOR STALLS
97 TOTAL STALLS

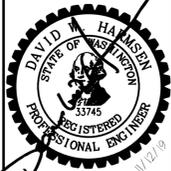
- NOTES**
1. PARKING LOT LIGHTING WILL COMPLY WITH MCC CHAPTER 15.15
 2. PARKING AREA LANDSCAPING WILL COMPLY WITH MCC CHAPTER 22.46
 3. TRACT 999 IS FOR THE BENEFIT OF THE HOME-OWNERS FOR RECREATIONAL SPACE
 4. TRACT 998 IS FOR THE BENEFIT OF THE HOME-OWNERS FOR ACCESS AND OPEN SPACE
 5. THE CITY WILL RECEIVE ITS OWN EASEMENTS FOR MAINTENANCE OF WATER AND SEWER FACILITIES.

LOT SIZE

LOT #	SF	ACRES	LOT #	SF	ACRES	LOT #	SF	ACRES
1.	2,893 SF	(0.07 AC)	15.	2,542 SF	(0.06 AC)	29.	2,459 SF	(0.06 AC)
2.	2,284 SF	(0.05 AC)	16.	2,542 SF	(0.06 AC)	30.	2,459 SF	(0.06 AC)
3.	2,284 SF	(0.05 AC)	17.	3,855 SF	(0.09 AC)	31.	2,459 SF	(0.06 AC)
4.	2,894 SF	(0.07 AC)	18.	3,305 SF	(0.08 AC)	32.	4,323 SF	(0.10 AC)
5.	2,893 SF	(0.07 AC)	19.	2,294 SF	(0.05 AC)	33.	3,157 SF	(0.07 AC)
6.	2,284 SF	(0.05 AC)	20.	2,294 SF	(0.05 AC)	34.	2,958 SF	(0.07 AC)
7.	2,284 SF	(0.05 AC)	21.	2,294 SF	(0.05 AC)	35.	2,757 SF	(0.06 AC)
8.	2,588 SF	(0.06 AC)	22.	3,700 SF	(0.08 AC)	36.	2,377 SF	(0.05 AC)
9.	2,588 SF	(0.06 AC)	23.	2,752 SF	(0.06 AC)	TOTAL	96,991 SF	(2.23 AC)
10.	2,284 SF	(0.05 AC)	24.	2,081 SF	(0.05 AC)	TRACT 998	25,248 SF	(0.58 AC)
11.	2,284 SF	(0.05 AC)	25.	2,081 SF	(0.05 AC)	TRACT 999	7,546 SF	(0.46 AC)
12.	2,893 SF	(0.07 AC)	26.	2,081 SF	(0.05 AC)	DEDICATION	901 SF	(0.02 AC)
13.	4,100 SF	(0.09 AC)	27.	2,349 SF	(0.05 AC)	TOTAL	130,685 SF	(3.00 AC)
14.	2,542 SF	(0.06 AC)	28.	2,777 SF	(0.06 AC)			

REVISIONS

HARMSEN & ASSOCIATES, INC
ENGINEERS SURVEYORS
125 EAST MAIN STREET, SUITE 104
P.O. BOX 516
MONROE, WA 98272
(360) 794-7811
(206) 343-5903
FAX: (360) 805-9732



BLUEBERRY MEADOWS
18900 BLOCK OF
BLUEBERRY LANE
MONROE, WA 98272
OVERVIEW PLAN

DATE: 2/22/2019

JOB #: 19-038



C0.0

1-RESPONSE 10/09/2019

SECTION 01, TOWNSHIP 27 NORTH, RANGE 06 EAST, W.M.

LEGEND

- ⊕ FOUND PLAT MONUMENT
- ⊙ FOUND IRON PIPE AS NOTED
- SET 1/2" REBAR/CAP "LS 34137"
- ⊙ FOUND MONUMENT IN CASE
- FOUND REBAR AS NOTED
- ⊕ BOULDER
- ⊕ BUSH
- GATE POST
- ⊕ CATCH BASIN
- ↷ TURN ARROW
- ⊕ WATER VALVE
- × FENCE POST
- ⊕ SUPPORT POLE
- ⊕ IRRIGATION CONTROL VALVE
- ⊕ GAS VALVE
- ⊕ STORM DRAIN MANHOLE
- MAILBOX
- ⊕ SIGN POST
- ⊕ SEWER MANHOLE
- ⊕ DECIDUOUS TREE
- ⊕ ALDER TREE
- ⊕ TELEPHONE MANHOLE
- ⊕ TELEPHONE PEDESTAL
- ⊕ TELEPHONE VAULT
- ⊕ POWER POLE W/ U.G. FEED
- ⊕ POWER POLE
- ⊕ GUY ANCHOR
- ⊕ FIRE HYDRANT
- ⊕ BOLLARD
- × GROUND SHOT
- ××× FENCE LINE
- GAS LINE
- P POWER LINE
- U-P POWER LINE (UNDERGROUND)
- T TELEPHONE LINE
- U-T TELEPHONE LINE (UNDERGROUND)
- EASEMENT
- ▬ ASPHALT PAVING
- ▬ CONCRETE PATH
- ▬ GRAVEL DRIVEWAY
- RIGHT-OF-WAY
- PROPERTY LINE
- RIGHT-OF-WAY CENTER LINE
- W WATER LINE
- W WATER LINE APPROX LOC. FROM GIS DATA

RECEIVED
12/11/2019
CITY OF MONROE

BASIS OF BEARING
CENTERLINE OF BLUEBERRY LANE BEARS S89°08'49"E
PER HARMSEN SURVEY CITY OF MONROE SHORT PLAT # 189002
RECORDED UNDER AF# 8912085006

VERTICAL DATUM
NAVD 88 GEOID 12A
ESTABLISHED BY GPS

TBM #1
TOP OF MONUMENT AT THE INTERSECTION OF GALWAY BAY & BLUEBERRY LANE.
ELEV = 56.82'

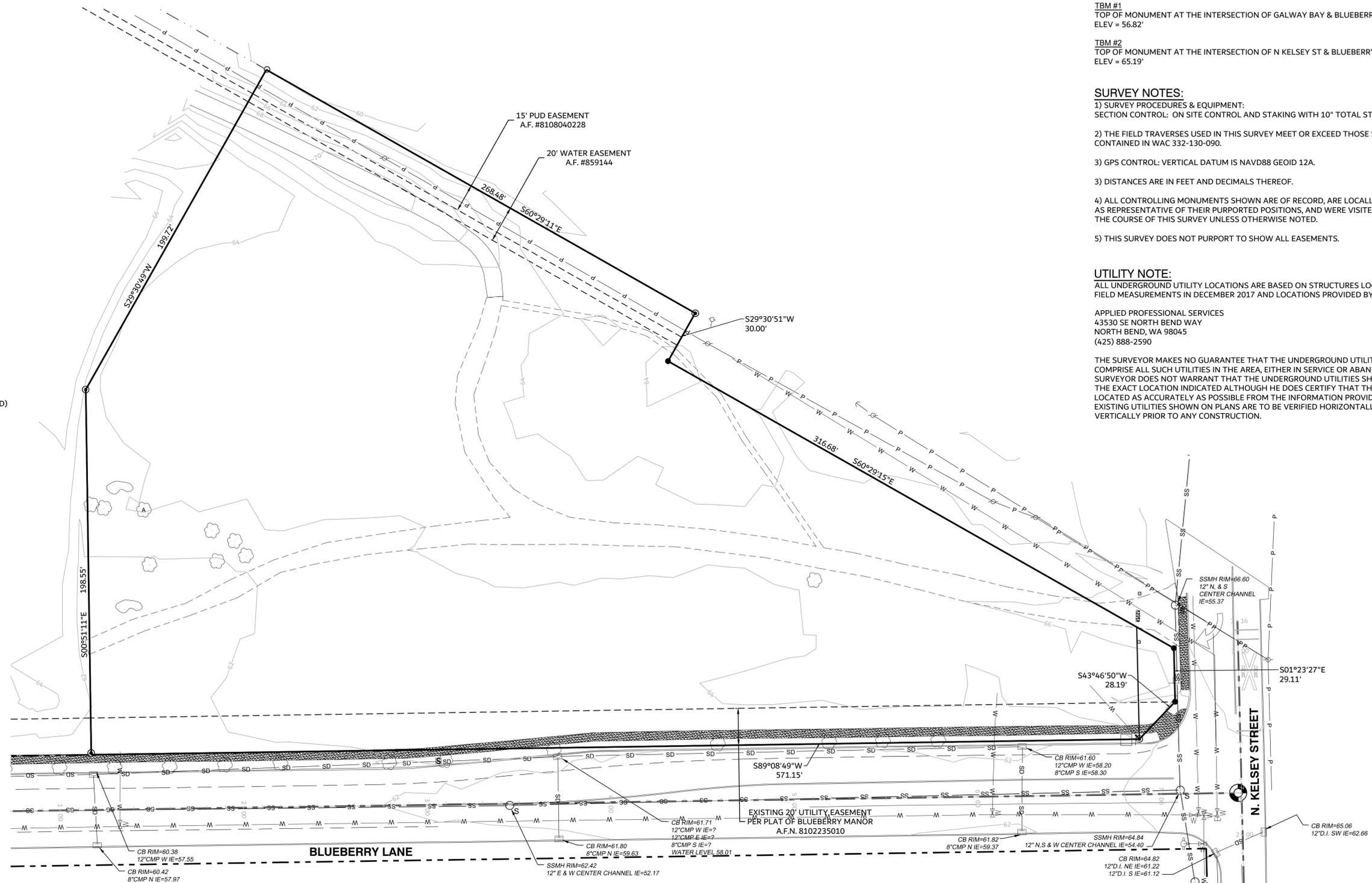
TBM #2
TOP OF MONUMENT AT THE INTERSECTION OF N KELSEY ST & BLUEBERRY LANE.
ELEV = 65.19'

- SURVEY NOTES:**
- 1) SURVEY PROCEDURES & EQUIPMENT:
SECTION CONTROL: ON SITE CONTROL AND STAKING WITH 10" TOTAL STATION.
 - 2) THE FIELD TRAVERSES USED IN THIS SURVEY MEET OR EXCEED THOSE STANDARDS CONTAINED IN WAC 332-130-090.
 - 3) GPS CONTROL: VERTICAL DATUM IS NAVD88 GEOID 12A.
 - 3) DISTANCES ARE IN FEET AND DECIMALS THEREOF.
 - 4) ALL CONTROLLING MONUMENTS SHOWN ARE OF RECORD, ARE LOCALLY ACCEPTED AS REPRESENTATIVE OF THEIR PURPORTED POSITIONS, AND WERE VISITED DURING THE COURSE OF THIS SURVEY UNLESS OTHERWISE NOTED.
 - 5) THIS SURVEY DOES NOT PURPORT TO SHOW ALL EASEMENTS.

UTILITY NOTE:
ALL UNDERGROUND UTILITY LOCATIONS ARE BASED ON STRUCTURES LOCATED BY FIELD MEASUREMENTS IN DECEMBER 2017 AND LOCATIONS PROVIDED BY:

APPLIED PROFESSIONAL SERVICES
43530 SE NORTH BEND WAY
NORTH BEND, WA 98045
(425) 888-2590

THE SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM THE INFORMATION PROVIDED. ALL EXISTING UTILITIES SHOWN ON PLANS ARE TO BE VERIFIED HORIZONTALLY AND VERTICALLY PRIOR TO ANY CONSTRUCTION.



REVISIONS

HARMSEN & ASSOCIATES, INC.
ENGINEERS SURVEYORS

125 EAST MAIN STREET, SUITE 104
P.O. BOX 516
MONROE, WA 98272

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FAX: (360) 805-9732



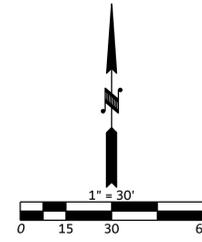
BLUEBERRY MEADOWS
18900 BLOCK OF
BLUEBERRY LANE
MONROE, WA 98272
EXISTING CONDITIONS

DATE: 2/22/2019
JOB #: 19-038



C1.1

SECTION 01, TOWNSHIP 27 NORTH, RANGE 06 EAST, W.M.

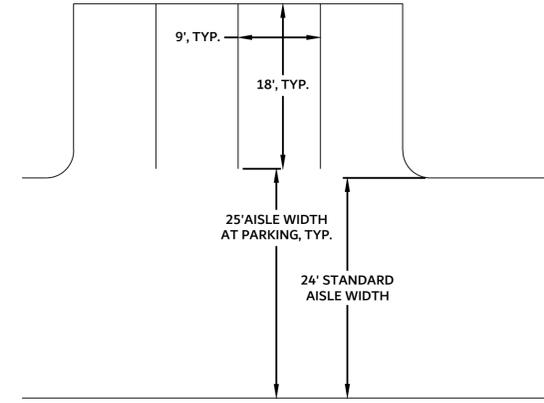
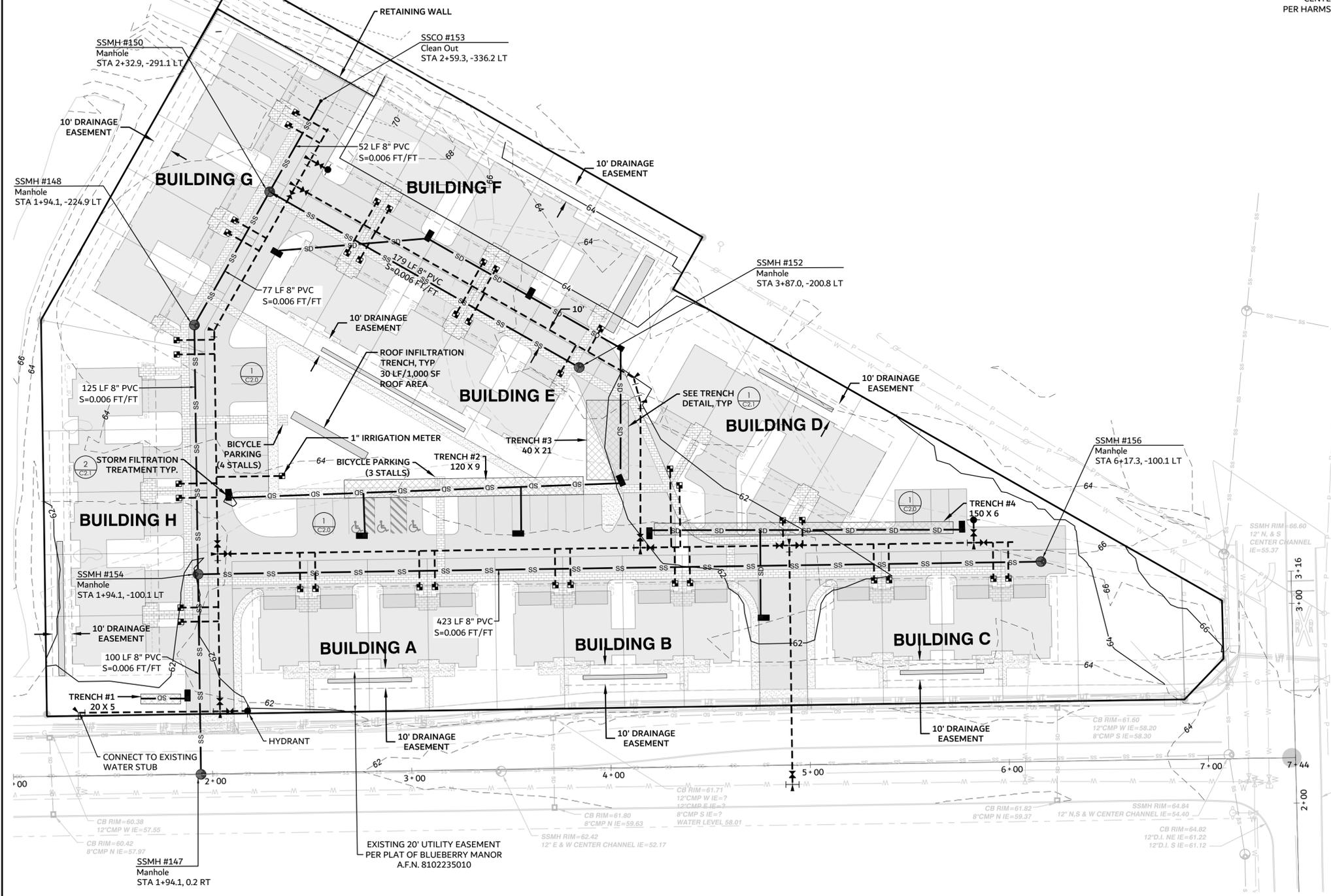


RECEIVED
12/11/2019
CITY OF MONROE



BASIS OF BEARING
CENTERLINE OF BLUEBERRY LANE BEARS S89°08'49"E
PER HARMSEN SURVEY CITY OF MONROE SHORT PLAT # 189002
RECORDED UNDER AF# 8912085006

VERTICAL DATUM
NAVD 88 GEOID 12A
ESTABLISHED BY GPS



1 PARKING AND AISLE DIMENSIONS
SCALE: 1" = 5'

PER MCC TABLE 22.44.330

- NOTES:
1. SEWER MAIN LINE TO BE 8" PVC WITH 6" PVC SIDE SEWERS, MANHOLES WILL BE TYPE I.
 2. WATER SYSTEM WILL BE 8" DI PIPE WITH 3/4" X 5/8" METERS.
 3. FIRE SPRINKLERS WILL MEET NFPA #13D.
 4. STORM SYSTEM WILL USE 8" PVC PIPE AND 8" PERF PVC PIPE WITH 6" PVC ROOF DRAIN.
 5. CARTRIDGE FILTER CATCH BASINS WILL BE USED FOR COLLECTION AND TREATMENT.

REVISIONS

ENGINEERS
SURVEYORS

HARMSEN & ASSOCIATES, INC.
125 EAST MAIN STREET, SUITE 104
P.O. BOX 516
MONROE, WA 98272



BLUEBERRY MEADOWS
18900 BLOCK OF
BLUEBERRY LANE
MONROE, WA 98272

DATE: 2/22/2019
JOB #: 19-038



C2.0

1-RESPONSE 10/09/2019

UTILITIES OVERVIEW & PARKING PLAN

SECTION 01, TOWNSHIP 27 NORTH, RANGE 06 EAST, W.M.

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REVISIONS

ENGINEERS
SURVEYORS

HARMSEN & ASSOCIATES, INC.
125 EAST MAIN STREET, SUITE 104
P.O. BOX 516
MONROE, WA 98272



BLUEBERRY MEADOWS
18900 BLOCK OF
BLUEBERRY LANE
MONROE, WA 98272

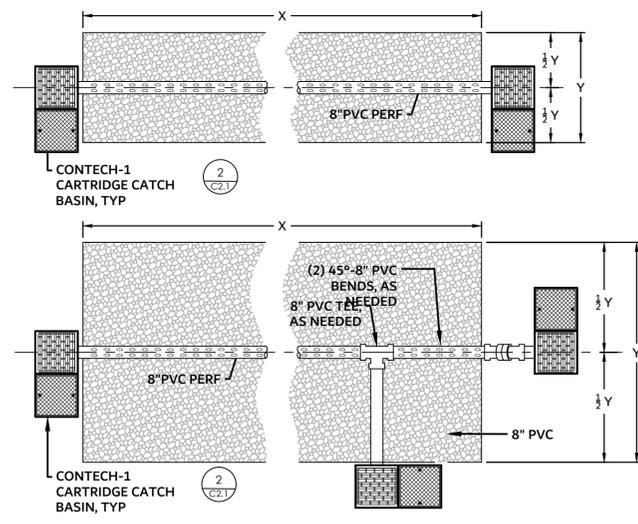
DATE: 2/22/2019

JOB #: 19-038



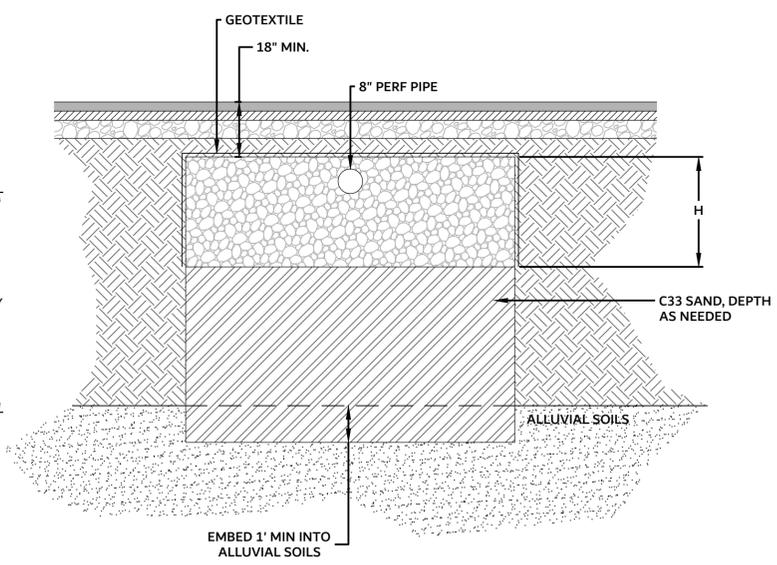
C2.1

1-RESPONSE 10/09/2019



TRENCH	X	Y	H
1	20	5	3
2	120	9	3
3	120	7	3
4	110	8	3

1 Trench Detail
SCALE: NOT TO SCALE



PLAN VIEW

STORMFILTER CATCHBASIN DESIGN NOTES

STORMFILTER TREATMENT CAPACITY IS A FUNCTION OF THE CARTRIDGE SELECTION AND THE NUMBER OF CARTRIDGES. 1 CARTRIDGE CATCHBASIN HAS MAXIMUM OF THE CARTRIDGE SYSTEM IS SHOWN WITH A 2\"/>

STORMFILTER TREATMENT CAPACITY IS A FUNCTION OF THE CARTRIDGE SELECTION AND THE NUMBER OF CARTRIDGES. 1 CARTRIDGE CATCHBASIN HAS MAXIMUM OF THE CARTRIDGE SYSTEM IS SHOWN WITH A 2\"/>

CARTRIDGE SELECTION	2\"/>					
CARTRIDGE HEIGHT	2\"/>					
MINIMUM HYDRAULIC DEPTH (H)	3.0\"/>					
SPECIFIC FLOW RATE (gpm/ft ²)	22.5	11.25	15	7.5	15	7.5
CARTRIDGE FLOW RATE (gpm)	1.0	1.0	1.0	1.0	1.0	1.0
PEAK HYDRAULIC CAPACITY	1.0	1.0	1.0	1.0	1.0	1.0
INLET PERMANENT POOL LEVEL (A)	1'-0\"/>					
OVERALL STRUCTURE HEIGHT (B)	4'-0\"/>					

GENERAL NOTES

- CONTRACTOR TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
- FOR SITE SPECIFIC DRAWINGS WITH DETAILED STORMFILTER CATCHBASIN STRUCTURE DIMENSIONS AND WEIGHTS, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.contechES.com
- STORMFILTER CATCHBASIN WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
- INLET SHALL NOT BE LOWER THAN OUTLET. INLET (IF APPLICABLE) AND OUTLET PIPING TO BE SPECIFIED BY ENGINEER AND PROVIDED BY CONTRACTOR.
- STORMFILTER CATCHBASIN EQUIPPED WITH 4 INCH (APPROXIMATE) LONG STUBS FOR INLET (IF APPLICABLE) AND OUTLET PIPING. STANDARD OUTLET STUB IS 8 INCHES IN DIAMETER. MAXIMUM OUTLET STUB IS 15 INCHES IN DIAMETER. CONNECTION TO COLLECTION PIPING CAN BE MADE USING FLEXIBLE COUPLING BY CONTRACTOR.
- STEEL STRUCTURE TO BE MANUFACTURED OF 1/4 INCH STEEL PLATE. CASTINGS SHALL MEET AASHTO M308 LOAD RATING. TO MEET HS20 LOAD RATING ON STRUCTURE, A CONCRETE COLLAR IS REQUIRED. WHEN REQUIRED, CONCRETE COLLAR WITH QUANTITY (Q) #4 REINFORCING BARS TO BE PROVIDED BY CONTRACTOR.
- FILTER CARTRIDGES SHALL BE MEDIA FILLED. PASSIVE SPRING ACTIVATED, RADIAL FLOW AND SELF-CLEANING. RADIAL MEDIA DEPTH SHALL BE 7 INCHES. FILTER MEDIA CONTACT TIME SHALL BE AT LEAST 37 SECONDS.
- SPECIFIC FLOW RATE IS EQUAL TO THE FILTER TREATMENT CAPACITY (gpm) DIVIDED BY THE FILTER CONTACT SURFACE AREA (sq ft).

INSTALLATION NOTES

- ANY SUBBASE, BACKFILL, DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
- CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CATCH-BASIN (LIFTING CLUTCHES PROVIDED).
- CONTRACTOR TO TAKE APPROPRIATE MEASURES TO PROTECT CARTRIDGES FROM CONSTRUCTION-RELATED EROSION RUNOFF.

SECTION A-A

SECTION B-B

STRUCTURE ID	#1	#2	#3	#4	#5
WATER QUALITY FLOW RATE (cfs)	0.0234	0.0119	0.0166	0.0158	0.0156
PEAK FLOW RATE (cfs)	YES	YES	YES	YES	YES
RETURN PERIOD OF PEAK FLOW (yrs)	50	50	50	50	50
CARTRIDGE FLOW RATE (gpm)	11.25	11.25	7.5	7.5	7.5
MEDIA TYPE (CSF, PERLITE, ZPG, GAC, PHS)	ZPG	ZPG	ZPG	ZPG	ZPG
RIM ELEVATION	53.44'	53.94'	57.30'	54.80'	56.84'
PIPE DATA	8"	8"	8"	8"	8"
INLET STUB	50.30'	50.80'	54.00'	51.50'	53.88'
OUTLET STUB					

CONFIGURATION:

SLOPED LID	NO	NO	NO	NO	YES
SOLID COVER	NO	NO	NO	NO	NO

NOTES/SPECIAL REQUIREMENTS:

2 Stormfilter Detail
SCALE: NOT TO SCALE

Dec 10, 2019 - 2:46pm Scott U:\Lankford Associates\Blueberry Meadows Remifinger 2019\dwg\Acad\dwg\Working\dwg\BLUEBERRY MEADOWS SITE PLAN.dwg Layout Name: LANDSCAPE PLAN

RECEIVED
12/11/2019
CITY OF MONROE

REVISIONS:
1. 10-7-19
2. 12-10-19
3.
4.
5.

26915 103RD DRIVE NW
SUITE 101
STANWOOD, WA 98292
PH: 206.331.5123
FX: 360.629.6159

LANKFORD ASSOCIATES
LANDSCAPE ARCHITECTURE



Blueberry Meadows
Snohomish County
18900 Block of Blueberry Lane
Monroe, WA 98272

LANDSCAPE
PLANTING / LAYOUT PLAN

DATE: 8-5-19
DESIGNED: RSL
DRAWN: LEO
JOB NO:
SHEET:
1.1

PLANTING NOTES
-ACTUAL PLANT COUNTS TAKE PRECEDENCE OVER PLANT SCHEDULE QUANTITIES.
-PLANT PLACEMENT SHALL BE INSPECTED BY LANDSCAPE ARCHITECT PRIOR TO PLANTING.
-PLANT ALL SHRUBS WITH A MINIMUM 6" TOPSOIL MIX AROUND ROOT BALL. PLANT ALL TREES WITH A MINIMUM 12" TOPSOIL MIX AROUND ROOT BALL. MIX TOPSOIL 50% WITH EXISTING SOIL.
-USE THREE WAY OR BETTER FOR ALL IMPORTED TOPSOIL.
-USE FINE BARK MULCH, 4" DEEP OVER ALL PLANT BEDS NOT SPECIFIED AS TURF OR PLAY CHIP AREAS.
-SET ALL NEW PLANTINGS 3" ABOVE PLANTED ROUGH GRADE TO ALLOW FOR THE ADDITION OF MULCH OR CHIPS. SET CROWN OF ROOT BALL AT FINISH GRADE.
-LIGHTLY SEPARATE BOUND ROOTS FOR PLANTS REMOVED FROM CONTAINERS AND POTS PRIOR TO PLANTING.
-AFTER PLANTING 1 GAL. AND LARGER PLANTS, COVER ALL PLANT BEDS WITH 4" FINE BARK MULCH.
-SPREAD PREEN OR MIRACAL-GROW WEED AND FEED HERBICIDE WITH TRIFLURLOLINE PER MANUFACTURERS SPECS UNDER MULCH AND WATER, PRIOR TO APPLYING MULCH. APPLY AGAIN AFTER MULCH APPLICATION AND WATER TO ACTIVATE.
-ALL PLANT MATERIAL SHALL BE AVAILABLE ON SITE FOR INSPECTION BY OWNER OR PROJECT MANAGER PRIOR TO PLANTING.
-NO SUBSTITUTION FOR PLANT MATERIAL SHALL BE ALLOWED WITHOUT WRITTEN PERMISSION FROM DESIGNER.
-ALL PLANT MATERIAL SHALL BE FREE OF PEST AND DISEASES AND WITHOUT DAMAGE TO ROOT OR FOLIAGE.

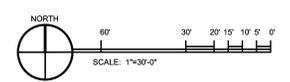
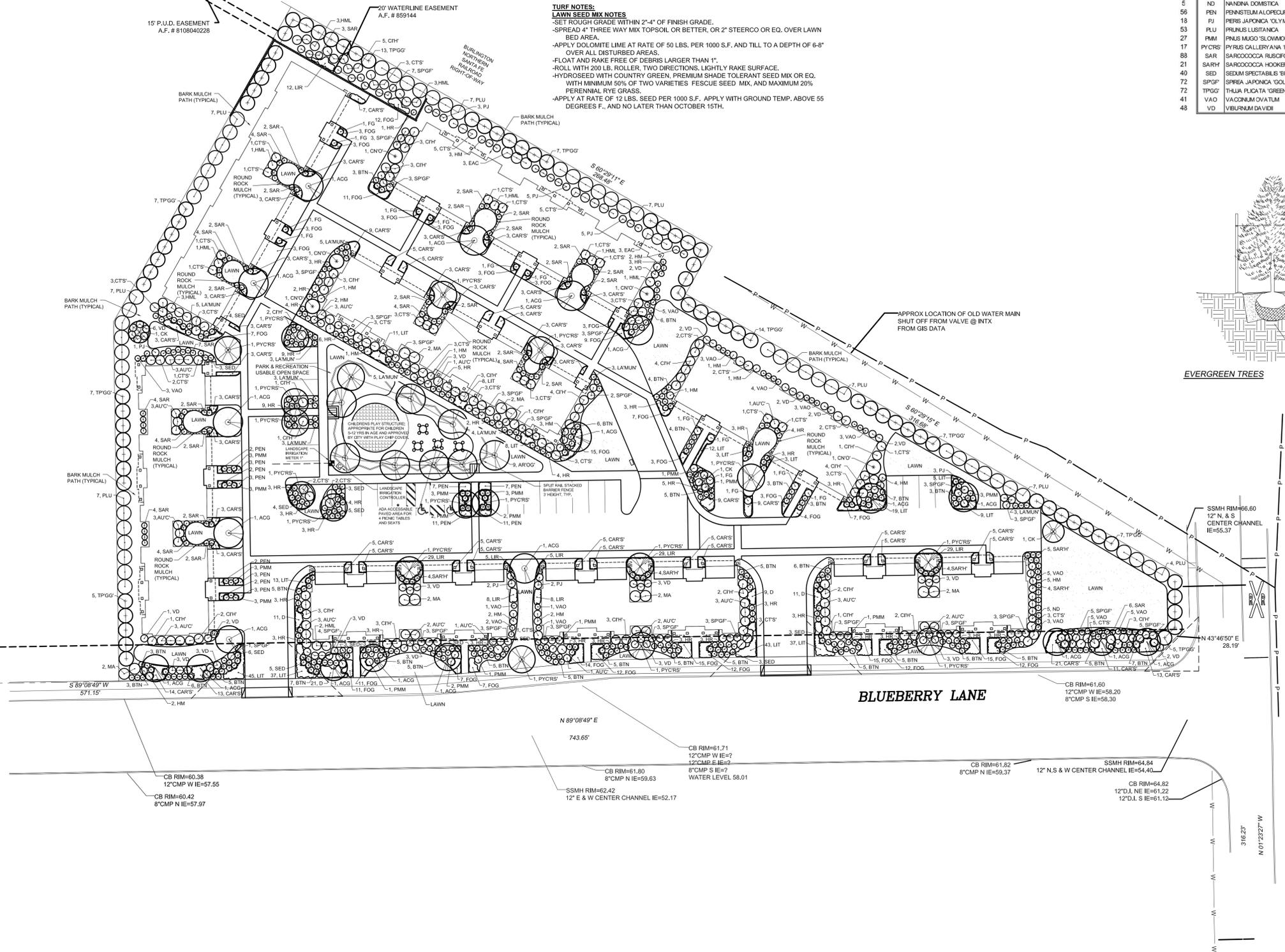
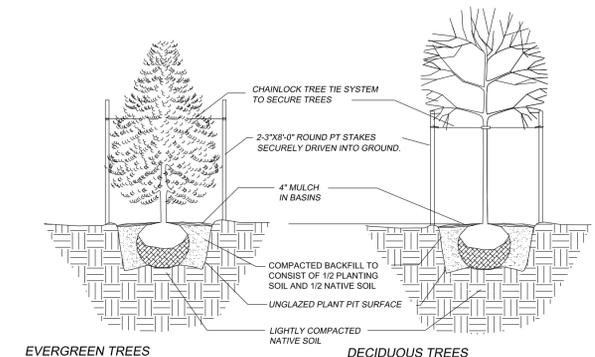
TURF NOTES:
LAWN SEED MIX NOTES
-SET ROUGH GRADE WITHIN 2"-4" OF FINISH GRADE.
-SPREAD 4" THREE WAY MIX TOPSOIL OR BETTER, OR 2" STEERCO OR EQ. OVER LAWN BED AREA.
-APPLY DOLLOMITE LIME AT RATE OF 50 LBS. PER 1000 S.F. AND TILL TO A DEPTH OF 6-8" OVER ALL DISTURBED AREAS.
-FLOAT AND RAKE FREE OF DEBRIS LARGER THAN 1".
-ROLL WITH 200 LB. ROLLER, TWO DIRECTIONS, LIGHTLY RAKE SURFACE.
-HYDROSEED WITH COUNTRY GREEN, PREMIUM SHADE TOLERANT SEED MIX OR EQ. WITH MINIMUM 50% OF TWO VARIETIES: FESCUE SEED MIX, AND MAXIMUM 20% PERENNIAL RYE GRASS.
-APPLY AT RATE OF 12 LBS. SEED PER 1000 S.F. APPLY WITH GROUND TEMP. ABOVE 55 DEGREES F., AND NO LATER THAN OCTOBER 15TH.

IRRIGATION NOTES:
ALL PLANT BEDS AND TURF AREAS TO BE IRRIGATED BY PERMANENT UNDERGROUND SPRINKLER OR DRIP WATER SYSTEM WITH AUTOMATIC CONTROLS.
IRRIGATION SYSTEM SHALL BE ADEQUATE TO PROVIDE APPROPRIATE WATER SUFFICIENT TO MAINTAIN PLANTING.
IRRIGATION ZONES SHALL BE SIZED FOR PROPOSED 1" SERVICE METER. NUMBER OF ZONES SHALL BE SIZED PER SERVICE METER CAPACITY.
AN AS-BUILT IRRIGATION DRAWING TO SCALE SHALL BE SUBMITTED PRIOR TO THE ISSUANCE OF THE CERTIFICATE OF OCCUPANCY OR RELEASE OF PERFORMANCE SECURITY.
PLANS SHALL SHOW METHOD OF IRRIGATION FOR ALL LANDSCAPED AREAS ILLUSTRATING LOCATION OF SPRINKLER HEADS, WATER SOURCE, VALVES, APPROVED BACK FLOW ASSEMBLY AND CONTROLS.

TREE ROOT BARRIER NOTES
-FOR ALL TREES WITHIN 10' ADJACENT TO PAVING AND SIDEWALKS, AND TREES PLANTED IN PLANTING BEDS WITHIN PAVED AREAS, A 24" DEEP ROOT BARRIER SHALL BE INSTALLED.
-FOR TREES MEETING ABOVE REQUIREMENTS, PLANT TREES WITH NDS-EP-2450, ROOT BARRIER OR EQUIVALENT. PLACE ROOT BARRIER ADJACENT TO PAVING AND SIDEWALKS WHERE APPLICABLE, WITHIN EIGHT FEET OF TREE. DO NOT ENCIRCLE THE TREE. FOLLOW MANUFACTURERS SPECIFICATIONS.

