Land Use Application for Middlebrook Subdivision

Date: September 2018

Submitted to: City of Sherwood
22560 SW Pine Street
Sherwood, OR 97140

Applicant: Brookman Development, LLC
PO Box 61426
Vancouver, WA 98666

AKS ENGINEERING & FORESTRY
12965 SW Herman Road, Suite 100
Tualatin, OR 97062
(503) 563-6151

Table of Contents

Exhibits

Exhibit J: Transportation Impact Analysis

Exhibit K: Tree Inventory Table

Exhibit L: Washington County Design Exception Information

Land Use Application
for Middlebrook Subdivision

Submitted to:	City of Sherwood Planning Department 22560 SW Pine Street Sherwood, OR 97140
Applicant:	Brookman Development, LLC PO Box 61426 Vancouver, WA 98666
Property Owner/ Contract Purchaser:	Brookman Development, LLC PO Box 61426 Vancouver, WA 98666
Applicant's Consultant:	AKS Engineering & Forestry, LLC 12965 SW Herman Road, Suite 100 Tualatin, OR 97062 Contact: Chris Goodell, AICP, LEED^{AP} Email: chrisg@aks-eng.com Phone: (503) 563-6151 Fax: (503) 563-6152
Site Location:	17495 and 17601 SW Brookman Road
Assessor's Map:	3S106 Tax Lot 103; 3S106B Tax Lot 100 (as adjusted)
Site Size:	±37.95 acres
Land Use Districts:	Medium Density Residential Low (MDRL) and Medium Density Residential High (MDRH)

I. Executive Summary

In order to address an identified regionwide need for urban land for housing, Metro expanded the Urban Growth Boundary (UGB) south of the City of Sherwood in 2002, including approximately 250 acres of land. This regional planning effort was followed by critical conceptual planning work at the local level. Local planning efforts included a broad-based community engagement component, including formation of a Steering Committee, holding open houses, providing study area tours, and other forms of public notification. The result of this work is the Brookman Addition Concept Plan (the "Concept Plan"), which was adopted by the Sherwood City Council in 2009. The Concept Plan provides the established framework for future land use planning in the area.

This application for Middlebrook Subdivision involves approximately 38 of the approximately 250 acres of land within the adopted Concept Plan. This land is urban, located within the incorporated limits of the City of Sherwood, and is designated with Medium Density Residential zoning. Although the Concept Plan is aspirational (rather than prescriptive) in nature, this project incorporates several key elements form the plan as follows:

- Low density residential land use – The project involves the creation of residential lots for needed housing, specifically future single-family detached homes.
- Infrastructure – Necessary public services including sanitary sewer, stormwater management, water, and franchise utilities are being provided as required by the City and other applicable agencies.
- Neighborhood park – The project features a large centrally located park that is planned to include a variety of recreational amenities.
- Natural resource preservation/open space – A significant amount of land is planned to be set aside and preserved as natural area/passive open space.
- Transportation – An interconnected system of pedestrian pathways, open spaces, trails, sidewalks, and local public streets creates a walkable community for future residents and provides access for emergency service provider access. Frontage improvements are included along SW Brookman Road as well as work necessary to provide safe ingress/egress to and from the neighborhood.

The City of Sherwood's review of this application will result in a "limited land use decision" pursuant to ORS 197.015(12). Thus, this application is subject only to those approval criteria found in the Zoning and Community Development Code (the "Code") and those comprehensive plan policies that are specifically incorporated as approval criteria within the Code. Under ORS 197.195(1), comprehensive plan provisions that have not been incorporated directly into the Code cannot be used as a basis for the decision.

The planned subdivision provides for detached single-family homes, which are expressly defined in ORS 197.303(1) as "needed housing". Therefore, the application is subject to ORS 197.307(4), which states, "a local government may adopt and apply only clear and objective standards, conditions and procedures regulating the development of needed housing on buildable land described in subsection (3) of this section. The standards, conditions and procedures may not have the effect, either in themselves or cumulatively, of discouraging needed housing through unreasonable cost or delay."

Oregon courts, including the Land Use Board of Appeals (LUBA), have generally held that an approval standard is not clear and objective if it imposes on an applicant "subjective, value-laden analyses that are designed to balance or mitigate impacts of the development." (See *Rogue Valley Association of Realtors v. City of Ashland*, 35 Or LUBA 139, 158 (1998) aff'd, 158 Or App 1 (1999)). ORS 197.307(4) places the

burden on local governments to demonstrate that approval standards, conditions, and procedures placed on needed housing applications can be imposed only in a clear and objective manner.

This application addresses each applicable approval criterion found in the Code. The Applicant may choose to accept discretionary standards. The Applicant reserves the right to object to the application of standards or conditions other than those that are clear and objective and does not waive its right to assert that the needed housing statutes apply to this application.

This narrative is supported by substantial evidence presented in the application materials, including preliminary plans and other written documentation. Considered together, and with respect to the discussion regarding clear and objective approval standards provided above, this information provides the necessary basis for the City of Sherwood to approve the application.

II. Site Description/Setting

The subject site is approximately 38 acres (actual acreage per deed descriptions and property boundary survey is ±37.95 acres) and is generally located between the Portland & Western Railroad right-of-way and SW Brookman Road in the southwestern portion of the City of Sherwood. A small portion of the site is located on the north side of the railroad right-of-way. The site boundary is based upon an approved property line adjustment between Tax Lots 100 and 200 of Washington County Assessor's Map 3S106BA. The site consists primarily of gently sloping grassland with wooded areas and a few isolated wetlands. The site supports two existing homes, assorted accessory buildings (detached garages, shops, etc.), and gravel driveway improvements.

The site is currently—and has been historically—used for rural residential purposes. Despite being located within the UGB, surrounding land uses to the east and west can be best characterized as rural residential. Rural land uses are located to the south and medium density single-family residential development exists to the north. Cedar Creek lies southeast of the property.

III. Applicable Review Criteria

CITY OF SHERWOOD COMMUNITY DEVELOPMENT CODE

Title 16 - ZONING AND COMMUNITY DEVELOPMENT CODE

Division II. - LAND USE AND DEVELOPMENT

Chapter 16.12 - RESIDENTIAL LAND USE DISTRICTS

The residential districts are intended to promote the livability, stability and improvement of the City's neighborhoods.

16.12.010 - Purpose and Density Requirements

C. Medium Density Residential (MDRL)

The MDRL zoning district provides for single-family and two-family housing, manufactured housing and other related uses with a density of 5.6 to 8 dwelling units per acre. Minor land partitions shall be exempt from the minimum density requirements.

D. **Medium Density Residential High (MDRH)**

The MDRH zoning district provides for a variety of medium density housing, including single-family, two-family housing, manufactured housing multi-family housing, and other related uses with a density of 5.5 to 11 dwelling units per acre. Minor land partitions are exempt from the minimum density requirement.

Response: The subject site is zoned both Medium Density Residential Low (MDRL) and Medium Density Residential High (MDRH). The planned subdivision includes a total of 145 units on a total net site area of ±23.86 acres resulting in a net residential density of ±6.08 units per acre. (See the Preliminary Subdivision Plat of Exhibit A for details.) This planned density falls within the minimum and maximum densities of both applicable land use districts. The criteria are met.

16.12.020 - Allowed Residential Land Uses

A. **Residential Land Uses**

The table below identifies the land uses that are allowed in the Residential Districts. The specific land use categories are described and defined in Chapter 16.10.

USES	MDRH	MDRL
RESIDENTIAL		
Single-Family Attached or Detached Dwellings	P	P
Two Family Dwelling Units	P	P
Multi-family Dwellings	P	N
Public Recreational Facilities*	P	P

***Includes, but is not limited to parks, playfields, sports and racquet courts, but excludes golf courses**

Response: The application involves subdividing the subject site into 145 lots suitable for future single-family detached dwellings. The subdivision also includes open space areas, natural resource areas, and a stormwater management facility. Both single-family detached dwellings and public recreational facilities (parks) are permitted outright in the MDRH and MDRL districts. The criterion is met.

B. **Any use not otherwise listed that can be shown to be consistent or associated with the permitted uses or conditionally permitted uses identified in the residential zones or contribute to the achievement of the objectives of the residential zones will be allowed or conditionally permitted using the procedure under Chapter 16.88 (Interpretation of Similar Uses).**

C. **Any use that is not permitted or conditionally permitted under this zone that cannot be found to be consistent with the allowed or conditional uses identified as in B. is prohibited in the residential zone using the procedure under Chapter 16.88 (Interpretation of Similar Uses).**

Response: The application includes permitted uses. These criteria do not apply.

16.12.030 - Residential Land Use Development Standards

A. Generally

No lot area, setback, yard, landscaped area, open space, off-street parking or loading area, or other site dimension or requirement, existing on, or after, the effective date of this Code shall be reduced below the minimum required by this Code. Nor shall the conveyance of any portion of a lot, for other than a public use or right-of-way, leave a lot or structure on the remainder of said lot with less than minimum Code dimensions, area, setbacks or other requirements, except as permitted by Chapter 16.84. (Variance and Adjustments)

B. Development Standards

Except as modified under Chapter 16.68 (Infill Development), Section 16.144.030 (Wetland, Habitat and Natural Areas) Chapter 16.44 (Townhomes), or as otherwise provided, required minimum lot areas, dimensions and setbacks shall be provided in the following table.

C. Development Standards per Residential Zone

DEVELOPMENT STANDARD BY RESIDENTIAL ZONE	MDRH	MDRL
Minimum Lot areas: (in square ft.)		
Single-Family Detached	5,000	5,000
Single-Family Attached	4,000	5,000
Two or Multi-Family: for the first 2 units	8,000	10,000
Multi-Family: each additional unit after first 2	3,200	X
Minimum Lot width at front property line: (in feet)	25	25
Minimum Lot width at building line[1] (in feet)		
Single-Family	50	50
Two-Family	60	60
Multi-Family	60	X
Lot Depth	80	80
Maximum Height [2] (in feet)	35 or 2.5 stories	30 or 2 stories
Setbacks (in feet)		
Front yard [4]	14	14
Face of garage	20	20
Interior side yard		
Single-family detached	5	5
Single-family attached	5	10
Two Family	5	5
Corner lot street side		
Single-family or Two family	15	15
Rear Yard	20	20

Response: The minimum dimensional standards for newly created lots in the MDRH and MHRL districts are included in the table above. As planned, each of the lots meet the 25-foot wide minimum street frontage, the 50-foot lot width at the building line, and the 80-foot

lot depth standards. The Preliminary Subdivision Plat, included in Exhibit A, demonstrates that future homes can meet the minimum setback requirements at the time of future building permit submittal. As shown, each lot meets the 5,000 square-foot minimum lot size requirement. The criteria are met.

16.12.040 - Community Design

For standards relating to off-street parking and loading, energy conservation, historic resources, environmental resources, landscaping, access and egress, signs, parks and open space, on-site storage, and site design, see Divisions V, VIII, IX.

Response: The application meets the applicable community design standards as demonstrated in the written narrative under Division V.-Community Design and Division VIII.-Environmental Resources. Division IX.- Historic Resources does not apply.

16.12.050 - Flood Plain

Except as otherwise provided, Section 16.134.020 shall apply.

16.134.020 - Purpose

The purpose of this ordinance is to promote the public health, safety, and general welfare, and to minimize public and private losses due to flood conditions in specific areas by complying with the provisions of this chapter.

A. The FP zoning district is an overlay district that controls and regulates flood hazard areas in order to protect the public health, safety and general welfare; to reduce potential flood damage losses; and to protect floodways and natural drainageways from encroachment by uses which may adversely affect water quality and water flow and subsequent upstream or downstream flood levels. The FP zone shall be applied to all areas within the base flood, and shall supplement the regulations of the underlying zoning district.

B. FP zoning districts are areas within the base flood as identified by the Federal Emergency Management Agency (FEMA) in a Flood Insurance Study (FIS) and in Flood Insurance Rate Maps (FIRM) published for the City and surrounding areas, or as otherwise identified in accordance with Section 16.134.020C. These FEMA documents are adopted by reference as part of this Code, and are on file at the City.

C. When base flood elevation data is not available from the FIS or FIRM, the City shall obtain, review, and reasonably utilize any base flood elevation and floodway data available from a federal, state, or other source, and standards developed by the FEMA, in order to administer the provisions of this Code.

Response: There are no floodplain areas within the site. This section does not apply.

Division V. - COMMUNITY DESIGN

Chapter 16.92 - LANDSCAPING

16.92.030 - Site Area Landscaping and Perimeter Screening Standards

D. Visual Corridors

Except as allowed by subsection 6. above, new developments shall be required to establish landscaped visual corridors along Highway 99W and other arterial and collector streets, consistent with the Natural Resources and Recreation Plan Map, Appendix C of the Community Development Plan, Part II, and the provisions of Chapter 16.142 (Parks, Trees, and Open Space). Properties within the Old Town Overlay are exempt from this standard.

16.142.040 - Visual Corridors

A. Corridors Required

New developments located outside of the Old Town Overlay with frontage on Highway 99W, or arterial or collector streets designated on Figure 8-1 of the Transportation System Plan shall be required to establish a landscaped visual corridor according to the following standards:

Highway 99W: 25 feet

Arterial: 15 feet

Collector: 10 feet

In residential developments where fences are typically desired adjoining the above described major street the corridor may be placed in the road right-of-way between the property line and the sidewalk. In all other developments, the visual corridor shall be on private property adjacent to the right-of-way.

Response: SW Brookman Road is classified as an Arterial, and therefore, a 15-foot landscaped visual corridor is required. The project includes a stormwater facility and open space area adjacent to SW Brookman Road. As illustrated on the Preliminary Subdivision Plat, the visual corridor will be measured from the back of the sidewalk in the right-of-way into the site. This criterion is met.

B. Landscape Materials

The required visual corridor areas shall be planted as specified by the review authority to provide a continuous visual and/or acoustical buffer between major streets and developed uses. Except as provided for above, fences and walls shall not be substituted for landscaping within the visual corridor. Uniformly planted, drought resistant street trees and ground cover, as specified in Section 16.142.060, shall be planted in the corridor by the developer. The improvements shall be included in the compliance agreement. In no case shall trees be removed from the required visual corridor.

Response: As illustrated on the Preliminary Landscape, Street Tree and Open Space Plan, the planned street tree installation is pursuant to Section 16.142.060. This criterion is met.

C. Establishment and Maintenance

Designated visual corridors shall be established as a portion of landscaping requirements pursuant to Chapter 16.92. To assure continuous maintenance of the visual corridors, the review authority may require that the development rights to the corridor areas be dedicated to the City or that restrictive covenants be recorded prior to the issuance of a building permit.

Response: The Applicant understands that the City may require dedication of the development rights or restrictive covenants to be recorded for the visual corridor area. This criterion, as applicable, can be met.

D. Required Yard

Visual corridors may be established in required yards, except that where the required visual corridor width exceeds the required yard width, the visual corridor requirement shall take precedence. In no case shall buildings be sited within the required visual corridor, with the exception of front porches on townhomes, as permitted in Section 16.44.010(E)(4)(c).

Response: The visual corridor area is not in a required yard. This criterion does not apply.

Chapter 16.96 - ON-SITE CIRCULATION

16.96.010 - On-Site Pedestrian and Bicycle Circulation

A. Purpose

On-site facilities shall be provided that accommodate safe and convenient pedestrian access within new subdivisions, multi-family developments, planned unit developments, shopping centers and commercial districts, and connecting to adjacent residential areas and neighborhood activity centers within one-half mile of the development. Neighborhood activity centers include but are not limited to existing or planned schools, parks, shopping areas, transit stops or employment centers. All new development, (except single-family detached housing), shall provide a continuous system of private pathways/sidewalks.

Response: As illustrated on the Conceptual Open Space Plan and Preliminary Street Plan, designated pedestrian pathways are provided adjacent to natural resource areas, parks, and throughout the subdivision. This criterion is met.

B. Maintenance

No building permit or other City permit shall be issued until plans for ingress, egress and circulation have been approved by the City. Any change increasing any ingress, egress or circulation requirements, shall be a violation of this Code unless additional facilities are provided in accordance with this Chapter.

Response: The Applicant understands that building permits or other City permits will not be issued until the plans for ingress, egress, and circulation have been approved by the City. This criterion, as applicable, can be met.

C. Joint Access

Two (2) or more uses, structures, or parcels of land may utilize the same ingress and egress when the combined ingress and egress of all uses, structures, or parcels of land satisfied the other requirements of this Code, provided that satisfactory legal evidence is presented to the City in the form of deeds, easements, leases, or contracts to clearly establish the joint use.

Response: This application does not involve joint access for two or more structures utilizing the same ingress and egress. This criterion is not applicable.

D. Connection to Streets

1. Except for joint access per this Section, all ingress and egress to a use or parcel shall connect directly to a public street, excepting alleyways with paved sidewalk.

Response: Individual ingress and egress connections for the planned lots are available as shown on the Preliminary Subdivision Plat. This criterion is met.