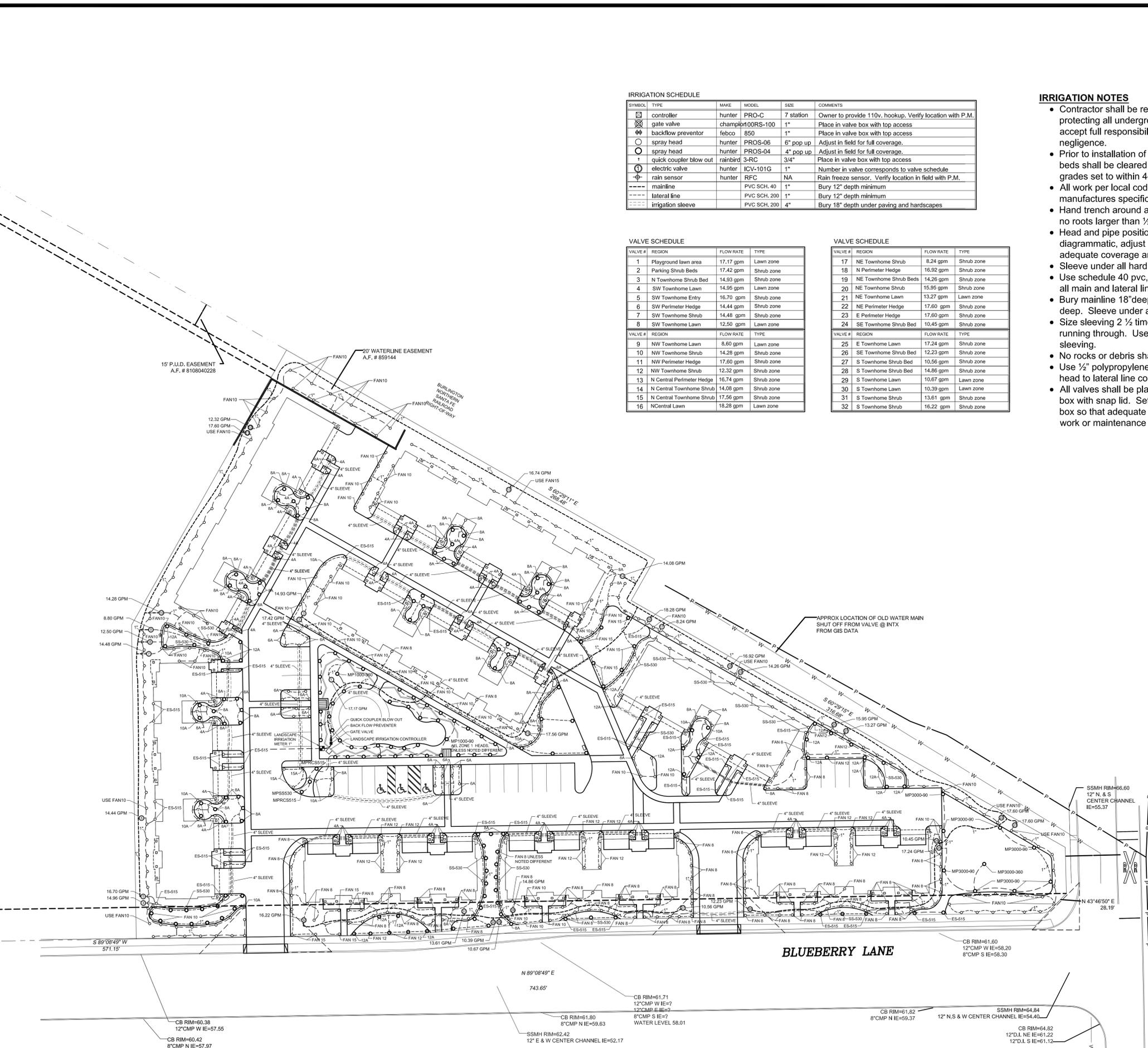
RECREATION SPACE NOTE
THE OPEN SPACE REQUIREMENT WILL BE MET AND INCLUDED IN THE FINAL DESIGN OF THE BUILDINGS.

QTY	SYMBOL	BOTANICAL NAME	COMMON NAME	SIZE	SPACING
20	ACG	ACER GRiseum	PAPERBARK MAPLE	2" CAL.	AS NOTED
9	AROG	ACER RUBRUM 'OCTOBER GLORY'	OCTOBER GLORY RED MAPLE	2" CAL.	AS NOTED
28	AUC	ARBITUS UNEDO COMPACTA	DWARF STRAWBERRY BUSH	5 G.	5' O.C.
131	BTN	BERBERIS THUNBERGII ATROPURPUREA 'NANA'	'NANA' DWF. JAP. BARBERY	2 G.	3' O.C.
246	CARS	CAREX STRICTA 'BOULES GOLDEN'	GOLDEN SEDGE	1 G.	24" C.C.
65	CHK	CISTIS HYBRIDUS	WHITE ROCKROSE	5 G.	5' O.C.
3	CK	CORULUS KOLSA 'OMNIBENS'	KORSAN DOGWOOD	2" CAL.	AS NOTED
5	CNCZ	CHAMAEDRY PARIS NODATA TENSIS	WEeping ALASKA CEDAR	8'	AS NOTED
75	CTS	CHO'SIA TERNATA 'SUNANCE'	GOLDEN MEXICAN ORANGE	5 G.	5' O.C.
31	D	HEMEROCALLIS HYBRIDUS	STELLA D'ORO	1 G.	2' O.C.
6	EAC	EUONYMUS ALATA 'COMACTA'	BURNING BUSH	5 G.	6' O.C.
14	FG	FOTHERGILLIA GARDENI	FOTHERGILLIA	5 G.	4' O.C.
233	FOG	FESTUCA OVINA GLAUCA	BLUE FESCUE	1 G.	2' O.C.
29	HM	HYDRANGEA MACROPHYLLA	HEAVENLY BAMBOO	5 G.	4' O.C.
16	HML	HYDRANGEA MACROPHYLLA 'BLUE WAVE'	LACECAP HYDRANGEA	5 G.	6' O.C.
124	HR	HELICTOT RICHON SEMPERVIRENS	BLUE OAT GRASS	1 G.	3' O.C.
34	LAMUN	LAVENDULA ANGLUSTIFOLIA 'MUNSTED'	MUNSTED LAVENDER	2 G.	3' O.C.
125	LIR	LIRIOPE MUSCARI 'SILVERY SUNROOF'	VARGAETED LILLY	1 G.	2' O.C.
228	LIT	LITHOSPERMUM DIFFUSA	SAME	1 G.	18" C.C.
12	MA	MAHONIA AQUIFOLIUM	OREGON GRAPE	5 G.	6' O.C.
5	ND	NANAKIA DOMESTICA	HEAVENLY BAMBOO	5 G.	4' O.C.
56	PEN	PENSTELM ALOPECUROIDES 'LITTLE BUNNY'	MINIATURE FOUNTAIN GRASS	1 G.	AS NOTED
18	PJ	PIERS JAPONICA 'OLYMPIC FIRE'	LILY OF THE VALLEY SHRUB	5 G.	4' O.C.
53	PLU	PRUNUS LUSITANICA	PORTUGUESE LAUREL	5 G.	7' O.C.
27	PMM	PRUNUS MUGO 'SLOWMOUND'	MUGO PINE	5 G.	4' O.C.
17	PYCPS	PYRUS CALLERYANA 'RED SPIRE'	COLLUMNAR FLOWERING PEAR	2" CAL.	AS NOTED
88	SAR	SARCOCODA RUSCIFOLIA	SARCOCODA	2 G.	3' O.C.
21	SARH	SARCOCODA HOODERIANA	SARCOCODA	1 G.	3' O.C.
40	SED	SEDUM SPECTABILIS 'BRILLIANT'	SEDUM	2 G.	3' O.C.
72	SPGF	SPIREA JAPONICA 'GOLD FLAME'	GOLDEN SPIREA	5 G.	4' O.C.
72	TPGG	THUJA PLICATA 'GREEN GANT'	GREEN GIANT ARBORVITAE	6-7"	8' O.C.
41	VAO	VACCINIUM OVATUM	EVERGREEN HUCKLEBERRY	2 G.	3' O.C.
48	VD	VBURNUM DAVIDI	DAVIDS VIBURNUM	2 G.	4' O.C.



PERMIT SET

Dec-10, 2019 - 2:45pm Scott U:\Lankford Associates\Blueberry Meadows\Working\2019\dwg\Arch\dwg\Working\Blueberry Meadows SITE PLAN.dwg Layout Name: IRRIGATION PLAN 30 SCALE



IRRIGATION SCHEDULE

SYMBOL	TYPE	MAKE	MODEL	SIZE	COMMENTS
[Symbol]	controller	hunter	PRO-C	7 station	Owner to provide 110v. hookup. Verify location with P.M.
[Symbol]	gate valve	champion	100RS-100	1"	Place in valve box with top access
[Symbol]	backflow preventor	fetco	850	1"	Place in valve box with top access
[Symbol]	spray head	hunter	PROS-06	6" pop up	Adjust in field for full coverage.
[Symbol]	spray head	hunter	PROS-04	4" pop up	Adjust in field for full coverage.
[Symbol]	quick coupler blow out	rainbird	3ARC	3/4"	Place in valve box with top access
[Symbol]	electric valve	hunter	ICV-101G	1"	Number in valve corresponds to valve schedule
[Symbol]	rain sensor	hunter	RFC	NA	Rain freeze sensor. Verify location in field with P.M.
[Symbol]	mainline		PVC SCH. 40	1"	Bury 12" depth minimum
[Symbol]	lateral line		PVC SCH. 200	1"	Bury 12" depth minimum
[Symbol]	irrigation sleeve		PVC SCH. 200	4"	Bury 18" depth under paving and hardscapes

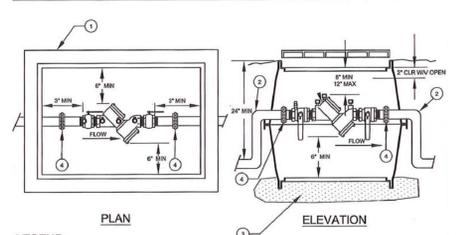
VALVE SCHEDULE

VALVE #	REGION	FLOW RATE	TYPE
1	Playground lawn area	17.17 gpm	Lawn zone
2	Parking Shrub Beds	17.42 gpm	Shrub zone
3	N Townhome Shrub Bed	14.93 gpm	Shrub zone
4	SW Townhome Lawn	14.95 gpm	Lawn zone
5	SW Townhome Entry	16.70 gpm	Shrub zone
6	SW Perimeter Hedge	14.44 gpm	Shrub zone
7	SW Townhome Shrub	14.48 gpm	Shrub zone
8	SW Townhome Lawn	12.50 gpm	Lawn zone
9	NW Townhome Lawn	8.60 gpm	Lawn zone
10	NW Townhome Shrub	14.28 gpm	Shrub zone
11	NW Perimeter Hedge	17.60 gpm	Shrub zone
12	NW Townhome Shrub	12.32 gpm	Shrub zone
13	N Central Perimeter Hedge	16.74 gpm	Shrub zone
14	N Central Townhome Shrub	14.08 gpm	Shrub zone
15	N Central Townhome Shrub	17.56 gpm	Shrub zone
16	N Central Lawn	18.28 gpm	Lawn zone

VALVE SCHEDULE

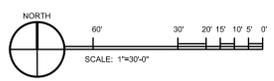
VALVE #	REGION	FLOW RATE	TYPE
17	NE Townhome Shrub	8.24 gpm	Shrub zone
18	N Perimeter Hedge	16.92 gpm	Shrub zone
19	NE Townhome Shrub Beds	14.26 gpm	Shrub zone
20	NE Townhome Shrub	15.95 gpm	Shrub zone
21	NE Townhome Lawn	13.27 gpm	Lawn zone
22	NE Perimeter Hedge	17.60 gpm	Shrub zone
23	E Perimeter Hedge	17.60 gpm	Shrub zone
24	SE Townhome Shrub Bed	10.45 gpm	Shrub zone
25	E Townhome Lawn	17.24 gpm	Shrub zone
26	SE Townhome Shrub Bed	12.23 gpm	Shrub zone
27	S Townhome Shrub	10.56 gpm	Shrub zone
28	S Townhome Shrub Bed	14.86 gpm	Shrub zone
29	S Townhome Lawn	10.67 gpm	Lawn zone
30	S Townhome Lawn	10.39 gpm	Lawn zone
31	S Townhome Shrub	13.61 gpm	Shrub zone
32	S Townhome Shrub	16.22 gpm	Shrub zone

- IRRIGATION NOTES**
- Contractor shall be responsible for locating and protecting all underground utilities, and shall accept full responsibility for any damage due to negligence.
 - Prior to installation of irrigation system, all plant beds shall be cleared and grubbed and sub grades set to within 4-6" of finish grade.
 - All work per local codes. Install per manufactures specifications.
 - Hand trench around all plants to be saved. Cut no roots larger than 1/2" in diameter.
 - Head and pipe positioning on plan is diagrammatic, adjust in field as necessary for adequate coverage and routing.
 - Sleeve under all hard surfaces.
 - Use schedule 40 pvc, or polypropylene pipe for all main and lateral lines.
 - Bury mainline 18" deep and lateral lines 12" deep. Sleeve under all paving or rockery.
 - Size sleeving 2 1/2 times diameter of line running through. Use Sch. 40 pvc for all sleeving.
 - No rocks or debris shall be backfilled over pipe.
 - Use 1/2" polypropylene funny pipe for all spray head to lateral line connections.
 - All valves shall be placed in 6" or 18" plastic box with snap lid. Set top at finish grade. Set box so that adequate room is provided to allow work or maintenance on valves.
 - All valve clusters or manifolds shall have slip, compression unions to allow replacement or maintenance without cutting pipe, and shall be set on 3" deep drain gravel for drainage.
 - Use 14 gauge wire for controller to valve hookup.
 - Contractor shall verify with Project Manager location and 110v. hookup of controller. All 110v. controller connections shall be to code and if placed outside, to be set in weather tight, lockable installation.
 - Contractor shall verify with Landscape Architect location of rain sensor and place so that sensor is not under eaves or planting that may interfere with accurate reading.
 - All irrigation lines shall be fully flushed to remove debris prior to installation of spray head nozzles.
 - Owner is responsible for yearly maintenance, winterization, and periodic adjustment to system to account for plant growth and site changes.
 - Contractor is responsible for setup of initial program and shall provide owner with operation instructions or owners manuals, and instruct owner of proper winterization procedure for system.
 - Contractor shall review initial irrigation program timing with Landscape Architect prior to substantial completion.



- LEGEND:**
- IN NON-TRAFFIC AREAS USE: PRECAST CONCRETE VALVE UTILITY VAULT CO 233-LA, OR APPROVED EQUAL, OR PLASTIC VALVE BOX (UTILITY VAULT CO 1324-12L OR APPROVED EQUAL) IN TRAFFIC AREAS: A TRAFFIC LOADED BOX MUST BE USED AND LOCATION APPROVED BY THE CITY OF MONROE PRIOR TO INSTALLATION.
 - PIPE BENDS SHALL BE OUTSIDE OF THE BOX
 - PROVIDE FREE DRAINING GRAVEL (6" MIN).
 - INSTALL UNIONS
- NOTES:**
- A PLUMBING PERMIT IS REQUIRED. OBTAIN PERMIT FROM CITY OF MONROE.
 - THOROUGHLY FLUSH LINES PRIOR TO INSTALLATION OF BACKFLOW PREVENTER.
 - DEVICE MUST BE PROTECTED FROM FREEZING CONDITIONS.
 - THE BACKFLOW ASSEMBLY SHALL BE A MODEL APPROVED BY THE STATE.
 - ALL TEST COCKS ARE REQUIRED TO BE CAPPED.
 - MAXIMUM HEIGHT OF INDOOR ASSEMBLIES SHALL BE FIVE FEET UNLESS AN OSHA APPROVED PLATFORM IS PROVIDED.
 - DEVICE MUST BE TESTED AFTER INSTALLATION AND ANNUALLY THEREAFTER BY A WASHINGTON STATE CERTIFIED BACKFLOW TESTER. TEST RESULTS SHALL BE SENT TO THE CITY OF MONROE PUBLIC WORKS DEPARTMENT.

DESIGNATION: DCVA 2" AND SMALLER
 SCALE: NOT TO SCALE
 REVISION: DEC 4, 2013
 DESIGNATION: 517S



REVISIONS:

1.	10-7-19
2.	12-10-19
3.	
4.	
5.	

26915 102ND DRIVE, NW
 SUITE 101
 STANWOOD, WA 98292
 PH: 206.331.5123
 FX: 360.629.6159

LANKFORD ASSOCIATES
 LANDSCAPE ARCHITECTURE

Blueberry Meadows
 Snohomish County
 18900 Block of Blueberry Lane
 Monroe, WA 98272

PERMIT SET

IRRIGATION PLAN

DATE: 8-5-19
 DESIGNED: RSL
 DRAWN: LEO
 JOB NO:
 SHEET:
L1.2



COMMUNITY DEVELOPMENT

806 West Main Street, Monroe, WA 98272
 Phone (360) 794-7400 Fax (360) 794-4007
www.monroewa.gov

FOR OFFICE USE ONLY
PERMIT #(s) <u>App. #5745</u>
Permit # <u>PL2019-01</u>
SEPA# <u>2019-07</u>

COMBINED PERMIT APPLICATION

PERMIT SUBMITTAL HOURS

MONDAY – FRIDAY 8:00 – 12:00 / 1:00 – 5:00

<u>Building</u>	<u>Operations</u>	<u>Fire</u>	<u>Land Use</u>
<input type="checkbox"/> Commercial T/I	<input type="checkbox"/> Engineering Review	<input type="checkbox"/> Fire Alarm	<input type="checkbox"/> Accessory Dwelling Unit
<input type="checkbox"/> Demolition	<input type="checkbox"/> Fencing	<input type="checkbox"/> Fire Sprinkler	<input type="checkbox"/> Boundary Line Adjustment /Lot Consolidation
<input type="checkbox"/> Garage/Carport	<input type="checkbox"/> Grading	<input type="checkbox"/> High Piled Storage	<input type="checkbox"/> Conditional/Special Use
<input type="checkbox"/> Mechanical	<input type="checkbox"/> Retaining wall	<input type="checkbox"/> Hood Suppression	<input type="checkbox"/> Land Clearing/Forest Practices
<input type="checkbox"/> New Construction (Commercial/Residential)	<input type="checkbox"/> Rockery	<input type="checkbox"/> Operational	<input type="checkbox"/> Planned Residential Development
<input type="checkbox"/> Plumbing	<input type="checkbox"/> Right-of-Way Disturbance	<input type="checkbox"/> Spray Booth	<input type="checkbox"/> Shoreline Permit
<input type="checkbox"/> Racking	<input type="checkbox"/> Special Flood Hazard Area	<input type="checkbox"/> Tents & Canopies	<input type="checkbox"/> Short Plat
<input type="checkbox"/> Residential Remodel	<input type="checkbox"/> Utility Service	<input type="checkbox"/> Other _____	<input checked="" type="checkbox"/> Subdivision/Plat
<input type="checkbox"/> Sign	<input type="checkbox"/> Other _____		<input type="checkbox"/> Variance
<input type="checkbox"/> Other _____			<input type="checkbox"/> Other _____

NOTE: All required Electrical Permits will be issued by the Dept. of Labor & Industries.

THIS APPLICATION WILL NOT BE ACCEPTED WITHOUT COMPLETED SUBMITTAL REQUIREMENTS

Site Address or Property Location: 18900 Block of Blueberry Lane

Size of site (acre/square feet): 3.00 ac / 130,685 sf

Assessor's Tax Parcel Number (14 digits): 270601-001-071-00

Applicant: Blair Group, LLC Phone # (425) 231-0219

*Signature: Printed Name: David Remlinger

Mailing Address: P.O. Box 177 Fax # () _____

City Carnation State WA Zip 98014 E-mail _____

Property Owner: The Blair Group Phone # (425) 231-0219

**Signature: Printed Name: David Remlinger

Mailing Address: P. O. Box 177 Fax # () _____

City Carnation State WA Zip 98014 E-mail _____

Attach a separate sheet for additional property owners/additional addresses

*Applicant: By your signature above, you hereby certify that the information submitted is true and correct and that you are authorized by the property owner(s) to act on their behalf.

**Property Owners: by your signature above, you hereby certify that you have authorized the above applicant to make application on your behalf for this application.

City of Monroe
Land Use Permit Application- Page 2



Give a detailed description below of the proposal / work. Provide details specific to your application e.g., current and proposed lot sizes, number of lots, description of driveway, description of proposed business including hours of operation, number of employees, existing and proposed parking spaces.

Forest Tax Reporting Account Number (if harvesting timber call the Department of Revenue at (800) 548-8829 for tax reporting information or to receive a tax number):

Detailed Description of work:

The project is a 29 lot subdivision in the MR6000 Zone. The project will have 2 access points off of Blueberry lane. The existing parcel is vacant with no existing structures. The existing frontage will remain as is. The current land use is vacant

FOR OFFICE USE ONLY

Planning Application Fee: _____	Publication Fee: _____
Fire Plan Check Fee: _____	Mailing Fee: _____
SEPA Fee: _____	Technology Fee: _____
TOTAL FEES: _____	

April 10, 2019

Planning Staff
City of Monroe
806 West Main St.
Monroe, WA 98272

Blueberry Meadows

Ms. Shaw:

The following narrative, per RCW 58.17.110, is in support of the proposed "Blueberry Meadows" development, located at 18900 Block of Blueberry Lane, Monroe, WA 98272, also referred to as Snohomish County Assessor Parcel Number 270601-001-071-00.

The proposal is to construct a 29-lot plat on 3.00 acres. The existing parcel is vacant with no existing structures. The current land use is vacant. The surrounding land use is Dwelling, Single Family and Wholesale establishment. The property is currently zoned MR6000. The site characteristics are flat, with an average slope of 3.1%, sloping to the Southwest. This project is not located in the Airport Overlay Zone.

The site is located on the Northwest corner of Blueberry lane and N. Kelsey Street. All Building will have driveways and garages that meet minimum dimensions that count toward at least two parking stalls per unit. There are also 25 external parking stalls for guest use.

The site will be served with public water and sewer. Stormwater will be collected and conveyed to infiltration trenches.

The City of Monroe Comprehensive plan has been designated this area for MR6000 Residential and has designated MR6000 as an implementing zone. The comprehensive Plan was approved after with substantial public input, after many public meetings and hearing. The purpose of the Comprehensive Plan is to better the public health safety and welfare. With that in mind, we can assume that the City of Monroe wouldn't add this zoning to this area if it wasn't in the public's health safety and welfare. Therefore, we can assume that the Comprehensive Plan and the implementing Zone bears a substantial relationship to the public health, safety, and welfare.

The open space, lot sizing, internal drive aisles, frontage and sidewalks all meet the City of Monroe standards. The required recreation space, based on MMC 18.78.080, is 4,930 sf. The proposed is 7,354 sf.

Each home will contain 2 car garages. The private roadway has adequate turning radii for safety vehicles and home owners

A. Lot Design.

1. Each lot or parcel shall contain sufficient area to meet minimum zoning requirements. Individual lot area calculations shall be determined prior to any city-required dedication of right-of-way.

The lot meet the MR6,000 minimum zoning requirements.

2. All lots shall have access to a public street and provide adequate lot frontage as set forth in MMC [18.10.140](#).

All lots have access to a public street and provide adequate lot frontage.

ISLAND COUNTY

840 SE 8th Avenue, Ste. 102
Oak Harbor, Washington 98277
tel: (360) 675-5973 / fax: (360) 675-7255

SNOHOMISH COUNTY

125 East Main Street, Ste. 104
Monroe, Washington 98272
tel: (360) 794-7811 / fax: (360) 805-9732

SKAGIT COUNTY

603 South First Street
Mount Vernon, Washington 98273
tel: (360) 336-9199 / fax: (360) 982-2637

3. Access easements or panhandles shall be a minimum of twenty feet wide along its entire length; the remainder of the lot shall provide adequate area to comply with setback standards found in MMC [18.10.140](#).

The access easements are 20' or greater and there is no panhandles.

4. Lots shall have frontage on two parallel streets (double frontage lots) only where the director of public works approves the lot arrangement as unavoidable.

There is no double frontage

5. Irregular-shaped lots shall be prohibited, specifically the creation of peninsulas, appendages or other irregularities to gain required lot area.

There are no lots that created peninsulas, appendages or other irregularities for the purposed of gaining lot area.

6. Lot lines shall be straight, except where a lot is bounded by a curved street right-of-way or along the boundary of a critical area and/or critical area buffer.

The lot lines are straight

7. Critical areas and their buffers shall be set aside in separate tracts in accordance with adopted critical area standards in effect at the time of application.

There are no critical areas

8. A city boundary line shall not bisect lots.

The City boundary line does not bisect lots

B. Dedication of Right-of-Way. Dedication of right-of-way for public streets to mitigate impacts to the city's street system created by the proposed short subdivision shall be required within or along the boundaries of short subdivisions as determined necessary by the city engineer to:

1. Extend or complete the existing or future neighborhood street pattern;

The frontage for future neighborhood street pattern has already been installed.

2. Provide additions of right-of-way to existing city right-of-way;

An easement for the existing frontage, that is on the subject parcel is proposed.

3. Comply with road standards;

Not Applicable

4. Provide for vehicular and pedestrian circulation within and between neighborhoods; and

The interior drive aisle and sidewalks, in the property provide circulation to Blueberry Lane. The existing sidewalks on Blueberry Lane provide circulation to other neighborhoods.

5. Reduce potential traffic impacts to existing residential access streets.

The development will access from Blueberry Lane. The access from Blueberry Lane allows N. Kelsey to be a collector, instead of direct access.

C. Street Design and Utility Requirements.

1. The short subdivision, including but not limited to streets, block design, utilities, and public improvements, must comply with all provisions of the city's current public works design and construction standards.

Not Applicable

2. Streets shall meet standards for public and private street design including minimum requirements for right-of-way width including alleys, pavement width, sidewalks, and off-street parking as determined necessary by the city engineer. Proposed streets shall have continuity for through streets and arterials and continue to boundaries of the short subdivision, as applicable. Areas used to convey public utility services shall be contained in separate tracts, rights-of-way, or easements.

Not Applicable

3. Names for public streets shall be determined by the city engineer and shall conform to the Snohomish County numbering system except where the city engineer finds this to be impractical.

Not Applicable

4. Following preliminary short subdivision approval and before site work begins, applicants must submit complete civil plans that comply with the city's current public works design and construction standards and receive approval by the city engineer.

Not Applicable

- D. Required Minimum Improvements. All improvements and their installation shall conform to city's current public works design and construction standards and the city's landscape standards, unless the director of community development and/or city engineer grants a special exemption. Prior to final approval, the following minimum improvements shall be constructed per the approved short subdivision and civil plans and shall be inspected by the city engineer or designee.

1. Drainage facilities and erosion control measures consistent with current city standards. If individual drainage systems are proposed, the applicant may defer the installation to the time of building permit with prior approval from the director of community development and city engineer and a note to this effect must be added to the face of the short plat;

Individual Drainage systems are proposed

2. Water mains and fire hydrants installed consistent with current city standards;

Not Applicable

3. Roadways are graded to all lots within the short subdivision and are capable of providing access by passenger vehicles;

Not Applicable

4. A professional land surveyor shall set control monuments at all street intersections, boundary angle points, points of curves in streets, and at such intermediate points as required by the city engineer;

Not Applicable

5. Specific site improvements without which the director of community development and/or city engineer determines a safety hazard would exist.

Not Applicable

E. Financial Securities.

1. The director of community development and city engineer may allow a financial security or general improvements other than those required for public health, safety, and general welfare as required by the short subdivision decision. The performance financial security shall be in a form acceptable to the city, and represent one hundred fifty percent of the fair cost estimate of the uncompleted portion of the proposed development or improvements.

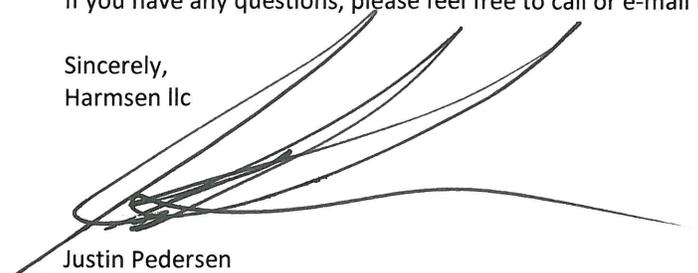
2. In extraordinary circumstances such as severe inclement weather, or other events beyond the applicant's control, the director of community development and city engineer may allow financial securities for minimum site improvements before final approval as described in subsection (D) of this section.

3. As a condition of final short plat approval, the proponent and/or successor shall assure successful operation of required improvements, as applicable, including the submission of required financial securities for maintenance of said improvements as specified by the city engineer. Such financial security shall be effective for up to two years from approval of their completion of all required improvements or final short plat approval, whichever is later.

F. Modifications. The proponent may request modification of any provision of this code, as it affects the proposed subdivision, where application of such provision would cause undue hardship due to any pre-existing adverse characteristic of the property, such as topography, soil conditions, and other natural features in conformance with MMC [17.26.010\(C\)\(1\)](#) through (3), the zoning code and the critical areas code to the community development director. Such request shall include details deemed by the proponent as essential to support his case and shall be filed concurrently with the proposed short plat. (Ord. 026/2011 § 2 (Exh. 1); Ord. 033/2008 § 5; Ord. 009/2007 § 2)

If you have any questions, please feel free to call or e-mail me.

Sincerely,
Harmsen IIc



Justin Pedersen



May 7, 2019

Blair Group, LLC
ATTN: David Remlinger
PO Box 177
Carnation, WA 98014

RE: Notice of Complete Application for Blueberry Meadows Preliminary Plat

File No. PL2019-01

Dear Mr. Remlinger:

Your land use permit application for preliminary plat approval, which was submitted to the City of Monroe on April 10, 2019, has been determined to be **COMPLETE** as of **May 7, 2019**. A complete application is not an approved application. A permit application is complete when it meets the submission requirements outlined in the Monroe Municipal Code. The City's determination of completeness does not preclude the City from requesting revisions, additional information or studies if new information is required, corrections are needed, or where there are substantial changes in the proposed action.

A decision will be made within 90 days of the date of the letter of completeness, excluding time periods specified in MMC 28.44.040(G)(4). If you have any questions, please feel free to contact me at (360) 863-4608 or via email at srestall@monroewa.gov.

Sincerely,

Shana Restall

Shana Restall
Principal Planner

Cc: File



City of Monroe
 806 West Main Street, Monroe, WA 98272
 Phone (360) 794-7400 Fax (360) 794-4007
www.monroewa.gov

NOTICE OF LAND USE APPLICATION

NOTICE IS HEREBY GIVEN that the City of Monroe has received an application for a Preliminary Plat as described below:

PROJECT NAME: Blueberry Meadows Subdivision

PROJECT FILE#: PL2019-01

APPLICANT: David Remlinger for The Blair Group, LLC

OWNER: The Blair Group, LLC, P.O. Box 177, Carnation WA. 98014

PROJECT LOCATION: The site is located on the 18900 block of Blueberry Lane, Monroe, Washington, 98272. Snohomish County Tax Parcel Number: 27060100107100.

PROJECT DESCRIPTION: The applicant is requesting preliminary plat approval for a 29-lot subdivision on approximately 3.0 acres in the Multi-Family Residential (R25) zoning district with associated grading, drainage improvements, landscaping, and street frontage improvements.

PERMITS/APPROVALS REQUIRED: Preliminary Subdivision Approval, Environmental Review, Grading/Engineering Permits, and any State and Federal Permits if applicable.

STUDIES REQUIRED: Traffic Study, Drainage Report, Environmental Checklist, Geotechnical Report, Critical Areas Report.

APPLICATION PROCESS: A preliminary plat is a public hearing review process per City of Monroe Municipal Code (MMC) Chapter 22.84. It requires a public hearing, which will be noticed separately and conducted before the Hearing Examiner.

APPLICATION DATE: April 10, 2019

NOTICE OF COMPLETE APPLICATION: May 7, 2019

DATE OF NOTICE OF APPLICATION: May 20, 2019

PUBLIC COMMENT PROCEDURE: Submit written comments on or before **5 p.m., June 3, 2019**. Comments should address completeness of the application, quality or quantity of information presented, and the project's conformance to applicable plans or code.

STAFF CONTACT: Shana Restall, Principal Planner @ (360) 863-4608 or srestall@monroewa.gov.

All documents are available for review Monday-Friday, 8:00-5:00 p.m., excluding holidays, at Monroe City Hall, 806 West Main St Monroe, WA 98272 and online at:

<http://www.monroewa.gov/818/Blueberry-Meadows>.

A decision on the application will be made within 120 days from the date of the letter of completeness.

Everett Daily Herald

Affidavit of Publication

State of Washington }
County of Snohomish } ss

Dicy Sheppard being first duly sworn, upon oath deposes and says: that he/she is the legal representative of the Everett Daily Herald a daily newspaper. The said newspaper is a legal newspaper by order of the superior court in the county in which it is published and is now and has been for more than six months prior to the date of the first publication of the Notice hereinafter referred to, published in the English language continually as a daily newspaper in Snohomish County, Washington and is and always has been printed in whole or part in the Everett Daily Herald and is of general circulation in said County, and is a legal newspaper, in accordance with the Chapter 99 of the Laws of 1921, as amended by Chapter 213, Laws of 1941, and approved as a legal newspaper by order of the Superior Court of Snohomish County, State of Washington, by order dated June 16, 1941, and that the annexed is a true copy of EDH857507 PL2019-01 as it was published in the regular and entire issue of said paper and not as a supplement form thereof for a period of 1 issue(s), such publication commencing on 05/20/2019 and ending on 05/20/2019 and that said newspaper was regularly distributed to its subscribers during all of said period.

The amount of the fee for such publication is \$55.10.

Dicy Sheppard

Subscribed and sworn before me on this 20th day of May, 2019.

Diana L Beaver



Notary Public in and for the State of Washington.

CITY OF MONROE, WASHINGTON
NOTICE OF LAND USE APPLICATION

NOTICE IS HEREBY GIVEN that the City of Monroe has received an application for a Preliminary Plat as described: **PROJECT NAME:** Blueberry Meadows Subdivision **PROJECT FILE#:** PL2019-01 **APPLICANT:** David Reminger for The Blair Group, LLC **OWNER:** The Blair Group, LLC, P.O. Box 177, Carnation WA, 98014 **PROJECT LOCATION:** The site is located on the 18900 block of Blueberry Lane, Monroe, Washington, 98272. Snohomish County Tax Parcel Number: 27060100107100. **PROJECT DESCRIPTION:** The applicant is requesting preliminary plat approval for a 29-lot subdivision on approximately 3.0 acres in the Multi-Family Residential (R26) zoning district with associated grading, drainage improvements, landscaping, and street frontage improvements. **PERMITS/APPROVALS REQUIRED:** Preliminary Subdivision Approval, Environmental Review, Grading/Engineering Permits, and any State and Federal Permits if applicable. **STUDIES REQUIRED:** Traffic Study, Drainage Report, Environmental Checklist, Geotechnical Report, Critical Areas Report. **APPLICATION PROCESS:** A preliminary plat is a public hearing review process per City of Monroe Municipal Code (MMC) Chapter 22.84. It requires a public hearing, which will be noticed separately and conducted before the Hearing Examiner. **APPLICATION DATE:** April 10, 2019 **NOTICE OF COMPLETE APPLICATION:** May 7, 2019 **DATE OF NOTICE OF APPLICATION:** May 20, 2019 **PUBLIC COMMENT PROCEDURE:** Submit written comments on or before 5 p.m., June 3, 2019. Comments should address completeness of the application, quality or quantity of information presented, and the project's conformance to applicable plans or code. **STAFF CONTACT:** Shana Restall, Principal Planner @ (360) 863-4608 or srestall@monroewa.gov. All documents are available for review Monday-Friday, 8:00-5:00 p.m., excluding holidays, at Monroe City Hall, 806 West Main St Monroe, WA 98272 and online at <http://www.monroewa.gov/818/Blueberry-Meadows>. A decision on the application will be made within 120 days from the date of the letter of completeness.
Published: May 20, 2019. EDH867607

AFFIDAVIT OF MAILING NOTICE OF LAND USE APPLICATION

STATE OF WASHINGTON) 18XXX Blueberry Lane Monroe, WA, 98272
Project location

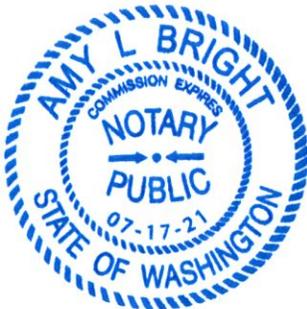
COUNTY OF SNOHOMISH) Blueberry Meadows (PL2019-01)
Application Name and File Number

I, Kim Shaw, being first duly sworn on oath depose and say that on the 17th day of May, 2019, made application with Click to Mail to mail on May 18th, 2019, a copy with prepaid postage of the Notice of Land Use Application for Blueberry Meadows Preliminary Plat. Attached are a list of names and addresses to whom this information was mailed and the Click to Mail receipt.

Kim Shaw
Signed

Subscribed and sworn to me this 21st day May, 2019

NOTARY SEAL



ABSA
NOTARY PUBLIC in and for the State of Washington, residing at:

Snohomish County

Printed Name: Amy L. Bright

My commission expires: 7/17/2021

OWNER NAME	OWNER ADDRESS	CITY	STATE	ZIP CODE
18532 BLUEBERRY LLC	18532 BLUEBERRY LANE	MONROE	WA	98272
649 ELIZABETH ST LLC	649 ELIZABETH STREET	MONROE	WA	98272
ANHUU PHAM AND XUYEN LY	18806 BLUEBERRY LANE	MONROE	WA	98272
ANNEMARIE SUMERI AND KENT SHUEY	651 NORTH STREET	MONROE	WA	98272
ARNOLD HANSEN	650 NORTH STREET	MONROE	WA	98272
ASORA NOA	605 NORTH STREET	MONROE	WA	98272
BALDRIDGE DEV GROUP LLC	18906 SR 2	MONROE	WA	98272
BNSF RAILWAY COMPANY	PO BOX 961089	FORT WORTH	TX	76161-0089
BRENT SEARLES AND PETER JONES	641 NORTH STREET	MONROE	WA	98272
CHONG HUI SONG AND HYUNG IN	18950 SR 2	MONROE	WA	98272
DAIN M AND KIMBERLEE A JONES	654 NORTH STREET	MONROE	WA	98272
DAKOTA LEMS	607 NORTH STREET	MONROE	WA	98272
DAMIANIDIS LIVING TRUST	643 ELIZABETH STREET	MONROE	WA	98272
DANIEL JOHNSON	642 NORTH STREET	MONROE	WA	98272
DAVID AND DEANNA HOLZERLAND	629 NORTH STREET	MONROE	WA	98272
DEL CAPPS INC	650 ELIZABETH STREET	MONROE	WA	98272
ELAINE ZANASSI	623 NORTH STREET	MONROE	WA	98272
GALWAY APARTMENTS LLC	18560 GALWAY BAY	MONROE	WA	98272
GALWAY APARTMENTS LLC	15247 GALWAY BAY SE	MONROE	WA	98272
GREG GIULIANI	638 NORTH STREET	MONROE	WA	98272
GTY-PACIFIC LEASING LLC	14980 N KELSEY STREET	MONROE	WA	98272
HALVORSEN JOHN TRUST	18600 SR 2	MONROE	WA	98272
JACOB AND BRITTNEY KUNA	634 NORTH STREET	MONROE	WA	98272
JOHN ECKER	19025 SR 2	MONROE	WA	98272
JOHN HALVORSEN TRUST	18824 SR 2	MONROE	WA	98272
JOSE LUNA AND ROSA SANABRIA	603 NORTH STREET	MONROE	WA	98272
JP MORGAN CHASE BANK NA	18751 SR 2	MONROE	WA	98272
KEVIN AND TAMMY WEBER	637 NORTH STREET	MONROE	WA	98272
LAKE APARTMENTS LLC	18727 BLUEBERRY LANE	MONROE	WA	98272
LT KELSEY CENTER LLC	19002 LENTON PLACE SE	MONROE	WA	98272
MARK MCCLAIN	412 N KELSEY STREET	MONROE	WA	98272
MATTHEW GORMLEY AND ALETA ENG	615 NORTH STREET	MONROE	WA	98272
MERCY PROPERTIES WASHINGTON III LLC	601 W ELIZABETH STREET	MONROE	WA	98272
MICHAEL B AND KELSEY L JONES	635 NORTH STREET	MONROE	WA	98272
MONROE GATEWAY ASSOCIATION	18669 SR 2	MONROE	WA	98272
NRCB/FRIENDSHIP HOUSE I	701 W ELIZABETH STREET	MONROE	WA	98272
PELTO PROPERTIES LLC	649 NORTH STREET	MONROE	WA	98272
RICHARD LINDEMULDER	347 ELIZABETH STREET	MONROE	WA	98272
ROBERT METHVEN	647 ELIZABETH STREET	MONROE	WA	98272
RONALD AND DEBRA LAWSON	18750 BLUEBERRY LANE	MONROE	WA	98272
RONALD REID	645 NORTH STREET	MONROE	WA	98272
ROUNDUP CO	18805 SR 2	MONROE	WA	98272
SHAGER FAMILY LLC	604 NORTH STREET	MONROE	WA	98272
SKYLER MARTINEZ	609 NORTH STREET	MONROE	WA	98272
SMITH BROTHERS LLC	18710 BLUEBERRY LANE	MONROE	WA	98272
SMITH BROTHERS LLC	373 ELIZABETH STREET	MONROE	WA	98272

SMITH BROTHERS LLC	15252 GALWAY BAY SE	MONROE	WA	98272
SMITH BROTHERS LLC	431 N KELSEY STREET	MONROE	WA	98272
SMITH BROTHERS LLC	351 ELIZABETH STREET	MONROE	WA	98272
STATE OF WA - DEPT OF TRANSPORTATION	18702 SR 2	MONROE	WA	98272
THE BLAIR GROUP	PO BOX 177	CARNATION	WA	98014
THOMAS GREEN	628 NORTH STREET	MONROE	WA	98272
TOM AND BETTY VANGELDER	645 ELIZABETH STREET	MONROE	WA	98272
VICTOR DEANE	618 NORTH STREET	MONROE	WA	98272
WAYNE DEANE	620 NORTH STREET	MONROE	WA	98272
WRM-MONROE LLC	15045 N KELSEY STREET	MONROE	WA	98272

AFFIDAVIT OF POSTING NOTICE OF APPLICATION

STATE OF WASHINGTON) 18XXX Blueberry Lane Monroe, WA, 98272
Project location

COUNTY OF SNOHOMISH) Blueberry Meadows (PL2019-01)
Application Name and File Number

I, JESSE HACKMANN being first duly sworn on oath, depose and say: That I am a citizen of the United States of America; That I am competent to be witness herein; That on the 20th day of May, 2019, I posted (2) Notice of Application for the Blueberry Meadows Preliminary Plat on site; and on the correct date of posting of said notice, to wit:

18XXX Blueberry Lane Monroe, WA, 98272
Location of Notice

[Signature]
Signed

Subscribed and sworn to me this 21st day of May, 2019

NOTARY SEAL



Kim M. Shaw
NOTARY PUBLIC in and for the State of Washington, residing at:

Snohomish County

Printed Name: Kim M. Shaw

My commission expires: 6/3/2020



AFFIDAVIT OF POSTING NOTICE OF APPLICATION

STATE OF WASHINGTON) 18XXX Blueberry Lane, Monroe, WA 98272
Address

COUNTY OF SNOHOMISH) Blueberry Meadows Preliminary Plat PL2019-01
Application Name and File #

I, Kim Shaw (print name) being first duly sworn on oath, depose and say:
That on the 20th day of May, 2019, I posted 1 notice in the City Hall lobby and
Emailed 1 notice to the Monroe Public Library for the Notice of Preliminary Plat of
Blueberry Meadows and on the correct date of posting of said notice.

I declare under penalty of perjury under the laws of the State of Washington that the
foregoing is true and correct.

Kim Shaw
Signed

2/12/2020
Date

From: Kim Shaw
To: [Kim Shaw](#)
Cc: [Kim Shaw](#); [Shana Restall](#)
Bcc: "separegister@ecy.wa.gov"; "pspirito@sno-isle.org"; "lanthony@sno-isle.org"; "Justin.fontes@ftr.com"; "david.matulich@pse.com"; "john_warrick@comcast.com"; "crenderlein@snopud.com"; "Kate.Tourtellot@commtrans.org"; "Neilwheeler@comcast.net"; "Eileen.lefebvre@providence.org"; "pjpicld@monroe.wednet.edu"; "Gretchen.Kaehler@DAHP.wa.gov"; "sharon.swan@snoco.org"; "Diane.Rolph@co.snohomish.wa.us"; "mfitzgerald@snofire7.org"; "k.kerwin@snoco.org"; "SEPA@psccleanair.org"; "stevev@psccleanair.org"; "eip@parks.wa.gov"; "sposner@utc.wa.gov"; "kmclain@agr.wa.gov"; "ike_nwankwo@commerce.wa.gov"; "reviewteam@commerce.wa.gov"; "sepadesk@dfw.wa.gov"; "efheinitz@doc1.wa.gov"; "sepacenter@dnr.wa.gov"; "ramin.pazooki@wsdot.wa.gov"; "randy.kline@parks.wa.gov"; "somers.elaine@epa.gov"; "Stan.Allison@faa.gov"; "Karen.Wood-McGuinness@fema.dhs.gov"; "kjoseph@sauk-suiattle.com"; "njoseph@sauk-suiattle.com"; "jjoseph@sauk-suiattle.com"; "ryoung@tulaliptribes-nsn.gov"; "klyste@stillaguamish.com"; "pstevenson@stillaguamish.com"; "newstips@heraldnet.com"; "mmuscari@esassoc.com"; "info@PPTValley.org"; "tom.laufmann@sno.wednet.edu"; "rooseveltwater@frontier.com"; "staff@highlandwaterdistrict.com"; "bewood@snopud.com"; "faye.ryan@pse.com"; "dan.o.olson@williams.com"; "shannon.fleming@snoco.org"; "zlamebull@tulaliptribes-nsn.gov"; "wrightp@wsdot.wa.gov"; "mrobenland@doc1.wa.gov"; "mannixj@monroe.wednet.edu"; "hansenh@monroe.wednet.edu"; "JPrichard@republicservices.com"; "rodrjr@dshs.wa.gov"; "ehquestions@snohd.org"; "serviceaddresscorrec@pse.com"; "laura.blackmore@psp.wa.gov"; "wcr.nepa@noaa.gov"; "apellham@snohd.org"; "stephen.semenick@BNSF.com"

Subject: City of Monroe Notice of Preliminary Plat Application
Date: Tuesday, May 21, 2019 11:52:00 AM
Attachments: [NOA - Blueberry Meadows.pdf](#)
[Vicinity map.pdf](#)

Good morning!

The attached is a Notice of Application for a proposed 29 lot subdivision (Blueberry Meadows) within the Monroe city limits. For further questions on this proposal, please contact Shana Restall, Principal Planner, at (360) 863-4608 or srestall@monroewa.gov. Additional documents are also available for review on the city's web site at: <http://www.monroewa.gov/818/Blueberry-Meadows>

Thank you,
Kim



Kim Shaw, CPT | Land Use Permit Supervisor
 806 West Main Street | Monroe, WA 98272
 360-863-4532 | kshaw@monroewa.gov

NOTE: This email is considered a public record and may be subject to public disclosure.



Providing quality water, power and service at a competitive price that our customers

June 21, 2019

Shana Restall
City of Monroe
806 West Main Street
Monroe, WA 98272

Dear Ms. Restall:

Reference: PL2019 01 Blueberry Meadows Subdivision

District DR Number: 19-108

The District presently has sufficient electric system capacity to serve the proposed development. However, the existing District facilities in the local area may require upgrading. The developer is required to supply the District with suitable locations/easements on all parcels where electrical facilities must be installed to serve the proposed development. It is unlikely that easements will be granted on District-owned property, or consents granted within District transmission line corridors. Existing PUD facilities may need relocations or modifications at the developer's expense. Any relocation, alteration or removal of District facilities to accommodate this project shall be at the expense of the project developer, and must be coordinated with the PUD in advance of final design. Please include any utility work in all applicable permits.

Cost of any work, new or to upgrade, existing facilities that are required to connect this proposed development to the District electric system shall be in accordance with the applicable District policies. The District policy requires the developer to provide a 10-foot easement and an 8-foot clearance between any building/structures and transformers/switch cabinets upon its property for underground electrical facilities that must be installed to serve the proposed development.

Please contact the District prior to design of the proposed project. For information about specific electric service requirements, please call the District's Plat Development Team at (425)783-4350.

Sincerely,

A handwritten signature in blue ink that reads "Jason Zyskowski".

Jason Zyskowski
Senior Manager
Planning, Engineering, & Technical Services

From: [Kerry Lyste](#)
To: [Shana Restall](#)
Cc: [Kim Shaw](#); [Sam Barr](#); [Tracey Boser](#)
Subject: RE: City of Monroe Notice of Preliminary Plat Application
Date: Tuesday, May 21, 2019 5:45:08 PM
Attachments: [image003.png](#)

Hi Shana,

This project is within close proximity to SN00062, a large pre-historic site. Our area of concern would focus on the trees to the north of the project area along highway 2, and we would recommend an archaeological survey for project activities in this northern area of the APE.

Best, KL

Kerry Lyste
THPO/GIS Database Administrator;
Stillaguamish Tribe of Indians
3322 236th Street NE, Arlington, WA 98223
Mailing Address: PO Box 277, Arlington, WA 98223
Ph: 360-572-3072 Fax: 360-659-3113



From: Kim Shaw [mailto:KShaw@monroewa.gov]
Sent: Tuesday, May 21, 2019 11:52 AM
To: Kim Shaw <KShaw@monroewa.gov>
Cc: Kim Shaw <KShaw@monroewa.gov>; Shana Restall <SRestall@monroewa.gov>
Subject: City of Monroe Notice of Preliminary Plat Application

Good morning!

The attached is a Notice of Application for a proposed 29 lot subdivision (Blueberry Meadows) within the Monroe city limits. For further questions on this proposal, please contact Shana Restall, Principal Planner, at (360) 863-4608 or srestall@monroewa.gov. Additional documents are also available for review on the city's web site at: <http://www.monroewa.gov/818/Blueberry-Meadows>

Thank you,
Kim

Kim Shaw, CPT | Land Use Permit Supervisor



THE ADVENTURE
STARTS HERE!

806 West Main Street | Monroe, WA 98272
360-863-4532 | kshaw@monroewa.gov

NOTE: This email is considered a public record and may be subject to public disclosure.

Shana Restall

From: McConnell, David <David.McConnell@co.snohomish.wa.us>
Sent: Monday, February 3, 2020 10:43 AM
To: Leigh Anne Barr
Cc: Kim Shaw; Shana Restall; McConnell, David
Subject: RE: City of Monroe Notice of MDNS

Follow Up Flag: Follow up
Flag Status: Flagged

Good Moring,

After reviewing the project documents for this project, the Snohomish County Department of Parks, Recreation and Tourism would like to comment that noise from the Evergreen State Fairgrounds and Speedway may occasionally be loud enough to be herd from this project location.

Dave McConnell

Associate Parks Planner

Snohomish County Department of Parks, Recreation & Tourism
6705 Puget Park Drive
Snohomish, WA 98296
Office (425) 388-6600 Ext. 6627
Mobile (425) 420-0193
David.McConnell@snoco.org
snocoparks.org



NOTICE: All emails, and attachments, sent to and from Snohomish County are public records and may be subject to disclosure pursuant to the Public Records Act (RCW 42.56)

From: Leigh Anne Barr [mailto:LABarr@monroewa.gov]
Sent: Monday, January 27, 2020 10:51 AM
To: Shana Restall <SRestall@monroewa.gov>
Cc: Kim Shaw <KShaw@monroewa.gov>
Subject: City of Monroe Notice of MDNS

CAUTION : This email originated from outside of this organization. Please exercise caution with links and attachments.

Good Morning,

Please see the attached Notice of Mitigated Determination of Non-Significance (MDNS) for the Blueberry Meadows Preliminary Plat and SEPA. For specific questions regarding these projects, please contact Shana Restall, Principal Planner, at (360) 863-4608 or at srestall@monroewa.gov. Further information can be found on the City's website at: <http://www.monroewa.gov/818/Blueberry-Meadows>.



Leigh Anne Barr, C.P.T | Permit Specialist
806 West Main Street | Monroe, WA 98272
360-863-4511 | labarr@monroewa.gov

NOTE: This email is considered a public record and may be subject to public disclosure.

*** Scheduling for Building, Fire and Public Works permit inspections are now available online! Online requests for approved permits can be made here: <http://www.monroewa.gov/637/Building> ***



MITIGATED DETERMINATION OF NON-SIGNIFICANCE (MDNS)

File Number: SEPA 2019-07

Name of Proposal: Blueberry Meadows Preliminary Plat

Description of Proposal: The applicant is requesting preliminary plat approval for a 29-lot subdivision on approximately 3.0 acres in the Multi-Family Residential (R25) zoning district with associated grading, drainage improvements, landscaping, and street frontage improvements.

Proponent: David Remlinger
The Blair Group, LLC
P.O. Box 177
Carnation WA. 98014

Location of Proposal: The site is located on the 18900 block of Blueberry Lane, Monroe, Washington, 98272. Snohomish County Tax Parcel Number: 27060100107100.

Lead Agency: City of Monroe

Threshold Determination: As lead agency, the City of Monroe has determined that this proposal will not have a probable significant adverse impact on the environment. Pursuant to WAC 197-11-350(3), the proposal has been clarified, changed, and conditioned to include necessary mitigation measures to avoid, minimize, or compensate for probable significant impacts. 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. The necessary mitigation measures are listed below. Information is available to the public for review upon request at Monroe City Hall, 806 West Main Street, Monroe, WA 98272 between the hours of 8:00 a.m. and 5:00 p.m., Monday through Friday, excluding holidays.

This determination is based on the following findings and conclusions:

Historic and Cultural Preservation

Due to the history of discovery of precontact archaeological resources in the immediate vicinity of the project site, staff finds that there are potential adverse environmental impacts that may result from the proposal. The existence and extent of potential archeological resources must be established prior to development permit issuance to ensure that said resources, if present, are handled appropriately and not damaged, destroyed, or lost during development of the site. Pursuant to the City's comprehensive plan, the City's goals and policies supporting this determination are as follows:

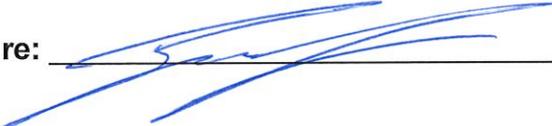
Goal 4: Provide for and appropriately locate the types, quality, and quantities of development in Monroe to assure land use compatibility, enhance neighborhood character, and facilitate the City's long-term sustainability.

Policy 065: Identify, preserve, and protect historic, cultural and archaeological resources.

The following mitigation measures are required to address and mitigate for the potential adverse environmental impacts identified:

1. The applicant must provide an archaeological survey of the project area to the City, the DAHP, and all interested Tribes. This survey shall be conducted and provided to the above specified parties prior to development permit issuance for site improvements and prior to any ground disturbing activities.

Responsible Official: Ben Swanson, Community Development Director
SEPA Responsible Official
(360) 863-4594
Monroe City Hall
806 West Main Street
Monroe, WA 98272
bswanson@monroewa.gov

Date: 1/24/2020 **Signature:** 

Date of Issuance: January 27, 2020

Deadline for Submitting Comments: No later than 5:00 p.m. on February 10, 2020

Deadline for Appeals: No later than 5:00 p.m. on February 10, 2020

Appeals: You may appeal this determination to the City of Monroe Hearing Examiner at Monroe City Hall, which is located at 806 West Main Street, Monroe, WA 98272, no later than **5:00 p.m. on February 10, 2020**. You should be prepared to make specific factual objections; and you shall set forth the specific reason, rationale, and/or basis for the appeal. Appeals must be made in person on City appeal forms, which are available through the Community Development Department at Monroe City Hall. Appeals must be filed in original form in accordance with MMC 22.84.080. Payment of the appeal fee, as specified in the city's fee resolution, shall occur at the time the appeal is filed. Please contact Kim Shaw, Land Use Permit Supervisor, by email at kshaw@monroewa.gov or by phone at (360) 863-4532 to read or ask about the procedures for SEPA appeals.

Staff Contact: Questions about the proposal may be directed to Shana Restall, Principal Planner, at srestall@monroewa.gov or (360) 863-4608.

Everett Daily Herald

Affidavit of Publication

State of Washington }

County of Snohomish } ss

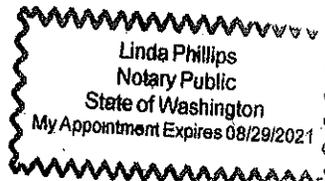
Dicy Sheppard being first duly sworn, upon oath deposes and says: that he/she is the legal representative of the Everett Daily Herald a daily newspaper. The said newspaper is a legal newspaper by order of the superior court in the county in which it is published and is now and has been for more than six months prior to the date of the first publication of the Notice hereinafter referred to, published in the English language continually as a daily newspaper in Snohomish County, Washington and is and always has been printed in whole or part in the Everett Daily Herald and is of general circulation in said County, and is a legal newspaper, in accordance with the Chapter 99 of the Laws of 1921, as amended by Chapter 213, Laws of 1941, and approved as a legal newspaper by order of the Superior Court of Snohomish County, State of Washington, by order dated June 16, 1941, and that the annexed is a true copy of EDH888573 SEPA 2019-07 as it was published in the regular and entire issue of said paper and not as a supplement form thereof for a period of 1 issue(s), such publication commencing on 01/27/2020 and ending on 01/27/2020 and that said newspaper was regularly distributed to its subscribers during all of said period.

The amount of the fee for such publication is \$117.81.

Dicy Sheppard

Subscribed and sworn before me on this

27th day of January,
2020.



Linda Phillips

Notary Public in and for the State of Washington.

CITY OF MONROE, WASHINGTON
NOTICE OF MITIGATED DETERMINATION OF
NON-SIGNIFICANCE (MONS)

NOTICE IS HEREBY GIVEN that the City of Monroe has received an application for a Preliminary Plat as described: **PROJECT NAME:** Blueberry Meadows Preliminary Plat; **PROJECT FILE NUMBER:** SEPA 2019-07; **DESCRIPTION OF PROPOSAL:** The applicant is requesting preliminary plat approval for a 29-lot subdivision on approximately 3.0 acres in the Multi-Family Residential (R25) zoning district with associated grading, drainage improvements, landscaping, and street frontage improvements; **PROPOSER:** David Remlinger, The Blair Group, LLC, P.O. Box 177, Carnation WA. 98014; **LOCATION OF PROPOSAL:** The site is located on the 18900 block of Blueberry Lane, Monroe, Washington, 98272. Snohomish County Tax Parcel Number: 27060100107100; **LEAD AGENCY:** City of Monroe **THRESHOLD DETERMINATION:** As lead agency, the City of Monroe has determined that this proposal will not have a probable significant adverse impact on the environment. Pursuant to WAC 197-11-350(3), the proposal has been clarified, changed, and conditioned to include necessary mitigation measures to avoid, minimize, or compensate for probable significant impacts. 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. The necessary mitigation measures are listed below. Information is available to the public for review upon request at Monroe City Hall, 806 West Main Street, Monroe, WA 98272 between the hours of 8:00 a.m. and 5:00 p.m., Monday through Friday, excluding holidays. This determination is based on the following findings and conclusions. **Historic and Cultural Preservation:** Due to the history of discovery of precontact archaeological resources in the immediate vicinity of the project site, staff finds that there are potential adverse environmental impacts that may result from the proposal. The existence and extent of potential archaeological resources must be established prior to development permit issuance to ensure that said resources, if present, are handled appropriately and not damaged, destroyed, or lost during development of the site. Pursuant to the City's comprehensive plan, the City's goals and policies supporting this determination are: 1) Goal 4: Provide for and appropriately locate the types, quality, and quantities of development in Monroe to assure land use compatibility, enhance neighborhood character, and facilitate the City's long-term sustainability; and 2) Policy 065: Identify, preserve, and protect historic, cultural and archaeological resources. **The following mitigation measures are required to address and mitigate for the potential adverse environmental impacts identified:** 1) The applicant must provide an archaeological survey of the project area to the City, the DAHP, and all interested Tribes. This survey shall be conducted and provided to the above specified parties prior to development permit issuance for site improvements and prior to any ground disturbing activities. **RESPONSIBLE OFFICIAL:** Ben Swanson, Community Development Director, SEPA Responsible Official; **DATE OF ISSUANCE:** January 27, 2020; **DEADLINE FOR SUBMITTING COMMENTS:** No later than 5:00 p.m. on February 10, 2020; **APPEALS:** You may appeal this determination to the City of Monroe Hearing Examiner at Monroe City Hall, which is located at 806 West Main Street, Monroe, WA 98272, no later than 5:00 p.m. on February 10, 2020. You should be prepared to make specific factual objections; and you shall set forth the specific reason, rationale, and/or basis for the appeal. Appeals must be made in person on City appeal forms, which are available through the Community Development Department at Monroe City Hall. Appeals must be filed in original form in accordance with MMC 22.84.080. Payment of the appeal fee, as specified in the city's fee resolution, shall occur at the time the appeal is filed. Please contact Kim Shaw, Land Use Permit Supervisor, by email at kshaw@monroewa.gov or by phone at (360) 863-4532 to read or ask about the procedures for SEPA appeals; **STAFF CONTACT:** Questions about the proposal may be directed to Shana Restall.

Classified Proof

Principal Planner, at srestali@monroewa.gov or (360) 863-4608.
All documents are available for review Monday-Friday, 8:00-5:00
p.m., excluding holidays, at Monroe City Hall, 806 West Main St
Monroe, WA 98272 and online at:
<http://www.monroewa.gov/818/Blueberry-Meadows>
Published: January 27, 2020. EDH688573



AFFIDAVIT OF MAILING NOTICE OF SEPA DETERMINATION (MDNS)

STATE OF WASHINGTON)

18XXX Blueberry Lane, Monroe WA 98272
Address

COUNTY OF SNOHOMISH)

Blueberry Meadows Preliminary Plat (PL2019-01)/SEPA2019-07
Application Name and File #

I, Kim Shaw (print name) being first duly sworn on oath, depose and say: That on the 24th day of January, 2020, I made application with Click2Mail to mail on January 25th, 2020 a copy with prepaid postage of the Notice of SEPA Mitigated Determination of Non-Significance for Blueberry Meadows Preliminary Plat. Attached is a list of names and addresses to whom this information was mailed to.

I declare under penalty of perjury under the laws of the State of Washington that the foregoing is true and correct.

Kim Shaw
Signed

1/24/2020
Date

OWNER NAME	OWNER ADDRESS	CITY	STATE	ZIP CODE
18532 BLUEBERRY LLC	18532 BLUEBERRY LANE	MONROE	WA	98272
649 ELIZABETH ST LLC	649 ELIZABETH STREET	MONROE	WA	98272
ANHUU PHAM AND XUYEN LY	18806 BLUEBERRY LANE	MONROE	WA	98272
ANNEMARIE SUMERI AND KENT SHUEY	651 NORTH STREET	MONROE	WA	98272
ARNOLD HANSEN	650 NORTH STREET	MONROE	WA	98272
ASORA NOA	605 NORTH STREET	MONROE	WA	98272
BALDRIDGE DEV GROUP LLC	18906 SR 2	MONROE	WA	98272
BNSF RAILWAY COMPANY	PO BOX 961089	FORT WORTH	TX	76161-0089
BRENT SEARLES AND PETER JONES	641 NORTH STREET	MONROE	WA	98272
CHONG HUI SONG AND HYUNG IN	18950 SR 2	MONROE	WA	98272
DAIN M AND KIMBERLEE A JONES	654 NORTH STREET	MONROE	WA	98272
DAKOTA LEMS	607 NORTH STREET	MONROE	WA	98272
DAMIANIDIS LIVING TRUST	643 ELIZABETH STREET	MONROE	WA	98272
DANIEL JOHNSON	642 NORTH STREET	MONROE	WA	98272
DAVID AND DEANNA HOLZERLAND	629 NORTH STREET	MONROE	WA	98272
DEL CAPPS INC	650 ELIZABETH STREET	MONROE	WA	98272
ELAINE ZANASSI	623 NORTH STREET	MONROE	WA	98272
GALWAY APARTMENTS LLC	18560 GALWAY BAY	MONROE	WA	98272
GALWAY APARTMENTS LLC	15247 GALWAY BAY SE	MONROE	WA	98272
GREG GIULIANI	638 NORTH STREET	MONROE	WA	98272
GTY-PACIFIC LEASING LLC	14980 N KELSEY STREET	MONROE	WA	98272
HALVORSEN JOHN TRUST	18600 SR 2	MONROE	WA	98272
JACOB AND BRITTNEY KUNA	634 NORTH STREET	MONROE	WA	98272
JOHN ECKER	19025 SR 2	MONROE	WA	98272
JOHN HALVORSEN TRUST	18824 SR 2	MONROE	WA	98272
JOSE LUNA AND ROSA SANABRIA	603 NORTH STREET	MONROE	WA	98272
JP MORGAN CHASE BANK NA	18751 SR 2	MONROE	WA	98272
KEVIN AND TAMMY WEBER	637 NORTH STREET	MONROE	WA	98272
LAKE APARTMENTS LLC	18727 BLUEBERRY LANE	MONROE	WA	98272
LT KELSEY CENTER LLC	19002 LENTON PLACE SE	MONROE	WA	98272
MARK MCCLAIN	412 N KELSEY STREET	MONROE	WA	98272
MATTHEW GORMLEY AND ALETA ENG	615 NORTH STREET	MONROE	WA	98272
MERCY PROPERTIES WASHINGTON III LLC	601 W ELIZABETH STREET	MONROE	WA	98272
MICHAEL B AND KELSEY L JONES	635 NORTH STREET	MONROE	WA	98272
MONROE GATEWAY ASSOCIATION	18669 SR 2	MONROE	WA	98272
NRCB/FRIENDSHIP HOUSE I	701 W ELIZABETH STREET	MONROE	WA	98272
PELTO PROPERTIES LLC	649 NORTH STREET	MONROE	WA	98272
RICHARD LINDEMULDER	347 ELIZABETH STREET	MONROE	WA	98272
ROBERT METHVEN	647 ELIZABETH STREET	MONROE	WA	98272
RONALD AND DEBRA LAWSON	18750 BLUEBERRY LANE	MONROE	WA	98272
RONALD REID	645 NORTH STREET	MONROE	WA	98272
ROUNDUP CO	18805 SR 2	MONROE	WA	98272
SHAGER FAMILY LLC	604 NORTH STREET	MONROE	WA	98272
SKYLER MARTINEZ	609 NORTH STREET	MONROE	WA	98272
SMITH BROTHERS LLC	18710 BLUEBERRY LANE	MONROE	WA	98272
SMITH BROTHERS LLC	373 ELIZABETH STREET	MONROE	WA	98272

SMITH BROTHERS LLC	15252 GALWAY BAY SE	MONROE	WA	98272
SMITH BROTHERS LLC	431 N KELSEY STREET	MONROE	WA	98272
SMITH BROTHERS LLC	351 ELIZABETH STREET	MONROE	WA	98272
STATE OF WA - DEPT OF TRANSPORTATION	18702 SR 2	MONROE	WA	98272
THE BLAIR GROUP	PO BOX 177	CARNATION	WA	98014
THOMAS GREEN	628 NORTH STREET	MONROE	WA	98272
TOM AND BETTY VANGELDER	645 ELIZABETH STREET	MONROE	WA	98272
VICTOR DEANE	618 NORTH STREET	MONROE	WA	98272
WAYNE DEANE	620 NORTH STREET	MONROE	WA	98272
WRM-MONROE LLC	15045 N KELSEY STREET	MONROE	WA	98272



AFFIDAVIT OF EMAILING NOTICE OF MDNS

STATE OF WASHINGTON)

189XX Blueberry Lane

Address

COUNTY OF SNOHOMISH)

Mitigated Determination of Non-Significance for
Blueberry Meadows Preliminary Plat SEPA2019-07

Application Name and File #

I, Leigh Anne Barr (print name) being first duly sworn on oath, depose and say:
That on the 27th day of January, 2020, I emailed the Notice of Mitigated
Determination of Non-Significance for Blueberry Meadows Preliminary Plat to public
agencies. Attached is a list of emails to whom this information was sent to.

I declare under penalty of perjury under the laws of the State of Washington that the
foregoing is true and correct.

L. Barr
Signed

1/27/2020
Date

separegister@ecy.wa.gov; pspirito@sno-isle.org; lanthony@sno-isle.org; Justin.fontes@ftr.com;
david.matulich@pse.com; john_warrick@cable.comcast.com; crenderlein@snopud.com;
Kate.Tourtellot@commtrans.org; Neilwheeler@comcast.net; Eileen.lefebvre@providence.org;
piplicd@monroe.wednet.edu; Diane.Rolph@co.snohomish.wa.us; mfitzgerald@snofire7.org;
k.kerwin@snoco.org; SEPA@psc Clean Air.org; stevev@psc Clean Air.org; eip@parks.wa.gov;
sposner@utc.wa.gov; kmclain@agr.wa.gov; ike.nwankwo@commerce.wa.gov;
reviewteam@commerce.wa.gov; sepadesk@dfw.wa.gov; efheinitz@doc1.wa.gov;
sepacenter@dnr.wa.gov; randy.kline@parks.wa.gov; Stan.Allison@faa.gov; Karen.Wood-
McGuiness@fema.dhs.gov; kjoseph@sauk-suiattle.com; njoseph@sauk-suiattle.com; jjoseph@sauk-
suiattle.com; ryoung@tulaliptribes-nsn.gov; klyste@stillaguamish.com; pstevenson@stillaguamish.com;
newstips@heraldnet.com; mmuscari@esassoc.com; info@PPTValley.org;
tom.laufmann@sno.wednet.edu; rooseveltwater@frontier.com; staff@highlandwaterdistrict.com;
bewood@snopud.com; faye.ryan@pse.com; dan.o.olson@williams.com; shannon.fleming@snoco.org;
zlamebull@tulaliptribes-nsn.gov; mrobenland@doc1.wa.gov; mannixj@monroe.wednet.edu;
JPrichard@republicservices.com; rodrijr@dshs.wa.gov; ehquestions@snohd.org;
Quinten.schmit@snoco.org; serviceaddresscorrec@pse.com; laura.blackmore@psp.wa.gov;
wcr.nepa@noaa.gov; apellham@snohd.org; stephen.semenick@BNSF.com;
David.McConnell@co.snohomish.wa.us; stephanie.jolivette@dahp.wa.gov; plattst@wsdot.wa.gov;
AnderDM@wsdot.wa.gov; David Harmsen <davidh@harmeseninc.com>; Justin Pedersen
<justinp@harmeseninc.com>



AFFIDAVIT OF POSTING NOTICE OF MDNS

STATE OF WASHINGTON)

189XX Blueberry Lane, Monroe WA 98272
Address

COUNTY OF SNOHOMISH)

Blueberry Meadows Mitigated Determination of
Non-Significance SEPA2019-07
Application Name and File #

I, Aaron Anderson (print name) being first duly sworn on oath, depose and say: That on the 27th day of January, 2020, I posted 1 sign for the Notice of Mitigated Determination of Non-Significance for Blueberry Meadows Preliminary Plat on or near the property concerned, in a conspicuous place; and on the correct date of posting of said notice.

I declare under penalty of perjury under the laws of the State of Washington that the foregoing is true and correct.


Signed

1/27/20
Date



City of Monroe
806 West Main Street, Monroe, WA 98272
Phone (360) 794-7400 Fax (360) 794-4007
www.monroewa.gov

NOTICE OF PUBLIC HEARING

NOTICE IS HEREBY GIVEN that a **PUBLIC HEARING** is scheduled to be held **Thursday, February 27, 2020 at approximately 11:00 a.m.** by the City of Monroe **Hearing Examiner** in the Council Chambers at City Hall, 806 West Main Street, Monroe, WA on the proposed **Blueberry Meadows Preliminary Plat**.

PROJECT NAME: Blueberry Meadows Preliminary Plat

PROJECT FILE#: PL2019-01 / SEPA2019-07

APPLICANT/OWNER: The Blair Group LLC, David Remlinger P.O. Box 177, Carnation, WA. 98014 (425) 231-0219

PROJECT LOCATION: The site is located on the 18900 block of Blueberry Lane, Monroe, Washington, 98272. Snohomish County Tax Parcel Number: 27060100107100.