2. Required private sidewalks shall extend from the ground floor entrances or the ground floor landing of stairs, ramps or elevators to the public sidewalk or curb of the public street which provides required ingress and egress.

Response: This application does not include private sidewalks as described above. This criterion is not applicable.

E. Maintenance of Required Improvements

Required ingress, egress and circulation improvements shall be kept clean and in good repair.

Response: The Applicant understands that the City requires ingress, egress, and circulation improvements to be kept clean and in good repair.

F. Access to Major Roadways

Points of ingress or egress to and from Highway 99W and arterials designated on the Transportation Plan Map, attached as Appendix C of the Community Development Plan, Part II, shall be limited as follows:

1. Single and two-family uses and manufactured homes on individual residential lots developed after the effective date of this Code shall not be granted permanent driveway ingress or egress from Highway 99W and arterial roadways. If alternative public access is not available at the time of development, provisions shall be made for temporary access which shall be discontinued upon the availability of alternative access.

2. Other private ingress or egress from Highway 99W and arterial roadways shall be minimized. Where alternatives to Highway 99W or arterials exist or are proposed, any new or altered uses developed after the effective date of this Code shall be required to use the alternative ingress and egress.

3. All site plans for new development submitted to the City for approval after the effective date of this Code shall show ingress and egress from existing or planned local or collector streets, consistent with the Transportation Plan Map and Section VI of the Community Development Plan.

Response: SW Brookman Road is classified as an Arterial on the City Transportation System Plan. Therefore, single-family uses cannot have permanent driveway ingress or egress from SW Brookman Road. This application includes ingress and egress to the single-family lots from planned local streets consistent with City standards. The criteria are met.

G. Service Drives

Service drives shall be provided pursuant to Section 16.94.030.

Response: The subject application does not include service drives. This criterion is not applicable.

16.96.020 Minimum - Residential standards

Minimum standards for private, on-site circulation improvements in residential developments:

A. Driveways

1. Single-Family: One (1) driveway improved with hard surface pavement with a minimum width of ten (10) feet, not to exceed a grade of 14%. Permeable surfaces and planting strips between driveway ramps are encouraged in order to reduce stormwater runoff.

Response: Each lot within the subdivision is planned to have a single designated driveway. Prior to construction of the driveways, the appropriate permit applications and details regarding the design of the driveways are planned to be submitted to the City for review and approval. The criterion can be met.

2. Two-Family: One (1) shared driveway improved with hard surface pavement with a minimum width of twenty (20) feet; or two (2) driveways improved with hard surface pavement with a minimum width of ten (10) feet each. Permeable surfaces and planting strips between driveway ramps are encouraged in order to reduce stormwater runoff.

Response: This application does not include two-family uses or shared driveways. The criterion does not apply.

3. Multi-Family: Improved hard surface driveways are required as follows:

Number of Units	Number of Driveways	One Way Drive Width (Pair)	Two Way Drive Width
3-49	1	15 feet	24 feet
50 or more	2	15 feet	24 feet

Response: The application does not include multi-family uses or shared driveways. The criterion does not apply.

B. Sidewalks, Pathways and Curbs

1. Single, Two-Family, and Manufactured Home on Individual Residential Lot: No on-site sidewalks and curbs are required when not part of a proposed partition or subdivision.

Response: As illustrated on the Preliminary Street Plan and Preliminary Street Cross-Sections sheets of Exhibit A, a curb and sidewalk are planned to be installed along the street frontage of each lot in the subdivision. This criterion will be met.

2. Multi-family:

…

Response: This application does not include multi-family uses. The criterion does not apply.

16.96.030 - Minimum Non-Residential Standards

Response: The application does not include commercial or industrial uses. The Section does not apply.

16.96.040 - On-Site Vehicle Circulation

A. Maintenance

No building permit or other City permit shall be issued until plans for ingress, egress and circulation have been approved by the City. Any change increasing any ingress, egress or circulation requirements, shall be a violation of this Code unless additional facilities are provided in accordance with this Chapter.

Response: The Applicant understands that building permits or other City permits will not be issued until the plans for ingress, egress, and circulation have been approved by the City. This criterion, as applicable, can be met.

B. Joint Access [See also Chapter 16.108]

Two (2) or more uses, structures, or parcels of land are strongly encouraged to utilize jointly the same ingress and egress when the combined ingress and egress of all uses, structures, or parcels of land satisfy the other requirements of this Code, provided that satisfactory legal evidence is presented to the City in the form of deeds, easements, leases, or contracts to clearly establish the joint use. In some cases, the City may require a joint access to improve safety, vision clearance, site distance, and comply with access spacing standards for the applicable street classification.

Response: This application does not involve joint access for two or more structures utilizing the same ingress and egress as described above. This criterion is not applicable.

C. Connection to Streets

1. Except for joint access per this Section, all ingress and egress to a use or parcel shall connect directly to a public street, excepting alleyways.

Response: Individual ingress and egress connections for the planned lots are available as shown on the Preliminary Subdivision Plat. Each connection meets the requirements of this Section.

2. Required private sidewalks shall extend from the ground floor entrances or the ground floor landing of stairs, ramps or elevators to the public sidewalk or curb of the public street which provides required ingress and egress.

Response: This application does not include private sidewalks as described above. This criterion is not applicable.

D. Maintenance of Required Improvements

Required ingress, egress and circulation improvements shall be kept clean and in good repair.

Response: The Applicant understands that the City requires ingress, egress, and circulation improvements to be kept clean and in good repair.

E. Service Drives

Service drives shall be provided pursuant to Section 16.94.030.

Response: This application does not include service drives. This criterion is not applicable.

Division VI. - PUBLIC INFRASTRUCTURE

Chapter 16.106 - TRANSPORTATION FACILITIES

16.106.010 - Generally

A. Creation

Public streets shall be created in accordance with provisions of this Chapter. Except as otherwise provided, all street improvements and rights-of-way shall conform to standards for the City's functional street classification, as shown on the Transportation System Plan (TSP) Map (Figure 15) and other applicable City standards. The following table depicts the guidelines for the street characteristics.

Type of Street	Right of Way Width	Number of Lanes	Minimum Lane Width	On Street Parking Width	Bike Lane Width	Sidewalk Width	Landscape Strip (exclusive of Curb)	Median Width
Arterial	60-102	2-5	12'	Limited	6 feet	6-8'	5'	14' if required
Neighborhood (> 1000 vpd)	64'	2	18'	8'	None	8'	5' with 1' Buffer	None
Local (<1000 vpd)	52'	2	14'	8' on one side only	None	6'	5' with 1' buffer	None

Response: SW Brookman Road is subject to Washington County jurisdictional control. The required improvements to SW Brookman Road are designed to County standards. The new local streets are designed according to City standards. The criteria are met.

B. Street Naming

1. All streets created by subdivision or partition will be named prior to submission of the final plat.
2. Any street created by a public dedication shall be named prior to or upon acceptance of the deed of dedication.
3. An action to name an unnamed street in the City may be initiated by the Council or by a person filing a petition as described in this Section.
4. All streets named shall conform to the general requirements as outlined in this Section.
5. At the request of the owner(s), the City may approve a private street name and address. Private streets are subject to the same street name standards as are public streets. All private street signs will be provided at the owner(s) expense.

Response: Street names are included on the Preliminary Plat. The criteria are met.

C. Street Name Standards

1. All streets named or renamed shall comply with the following criteria:

   a. Major streets and highways shall maintain a common name or number for the entire alignment.

   b. Whenever practicable, names as specified in this Section shall be utilized or retained.

   c. Hyphenated or exceptionally long names shall be avoided.

   d. Similar names such as Farview and Fairview or Salzman and Saltzman shall be avoided.

   e. Consideration shall be given to the continuation of the name of a street in another jurisdiction when it is extended into the City.

2. The following classifications (suffixes) shall be utilized in the assignment of all street names:

   a. Boulevards: North/south arterials providing through traffic movement across the community.

   b. Roads: East/west arterials providing through traffic movement across the community.

   c. Avenues: Continuous, north/south collectors or extensions thereof.

   d. Streets: Continuous, east-west collectors or extensions thereof.

   e. Drives: Curvilinear collectors (less than 180 degrees) at least 1,000 feet in length or more.

   f. Lanes: Short east/west local streets under 1,000 feet in length.

   g. Terraces: short north/south local streets under 1,000 feet in length.

   h. Court: All east/west cul-de-sacs.

   i. Place: All north/south cul-de-sacs.

   j. Ways: All looped local streets (exceeding 180 degrees).

   k. Parkway: A broad landscaped collector or arterial.

3. Except as provided for by this section, no street shall be given a name that is the same as, similar to, or pronounced the same as any other street in the City unless that street is an extension of an already-named street.

4. All proposed street names shall be approved, prior to use, by the City.

D. Preferred Street Names

Whenever practicable, historical names will be considered in the naming or renaming of public roads. Historical factors to be considered shall include, but not be limited to the following:

1. Original holders of Donation Land Claims in Sherwood.

2. Early homesteaders or settlers of Sherwood.

3. Heirs of original settlers or long-time (50 or more years) residents of Sherwood.

4. Explorers of or having to do with Sherwood.

5. Indian tribes of Washington County.

6. Early leaders and pioneers of eminence.

7. Names related to Sherwood's flora and fauna.

8. Names associated with the Robin Hood legend.

Response: Street names, in accordance with the above street naming standards, are included on the Preliminary Plat. The criteria are met.

16.106.020 - Required Improvements

A. Generally

Except as otherwise provided, all developments containing or abutting an existing or proposed street, that is either unimproved or substandard in right-of-way width or improvement, shall dedicate the necessary right-of-way prior to the issuance of building permits and/or complete acceptable improvements prior to issuance of occupancy permits. Right-of-way requirements are based on functional classification of the street network as established in the Transportation System Plan, Figure 15.

Response: SW Brookman Road is an existing Arterial facility subject to Washington County jurisdictional control. The required right-of-way dedication and frontage improvements are depicted on the Preliminary Subdivision Plat, Preliminary Street Plan, and Preliminary Street Cross-Sections sheets of Exhibit A. The criterion is met.

B. Existing Streets

Except as otherwise provided, when a development abuts an existing street, the improvements requirement shall apply to that portion of the street right-of-way located between the centerline of the right-of-way and the property line of the lot proposed for development. In no event shall a required street improvement for an existing street exceed a pavement width of thirty (30) feet.

Response: SW Brookman Road is under Washington County jurisdictional control. The required right-of-way dedication and frontage improvements are depicted on the Preliminary Plat, Preliminary Street Plan, and Preliminary Street Cross-Sections sheets. The criterion is met.

C. Proposed Streets

1. Except as otherwise provided, when a development includes or abuts a proposed street, in no event shall the required street improvement exceed a pavement width of forty (40) feet.

2. Half Streets: When a half street is created, a minimum of 22 feet of driving surface shall be provided by the developer.

Response: Local streets are planned to be constructed to City standards with a pavement width of less than 40 feet. The eastern portion of Trillium Lane, as illustrated on the Preliminary Street Plan and Preliminary Streets Cross-Sections sheets, is planned to be improved to three-quarters of the standard residential street width. Twenty-two feet or more of driving surface is planned for this portion of Trillium Lane. The criteria are met.

D. Extent of Improvements

1. Streets required pursuant to this Chapter shall be dedicated and improved consistent with Chapter 6 of the Community Development Plan, the TSP and applicable City specifications included in the City of Sherwood Construction Standards. Streets shall include curbs, sidewalks, catch basins, street lights, and street trees. Improvements shall also include any bikeways designated on the Transportation System Plan map. Applicant may be required to dedicate land for required public improvements only when the exaction is directly related to and roughly proportional to the impact of the development, pursuant to Section 16.106.090.

Response: Right-of-way dedication and street improvements—as illustrated on the Preliminary Plans—include curbs, sidewalks, catch basins, street lights, and street trees. The Transportation System Plan identifies SW Brookman Road for future bike lanes. Frontage improvements to SW Brookman Road are planned to be provided in accordance with Washington County standards. The criterion is met.

2. If the applicant is required to provide street improvements, the City Engineer may accept a future improvements guarantee in lieu of street improvements if one or more of the following conditions exist, as determined by the City:

a. A partial improvement is not feasible due to the inability to achieve proper design standards;

b. A partial improvement may create a potential safety hazard to motorists or pedestrians.

c. Due to the nature of existing development on adjacent properties it is unlikely that street improvements would be extended in the foreseeable future and the improvement associated with the project under review does not, by itself, provide a significant improvement to street safety or capacity;

d. The improvement would be in conflict with an adopted capital improvement plan;

e. The improvement is associated with an approved land partition on property zoned residential use and the proposed land partition does not create any new streets; or

f. Additional planning work is required to define the appropriate design standards for the street and the application is for a project that would contribute only a minor portion of the anticipated future traffic on the street.

Response: Washington County Land Use & Transportation staff have indicated that a fee in-lieu of frontage improvements may be required along SW Brookman Road. New local streets will be constructed according to City standards. The criteria, as applicable, can be met.

E. Transportation Facilities Modifications

1. A modification to a standard contained within this Chapter and Section 16.58.010 and the standard cross sections contained in Chapter 8 of the adopted TSP may be granted in accordance with the procedures and criteria set out in this section.

Response: This application includes a modification to the standard in 16.106.040.E.1 to permit a cul-de-sac in excess of the 200-foot maximum length. The details of the modification are outlined below.

2. A modification request concerns a deviation from the general design standards for public facilities, in this Chapter, Section 16.58.010, or Chapter 8 in the adopted Transportation System Plan. The standards that may be modified include but are not limited to:

   a. Reduced sight distances.

   b. Vertical alignment.

   c. Horizontal alignment.

   d. Geometric design (length, width, bulb radius, etc.).

   e. Design speed.

   f. Crossroads.

   g. Access policy.

   h. A proposed alternative design which provides a plan superior to these standards.

   i. Low impact development.

   j. Access Management Plans

Response: Section 16.106.020.E.2 authorizes the City to permit modifications to the standards listed in a-j above, as well as other similar unlisted standards. This application includes a modification to the maximum cul-de-sac length as established in 16.106.040.E.1. The modification is permissible per 2.d above.

3. Modification Procedure

   a. A modification shall be proposed with the application for land use approval.

   b. A modification is processed as a Type II application. Modification requests shall be processed in conjunction with the underlying development proposal.

   c. When a modification is requested to provide a green street element that is not included in the Engineering Design Manual, the modification process will apply, but the modification fee will be waived.

Response: The modification outlined above will be processed as a Type II application in conjunction with this subdivision application.

4. Criteria for Modification: Modifications may be granted when criterion 4a and any one of criteria 4b through 4e are met:

a. Consideration shall be given to public safety, durability, cost of maintenance, function, appearance, and other appropriate factors to advance the goals of the adopted Sherwood Comprehensive Plan and Transportation System Plan as a whole. Any modification shall be the minimum necessary to alleviate the hardship or disproportional impact.

b. Topography, right-of-way, existing construction or physical conditions, or other geographic conditions impose an unusual hardship on the applicant, and an equivalent alternative which can accomplish the same design purpose is available.

c. A minor change to a specification or standard is required to address a specific design or construction problem which, if not enacted, will result in an unusual hardship. Self- imposed hardships shall not be used as a reason to grant a modification request.

d. An alternative design is proposed which will provide a plan equal to or superior to the existing street standards.

e. Application of the standards of this chapter to the development would be grossly disproportional to the impacts created.

Response: Section 16.106.040.E.1 limits cul-de-sacs to a maximum of 200 feet in length. The modification to this standard will allow a 480-foot cul-de-sac. The cul-de-sac is necessary due to site constraints: the Portland & Western Railroad right-of-way to the north and natural resources to the south. Due to these site constraints, a longer cul-de-sac is necessary.

The cul-de-sac is designed according to City and Tualatin Valley Fire and Rescue standards and meets relevant safety standards. Therefore, 4a and 4b above are satisfied, and the criteria to grant a modification to the maximum cul-de-sac length are met.

16.106.030 - Location

A. Generally

The location, width and grade of streets shall be considered in their relation to existing and planned streets, topographical conditions, and proposed land uses. The proposed street system shall provide adequate, convenient and safe traffic and pedestrian circulation, and intersection angles, grades, tangents, and curves shall be adequate for expected traffic volumes. Street alignments shall be consistent with solar access requirements as per Chapter 16.156, and topographical considerations.

Response: The subdivision application and the streets that serve the lots therein have been designed and located to serve the planned lots and to satisfy the access management standards for potential future streets adjacent to the subject site. Safe and convenient pedestrian access through the site is provided by sidewalks and paths. Street alignments are consistent with the solar access requirements of Chapter 16.156 as discussed below. The criterion is met.

B. Street Connectivity and Future Street Systems

1. Future Street Systems. The arrangement of public streets shall provide for the continuation and establishment of future street systems as shown on the Local Street Connectivity Map contained in the adopted Transportation System Plan (Figure 16).

Response: The City of Sherwood Local Street Connectivity Map (Figure 18 in the Transportation System Plan) shows conceptual street connections with SW Brookman Road. The streets included in this application, as illustrated on the Conceptual Future Connectivity Plan sheet of the Preliminary Plans, provide for the continuation and/or establishment of future street systems adjacent to the subject site. The criterion is met.

2. Connectivity Map Required. New residential, commercial, and mixed use development involving the construction of new streets shall be submitted with a site plan that implements, responds to and expands on the Local Street Connectivity map contained in the TSP.

a. A project is deemed to be consistent with the Local Street Connectivity map when it provides a street connection in the general vicinity of the connection(s) shown on the map, or where such connection is not practicable due to topography or other physical constraints; it shall provide an alternate connection approved by the decision-maker.

b. Where a developer does not control all of the land that is necessary to complete a planned street connection, the development shall provide for as much of the designated connection as practicable and not prevent the street from continuing in the future.

c. Where a development is disproportionately impacted by a required street connection, or it provides more than its proportionate share of street improvements along property line (i.e., by building more than 3/4 width street), the developer shall be entitled to System Development charge credits, as determined by the City Engineer.

d. Driveways that are more than 24 feet in width shall align with existing streets or planned streets as shown in the Local Street Connectivity Map in the adopted Transportation System Plan (Figure 17), except where prevented by topography, rail lines, freeways, pre-existing development, or leases, easements, or covenants.

Response: The Preliminary Plans (Exhibit A) are consistent with the Local Street Connectivity Map (Figure 18 of the Transportation System Plan). The main access road to the subdivision aligns with SW Oberst Road to the south. Another access point from SW Brookman Road to the site may be needed/provided with the future development of Tax Lot 200. The criteria, as applicable, are met.

3. Block Length. For new streets except arterials, block length shall not exceed 530 feet. The length of blocks adjacent to arterials shall not exceed 1,800 feet.

Response: In general, interior blocks are shorter than 530 feet in length. However, blocks cannot be created along the northern boundary of the site due to the existing railroad right-of-way and the lack of street stubs provided through the existing Abney Revard Subdivision. There is one interior block that is approximately ±650 feet in length. See response to Section 16.106.030.B.7 pertaining to "Exceptions" below. To mitigate the visual impact of a larger block and to create pedestrian connectivity through the neighborhood, there is a pedestrian access easement provided mid-block, essentially creating two ±325-foot long blocks. There are no blocks provided along arterials at this time. This criterion is met.

4. Where streets must cross water features identified in Title 3 of the Urban Growth Management Functional Plan (UGMFP), provide crossings at an average spacing of 800 to 1,200 feet, unless habitat quality or length of crossing prevents a full street connection.

Response: This project does not involve street crossings of water features. This criterion does not apply.

5. Where full street connections over water features identified in Title 3 of the UGMFP cannot be constructed in centers, main streets and station communities (including direct connections from adjacent neighborhoods), or spacing of full street crossings exceeds 1,200 feet, provide bicycle and pedestrian crossings at an average spacing of 530 feet, unless exceptional habitat quality or length of crossing prevents a connection.

Response: This project does not involve street connections over water features. This criterion does not apply.

6. **Pedestrian and Bicycle Connectivity. Paved bike and pedestrian accessways consistent with cross section standards in Figure 8-6 of the TSP shall be provided on public easements or right- of-way when full street connections are not possible, with spacing between connections of no more than 300 feet. Multi-use paths shall be built according to the Pedestrian and Bike Master Plans in the adopted TSP.**

Response: Pedestrian paths in pedestrian access easements are provided throughout the site to allow for increased pedestrian connectivity. This criterion is met.

7. **Exceptions. Streets, bike, and pedestrian connections need not be constructed when any of the following conditions exists:**

   a. **Physical or topographic conditions make a street or accessway connection impracticable. Such conditions include but are not limited to freeways, railroads, steep slopes, wetlands or other bodies of water where a connection could not reasonably be provided.**

   b. **Buildings or other existing development on adjacent lands physically preclude a connection now or in the future considering the potential for redevelopment; or**

   c. **Where streets or accessways would violate provisions of leases, easements, covenants, restrictions or other agreements existing as of May 1, 1995, which preclude a required street or accessway connection.**

Response: Street connections cannot be created along the northwest boundary of the site due to the existing Portland & Western Railroad right-of-way. In addition, the existing Abney Revard residential subdivision to the northeast did not provide street stubs for future development, which now limits street connections in the northeast portion of the site. The existence of natural resource areas further constrains block creation. For the above reasons, the standard to allow for an exception to the maximum block length is met. In addition, to further mitigate the impact of increased block lengths, pedestrian paths are provided in pedestrian access easements where appropriate. The criteria are met.

C. **Underground Utilities**

All public and private underground utilities, including sanitary sewers and storm water drains, shall be constructed prior to the surfacing of streets. Stubs for service connections shall be long enough to avoid disturbing the street improvements when service connections are made.

Response: Public and private utilities are planned to be installed prior to the surfacing of streets. The criterion can be met.

D. Additional Setbacks

Generally additional setbacks apply when the width of a street right-of-way abutting a development is less than the standard width under the functional classifications in Section VI of the Community Development Plan. Additional setbacks are intended to provide unobstructed area for future street right-of-way dedication and improvements, in conformance with Section VI. Additional setbacks shall be measured at right angles from the centerline of the street.

	Classification	Additional Setback
1.	Principle Arterial (99W)	61 feet
2.	Arterial	37 feet
3.	Collector	32 feet
4.	Neighborhood Route	32 feet
5.	Local	26 feet

Response: The dedication of right-of-way to Washington County standards along SW Brookman Road is shown on the preliminary plans. There are no other existing abutting streets. This criterion is met.

16.106.040 - Design

Standard cross sections showing street design and pavement dimensions are located in the City of Sherwood's Engineering Design Manual.

A. Reserve Strips

Reserve strips or street plugs controlling access or extensions to streets are not allowed unless necessary for the protection of the public welfare or of substantial property rights. All reserve strips shall be dedicated to the appropriate jurisdiction that maintains the street.

Response: Reserve strips and street plugs are not included with this application. This criterion is met.

B. Alignment

All proposed streets shall, as far as practicable, be in alignment with existing streets. In no case shall the staggering of streets create a "T" intersection or a dangerous condition. Street offsets of less than one hundred (100) feet are not allowed.

Response: The Preliminary Plans (Exhibit A) illustrate that streets are planned to align in a safe manner. Streets are not offset by less than 100 feet and dangerous conditions are not created. The criterion is met.

C. Future Extension

Where necessary to access or permit future subdivision or development of adjoining land, streets must extend to the boundary of the proposed development and provide the required roadway width. Dead-end streets less than 100' in length must comply with the Engineering Design Manual.

A durable sign must be installed at the applicant's expense. The sign is required to notify the public of the intent to construct future streets. The sign must read as follows: "This road will be extended with future development. For more information contact the City of Sherwood Engineering Department."

Response: As illustrated on the Conceptual Future Connectivity Plan of Exhibit A, a number of streets are planned to extend to the boundary of the site to provide connections for potential future development. Each street complies with the Engineering Design Manual and the required signs will be installed per City standards. The criteria can be met.

D. Intersection Angles

Streets shall intersect as near to ninety (90) degree angles as practical, except where topography requires a lesser angle. In all cases, the applicant shall comply with the Engineering Design Manual.

Response: New streets are planned to intersect near to 90-degree angles and comply with the Engineering Design Manual. The criterion is met.

E. Cul-de-sacs

1. All cul-de-sacs shall be used only when exceptional topographical constraints, existing development patterns, or compliance with other standards in this code preclude a street extension and circulation. A cul-de-sac shall not be more than two hundred (200) feet in length and shall not provide access to more than 25 dwelling units.

2. All cul-de-sacs shall terminate with a turnaround in accordance with the specifications in the Engineering Design Manual. The radius of circular turnarounds may be larger when they contain a landscaped island, parking bay in their center, Tualatin Valley Fire and Rescue submits a written request, or an industrial use requires a larger turnaround for truck access.

3. Public easements, tracts, or right-of-way shall provide paved pedestrian and bicycle access ways at least 6 feet wide where a cul-de-sac or dead-end street is planned, to connect the ends of the streets together, connect to other streets, or connect to other existing or planned developments in accordance with the standards of this Chapter, the TSP, the Engineering Design Manual or other provisions identified in this Code for the preservation of trees.

Response: A cul-de-sac is planned in the northwestern portion of the site which provides access to 18 lots and future dwelling units. The cul-de-sac is necessary due to site constraints: the Portland & Western Railroad right-of-way to the north and natural resource areas to the south (see the Preliminary Plans, Exhibit A). A Transportation Facilities Modification is included in this application to permit the cul-de-sac length to exceed 200-feet. Please see the response to Section 16.106.020.E above. The cul-de-sac turnaround is designed in accordance with the specifications in the Engineering Design Manual. A pedestrian path and pedestrian access easement is provided at the terminus of the cul-de-sac. The criteria are met.

F. Grades and Curves

Grades shall be evaluated by the City Engineer and comply with the Engineering Design Manual.

Response: Street grades have been designed in accordance with the City standards. The criterion is met.

G. Streets Adjacent to Railroads

Streets adjacent to railroads shall run approximately parallel to the railroad and be separated by a distance suitable to allow landscaping and buffering between the street and railroad. Due consideration shall be given at cross streets for the minimum distance required for future grade separations and to provide sufficient depth to allow screening of the railroad.

Response: The site abuts the Portland & Western Railroad right-of-way. However, streets are not located adjacent to the railroad. The criterion does not apply.

H. Buffering of Major Streets

Where a development abuts Highway 99W, or an existing or proposed principal arterial, arterial or collector street, or neighborhood route, adequate protection for residential properties must be provided, through and local traffic be separated, and traffic conflicts minimized. In addition, visual corridors pursuant to Section 16.142.040, and all applicable access provisions of Chapter 16.96, are to be met. Buffering may be achieved by: parallel access streets, lots of extra depth abutting the major street with frontage along another street, or other treatment suitable to meet the objectives of this Code.

Response: The subject site abuts SW Brookman Road, an Arterial. The residential lots are buffered from SW Brookman Road by a stormwater management facility and an open space area (see the Preliminary Plans, Exhibit A). In addition, per Section 16.142.040, a 15-foot landscaped visual corridor is required and provided along SW Brookman Road. On-site access provisions are met as required in Chapter 16.96. The criterion is met.

I. Median Islands

As illustrated in the adopted Transportation System Plan, Chapter 8, median islands may be required on arterial or collector streets for the purpose of controlling access, providing pedestrian safety or for aesthetic purposes.

Response: Frontage improvements along SW Brookman Road do not include a median at this time. Therefore, the criterion does not apply.

J. Transit Facilities

Development along an existing or proposed transit route, as illustrated in Figure 7-2 in the TSP, is required to provide areas and facilities for bus turnouts, shelters, and other transit-related facilities to Tri-Met specifications. Transit facilities shall also meet the following requirements:

1. **Locate buildings within 20 feet of or provide a pedestrian plaza at major transit stops.**
2. **Provide reasonably direct pedestrian connections between the transit stop and building entrances on the site.**
3. **Provide a transit passenger landing pad accessible to disabled persons (if not already existing to transit agency standards).**
4. **Provide an easement or dedication for a passenger shelter and underground utility connection from the new development to the transit amenity if requested by the public transit provider.**
5. **Provide lighting at a transit stop (if not already existing to transit agency standards).**

Response: Figure 14 of the Transportation System Plan (TSP) titled "Transit System and Potential Enhancements" identifies SW Brookman Road as a route for "Potential Local Enhancements." However, SW Brookman Road is not identified as an existing or proposed transit route. Figure 14 contains a note which states, "Transit projects in this TSP include enhancement to local and regional transit service to be identified through a refinement plan. While specific transit service enhancement locations have not been identified, for the purposes of providing information for other planning efforts, this map indicates corridors that could be selected for future enhancements through further planning studies. This information is subject to change pending future planning efforts." Therefore, SW Brookman Road is not considered an existing or proposed transit route and the criteria do not apply.

K. Traffic Controls

1. **Pursuant to Section 16.106.080, or as otherwise required by the City Engineer, an application must include a traffic impact analysis to determine the number and types of traffic controls necessary to accommodate anticipated traffic flow.**

2. For all other proposed developments including commercial, industrial or institutional uses with over an estimated 400 ADT, or as otherwise required by the City Engineer, the application must include a traffic impact analysis to determine the number and types of traffic controls necessary to accommodate anticipated traffic flow.

Response: A Transportation Impact Analysis (TIA) is included with the application (Exhibit J). The TIA shows that the subdivision and future lot development is anticipated to generate approximately 110 AM peak hour trips, 145 PM peak hour trips and approximately 1,362 Average Daily Trips (ADT). The TIA analyzed 10 intersections in the vicinity. After forecasting the year 2020 total traffic conditions, the TIA determined that one intersection—Highway 99W/SW Brookman-SW Chapman Road—will require mitigation. The TIA recommends that an exclusive right-turn lane on the SW Brookman Road approach be provided in conjunction with this project. The criteria are met.

L. Traffic Calming

1. The following roadway design features, including internal circulation drives, may be required by the City in new construction in areas where traffic calming needs are anticipated:

   a. Curb extensions (bulb-outs).

   b. Traffic diverters/circles.

   c. Alternative paving and painting patterns.

   d. Raised crosswalks, speed humps, and pedestrian refuges.

   e. Other methods demonstrated as effective through peer reviewed Engineering studies.

2. With approval of the City Engineer, traffic calming measures such as speed humps and additional stop signs can be applied to mitigate traffic operations and/or safety problems on existing streets. They should not be applied with new street construction unless approved by the City Engineer and Tualatin Valley Fire & Rescue.

Response: The above listed traffic calming measures are not included in this project. The criteria do not apply.

M. Vehicular Access Management

All developments shall have legal access to a public road. Access onto public streets shall be permitted upon demonstration of compliance with the provisions of adopted street standards in the Engineering Design Manual.

1. Measurement: See the following access diagram where R/W = Right-of-Way; and P.I. = Point-of-Intersection where P.I. shall be located based upon a 90 degree angle of intersection between ultimate right-of-way lines.

   a. Minimum right-of-way radius at intersections shall conform to City standards.

   b. All minimum distances stated in the following sections shall be governed by sight distance requirements according to the Engineering Design Manual.

   c. All minimum distances stated in the following sections shall be measured to the nearest easement line of the access or edge of travel lane of the access on both sides of the road.

   d. All minimum distances between accesses shall be measured from existing or approved accesses on both sides of the road.

   e. Minimum spacing between driveways shall be measured from Point "C" to Point "C" as shown below:

2. Roadway Access

No use will be permitted to have direct access to a street or road except as specified below. Access spacing shall be measured from existing or approved accesses on either side of a street or road. The lowest functional classification street available to the legal lot, including alleys within a public easement, shall take precedence for new access points.

a. Local Streets:

Minimum right-of-way radius is fifteen (15) feet. Access will not be permitted within ten (10) feet of Point "B," if no radius exists, access will not be permitted within twenty-five (25) feet of Point "A." Access points near an intersection with a Neighborhood Route, Collector or Arterial shall be located beyond the influence of standing queues of the intersection in accordance with AASHTO standards. This requirement may result in access spacing greater than ten (10) feet.

b. Neighborhood Routes:

Minimum spacing between driveways (Point "C" to Point "C") shall be fifty (50) feet with the exception of single family residential lots in a recorded subdivision. Such lots shall not be subject to a minimum spacing requirement between driveways (Point "C" to Point "C"). In all instances, access points near an intersection with a Neighborhood Route, Collector or Arterial shall be located beyond the influence of standing queues of the intersection in accordance with AASHTO standards. This requirement may result in access spacing greater than fifty (50) feet.

c. Collectors:

All commercial, industrial and institutional uses with one-hundred-fifty (150) feet or more of frontage will be permitted direct access to a Collector. Uses with less than one-hundred-fifty (150) feet of frontage shall not be permitted direct access to Collectors unless no other alternative exists.

Where joint access is available it shall be used, provided that such use is consistent with Section 16.96.040, Joint Access. No use will be permitted direct access to a Collector within one- hundred (100) feet of any present Point "A." Minimum spacing between driveways (Point "C" to Point "C") shall be one-hundred (100) feet. In all instances, access points near an intersection with a Collector or Arterial shall be located beyond the influence of standing queues of the intersection in accordance with AASHTO standards. This requirement may result in access spacing greater than one hundred (100) feet.

d. Arterials and Highway 99W - Points of ingress or egress to and from Highway 99W and arterials designated on the Transportation Plan Map, attached as Figure 1 of the Community Development Plan, Part II, shall be limited as follows:

(1) Single and two-family uses and manufactured homes on individual residential lots developed after the effective date of this Code shall not be granted permanent driveway ingress or egress from Highway 99W or arterials. If alternative public access is not available at the time of development, provisions shall be made for temporary access which shall be discontinued upon the availability of alternative access.