PROJECT DESCRIPTION: The applicant is requesting preliminary plat approval for a 36-lot subdivision on approximately 3.0 acres in the Multi-Family Residential (R25) zoning district with associated grading, drainage improvements, landscaping, and street frontage improvements.

PUBLIC COMMENT PROCEDURE: Anyone wishing to comment on the above items or to provide other relevant information may do so in writing or appear in person before the Hearing Examiner at the time and place of said public hearing. Per MMC 22.82.110 (D), the Hearing Examiner's decision shall become final and issued upon the terms and conditions prescribed by the Hearing Examiner, if no appeal is filed.

PUBLIC REVIEW OF DOCUMENTS: A copy of the application and supporting documents for the project are available for review during regular business hours, 8:00 a.m. – 5:00 p.m., Monday through Friday, excluding Holidays, at Monroe City Hall, 806 W Main St., Monroe WA or on the city's website at: <http://www.monroewa.gov/818/Blueberry-Meadows>. A copy of the staff report will be available for review at City Hall seven (7) days prior to the hearing. Please contact Kim Shaw at (360) 863-4532 or kshaw@monroewa.gov for further assistance. Copies will be provided at cost.

STAFF CONTACT: Shana Restall, Principal Planner @ (360) 863-4608 or srestall@monroewa.gov

Client	EDH103247 - City Of Monroe	Phone	(360) 794-7400		
Address	Attn: Jammi Guion, 806 W Main St	E-Mail	KShaw@monroewa.gov		
	Monroe, WA, 98272	Fax			
Order#	890632	Requested By	KIM SHAW	Order Price	\$53.55
Classification	8901 - EDH-WIDE-Public Notices	PO #	PL2019-01	Tax 1	\$0.00
Start Date	02/13/2020	Created By	1751	Tax 2	\$0.00
End Date	02/13/2020	Creation Date	02/11/2020, 03:44:37 pm	Total Net	\$53.55
Run Dates	2			Payment	\$0.00
Publication(s)	Everett Daily Herald, HeraldNet				
Sales Rep	1751 - Cedarquist, Karen	Phone	(425) 339-3089		
		E-Mail	kcedarquist@heraldnet.com		
		Fax	(425) 339-3438		

CITY OF MONROE, WASHINGTON
NOTICE IS HEREBY GIVEN that a PUBLIC HEARING is scheduled to be held Thursday, February 27, 2020 at approximately 11:00 a.m. by the City of Monroe Hearing Examiner in the Council Chambers at City Hall, 806 West Main Street, Monroe, WA on the proposed Blueberry Meadows Preliminary Plat. PROJECT NAME: Blueberry Meadows Preliminary Plat PROJECT FILE#: PL2019-01 / SEPA2019-07 APPLICANT/OWNER: The Blair Group LLC, David Remlinger P.O. Box 177, Carnation, WA. 98014 (425) 231-0219 PROJECT LOCATION: The site is located on the 18900 block of Blueberry Lane, Monroe, Washington, 98272. Snohomish County Tax Parcel Number: 27060100107100. PROJECT DESCRIPTION: The applicant is requesting preliminary plat approval for a 36-lot subdivision on approximately 3.0 acres in the Multi-Family Residential (R25) zoning district with associated grading, drainage improvements, landscaping, and street frontage improvements. PUBLIC COMMENT PROCEDURE: Anyone wishing to comment on the above items or to provide other relevant information may do so in writing or appear in person before the Hearing Examiner at the time and place of said public hearing. Per MMC 22.82.110 (D), the Hearing Examiner's decision shall become final and issued upon the terms and conditions prescribed by the Hearing Examiner, if no appeal is filed. PUBLIC REVIEW OF DOCUMENTS: A copy of the application and supporting documents for the project are available for review during regular business hours, 8:00 a.m. - 5:00 p.m., Monday through Friday, excluding Holidays, at Monroe City Hall, 806 W Main St., Monroe WA or on the city's website at: <http://www.monroewa.gov/818/Blueberry-Meadows>. A copy of the staff report will be available for review at City Hall seven (7) days prior to the hearing. Please contact Kim Shaw at (360) 863-4532 or kshaw@monroewa.gov for further assistance. Copies will be provided at cost. STAFF CONTACT: Shana Restall, Principal Planner @ (360) 863-4608 or srestall@monroewa.gov
Published: February 13, 2020. EDH890632



AFFIDAVIT OF MAILING NOTICE OF PUBLIC HEARING

STATE OF WASHINGTON)

18xxx Blueberry Lane, Monroe WA 98272

Address

COUNTY OF SNOHOMISH)

Blueberry Meadows Preliminary Plat PL2019-01

Application Name and File #

I, Kim Shaw (print name) being first duly sworn on oath, depose and say:
That on the 11th day of February, 2020, I made application with Click2Mail to mail
on February 12th, 2020 a copy with prepaid postage of the Notice of Public Hearing
for Blueberry Meadows Preliminary Plat. Attached is a list of names and addresses to
whom this information was mailed to.

I declare under penalty of perjury under the laws of the State of Washington that the
foregoing is true and correct.

Kim Shaw
Signed

2/12/2020
Date

OWNER NAME	OWNER ADDRESS	CITY	STATE	ZIP CODE
18532 BLUEBERRY LLC	18532 BLUEBERRY LANE	MONROE	WA	98272
649 ELIZABETH ST LLC	649 ELIZABETH STREET	MONROE	WA	98272
ANHUU PHAM AND XUYEN LY	18806 BLUEBERRY LANE	MONROE	WA	98272
ANNEMARIE SUMERI AND KENT SHUEY	651 NORTH STREET	MONROE	WA	98272
ARNOLD HANSEN	650 NORTH STREET	MONROE	WA	98272
ASORA NOA	605 NORTH STREET	MONROE	WA	98272
BALDRIDGE DEV GROUP LLC	18906 SR 2	MONROE	WA	98272
BNSF RAILWAY COMPANY	PO BOX 961089	FORT WORTH	TX	76161-0089
BRENT SEARLES AND PETER JONES	641 NORTH STREET	MONROE	WA	98272
CHONG HUI SONG AND HYUNG IN	18950 SR 2	MONROE	WA	98272
DAIN M AND KIMBERLEE A JONES	654 NORTH STREET	MONROE	WA	98272
DAKOTA LEMS	607 NORTH STREET	MONROE	WA	98272
DAMIANIDIS LIVING TRUST	643 ELIZABETH STREET	MONROE	WA	98272
DANIEL JOHNSON	642 NORTH STREET	MONROE	WA	98272
DAVID AND DEANNA HOLZERLAND	629 NORTH STREET	MONROE	WA	98272
DEL CAPPS INC	650 ELIZABETH STREET	MONROE	WA	98272
ELAINE ZANASSI	623 NORTH STREET	MONROE	WA	98272
GALWAY APARTMENTS LLC	18560 GALWAY BAY	MONROE	WA	98272
GALWAY APARTMENTS LLC	15247 GALWAY BAY SE	MONROE	WA	98272
GREG GIULIANI	638 NORTH STREET	MONROE	WA	98272
GTY-PACIFIC LEASING LLC	14980 N KELSEY STREET	MONROE	WA	98272
HALVORSEN JOHN TRUST	18600 SR 2	MONROE	WA	98272
JACOB AND BRITTNEY KUNA	634 NORTH STREET	MONROE	WA	98272
JOHN ECKER	19025 SR 2	MONROE	WA	98272
JOHN HALVORSEN TRUST	18824 SR 2	MONROE	WA	98272
JOSE LUNA AND ROSA SANABRIA	603 NORTH STREET	MONROE	WA	98272
JP MORGAN CHASE BANK NA	18751 SR 2	MONROE	WA	98272
KEVIN AND TAMMY WEBER	637 NORTH STREET	MONROE	WA	98272
LAKE APARTMENTS LLC	18727 BLUEBERRY LANE	MONROE	WA	98272
LT KELSEY CENTER LLC	19002 LENTON PLACE SE	MONROE	WA	98272
MARK MCCLAIN	412 N KELSEY STREET	MONROE	WA	98272
MATTHEW GORMLEY AND ALETA ENG	615 NORTH STREET	MONROE	WA	98272
MERCY PROPERTIES WASHINGTON III LLC	601 W ELIZABETH STREET	MONROE	WA	98272
MICHAEL B AND KELSEY L JONES	635 NORTH STREET	MONROE	WA	98272
MONROE GATEWAY ASSOCIATION	18669 SR 2	MONROE	WA	98272
NRCB/FRIENDSHIP HOUSE I	701 W ELIZABETH STREET	MONROE	WA	98272
PELTO PROPERTIES LLC	649 NORTH STREET	MONROE	WA	98272
RICHARD LINDEMULDER	347 ELIZABETH STREET	MONROE	WA	98272
ROBERT METHVEN	647 ELIZABETH STREET	MONROE	WA	98272

RONALD AND DEBRA LAWSON	18750 BLUEBERRY LANE	MONROE	WA	98272
RONALD REID	645 NORTH STREET	MONROE	WA	98272
ROUNDUP CO	18805 SR 2	MONROE	WA	98272
SHAGER FAMILY LLC	604 NORTH STREET	MONROE	WA	98272
SKYLER MARTINEZ	609 NORTH STREET	MONROE	WA	98272
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SMITH BROTHERS LLC	15252 GALWAY BAY SE	MONROE	WA	98272
SMITH BROTHERS LLC	431 N KELSEY STREET	MONROE	WA	98272
SMITH BROTHERS LLC	351 ELIZABETH STREET	MONROE	WA	98272
STATE OF WA - DEPT OF TRANSPORTATION	18702 SR 2	MONROE	WA	98272
THE BLAIR GROUP	PO BOX 177	CARNATION	WA	98014
THOMAS GREEN	628 NORTH STREET	MONROE	WA	98272
TOM AND BETTY VANGELDER	645 ELIZABETH STREET	MONROE	WA	98272
VICTOR DEANE	618 NORTH STREET	MONROE	WA	98272
WAYNE DEANE	620 NORTH STREET	MONROE	WA	98272
WRM-MONROE LLC	15045 N KELSEY STREET	MONROE	WA	98272



AFFIDAVIT OF POSTING NOTICE OF PUBLIC HEARING

STATE OF WASHINGTON)

18XXX Blueberry Lane, Monroe WA 98272
Address

COUNTY OF SNOHOMISH)

Blueberry Meadows Preliminary Plat PL2019-01
Application Name and File #

I, AMON AMBENZON (print name) being first duly sworn on oath, depose and say: That on the 13th day of February, 2020, I posted 2 signs for the Notice of Public Hearing for the Blueberry Meadows Preliminary Plat on or near the property concerned, in a conspicuous place; and on the correct date of posting of said notice.

I declare under penalty of perjury under the laws of the State of Washington that the foregoing is true and correct.

Signed

A handwritten signature in black ink, appearing to read "Amon Ambenzon", written over a horizontal line.

Date

2/13/20



AFFIDAVIT OF POSTING NOTICE OF PUBLIC HEARING

STATE OF WASHINGTON) 18XXX Blueberry Lane, Monroe, WA 98272
Address

COUNTY OF SNOHOMISH) Blueberry Meadows Preliminary Plat PL2019-01
Application Name and File #

I, Keri Shaw (print name) being first duly sworn on oath, depose and say:
That on the 13 day of February, 2020, I posted 1 notice in the City Hall lobby
and Emailed 1 notice to the Monroe Public Library for the Preliminary Plat of Blueberry
Meadows and on the correct date of posting of said notice.

I declare under penalty of perjury under the laws of the State of Washington that the
foregoing is true and correct.

Keri Shaw
Signed

2/13/2020
Date

From: Kim Shaw
To: "pspirito@sno-isle.org"; "lanthony@sno-isle.org"
Cc: [Kim Shaw](#)
Subject: Notice of Public Hearings
Date: Thursday, February 13, 2020 10:09:57 AM
Attachments: [NOPH.pdf](#)
[NOPH.pdf](#)

Good morning!

Please see the attached Notices of Public Hearings for Blueberry Meadows Preliminary Plat and Suschik Reasonable Use for posting in your lobby, effective February 13, 2020. If you have any questions please feel free to call me.

Thank you,
Kim



Kim Shaw, CPT | Land Use Permit Supervisor
806 West Main Street | Monroe, WA 98272
360-863-4532 | kshaw@monroewa.gov

NOTE: This email is considered a public record and may be subject to public disclosure.

CONCEPTUAL STORMWATER SITE PLAN
FOR THE
**PRELIMINARY PLAT OF
BLUEBERRY MEADOWS**
MONROE, WASHINGTON

FEBRUARY 22, 2019
Revised SEPTEMBER 20, 2019
ReRevised NOVEMBER 12, 2019



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PROJECT OVERVIEW

This Stormwater Site Plan has been prepared for the Preliminary Plat of Blueberry Meadows in Monroe, Washington. The project consists of 36 zero lot line lots spread over 8 buildings. A looped internal road network provides access to 30 units as well as additional parking. A second access will provide for the remaining 6 units. Currently, the site is vacant. The 3.0 acre site is located northwest at the intersection of Blueberry Lane and Kelsey Street, see Figure 1: Vicinity Map.

METHODOLOGY

The drainage design for the project has been prepared based on the requirements of the 2014 Department of Ecology Stormwater Management Manual (DOE Manual) as adopted by the City of Monroe. WWHM2012 as provided by DOE has been used for determining basin runoff and for sizing of the stormwater facilities. Based on the flow charts in Figure 2.3 of the DOE Manual and the site parameters, the project is subject to Minimum Requirements 1-9.

The project site parameters are:

- The project is new development.
- The project will create 5,000 sf of new or replaced impervious area.

MR 1: PREPARATION OF STORMWATER SITE PLANS

DRAINAGE PLAN DESCRIPTION

Stormwater runoff from roofs and paved areas will be collected and conveyed to infiltration trenches located under the access drive.

WATER QUALITY MEASURES

Following is a list of the proposed construction water quality BMPs. See MR 3: Water Pollution Source Control for more information. The proposed BMPs are as follows:

- BMP C103, High Visibility Fence
- BMP C105, Construction Entrance
- BMP C107, Construction Road/Parking Area Stabilization
- BMP C120, Temporary and Permanent Seeding
- BMP C121, Mulching
- BMP C123, Plastic Covering
- BMP C125, Topsoiling/Composting
- BMP C140, Dust Control
- BMP C220, Storm Inlet Protection
- Temporary Infiltration Pond

DETENTION SIZING

Flow control will consist of infiltration into the underlying soils using several underground, infiltration trenches. As a result there will be no surface runoff from the site.

CONVEYANCE CALCULATIONS

It is anticipated that pipe runs will be short and that conveyance will not be an issue.

STORMWATER TREATMENT BMP'S

The roof runoff is considered clean and treatment is not required. The runoff from the new access drive will utilize cartridge filter treatment systems. See Minimum Requirement #6 for additional information.

PROTECTION OF WETLANDS

There are no wetlands on or adjacent to the site.

OPERATIONS AND MAINTENANCE

This will be provided with the permit documents after preliminary approval.

EXISTING CONDITIONS SUMMARY

DESCRIPTION

The site is located northwest of the intersection of Blueberry Lane and Kelsey Street. Railroad Right of Way lies immediately to the north. The 3.0 acre, triangular site is currently vacant with a ground cover of unmaintained grass and native shrubs. The topography of the site lies between 61 feet and 65 feet with a portion of a berm from previous grading projects along the northwest boundary. See Figure 2: Existing Site Map for more information.

SOILS DESCRIPTION

GeoTest Services, Inc has performed soils exploration on the site and has documented the underlying soils in their report *Monroe Townhouses*. In general, the soils are topsoil over various depths of fill (3 ft to greater than 10 ft) placed over native sands and gravels (alluvium). Area fills are largest to the northwest, where test pits 5, 6 and 9 did not reach the alluvium down to 11 feet, and to the east where test pits 3 did not find alluvium down to 7 feet and test pit 10 reached it at 10.5 feet. The remaining test pits reached alluvium at depths ranging from 4-9 feet. Where alluvium was encountered, no bottom was found to a depth of 11 feet below grade.

Local well data indicates that seasonal groundwater is at a depth of 10-15 feet. At the time of the test pits (mid December 2017), groundwater was found in only the most northwest test pit (5) at a depth of 4 feet. The report states this is likely not regional groundwater but water trapped on top of the silty fill soils.

Geotest gave preliminary, design infiltration rates of the alluvium of 10 inches per hour.

EXISTING BASIN

The existing basin is the full site. As 100 percent infiltration is proposed, no existing basin calculations were performed.

OFFSITE ANALYSIS & MITIGATION

No runoff is proposed to leave the site.

UPSTREAM ANALYSIS

The site is bounded by Blueberry Lane to the south and Kelsey Street to the east. To the west is current construction for a multi-family residential development. To the north lies the railroad. The roads block drainage from the south and east, the railroad from the north, and the multi-family to the west is downstream; so there is no upstream basin.

DOWNSTREAM ANALYSIS

No runoff is proposed to leave the site.

PROPOSED CONDITIONS SUMMARY

The site will be sub-divided into 36 zero-lot line lots consisting of 8 multi-unit buildings; four 5-unit buildings and four 4 unit buildings. Two driveway aprons will provide access from Blueberry Lane and will provide frontage along the buildings. See Figure 3: Developed Conditions.

MR 2: CONSTRUCTION STORMWATER POLLUTION PREVENTION (SWPP)

This SWPPP Narrative has been prepared as part of the Preliminary Plat of Blueberry Meadows and is conceptual in nature. The project proposes greater than 1 acre of land disturbing activities and will require a Department of Ecology Construction Stormwater General Permit.

The construction site has the following characteristics:

Disturbed Area: Approximately 2.94 ac
Soil Type: Sultan silt loam
(Runoff is slow and the hazard of water erosion is slight)
Average slope: 0.5-2%
Critical Areas: None

1. CONSTRUCTION STORMWATER POLLUTION PREVENTION ELEMENTS

A Construction Stormwater Management Plan will be prepared that addresses the 13 Required Elements summarized below:

Element #1: Mark Clearing Limits

The construction plans will delineate the limits of the clearing for the site. These will be located in the field prior to clearing taking place.

Element #2: Establish Construction Access

Construction access will be taken from the west access from Blueberry Lane. A stabilized construction entrance will be installed at that location.

Element #3: Control Flow Rates

Temporary infiltration ponds will be constructed by the contractor to allow construction runoff to infiltrate.

Element #4: Install Sediment Controls

Sediment controls and their installation will be delineated on the construction documents in the future.

Element #5: Stabilize Soils

In planting areas the exposed soils will be stabilized per BMPs C120, C121, C123, and C125. In paved areas the soils will be stabilized by the placement of the rock base course as part of C107. Temporary stockpiles will be mulched, seeded or covered with plastic.

Element #6: Protect Slopes

The site is flat and will not require slope protection.

Element #7: Protect Drain Inlets

The storm drains along Blueberry Land and Kelsey Street will be protected with filter inserts.

Element #8: Stabilize Channels and Outlets

No channels or outfalls are proposed.

Element #9: Control of Pollutants

All pollutants, including waste materials and demolition debris, that occur onsite shall be handled and disposed of in a manner that does not cause contamination of stormwater. Good housekeeping and preventative measures will be taken to ensure that the site will be kept clean, well organized, and free of debris.

Element #10: Control De-Watering

No dewatering is expected as no excavation to the water table is anticipated.

Element #11: Maintain BMPs

Notes for the maintenance of erosion control facilities will be included on the construction plans.

Element #12: Manage the Project

The project will be subject to seasonal work limitations, site inspection and monitoring as required by the City of Monroe. Erosion control monitoring and supervision will be managed by the contractor.

Element #13: Protect Low Impact Development

At present, no LID features are proposed as the site achieves 100% infiltration. This Element will be implemented if LID features are added during the design phase.

MR 3: WATER POLLUTION SOURCE CONTROL

PERMANENT SOURCE CONTROL BMPs

Being a residential development source control will consist of maintained garbage facilities, maintenance of the storm drain system, and pavement sweeping.

MR 4: PRESERVATION OF NATURAL DRAINAGE

Infiltration of the storm water runoff from the developed site is proposed. This matches the existing conditions where there is essentially no surface discharge from the site. As such there is no downstream drainage that will be impacted by the discharge of surface water from the proposed development. By allowing the runoff to continue to infiltrate, the natural drainage will be preserved.

MR 5: ON-SITE STORMWATER MANAGEMENT

The site is located within City limits and will require MR's 1-9. As such, it needs to meet the Low Impact Development Performance Standard (LIDPS) and use BMP T5.13 on pervious surfaces OR meet the requirements of List #2.

There are no storm systems in the local area that do not tie to some form of infiltration and it is expected that the City will not allow a storm drainage connection to their system. Therefore, on-site infiltration is the proposed solution to stormwater increases. All infiltration systems will need to be bedded into the native alluvial soils. This will require removal of the fill soils down to the alluvial material. Depending on depth and location of groundwater, either the trench will be bedded directly in the alluvial material or C33 sand will be used as backfill to the bottom of the infiltration system.

With these measures in place, the project is proposed to achieve 100 percent infiltration of runoff, meeting the requirements of the LIDPS.

MR 6: RUNOFF TREATMENT

With greater than 5,000 sf of pollution generating impervious surfaces, the site will be required to treat runoff. Based on the Treatment Facility Selection Flow Chart, the following requirements apply:

Step 1: Identify Pollutants of Concern: Based on the Downstream Analysis, there are no 303d listed waterbodies in the area. Infiltration will be used to control runoff. Pollutants will be typical of those for a residential development.

Step 2: Determine if an Oil Control Facility is Required: The site will have less than 100 vehicles per 1,000 sf of building area per the traffic report. There will be no fueling or maintenance of vehicles on the site.

Step 3 Determine if Infiltration for Pollutant Removal Is Practical: The site will fail Soil Suitability in the alluvial soils at the proposed infiltration depth.

Step 4 Determine if Phosphorous Control is Required: There is no indication in the downstream analysis that there is a phosphorous issue in the downstream system. Infiltration is the proposed means of controlling runoff.

Step 5 Determine if Enhanced Treatment is Required: Based on the proposed land use, residential, enhanced treatment is not required. The adjacent pond is man-made and is not expected to count as a “fresh water designated for aquatic life use”.

Therefore; **Basic Treatment** is required.

Storm water treatment of the parking lot runoff will be accomplished through the use of catch basin cartridge filter treatment systems by Contech Stormwater Solutions. The system is approved for stand alone general use by the Department of Ecology and is sized to treat the 6-month developed stormwater runoff rate while safely conveying larger stormwater events to the infiltration facility. All catchbasins collecting stormwater from pollutant generating impervious surfaces will be treatment catchbasins.

Final sizing and cartridge count will be determined during the final design.

MR 7: FLOW CONTROL

The project proposes full infiltration through the use of underground, rock, infiltration galleries. Geotest Services, Inc has determined that the lower alluvial soils are expected to have a design rate of 10 in/hr. See their report in Appendix A for more information. Trenches have generally been located away from the old fills in the northwest and east. The geotechnical report and regional information give support to the lack of a restrictive layer down to 11 feet and groundwater is estimated to be 10-15 feet below surface grades. During permit design, it is anticipated that further geotechnical evaluation will be required once exact locations and depths are known. The infiltration trench sections indicate that C33 sand might be used to bridge any potential gap between the bottom of the infiltration facility and the top of the alluvium. C33 (or concrete) sand is a washed or manufactured sand free of fines and generally free draining. Using the DOE Manual equation for Saturated Hydraulic Conductivity gives a design rate of around 50 in/hr, much greater than that of the native soils.

The project will be subdivided into 4 sub basins as shown on Figure 3. The basin areas and ground coverage is included with the WWHM2012 output in Appendix B.

The infiltration galleries will have the following preliminary dimensions (note: final dimensions and layout will be provided on final engineering design documents, those :

Basin ID	Bottom Area	Length	Width	Depth	% Infiltrated
1	100	20	5	3	100
2	1,080	120	9	3	100
3	840	40	21	3	100
4	900	150	6	3	100

These trenches account for all runoff from access, walkways, planters, the two buildings in the midst of the development and the front roofs of all the edge buildings.

The rear roofs of the edge buildings will use roof downspout infiltration systems. These systems can be sized using grain-size with a length of standard trench per 1,000 sf of tributary roof area. In this case, the length of 2 ft wide by 1.5 foot deep trench would be 30 lineal feet per 1,000 sf roof area.

With these two systems types, 100 percent of the developed site runoff is to be infiltrated. The final storm drainage report will further detail the systems and sizing calculations.

See attached WWHM2012 screen captures in Appendix A.

ALTERNATES:

Infiltration is the only viable solution for stormwater in the area as there are no City or naturea conveyance systems in the local area that are not tied to infiltration systems already. Alternates to the design would involve measures to bridge the gap between infiltration systems and the free draining alluvium while addressing potential groundwater issues. Such measures could include pit drains, that extend deeper in to the alluvium to better utilize hydraulic head pressue to promote drainage. This has been used in Marysville on Grove Elementary without issue since 2007. The C33 sand below a trench has been used for years and has been included on the plan sections. Additional storage could address reductions in infiltration rates due to the presence of groundwater. If groundwater is determined to be high enough to become an issue, then a mounding analysis would be prepared to address the impacts. In general, infiltration appears to be a viable solution with options to make it fit with the site constraints.

MR 8: WETLANDS PROTECTION

There are no wetlands or other critical areas on or near the site.

MR 9: BASIN/WATERSHED PLANNING

The City of Monroe does not have any specific drainage basin or watershed requirements.

MR 10: OPERATION AND MAINTENANCE

A full operations and Maintenance Manual will accompany the final drainage report.

FIGURES

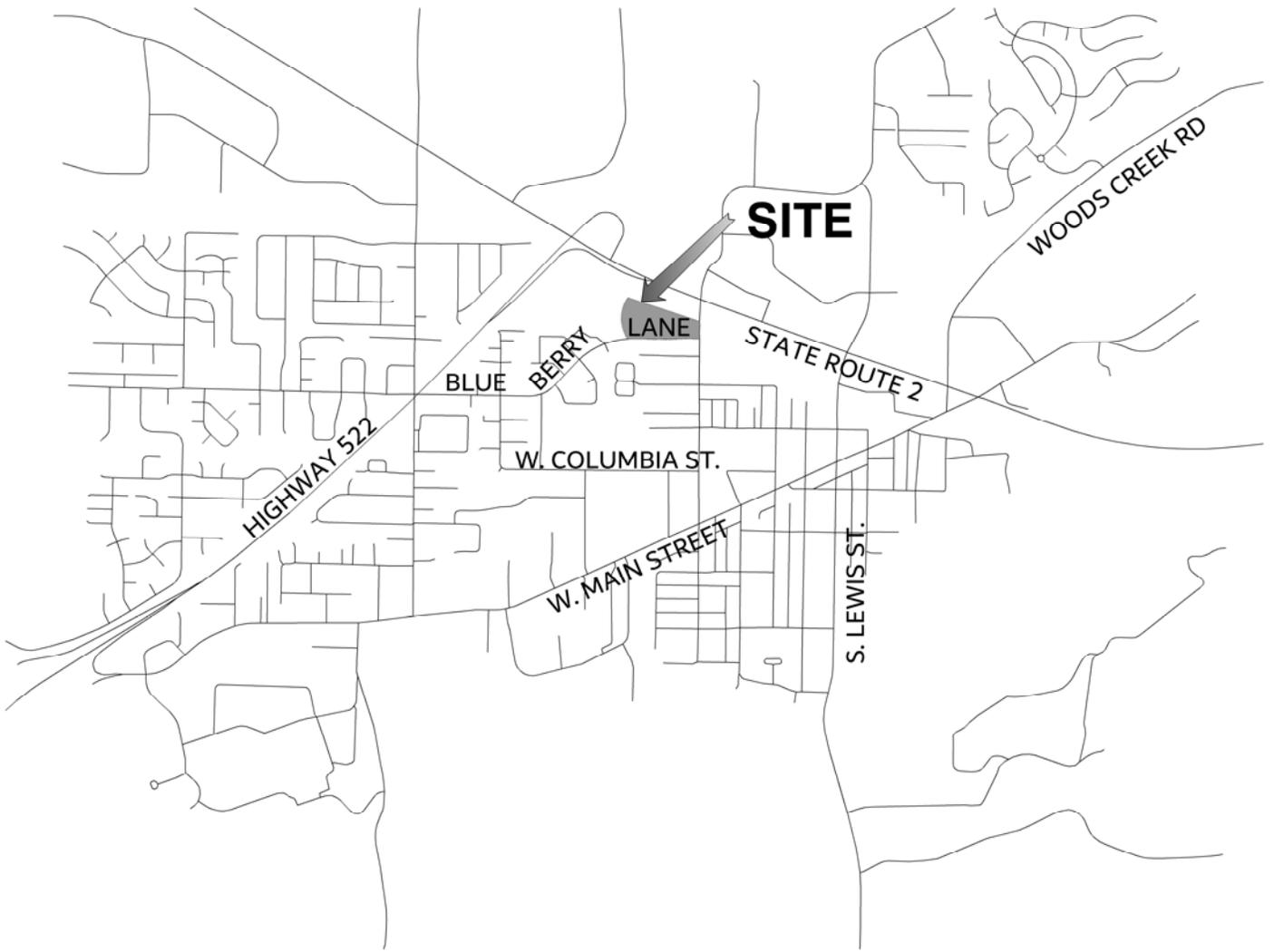
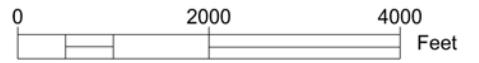


FIGURE 1 - VICINITY MAP

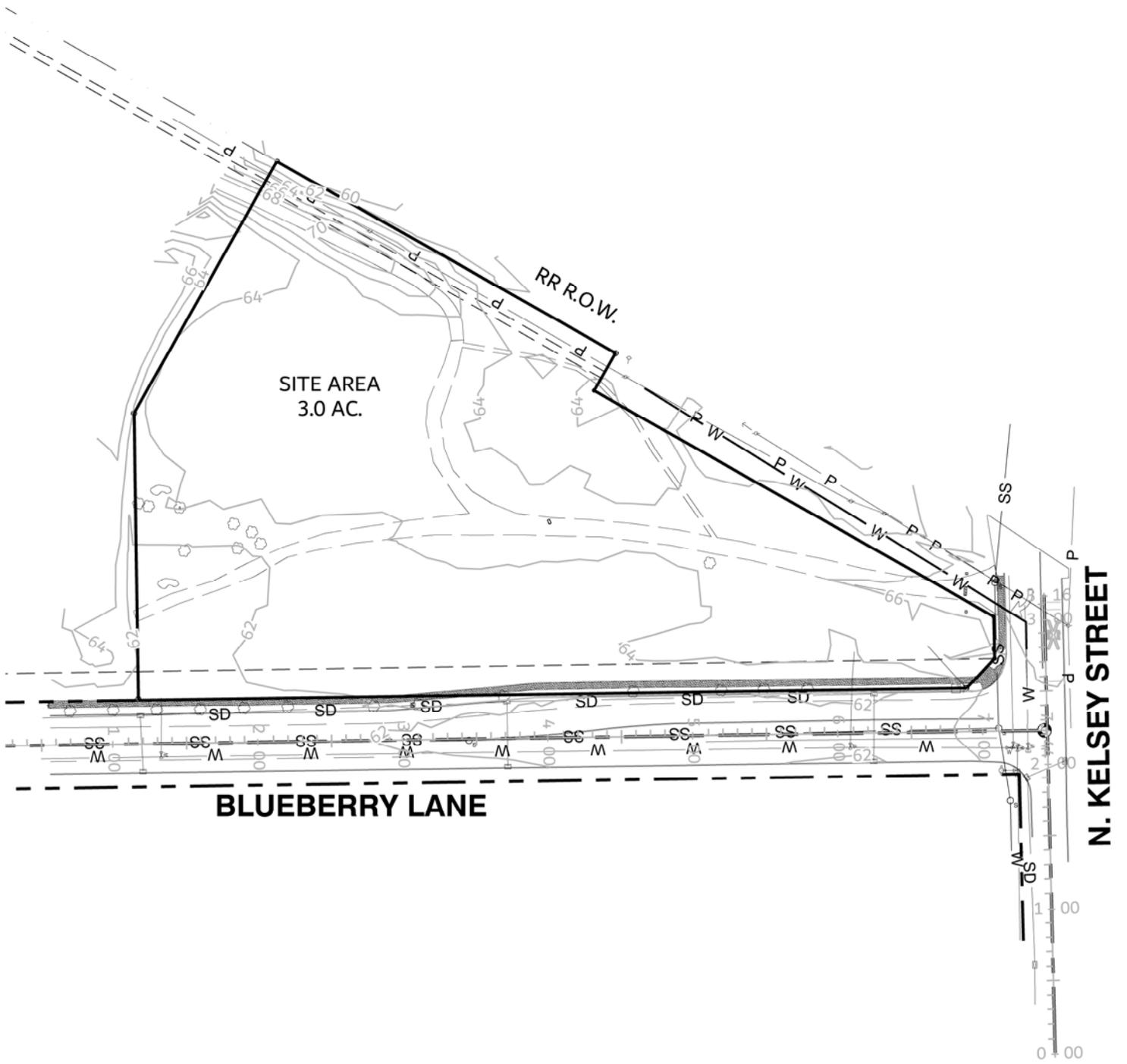


FIGURE 2 - EXISTING CONDITIONS

APPENDIX A
WWHM2012 SCREEN CAPTURES

Basin 1 Predeveloped

Subbasin Name: Basin 1

Flows To : Surface: Gravel Trench Bed 1, Interflow: Gravel Trench Bed 1, Groundwater:

Area in Basin Show Only Selected

Available Pervious		Available Impervious	
	Acres		Acres
<input type="checkbox"/> A/B, Forest, Flat	0	<input checked="" type="checkbox"/> ROADS/FLAT	.06
<input type="checkbox"/> A/B, Forest, Mod	0	<input type="checkbox"/> ROADS/MOD	0
<input type="checkbox"/> A/B, Forest, Steep	0	<input type="checkbox"/> ROADS/STEEP	0
<input type="checkbox"/> A/B, Pasture, Flat	0	<input checked="" type="checkbox"/> ROOF TOPS/FLAT	0
<input type="checkbox"/> A/B, Pasture, Mod	0	<input type="checkbox"/> DRIVEWAYS/FLAT	0
<input type="checkbox"/> A/B, Pasture, Steep	0	<input type="checkbox"/> DRIVEWAYS/MOD	0
<input checked="" type="checkbox"/> A/B, Lawn, Flat	.03	<input type="checkbox"/> DRIVEWAYS/STEEP	0
<input type="checkbox"/> A/B, Lawn, Mod	0	<input type="checkbox"/> SIDEWALKS/FLAT	0
<input type="checkbox"/> A/B, Lawn, Steep	0	<input type="checkbox"/> SIDEWALKS/MOD	0
<input type="checkbox"/> C, Forest, Flat	0	<input type="checkbox"/> SIDEWALKS/STEEP	0
<input type="checkbox"/> C, Forest, Mod	0	<input type="checkbox"/> PARKING/FLAT	0
<input type="checkbox"/> C, Forest, Steep	0	<input type="checkbox"/> PARKING/MOD	0
<input type="checkbox"/> C, Pasture, Flat	0	<input type="checkbox"/> PARKING/STEEP	0
<input type="checkbox"/> C, Pasture, Mod	0	<input type="checkbox"/> POND	0
<input type="checkbox"/> C, Pasture, Steep	0	<input type="checkbox"/> Porous Pavement	0
<input type="checkbox"/> C, Lawn, Flat	0		
<input type="checkbox"/> C, Lawn, Mod	0		
<input type="checkbox"/> C, Lawn, Steep	0		
<input type="checkbox"/> SAT, Forest, Flat	0		
<input type="checkbox"/> SAT, Forest, Mod	0		
<input type="checkbox"/> SAT, Forest, Steep	0		

Pervious Total: 0.03 Acres
 Impervious Total: 0.06 Acres
 Basin Total: 0.09 Acres

BASIN 1 INPUT

Gravel Trench Bed 1 Predeveloped

Facility Name: Gravel Trench Bed 1

Outlet 1: 0, Outlet 2: 0, Outlet 3: 0

Downstream Connection: Gravel Trench/Bed

Facility Type: Precipitation Applied to Facility, Evaporation Applied to Facility

Quick Trench

Facility Dimension Diagram

Facility Dimensions

Trench Length (ft): 20
 Trench Bottom Width (ft): 5
 Effective Total Depth (ft): 4
 Top and bottom slope (H/V): 0
 Left Side Slope (H/V): 0
 Right Side Slope (H/V): 0