(2) Other private ingress or egress from Highway 99W and arterial roadways shall be minimized. Where alternatives to Highway 99W or arterials exist or are proposed, any new or altered uses developed after the effective date of this Code shall be required to use the alternative ingress and egress. Alternatives include shared or crossover access agreement between properties, consolidated access points, or frontage or backage roads. When alternatives do not exist, access shall comply with the following standards:

(a) Access to Highway 99W shall be consistent with ODOT standards and policies per OAR 734, Division 51, as follows: Direct access to an arterial or principal arterial will be permitted provided that Point 'A' of such access is more than six hundred (600) feet from any intersection Point 'A' or other access to that arterial (Point 'C').

(b) The access to Highway 99W will be considered temporary until an alternative access to public right-of-ways is created. When the alternative access is available the temporary access to Highway 99W shall be closed.

(3) All site plans for new development submitted to the City for approval after the effective date of this Code shall show ingress and egress from existing or planned local, neighborhood route or collector streets, including frontage or backage roads, consistent with the Transportation Plan Map and Chapter 6 of the Community Development Plan.

3. Exceptions to Access Criteria for City-Owned Streets

a. Alternate points of access may be allowed if an access management plan which maintains the classified function and integrity of the applicable facility is submitted to and approved by the City Engineer as the access management plan must be included as part of the land use submittal or an application for modification as described in § 16.106.020 E. (Transportation Facilities Modifications).

b. Access in the Old Town (OT) Overlay Zone

Access points in the OT Overlay Zone shown in an adopted plan such as the Transportation System Plan, are not subject to the access spacing standards and do not need a variance. However, the applicant shall submit a partial access management plan for approval by the City Engineer. The approved plan shall be implemented as a condition of development approval.

Response: The Preliminary Plans (Exhibit A) demonstrate that the vehicular access management standards above are met. The site does not access Highway 99W and is not in the Old Town Overlay District. The applicable criteria are met.

N. Private Streets

1. The construction of a private street serving a single-family residential development is prohibited unless it provides principal access to two or fewer residential lots or parcels (i.e. flag lots).

2. Provisions shall be made to assure private responsibility for future access and maintenance through recorded easements. Unless otherwise specifically authorized, a private street shall comply with the same standards as a public street identified in the Community Development Code and the Transportation System Plan.

3. A private street shall be distinguished from public streets and reservations or restrictions relating to the private street shall be described in land division documents and deed records.

4. A private street shall also be signed differently from public streets and include the words "Private Street".

Response: The application does not include private streets. The criteria do not apply.

16.106.060 - Sidewalks

A. Required Improvements

1. Except as otherwise provided, sidewalks shall be installed on both sides of a public street and in any special pedestrian way within new development.

2. For Highway 99W, arterials, or in special industrial districts, the City Manager or designee may approve a development without sidewalks if alternative pedestrian routes are available.

3. In the case of approved cul-de-sacs serving less than fifteen (15) dwelling units, sidewalks on one side only may be approved by the City Manager or designee.

Response: As shown on the Preliminary Street Plan of Exhibit A, new streets (except for the three-quarter street improvement at the southeast boundary of the site) include sidewalks on both sides of the street. A 10-foot wide sidewalk is provided along the subject site's frontage of SW Brookman Road. The criteria are met.

B. Design Standards

1. Arterial and Collector Streets

Arterial and collector streets shall have minimum eight (8) foot wide sidewalks/multi- use path, located as required by this Code.

2. Local Streets

Local streets shall have minimum five (5) foot wide sidewalks, located as required by this Code.

3. Handicapped Ramps

Sidewalk handicapped ramps shall be provided at all intersections.

Response: SW Brookman Road is classified as an Arterial and is under the jurisdiction of Washington County. A 10-foot wide multi-use paved path is planned along the subject site's frontage on SW Brookman Road. Six-foot wide sidewalks are provided along all local streets per City standards. Sidewalk handicapped ramps will be provided as required by code. The criteria, as applicable, are met.

C. Pedestrian and Bicycle Paths

Provide bike and pedestrian connections on public easements or right-of-way when full street connections are not possible, with spacing between connections of no more than 330 feet except where prevented by topography, barriers such as railroads or highways, or environmental constraints such as rivers and streams.

Response: As shown on the Preliminary Plans, bicycle and pedestrian connections are provided where appropriate and possible. The criterion is met.

16.106.070 - Bike Lanes

If shown in Figure 13 of the Transportation System Plan, bicycle lanes shall be installed in public rights-of-way, in accordance with City specifications. Bike lanes shall be installed on both sides of designated roads, should be separated from the road by a twelve-inch stripe or other means approved by Engineering Staff, and should be a minimum of five (5) feet wide.

Response: According to Figure 13 of the Transportation System Plan (TSP), bicycle lanes are required along SW Brookman Road. SW Brookman Road is under the jurisdictional control of Washington County. The planned right-of-way dedication and improvements (see the Preliminary Street Plan and Preliminary Street Cross-Sections of Exhibit A) are in accordance with Washington County standards and provide adequate area for a bike lane. The criterion is met.

16.106.080 - Traffic Impact Analysis (TIA)

A. Purpose

The purpose of this section is to implement Sections 660-012-0045(2)(b) and -0045(2)(e) of the State Transportation Planning Rule (TPR), which require the City to adopt performance standards and a process to apply conditions to land use proposals in order to minimize impacts on and protect transportation facilities. This section establishes requirements for when a traffic impact analysis (TIA) must be prepared and submitted; the analysis methods and content involved in a TIA; criteria used to review the TIA; and authority to attach conditions of approval to minimize the impacts of the proposal on transportation facilities.

This section refers to the TSP for performance standards for transportation facilities as well as for projects that may need to be constructed as mitigation measures for a proposal's projected impacts. This section also relies on the City's Engineering Design Manual to provide street design standards and construction specifications for improvements and projects that may be constructed as part of the proposal and mitigation measures approved for the proposal.

B. Applicability

A traffic impact analysis (TIA) shall be required to be submitted to the City with a land use application at the request of the City Engineer or if the proposal is expected to involve one (1) or more of the following:

1. **An amendment to the Sherwood Comprehensive Plan or zoning map.**
2. **A new direct property approach road to Highway 99W is proposed.**
3. **The proposed development generates fifty (50) or more PM peak-hour trips on Highway 99W, or one hundred (100) PM peak-hour trips on the local transportation system.**
4. **An increase in use of any adjacent street or direct property approach road to Highway 99W by ten (10) vehicles or more per day that exceed the twenty thousand-pound gross vehicle weight.**
5. **The location of an existing or proposed access driveway does not meet minimum spacing or sight distance requirements, or is located where vehicles entering or leaving the property are restricted, or such vehicles are likely to queue or hesitate at an approach or access connection, thereby creating a safety hazard.**
6. **A change in internal traffic patterns that may cause safety problems, such as back up onto the highway or traffic crashes in the approach area.**

Response: A Transportation Impact Analysis (TIA) is included with the application. The TIA (Exhibit J) anticipates that the future homes in the subdivision will generate approximately 145 PM peak hour trips on the local transportation system, more than outlined in 16.106.080.B.3 above. Therefore, a TIA is required.

C. Requirements

The following are typical requirements that may be modified in coordination with Engineering Staff based on the specific application.

1. **Pre-application Conference. The applicant shall meet with the City Engineer prior to submitting an application that requires a TIA. This meeting will be coordinated with Washington County and ODOT when an approach road to a County road or Highway 99W serves the property, so that the TIA will meet the requirements of all relevant agencies.**
2. **Preparation. The TIA shall be prepared by an Oregon Registered Professional Engineer qualified to perform traffic Engineering analysis and will be paid for by the applicant.**

3. **Typical Average Daily Trips and Peak Hour Trips. The latest edition of the Trip Generation Manual, published by the Institute of Transportation Engineers (ITE), shall be used to gauge PM peak hour vehicle trips, unless a specific trip generation study that is approved by the City Engineer indicates an alternative trip generation rate is appropriate.**

4. **Intersection-level Analysis. Intersection-level analysis shall occur at every intersection where the analysis shows that fifty (50) or more peak hour vehicle trips can be expected to result from the development.**

5. **Transportation Planning Rule Compliance. The requirements of OAR 660-012-0060 shall apply to those land use actions that significantly affect the transportation system, as defined by the Transportation Planning Rule.**

Response: The Applicant met with the City Engineer for a Pre-Application Conference on July 13, 2017. The appropriate transportation agencies were notified of the Conference and the Applicant received comments from the City Engineer and Washington County. The attached TIA (Exhibit J) meets the above standards. The criteria are met.

D. Study Area

The following facilities shall be included in the study area for all TIAs:

1. **All site-access points and intersections (signalized and unsignalized) adjacent to the proposed development site. If the site fronts an arterial or collector street, the analysis shall address all intersections and driveways along the site frontage and within the access spacing distances extending out from the boundary of the site frontage.**

2. **Roads and streets through and adjacent to the site.**

3. **All intersections needed for signal progression analysis.**

4. **In addition to these requirements, the City Engineer may require analysis of any additional intersections or roadway links that may be adversely affected as a result of the proposed development.**

Response: As stated in the TIA under "Study Methodology", the study methodology, assumptions, and scope were determined based on a review of existing travel patterns, the City of Sherwood's Zoning and Development Code, direction provided by DKS Associates (the City's traffic engineer), as well as discussions with Washington County and Oregon Department of Transportation (ODOT) staff. The TIA includes 10 intersections within the vicinity. Please refer to the TIA (Exhibit J) for additional information. The above criteria are met.

E. Analysis Periods

To adequately assess the impacts of a proposed land use action, the following study periods, or horizon years, should be addressed in the transportation impact analysis where applicable:

1. **Existing Year.**
2. **Background Conditions in Project Completion Year. The conditions in the year in which the proposed land use action will be completed and occupied, but without the expected traffic from the proposed land use action. This analysis should account for all City-approved developments that are expected to be fully built out in the proposed land use action horizon year, as well as all planned transportation system improvements.**
3. **Full Buildout Conditions in Project Completion Year. The background condition plus traffic from the proposed land use action assuming full build-out and occupancy.**
4. **Phased Years of Completion. If the project involves construction or occupancy in phases, the applicant shall assess the expected roadway and intersection conditions resulting from major development phases. Phased years of analysis will be determined in coordination with City staff.**
5. **Twenty-Year or TSP Horizon Year. For planned unit developments, comprehensive plan amendments or zoning map amendments, the applicant shall assess the expected future roadway, intersection, and land use conditions as compared to approved comprehensive planning documents.**

Response: The TIA includes analysis for the existing conditions, year 2020 background conditions (without the subject development), and year 2020 total conditions (with buildout of the subject development). The project does not include phasing, and a 20-year analysis is not required for a subdivision. Please refer to the TIA (Exhibit J) for additional information. The criteria are met.

F. Approval Criteria

When a TIA is required, a proposal is subject to the following criteria, in addition to all criteria otherwise applicable to the underlying land use proposal:

1. **The analysis complies with the requirements of 16.106.080.C;**
2. **The analysis demonstrates that adequate transportation facilities exist to serve the proposed development or identifies mitigation measures that resolve identified traffic safety problems in a manner that is satisfactory to the City Engineer and, when County or State highway facilities are affected, to Washington County and ODOT;**

3. For affected non-highway facilities, the TIA demonstrates that mobility and other applicable performance standards established in the adopted City TSP have been met; and

4. Proposed public improvements are designed and will be constructed to the street standards specified in Section 16.106.010 and the Engineering Design Manual, and to the access standards in Section 16.106.040.

5. Proposed public improvements and mitigation measures will provide safe connections across adjacent right-of-way (e.g., protected crossings) when pedestrian or bicycle facilities are present or planned on the far side of the right-of-way.

Response: The TIA concludes that the project satisfies traffic operations requirements of the City of Sherwood Municipal Code, as well as applicable Washington County and ODOT standards, assuming provision of recommended transportation improvements. The study recommendations include:

- Providing a westbound right-turn lane with 200 feet of storage on SW Brookman Road at the Highway 99W/SW Brookman Road-SW Chapman Road intersection
- Designing the new public street connection to SW Brookman Road as well as internal site roadways to ensure that intersection sight distance is maintained in accordance with Washington County and City of Sherwood standards

It is understood that public improvements, including those described above are required to be designed and built according to the applicable standards. The criteria are met.

G. Conditions of Approval

The City may deny, approve, or approve a development proposal with conditions needed to meet operations and safety standards and provide the necessary right-of-way and improvements to ensure consistency with the future planned transportation system. Improvements required as a condition of development approval, when not voluntarily provided by the applicant, shall be roughly proportional to the impact of the development on transportation facilities, pursuant to Section 16.106.090. Findings in the development approval shall indicate how the required improvements are directly related to and are roughly proportional to the impact of development.

Response: The Applicant understands that the City may impose conditions of approval and that such conditions are required to be based upon an essential nexus and roughly proportional to an identified impact. This criterion is met.

16.106.090 - Rough Proportionality

A. Purpose

The purpose of this section is to ensure that required transportation facility improvements are roughly proportional to the potential impacts of the proposed development. The rough proportionality requirements of this section apply to both frontage and non-frontage improvements. A proportionality analysis will be conducted by the City Engineer for any proposed development that triggers transportation facility improvements pursuant to this chapter. The City Engineer will take into consideration any benefits that are estimated to accrue to the development property as a result of any required transportation facility improvements. A proportionality determination can be appealed pursuant to Chapter 16.76. The following general provisions apply whenever a proportionality analysis is conducted.

B. Mitigation of impacts due to increased demand for transportation facilities associated with the proposed development shall be provided in rough proportion to the transportation impacts of the proposed development. When applicable, anticipated impacts will be determined by the TIA in accordance with Section 16.106.080. When no TIA is required, anticipated impacts will be determined by the City Engineer.

C. The following shall be considered when determining proportional improvements:

1. Condition and capacity of existing facilities within the impact area in relation to City standards. The impact area is generally defined as the area within a one-half-mile radius of the proposed development. If a TIA is required, the impact area is the TIA study area.

2. Existing vehicle, bicycle, pedestrian, and transit use within the impact area.

3. The effect of increased demand on transportation facilities and other approved, but not yet constructed, development projects within the impact area that is associated with the proposed development.

4. Applicable TSP goals, policies, and plans.

5. Whether any route affected by increased transportation demand within the impact area is listed in any City program including school trip safety; neighborhood traffic management; capital improvement; system development improvement, or others.

6. Accident history within the impact area.

7. Potential increased safety risks to transportation facility users, including pedestrians and cyclists.

8. Potential benefit the development property will receive as a result of the construction of any required transportation facility improvements.

9. Other considerations as may be identified in the review process pursuant to Chapter 16.72.

Response: It is understood that the City will make appropriate proportionality findings for conditions of approval applied in the City's decision for this application.

Chapter 16.110 - SANITARY SEWERS

16.110.010 - Required Improvements

Sanitary sewers shall be installed to serve all new developments and shall connect to existing sanitary sewer mains. Provided, however, that when impractical to immediately connect to a trunk sewer system, the use of septic tanks may be approved, if sealed sewer laterals are installed for future connection and the temporary system meets all other applicable City, Clean Water Services, Washington County and State sewage disposal standards.

Response: The project includes necessary public sanitary sewer infrastructure as shown on the preliminary plans. The Applicant is working on an agreement with Clean Water Services to construct a trunk sewer main that will serve the Brookman Addition Concept Plan area, including this project area. Improvements are planned to be designed in accordance with applicable City, Clean Water Services, and State standards. The criteria are met.

16.110.020 - Design Standards

A. Capacity

Sanitary sewers shall be constructed, located, sized, and installed at standards consistent with this Code, the Sanitary Sewer Service Plan Map in the Sanitary Sewer Master Plan, and other applicable Clean Water Services and City standards, in order to adequately serve the proposed development and allow for future extensions.

B. Over-Sizing

1. When sewer facilities will, without further construction, directly serve property outside a proposed development, gradual reimbursement may be used to equitably distribute the cost of that over-sized system.

2. Reimbursement shall be in an amount estimated by the City to be a proportionate share of the cost for each connection made to the sewer by property owners outside of the development, for a period of ten (10) years from the time of installation of the sewers. The boundary of the reimbursement area and the method of determining proportionate shares shall be determined by the City. Reimbursement shall only be made as additional connections are made and shall be collected as a surcharge in addition to normal connection charges.

Response: Sanitary sewer infrastructure is planned to be sized properly and oversized as necessary to serve potential future growth. The Applicant plans to work with the City and Clean Water Services to determine appropriate reimbursement/SDC credits for any over-sized sanitary sewer system infrastructure. The criteria are met.

16.110.030 - Service Availability

Approval of construction plans for new facilities pursuant to Chapter 16.106, and the issuance of building permits for new development to be served by existing sewer systems shall include certification by the City that existing or proposed sewer facilities are adequate to serve the development.

Response: The Applicant understands that certification by the City as described above is required prior to approval of construction plans and issuance of building permits. The criterion can be met.

Chapter 16.112 - WATER SUPPLY

16.112.010 - Required Improvements

Water lines and fire hydrants conforming to City and Fire District standards shall be installed to serve all building sites in a proposed development. All waterlines shall be connected to existing water mains or shall construct new mains appropriately sized and located in accordance with the Water System Master Plan.

Response: Planned water lines, hydrants, and connections are shown on the Preliminary Composite Utility Plan of Exhibit A. These improvements are appropriately sized and designed in accordance with applicable City, State, and Tualatin Valley Fire and Rescue standards. The criterion is met.

16.112.020 - Design Standards

A. Capacity

Water lines providing potable water supply shall be sized, constructed, located and installed at standards consistent with this Code, the Water System Master Plan, the City's Design and Construction Manual, and with other applicable City standards and specifications, in order to adequately serve the proposed development and allow for future extensions.

B. Fire Protection

All new development shall comply with the fire protection requirements of Chapter 16.116, the applicable portions of Chapter 7 of the Community Development Plan, and the Fire District.

C. Over-Sizing

1. **When water mains will, without further construction, directly serve property outside a proposed development, gradual reimbursement may be used to equitably distribute the cost of that over-sized system.**

2. **Reimbursement shall be in an amount estimated by the City to be the proportionate share of the cost of each connection made to the water mains by property owners outside the development, for a period of ten (10) years from the time of installation of the mains. The boundary of the reimbursement area and the method of determining proportionate shares shall be determined by the City. Reimbursement shall only be made as additional connections are made and shall be collected as a surcharge in addition to normal connection charges.**

3. **When over-sizing is required in accordance with the Water System Master Plan, it shall be installed per the Water System Master Plan. Compensation for over-sizing may be provided through direct reimbursement, from the City, after mainlines have been accepted. Reimbursement of this nature would be utilized when the cost of over-sizing is for system wide improvements.**

Response: Water mains are planned to be sized properly and oversized as necessary to serve potential future growth. The Applicant plans to work with the City to determine appropriate reimbursement/SDC credits for any oversized water supply infrastructure. The criteria are met.

16.112.030 - Service Availability

Approval of construction plans for new water facilities pursuant to Chapter 16.106, and the issuance of building permits for new development to be served by existing water systems shall include certification by the City that existing or proposed water systems are adequate to serve the development.

Response: The Applicant understands that certification by the City as described above is required prior to approval of construction plans and issuance of building permits. As illustrated on the Preliminary Plans (Exhibit A), the criterion can be met.

Chapter 16.114 - STORM WATER

16.114.010 - Required Improvements

Storm water facilities, including appropriate source control and conveyance facilities, shall be installed in new developments and shall connect to the existing downstream drainage systems consistent with the Comprehensive Plan and the requirements of the Clean Water Services water quality regulations contained in their Design and Construction Standards R&O 04-9, or its replacement.

Response: The project includes necessary stormwater facilities as shown on the Preliminary Composite Utility Plan of Exhibit A. These improvements are appropriately sized and designed in accordance with applicable City, State, and Tualatin Valley Fire and Rescue standards. The criterion is met.

16.114.020 - Design Standards

A. Capacity

Storm water drainage systems shall be sized, constructed, located, and installed at standards consistent with this Code, the Storm Drainage Master Plan Map, attached as Exhibit E, Chapter 7 of the Community Development Plan, other applicable City standards, the Clean Water Services Design and Construction standards R&O 04-9 or its replacement, and hydrologic data and improvement plans submitted by the developer.

B. On-Site Source Control

Storm water detention and groundwater recharge improvements, including but not limited to such facilities as dry wells, detention ponds, and roof top ponds shall be constructed according to Clean Water Services Design and Construction Standards.

C. Conveyance System

The size, capacity and location of storm water sewers and other storm water conveyance improvements shall be adequate to serve the development and accommodate upstream and downstream flow. If an upstream area discharges through the property proposed for development, the drainage system shall provide capacity to the receive storm water discharge from the upstream area. If downstream drainage systems are not sufficient to receive an increase in storm water caused by new development, provisions shall be made by the developer to increase the downstream capacity or to provide detention such that the new development will not increase the storm water caused by the new development.

Response: The planned stormwater drainage system is sized and designed in accordance with applicable City and Clean Water Services standards. As detailed in the attached Preliminary Stormwater Report (Exhibit E), stormwater treatment and detention will be provided on-site prior to being released in Cedar Creek. The criteria, as applicable, are met.

16.114.030 - Service Availability

Approval of construction plans for new storm water drainage facilities pursuant to Chapter 16.106, and the issuance of building permits for new development to be served by existing storm water drainage systems shall include certification by the City that existing or proposed drainage facilities are adequate to serve the development.

Response: The Applicant understands that certification by the City as described above is required prior to approval of construction plans and issuance of building permits. As illustrated by the Preliminary Plans (Exhibit A) and Preliminary Stormwater Report (Exhibit E), the criterion can be met.

Chapter 16.116 - FIRE PROTECTION

16.116.010 - Required Improvements

When land is developed so that any commercial or industrial structure is further than two hundred and fifty (250) feet or any residential structure is further than five hundred (500) feet from an adequate water supply for fire protection, as determined by the Fire District, the developer shall provide fire protection facilities necessary to provide adequate water supply and fire safety.

Response: Planned fire protection facilities are shown on the Preliminary Composite Utility Plan of Exhibit A. These improvements are appropriately sized and designed in accordance with applicable City and Tualatin Valley Fire and Rescue standards. The criterion is met.

16.116.020 - Standards

A. Capacity

All fire protection facilities shall be approved by and meet the specifications of the Fire District, and shall be sized, constructed, located, and installed consistent with this Code, Chapter 7 of the Community Development Plan, and other applicable City standards, in order to adequately protect life and property in the proposed development.

B. **Fire Flow**

Standards published by the Insurance Services Office, entitled "Guide for Determination of Required Fire Flows" shall determine the capacity of facilities required to furnish an adequate fire flow. Fire protection facilities shall be adequate to convey quantities of water, as determined by ISO standards, to any outlet in the system, at no less than twenty (20) pounds per square inch residual pressure. Water supply for fire protection purposes shall be restricted to that available from the City water system. The location of hydrants shall be taken into account in determining whether an adequate water supply exists.

C. **Access to Facilities**

Whenever any hydrant or other appurtenance for use by the Fire District is required by this Chapter, adequate ingress and egress shall be provided. Access shall be in the form of an improved, permanently maintained roadway or open paved area, or any combination thereof, designed, constructed, and at all times maintained, to be clear and unobstructed. Widths, height clearances, ingress and egress shall be adequate for District firefighting equipment. The Fire District, may further prohibit vehicular parking along private accessways in order to keep them clear and unobstructed, and cause notice to that effect to be posted.

D. **Hydrants**

Hydrants located along private, accessways shall either have curbs painted yellow or otherwise marked prohibiting parking for a distance of at least fifteen (15) feet in either direction, or where curbs do not exist, markings shall be painted on the pavement, or signs erected, or both, given notice that parking is prohibited for at least fifteen (15) feet in either direction.

Response: Fire protection infrastructure is planned to be sized properly, constructed, located, and installed consistent with applicable City and Tualatin Valley Fire and Rescue standards. The criteria are met.

16.116.030 - **Miscellaneous Requirements**

A. **Timing of Installation**

When fire protection facilities are required, such facilities shall be installed and made serviceable prior to or at the time any combustible construction begins on the land unless, in the opinion of the Fire District, the nature or circumstances of said construction makes immediate installation impractical.

B. **Maintenance of Facilities**

All on-site fire protection facilities, shall be maintained in good working order. The Fire District may conduct periodic tests and inspection of fire protection and may order the necessary repairs or changes be made within ten (10) days.

C. Modification of Facilities

On-site fire protection facilities, may be altered or repaired with the consent of the Fire District; provided that such alteration or repairs shall be carried out in conformity with the provisions of this Chapter.

Response: The Applicant understands that the Fire District may require installation of fire protection facilities prior to or at the time of construction, may conduct inspections of fire protection facilities and may consent to modification of fire protection facilities. The criteria, as applicable, can be met.

Chapter 16.118 - PUBLIC AND PRIVATE UTILITIES

16.118.010 - Purpose

Public telecommunication conduits as well as conduits for franchise utilities including, but not limited to, electric power, telephone, natural gas, lighting, and cable television shall be installed to serve all newly created lots and developments in Sherwood.

16.118.020 - Standard

A. Installation of utilities shall be provided in public utility easements and shall be sized, constructed, located and installed consistent with this Code, Chapter 7 of the Community Development Code, and applicable utility company and City standards.

B. Public utility easements shall be a minimum of eight (8) feet in width unless a reduced width is specifically exempted by the City Engineer. An eight-foot wide public utility easement (PUE) shall be provided on private property along all public street frontages. This standard does not apply to developments within the Old Town Overlay.

C. Where necessary, in the judgment of the City Manager or his designee, to provide for orderly development of adjacent properties, public and franchise utilities shall be extended through the site to the edge of adjacent property(ies).

D. Franchise utility conduits shall be installed per the utility design and specification standards of the utility agency.

E. Public Telecommunication conduits and appurtenances shall be installed per the City of Sherwood telecommunication design standards.

F. Exceptions: Installation shall not be required if the development does not require any other street improvements. In those instances, the developer shall pay a fee in lieu that will finance installation when street or utility improvements in that location occur.

Response: As illustrated on the Preliminary Subdivision Plat of Exhibit A, planned lots are provided an 8-foot wide public utility easement along the adjacent street frontage. This public utility easement provides adequate area for franchise utilities. The criteria can be met.

16.118.030 - Underground Facilities

Except as otherwise provided, all utility facilities, including but not limited to, electric power, telephone, natural gas, lighting, cable television, and telecommunication cable, shall be placed underground, unless specifically authorized for above ground installation, because the points of connection to existing utilities make underground installation impractical, or for other reasons deemed acceptable by the City.

16.118.040 - Exceptions

Surface-mounted transformers, surface-mounted connection boxes and meter cabinets, temporary utility service facilities during construction, high capacity electric and communication feeder lines, and utility transmission lines operating at fifty thousand (50,000) volts or more may be located above ground. The City reserves the right to approve location of all surface-mounted transformers.

Response: New utility facilities are planned to be placed underground. The criteria can be met.

16.118.050 - Private Streets

The construction of new private streets, serving single-family residential developments shall be prohibited unless it provides principal access to two or fewer residential lots or parcels i.e. flag lots. Provisions shall be made to assure private responsibility for future access and maintenance through recorded easements. Unless otherwise specifically authorized, a private street shall comply with the same standards as a public street identified in the Community Development Code and the Transportation System Plan. A private street shall be distinguished from public streets and reservations or restrictions relating to the private street shall be described in land division documents and deed records. A private street shall also be signed differently from public streets and include the words "Private Street".

Response: This application does not include private streets. This section does not apply.

Chapter 16.120 - SUBDIVISIONS

16.120.010 - Purpose

Subdivision regulations are intended to promote the public health, safety and general welfare; lessen traffic congestion; provide adequate light and air; prevent overcrowding of land; and facilitate adequate water supply, sewage and drainage.

16.120.020 - General Subdivision Provisions

A. Approval of a subdivision occurs through a two-step process: the preliminary plat and the final plat.

1. The preliminary plat shall be approved by the Approval Authority before the final plat can be submitted for approval consideration; and

2. The final plat shall reflect all conditions of approval of the preliminary plat.

Response: This application constitutes the preliminary plat step of the two-step subdivision process. Following approval of the preliminary plat, the Applicant will submit a separate application for final plat approval that will reflect the requirements and conditions of approval from the preliminary plat. The criteria can be met.

B. All subdivision proposals shall conform to all state regulations set forth in ORS Chapter 92, Subdivisions and Partitions.

Response: The applicable subdivision and partition regulations contained in ORS Chapter 92 are implemented through the City's Zoning Ordinance and are responded to herein. The applicable criteria are met.

C. Future re-division

When subdividing tracts into large lots, the Approval Authority shall require that the lots be of such size and shape as to facilitate future re-division in accordance with the requirements of the zoning district and this Division.

D. Future Partitioning

When subdividing tracts into large lots which may be resubdivided, the City shall require that the lots be of a size and shape, and apply additional building site restrictions, to allow for the subsequent division of any parcel into lots of smaller size and the creation and extension of future streets.

Response: As planned, the Middlebrook Subdivision does not include large lots which would facilitate future re-division or future partitioning. The criteria do not apply.

E. Lot averaging

Lot size may be averaged to allow lots less than the minimum lot size allowed in the underlying zoning district subject to the following regulations:

1. The average lot area for all lots is not less than allowed by the underlying zoning district.
2. No lot created under this provision shall be less than 90 % of the minimum lot size allowed in the underlying zoning district.
3. The maximum lot size cannot be greater than 10 % of the minimum lot size.

Response: As illustrated by the Preliminary Subdivision Plat of Exhibit A, each lot exceeds the 5,000-square-foot minimum lot size required for detached residential units in the MDRH and MDRL districts. The application does not include the use of lot averaging. The criteria do not apply.

F. Required Setbacks

All required building setback lines as established by this Code, shall be shown in the preliminary subdivision plat.

Response: Conceptual future building setbacks are shown on the Preliminary Building Setback Plan of Exhibit A. The criterion is met.

G. Property Sales

No property shall be disposed of, transferred, or sold until required subdivision approvals are obtained, pursuant to this Code.

Response: The Applicant understands that individual lots may not be disposed of, transferred, or sold until the subdivision is approved and the final subdivision plat is recorded. The criterion can be met.

16.120.030 - Approval Procedure-Preliminary Plat

A. Approval Authority

1. The approving authority for preliminary and final plats of subdivisions shall be in accordance with Section 16.72.010 of this Code.

   a. A subdivision application for 4-10 lots will follow a Type II review process.

   b. A subdivision application for 11-50 lots will follow a Type III review process.

   c. A subdivision application for over 50 lots will follow a Type IV review process.

2. Approval of subdivisions is required in accordance with this Code before a plat for any such subdivision may be filed or recorded with County. Appeals to a decision may be filed pursuant to Chapter 16.76.

Response: The planned subdivision includes more than 50 residential lots and will therefore follow a Type IV review process. The Applicant is aware that approval from the City is required prior to recordation of the final plat with Washington County. The criteria are met.

B. Phased Development

1. The Approval Authority may approve a time schedule for developing a subdivision in phases, but in no case shall the actual construction time period for any phase be greater than two years without reapplying for a preliminary plat.

2. The criteria for approving a phased subdivision review proposal are:

   a. The public facilities shall be scheduled to be constructed in conjunction with or prior to each phase to ensure provision of public facilities prior to building occupancy;

b. The development and occupancy of any phase shall not be dependent on the use of temporary public facilities:

(1) For purposes of this subsection, a temporary public facility is an interim facility not constructed to the applicable City or district standard; and

(2) The phased development shall not result in requiring the City or other property owners to construct public facilities that were required as a part of the approval of the preliminary plat.

3. The application for phased development approval shall be reviewed concurrently with the preliminary plat application and the decision may be appealed in the same manner as the preliminary plat.

Response: The Middlebrook Subdivision is planned to be permitted and constructed as a single phase. The above criteria do not apply.

16.120.040 - Approval Criteria: Preliminary Plat

No preliminary plat shall be approved unless:

A. Streets and roads conform to plats approved for adjoining properties as to widths, alignments, grades, and other standards, unless the City determines that the public interest is served by modifying streets or road patterns.

B. Streets and roads held for private use are clearly indicated on the plat and all reservations or restrictions relating to such private roads and streets are set forth thereon.

C. The plat complies with applicable zoning district standards and design standards in Division II, and all provisions of Divisions IV, VI, VIII and IX. The subdivision complies with Chapter 16.128 (Land Division Design Standards).

D. Adequate water, sanitary sewer, and other public facilities exist to support the use of land proposed in the plat.

E. Development of additional, contiguous property under the same ownership can be accomplished in accordance with this Code.

F. Adjoining land can either be developed independently or is provided access that will allow development in accordance with this Code.

G. Tree and woodland inventories have been submitted and approved as per Section 16.142.060.

H. The plat clearly shows the proposed lot numbers, setbacks, dedications and easements.

I. A minimum of five percent (5%) open space has been provided per Section 16.44.010.B.8 (Townhome-Standards) or Section 16.142.030 (Parks, Open Spaces and Trees-Single-Family Residential Subdivisions), if applicable.

Response: The above criteria are satisfied as shown in applicable responses in this narrative. Additionally, the Preliminary Subdivision Plat of Exhibit A illustrates compliance with the above criteria and the information required to be shown on the plat. The Tree Inventory Table is included as Exhibit K. The criteria are met.

Chapter 16.128 - LAND DIVISION DESIGN STANDARDS

16.128.010 - Blocks

A. Connectivity

1. Block Size

The length, width, and shape of blocks shall be designed to provide adequate building sites for the uses proposed, and for convenient access, circulation, traffic control and safety.