Material Layers for Trench/Bed

Layer 1 Thickness (ft): 5
 Layer 1 porosity (0-1): 0.4
 Layer 2 Thickness (ft): 0
 Layer 2 porosity (0-1): 0
 Layer 3 Thickness (ft): 0
 Layer 3 porosity (0-1): 0

Infiltration: Yes

Measured Infiltration Rate (in/hr): 10
 Reduction Factor (infiltr*factor): 1
 Use Wetted Surface Area (sidewalls): NO

Total Volume Infiltrated (ac-ft): 11.379
 Total Volume Through Riser (ac-ft): 0.001

Outlet Structure Data

Riser Height (ft): 3
 Riser Diameter (in): 8
 Riser Type: Flat
 Notch Type:

Orifice Number, Diameter (in), Height (ft)

Orifice Number	Diameter (in)	Height (ft)
1	0	0
2	0	0
3	0	0

Trench Volume at Riser Head (ac-ft): .003

Show Trench: Open Table

Initial Stage (ft): 0
 Total Volume Through Facility (ac-ft): 11.379
 Percent Infiltrated: 100

TRENCH 1 INPUT AND RESULTS

Basin 2 Predeveloped

Subbasin Name: Basin 2

Flows To : Surface: Gravel Trench Bed 2, Interflow: Gravel Trench Bed 2, Groundwater: (empty)

Area in Basin Show Only Selected

Available Pervious		Available Impervious	
	Acres		Acres
<input type="checkbox"/> A/B, Forest, Flat	0	<input checked="" type="checkbox"/> ROADS/FLAT	.43
<input type="checkbox"/> A/B, Forest, Mod	0	<input type="checkbox"/> ROADS/MOD	0
<input type="checkbox"/> A/B, Forest, Steep	0	<input type="checkbox"/> ROADS/STEEP	0
<input type="checkbox"/> A/B, Pasture, Flat	0	<input checked="" type="checkbox"/> ROOF TOPS/FLAT	.2
<input type="checkbox"/> A/B, Pasture, Mod	0	<input type="checkbox"/> DRIVEWAYS/FLAT	0
<input type="checkbox"/> A/B, Pasture, Steep	0	<input type="checkbox"/> DRIVEWAYS/MOD	0
<input checked="" type="checkbox"/> A/B, Lawn, Flat	.24	<input type="checkbox"/> DRIVEWAYS/STEEP	0
<input type="checkbox"/> A/B, Lawn, Mod	0	<input type="checkbox"/> SIDEWALKS/FLAT	0
<input type="checkbox"/> A/B, Lawn, Steep	0	<input type="checkbox"/> SIDEWALKS/MOD	0
<input type="checkbox"/> C, Forest, Flat	0	<input type="checkbox"/> SIDEWALKS/STEEP	0
<input type="checkbox"/> C, Forest, Mod	0	<input type="checkbox"/> PARKING/FLAT	0
<input type="checkbox"/> C, Forest, Steep	0	<input type="checkbox"/> PARKING/MOD	0
<input type="checkbox"/> C, Pasture, Flat	0	<input type="checkbox"/> PARKING/STEEP	0
<input type="checkbox"/> C, Pasture, Mod	0	<input type="checkbox"/> POND	0
<input type="checkbox"/> C, Pasture, Steep	0	<input type="checkbox"/> Porous Pavement	0
<input type="checkbox"/> C, Lawn, Flat	0		
<input type="checkbox"/> C, Lawn, Mod	0		
<input type="checkbox"/> C, Lawn, Steep	0		
<input type="checkbox"/> SAT, Forest, Flat	0		
<input type="checkbox"/> SAT, Forest, Mod	0		
<input type="checkbox"/> SAT, Forest, Steep	0		

Pervious Total: 0.24 Acres
 Impervious Total: 0.63 Acres
 Basin Total: 0.87 Acres

BASIN 2 INPUT

Gravel Trench Bed 2 Predeveloped

Facility Name: Gravel Trench Bed 2

Outlet 1: 0, Outlet 2: 0, Outlet 3: 0

Downstream Connection: Gravel Trench/Bed

Facility Type: Precipitation Applied to Facility, Evaporation Applied to Facility

Quick Trench

Facility Dimension Diagram

Facility Dimensions

Trench Length (ft): 120
 Trench Bottom Width (ft): 9
 Effective Total Depth (ft): 4
 Top and bottom slope (H/V): 0
 Left Side Slope (H/V): 0
 Right Side Slope (H/V): 0

Outlet Structure Data

Riser Height (ft): 3
 Riser Diameter (in): 8
 Riser Type: Flat
 Notch Type: (empty)

Material Layers for Trench/Bed

Layer 1 Thickness (ft): 4
 Layer 1 porosity (0-1): 0.4
 Layer 2 Thickness (ft): 0
 Layer 2 porosity (0-1): 0
 Layer 3 Thickness (ft): 0
 Layer 3 porosity (0-1): 0

Infiltration Yes No

Measured Infiltration Rate (in/hr): 10
 Reduction Factor (infiltr*factor): 1
 Use Wetted Surface Area (sidewalls): NO

Total Volume Infiltrated (ac-ft): 121.912
 Total Volume Through Riser (ac-ft): 0.005

Orifice Number, Diameter (in), Height (ft)

Orifice Number	Diameter (in)	Height (ft)
1	0	0
2	0	0
3	0	0

Trench Volume at Riser Head (ac-ft): .030

Show Trench Open Table

Initial Stage (ft): 0
 Total Volume Through Facility (ac-ft): 121.917
 Percent Infiltrated: 100

TRENCH 2 INPUT AND RESULTS

Basin 3 Predeveloped

Subbasin Name: Basin 3

Flows To : Surface: Gravel Trench Bed 3, Interflow: Gravel Trench Bed 3, Groundwater:

Area in Basin Show Only Selected

Available Pervious		Available Impervious	
	Acres		Acres
<input type="checkbox"/> A/B, Forest, Flat	0	<input checked="" type="checkbox"/> ROADS/FLAT	.31
<input type="checkbox"/> A/B, Forest, Mod	0	<input type="checkbox"/> ROADS/MOD	0
<input type="checkbox"/> A/B, Forest, Steep	0	<input type="checkbox"/> ROADS/STEEP	0
<input type="checkbox"/> A/B, Pasture, Flat	0	<input checked="" type="checkbox"/> ROOF TOPS/FLAT	.18
<input type="checkbox"/> A/B, Pasture, Mod	0	<input type="checkbox"/> DRIVEWAYS/FLAT	0
<input type="checkbox"/> A/B, Pasture, Steep	0	<input type="checkbox"/> DRIVEWAYS/MOD	0
<input checked="" type="checkbox"/> A/B, Lawn, Flat	.06	<input type="checkbox"/> DRIVEWAYS/STEEP	0
<input type="checkbox"/> A/B, Lawn, Mod	0	<input type="checkbox"/> SIDEWALKS/FLAT	0
<input type="checkbox"/> A/B, Lawn, Steep	0	<input type="checkbox"/> SIDEWALKS/MOD	0
<input type="checkbox"/> C, Forest, Flat	0	<input type="checkbox"/> SIDEWALKS/STEEP	0
<input type="checkbox"/> C, Forest, Mod	0	<input type="checkbox"/> PARKING/FLAT	0
<input type="checkbox"/> C, Forest, Steep	0	<input type="checkbox"/> PARKING/MOD	0
<input type="checkbox"/> C, Pasture, Flat	0	<input type="checkbox"/> PARKING/STEEP	0
<input type="checkbox"/> C, Pasture, Mod	0	<input type="checkbox"/> POND	0
<input type="checkbox"/> C, Pasture, Steep	0	<input type="checkbox"/> Porous Pavement	0
<input type="checkbox"/> C, Lawn, Flat	0		
<input type="checkbox"/> C, Lawn, Mod	0		
<input type="checkbox"/> C, Lawn, Steep	0		
<input type="checkbox"/> SAT, Forest, Flat	0		
<input type="checkbox"/> SAT, Forest, Mod	0		
<input type="checkbox"/> SAT, Forest, Steep	0		

Pervious Total: 0.06 Acres
 Impervious Total: 0.49 Acres
 Basin Total: 0.55 Acres

BASIN 3 INPUT

Gravel Trench Bed 3 Predeveloped

Facility Name: Gravel Trench Bed 3

Outlet 1: 0, Outlet 2: 0, Outlet 3: 0

Downstream Connection:

Facility Type: Gravel Trench/Bed

Precipitation Applied to Facility
 Evaporation Applied to Facility

Facility Dimensions

Trench Length (ft): 40
 Trench Bottom Width (ft): 21
 Effective Total Depth (ft): 4
 Top and bottom slope (H/V): 0
 Left Side Slope (H/V): 0
 Right Side Slope (H/V): 0

Outlet Structure Data

Riser Height (ft): 3
 Riser Diameter (in): 8
 Riser Type: Flat
 Notch Type:

Material Layers for Trench/Bed

Layer 1 Thickness (ft): 4
 Layer 1 porosity (0-1): 0.4
 Layer 2 Thickness (ft): 0
 Layer 2 porosity (0-1): 0
 Layer 3 Thickness (ft): 0
 Layer 3 porosity (0-1): 0

Infiltration Yes

Measured Infiltration Rate (in/hr): 10
 Reduction Factor (infiltr*factor): 1
 Use Wetted Surface Area (sidewalls): NO

Total Volume Infiltrated (ac-ft): 94.634
 Total Volume Through Riser (ac-ft): 0.004

Trench Volume at Riser Head (ac-ft): .023

Orifice Number, Diameter (in), Height (ft)

Orifice Number	Diameter (in)	Height (ft)
1	0	0
2	0	0
3	0	0

Initial Stage (ft): 0
 Total Volume Through Facility (ac-ft): 94.638
 Percent Infiltrated: 100

TRENCH 3 INPUT AND RESULTS

Basin 4 Predeveloped

Subbasin Name: Basin 4

Flows To: Surface: Gravel Trench Bed 4, Interflow: Gravel Trench Bed 4, Groundwater: [Empty]

Area in Basin Show Only Selected

Available Pervious	Acres	Available Impervious	Acres
<input type="checkbox"/> A/B, Forest, Flat	0	<input checked="" type="checkbox"/> ROADS/FLAT	.33
<input type="checkbox"/> A/B, Forest, Mod	0	<input type="checkbox"/> ROADS/MOD	0
<input type="checkbox"/> A/B, Forest, Steep	0	<input type="checkbox"/> ROADS/STEEP	0
<input type="checkbox"/> A/B, Pasture, Flat	0	<input checked="" type="checkbox"/> ROOF TOPS/FLAT	.12
<input type="checkbox"/> A/B, Pasture, Mod	0	<input type="checkbox"/> DRIVEWAYS/FLAT	0
<input type="checkbox"/> A/B, Pasture, Steep	0	<input type="checkbox"/> DRIVEWAYS/MOD	0
<input checked="" type="checkbox"/> A/B, Lawn, Flat	.05	<input type="checkbox"/> DRIVEWAYS/STEEP	0
<input type="checkbox"/> A/B, Lawn, Mod	0	<input type="checkbox"/> SIDEWALKS/FLAT	0
<input type="checkbox"/> A/B, Lawn, Steep	0	<input type="checkbox"/> SIDEWALKS/MOD	0
<input type="checkbox"/> C, Forest, Flat	0	<input type="checkbox"/> SIDEWALKS/STEEP	0
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<input type="checkbox"/> C, Forest, Steep	0	<input type="checkbox"/> PARKING/MOD	0
<input type="checkbox"/> C, Pasture, Flat	0	<input type="checkbox"/> PARKING/STEEP	0
<input type="checkbox"/> C, Pasture, Mod	0	<input type="checkbox"/> POND	0
<input type="checkbox"/> C, Pasture, Steep	0	<input type="checkbox"/> Porous Pavement	0
<input type="checkbox"/> C, Lawn, Flat	0		
<input type="checkbox"/> C, Lawn, Mod	0		
<input type="checkbox"/> C, Lawn, Steep	0		
<input type="checkbox"/> SAT, Forest, Flat	0		
<input type="checkbox"/> SAT, Forest, Mod	0		
<input type="checkbox"/> SAT, Forest, Steep	0		

Pervious Total: 0.05 Acres
 Impervious Total: 0.45 Acres
 Basin Total: 0.5 Acres

BASIN 4 INPUT

Gravel Trench Bed 4 Predeveloped

Facility Name: Gravel Trench Bed 4

Outlet 1: 0, Outlet 2: 0, Outlet 3: 0

Downstream Connection: [Empty]

Facility Type: Gravel Trench/Bed

Precipitation Applied to Facility
 Evaporation Applied to Facility

Quick Trench Facility Dimension Diagram

Facility Dimensions

Trench Length (ft): 150
 Trench Bottom Width (ft): 6
 Effective Total Depth (ft): 4
 Top and bottom slope (H/V): 0
 Left Side Slope (H/V): 0
 Right Side Slope (H/V): 0

Outlet Structure Data

Riser Height (ft): 3
 Riser Diameter (in): 8
 Riser Type: Flat
 Notch Type: [Empty]

Material Layers for Trench/Bed

Layer 1 Thickness (ft): 4
 Layer 1 porosity (0-1): 0.4
 Layer 2 Thickness (ft): 0
 Layer 2 porosity (0-1): 0
 Layer 3 Thickness (ft): 0
 Layer 3 porosity (0-1): 0

Infiltration Yes

Measured Infiltration Rate (in/hr): 10
 Reduction Factor (infiltr*factor): 1
 Use Wetted Surface Area (sidewalls): NO
 Total Volume Infiltrated (ac-ft): 86.876
 Total Volume Through Riser (ac-ft): 0

Orifice Number, Diameter (in), Height (ft)

Orifice Number	Diameter (in)	Height (ft)
1	0	0
2	0	0
3	0	0

Trench Volume at Riser Head (ac-ft): .025

Show Trench Open Table

Initial Stage (ft): 0
 Total Volume Through Facility (ac-ft): 86.876
 Percent Infiltrated: 100

TRENCH 4 INPUT AND RESULTS

APPENDIX B
WWHM2012 DATA

WWHM2012
PROJECT REPORT

General Model Information

Project Name: Blueberry
Site Name: Blueberry, LLC
Site Address:
City:
Report Date: 11/18/2019
Gage: Everett
Data Start: 1948/10/01
Data End: 2009/09/30
Timestep: 15 Minute
Precip Scale: 1.200
Version Date: 2018/10/10
Version: 4.2.16

POC Thresholds

Low Flow Threshold for POC1:	50 Percent of the 2 Year
High Flow Threshold for POC1:	50 Year

Landuse Basin Data

Predeveloped Land Use

Basin 1

Bypass: No

GroundWater: No

Pervious Land Use acre
A B, Lawn, Flat 0.03

Pervious Total 0.03

Impervious Land Use acre
ROADS FLAT 0.06

Impervious Total 0.06

Basin Total 0.09

Element Flows To:

Surface Interflow Groundwater
Gravel Trench Bed 1 Gravel Trench Bed 1

Basin 2

Bypass:	No
GroundWater:	No
Pervious Land Use	acre
A B, Lawn, Flat	0.24
Pervious Total	0.24
Impervious Land Use	acre
ROADS FLAT	0.43
ROOF TOPS FLAT	0.2
Impervious Total	0.63
Basin Total	0.87

Element Flows To:

Surface	Interflow	Groundwater
Gravel Trench Bed 2	Gravel Trench Bed 2	

Basin 3

Bypass:	No
GroundWater:	No
Pervious Land Use	acre
A B, Lawn, Flat	0.06
Pervious Total	0.06
Impervious Land Use	acre
ROADS FLAT	0.31
ROOF TOPS FLAT	0.18
Impervious Total	0.49
Basin Total	0.55

Element Flows To:		
Surface	Interflow	Groundwater
Gravel Trench Bed 3	Gravel Trench Bed 3	

Basin 4

Bypass: No

GroundWater: No

Pervious Land Use acre
A B, Lawn, Flat 0.05

Pervious Total 0.05

Impervious Land Use acre
ROADS FLAT 0.33
ROOF TOPS FLAT 0.12

Impervious Total 0.45

Basin Total 0.5

Element Flows To:

Surface	Interflow	Groundwater
Gravel Trench Bed 4	Gravel Trench Bed 4	

Mitigated Land Use

Routing Elements

Predeveloped Routing

Gravel Trench Bed 1

Bottom Length: 20.00 ft.
 Bottom Width: 5.00 ft.
 Trench bottom slope 1: 0 To 1
 Trench Left side slope 0: 0 To 1
 Trench right side slope 2: 0 To 1
 Material thickness of first layer: 5
 Pour Space of material for first layer: 0.4
 Material thickness of second layer: 0
 Pour Space of material for second layer: 0
 Material thickness of third layer: 0
 Pour Space of material for third layer: 0
 Infiltration On
 Infiltration rate: 10
 Infiltration safety factor: 1
 Total Volume Infiltrated (ac-ft.): 11.379
 Total Volume Through Riser (ac-ft.): 0.001
 Total Volume Through Facility (ac-ft.): 11.379
 Percent Infiltrated: 100
 Total Precip Applied to Facility: 0
 Total Evap From Facility: 0
 Discharge Structure
 Riser Height: 3 ft.
 Riser Diameter: 8 in.
 Element Flows To:
 Outlet 1 Outlet 2

Gravel Trench Bed Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.002	0.000	0.000	0.000
0.0444	0.002	0.000	0.000	0.023
0.0889	0.002	0.000	0.000	0.023
0.1333	0.002	0.000	0.000	0.023
0.1778	0.002	0.000	0.000	0.023
0.2222	0.002	0.000	0.000	0.023
0.2667	0.002	0.000	0.000	0.023
0.3111	0.002	0.000	0.000	0.023
0.3556	0.002	0.000	0.000	0.023
0.4000	0.002	0.000	0.000	0.023
0.4444	0.002	0.000	0.000	0.023
0.4889	0.002	0.000	0.000	0.023
0.5333	0.002	0.000	0.000	0.023
0.5778	0.002	0.000	0.000	0.023
0.6222	0.002	0.000	0.000	0.023
0.6667	0.002	0.000	0.000	0.023
0.7111	0.002	0.000	0.000	0.023
0.7556	0.002	0.000	0.000	0.023
0.8000	0.002	0.000	0.000	0.023
0.8444	0.002	0.000	0.000	0.023
0.8889	0.002	0.000	0.000	0.023
0.9333	0.002	0.000	0.000	0.023

0.9778	0.002	0.000	0.000	0.023
1.0222	0.002	0.000	0.000	0.023
1.0667	0.002	0.001	0.000	0.023
1.1111	0.002	0.001	0.000	0.023
1.1556	0.002	0.001	0.000	0.023
1.2000	0.002	0.001	0.000	0.023
1.2444	0.002	0.001	0.000	0.023
1.2889	0.002	0.001	0.000	0.023
1.3333	0.002	0.001	0.000	0.023
1.3778	0.002	0.001	0.000	0.023
1.4222	0.002	0.001	0.000	0.023
1.4667	0.002	0.001	0.000	0.023
1.5111	0.002	0.001	0.000	0.023
1.5556	0.002	0.001	0.000	0.023
1.6000	0.002	0.001	0.000	0.023
1.6444	0.002	0.001	0.000	0.023
1.6889	0.002	0.001	0.000	0.023
1.7333	0.002	0.001	0.000	0.023
1.7778	0.002	0.001	0.000	0.023
1.8222	0.002	0.001	0.000	0.023
1.8667	0.002	0.001	0.000	0.023
1.9111	0.002	0.001	0.000	0.023
1.9556	0.002	0.001	0.000	0.023
2.0000	0.002	0.001	0.000	0.023
2.0444	0.002	0.001	0.000	0.023
2.0889	0.002	0.001	0.000	0.023
2.1333	0.002	0.002	0.000	0.023
2.1778	0.002	0.002	0.000	0.023
2.2222	0.002	0.002	0.000	0.023
2.2667	0.002	0.002	0.000	0.023
2.3111	0.002	0.002	0.000	0.023
2.3556	0.002	0.002	0.000	0.023
2.4000	0.002	0.002	0.000	0.023
2.4444	0.002	0.002	0.000	0.023
2.4889	0.002	0.002	0.000	0.023
2.5333	0.002	0.002	0.000	0.023
2.5778	0.002	0.002	0.000	0.023
2.6222	0.002	0.002	0.000	0.023
2.6667	0.002	0.002	0.000	0.023
2.7111	0.002	0.002	0.000	0.023
2.7556	0.002	0.002	0.000	0.023
2.8000	0.002	0.002	0.000	0.023
2.8444	0.002	0.002	0.000	0.023
2.8889	0.002	0.002	0.000	0.023
2.9333	0.002	0.002	0.000	0.023
2.9778	0.002	0.002	0.000	0.023
3.0222	0.002	0.002	0.023	0.023
3.0667	0.002	0.002	0.121	0.023
3.1111	0.002	0.002	0.255	0.023
3.1556	0.002	0.002	0.404	0.023
3.2000	0.002	0.002	0.547	0.023
3.2444	0.002	0.003	0.665	0.023
3.2889	0.002	0.003	0.747	0.023
3.3333	0.002	0.003	0.799	0.023
3.3778	0.002	0.003	0.860	0.023
3.4222	0.002	0.003	0.909	0.023
3.4667	0.002	0.003	0.956	0.023
3.5111	0.002	0.003	1.000	0.023

3.5556	0.002	0.003	1.043	0.023
3.6000	0.002	0.003	1.084	0.023
3.6444	0.002	0.003	1.123	0.023
3.6889	0.002	0.003	1.161	0.023
3.7333	0.002	0.003	1.198	0.023
3.7778	0.002	0.003	1.234	0.023
3.8222	0.002	0.003	1.269	0.023
3.8667	0.002	0.003	1.303	0.023
3.9111	0.002	0.003	1.336	0.023
3.9556	0.002	0.003	1.368	0.023
4.0000	0.002	0.003	1.399	0.023

Gravel Trench Bed 2

Bottom Length: 120.00 ft.
 Bottom Width: 9.00 ft.
 Trench bottom slope 1: 0 To 1
 Trench Left side slope 0: 0 To 1
 Trench right side slope 2: 0 To 1
 Material thickness of first layer: 4
 Pour Space of material for first layer: 0.4
 Material thickness of second layer: 0
 Pour Space of material for second layer: 0
 Material thickness of third layer: 0
 Pour Space of material for third layer: 0
 Infiltration On
 Infiltration rate: 10
 Infiltration safety factor: 1
 Total Volume Infiltrated (ac-ft.): 121.912
 Total Volume Through Riser (ac-ft.): 0.005
 Total Volume Through Facility (ac-ft.): 121.917
 Percent Infiltrated: 100
 Total Precip Applied to Facility: 0
 Total Evap From Facility: 0
 Discharge Structure
 Riser Height: 3 ft.
 Riser Diameter: 8 in.
 Element Flows To:
 Outlet 1 Outlet 2

Gravel Trench Bed Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.024	0.000	0.000	0.000
0.0444	0.024	0.000	0.000	0.250
0.0889	0.024	0.000	0.000	0.250
0.1333	0.024	0.001	0.000	0.250
0.1778	0.024	0.001	0.000	0.250
0.2222	0.024	0.002	0.000	0.250
0.2667	0.024	0.002	0.000	0.250
0.3111	0.024	0.003	0.000	0.250
0.3556	0.024	0.003	0.000	0.250
0.4000	0.024	0.004	0.000	0.250
0.4444	0.024	0.004	0.000	0.250
0.4889	0.024	0.004	0.000	0.250
0.5333	0.024	0.005	0.000	0.250
0.5778	0.024	0.005	0.000	0.250
0.6222	0.024	0.006	0.000	0.250
0.6667	0.024	0.006	0.000	0.250
0.7111	0.024	0.007	0.000	0.250
0.7556	0.024	0.007	0.000	0.250
0.8000	0.024	0.007	0.000	0.250
0.8444	0.024	0.008	0.000	0.250
0.8889	0.024	0.008	0.000	0.250
0.9333	0.024	0.009	0.000	0.250
0.9778	0.024	0.009	0.000	0.250
1.0222	0.024	0.010	0.000	0.250
1.0667	0.024	0.010	0.000	0.250
1.1111	0.024	0.011	0.000	0.250

1.1556	0.024	0.011	0.000	0.250
1.2000	0.024	0.011	0.000	0.250
1.2444	0.024	0.012	0.000	0.250
1.2889	0.024	0.012	0.000	0.250
1.3333	0.024	0.013	0.000	0.250
1.3778	0.024	0.013	0.000	0.250
1.4222	0.024	0.014	0.000	0.250
1.4667	0.024	0.014	0.000	0.250
1.5111	0.024	0.015	0.000	0.250
1.5556	0.024	0.015	0.000	0.250
1.6000	0.024	0.015	0.000	0.250
1.6444	0.024	0.016	0.000	0.250
1.6889	0.024	0.016	0.000	0.250
1.7333	0.024	0.017	0.000	0.250
1.7778	0.024	0.017	0.000	0.250
1.8222	0.024	0.018	0.000	0.250
1.8667	0.024	0.018	0.000	0.250
1.9111	0.024	0.019	0.000	0.250
1.9556	0.024	0.019	0.000	0.250
2.0000	0.024	0.019	0.000	0.250
2.0444	0.024	0.020	0.000	0.250
2.0889	0.024	0.020	0.000	0.250
2.1333	0.024	0.021	0.000	0.250
2.1778	0.024	0.021	0.000	0.250
2.2222	0.024	0.022	0.000	0.250
2.2667	0.024	0.022	0.000	0.250
2.3111	0.024	0.022	0.000	0.250
2.3556	0.024	0.023	0.000	0.250
2.4000	0.024	0.023	0.000	0.250
2.4444	0.024	0.024	0.000	0.250
2.4889	0.024	0.024	0.000	0.250
2.5333	0.024	0.025	0.000	0.250
2.5778	0.024	0.025	0.000	0.250
2.6222	0.024	0.026	0.000	0.250
2.6667	0.024	0.026	0.000	0.250
2.7111	0.024	0.026	0.000	0.250
2.7556	0.024	0.027	0.000	0.250
2.8000	0.024	0.027	0.000	0.250
2.8444	0.024	0.028	0.000	0.250
2.8889	0.024	0.028	0.000	0.250
2.9333	0.024	0.029	0.000	0.250
2.9778	0.024	0.029	0.000	0.250
3.0222	0.024	0.030	0.023	0.250
3.0667	0.024	0.030	0.121	0.250
3.1111	0.024	0.030	0.255	0.250
3.1556	0.024	0.031	0.404	0.250
3.2000	0.024	0.031	0.547	0.250
3.2444	0.024	0.032	0.665	0.250
3.2889	0.024	0.032	0.747	0.250
3.3333	0.024	0.033	0.799	0.250
3.3778	0.024	0.033	0.860	0.250
3.4222	0.024	0.033	0.909	0.250
3.4667	0.024	0.034	0.956	0.250
3.5111	0.024	0.034	1.000	0.250
3.5556	0.024	0.035	1.043	0.250
3.6000	0.024	0.035	1.084	0.250
3.6444	0.024	0.036	1.123	0.250
3.6889	0.024	0.036	1.161	0.250

3.7333	0.024	0.037	1.198	0.250
3.7778	0.024	0.037	1.234	0.250
3.8222	0.024	0.037	1.269	0.250
3.8667	0.024	0.038	1.303	0.250
3.9111	0.024	0.038	1.336	0.250
3.9556	0.024	0.039	1.368	0.250
4.0000	0.024	0.039	1.399	0.250

Gravel Trench Bed 3

Bottom Length: 40.00 ft.
 Bottom Width: 21.00 ft.
 Trench bottom slope 1: 0 To 1
 Trench Left side slope 0: 0 To 1
 Trench right side slope 2: 0 To 1
 Material thickness of first layer: 4
 Pour Space of material for first layer: 0.4
 Material thickness of second layer: 0
 Pour Space of material for second layer: 0
 Material thickness of third layer: 0
 Pour Space of material for third layer: 0
 Infiltration On
 Infiltration rate: 10
 Infiltration safety factor: 1
 Total Volume Infiltrated (ac-ft.): 94.634
 Total Volume Through Riser (ac-ft.): 0.004
 Total Volume Through Facility (ac-ft.): 94.638
 Percent Infiltrated: 100
 Total Precip Applied to Facility: 0
 Total Evap From Facility: 0
 Discharge Structure
 Riser Height: 3 ft.
 Riser Diameter: 8 in.
 Element Flows To:
 Outlet 1 Outlet 2

Gravel Trench Bed Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.019	0.000	0.000	0.000
0.0444	0.019	0.000	0.000	0.194
0.0889	0.019	0.000	0.000	0.194
0.1333	0.019	0.001	0.000	0.194
0.1778	0.019	0.001	0.000	0.194
0.2222	0.019	0.001	0.000	0.194
0.2667	0.019	0.002	0.000	0.194
0.3111	0.019	0.002	0.000	0.194
0.3556	0.019	0.002	0.000	0.194
0.4000	0.019	0.003	0.000	0.194
0.4444	0.019	0.003	0.000	0.194
0.4889	0.019	0.003	0.000	0.194
0.5333	0.019	0.004	0.000	0.194
0.5778	0.019	0.004	0.000	0.194
0.6222	0.019	0.004	0.000	0.194
0.6667	0.019	0.005	0.000	0.194
0.7111	0.019	0.005	0.000	0.194
0.7556	0.019	0.005	0.000	0.194
0.8000	0.019	0.006	0.000	0.194
0.8444	0.019	0.006	0.000	0.194
0.8889	0.019	0.006	0.000	0.194
0.9333	0.019	0.007	0.000	0.194
0.9778	0.019	0.007	0.000	0.194
1.0222	0.019	0.007	0.000	0.194
1.0667	0.019	0.008	0.000	0.194
1.1111	0.019	0.008	0.000	0.194

1.1556	0.019	0.008	0.000	0.194
1.2000	0.019	0.009	0.000	0.194
1.2444	0.019	0.009	0.000	0.194
1.2889	0.019	0.009	0.000	0.194
1.3333	0.019	0.010	0.000	0.194
1.3778	0.019	0.010	0.000	0.194
1.4222	0.019	0.011	0.000	0.194
1.4667	0.019	0.011	0.000	0.194
1.5111	0.019	0.011	0.000	0.194
1.5556	0.019	0.012	0.000	0.194
1.6000	0.019	0.012	0.000	0.194
1.6444	0.019	0.012	0.000	0.194
1.6889	0.019	0.013	0.000	0.194
1.7333	0.019	0.013	0.000	0.194
1.7778	0.019	0.013	0.000	0.194
1.8222	0.019	0.014	0.000	0.194
1.8667	0.019	0.014	0.000	0.194
1.9111	0.019	0.014	0.000	0.194
1.9556	0.019	0.015	0.000	0.194
2.0000	0.019	0.015	0.000	0.194
2.0444	0.019	0.015	0.000	0.194
2.0889	0.019	0.016	0.000	0.194
2.1333	0.019	0.016	0.000	0.194
2.1778	0.019	0.016	0.000	0.194
2.2222	0.019	0.017	0.000	0.194
2.2667	0.019	0.017	0.000	0.194
2.3111	0.019	0.017	0.000	0.194
2.3556	0.019	0.018	0.000	0.194
2.4000	0.019	0.018	0.000	0.194
2.4444	0.019	0.018	0.000	0.194
2.4889	0.019	0.019	0.000	0.194
2.5333	0.019	0.019	0.000	0.194
2.5778	0.019	0.019	0.000	0.194
2.6222	0.019	0.020	0.000	0.194
2.6667	0.019	0.020	0.000	0.194
2.7111	0.019	0.020	0.000	0.194
2.7556	0.019	0.021	0.000	0.194
2.8000	0.019	0.021	0.000	0.194
2.8444	0.019	0.021	0.000	0.194
2.8889	0.019	0.022	0.000	0.194
2.9333	0.019	0.022	0.000	0.194
2.9778	0.019	0.023	0.000	0.194
3.0222	0.019	0.023	0.023	0.194
3.0667	0.019	0.023	0.121	0.194
3.1111	0.019	0.024	0.255	0.194
3.1556	0.019	0.024	0.404	0.194
3.2000	0.019	0.024	0.547	0.194
3.2444	0.019	0.025	0.665	0.194
3.2889	0.019	0.025	0.747	0.194
3.3333	0.019	0.025	0.799	0.194
3.3778	0.019	0.026	0.860	0.194
3.4222	0.019	0.026	0.909	0.194
3.4667	0.019	0.026	0.956	0.194
3.5111	0.019	0.027	1.000	0.194
3.5556	0.019	0.027	1.043	0.194
3.6000	0.019	0.027	1.084	0.194
3.6444	0.019	0.028	1.123	0.194
3.6889	0.019	0.028	1.161	0.194

3.7333	0.019	0.028	1.198	0.194
3.7778	0.019	0.029	1.234	0.194
3.8222	0.019	0.029	1.269	0.194
3.8667	0.019	0.029	1.303	0.194
3.9111	0.019	0.030	1.336	0.194
3.9556	0.019	0.030	1.368	0.194
4.0000	0.019	0.030	1.399	0.194

Gravel Trench Bed 4

Bottom Length: 150.00 ft.
 Bottom Width: 6.00 ft.
 Trench bottom slope 1: 0 To 1
 Trench Left side slope 0: 0 To 1
 Trench right side slope 2: 0 To 1
 Material thickness of first layer: 4
 Pour Space of material for first layer: 0.4
 Material thickness of second layer: 0
 Pour Space of material for second layer: 0
 Material thickness of third layer: 0
 Pour Space of material for third layer: 0
 Infiltration On
 Infiltration rate: 10
 Infiltration safety factor: 1
 Total Volume Infiltrated (ac-ft.): 86.876
 Total Volume Through Riser (ac-ft.): 0
 Total Volume Through Facility (ac-ft.): 86.876
 Percent Infiltrated: 100
 Total Precip Applied to Facility: 0
 Total Evap From Facility: 0
 Discharge Structure
 Riser Height: 3 ft.
 Riser Diameter: 8 in.
 Element Flows To:
 Outlet 1 Outlet 2

Gravel Trench Bed Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.020	0.000	0.000	0.000
0.0444	0.020	0.000	0.000	0.208
0.0889	0.020	0.000	0.000	0.208
0.1333	0.020	0.001	0.000	0.208
0.1778	0.020	0.001	0.000	0.208
0.2222	0.020	0.001	0.000	0.208
0.2667	0.020	0.002	0.000	0.208
0.3111	0.020	0.002	0.000	0.208
0.3556	0.020	0.002	0.000	0.208
0.4000	0.020	0.003	0.000	0.208
0.4444	0.020	0.003	0.000	0.208
0.4889	0.020	0.004	0.000	0.208
0.5333	0.020	0.004	0.000	0.208
0.5778	0.020	0.004	0.000	0.208
0.6222	0.020	0.005	0.000	0.208
0.6667	0.020	0.005	0.000	0.208
0.7111	0.020	0.005	0.000	0.208
0.7556	0.020	0.006	0.000	0.208
0.8000	0.020	0.006	0.000	0.208
0.8444	0.020	0.007	0.000	0.208
0.8889	0.020	0.007	0.000	0.208
0.9333	0.020	0.007	0.000	0.208
0.9778	0.020	0.008	0.000	0.208
1.0222	0.020	0.008	0.000	0.208
1.0667	0.020	0.008	0.000	0.208
1.1111	0.020	0.009	0.000	0.208

1.1556	0.020	0.009	0.000	0.208
1.2000	0.020	0.009	0.000	0.208
1.2444	0.020	0.010	0.000	0.208
1.2889	0.020	0.010	0.000	0.208
1.3333	0.020	0.011	0.000	0.208
1.3778	0.020	0.011	0.000	0.208
1.4222	0.020	0.011	0.000	0.208
1.4667	0.020	0.012	0.000	0.208
1.5111	0.020	0.012	0.000	0.208
1.5556	0.020	0.012	0.000	0.208
1.6000	0.020	0.013	0.000	0.208
1.6444	0.020	0.013	0.000	0.208
1.6889	0.020	0.014	0.000	0.208
1.7333	0.020	0.014	0.000	0.208
1.7778	0.020	0.014	0.000	0.208
1.8222	0.020	0.015	0.000	0.208
1.8667	0.020	0.015	0.000	0.208
1.9111	0.020	0.015	0.000	0.208
1.9556	0.020	0.016	0.000	0.208
2.0000	0.020	0.016	0.000	0.208
2.0444	0.020	0.016	0.000	0.208
2.0889	0.020	0.017	0.000	0.208
2.1333	0.020	0.017	0.000	0.208
2.1778	0.020	0.018	0.000	0.208
2.2222	0.020	0.018	0.000	0.208
2.2667	0.020	0.018	0.000	0.208
2.3111	0.020	0.019	0.000	0.208
2.3556	0.020	0.019	0.000	0.208
2.4000	0.020	0.019	0.000	0.208
2.4444	0.020	0.020	0.000	0.208
2.4889	0.020	0.020	0.000	0.208
2.5333	0.020	0.020	0.000	0.208
2.5778	0.020	0.021	0.000	0.208
2.6222	0.020	0.021	0.000	0.208
2.6667	0.020	0.022	0.000	0.208
2.7111	0.020	0.022	0.000	0.208
2.7556	0.020	0.022	0.000	0.208
2.8000	0.020	0.023	0.000	0.208
2.8444	0.020	0.023	0.000	0.208
2.8889	0.020	0.023	0.000	0.208
2.9333	0.020	0.024	0.000	0.208
2.9778	0.020	0.024	0.000	0.208
3.0222	0.020	0.025	0.023	0.208
3.0667	0.020	0.025	0.121	0.208
3.1111	0.020	0.025	0.255	0.208
3.1556	0.020	0.026	0.404	0.208
3.2000	0.020	0.026	0.547	0.208
3.2444	0.020	0.026	0.665	0.208
3.2889	0.020	0.027	0.747	0.208
3.3333	0.020	0.027	0.799	0.208
3.3778	0.020	0.027	0.860	0.208
3.4222	0.020	0.028	0.909	0.208
3.4667	0.020	0.028	0.956	0.208
3.5111	0.020	0.029	1.000	0.208
3.5556	0.020	0.029	1.043	0.208
3.6000	0.020	0.029	1.084	0.208
3.6444	0.020	0.030	1.123	0.208
3.6889	0.020	0.030	1.161	0.208

3.7333	0.020	0.030	1.198	0.208
3.7778	0.020	0.031	1.234	0.208
3.8222	0.020	0.031	1.269	0.208
3.8667	0.020	0.032	1.303	0.208
3.9111	0.020	0.032	1.336	0.208
3.9556	0.020	0.032	1.368	0.208
4.0000	0.020	0.033	1.399	0.208

Mitigated Routing

Analysis Results

POC 1

POC #1 was not reported because POC must exist in both scenarios and both scenarios must have been run.