Response: Blocks are sized to provide adequate building sites, access, circulation, traffic control, and safety for single-family dwellings. This criterion is met.

2. Block Length

Block length standards shall be in accordance with Section 16.108.040. Generally, blocks shall not exceed five-hundred thirty (530) feet in length, except blocks adjacent to principal arterial, which shall not exceed one thousand eight hundred (1,800) feet. The extension of streets and the formation of blocks shall conform to the Local Street Network map contained in the Transportation System Plan.

Response: As outlined above in the response to Section 16.106.030 B.7, the application satisfies the exception standards for block size and length where topography and natural resources preclude a standard connection. In those cases, pedestrian pathways are provided where appropriate. This criterion is met.

3. Pedestrian and Bicycle Connectivity. Paved bike and pedestrian accessways shall be provided on public easements or right-of-way consistent with Figure 7.401.

Response: To facilitate pedestrian and bicycle movement through the site, pedestrian paths are provided where appropriate. This criterion is met.

B. Utilities Easements for sewers, drainage, water mains, electric lines, or other utilities shall be dedicated or provided for by deed. Easements shall be a minimum of ten (10) feet in width and centered on rear or side lot lines; except for tie-back easements, which shall be six (6) feet wide by twenty (20) feet long on side lot lines at the change of direction.

Response: New public utility mains required to serve the planned subdivision will be located within the rights-of-way adjacent to individual lots. An 8-foot-wide public utility easement is provided along the frontage of the lots to accommodate future franchise utilities. In addition, a 15-foot wide easement is located along the side lot lines of Lots 80 and 81 for water service. (See the Preliminary Subdivision Plat of Exhibit A). The criterion is met.

C. Drainages

Where a subdivision is traversed by a watercourse, drainage way, channel or street, drainage easements or rights-of-way shall be provided conforming substantially to the alignment and size of the drainage.

Response: The planned Middlebrook Subdivision is not traversed by a watercourse, drainage way or channel. This criterion does not apply.

16.128.020 - Pedestrian and Bicycle Ways

Pedestrian or bicycle ways may be required to connect cul-de-sacs, divide through an unusually long or oddly shaped block, or to otherwise provide adequate circulation.

Response: Pedestrian easements and paths are provided, as illustrated on the Preliminary Subdivision Plat of Exhibit A. A pedestrian easement divides one block, connecting Kalapuya Lane with Trillium Lane. Additionally, pedestrian paths extend to both sides of the cul-de-sac at the west end of the site. See the response to Street Connectivity and Future Street Systems, Section 16.106.030.B, for further discussion. This criterion is met.

16.128.030 - Lots

A. Size and Shape

Lot size, width, shape, and orientation shall be appropriate for the location and topography of the subdivision or partition, and shall comply with applicable zoning district requirements, with the following exception:

1. Lots in areas not served by public sewer or water supply shall conform to any special County Health Department standards.

Response: As discussed above, and as illustrated on the Preliminary Subdivision Plat of Exhibit A, lot dimension and orientation are consistent with the standards established for residential lots in the MDRH and MDRL zoning districts. Lots are served by public sewer and water supply. The criteria are met.

B. Access

All lots in a subdivision shall abut a public street, except as allowed for infill development under Chapter 16.68.

Response: As shown on the Preliminary Plans (Exhibit A), lots abut a planned public street. The criterion is met.

C. Double Frontage

Double frontage and reversed frontage lots are prohibited except where essential to provide separation of residential development from railroads, traffic arteries, adjacent nonresidential uses, or to overcome specific topographical or orientation problems. A five (5) foot wide or greater easement for planting and screening may be required.

Response: The Middlebrook Subdivision does not include double frontage or reversed frontage lots. This criterion does not apply.

D. Side Lot Lines Side lot lines shall, as far as practicable, run at right angles to the street upon which the lots face, except that on curved streets side lot lines shall be radial to the curve of the street.

Response: To the extent practical, side lot lines are perpendicular to the fronting street (see the Preliminary Subdivision Plat of Exhibit A). The criterion is met.

E. Grading

Grading of building sites shall conform to the following standards, except when topography of physical conditions warrants special exceptions:

1. Cut slopes shall not exceed one (1) and one-half (1 1/2) feet horizontally to one (1) foot vertically.

2. Fill slopes shall not exceed two (2) feet horizontally to one (1) foot vertically.

Response: The planned site grading is illustrated on the Preliminary Grading and Erosion and Sediment Control Plans of Exhibit A. The planned cut and fill slopes are not anticipated to exceed the above standards. The criteria are met.

Division VIII. - ENVIRONMENTAL RESOURCES

Chapter 16.134 - FLOODPLAIN (FP) OVERLAY

16.134.010 - Generally

Special resource zones are established to provide for preservation, protection, and management of unique natural and environmental resources in the City that are deemed to require additional standards beyond those contained elsewhere in this Code. Special resource zones may be implemented as underlying or overlay zones depending on patterns of property ownership and the nature of the resource. A property or properties may be within more than one resource zone. In addition, the City may identify special resource areas and apply a PUD overlay zone in advance of any development in order to further protect said resources.

The areas of special flood hazard identified by the Federal Insurance Administration in a scientific and engineering report entitled, "The Flood Insurance Study for Washington County, Oregon and Incorporated Areas," (flood insurance study) dated November 4, 2016, with accompanying Flood

Insurance Maps are hereby adopted by reference and declared to be a part of this ordinance. The Flood Insurance Study is on file with the Sherwood City Engineer at Sherwood City Hall.

16.134.020 - Purpose

The purpose of this ordinance is to promote the public health, safety, and general welfare, and to minimize public and private losses due to flood conditions in specific areas by complying with the provisions of this chapter.

A. The FP zoning district is an overlay district that controls and regulates flood hazard areas in order to protect the public health, safety and general welfare; to reduce potential flood damage losses; and to protect floodways and natural drainageways from encroachment by uses which may adversely affect water quality and water flow and subsequent upstream or downstream flood levels. The FP zone shall be applied to all areas within the base flood, and shall supplement the regulations of the underlying zoning district.

B. FP zoning districts are areas within the base flood as identified by the Federal Emergency Management Agency (FEMA) in a Flood Insurance Study (FIS) and in Flood Insurance Rate Maps (FIRM) published for the City and surrounding areas, or as otherwise identified in accordance with Section 16.134.020C. These FEMA documents are adopted by reference as part of this Code, and are on file at the City.

C. When base flood elevation data is not available from the FIS or FIRM, the City shall obtain, review, and reasonably utilize any base flood elevation and floodway data available from a federal, state, or other source, and standards developed by the FEMA, in order to administer the provisions of this Code.

Response: Cedar Creek is located southeast of the subject site. The base flood elevation of Cedar Creek closest to the site is ±173.5 feet. The lowest elevation on the subject site is ±177.3 feet, at the southeast corner. Therefore, the subject property does not include floodplain areas and the criteria do not apply.

Chapter 16.142 - PARKS, TREES AND OPEN SPACES

16.142.010 - Purpose

This Chapter is intended to assure the provision of a system of public and private recreation and open space areas and facilities consistent with this Code and applicable portions of Chapter 5 of the Community Development Plan Part 2. The standards of this section do not supersede the open space requirements of a Planned Unit Development, found in Chapter 16.40 - Planned Unit Development (PUD).

Response: The subject site includes open space areas, meeting the intent of this Code. This application does not include a Planned Unit Development and therefore the open space standards of this section apply.

16.142.030 - Single-Family or Duplex Residential Subdivisions

A. A minimum of five percent (5%) of the net buildable site (after exclusion of public right-of-way and environmentally constrained areas) shall be maintained as "open space". Open space must include usable areas such as public parks, swimming and wading pools, grass areas for picnics and recreational play, walking paths, and other like space. The following may not be used to calculate open space:

1. Required yards or setbacks.

2. Required visual corridors.

3. Required sensitive areas and buffers.

4. Any area required to meet a standard found elsewhere in this code.

Response: The net developable area of the site is ±23.86 acres. The 5% open space requirement in this section yields a minimum required open space of ±1.19 acres. The application, as illustrated in the Open Space Area table below and on the Preliminary Subdivision Plat of Exhibit A, includes ±2.87 acres of open space. The largest tract of ±1.85 acres, Tract B, is planned as a park, consistent with the Brookman Addition Concept Plan. Tract F is planned as a smaller open space area at the entrance to the subdivision. Tracts G and H include pedestrian paths as well as open space adjacent to, but outside of, the natural resource areas. The criteria are met.

OPEN SPACE AREA		
	Acres	**Square Feet**
Park (Tract B)	±1.85	±80,646
Entryway Open Space (Tract F)	±0.15	±6,592
Pedestrian Path (Tract G)	±0.43	±18,534
Pedestrian Path (Tract H)	±0.44	±19,245
Total Open Space	±2.87	±125,017
Minimum Open Space Required	±1.19	±51,973

B. Enhanced streetscapes such as "boulevard treatments" in excess of the minimum public street requirements may count toward a maximum of 10,000 square feet of the open space requirement.

1. Example: if a 52-foot-wide right-of-way [ROW] is required for a 1,000 foot-long street and a 62-foot wide ROW with 5-foot additional plantings/meandering pathway is provided on each side of the street, the additional 10-foot-wide area x 1,000 linear feet, or 10,000 square feet, counts toward the open space requirement.

Response: The application includes one street (Oberst Road) with an eight-foot wide landscaped median. (See the Preliminary Street Plan sheet of Exhibit A.) The median area adds approximately ±1500 square feet of landscaped area. After including the median area with the open space area of ±125,017 square feet calculated above, there is a total of ±126,517 square feet (±2.90 acres) of planned open space area. This criterion is met.

> **C.** The open space shall be conveyed in accordance with one of the following methods:
>
> 1. By dedication to the City as public open space (if acceptable to the City). Open space proposed for dedication to the City must be acceptable to the City Manager or the Manager's designee with regard to the size, shape, location, improvement, environmental condition, and budgetary and maintenance abilities;
>
> 2. By leasing or conveying title (including beneficial ownership) to a corporation, homeowners' association or other legal entity, with the City retaining the development rights to the open space. The terms of such lease or other instrument of conveyance must include provisions (e.g., maintenance, property tax payment, etc.) suitable to the City.

Response: The open space areas (Tracts B, F, G, and H) are anticipated to be conveyed to a future homeowner's association per 16.142.010.C.2 above. However, if deemed acceptable by the City, the open spaces could potentially be dedicated to the City. The criteria can be met.

> **D.** The density of a single-family residential subdivision shall be calculated based on the net buildable site prior to exclusion of open space per this Section.
>
> 1. Example: a 40,000 square foot net buildable site would be required to maintain 2,000 square feet (5%) of open space but would calculate density based on 40,000 square feet.

Response: The net residential density of the planned subdivision has been calculated using the above methodology. The criterion is met.

> **E.** If a proposed residential subdivision contains or is adjacent to a site identified as "parks" on the Acquisition Map of the Parks Master Plan (2006) or has been identified for acquisition by the Sherwood Parks and Recreation Board, establishment of open space shall occur in the designated areas if the subdivision contains the park site, or immediately adjacent to the parks site if the subdivision is adjacent to it.

Response: The Parks Master Plan (2006) does not include the area annexed to the City in 2017. However, the Brookman Addition Concept Plan, adopted in 2009, indicates conceptual locations for park/open space areas. One of the areas generally falls within the boundaries of the planned Middlebrook Subdivision. The planned park, Tract B, is consistent with the Brookman Addition Concept Plan and could potentially be dedicated to the City if deemed acceptable. This criterion can be met.

F. **If the proposed residential subdivision does not contain or is not adjacent to a site identified on the Parks Master Plan map or otherwise identified for acquisition by the Parks and Recreation Board, the applicant may elect to convey off-site park/open space.**

G. **This standard does not apply to a residential partition provided that a development may not use phasing or series partitions to avoid the minimum open space requirement. A partition of land that was part of an approved partition within the previous five (5) years shall be required to provide the minimum five percent (5%) open space in accordance with subsection (A) above.**

Response: The planned subdivision includes adequate park area. The application does not include a partition. The above criteria do not apply.

H. **The value of the open space conveyed under Subsection (A) above may be eligible for Parks System Development Charges (SDCs) credits based on the methodology identified in the most current Parks and Recreation System Development Charges Methodology Report.**

Response: Eligibility for System Development Charges (SDCs) credits will be reviewed and applied at time of building permit submittal. The criterion can be met.

16.142.040 - Visual Corridors

Response: The Visual Corridor section was addressed above, in response to Section 16.92.030 – Site Area Landscaping and Perimeter Screening Standards.

16.142.050 - Park Reservation

Areas designated on the Natural Resources and Recreation Plan Map, in Chapter 5 of the Community Development Plan, which have not been dedicated pursuant to Section 16.142.030 or 16.134.020, may be required to be reserved upon the recommendation of the City Parks Board, for purchase by the City within a period of time not to exceed three (3) years.

Response: The Community Development Plan does not include this area annexed to the City in 2017. However, the site is located within the adopted Brookman Addition Concept Plan Area which illustrates the conceptual location of natural resource areas. If deemed acceptable, natural resource areas could potentially be dedicated to the City. The criterion can be met.

16.142.060 - Street Trees

A. Installation of Street Trees on New or Redeveloped Property.

Trees are required to be planted to the following specifications along public streets abutting or within any new development or re-development. Planting of such trees shall be a condition of development approval. The City shall be subject to the same standards for any developments involving City-owned property, or when constructing or reconstructing City streets. After installing street trees, the property owner shall be responsible for maintaining the street trees on the owner's property or within the right-of-way adjacent to the owner's property.

1. Location: Trees shall be planted within the planter strip along a newly created or improved streets. In the event that a planter strip is not required or available, the trees shall be planted on private property within the front yard setback area or within public street right-of-way between front property lines and street curb lines or as required by the City.

2. Size: Trees shall have a minimum trunk diameter of two (2) caliper inches, which is measured six inches above the soil line, and a minimum height of six (6) feet when planted.

3. Types: Developments shall include a variety of street trees. The trees planted shall be chosen from those listed in 16.142.080 of this Code.

4. Required Street Trees and Spacing:

a. The minimum spacing is based on the maximum canopy spread identified in the recommended street tree list in section 16.142.080 with the intent of providing a continuous canopy without openings between the trees. For example, if a tree has a canopy of forty (40) feet, the spacing between trees is forty (40) feet. If the tree is not on the list, the mature canopy width must be provided to the planning department by a certified arborist.

b. All new developments shall provide adequate tree planting along all public streets. The number and spacing of trees shall be determined based on the type of tree and the spacing standards described in a. above and considering driveways, street light locations and utility connections. Unless exempt per c. below, trees shall not be spaced more than forty (40) feet apart in any development.

c. A new development may exceed the forty-foot spacing requirement under section b. above, under the following circumstances:

(1) Installing the tree would interfere with existing utility lines and no substitute tree is appropriate for the site; or

(2) There is not adequate space in which to plant a street tree due to driveway or street light locations, vision clearance or utility connections, provided the driveways, street light or utilities could not be reasonably located elsewhere so as to accommodate adequate room for street trees; and

(3) The street trees are spaced as close as possible given the site limitations in (1) and (2) above.

(4) The location of street trees in an ODOT or Washington County right-of-way may require approval, respectively, by ODOT or Washington County and are subject to the relevant state or county standards.

(5) For arterial and collector streets, the City may require planted medians in lieu of paved twelve-foot wide center turning lanes, planted with trees to the specifications of this subsection.

Response: The Preliminary Landscape, Street Tree and Open Space Plan of Exhibit A illustrates the planned installation of street trees pursuant to these standards. The criteria are met.

B. Removal and Replacement of Street Trees.

The removal of a street tree shall be limited and in most cases, necessitated by the tree. A person may remove a street tree as provided in this section. The person removing the tree is responsible for all costs of removal and replacement. Street trees less than five (5) inches DBH can be removed by right by the property owner or his or her assigns, provided that they are replaced. A street tree that is removed must be replaced within six (6) months of the removal date.

1. Criteria for All Street Tree Removal for trees over five (5) inches DBH. No street tree shall be removed unless it can be found that the tree is:

a. Dying, becoming severely diseased, or infested or diseased so as to threaten the health of other trees, or

b. Obstructing public ways or sight distance so as to cause a safety hazard, or

c. Interfering with or damaging public or private utilities, or

d. Defined as a nuisance per City nuisance abatement ordinances.

2. Street trees between five (5) and ten (10) inches DBH may be removed if any of the criteria in 1. above are met and a tree removal permit is obtained.

a. The Tree Removal Permit Process is a Type I land use decision and shall be approved subject to the following criteria:

(1) The person requesting removal shall submit a Tree Removal Permit application that identifies the location of the tree, the type of tree to be removed, the proposed replacement and how it qualifies for removal per Section 1. above.

(2) The person shall post a sign, provided by the City, adjacent to the tree for ten (10) calendar days prior to removal that provides notice of the removal application and the process to comment on the application.

(3) If an objection to the removal is submitted by the City or to the City during the ten (10) calendar day period, an additional evaluation of the tree will be conducted by an arborist to determine whether the tree meets the criteria for street tree removal in Section 1. above. The person requesting the Tree Removal Permit shall be responsible for providing the arborist report and associated costs.

(4) Upon completion of the additional evaluation substantiating that the tree warrants removal per Section 1. above or if no objections are received within the ten-day period, the tree removal permit shall be approved.

(5) If additional evaluation indicates the tree does not warrant removal, the Tree Removal Permit will be denied.

3. Street trees over ten (10) inches DBH may be removed through a Type I review process subject to the following criteria.

a. The applicant shall provide a letter from a certified arborist identifying:

(1) The tree's condition,

(2) How it warrants removal using the criteria listed in Section 1. above, and identifying any reasonable actions that could be taken to allow the retention of the tree.

b. The applicant shall provide a statement that describes whether and how the applicant sought assistance from the City, HOA or neighbors to address any issues or actions that would enable the tree to be retained.

c. The person shall post a sign, provided by the City, adjacent to the tree for ten (10) calendar days prior to removal that provides notice of the removal application and the process to comment on the application.

d. Review of the materials and comments from the public confirm that the tree meets the criteria for removal in Section 1. above.

Response: The application does not include the removal of existing street trees. The above criteria are not applicable.

C. Homeowner's Association Authorization.

The Planning Commission may approve a program for the adoption, administration and enforcement by a homeowners' association (HOA) of regulations for the removal and replacement of street trees within the geographic boundaries of the association.

1. An HOA that seeks to adopt and administer a street tree program must submit an application to the City. The application must contain substantially the following information:

a. The HOA must be current and active. The HOA should meet at least quarterly and the application should include the minutes from official HOA Board meetings for a period not less than eighteen (18) months (six (6) quarters) prior to the date of the application.

b. The application must include proposed spacing standards for street trees that are substantially similar to the spacing standards set forth in 16.142.060.A above.

c. The application must include proposed street tree removal and replacement standards that are substantially similar to the standards set forth in 16.142.060.B above.

d. The application should include a copy of the HOA bylaws as amended to allow the HOA to exercise authority over street tree removal and replacement, or demonstrate that such an amendment is likely within ninety (90) days of a decision to approve the application.

e. The application should include the signatures of not less than seventy-five (75) percent of the homeowners in the HOA in support of the application.

2. An application for approval of a tree removal and replacement program under this section shall be reviewed by the City through the Type IV land use process. In order to approve the program, the City must determine:

a. The HOA is current and active.

b. The proposed street tree removal and replacement standards are substantially similar to the standards set forth in 16.142.060.B above.

c. The proposed street tree spacing standards are substantially similar to the standards set forth in 16.142.060.A above.

d. The HOA has authority under its bylaws to adopt, administer and enforce the program.

e. The signatures of not less than seventy-five (75) percent of the homeowners in the HOA in support of the application.

3. A decision to approve an application under this section shall include at least the following conditions:

a. Beginning on the first January 1 following approval and on January 1 every two (2) years thereafter, the HOA shall make a report to the city planning department that provides a summary and description of action taken by the HOA under the approved program. Failure to timely submit the report that is not cured within sixty (60) days shall result in the immediate termination of the program.

b. The HOA shall comply with the requirements of Section 12.20 of the Sherwood Municipal Code.

4. The City retains the right to cancel the approved program at any time for failure to substantially comply with the approved standards or otherwise comply with the conditions of approval.

a. If an HOA tree removal program is canceled, future tree removals shall be subject to the provisions of section 16.142.060.

b. A decision by the City to terminate an approved street tree program shall not affect the validity of any decisions made by the HOA under the approved program that become final prior to the date the program is terminated.

c. If the city amends the spacing standards or the removal and replacement standards in this section (SZCDC 16.142.060) the City may require that the HOA amend the corresponding standards in the approved street tree program.

5. An approved HOA tree removal and replacement program shall be valid for five (5) years; however the authorization may be extended as approved by the City, through a Type II Land Use Review.

Response: As described above, a tree removal and replacement program, managed by a homeowners' association (HOA), is not included in this application. The street trees are planned to be in public rights-of-way and the responsibility of the future abutting property owner to maintain. The criteria do not apply.

D. Exemption from Replacing Street Trees.

A street tree that was planted in compliance with the Code in effect on the date planted and no longer required by spacing standards of section A.4. above may be removed without replacement provided:

1. Exemption is granted at the time of street tree removal permit or authorized homeowner's association removal per Section 16.142.060.C. above.

2. The property owner provides a letter from a certified arborist stating that the tree must be removed due to a reason identified in the tree removal criteria listed in Section 16.142.060.B.1. above, and

3. The letter describes why the tree cannot be replaced without causing continued or additional damage to public or private utilities that could not be prevented through reasonable maintenance.

E. Notwithstanding any other provision in this section, the city manager or the manager's designee may authorize the removal of a street tree in an emergency situation without a tree removal permit when the tree poses an immediate threat to life, property or utilities. A decision to remove a street tree under this section is subject to review only as provided in ORS 34.100.

F. Trees on Private Property Causing Damage.

Any tree, woodland or any other vegetation located on private property, regardless of species or size, that interferes with or damages public streets or utilities, or causes an unwarranted increase in the maintenance costs of same, may be ordered removed or cut by the City Manager or his or her designee. Any order for the removal or cutting of such trees, woodlands or other vegetation, shall be made and reviewed under the applicable City nuisance abatement ordinances.

G. Penalties. The abuse, destruction, defacing, cutting, removal, mutilation or other misuse of any tree planted on public property or along a public street as per this Section, shall be subject to the penalties defined by Section 16.02.040, and other penalties defined by applicable ordinances and statutes, provided that each tree so abused shall be deemed a separate offense.

Response: This application does not include the removal of street trees for the reasons listed above. The Applicant is aware of the penalty for illegal abuse, destruction, or removal of street trees. The criteria, as applicable, are met.

16.142.070 - Trees on Property Subject to Certain Land Use Applications

A. Generally

The purpose of this Section is to establish processes and standards which will minimize cutting or destruction of trees and woodlands within the City. This Section is intended to help protect the scenic beauty of the City; to retain a livable environment through the beneficial effect of trees on air pollution, heat and glare, sound, water quality, and surface water and erosion control; to encourage the retention and planting of tree species native to the Willamette Valley and Western Oregon; to provide an attractive visual contrast to the urban environment, and to sustain a wide variety and distribution of viable trees and woodlands in the community over time.

B. Applicability

All applications including a Type II - IV land use review, shall be required to preserve trees or woodlands, as defined by this Section to the maximum extent feasible within the context of the proposed land use plan and relative to other codes, policies, and standards of the City Comprehensive Plan.

Response: The planned subdivision warrants a Type IV land use review. The criteria of this section apply.

C. Inventory

1. To assist the City in making its determinations on the retention of trees and woodlands, land use applications including Type II - IV development shall include a tree and woodland inventory and report. The report shall be prepared by a qualified professional and must contain the following information:

   a. Tree size (in DBH and canopy area)

   b. Tree species

   c. The condition of the tree with notes as applicable explaining the assessment

   d. The location of the tree on the site

   e. The location of the tree relative to the planned improvements

   f. Assessment of whether the tree must be removed to accommodate the development

   g. Recommendations on measures that must be taken to preserve trees during the construction that are not proposed to be removed.

2. In addition to the general requirements of this Section, the tree and woodland inventory's mapping and report shall also include, but is not limited to, the specific information outlined in the appropriate land use application materials packet.

3. Definitions for the inventory purposes of this Section

   a. A tree is a living woody plant having a trunk diameter as specified below at Diameter at Breast Height (DBH). Trees planted for commercial agricultural purposes, and/or those subject to farm forest deferral, such as nut and fruit orchards and Christmas tree farms, are excluded from this definition and from regulation under this Section, as are any living woody plants under six (6) inches at DBH. All trees six (6) inches or greater shall be inventoried.

b. A woodland is a biological community dominated by trees covering a land area of 20,000 square feet or greater at a density of at least fifty (50) trees per every 20,000 square feet with at least fifty percent (50%) of those trees of any species having a six (6) inches or greater at DBH. Woodlands planted for commercial agricultural purposes and/or subject to farm forest deferral, such as nut and fruit orchards and Christmas tree farms, are excluded from this definition, and from regulation under this Section.

c. A large stature tree is over 20 feet tall and wide with a minimum trunk diameter of 30 inches at DBH.

Response: The Preliminary Tree Preservation and Removal Plan of Exhibit A and the Tree Inventory, included with the application as Exhibit K, includes the information listed above. The criteria, as applicable, are met.

D. Retention requirements

1. Trees may be considered for removal to accommodate the development including buildings, parking, walkways, grading etc., provided the development satisfies of D.2 or D.3, below.

Response: As illustrated on the Existing Conditions Plans of Exhibit A and the Tree Inventory Table (Exhibit K), there are numerous trees on the subject site. Removal of trees is necessary to accommodate the required site improvements, including utility installation, earthwork, and grading necessary for street construction, proper drainage, and future home construction. Sections D.2 and D.3 below are satisfied. Therefore, this criterion is met.

2. Required Tree Canopy - Residential Developments (Single Family Attached, Single Family Detached and Two - Family)

Each net development site shall provide a variety of trees to achieve a minimum total tree canopy of 40 percent. The canopy percentage is based on the expected mature canopy of each tree by using the equation πr^2 to calculate the expected square footage of canopy for each tree. The expected mature canopy is counted for each tree regardless of an overlap of multiple tree canopies.

The canopy requirement can be achieved by retaining existing trees or planting new trees. Required street trees can be used toward the total on site canopy required to meet this standard. The expected mature canopy spread of the new trees will be counted toward the needed canopy cover. A certified arborist or other qualified professional shall provide the estimated tree canopy of the proposed trees to the planning department for review.

Response: The Preliminary Landscape, Street Tree and Open Space Plan of Exhibit A demonstrates that at least 40% canopy coverage of the net development site is provided. This criterion is met.

3. Required Tree Canopy - Non-Residential and Multi-family Developments

Each net development site shall provide a variety of trees to achieve a minimum total tree canopy of 30 percent. The canopy percentage is based on the expected mature canopy of each tree by using the equation πr 2 to calculate the expected square footage of each tree. The expected mature canopy is counted for each tree even if there is an overlap of multiple tree canopies.

The canopy requirement can be achieved by retaining existing trees or planting new trees. Required landscaping trees can be used toward the total on site canopy required to meet this standard. The expected mature canopy spread of the new trees will be counted toward the required canopy cover. A certified arborist or other qualified professional shall provide an estimated tree canopy for all proposed trees to the planning department for review as a part of the land use review process.

Response: The application involves the creation of a residential subdivision for future single-family homes. The criteria above do not apply.

	Residential (single family & two family developments)	Old Town & Infill developments	Commercial, Industrial, Institutional Public and Multi-family
Canopy Requirement	40%	N/A	30%
Counted Toward the Canopy Requirement			
Street trees included in canopy requirement	Yes	N/A	No
Landscaping requirements included in canopy requirement	N/A	N/A	Yes
Existing trees onsite	Yes x2	N/A	Yes x2
Planting new trees onsite	Yes	N/A	Yes
Mature Canopy in Square Feet Equation πr^2 or (3.14159*radius ^{2}) (This is the calculation to measure the square footage of a circle. The Mature Canopy is given in diameter. In gardening and horticulture reference books, therefore to get the radius you must divide the diameter in half.			
Canopy Calculation Example: Pin Oak Mature canopy = 35' (3.14159* 17.5 ^{2}) = 962 square feet			

4. The City may determine that, regardless of D.1 through D.3, that certain trees or woodlands may be required to be retained. The basis for such a decision shall include; specific findings that retention of said trees or woodlands furthers the purposes and goals of this Section, is feasible and practical both within the context of the proposed land use plan and relative to other policies and standards of the City Comprehensive Plan, and are:

   a. Within a Significant Natural Area, 100-year floodplain, City greenway, jurisdictional wetland or other existing or future public park or natural area designated by the City Comprehensive Plan, or

Response: The site includes jurisdictional wetlands, open space, and natural areas to be retained. The trees within the natural resource areas (Tracts C, D, E) are planned to be protected and retained. Many of the trees in the areas outside of the planned pedestrian pathways in open space Tracts G and H will also be protected and retained. As described in the Natural Resource Assessment (Exhibit G) and the Department of State Lands Wetland Delineation Concurrence Letter (Exhibit I), there are five designated wetlands on the site. The two smaller wetlands are planned to be filled and do not include trees or woodland areas. The larger three wetlands are planned to be retained and protected within the natural resource area tracts. The criteria are met.

b. A landscape or natural feature as per applicable policies of the City Comprehensive Plan, or are necessary to keep other identified trees or woodlands on or near the site from being damaged or destroyed due to windfall, erosion, disease or other natural processes, or

Response: The site does not include a landscape or natural feature as described above. This criterion does not apply.

c. Necessary for soil stability and the control of erosion, for managing and preserving surface or groundwater quantities or quality, or for the maintenance of a natural drainageway, as per Clean Water Services stormwater management plans and standards of the City Comprehensive Plan, or

Response: The application includes a Preliminary Tree Preservation and Removal Plan (in Exhibit A) and a Preliminary Stormwater Report (Exhibit E). Tree removal and preservation and stormwater management measures are illustrated and described therein. This criterion, as applicable, is met.

d. Necessary in required buffers between otherwise incompatible land uses, or from natural areas, wetlands and greenways, or

Response: The abutting properties include compatible residential uses with low to medium density residential zoning designations. Therefore, incompatible land uses are not present and this criterion does not apply.

e. Otherwise merit retention because of unusual size, size of the tree stand, historic association or species type, habitat or wildlife preservation considerations, or some combination thereof, as determined by the City.

Response: The Brookman Addition Concept Plan identified areas where natural resources are present. The application includes a detailed Natural Resource Assessment (Exhibit G). To the extent these mapped areas exist within the boundary of the subject site, the application is consistent with the Concept Plan. Trees within these areas are retained as shown in the Preliminary Plans. This criterion, as applicable, is met.

5. Tree retention requirements for properties located within the Old Town Overlay or projects subject to the infill standards of Chapter 16.68 are only subject to retention requirements identified in D.4. above.

Response: The subject site is not within the Old Town Overlay and is not subject to the infill standards of Chapter 16.68. This criterion is not applicable.

6. The Notice of Decision issued for the land use applications subject to this Section shall indicate which trees and woodlands will be retained as per subsection D of this Section, which may be removed or shall be retained as per subsection D of this Section and any limitations or conditions attached thereto.

Response: The Applicant understands the abovementioned tree information will be provided in the Notice of Decision issued for this land use application.

7. All trees, woodlands, and vegetation located on any private property accepted for dedication to the City for public parks and open space, greenways, Significant Natural Areas, wetlands, floodplains, or for storm water management or for other purposes, as a condition of a land use approval, shall be retained outright, irrespective of size, species, condition or other factors. Removal of any such trees, woodlands, and vegetation prior to actual dedication of the property to the City shall be cause for reconsideration of the land use plan approval.

Response: The Applicant is aware of the City's authority to restrict tree removal in the manner described above.

E. Tree Preservation Incentive

Retention of existing native trees on site which are in good health can be used to achieve the required mature canopy requirement of the development. The expected mature canopy can be calculated twice for existing trees. For example, if one existing tree with an expected mature canopy of 10 feet (78.5 square feet) is retained it will count as twice the existing canopy (157 square feet).

F. Additional Preservation Incentives

1. General Provisions. To assist in the preservation of trees, the City may apply one or more of the following flexible standards as part of the land use review approval. To the extent that the standards in this section conflict with the standards in other sections of this Title, the standards in this section shall apply except in cases where the City determines there would be an unreasonable risk to public health, safety, or welfare. Flexibility shall be requested by the applicant with justification provided within the tree preservation and protection report as part of the land use review process and is only applicable to trees that are eligible for credit towards the effective tree canopy cover of the site. A separate adjustment application as outlined in Section 16.84.030.A is not required.

2. Flexible Development Standards. The following flexible standards are available to applicants in order to preserve trees on a development site. These standards cannot be combined with any other reductions authorized by this code.

a. Lot size averaging. To preserve existing trees in the development plan for any Land Division under Division VII, lot size may be averaged to allow lots less than the minimum lot size required in the underlying zone as long as the average lot area is not less than that allowed by the underlying zone. No lot area shall be less than 80 percent of the minimum lot size allowed in the zone;

b. Setbacks. The following setback reductions will be allowed for lots preserving existing trees using the criteria in subsection (1) below. The following reductions shall be limited to the minimum reduction necessary to protect the tree.

(1) Reductions allowed:

(a.) Front yard - up to a 25 percent reduction of the dimensional standard for a front yard setback required in the base zone. Setback of garages may not be reduced by this provision.

(b.) Interior setbacks - up to a 40 percent reduction of the dimensional standards for an interior side and/or rear yard setback required in the base zone.