Model Default Modifications

Total of 0 changes have been made.

PERLND Changes

No PERLND changes have been made.

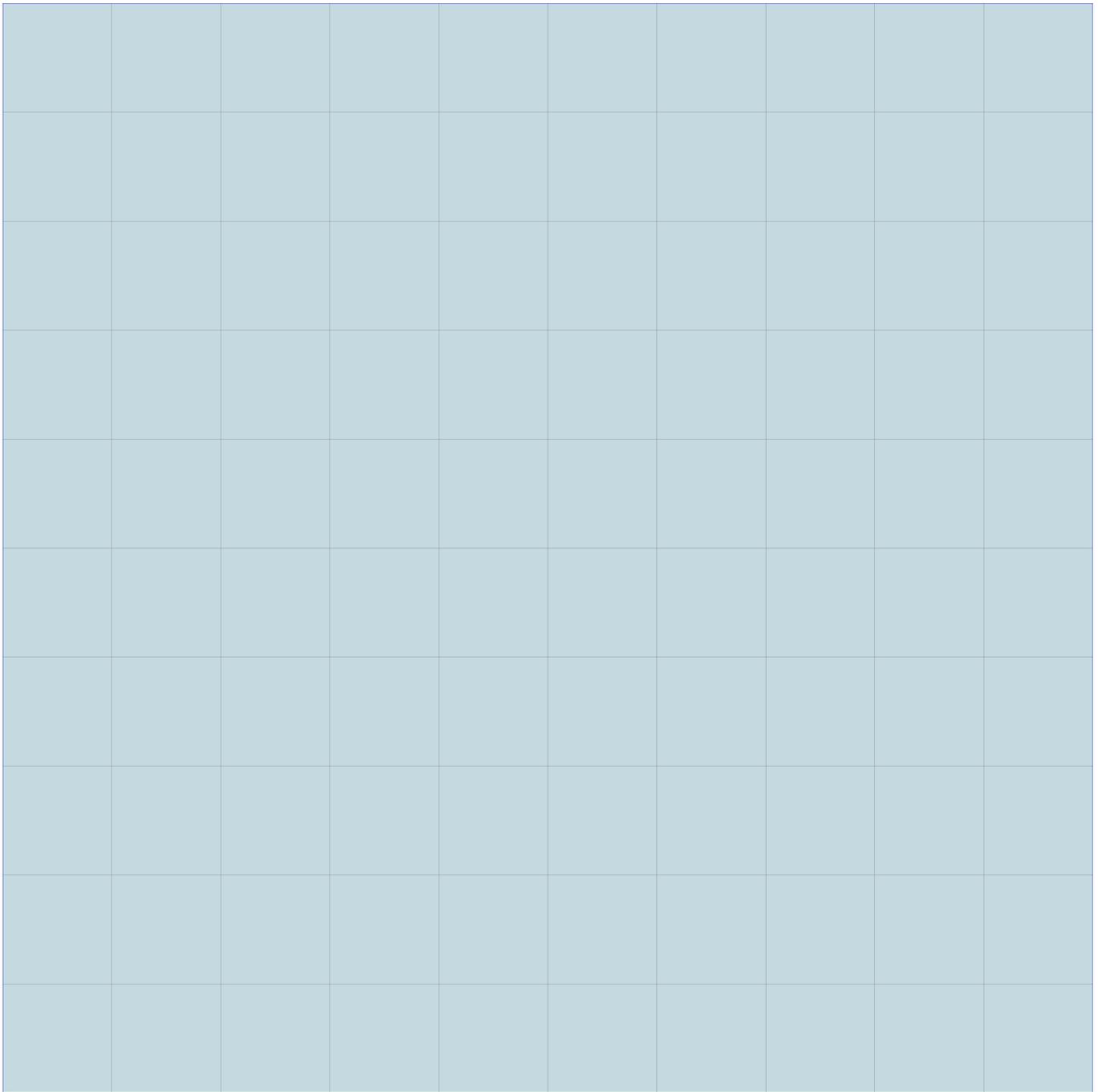
IMPLND Changes

No IMPLND changes have been made.

Appendix
Predeveloped Schematic



Mitigated Schematic



Predeveloped UCI File

RUN

GLOBAL

WVHM4 model simulation
START 1948 10 01 END 2009 09 30
RUN INTERP OUTPUT LEVEL 3 0
RESUME 0 RUN 1 UNIT SYSTEM 1
END GLOBAL

FILES

<File>	<Un#>	<-----File Name----->	***
<-ID->			***
WDM	26	Blueberry.wdm	
MESSU	25	PreBlueberry.MES	
	27	PreBlueberry.L61	
	28	PreBlueberry.L62	
	30	POCBlueberry1.dat	

END FILES

OPN SEQUENCE

INGRP INDELT 00:15
PERLND 7
IMPLND 1
IMPLND 4
RCHRES 1
RCHRES 2
RCHRES 3
RCHRES 4
COPY 501
DISPLY 1

END INGRP

END OPN SEQUENCE

DISPLY

DISPLY-INFO1

#	-	#	<-----Title----->	***	TRAN	PIVL	DIG1	FIL1	PYR	DIG2	FIL2	YRND
1			Gravel Trench Bed 1		MAX				1	2	30	9

END DISPLY-INFO1

END DISPLY

COPY

TIMESERIES

#	-	#	NPT	NMN	***
1			1	1	
501			1	1	

END TIMESERIES

END COPY

GENER

OPCODE

#	#	OPCD	***
---	---	------	-----

END OPCODE

PARM

#	#	K	***
---	---	---	-----

END PARM

END GENER

PERLND

GEN-INFO

<PLS >	<-----Name----->	NBLKS	Unit-systems	Printer	***	
#	-	#	User	t-series	Engl Metr	***
			in	out		***
7	A/B, Lawn, Flat	1	1	1	1	27 0

END GEN-INFO

*** Section PWATER***

ACTIVITY

<PLS >	***** Active Sections *****														
#	-	#	ATMP	SNOW	PWAT	SED	PST	PWG	PQAL	MSTL	PEST	NITR	PHOS	TRAC	***
7			0	0	1	0	0	0	0	0	0	0	0	0	

END ACTIVITY

```

PRINT-INFO
<PLS > ***** Print-flags ***** PIVL  PYR
# - # ATMP SNOW PWAT  SED  PST  PWG  PQAL MSTL PEST NITR PHOS TRAC  *****
7   0   0   4   0   0   0   0   0   0   0   0   0   0   1   9
END PRINT-INFO

```

```

PWAT-PARM1
<PLS > PWATER variable monthly parameter value flags ***
# - # CSNO RTOP UZFG  VCS  VUZ  VNN VIFW VIRC  VLE INFC  HWT ***
7   0   0   0   0   0   0   0   0   0   0   0   0
END PWAT-PARM1

```

```

PWAT-PARM2
<PLS > PWATER input info: Part 2          ***
# - # ***FOREST  LZSN  INFILT  LSUR  SLSUR  KVARY  AGWRC
7   0           5   0.8    400    0.05   0.3    0.996
END PWAT-PARM2

```

```

PWAT-PARM3
<PLS > PWATER input info: Part 3          ***
# - # ***PETMAX  PETMIN  INFEXP  INFILD  DEEPFR  BASETP  AGWETP
7   0           0           2     2     0     0     0
END PWAT-PARM3

```

```

PWAT-PARM4
<PLS > PWATER input info: Part 4          ***
# - # CEPSC  UZSN  NSUR  INTFW  IRC  LZETP ***
7   0.1    0.5    0.25  0     0.7  0.25
END PWAT-PARM4

```

```

PWAT-STATE1
<PLS > *** Initial conditions at start of simulation
ran from 1990 to end of 1992 (pat 1-11-95) RUN 21 ***
# - # *** CEPS  SURS  UZS  IFWS  LZS  AGWS  GWVS
7   0   0   0   0   3   1   0
END PWAT-STATE1

```

END PERLND

IMPLND

```

GEN-INFO
<PLS ><-----Name----->  Unit-systems  Printer ***
# - # User t-series Engl Metr ***
# - # in out ***
1   ROADS/FLAT  1  1  1  27  0
4   ROOF TOPS/FLAT  1  1  1  27  0
END GEN-INFO
*** Section IWATER***

```

```

ACTIVITY
<PLS > ***** Active Sections *****
# - # ATMP SNOW IWAT  SLD  IWG IQAL  ***
1   0   0   1   0   0   0
4   0   0   1   0   0   0
END ACTIVITY

```

```

PRINT-INFO
<ILS > ***** Print-flags ***** PIVL  PYR
# - # ATMP SNOW IWAT  SLD  IWG IQAL  *****
1   0   0   4   0   0   0   1   9
4   0   0   4   0   0   0   1   9
END PRINT-INFO

```

```

IWAT-PARM1
<PLS > IWATER variable monthly parameter value flags ***
# - # CSNO RTOP  VRS  VNN RTLI  ***
1   0   0   0   0   0
4   0   0   0   0   0
END IWAT-PARM1

```

IWAT-PARM2

```

<PLS >          IWATER input info: Part 2          ***
# - # ***  LRSUR  SLSUR  NSUR  RETSC
1         400    0.01   0.1   0.1
4         400    0.01   0.1   0.1
END IWAT-PARM2

```

```

IWAT-PARM3
<PLS >          IWATER input info: Part 3          ***
# - # ***PETMAX  PETMIN
1         0        0
4         0        0
END IWAT-PARM3

```

```

IWAT-STATE1
<PLS > *** Initial conditions at start of simulation
# - # ***  RETS  SURS
1         0        0
4         0        0
END IWAT-STATE1

```

END IMPLND

```

SCHEMATIC
<-Source->          <--Area-->          <-Target->          MBLK          ***
<Name> #          <-factor->          <Name> #          Tbl#          ***
Basin 1***
PERLND 7          0.03          RCHRES 1          2
PERLND 7          0.03          RCHRES 1          3
IMPLND 1          0.06          RCHRES 1          5
Basin 2***
PERLND 7          0.24          RCHRES 2          2
PERLND 7          0.24          RCHRES 2          3
IMPLND 1          0.43          RCHRES 2          5
IMPLND 4          0.2          RCHRES 2          5
Basin 3***
PERLND 7          0.06          RCHRES 3          2
PERLND 7          0.06          RCHRES 3          3
IMPLND 1          0.31          RCHRES 3          5
IMPLND 4          0.18          RCHRES 3          5
Basin 4***
PERLND 7          0.05          RCHRES 4          2
PERLND 7          0.05          RCHRES 4          3
IMPLND 1          0.33          RCHRES 4          5
IMPLND 4          0.12          RCHRES 4          5

```

```

*****Routing*****
RCHRES 1          1          COPY 501          17
RCHRES 2          1          COPY 501          17
RCHRES 3          1          COPY 501          17
RCHRES 4          1          COPY 501          17
END SCHEMATIC

```

```

NETWORK
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member-> ***
<Name> # <Name> # #<-factor->strg <Name> # # <Name> # # ***
COPY 501 OUTPUT MEAN 1 1 48.4 DISPLY 1 INPUT TIMSER 1

```

```

<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member-> ***
<Name> # <Name> # #<-factor->strg <Name> # # <Name> # # ***
END NETWORK

```

```

RCHRES
GEN-INFO
RCHRES          Name          Nexits          Unit Systems          Printer          ***
# - #<-----><----> User T-series Engl Metr LKFG          ***
          in out
1          Gravel Trench Be-004          2          1          1          1          28          0          1
2          Gravel Trench Be-006          2          1          1          1          28          0          1

```

```

3      Gravel Trench Be-008      2      1      1      1      28      0      1
4      Gravel Trench Be-010      2      1      1      1      28      0      1
END GEN-INFO
*** Section RCHRES***

```

```

ACTIVITY
<PLS > ***** Active Sections *****
# - # HYFG ADFG CNFG HTFG SDFG GQFG OXFG NUGF PKFG PHFG ***
1      1      0      0      0      0      0      0      0      0      0
2      1      0      0      0      0      0      0      0      0      0
3      1      0      0      0      0      0      0      0      0      0
4      1      0      0      0      0      0      0      0      0      0
END ACTIVITY

```

```

PRINT-INFO
<PLS > ***** Print-flags ***** PIVL  PYR
# - # HYDR ADCA CONS HEAT SED  GQL OXRX NUTR PLNK PHCB PIVL  PYR  *****
1      4      0      0      0      0      0      0      0      0      0      1      9
2      4      0      0      0      0      0      0      0      0      0      1      9
3      4      0      0      0      0      0      0      0      0      0      1      9
4      4      0      0      0      0      0      0      0      0      0      1      9
END PRINT-INFO

```

```

HYDR-PARM1
RCHRES  Flags for each HYDR Section
# - # VC A1 A2 A3 ODFVFG for each *** ODGTFG for each  FUNCT for each
      FG FG FG FG possible exit *** possible exit  possible exit
      * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
1      0 1 0 0 4 5 0 0 0 0 0 0 0 0 0 2 2 2 2 2
2      0 1 0 0 4 5 0 0 0 0 0 0 0 0 0 2 2 2 2 2
3      0 1 0 0 4 5 0 0 0 0 0 0 0 0 0 2 2 2 2 2
4      0 1 0 0 4 5 0 0 0 0 0 0 0 0 0 2 2 2 2 2
END HYDR-PARM1

```

```

HYDR-PARM2
# - # FTABNO LEN DELTH STCOR KS DB50 ***
<-----><-----><-----><-----><-----><-----><----->
1      1      0.01 0.0 0.0 0.5 0.0
2      2      0.02 0.0 0.0 0.5 0.0
3      3      0.01 0.0 0.0 0.5 0.0
4      4      0.03 0.0 0.0 0.5 0.0
END HYDR-PARM2

```

```

HYDR-INIT
RCHRES  Initial conditions for each HYDR section
# - # *** VOL Initial value of COLIND Initial value of OUTDGT
      *** ac-ft for each possible exit for each possible exit
<-----><-----><-----><-----><-----><-----><-----><-----><-----><-----><----->
1      0 4.0 5.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
2      0 4.0 5.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
3      0 4.0 5.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
4      0 4.0 5.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
END HYDR-INIT

```

END RCHRES

SPEC-ACTIONS
END SPEC-ACTIONS

```

FTABLES
FTABLE 1
92 5
Depth Area Volume Outflow1 Outflow2 Velocity Travel Time***
(ft) (acres) (acre-ft) (cfs) (cfs) (ft/sec) (Minutes)***
0.000000 0.002296 0.000000 0.000000 0.000000
0.044444 0.002296 0.000041 0.000000 0.023148
0.088889 0.002296 0.000082 0.000000 0.023148
0.133333 0.002296 0.000122 0.000000 0.023148
0.177778 0.002296 0.000163 0.000000 0.023148
0.222222 0.002296 0.000204 0.000000 0.023148
0.266667 0.002296 0.000245 0.000000 0.023148
0.311111 0.002296 0.000286 0.000000 0.023148
0.355556 0.002296 0.000326 0.000000 0.023148

```

0.400000	0.002296	0.000367	0.000000	0.023148
0.444444	0.002296	0.000408	0.000000	0.023148
0.488889	0.002296	0.000449	0.000000	0.023148
0.533333	0.002296	0.000490	0.000000	0.023148
0.577778	0.002296	0.000531	0.000000	0.023148
0.622222	0.002296	0.000571	0.000000	0.023148
0.666667	0.002296	0.000612	0.000000	0.023148
0.711111	0.002296	0.000653	0.000000	0.023148
0.755556	0.002296	0.000694	0.000000	0.023148
0.800000	0.002296	0.000735	0.000000	0.023148
0.844444	0.002296	0.000775	0.000000	0.023148
0.888889	0.002296	0.000816	0.000000	0.023148
0.933333	0.002296	0.000857	0.000000	0.023148
0.977778	0.002296	0.000898	0.000000	0.023148
1.022222	0.002296	0.000939	0.000000	0.023148
1.066667	0.002296	0.000979	0.000000	0.023148
1.111111	0.002296	0.001020	0.000000	0.023148
1.155556	0.002296	0.001061	0.000000	0.023148
1.200000	0.002296	0.001102	0.000000	0.023148
1.244444	0.002296	0.001143	0.000000	0.023148
1.288889	0.002296	0.001184	0.000000	0.023148
1.333333	0.002296	0.001224	0.000000	0.023148
1.377778	0.002296	0.001265	0.000000	0.023148
1.422222	0.002296	0.001306	0.000000	0.023148
1.466667	0.002296	0.001347	0.000000	0.023148
1.511111	0.002296	0.001388	0.000000	0.023148
1.555556	0.002296	0.001428	0.000000	0.023148
1.600000	0.002296	0.001469	0.000000	0.023148
1.644444	0.002296	0.001510	0.000000	0.023148
1.688889	0.002296	0.001551	0.000000	0.023148
1.733333	0.002296	0.001592	0.000000	0.023148
1.777778	0.002296	0.001632	0.000000	0.023148
1.822222	0.002296	0.001673	0.000000	0.023148
1.866667	0.002296	0.001714	0.000000	0.023148
1.911111	0.002296	0.001755	0.000000	0.023148
1.955556	0.002296	0.001796	0.000000	0.023148
2.000000	0.002296	0.001837	0.000000	0.023148
2.044444	0.002296	0.001877	0.000000	0.023148
2.088889	0.002296	0.001918	0.000000	0.023148
2.133333	0.002296	0.001959	0.000000	0.023148
2.177778	0.002296	0.002000	0.000000	0.023148
2.222222	0.002296	0.002041	0.000000	0.023148
2.266667	0.002296	0.002081	0.000000	0.023148
2.311111	0.002296	0.002122	0.000000	0.023148
2.355556	0.002296	0.002163	0.000000	0.023148
2.400000	0.002296	0.002204	0.000000	0.023148
2.444444	0.002296	0.002245	0.000000	0.023148
2.488889	0.002296	0.002285	0.000000	0.023148
2.533333	0.002296	0.002326	0.000000	0.023148
2.577778	0.002296	0.002367	0.000000	0.023148
2.622222	0.002296	0.002408	0.000000	0.023148
2.666667	0.002296	0.002449	0.000000	0.023148
2.711111	0.002296	0.002490	0.000000	0.023148
2.755556	0.002296	0.002530	0.000000	0.023148
2.800000	0.002296	0.002571	0.000000	0.023148
2.844444	0.002296	0.002612	0.000000	0.023148
2.888889	0.002296	0.002653	0.000000	0.023148
2.933333	0.002296	0.002694	0.000000	0.023148
2.977778	0.002296	0.002734	0.000000	0.023148
3.022222	0.002296	0.002775	0.023421	0.023148
3.066667	0.002296	0.002816	0.121030	0.023148
3.111111	0.002296	0.002857	0.255267	0.023148
3.155556	0.002296	0.002898	0.404632	0.023148
3.200000	0.002296	0.002938	0.547841	0.023148
3.244444	0.002296	0.002979	0.665728	0.023148
3.288889	0.002296	0.003020	0.747561	0.023148
3.333333	0.002296	0.003061	0.799562	0.023148
3.377778	0.002296	0.003102	0.860390	0.023148
3.422222	0.002296	0.003143	0.909594	0.023148
3.466667	0.002296	0.003183	0.956270	0.023148

3.511111	0.002296	0.003224	1.000771	0.023148
3.555556	0.002296	0.003265	1.043376	0.023148
3.600000	0.002296	0.003306	1.084308	0.023148
3.644444	0.002296	0.003347	1.123750	0.023148
3.688889	0.002296	0.003387	1.161854	0.023148
3.733333	0.002296	0.003428	1.198748	0.023148
3.777778	0.002296	0.003469	1.234539	0.023148
3.822222	0.002296	0.003510	1.269321	0.023148
3.866667	0.002296	0.003551	1.303176	0.023148
3.911111	0.002296	0.003591	1.336173	0.023148
3.955556	0.002296	0.003632	1.368375	0.023148
4.000000	0.002296	0.003673	1.399836	0.023148
4.044444	0.002296	0.003714	1.430605	0.023148

END FTABLE 1
 FTABLE 2
 92 5

Depth (ft)	Area (acres)	Volume (acre-ft)	Outflow1 (cfs)	Outflow2 (cfs)	Velocity (ft/sec)	Travel Time*** (Minutes)***
0.000000	0.024793	0.000000	0.000000	0.000000		
0.044444	0.024793	0.000441	0.000000	0.000000		
0.088889	0.024793	0.000882	0.000000	0.250000		
0.133333	0.024793	0.001322	0.000000	0.250000		
0.177778	0.024793	0.001763	0.000000	0.250000		
0.222222	0.024793	0.002204	0.000000	0.250000		
0.266667	0.024793	0.002645	0.000000	0.250000		
0.311111	0.024793	0.003085	0.000000	0.250000		
0.355556	0.024793	0.003526	0.000000	0.250000		
0.400000	0.024793	0.003967	0.000000	0.250000		
0.444444	0.024793	0.004408	0.000000	0.250000		
0.488889	0.024793	0.004848	0.000000	0.250000		
0.533333	0.024793	0.005289	0.000000	0.250000		
0.577778	0.024793	0.005730	0.000000	0.250000		
0.622222	0.024793	0.006171	0.000000	0.250000		
0.666667	0.024793	0.006612	0.000000	0.250000		
0.711111	0.024793	0.007052	0.000000	0.250000		
0.755556	0.024793	0.007493	0.000000	0.250000		
0.800000	0.024793	0.007934	0.000000	0.250000		
0.844444	0.024793	0.008375	0.000000	0.250000		
0.888889	0.024793	0.008815	0.000000	0.250000		
0.933333	0.024793	0.009256	0.000000	0.250000		
0.977778	0.024793	0.009697	0.000000	0.250000		
1.022222	0.024793	0.010138	0.000000	0.250000		
1.066667	0.024793	0.010579	0.000000	0.250000		
1.111111	0.024793	0.011019	0.000000	0.250000		
1.155556	0.024793	0.011460	0.000000	0.250000		
1.200000	0.024793	0.011901	0.000000	0.250000		
1.244444	0.024793	0.012342	0.000000	0.250000		
1.288889	0.024793	0.012782	0.000000	0.250000		
1.333333	0.024793	0.013223	0.000000	0.250000		
1.377778	0.024793	0.013664	0.000000	0.250000		
1.422222	0.024793	0.014105	0.000000	0.250000		
1.466667	0.024793	0.014545	0.000000	0.250000		
1.511111	0.024793	0.014986	0.000000	0.250000		
1.555556	0.024793	0.015427	0.000000	0.250000		
1.600000	0.024793	0.015868	0.000000	0.250000		
1.644444	0.024793	0.016309	0.000000	0.250000		
1.688889	0.024793	0.016749	0.000000	0.250000		
1.733333	0.024793	0.017190	0.000000	0.250000		
1.777778	0.024793	0.017631	0.000000	0.250000		
1.822222	0.024793	0.018072	0.000000	0.250000		
1.866667	0.024793	0.018512	0.000000	0.250000		
1.911111	0.024793	0.018953	0.000000	0.250000		
1.955556	0.024793	0.019394	0.000000	0.250000		
2.000000	0.024793	0.019835	0.000000	0.250000		
2.044444	0.024793	0.020275	0.000000	0.250000		
2.088889	0.024793	0.020716	0.000000	0.250000		
2.133333	0.024793	0.021157	0.000000	0.250000		
2.177778	0.024793	0.021598	0.000000	0.250000		
2.222222	0.024793	0.022039	0.000000	0.250000		
2.266667	0.024793	0.022479	0.000000	0.250000		

2.311111	0.024793	0.022920	0.000000	0.250000
2.355556	0.024793	0.023361	0.000000	0.250000
2.400000	0.024793	0.023802	0.000000	0.250000
2.444444	0.024793	0.024242	0.000000	0.250000
2.488889	0.024793	0.024683	0.000000	0.250000
2.533333	0.024793	0.025124	0.000000	0.250000
2.577778	0.024793	0.025565	0.000000	0.250000
2.622222	0.024793	0.026006	0.000000	0.250000
2.666667	0.024793	0.026446	0.000000	0.250000
2.711111	0.024793	0.026887	0.000000	0.250000
2.755556	0.024793	0.027328	0.000000	0.250000
2.800000	0.024793	0.027769	0.000000	0.250000
2.844444	0.024793	0.028209	0.000000	0.250000
2.888889	0.024793	0.028650	0.000000	0.250000
2.933333	0.024793	0.029091	0.000000	0.250000
2.977778	0.024793	0.029532	0.000000	0.250000
3.022222	0.024793	0.029972	0.023421	0.250000
3.066667	0.024793	0.030413	0.121030	0.250000
3.111111	0.024793	0.030854	0.255267	0.250000
3.155556	0.024793	0.031295	0.404632	0.250000
3.200000	0.024793	0.031736	0.547841	0.250000
3.244444	0.024793	0.032176	0.665728	0.250000
3.288889	0.024793	0.032617	0.747561	0.250000
3.333333	0.024793	0.033058	0.799562	0.250000
3.377778	0.024793	0.033499	0.860390	0.250000
3.422222	0.024793	0.033939	0.909594	0.250000
3.466667	0.024793	0.034380	0.956270	0.250000
3.511111	0.024793	0.034821	1.000771	0.250000
3.555556	0.024793	0.035262	1.043376	0.250000
3.600000	0.024793	0.035702	1.084308	0.250000
3.644444	0.024793	0.036143	1.123750	0.250000
3.688889	0.024793	0.036584	1.161854	0.250000
3.733333	0.024793	0.037025	1.198748	0.250000
3.777778	0.024793	0.037466	1.234539	0.250000
3.822222	0.024793	0.037906	1.269321	0.250000
3.866667	0.024793	0.038347	1.303176	0.250000
3.911111	0.024793	0.038788	1.336173	0.250000
3.955556	0.024793	0.039229	1.368375	0.250000
4.000000	0.024793	0.039669	1.399836	0.250000
4.044444	0.024793	0.040771	1.430605	0.250000

END FTABLE 2

FTABLE 3

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Depth (ft)	Area (acres)	Volume (acre-ft)	Outflow1 (cfs)	Outflow2 (cfs)	Velocity (ft/sec)	Travel Time*** (Minutes)***
0.000000	0.019284	0.000000	0.000000	0.000000		
0.044444	0.019284	0.000343	0.000000	0.194444		
0.088889	0.019284	0.000686	0.000000	0.194444		
0.133333	0.019284	0.001028	0.000000	0.194444		
0.177778	0.019284	0.001371	0.000000	0.194444		
0.222222	0.019284	0.001714	0.000000	0.194444		
0.266667	0.019284	0.002057	0.000000	0.194444		
0.311111	0.019284	0.002400	0.000000	0.194444		
0.355556	0.019284	0.002743	0.000000	0.194444		
0.400000	0.019284	0.003085	0.000000	0.194444		
0.444444	0.019284	0.003428	0.000000	0.194444		
0.488889	0.019284	0.003771	0.000000	0.194444		
0.533333	0.019284	0.004114	0.000000	0.194444		
0.577778	0.019284	0.004457	0.000000	0.194444		
0.622222	0.019284	0.004800	0.000000	0.194444		
0.666667	0.019284	0.005142	0.000000	0.194444		
0.711111	0.019284	0.005485	0.000000	0.194444		
0.755556	0.019284	0.005828	0.000000	0.194444		
0.800000	0.019284	0.006171	0.000000	0.194444		
0.844444	0.019284	0.006514	0.000000	0.194444		
0.888889	0.019284	0.006856	0.000000	0.194444		
0.933333	0.019284	0.007199	0.000000	0.194444		
0.977778	0.019284	0.007542	0.000000	0.194444		
1.022222	0.019284	0.007885	0.000000	0.194444		
1.066667	0.019284	0.008228	0.000000	0.194444		

1.111111	0.019284	0.008571	0.000000	0.194444
1.155556	0.019284	0.008913	0.000000	0.194444
1.200000	0.019284	0.009256	0.000000	0.194444
1.244444	0.019284	0.009599	0.000000	0.194444
1.288889	0.019284	0.009942	0.000000	0.194444
1.333333	0.019284	0.010285	0.000000	0.194444
1.377778	0.019284	0.010627	0.000000	0.194444
1.422222	0.019284	0.010970	0.000000	0.194444
1.466667	0.019284	0.011313	0.000000	0.194444
1.511111	0.019284	0.011656	0.000000	0.194444
1.555556	0.019284	0.011999	0.000000	0.194444
1.600000	0.019284	0.012342	0.000000	0.194444
1.644444	0.019284	0.012684	0.000000	0.194444
1.688889	0.019284	0.013027	0.000000	0.194444
1.733333	0.019284	0.013370	0.000000	0.194444
1.777778	0.019284	0.013713	0.000000	0.194444
1.822222	0.019284	0.014056	0.000000	0.194444
1.866667	0.019284	0.014399	0.000000	0.194444
1.911111	0.019284	0.014741	0.000000	0.194444
1.955556	0.019284	0.015084	0.000000	0.194444
2.000000	0.019284	0.015427	0.000000	0.194444
2.044444	0.019284	0.015770	0.000000	0.194444
2.088889	0.019284	0.016113	0.000000	0.194444
2.133333	0.019284	0.016455	0.000000	0.194444
2.177778	0.019284	0.016798	0.000000	0.194444
2.222222	0.019284	0.017141	0.000000	0.194444
2.266667	0.019284	0.017484	0.000000	0.194444
2.311111	0.019284	0.017827	0.000000	0.194444
2.355556	0.019284	0.018170	0.000000	0.194444
2.400000	0.019284	0.018512	0.000000	0.194444
2.444444	0.019284	0.018855	0.000000	0.194444
2.488889	0.019284	0.019198	0.000000	0.194444
2.533333	0.019284	0.019541	0.000000	0.194444
2.577778	0.019284	0.019884	0.000000	0.194444
2.622222	0.019284	0.020227	0.000000	0.194444
2.666667	0.019284	0.020569	0.000000	0.194444
2.711111	0.019284	0.020912	0.000000	0.194444
2.755556	0.019284	0.021255	0.000000	0.194444
2.800000	0.019284	0.021598	0.000000	0.194444
2.844444	0.019284	0.021941	0.000000	0.194444
2.888889	0.019284	0.022283	0.000000	0.194444
2.933333	0.019284	0.022626	0.000000	0.194444
2.977778	0.019284	0.022969	0.000000	0.194444
3.022222	0.019284	0.023312	0.023421	0.194444
3.066667	0.019284	0.023655	0.121030	0.194444
3.111111	0.019284	0.023998	0.255267	0.194444
3.155556	0.019284	0.024340	0.404632	0.194444
3.200000	0.019284	0.024683	0.547841	0.194444
3.244444	0.019284	0.025026	0.665728	0.194444
3.288889	0.019284	0.025369	0.747561	0.194444
3.333333	0.019284	0.025712	0.799562	0.194444
3.377778	0.019284	0.026054	0.860390	0.194444
3.422222	0.019284	0.026397	0.909594	0.194444
3.466667	0.019284	0.026740	0.956270	0.194444
3.511111	0.019284	0.027083	1.000771	0.194444
3.555556	0.019284	0.027426	1.043376	0.194444
3.600000	0.019284	0.027769	1.084308	0.194444
3.644444	0.019284	0.028111	1.123750	0.194444
3.688889	0.019284	0.028454	1.161854	0.194444
3.733333	0.019284	0.028797	1.198748	0.194444
3.777778	0.019284	0.029140	1.234539	0.194444
3.822222	0.019284	0.029483	1.269321	0.194444
3.866667	0.019284	0.029826	1.303176	0.194444
3.911111	0.019284	0.030168	1.336173	0.194444
3.955556	0.019284	0.030511	1.368375	0.194444
4.000000	0.019284	0.030854	1.399836	0.194444
4.044444	0.019284	0.031711	1.430605	0.194444

END FTABLE 3

FTABLE 4

92 5

Depth (ft)	Area (acres)	Volume (acre-ft)	Outflow1 (cfs)	Outflow2 (cfs)	Velocity (ft/sec)	Travel Time*** (Minutes)***
0.000000	0.020661	0.000000	0.000000	0.000000		
0.044444	0.020661	0.000367	0.000000	0.208333		
0.088889	0.020661	0.000735	0.000000	0.208333		
0.133333	0.020661	0.001102	0.000000	0.208333		
0.177778	0.020661	0.001469	0.000000	0.208333		
0.222222	0.020661	0.001837	0.000000	0.208333		
0.266667	0.020661	0.002204	0.000000	0.208333		
0.311111	0.020661	0.002571	0.000000	0.208333		
0.355556	0.020661	0.002938	0.000000	0.208333		
0.400000	0.020661	0.003306	0.000000	0.208333		
0.444444	0.020661	0.003673	0.000000	0.208333		
0.488889	0.020661	0.004040	0.000000	0.208333		
0.533333	0.020661	0.004408	0.000000	0.208333		
0.577778	0.020661	0.004775	0.000000	0.208333		
0.622222	0.020661	0.005142	0.000000	0.208333		
0.666667	0.020661	0.005510	0.000000	0.208333		
0.711111	0.020661	0.005877	0.000000	0.208333		
0.755556	0.020661	0.006244	0.000000	0.208333		
0.800000	0.020661	0.006612	0.000000	0.208333		
0.844444	0.020661	0.006979	0.000000	0.208333		
0.888889	0.020661	0.007346	0.000000	0.208333		
0.933333	0.020661	0.007713	0.000000	0.208333		
0.977778	0.020661	0.008081	0.000000	0.208333		
1.022222	0.020661	0.008448	0.000000	0.208333		
1.066667	0.020661	0.008815	0.000000	0.208333		
1.111111	0.020661	0.009183	0.000000	0.208333		
1.155556	0.020661	0.009550	0.000000	0.208333		
1.200000	0.020661	0.009917	0.000000	0.208333		
1.244444	0.020661	0.010285	0.000000	0.208333		
1.288889	0.020661	0.010652	0.000000	0.208333		
1.333333	0.020661	0.011019	0.000000	0.208333		
1.377778	0.020661	0.011387	0.000000	0.208333		
1.422222	0.020661	0.011754	0.000000	0.208333		
1.466667	0.020661	0.012121	0.000000	0.208333		
1.511111	0.020661	0.012489	0.000000	0.208333		
1.555556	0.020661	0.012856	0.000000	0.208333		
1.600000	0.020661	0.013223	0.000000	0.208333		
1.644444	0.020661	0.013590	0.000000	0.208333		
1.688889	0.020661	0.013958	0.000000	0.208333		
1.733333	0.020661	0.014325	0.000000	0.208333		
1.777778	0.020661	0.014692	0.000000	0.208333		
1.822222	0.020661	0.015060	0.000000	0.208333		
1.866667	0.020661	0.015427	0.000000	0.208333		
1.911111	0.020661	0.015794	0.000000	0.208333		
1.955556	0.020661	0.016162	0.000000	0.208333		
2.000000	0.020661	0.016529	0.000000	0.208333		
2.044444	0.020661	0.016896	0.000000	0.208333		
2.088889	0.020661	0.017264	0.000000	0.208333		
2.133333	0.020661	0.017631	0.000000	0.208333		
2.177778	0.020661	0.017998	0.000000	0.208333		
2.222222	0.020661	0.018365	0.000000	0.208333		
2.266667	0.020661	0.018733	0.000000	0.208333		
2.311111	0.020661	0.019100	0.000000	0.208333		
2.355556	0.020661	0.019467	0.000000	0.208333		
2.400000	0.020661	0.019835	0.000000	0.208333		
2.444444	0.020661	0.020202	0.000000	0.208333		
2.488889	0.020661	0.020569	0.000000	0.208333		
2.533333	0.020661	0.020937	0.000000	0.208333		
2.577778	0.020661	0.021304	0.000000	0.208333		
2.622222	0.020661	0.021671	0.000000	0.208333		
2.666667	0.020661	0.022039	0.000000	0.208333		
2.711111	0.020661	0.022406	0.000000	0.208333		
2.755556	0.020661	0.022773	0.000000	0.208333		
2.800000	0.020661	0.023140	0.000000	0.208333		
2.844444	0.020661	0.023508	0.000000	0.208333		
2.888889	0.020661	0.023875	0.000000	0.208333		
2.933333	0.020661	0.024242	0.000000	0.208333		
2.977778	0.020661	0.024610	0.000000	0.208333		

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3.022222 0.020661 0.024977 0.023421 0.208333
3.066667 0.020661 0.025344 0.121030 0.208333
3.111111 0.020661 0.025712 0.255267 0.208333
3.155556 0.020661 0.026079 0.404632 0.208333
3.200000 0.020661 0.026446 0.547841 0.208333
3.244444 0.020661 0.026814 0.665728 0.208333
3.288889 0.020661 0.027181 0.747561 0.208333
3.333333 0.020661 0.027548 0.799562 0.208333
3.377778 0.020661 0.027916 0.860390 0.208333
3.422222 0.020661 0.028283 0.909594 0.208333
3.466667 0.020661 0.028650 0.956270 0.208333
3.511111 0.020661 0.029017 1.000771 0.208333
3.555556 0.020661 0.029385 1.043376 0.208333
3.600000 0.020661 0.029752 1.084308 0.208333
3.644444 0.020661 0.030119 1.123750 0.208333
3.688889 0.020661 0.030487 1.161854 0.208333
3.733333 0.020661 0.030854 1.198748 0.208333
3.777778 0.020661 0.031221 1.234539 0.208333
3.822222 0.020661 0.031589 1.269321 0.208333
3.866667 0.020661 0.031956 1.303176 0.208333
3.911111 0.020661 0.032323 1.336173 0.208333
3.955556 0.020661 0.032691 1.368375 0.208333
4.000000 0.020661 0.033058 1.399836 0.208333
4.044444 0.020661 0.033976 1.430605 0.208333

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END FTABLE 4

END FTABLES

EXT SOURCES

```

<-Volume-> <Member> SsysSgap<--Mult-->Tran <-Target vols> <-Grp> <-Member-> ***
<Name> # <Name> # tem strg<-factor->strg <Name> # # <Name> # # ***
WDM 2 PREC ENGL 1.2 PERLND 1 999 EXTNL PREC
WDM 2 PREC ENGL 1.2 IMPLND 1 999 EXTNL PREC
WDM 1 EVAP ENGL 0.76 PERLND 1 999 EXTNL PETINP
WDM 1 EVAP ENGL 0.76 IMPLND 1 999 EXTNL PETINP

```

END EXT SOURCES

EXT TARGETS

```

<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Volume-> <Member> Tsys Tgap Amd ***
<Name> # <Name> # #<-factor->strg <Name> # <Name> tem strg strg***
RCHRES 1 HYDR RO 1 1 1 WDM 1000 FLOW ENGL REPL
RCHRES 1 HYDR O 1 1 1 WDM 1001 FLOW ENGL REPL
RCHRES 1 HYDR O 2 1 1 WDM 1002 FLOW ENGL REPL
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MASS-LINK

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3
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END MASS-LINK 3

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MASS-LINK          17
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END MASS-LINK      17

END MASS-LINK

END RUN
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Mitigated UCI File

Predeveloped HSPF Message File

Mitigated HSPF Message File

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December 28, 2017
Job No. 17-0765

Columbia Development
13110 NE 177th Place, Suite 202
Woodinville, Washington, 98072

Attn: Mr. Hegger

Re: Monroe Townhomes
Blueberry Lane and Kelsey Street
Monroe, WA 98272

Dear Mr. Hegger

As requested, GeoTest Services, Inc. is pleased to submit this report summarizing the results of our geotechnical engineering evaluation for the proposed Monroe Townhomes project located at the above referenced address. The purpose of this evaluation was to establish general subsurface conditions beneath the proposed development for use in project design. Specifically our scope of services included the following tasks:

- Exploration of soil and groundwater conditions underlying the site by excavating 10 test pits to evaluate subsurface soil conditions.
- Provide this written report containing a description of the general geologic conditions, subsurface soils and groundwater conditions. Also presented in this report are our findings and recommendations pertaining to site preparation and earthwork, fill and compaction, wet weather construction and seismic design considerations. Included in these recommendations are foundation support and settlement, surcharge program, slab-on-grade construction, foundation and site drainage, utilities, stormwater infiltration, LID, and geotechnical consultation and construction monitoring recommendations.

PROJECT DESCRIPTION

We understand that a new multi-family residential development is planned for the property referenced above. The property does not currently have a formal address, but is located at the northwest corner of Blueberry Lane and Kelsey Street. A formal development plan has not been finalized at the time of this report. Conversations with Mr. Hegger indicate that the planned construction will consist of several multi-story buildings containing approximately 32 units in total. We anticipate the use of frame construction, shallow conventional footings, and slab-on-grade floors. Structural loads are expected to be relatively light

SITE CONDITIONS

This section discusses the general surface and subsurface conditions observed at the project site at the time of our field investigation. Interpretations of the site conditions are based on the results of our review of available information, site reconnaissance, subsurface explorations, laboratory testing, and our experience in the project vicinity.

Surface Conditions

The site is currently vacant and vegetated with blackberry bushes and shrubs except within the northwest portion of the property where it is surfaced with gravel. A walking path running east and west crosses the property. The property is relatively level with very little elevation change across the site. The flat topography suggests historic grading activities on the property. Notably, properties to the north and south have been developed. At the time of our visits, surface water was observed ponding in the vicinity of test pits TP-5, TP-6, TP-7, and TP-9 (See figure 2).

Subsurface Soil Conditions

Subsurface soil conditions were explored by excavating ten test pits throughout the site on 12-6-17. The exploratory test pits (TP-1 through TP-10) were advanced with a tracked excavator to depths of 6 to 11 feet below ground surface (BGS). Test pits were advanced to refusal (dense soil) or to the limits of the provided equipment. Grab soil samples were obtained from the side wall of the test pit excavation. All explorations were continuously observed by a staff geologist from our firm. See the attached Site and Exploration Map (Figure 2) for the approximate locations of our Test Pit explorations.

The on-site subsurface soils generally consisted of approximately of 0.25 to 1 feet of topsoil over variable fill soils over native sand and gravel Alluvium. These fill soils extended to depths of 4 feet to greater than 11 feet BGS across the site, with medium dense to dense sandy gravel (Alluvium – Stream Channel Deposits) below and to the base of all explorations except for test pits TP-3, TP-5, TP-6, and TP-9. In TP-3, TP-5, and TP-9 uncontrolled fill soils were encountered to the limits of exploration. The uncontrolled fill soils appeared to be generally thickest to the east and thinnest within the central portion of the property. The southeast corner of the site encountered a greater thickness of uncontrolled fill before exposing native sandy, gravel, but this appears to be limited to a relatively small area.

Historical Site Development

Based on a review of Snohomish county historical aerial imagery, the majority of the project site and the site bordering to the west appear to have been used as a gravel pit. GeoTest's review of historical images show gravel mine operations as recently as 2001. The presence of existing fill soils on the project site, in conjunction with the halting of mining operations, suggest that the site was reclaimed in general accordance with a Department of Ecology/Department of Natural Resources reclamation plan. GeoTest is not aware of the source of the fill on the project site, nor is GeoTest aware of its means and methods of placement. Thus, GeoTest is treating the fill as an "uncontrolled" fill source.

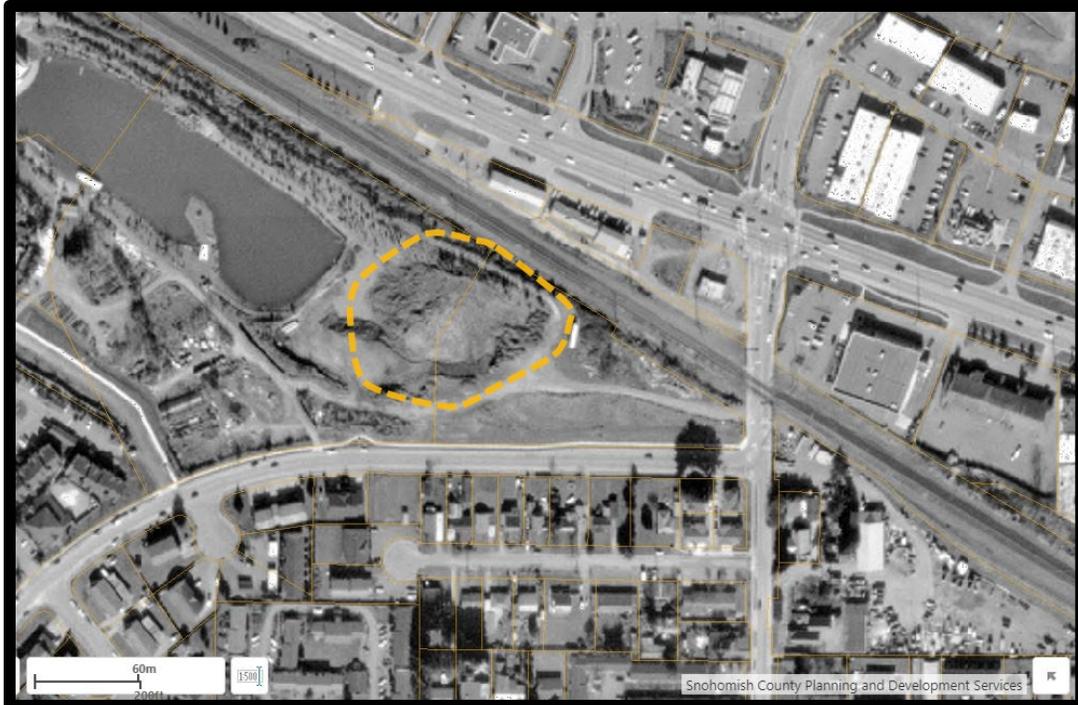


Photo 1: 2001 aerial imagery of proposed residence site. Note topographic depression in northwest corner of parcel (Yellow Dashed Line).



Photo 2: 2002-2003 aerial imagery of proposed residence site. Note disappearance of topographic depression in northwest corner of parcel (Yellow Dashed Line).

Based on our subsurface explorations and review of aerial photography, the northwest portion of the project site appears to have been subject to significant historic grading operations. The large pond to the northwest (off-site) appears to have been part of a gravel mining operation.

General Geologic Conditions

Geologic information for the project site was obtained from the interactive *Geologic Map of Washington State*, published by the Washington State Department of Natural Resources (DNR). According to the DNR map, subsurface soils in the vicinity of the project consist of Quaternary Alluvium Deposits (Q_a).

Soils defined as Alluvium typically consists irregularly layered sands and gravels deposited in river and stream channels, with silts, clays, and peats deposited in the surrounding floodplain.

Native soils consistent with the river and stream channel alluvial deposits (sands and gravels) were encountered during the subsurface exploration program.

Groundwater Seepage and Seasonal Groundwater

For the purposes of this report, observed groundwater seepage represents either the existing surface of a groundwater table or the surface of perched seepage. The groundwater table is referred to as the atmospheric pressure surface that coincides with the top of the zone of saturation and is the surface that dictates the development design recommendations in this report. Perched seepage is referred to as a saturated zone that develops where a restrictive surface (i.e. dense, fine grained soils or bedrock) limits the vertical, downward migration of near-surface water. The groundwater table or perched seepage surface should be considered when determining methods of earthwork construction but is not used to dictate development design.

Groundwater Observations

At the time of our visit on December 6, 2017, a rapid groundwater seep was encountered at approximately 4' BGS within test pit TP-5. Although ponded surface water was observed in the northwest portion of the parcel, this is likely due to the high silt content, and relative density of the surficial fill soils in that area, and not a regional groundwater condition. A review of publicly available well data for the city of Monroe indicates that wet-season groundwater elevations near the project vicinity are approximately 10-15 feet below the ground surface.

Seasonal Groundwater Fluctuation Observations

A distinct mottled horizon or "rust line," was not encountered within the test pit explorations. Mottling (reddish-brown, orange, or yellow splotches or mottles) is typically indicative of soils that experience fluctuating moisture conditions, generally due to seasonal wetting and drying.

Considerations

The groundwater conditions reported on the test pit logs are for the specific locations and dates indicated, and therefore may not necessarily be indicative of other locations and/or times. Please consider that groundwater table levels are generally higher (at shallower depths) during the wetter months (October through May).

It is the client's and their (his/her) representative's responsibility to inform GTS of variations in groundwater conditions and/or any modifications to project designs so that a review of and revision to report recommendations can be made, if necessary. Unless specifically requested, GTS is not responsible to provide monitoring of groundwater conditions beyond the time of our site investigations. Please keep in mind that groundwater conditions may be different if there is a substantial lapse of time between submission of this report and the start of construction. If this is the situation, GTS recommends we be contacted to evaluate groundwater conditions in order to determine whether our report conclusions and recommendations remain applicable.

CONCLUSIONS AND RECOMMENDATIONS

Existing fill soils were encountered in all explorations on site. These soils were found to be moisture sensitive, ranged from soft/loose to very dense/hard, and contained organic material and construction debris. Our subsurface explorations suggest that existing fill soils are between 4 feet thick within the central and southern portion of the property, and greater than 11 feet thick within the northwestern portion. The eastern quadrant of the property was found to contain approximately 10 feet of this existing fill soil. The fill thicknesses have the potential to impact construction costs, especially in the northwestern portion of the site.

Due to the variable and uncontrolled nature of the existing fill soils on site, there is significant risk of differential settlement across foundation elements if these elements were to be placed on existing fill soils. Thus, it is our opinion that the in-place fill soils are not suitable for shallow conventional foundation support, or for reuse as structural fill for shallow conventional foundation support. If shallow conventional foundations are planned, existing fill must be completely removed below these foundations. Alternatively, a deep foundation system extending through existing fill soils could be considered.

Underlying the fill soils were medium dense to dense, undisturbed Alluvium that is considered suitable for the support of shallow conventional foundations. Alternatively, structural fill or Controlled Density Fill placed on medium dense to dense Alluvium is considered to be suitable for the support of new foundations.

GeoTest understands that it may not be feasible or cost-effective to remove existing fill soils from below pavement sections on this project. The Owner may elect to leave the existing fill in place, with the understanding that parking lot areas and/or drive paths will have an increased risk of post-construction settlements or above-average maintenance costs. GTS has presented recommendations with respect to leaving existing fill soils in place elsewhere in this report.

The stormwater infiltration potential of the Alluvium on site is generally favorable. However, these soils are overlain by very silty fill soils that would not be suitable for infiltration under the Snohomish County Stormwater Manual. GTS anticipates that any infiltration must bypass existing fill soils at depth and utilize native soil if it is to meet the intent of the County's Stormwater Manual. GTS is not aware of any specific infiltration plan or concept at the time of this report and it is expected that additional evaluations and/or considerations will be needed to develop stormwater concepts. Shallow groundwater was not, however, observed in the majority of the explorations, so groundwater mounding does not appear to be a concern at this time.

Site Preparation and Earthwork

The portions of the site to be occupied by proposed foundations and floor slabs should be prepared by removing any existing topsoil, existing fill, debris, deleterious material and/or

significant accumulations of organics from the area to be developed. Prior to placement of foundation elements or structural fill, the exposed native subgrade should be observed by the engineer. The purpose of this effort is to identify possible loose or soft soil deposits, where applicable, and then remedially compact soft soil or soil disturbed during site excavation activities.

Prior to the placement of structural fill, the exposed subgrade under all areas should be recompacted to a dense and unyielding condition and proof rolled with a loaded dump truck, large self-propelled vibrating roller, or equivalent piece of equipment applicable to the size of the excavation. The purpose of this effort is to identify possible loose or soft soil deposits and recompact the soil exposed during site excavation activities.

Where applicable, exposed subgrades should be proof rolled to confirm firm and unyielding conditions. Areas exhibiting significant deflection, pumping, or are observed to have elevated moisture contents that prevent the soil from being adequately compacted should be over-excavated to firm soil. Over-excavated areas should be backfilled with structural fill as recommended elsewhere in this report. During periods of wet weather, proof rolling could damage the exposed subgrade. Under these conditions, qualified geotechnical personnel should observe subgrade conditions to determine if proof rolling is feasible.

Fill and Compaction

In general, non-organic, predominantly granular soil may be used as structural fill provided the material is properly moisture conditioned prior to placement and compacted to at least 95 percent of the maximum dry density, as determined using test method ASTM D1557. Material containing topsoil, wood, trash, organic material, or other debris is not recommended for reuse as structural fill and should be properly disposed offsite or placed in nonstructural areas.

Soils containing more than approximately 5 percent fines are considered moisture sensitive. These soils are very difficult to compact to a firm and unyielding condition when over the optimum moisture content by more than approximately 2 percent. The optimum moisture content is that which allows the greatest dry density to be achieved at a given level of compactive effort.

Reuse of Onsite Soil

It is our opinion that existing fill soils encountered across the majority of the site should not be used as structural fill due to their variability, fines content, and the presence of trash, debris, and elevated organic contents. Complete removal of these materials from foundation areas or using the existing fill in non-structural applications should be expected.

As with any uncontrolled fill, it is possible that the fill contains contaminants that were not identified during our explorations. It should be noted, however, that our field screening methods did not indicate soil contamination at the time of our investigation. In a similar fashion, concentrations of organic debris may exist in greater quantities than what was observed during our site visit. The Owner should be aware that the potential for encountering contaminated soils during construction exists and should be prepared for this contingency.

Native soils were generally not encountered in the upper portions of our subsurface soil explorations. It is generally assumed that native soil is overlain by existing fill and will not be available to be reused in structural fill applications.

Imported Granular Structural Fill

We recommend that imported granular structural fill consist of clean, well-graded sandy gravel, gravelly sand, or other approved naturally occurring granular material (pit run) with at least 30 percent retained on the No. 4 sieve, or a well-graded crushed rock. Structural fill for dry weather construction may contain on the order of 10 percent fines (that portion passing the U.S. No. 200 sieve) based on the portion passing the U.S. No. 4 sieve. Soil containing more than about 5 percent fines cannot consistently be compacted to a dense, non-yielding condition when the water content is greater than optimum. Accordingly, we recommend that imported structural fill with less than 5 percent fines be used during wet weather conditions.

Due to wet weather or wet site conditions, soil moisture contents could be high enough that it may be very difficult to compact even "clean" imported select granular fill to a firm and unyielding condition. Soils with over-optimum moisture contents should be either scarified and dried back to more suitable moisture contents during periods of dry weather or removed and replaced with fill soils at a more suitable range of moisture contents.

Backfill and Compaction

Structural fill should be placed in horizontal lifts 8 to 10 inches in loose thickness and thoroughly compacted. All structural fill placed under load bearing areas should be compacted to at least 95 percent of the maximum dry density, as determined using test method ASTM D1557. The top of the compacted structural fill should extend outside all foundations and other structural improvements a minimum distance equal to the thickness of the fill. We recommend that compaction be tested periodically throughout the fill placement.

Wet Weather Earthwork

It is generally assumed that it will be difficult to control the moisture content of the site soils during the wet season. Contractors must be aware of the limitations of the near-surface soils on this property and have contingencies for addressing over-optimum moisture content soils. If construction is accomplished during wet weather, we recommend that structural fill consist of imported, clean, well-graded sand or sand and gravel as described above. If fill is to be placed or earthwork is to be performed in wet weather or under wet conditions, the contractor may reduce, but not eliminate, soil disturbance by:

- Limiting the size of areas that are stripped of topsoil and left exposed
- Accomplishing earthwork in small sections
- Limiting construction traffic over unprotected soil
- Sloping excavated surfaces to promote runoff
- Limiting the size and type of construction equipment used
- Providing gravel "working mats" over areas of prepared subgrade
- Removing wet surficial soil prior to commencing fill placement each day
- Sealing the exposed ground surface by rolling with a smooth drum compactor or rubber-tired roller at the end of each working day
- Providing up gradient perimeter ditches or low earthen berms and using temporary sumps to collect runoff and prevent water from ponding and damaging exposed subgrades.

Seismic Design Considerations

The Pacific Northwest is seismically active and the site could be subject to ground shaking from a moderate to major earthquake. Consequently, moderate levels of earthquake shaking should be anticipated during the design life of the project, and the proposed structure should be designed to resist earthquake loading using appropriate design methodology.

For structures designed using the seismic design provisions of the 2015 International Building Code, the native soil interpreted to underlie the site within the upper 100 feet classifies as Site Class D, according to 2010 ASCE -7 Standard – Table 20.3-1, Site Class Definitions. The corresponding values for calculating a design response spectrum for the assumed soil profile type is considered appropriate for the site.

Please reference the following values for seismic structural design purposes:

Conterminous 48 States – 2015 International Building Code
Zip Code 98272
Central Latitude = 47.860056, Central Longitude = -121.978654

Short Period (0.2 sec) Spectral Acceleration

Maximum Considered Earthquake (MCE) Value of $S_s = 1.201(g)$
Site Response Coefficient, $F_a = 1.019$ (Site Class D)
Adjusted spectral response acceleration for Site Class D, $S_{MS} = S_s \times F_a = 1.225 (g)$
Design spectral response acceleration for Site Class D, $S_{DS} = 2/3 \times S_{MS} = 0.702 (g)$

One Second Period (1 sec) Spectral Acceleration

Maximum Considered Earthquake (MCE) Value of $S_1 = 0.454 (g)$
Site Response Coefficient, $F_v = 1.546$ (Site Class D)
Adjusted spectral response acceleration for Site Class D, $S_{M1} = S_1 \times F_v = 0.702 (g)$
Design spectral response acceleration for Site Class D, $S_{D1} = 2/3 \times S_{M1} = 0.457 (g)$

Foundation Support System

Foundation support for the proposed buildings may be provided by continuous or isolated spread footings founded on undisturbed or recompacted Alluvium (sandy gravel) Alternatively, structural fill or controlled density fill may be placed over undisturbed or suitably recompacted Alluvium (sandy gravel). To provide proper support for the foundations, we recommend that all existing topsoil, fill, or loose native soil be removed from beneath the building foundation area(s). Our subsurface explorations suggest that existing fill soils are between 4 feet and greater than 11 feet thick. Thus, significant effort should be expected to expose suitable native soil if conventional spread foundations are utilized. All foundations should be buried a minimum of 18 inches below the lowest adjacent final grade for freeze/thaw protection. The footings should be sized in accordance with the structural engineer's prescribed design criteria and seismic considerations.

Conventional Shallow Footings on Native Alluvium

As a construction mitigation to limit the amount of differential settlement across a singular building pad, GTS typically recommends that foundations bear entirely on similar soil conditions. We anticipate that placing individual building foundations entirely on the same soil condition will

be challenging on this property due to the varying depth to Alluvium. However, we anticipate that differential settlement across a singular building will be minimal when foundations are placed entirely on medium dense to dense Alluvium, or a combination of Alluvium and structural fill. We recommend that qualified geotechnical personnel verify that suitable bearing conditions have been reached prior to the placement of foundation formwork.

Conventional Shallow Footings on Structural Fill or Controlled Density Fill

In areas where overexcavation of unsuitable materials extends to competent native soil, the limits of the overexcavation and replacement with structural fill should extend laterally beyond the edge of each side of the footing a distance equal to the depth of the excavation. Alternatively, localized overexcavation of site soils could be backfilled to the design footing elevation with Controlled Density Fill (CDF) provided that the CDF bears directly on medium dense to dense Alluvium. If CDF is used to backfill the soil over-excavation, the limits of the over-excavation need only extend about 1 foot beyond either side of the footing.

Alternative Foundation Support Options

The options presented above are generally only applicable to mitigation of differential settlements in the case of relatively shallow fills. If the design calls for the support of foundation elements over deeper fills, such as those encountered within the northwest portion of the property, alternative methods to mitigate differential settlement should be considered. These options are likely to include some form of pile system to transfer vertical loads through the existing fill to competent native soil or the use of a rammed aggregate pier system to densify and improve existing fill soils. At the time of this report, GTS is not considering these options due to the preliminary nature of the project. GeoTest can assist with the design and selection of an alternative foundation support option if it becomes necessary to do so.

Allowable Bearing Capacity

Assuming the above foundation support criteria are satisfied, continuous or isolated spread footings founded directly on the medium dense to dense Alluvium may be proportioned using a maximum net allowable soil bearing pressure of 2,000 pounds per square foot (psf). For foundations that are placed on structural fill or CDF overlying medium dense to dense Alluvium, they may also be proportioned using a maximum net allowable soil bearing pressure of 2,000 psf.

The term "net allowable bearing pressure" refers to the pressure that can be imposed on the soil at foundation level resulting from the total of all dead plus live loads, exclusive of the weight of the footing or any backfill placed above the footing. The net allowable bearing pressure may be increased by one-third for transient wind or seismic loads.

Foundation Settlement

Settlement of shallow foundations depends on foundation size and bearing pressure, as well as the strength and compressibility characteristics of the underlying soil. Assuming construction is accomplished as previously recommended and for the maximum allowable soil bearing pressure recommended above, we estimate the total settlement of building foundations should be less than 1 inch and differential settlement between two adjacent load-bearing components supported on competent soil should be less than one half the total settlement. The soil/rock response to applied stresses caused by building and other loads is expected to be

predominantly elastic in nature, with most of the settlement occurring during construction as loads are applied.

Floor Support

Floors for the proposed construction may consist of either concrete slab-on-grade floors placed over native soil or structural fill over native soil. GTS does not recommend placing slab-on-grade floors over existing fill soils due to the elevated risks for long-term slab cracking and/or post-construction settlement. It should be understood that the more fill that remains in place, the greater the risk that settlement under the slab could occur over time. Alternatively, a grade beam-supported floor may be considered.

Recommendations for each system are presented below.

Concrete Slabs-on-Grade

Conventional slab-on-grade floor construction is considered feasible for the planned site improvements if the floor slab is placed on firm and unyielding native soil, or structural fill placed over native soil. A modulus of subgrade reaction of 200 pounds per cubic inch (pci) should be appropriate for use in design of floor slabs constructed with these recommendations. Prior to placement of structural fill, the native soil should be proof-rolled as recommended in the *Site Preparation and Earthwork* section of this report.

We recommend that interior concrete slab-on-grade floors be underlain by a minimum of 6 inches of compacted, clean, free-draining gravel with less than 3 percent passing the U.S. Standard No. 200 sieve (based on a wet sieve analysis of that portion passing the U.S. Standard No. 4 sieve). We typically recommend a 5/8" clear crushed rock (no fines) or similar product. The purpose of this layer is to provide uniform support for the slab, provide a capillary break, and act as a drainage layer. To help reduce the potential for water vapor migration through floor slabs, at a minimum a continuous impermeable membrane of 10-mil polyethylene sheeting with tape-sealed joints should be installed below the slab. The American Concrete Institute (ACI) guidelines suggest that the slab may either be poured directly on the vapor retarding membrane or on a granular curing layer placed over the vapor retarding membrane depending on conditions anticipated during construction. We recommend that the architect or structural engineer specify if a curing layer should be used. If construction is planned during the wet season or if the slab-on-grade will be exposed to rain, we do not recommend the use of a curing layer over the vapor retarding membrane. If moisture control within the building is critical, we recommend an inspection of the vapor retarding membrane to verify that all openings have been properly sealed. Also, upgrading to a true vapor barrier membrane product is usually recommended.

Grade Beam Support

Grade beam-supported floors may be a desirable option for floor support. With this option, floors may be structurally supported by grade beams placed upon foundation elements that extend down to firm native soil, or on structural fill/CDF extending to competent native materials. With this approach, floor support problems, including excessive settlement resulting from uneven ground surfaces, loose soil below the floor, or wet subgrades are reduced. The soil below the floor system, however, should be covered with an impervious moisture barrier to reduce dampness as indicated in the Concrete Slabs-on-Grade section of this report.

Foundation and Site Drainage

To reduce the potential for perched groundwater and surface water to seep into interior spaces we recommend that an exterior footing drain system be constructed around the perimeter of new building foundations as shown in the Typical Footing and Wall Drain Section, Figure 3. The drain should consist of a minimum 4-inch diameter perforated PVC pipe, surrounded by a minimum 12 inches of filtering media with the discharge sloped to carry water to a suitable collection system. The filtering media may consist of open-graded drain rock wrapped by a nonwoven geotextile fabric (such as Mirafi 140N or equivalent) or a graded sand and gravel filter. The drainage backfill should be carried up the back of wall and contain less than 3 percent by weight passing the U.S. Standard No. 200 sieve (based on a wet sieve analysis of that portion passing the U.S. Standard No. 4 sieve). The invert of the footing drain pipe should be placed slightly below the elevation of the bottom of the footing or 12 inches below the adjacent floor slab grade, whichever is deeper, so that water will not seep through walls or floor slabs. The footing drain should discharge to an approved drain system and include cleanouts to allow periodic maintenance and inspection.

Positive surface gradients should be provided adjacent to the proposed building to direct surface water away from the foundation and toward suitable drainage facilities. Roof drainage should not be introduced into the perimeter footing drains, but should be separately discharged directly to the stormwater collection system or other appropriate outlet. Pavement and sidewalk areas should be sloped and drainage gradients should be maintained to carry all surface water away from the building towards the local stormwater collection system. Surface water should not be allowed to pond and soak into the ground surface near buildings or paved areas during or after construction. Construction excavations should be sloped to drain to sumps where water from seepage, rainfall, and runoff can be collected and pumped to a suitable discharge facility.

Resistance to Lateral Loads

Not allowed to pump stormwater

The lateral earth pressures that develop against retaining walls will depend on the method of backfill placement, degree of compaction, slope of backfill, type of backfill material, provisions for drainage, magnitude and location of any adjacent surcharge loads, and the degree to which the wall can yield laterally during or after placement of backfill. If the wall is allowed to rotate or yield so the top of the wall moves an amount equal to or greater than about 0.001 to 0.002 times its height (a yielding wall), the soil pressure exerted will be the active soil pressure. When a wall is restrained against lateral movement or tilting (a nonyielding wall), the soil pressure exerted is the at-rest soil pressure. Wall restraint may develop if a rigid structural network is constructed prior to backfilling or if the wall is inherently stiff.

We recommend that yielding walls under drained conditions be designed for an equivalent fluid density of 35 pounds per cubic ft (pcf) for structural fill (import pit run) in active soil conditions. Nonyielding walls under drained conditions should be designed for an equivalent fluid density of 55 pcf for structural fill in at-rest conditions. The design of walls should include appropriate lateral pressures caused by surcharge loads located within a horizontal distance equal to or less than the height of the wall. For uniform surcharge pressures, a uniformly distributed lateral pressure equal to 35 percent and 50 percent of the vertical surcharge pressure should be added to the lateral soil pressures for yielding and nonyielding walls, respectively. GTS also recommends that a seismic surcharge pressure of 12H be included where H is the wall height in feet. The seismic surcharge should be modeled as a rectangular distribution with the resultant applied at the midpoint of the wall.

Passive earth pressures developed against the sides of building foundations, in conjunction with friction developed between the base of the footings and the supporting subgrade, will resist lateral loads transmitted from the structure to its foundation. For design purposes, the passive resistance of well-compacted fill placed against the sides of foundations may be considered equivalent to a fluid with a density of 250 pounds per cubic feet. The recommended value includes a safety factor of about 1.5 and is based on the assumption that the ground surface adjacent to the structure is level in the direction of movement for a distance equal to or greater than twice the embedment depth. The recommended value also assumes drained conditions that will prevent the buildup of hydrostatic pressure in the compacted fill. Retaining walls should include a drain system constructed in general accordance with the recommendations presented in the *Foundation and Site Drainage* section of this report. In design computations, the upper 12 inches of passive resistance should be neglected if the soil is not covered by floor slabs or pavement. If future plans call for the removal of the soil providing resistance, the passive resistance should not be considered.

An allowable coefficient of base friction of 0.35, applied to vertical dead loads only, may be used for the Alluvium or imported granular structural fill and the base of the footing. If passive and frictional resistance are considered together, one half the recommended passive soil resistance value should be used since larger strains are required to mobilize the passive soil resistance as compared to frictional resistance. We do not recommend increasing the coefficient of friction to resist seismic or wind loads.

Temporary and Permanent Slopes

Actual construction slope configurations and maintenance of safe working conditions, including temporary excavation stability, should be the responsibility of the contractor, who is able to monitor the construction activities and has direct control over the means and methods of construction. All applicable local, state, and federal safety codes should be followed. All open cuts should be monitored during and after excavation for any evidence of instability. If instability is detected, the contractor should flatten the side slopes or install temporary shoring.

Temporary excavations in excess of 4 ft should be shored or sloped in accordance with Safety Standards for Construction Work Part N, WAC 296-155-66403

Temporary unsupported excavations in the existing fill soils encountered at the project site are classified as a Type C soil according to WAC 296-155-66403 and may be sloped as steep as 1.5H:1V (34°) (Horizontal: Vertical). Temporary unsupported excavations in the native soils encountered at the project site are classified as a Type C soil according to WAC 296-155-66403 and also may be sloped as steep as 1.5H:1V (34°) (Horizontal: Vertical). All soils encountered are classified as Type C soil in the presence of groundwater seepage. Flatter slopes or temporary shoring may be required in areas where groundwater flow is present and unstable conditions develop.

Temporary slopes and excavations should be protected as soon as possible using appropriate methods to prevent erosion from occurring during periods of wet weather.

We recommend that permanent cut or fill slopes be designed for inclinations of 2H:1V or flatter. Permanent cut or fill slopes that are part of detention ponds, retention ponds, infiltration facilities, or other earth structures intended to receive stormwater should be designed for inclinations of 3H:1V or flatter. All permanent cut slopes should be vegetated or otherwise protected to limit the potential for erosion as soon as practical after construction. Permanent

slopes requiring immediate protection from the effects of erosion should be covered with either mulch or erosion control netting/blankets. Areas requiring permanent stabilization should be seeded with an approved grass seed mixture, or hydroseeded with an approved seed-mulch-fertilizer mixture.

Utilities

It is important that utility trenches be properly backfilled and compacted to reduce the risk of cracking or localized loss of foundation, slab, or pavement support. It is anticipated that excavations for new underground utilities will be in variable fill soils, but deeper excavations could encounter Alluvium and/or groundwater at depth. GTS anticipates that excavations in existing fill can be accomplished with conventional excavation equipment, however the contractor should be prepared to address the presence of construction debris within the excavation.

Trench backfill in improved areas (beneath structures, pavements, sidewalks, etc.) should consist of structural fill as defined earlier in this report. GTS does not recommend the reuse of existing fill soils as structural fill. As such, the use of imported, granular soil should be anticipated for backfill in improved areas. Outside of improved areas and where allowed for in the plans and specifications prepared for this project, non-structural backfill may consist of onsite soil. Trench backfill should be placed and compacted in accordance with the report section *Fill and Compaction*.

Surcharge loads on trench support systems due to construction equipment, stockpiled material, and vehicle traffic should be included in the design of any anticipated shoring system. The contractor should implement measures to prevent surface water runoff from entering trenches and excavations. In addition, vibration as a result of construction activities and traffic may cause caving of the trench walls.

Actual trench configurations should be the responsibility of the contractor. All applicable local, state, and federal safety codes should be followed. All open cuts should be monitored by the contractor during excavation for any evidence of instability. If instability is detected, the contractor should flatten the side slopes or install temporary shoring. If groundwater or groundwater seepage is present, and the trench is not properly dewatered, the soil within the trench zone may be prone to caving, channeling, and running. Trench widths may be substantially wider than under dewatered conditions.

Pavement Subgrade Preparation

Selection of a pavement section is typically a compromise between higher initial cost and lower long term maintenance costs or lower initial cost with more frequent maintenance. For this reason, we recommend that the owner participate in the selection of proposed pavement improvements planned for the site. Site grading plans should include provisions for sloping of the subgrade soils in proposed pavement areas, so that passive drainage of the pavement section(s) can proceed uninterrupted during the life of the project.

At the time of this report, GTS does not have a formal development plan that addresses the presence of the uncontrolled fill on the project site. It is generally assumed that the costs to remove the entirety of the fill from below pavement sections would be prohibitive. As such, GTS is assuming that the Owner will elect to either leave the existing fill in place and accept the likelihood of a shorter design life, or perform limited amounts of overexcavation and

replacement with a geotextile product and structural fill underlying pavement subgrades to extend the life of the pavement. In all cases, GTS anticipates that the subgrade will be prepared through remedially compacting near-surface soils to a firm and unyielding condition prior to proof rolling the subgrades in general accordance with the *Site Preparation and Earthwork* section of this report.

Stormwater Design Recommendations/Infiltration Potential

Test Pit Gradation Results

From the explorations excavated in the areas of interest, 4 representative soil samples were selected and mechanically tested for grain size distribution and calculation according to the 2016 Snohomish County Drainage Manual soil grain size analysis method (Section 3.3.6). A summary of these results are reproduced in Table 1 below.

Table 1 Preliminary Infiltration Results Based on Grain Size Analysis			
Test Pit Exploration Number and Depth	Geologic Description	Uncorrected K_{sat} Infiltration Rate [in/hr]	Corrected K_{sat} Infiltration Rate [in/hr]
TP-1 (5.0 ft)	Alluvium	68.12	14.71
TP-6 (6.0 ft)	Silty Fill	3.72	0.80
TP-7 (9.0 ft)	Alluvium	85.18	18.40
TP-8 (6.0 ft)	Alluvium	116.36	25.13

In the simplified approach (Section 3.3.4) the infiltration rate is derived by applying appropriate correction factors to the measured saturated hydraulic conductivity (K_{sat}) from the ASTM 422 grain size analysis.

Saturated hydraulic conductivity is a quantitative measure of a saturated soil's ability to transmit water when subjected to a hydraulic gradient. It can be thought of as the ease with which pores of a saturated soil permit water movement.

Saturated Hydraulic Conductivity is expressed as follows:

$$\log_{10}(K_{sat}) = -1.57 + 1.90D_{10} + 0.015D_{60} - 0.013D_{90} - 2.08f_{fines}$$

Where D_{10} , D_{60} , and D_{90} are the grain sizes in mm for which 10 percent, 60 percent, and 90 percent is more fine and f_{fines} is the fraction of the soil (by weight) that passes the U.S. No. 200 sieve. K_{sat} is measured in cm/sec.

With this equation, we can determine the saturated hydraulic conductivity for our representative samples. See example below:

Test Pit TP-1 at 5.0 feet BGS: $K_{sat} = 0.048$ cm/sec, or approximately 68.12 inches/hour.

Applying correction factors for site variability (0.6), test method (0.4) and degree of influent control to prevent siltation and bio-buildup (0.9) gives a corrected preliminary design rate of 14.71 inches/hour for the example above. This rate does not take into consideration the effects of ground water mounding.

Given the variability of the site, **we recommend utilizing a preliminary design rate of 10 inches/hour** in the native Alluvium to account for potential restrictive layers or high groundwater. If higher rates are required for design, in-situ infiltration testing is required such as a Pilot Infiltration Testing (PIT Testing). GeoTest does not recommend locating infiltration facilities in uncontrolled fill soils.

Please note that preliminary infiltration rates calculated per the 2016 Snohomish County Drainage Manual assume loose, unconsolidated soil. It should be noted that stormwater infiltration design is an iterative process and that Snohomish County may require additional information, such as seasonal groundwater monitoring, a mounding analysis, or Pilot Infiltration Testing (PIT Testing). GeoTest can provide these services as part of a separate scope of work.

Infiltration Considerations

Infiltration areas should be protected from construction traffic, compaction activities, or other ground disturbing activities. Densification of the soils due to construction activities has the potential to significantly reduce their infiltration capacity. The degree of reduction is highly dependent on both the material type and relative compaction. Infiltration capacity reductions of an order of magnitude or more may occur in soils with significant silt or clay contents. We recommend the client and/or contractor consider protecting infiltration area soils from unintended densification by surrounding these areas with temporary construction fencing or similar temporary obstructions.

The above rates should be considered preliminary in nature and may warrant modification based on changes in facility type, location, or additional subsurface information. Alternatively, the stormwater designer may wish to conduct their own analysis to obtain design rates that best account for the specifics of their system design. Appropriate incorporation of these recommendations into stormwater design is at the discretion of the designer.

The initial saturated hydrologic conductivity of site soils was determined by the Grain Size Analysis Method with applied correction factors. This method produces **estimates** of real-world behavior only. Determination by in-situ testing methods, such as a PIT (Pilot Infiltrating Test), would be anticipated to produce rates more reflective of real-world behavior. GeoTest is available to assist with additional assessment or testing of site soils upon request.

Stormwater Pollutant Treatment

Prior to offsite discharge, stormwater may require some form of pollutant pre-treatment or treatment with an amended soil. It is our opinion, based on past experience, that the re-use of onsite topsoil is often the most sustainable and cost effective method for pollutant treatment purposes. Cation exchange capacities and organic contents of site topsoil and shallow subsurface soils were determined to establish their pollutant treatment suitability.

Cation Exchange Capacity and Organic Content Testing

Two composite samples were collected during our subsurface explorations for pollutant treatment purposes. Cation exchange capacity (CEC) and organic content (OC) tests were performed by Northwest Agricultural Consultants. Laboratory test results are presented in Table 2.

Table 2 CEC & Organic Content Laboratory Test Results			
Test Pit Exploration Number and Depth	Geologic Description	Cation Exchange Capacity (meq/100 grams)	Organic Content (%)
TP-2 (0.5 ft)	Topsoil	21.5	9.09
TP-8 (0.5 ft)	Topsoil	20.1	9.57

Based on the results listed in Table 2, the fine-grained, near-surface soil (topsoil and weathered soils) appear to be suitable for onsite pollutant treatment purposes based on the *2016 Snohomish County Drainage Manual*. The Manual also states that cation exchange capacity must be greater than or equal to 5.0 meq/100 grams for treatment purposes. Thus, the fine-grained, near-surface soils would also appear to be suitable for this purpose, although low rates of infiltration can be expected if the on-site soils are amended due to their high silt contents.

Geotechnical Consultation and Construction Monitoring

GeoTest Services recommends that we be involved in the project design review process. The purpose of the review is to verify that the recommendations presented in this report have been properly interpreted and incorporated in the design and specifications.

We recommend that geotechnical construction monitoring services be provided. These services should include observation by GeoTest personnel during fill placement/compaction activities and subgrade preparation operations to verify that design subgrade conditions are obtained beneath the proposed building(s). There are challenging conditions that exist on the project site and it is imperative that the recommendations presented in this report be implemented during construction. We recommend that periodic field density testing be performed to verify that the appropriate degree of compaction is obtained for structural fill. The purpose of these services would be to observe compliance with the design concepts, specifications, and recommendations of this report, and in the event subsurface conditions differ from those anticipated before the start of construction, provide revised recommendations appropriate to the conditions revealed during construction. GeoTest Services would be pleased to provide these services for you.

GeoTest Services is also available to provide a full range of materials testing and special inspection during building construction as required by the local building department and the International Building Code. This may include specific construction inspections on materials such as reinforced concrete, reinforced masonry, wood framing and structural steel. These services are supported by our fully accredited materials testing laboratory.

USE OF THIS REPORT

GeoTest Services has prepared this report for the exclusive use of William Hegger and his design consultants for specific application to the design of the proposed Monroe Townhomes Project in Monroe, Washington. Use of this report by others or for another project is at the user's sole risk. Our services have been conducted in accordance with generally accepted practices of the geotechnical engineering profession; no other warranty, either express or implied, is made as to the professional advice included in this report.

Our site explorations indicate subsurface conditions at the dates and locations indicated. It is not warranted that they are representative of subsurface conditions at other locations and times. The analyses, conclusions, and recommendations contained in this report are based on site conditions to the limited depth of our explorations at the time of our exploration program, a brief geological reconnaissance of the area, and review of published geological information for the site. We assume that the explorations are representative of the subsurface conditions throughout the site during the preparation of our recommendations. If variations in subsurface conditions are encountered during construction, we should be notified for review of the recommendations of this report, and revision of such if necessary. If there is a substantial lapse of time between submission of this report and the start of construction, or if conditions change due to construction operations at or adjacent to the project site, we recommend that we review this report to determine the applicability of the conclusions and recommendations contained herein.

The earthwork contractor is responsible to perform all work in conformance with all applicable WISHA/OSHA regulations. GeoTest Services, Inc. should not be assumed to be responsible for job site safety on this project, and this responsibility is specifically disclaimed.

We appreciate the opportunity to provide geotechnical services on this project and look forward to assisting you during the final design phase. If you have any questions or comments regarding the information contained in this report, or if we may be of further service, please contact the undersigned.

Respectfully Submitted,
GeoTest Services, Inc.



Noah Griffin G.I.T
Staff Geologist



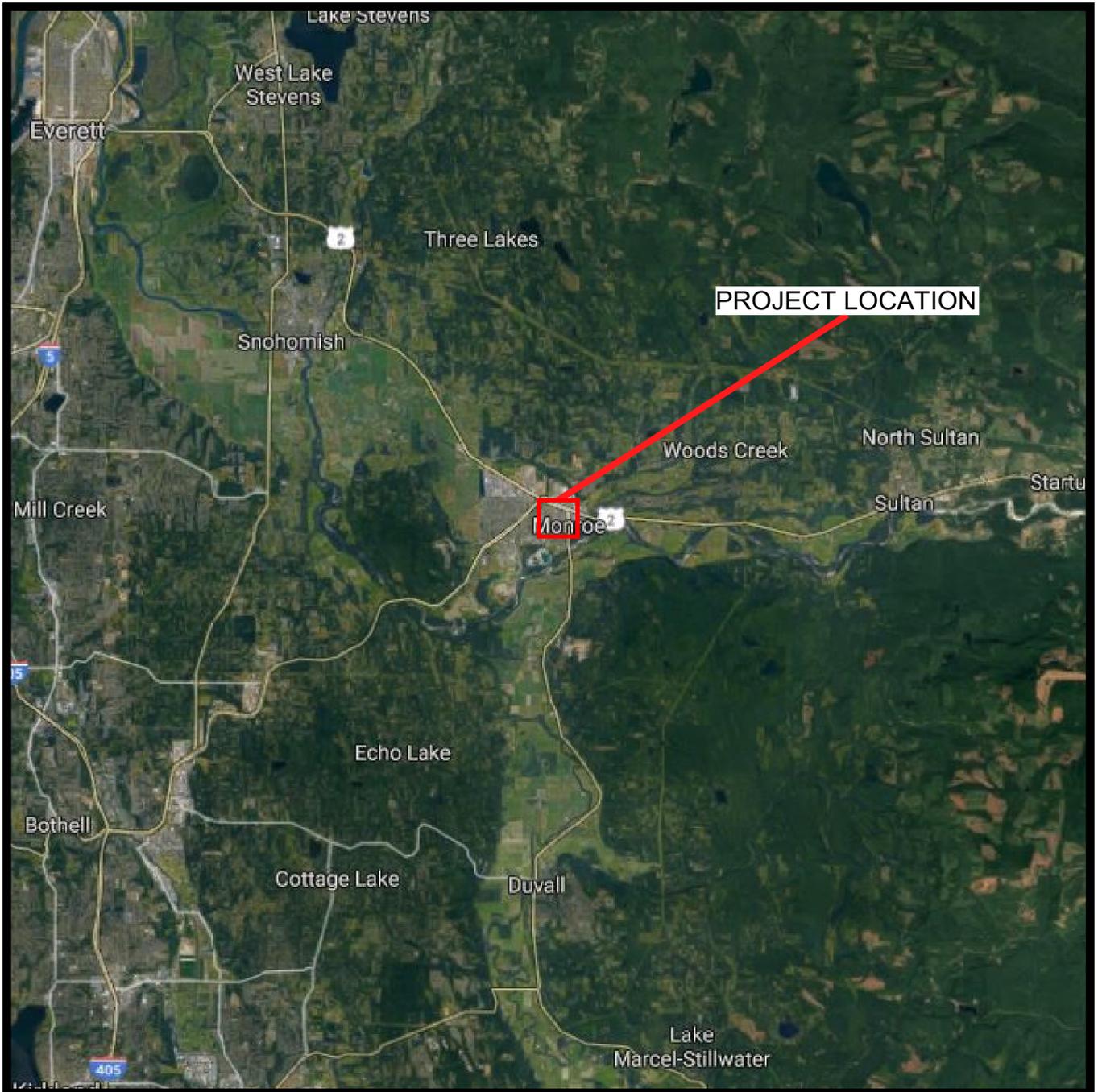
Edwardo Garcia, P.E.
Geotechnical Department Manager

Attachments:	Figure 1	Vicinity Map
	Figure 2	Site and Exploration Plan
	Figure 3	Soil Classification System and Key
	Figures 4-8	Test Pit Logs
	Figure 9	Grain Size Analysis
	Attachment:	Report Limitations and Guidelines

REFERENCES

Interactive Geologic Map of Washington State. Online interactive services provided by the Washington State Department of Natural Resources.

Snohomish County Drainage Manual, 2016.



2 miles



MAP REFERENCED FROM GOOGLE MAPS

GEOTEST SERVICES, INC.

741 Marine Drive
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phone: (360) 733-7318
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Date: 12-15-17

By: NG

Scale: As Shown

Project

17-0765

**SITE VICINITY MAP
MONROE TOWNHOMES
BLUEBERRY LANE AND KELSEY STREET
MONROE, WASHINGTON**

Figure

1



Approximate Property Boundaries

100 Feet



TP-# = Approximate Test Pit Location

REFERENCE DRAWING FROM GOOGLE EARTH

GEOTEST SERVICES, INC.
 741 Marine Drive
 Bellingham, WA 98225
 phone: (360) 733-7318
 fax: (360) 733-7418

Date: 12-15-17 By: NG Scale: As Shown

SITE AND EXPLORATION PLAN
MONROE TOWNHOMES
BLUEBERRY LANE AND KELSEY STREET
MONROE, WASHINGTON

Project
17-0765
 Figure
2

Soil Classification System

	MAJOR DIVISIONS	CLEAN GRAVEL (Little or no fines)	GRAPHIC SYMBOL	USCS LETTER SYMBOL	TYPICAL DESCRIPTIONS ⁽¹⁾⁽²⁾
COARSE-GRAINED SOIL (More than 50% of material is larger than No. 200 sieve size)	GRAVEL AND GRAVELLY SOIL (More than 50% of coarse fraction retained on No. 4 sieve)	CLEAN GRAVEL (Little or no fines)		GW	Well-graded gravel; gravel/sand mixture(s); little or no fines
		GRAVEL WITH FINES (Appreciable amount of fines)		GP	Poorly graded gravel; gravel/sand mixture(s); little or no fines
	SAND AND SANDY SOIL (More than 50% of coarse fraction passed through No. 4 sieve)	CLEAN SAND (Little or no fines)		SW	Well-graded sand; gravelly sand; little or no fines
		SAND WITH FINES (Appreciable amount of fines)		SP	Poorly graded sand; gravelly sand; little or no fines
		SAND WITH FINES (Appreciable amount of fines)		SM	Silty sand; sand/silt mixture(s)
		SAND WITH FINES (Appreciable amount of fines)		SC	Clayey sand; sand/clay mixture(s)
FINE-GRAINED SOIL (More than 50% of material is smaller than No. 200 sieve size)	SILT AND CLAY (Liquid limit less than 50)	SILT AND CLAY (Liquid limit less than 50)		ML	Inorganic silt and very fine sand; rock flour; silty or clayey fine sand or clayey silt with slight plasticity
		SILT AND CLAY (Liquid limit less than 50)		CL	Inorganic clay of low to medium plasticity; gravelly clay; sandy clay; silty clay; lean clay
		SILT AND CLAY (Liquid limit less than 50)		OL	Organic silt; organic, silty clay of low plasticity
	SILT AND CLAY (Liquid limit greater than 50)	SILT AND CLAY (Liquid limit greater than 50)		MH	Inorganic silt; micaceous or diatomaceous fine sand
		SILT AND CLAY (Liquid limit greater than 50)		CH	Inorganic clay of high plasticity; fat clay
		SILT AND CLAY (Liquid limit greater than 50)		OH	Organic clay of medium to high plasticity; organic silt
	HIGHLY ORGANIC SOIL		PT	Peat; humus; swamp soil with high organic content	

OTHER MATERIALS	GRAPHIC SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
PAVEMENT		AC or PC	Asphalt concrete pavement or Portland cement pavement
ROCK		RK	Rock (See Rock Classification)
WOOD		WD	Wood, lumber, wood chips
DEBRIS		DB	Construction debris, garbage

- Notes: 1. Soil descriptions are based on the general approach presented in the *Standard Practice for Description and Identification of Soils (Visual-Manual Procedure)*, as outlined in ASTM D 2488. Where laboratory index testing has been conducted, soil classifications are based on the *Standard Test Method for Classification of Soils for Engineering Purposes*, as outlined in ASTM D 2487.
2. Soil description terminology is based on visual estimates (in the absence of laboratory test data) of the percentages of each soil type and is defined as follows:

- Primary Constituent: > 50% - "GRAVEL," "SAND," "SILT," "CLAY," etc.
 Secondary Constituents: > 30% and ≤ 50% - "very gravelly," "very sandy," "very silty," etc.
 > 12% and ≤ 30% - "gravelly," "sandy," "silty," etc.
 Additional Constituents: > 5% and ≤ 12% - "slightly gravelly," "slightly sandy," "slightly silty," etc.
 ≤ 5% - "trace gravel," "trace sand," "trace silt," etc., or not noted.

Drilling and Sampling Key		Field and Lab Test Data		
SAMPLE NUMBER & INTERVAL	SAMPLER TYPE	Code	Description	
	Code			
	a	3.25-inch O.D., 2.42-inch I.D. Split Spoon	PP = 1.0	Pocket Penetrometer, tsf
	b	2.00-inch O.D., 1.50-inch I.D. Split Spoon	TV = 0.5	Torvane, tsf
	c	Shelby Tube	PID = 100	Photoionization Detector VOC screening, ppm
	d	Grab Sample	W = 10	Moisture Content, %
e	Other - See text if applicable	D = 120	Dry Density, pcf	
1	300-lb Hammer, 30-inch Drop	-200 = 60	Material smaller than No. 200 sieve, %	
2	140-lb Hammer, 30-inch Drop	GS	Grain Size - See separate figure for data	
3	Pushed	AL	Atterberg Limits - See separate figure for data	
4	Other - See text if applicable	GT	Other Geotechnical Testing	
		CA	Chemical Analysis	
Groundwater				
Approximate water elevation at time of drilling (ATD) or on date noted. Groundwater levels can fluctuate due to precipitation, seasonal conditions, and other factors.				

TP-1

SAMPLE DATA			SOIL PROFILE			GROUNDWATER
Sample Number & Interval	Sampler Type	Test Data	Graphic Symbol	USCS Symbol	Excavation Method: <u>Tracked Excavator</u> Ground Elevation (ft): <u>Undetermined</u>	
1	d	W = 6 GS		SM/OH	Loose, brown, moist, silty, SAND with organics and rootlets (Topsoil) Dense, brown, silty, very gravelly, SAND with scattered organics and angular to subangular gravel (Fill) Soft, reddish brown, sandy, SILT with scattered organics (Fill) Medium Dense to Dense, brown, damp, slightly silty, sandy, GRAVEL with cobble sized grains (Alluvium)	Groundwater not encountered.
2	d			GM/SM		
3	d			SM/ML		
				GP/GM		
Test Pit Completed 12/06/17 Total Depth of Test Pit = 9.5 ft.						

TP-2

SAMPLE DATA			SOIL PROFILE			GROUNDWATER
Sample Number & Interval	Sampler Type	Test Data	Graphic Symbol	USCS Symbol	Excavation Method: <u>Tracked Excavator</u> Ground Elevation (ft): <u>Undetermined</u>	
4	d			SM/OH	Loose, brown, moist, silty, SAND with organics, rootlets, and scattered debris (Topsoil) Soft, brown/tan, moist, sandy, SILT with scattered organics, trace gravel, and occasional cobbles (Fill) Medium Dense to Dense, brown, damp, slightly silty, sandy, GRAVEL, medium to coarse sand, rounded to subrounded gravel, with cobble sized grains (Alluvium)	Groundwater not encountered.
5	d			SM/ML		
6	d			GP		
Test Pit Completed 12/06/17 Total Depth of Test Pit = 8.0 ft.						

- Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
 2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
 3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

17-0765 - 12/21/17 X:\0-PROJECTS GEO\00000-PROJECTS 2017-GEO\FULL GEO EVALUATIONS\HEGGER, BILL - 17-0765 - MONROE TOWNHOMES\GINT17-0765 - MONROE TOWNHOMES.GPJ TEST PIT LOG

TP-3

SAMPLE DATA			SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Test Data	Graphic Symbol	USCS Symbol	
0						
0						
1	7	d			SM/OH	Groundwater not encountered.
1.5					SM	
2	8	d			SM	
2						
4						
6						
8						
10						

Excavation Method: Tracked Excavator
 Ground Elevation (ft): Undetermined

Test Pit Completed 12/06/17
 Total Depth of Test Pit = 7.0 ft.

Test pit terminated at ~7' BGS due to encountering unmarked, defunct, utilities

TP-4

SAMPLE DATA			SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Test Data	Graphic Symbol	USCS Symbol	
0						
0						
0.5					SM/OH	Groundwater not encountered.
0.5					SM	
1					SM	
2					GM	
3					ML	
6	9	d			GP/GM	
8						
10						

Excavation Method: Tracked Excavator
 Ground Elevation (ft): Undetermined

Test Pit Completed 12/06/17
 Total Depth of Test Pit = 8.0 ft.

- Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
 2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
 3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.



Monroe Townhomes
 Blueberry Lane and Kelsey Street
 Monroe, Washington

Log of Test Pits

Figure
 5
 (2 of 5)

17-0765 - 12/21/17 X:\0-PROJECTS GEO\00000-PROJECTS 2017-GEO\FULL GEO EVALUATIONS\HEGGER, BILL - 17-0765 - MONROE TOWNHOUSES\GINT\17-0765 - MONROE TOWNHOMES.GPJ TEST PIT LOG

TP-5

SAMPLE DATA			SOIL PROFILE			GROUNDWATER
Sample Number & Interval	Sampler Type	Test Data	Graphic Symbol	USCS Symbol	Excavation Method: <u>Tracked Excavator</u>	
10	d		SM/OH SM		Ground Elevation (ft): <u>Undetermined</u>	
			Loose, brown, moist, silty, SAND with organics and rootlets (Topsoil) Medium dense, grey, wet, slightly gravelly, slightly silty, SAND (Fill) Increasing moisture content with depth Sidewalls caving @ 4' BGS			∇ Rapid seep @ ~4' BGS groundwater seepage encountered at 4.0 ft.
Test Pit Completed 12/06/17 Total Depth of Test Pit = 7.0 ft.			Test pit terminated due to sidewalls caving			

TP-6

SAMPLE DATA			SOIL PROFILE			GROUNDWATER
Sample Number & Interval	Sampler Type	Test Data	Graphic Symbol	USCS Symbol	Excavation Method: <u>Tracked Excavator</u>	
11	d		SM/OH SM		Ground Elevation (ft): <u>Undetermined</u>	
12	d	W = 15 GS	ML		Medium stiff, blue, wet, sandy, low plasticity SILT with scattered organics and woody debris (Fill) Increasing organic content with depth Chain link fence in sidewall @ ~8.5' BGS	Groundwater not encountered.
Test Pit Completed 12/06/17 Total Depth of Test Pit = 10.0 ft.						

- Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
 2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
 3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.



Monroe Townhomes
Blueberry Lane and Kelsey Street
Monroe, Washington

Log of Test Pits

Figure
6
(3 of 5)

TP-7

SAMPLE DATA			SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Test Data	Graphic Symbol	USCS Symbol	
0						
2						
4						
6						
8						
10	13	d	W = 4 GS		GP	
12	Test Pit Completed 12/06/17 Total Depth of Test Pit = 11.0 ft.					
14						

TP-8

SAMPLE DATA			SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Test Data	Graphic Symbol	USCS Symbol	
0						
2						
4						
6	14	d			SM/OH	
8					SM	
10					GP	
12						
14	15	d	W = 5 GS		GP	
16	Test Pit Completed 12/06/17 Total Depth of Test Pit = 6.0 ft.					
18						

- Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
 2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
 3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.



Monroe Townhomes
 Blueberry Lane and Kelsey
 Street
 Monroe, Washington

Log of Test Pits

Figure
 7
 (4 of 5)

TP-9

SAMPLE DATA			SOIL PROFILE		GROUNDWATER	
Depth (ft)	Sample Number & Interval	Sampler Type	Test Data	Graphic Symbol	USCS Symbol	
0						Excavation Method: <u>Tracked Excavator</u> Ground Elevation (ft): <u>Undetermined</u>
2					SM/OH	Groundwater not encountered.
4					SM/ML	
6						
8						
10						
12						
14						

Test Pit Completed 12/06/17
Total Depth of Test Pit = 11.0 ft.

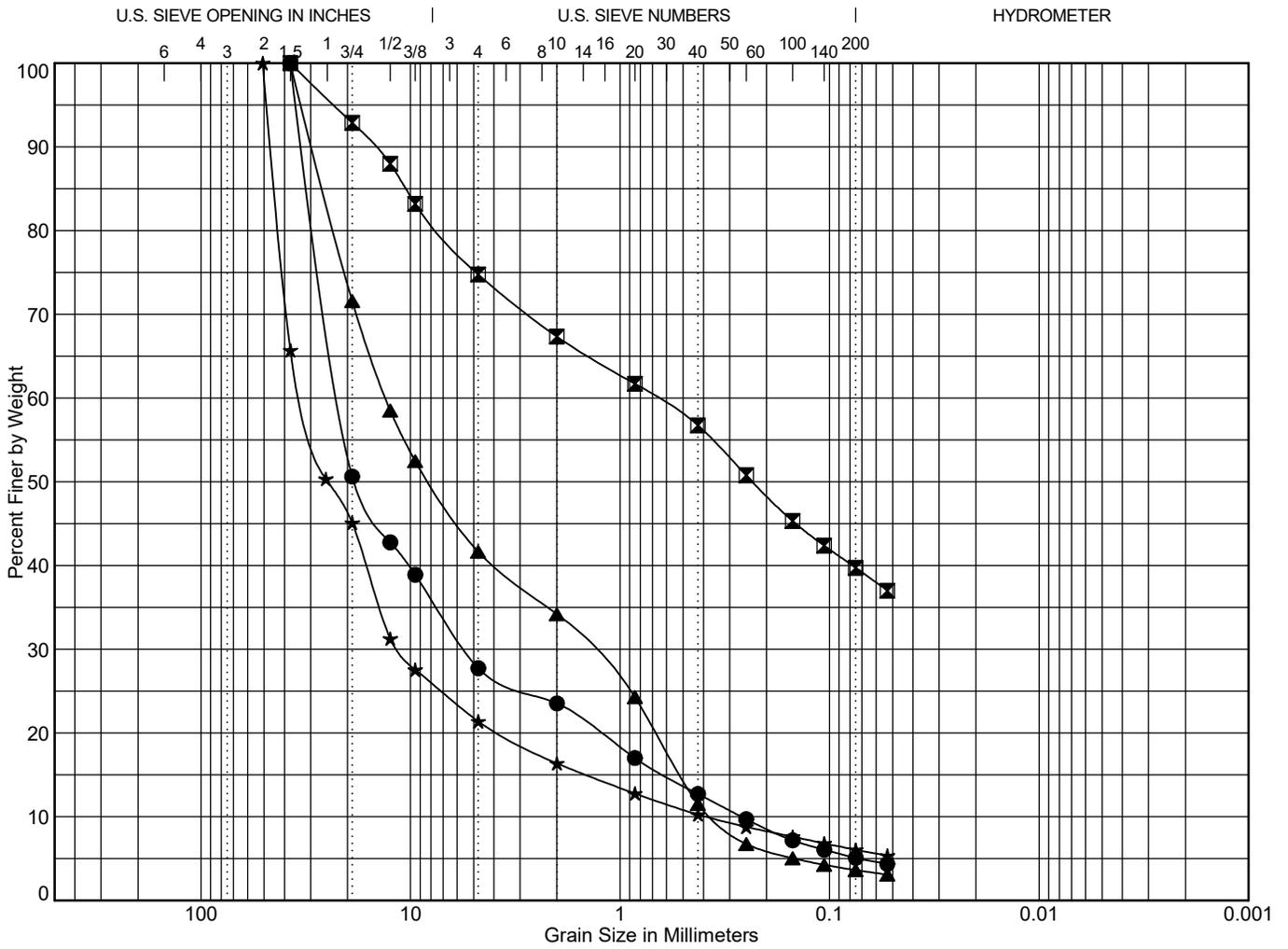
TP-10

SAMPLE DATA			SOIL PROFILE		GROUNDWATER	
Depth (ft)	Sample Number & Interval	Sampler Type	Test Data	Graphic Symbol	USCS Symbol	
0						Excavation Method: <u>Tracked Excavator</u> Ground Elevation (ft): <u>Undetermined</u>
2					SM/OH	Groundwater not encountered.
4					SM/ML	
6	16	d			WD	
8					ML/OH	
10					GP	
12						
14						

Test Pit Completed 12/06/17
Total Depth of Test Pit = 11.0 ft.

- Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
 2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
 3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

17-0765 12/15/17 X:\0-PROJECTS GEO\0000-PROJECTS 2017-GEO\FULL GEO EVALUATIONS\HEGGER, BILL - 17-0765 - MONROE TOWNHOUSES\GINT17-0765 - MONROE TOWNHOUSES.GPJ GRAIN SIZE W/STATS



Cobbles	Gravel		Sand			Silt or Clay
	coarse	fine	coarse	medium	fine	

Point	Depth	Classification	LL	PL	PI	C _c	C _u
●	TP-1	5.0	SLIGHTLY SILTY, SANDY, GRAVEL (GP/GM)			5.25	82.04
■	TP-6	6.0	GRAVELLY, VERY SILTY, SAND (SM)				
▲	TP-7	9.0	VERY SANDY, GRAVEL (GP)			0.41	36.54
★	TP-8	6.0	SLIGHTLY SILTY, SANDY, GRAVEL (GP/GM)			10.31	83.77

Point	Depth	D ₁₀₀	D ₆₀	D ₅₀	D ₃₀	D ₁₀	% Coarse Gravel	% Fine Gravel	% Coarse Sand	% Medium Sand	% Fine Sand	% Fines	
●	TP-1	5.0	37.5	21.618	18.377	5.468	0.264	49.4	22.9	4.2	10.8	7.6	5.1
■	TP-6	6.0	37.5	0.67	0.233			7.1	18.1	7.4	10.6	17.0	39.7
▲	TP-7	9.0	37.5	13.109	8.11	1.393	0.359	28.4	29.9	7.5	22.7	7.9	3.6
★	TP-8	6.0	50.8	32.458	24.935	11.384	0.387	54.9	23.7	5.0	6.1	4.2	6.1

$C_c = D_{30}^2 / (D_{60} * D_{10})$ To be well graded: $1 < C_c < 3$ and
 $C_u = D_{60} / D_{10}$ $C_u > 4$ for GW or $C_u > 6$ for SW



Monroe Townhomes
 Blueberry Lane and Kelsey Street
 Monroe, Washington

Grain Size Test Data

Figure
9

REPORT LIMITATIONS AND GUIDELINES FOR ITS USE¹

Subsurface issues may cause construction delays, cost overruns, claims, and disputes. While you cannot eliminate all such risks, you can manage them. The following information is provided to help:

Geotechnical Services are Performed for Specific Purposes, Persons, and Projects

At GeoTest our geotechnical engineers and geologists structure their services to meet specific needs of our clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of an owner, a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared solely for the client. No one except you should rely on your geotechnical engineer who prepared it. And no one – not even you – should apply the report for any purpose or project except the one originally contemplated.

Read the Full Report

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

A Geotechnical Engineering Report is Based on a Unique Set of Project-Specific Factors

GeoTest's geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the clients goals, objectives, and risk management preferences; the general nature of the structure involved its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless GeoTest, who conducted the study specifically states otherwise, do not rely on a geotechnical engineering report that was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

- the function of the proposed structure, as when it's changed, for example, from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,
- elevation, configuration, location, orientation, or weight of the proposed construction,
- alterations in drainage designs; or
- composition of the design team; the passage of time; man-made alterations and construction whether on or adjacent to the site; or by natural alterations and events, such as floods, earthquakes or groundwater fluctuations; or project ownership.

Always inform GeoTest's geotechnical engineer of project changes – even minor ones – and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

¹Information in this document is based upon material developed by ASFE, Professional Firms Practicing in the Geosciences(asfe.org)

Subsurface Conditions Can Change

This geotechnical or geologic report is based on conditions that existed at the time the study was performed. Do not rely on the findings and conclusions of this report, whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. Always contact GeoTest before applying the report to determine if it is still relevant. A minor amount of additional testing or analysis will help determine if the report remains applicable.

Most Geotechnical and Geologic Findings are Professional Opinions

Our site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. GeoTest's engineers and geologists review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ – sometimes significantly – from those indicated in your report. Retaining GeoTest who developed this report to provide construction observation is the most effective method of managing the risks associated with anticipated or unanticipated conditions.

A Report's Recommendations are *Not* Final

Do not over-rely on the construction recommendations included in this report. Those recommendations are not final, because geotechnical engineers or geologists develop them principally from judgment and opinion. GeoTest's geotechnical engineers or geologists can finalize their recommendations only by observing actual subsurface conditions revealed during construction. GeoTest cannot assume responsibility or liability for the report's recommendations if our firm does not perform the construction observation.

A Geotechnical Engineering or Geologic Report may be Subject to Misinterpretation

Misinterpretation of this report by other design team members can result in costly problems. Lower that risk by having GeoTest confer with appropriate members of the design team after submitting the report. Also, we suggest retaining GeoTest to review pertinent elements of the design teams plans and specifications. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having GeoTest participate in pre-bid and preconstruction conferences, and by providing construction observation.

Do not Redraw the Exploration Logs

Our geotechnical engineers and geologists prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors of omissions, the logs included in this report should never be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable; but recognizes that separating logs from the report can elevate risk.

Give Contractors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, but preface it with a clearly written letter of transmittal. In that letter, consider advising the contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the GeoTest and/or to conduct

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additional study to obtain the specific types of information they need or prefer. A pre-bid conference can also be valuable. Be sure contractors have sufficient time to perform additional study. Only then might you be in a position to give contractors the best information available, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions. In addition, it is recommended that a contingency for unanticipated conditions be included in your project budget and schedule.

Read Responsibility Provisions Closely

Some clients, design professionals, and contractors do not recognize that geotechnical engineering or geology is far less exact than other engineering disciplines. This lack of understanding can create unrealistic expectations that can lead to disappointments, claims, and disputes. To help reduce risk, GeoTest includes an explanatory limitations section in our reports. Read these provisions closely. Ask questions and we encourage our clients or their representative to contact our office if you are unclear as to how these provisions apply to your project.

Environmental Concerns Are Not Covered in this Geotechnical or Geologic Report

The equipment, techniques, and personnel used to perform an environmental study differ significantly from those used to perform a geotechnical or geologic study. For that reason, a geotechnical engineering or geologic report does not usually relate any environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated containments, etc. If you have not yet obtained your own environmental information, ask your geotechnical consultant for risk management guidance. Do not rely on environmental report prepared for some one else.

Obtain Professional Assistance to Deal with Biological Pollutants

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts biological pollutants from growing on indoor surfaces. Biological pollutants includes but is not limited to molds, fungi, spores, bacteria and viruses. To be effective, all such strategies should be devised for the express purpose of prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional biological pollutant prevention consultant. Because just a small amount of water or moisture can lead to the development of severe biological infestations, a number of prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of this study, the geotechnical engineer or geologist in charge of this project is not a biological pollutant prevention consultant; none of the services performed in connection with this geotechnical engineering or geological study were designed or conducted for the purpose of preventing biological infestations.

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