(c.) Perimeter side and rear yard setbacks shall not be reduced through this provision.

c. Approval criteria:

(1.) A demonstration that the reduction requested is the least required to preserve trees; and

(2.) The reduction will result in the preservation of tree canopy on the lot with the modified setbacks; and

(3.) The reduction will not impede adequate emergency access to the site and structure.

3. Sidewalks. Location of a public sidewalk may be flexible in order to preserve existing trees or to plant new large stature street trees. This flexibility may be accomplished through a curb-tight sidewalk or a meandering public sidewalk easement recorded over private property and shall be reviewed on a case by case basis in accordance with the provisions of the Engineering Design Manual, Street and Utility Improvement Standards. For preservation, this flexibility shall be the minimum required to achieve the desired effect. For planting, preference shall be given to retaining the planter strip and separation between the curb and sidewalk wherever practicable. If a preserved tree is to be utilized as a street tree, it must meet the criteria found in the Street Tree section, 16.142.060.

4. Adjustments to Commercial and Industrial development Standards. Adjustments to Commercial or Industrial Development standards of up to 20 feet additional building height are permitted provided;

a. At least 50% of a Significant Tree stand's of canopy within a development site (and not also within the sensitive lands or areas that areas dedicated to the City) is preserved;

b. The project arborist or qualified professional certifies the preservation is such that the connectivity and viability of the remaining significant tree stand is maximized;

c. Applicable buffering and screening requirements are met;

d. Any height adjustments comply with state building codes;

e. Significant tree stands are protected through an instrument or action subject to approval by the City Manager or the City manager's designee that demonstrates it will be permanently preserved and managed as such;

(1.) A conservation easement;

(2.) An open space tract;

(3.) A deed restriction; or

(4.) Through dedication and acceptance by the City.

Response: The Applicant is not pursuing any of the above-listed incentives. The criteria do not apply.

G. Tree Protection During Development

The applicant shall prepare and submit a final Tree and Woodland Plan prior to issuance of any construction permits, illustrating how identified trees and woodlands will be retained, removed or protected as per the Notice of Decision. Such plan shall specify how trees and woodlands will be protected from damage or destruction by construction activities, including protective fencing, selective pruning and root treatments, excavation techniques, temporary drainage systems, and like methods. At a minimum, trees to be protected shall have the area within the drip line of the tree protected from grading, stockpiling, and all other construction related activity unless specifically reviewed and recommended by a certified arborist or other qualified professional. Any work within the dripline of the tree shall be supervised by the project arborist or other qualified professional onsite during construction.

Response: A Preliminary Tree Preservation and Removal Plan, pursuant to 16.142.070.G above, is included in the Preliminary Plans (Exhibit A). The criterion is met.

H. Penalties

Violations of this Section shall be subject to the penalties defined by Section 16.02.040, provided that each designated tree or woodland unlawfully removed or cut shall be deemed a separate offense.

Response: The Applicant is aware of the penalty for the unlawful removal of trees protected by this ordinance.

Chapter 16.144 - WETLAND, HABITAT AND NATURAL AREAS

16.144.010 - Generally

Unless otherwise permitted, residential, commercial, industrial, and institutional uses in the City shall comply with the following wetland, habitat and natural area standards if applicable to the site as identified on the City's Wetland Inventory, the Comprehensive Plan Natural Resource Inventory, the Regionally Significant Fish and Wildlife Habitat Area map adopted by Metro, and by reference into this Code and the Comprehensive Plan. Where the applicability of a standard overlaps, the more stringent regulation shall apply.

Response: The Applicant's Natural Resource Assessment (Exhibit G) identifies and describes the significance of on-site wetlands as well as the limited impacts and significant restoration that is included as part of this subdivision application. No other sensitive habitat or natural areas are identified on the site or within 50 feet of the site.

16.144.020 - Standards

A. The applicant shall identify and describe the significance and functional value of wetlands on the site and protect those wetlands from adverse effects of the development. A facility complies with this standard if it complies with the criteria of subsections A.1.a and A.1.b, below:

1. The facility will not reduce the area of wetlands on the site, and development will be separated from such wetlands by an area determined by the Clean Water Services Design and Construction Standards R&O 00-7 or its replacement provided Section 16.140.090 does not require more than the requested setback.

a. A natural condition such as topography, soil, vegetation or other feature isolates the area of development from the wetland.

Response: The wetlands planned to be retained, as described in the Natural Resource Assessment (Exhibit G), the Clean Water Services – Service Provider Letter (Exhibit H), and the Department of State Lands Wetland Delineation Concurrence Letter (Exhibit I), are provided with 50-foot vegetated corridors that buffer the wetlands from the planned on-site improvements. This criterion is met.

b. Impact mitigation measures will be designed, implemented, and monitored to provide effective protection against harm to the wetland from sedimentation, erosion, loss of surface or ground water supply, or physical trespass.

Response: As described in the Clean Water Services- Service Provider Letter (Exhibit H), the planned on-site improvements are subject to mitigation measures to protect water quality according to Clean Water Services standards. The criterion is met.

c. A lesser setback complies with federal and state permits, or standards that will apply to state and federal permits, if required.

Response: As described in the Service Provider letter from Clean Water Services (Exhibit H), authorization from the appropriate state and federal agencies is required. This criterion, as applicable, can be met.

2. If existing wetlands are proposed to be eliminated by the facility, the applicant shall demonstrate that the project can, and will develop or enhance an area of wetland on the site or in the same drainage basin that is at least equal to the area and functional value of wetlands eliminated.

Response: The Service Provider Letter from Clean Water Services (Exhibit H) outlines the planned encroachment areas and required mitigation. This criterion is met.

B. The applicant shall provide appropriate plans and text that identify and describe the significance and functional value of natural features on the site (if identified in the Community Development Plan, Part 2) and protect those features from impacts of the development or mitigate adverse effects that will occur. A facility complies with this standard if:

Response: The City's Comprehensive Plan does not include the area annexed to the City in 2017. However, the Brookman Addition Concept Plan, adopted in 2009, identified areas where natural resources are present. The application includes a detailed Natural Resource Assessment (Exhibit G) which describes the extent of the natural resources, the limited impacts of planned site improvements and significant restoration.

1. **The site does not contain an endangered or threatened plant or animal species or a critical habitat for such species identified by Federal or State government (and does not contain significant natural features identified in the Community Development Plan, Part 2, Natural Resources and Recreation Plan).**

Response: The Natural Resource Assessment (Exhibit G) describes the extent of natural resources on site. The Natural Resource Assessment did not identify endangered or threatened plant or animal species or a critical habitat on the subject site. This criterion does not apply.

2. **The facility will comply with applicable requirements of the zone.**

Response: As demonstrated throughout this application, the planned subdivision complies with the applicable requirements of the Medium Density Residential Low and Medium Density Residential High Land Use Districts. This criterion is met.

3. **The applicant will excavate and store topsoil separate from subsurface soil, and shall replace the topsoil over disturbed areas of the site not covered by buildings or pavement or provide other appropriate medium for re-vegetation of those areas, such as yard debris compost.**

Response: As demonstrated in the Preliminary Plans and Natural Resource Assessment, the majority of the identified natural resource areas are planned to be retained and protected from disturbance. The disturbed areas will be mitigated according to the Service Provider Letter from Clean Water Services (Exhibit H). This criterion does not apply.

4. **The applicant will retain significant vegetation in areas that will not be covered by buildings or pavement or disturbed by excavation for the facility; will replant areas disturbed by the development and not covered by buildings or pavement with native species vegetation unless other vegetation is needed to buffer the facility; will protect disturbed areas and adjoining habitat from potential erosion until replanted vegetation is established; and will provide a plan or plans identifying each area and its proposed use.**

Response: As demonstrated in this narrative and the Preliminary Plans, areas with significant vegetation are planned to be retained in the natural resource and open space areas. The Preliminary Landscape, Street Tree, and Open Space Plan of Exhibit A illustrates the existing and planned plantings throughout the site. The Grading, Erosion and Sediment

Control Plan of Exhibit A illustrates the location of sediment control and tree protection fencing. This criterion is met.

> **5.** **Development associated with the facility will be set back from the edge of a significant natural area by an area determined by the Clean Water Services Design and Construction standards R&O 00-7 or its replacement, provided Section 16.140.090A does not require more than the requested setback. Lack of adverse effect can be demonstrated by showing the same sort of evidence as in subsection A.1 above.**

Response: The wetlands planned to be retained, as described in the Natural Resource Assessment (Exhibit G) and the Clean Water Services – Service Provider Letter (Exhibit H), are provided with 50-foot vegetated corridors that buffer the wetlands from the planned on-site improvements. This criterion is met.

> **C.** **When the Regionally Significant Fish and Wildlife Habitat map indicates there are resources on the site or within 50 feet of the site, the applicant shall provide plans that show the location of resources on the property. If resources are determined to be located on the property, the plans shall show the value of environmentally sensitive areas using the methodologies described in Sections 1 and 2 below.**

Response: The Applicant's Natural Resource Assessment (Exhibit G) identifies and describes the natural resources on the site. The Natural Resource Assessment identified five jurisdictional wetlands and no other environmentally sensitive areas. Cedar Creek and its associated wetlands are located at least 50 feet from the site. Therefore, there are no "Regionally Significant Fish and Wildlife Habitat" areas on the site or within 50 feet of the site. Therefore, the criteria do not apply.

> **16.144.030 - Exceptions to Standards**
>
> **In order to protect environmentally sensitive areas that are not also governed by floodplain, wetland and Clean Water Services vegetated corridor regulations, the City allows flexibility of the specific standards in exchange for the specified amount of protection inventoried environmentally sensitive areas as defined in this code.**
>
> **A. Process**
>
> **The flexibility of standards is only applicable when reviewed and approved as part of a land use application and shall require no additional fee or permit provided criteria is addressed. In the absence of a land use application, review may be processed as a Type 1 administrative interpretation.**

B. Standards modified

1. **Lot size — Not withstanding density transfers permitted through Chapter 16.40, when a development contains inventoried regionally significant fish and wildlife habitats as defined in Section 16.144.020 above, lot sizes may be reduced up to ten percent (10%) below the minimum lot size of the zone when an equal amount of inventoried resource above and beyond that already required to be protected is held in a public or private open space tract or otherwise protected from further development.**

2. **Setbacks — For residential zones, the setback may be reduced up to thirty percent (30%) for all setbacks except the garage setback provided the following criteria are satisfied:**

   a. **The setback reduction must result in an equal or greater amount of significant fish and/or wildlife habitat protection. Protection shall be guaranteed with deed restrictions or public or private tracts.**

   b. **In no case shall the setback reduction supersede building code and/or Tualatin Valley Fire and Rescue separation requirements.**

   c. **In no case shall the setback be reduced to less than five feet unless otherwise provided for by the underlying zone.**

3. **Density — per Section 16.10.020 (Net Buildable Acre definition), properties with environmentally sensitive areas on site may opt to exclude the environmentally sensitive areas from the minimum density requirements provided the sensitive areas are protected via tract or restrictive easement. A proposal to remove said area from the density calculation must include: a delineation of the resource in accordance with Section 16.144.020C, the acreage being protected, and the net reduction below the normally required minimum for accurate reporting to Metro.**

4. **Parking — Per Section 16.94.020.B.6, 10-25% of the required parking spaces may be reduced in order to protect inventoried regionally significant fish and wildlife habitat areas, provided these resources are protected via deed restrictions or held in public or private tracts.**

5. **Landscaping — Per Section 16.92.030.B.6, exceptions may be granted to the landscaping standards in certain circumstances as outlined in that section.**

Response: The application does not include exceptions to the applicable code standards listed above. The criteria do not apply.

Chapter 16.156 - ENERGY CONSERVATION

16.156.010 - Purpose

This Chapter and applicable portions of Chapter 5 of the Community Development Plan provide for natural heating and cooling opportunities in new development. The requirements of this Chapter shall not result in development exceeding allowable densities or lot coverage, or the destruction of existing trees.

16.156.020 - Standards

A. Building Orientation - The maximum number of buildings feasible shall receive sunlight sufficient for using solar energy systems for space, water or industrial process heating or cooling. Buildings and vegetation shall be sited with respect to each other and the topography of the site so that unobstructed sunlight reaches the south wall of the greatest possible number of buildings between the hours of 9:00 AM and 3:00 PM, Pacific Standard Time on December 21st.

Response: The majority of the planned streets run east-west allowing lots to face north or south and maximizing the unshaded exposure of the south sides of homes. The criterion is met.

B. Wind - The cooling effects of prevailing summer breezes and shading vegetation shall be accounted for in site design. The extent solar access to adjacent sites is not impaired vegetation shall be used to moderate prevailing winter wind on the site.

Response: The site design of the planned subdivision as well as mandatory building setbacks will allow for adequate air circulation and cooling. There is adequate room for the addition of vegetation to moderate prevailing winter winds from the south and east. The criterion is met.

16.156.030 - Variance to Permit Solar Access

Variances from zoning district standards relating to height, setback and yard requirements approved as per Chapter 16.84 may be granted by the Commission where necessary for the proper functioning of solar energy systems, or to otherwise preserve solar access on a site or to an adjacent site.

Response: The application does not include a variance from applicable standards. This criterion does not apply.

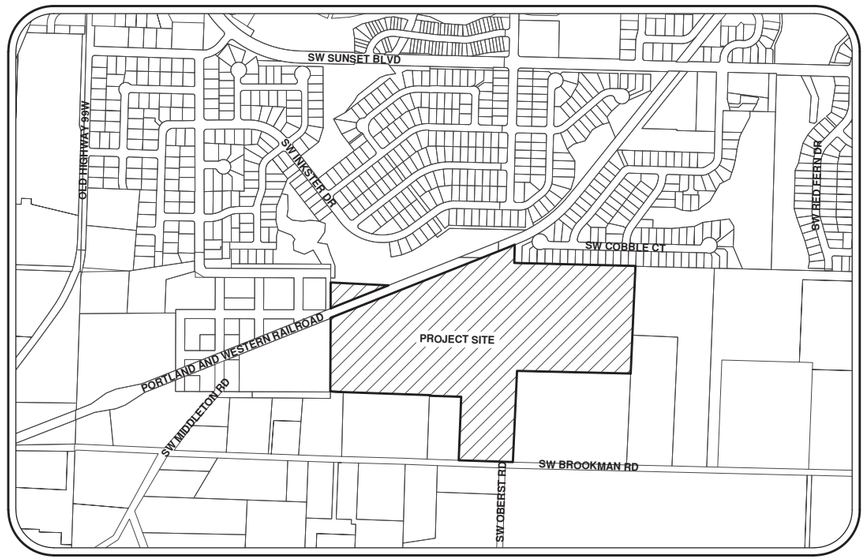
IV. Conclusion

The required findings have been made, and this written narrative and accompanying documentation demonstrate the application is consistent with the applicable provisions of the City of Sherwood Municipal Code. The evidence in the record is substantial and supports approval of the application. The City can rely on this information in its approval of this application.

Exhibit A: Preliminary Plans

MIDDLEBROOK SUBDIVISION

SUBDIVISION APPLICATION



VICINITY MAP

1" = 500'

SITE MAP

1" = 200'

LEGEND

	EXISTING	PROPOSED		EXISTING	PROPOSED
DECIDUOUS TREE			STORM SEWER CLEAN OUT		
CONIFEROUS TREE			STORM SEWER CATCH BASIN		
FIRE HYDRANT			STORM SEWER AREA DRAIN		
WATER BLOWOFF			STORM SEWER MANHOLE		
WATER METER			GAS METER		
WATER VALVE			GAS VALVE		
DOUBLE CHECK VALVE			GUY WIRE ANCHOR		
AIR RELEASE VALVE			UTILITY POLE		
SANITARY SEWER CLEAN OUT			POWER VAULT	P	P
SANITARY SEWER MANHOLE			POWER JUNCTION BOX		
SIGN			POWER PEDESTAL		
STREET LIGHT			COMMUNICATIONS VAULT	C	C
MAILBOX	MB	MB	COMMUNICATIONS JUNCTION BOX		
			COMMUNICATIONS RISER		

	EXISTING	PROPOSED
RIGHT-OF-WAY LINE		
BOUNDARY LINE		
PROPERTY LINE		
CENTERLINE		
DITCH		
CURB		
EDGE OF PAVEMENT		
EASEMENT		
FENCE LINE		
GRAVEL EDGE		
POWER LINE	PWR	PWR
OVERHEAD WIRE	OHW	OHW
COMMUNICATIONS LINE	COM	COM
FIBER OPTIC LINE	CFO	CFO
GAS LINE	GAS	GAS
STORM SEWER LINE	STM	STM
SANITARY SEWER LINE	SAN	SAN
WATER LINE	WAT	WAT

SHEET INDEX

APPLICANT

BROOKMAN DEVELOPMENT, LLC
P.O. BOX 61426
VANCOUVER, WA 98666

PLANNING/ENGINEERING/SURVEYING/ NATURAL RESOURCES/ARBORIST/ LANDSCAPE ARCHITECTURE FIRM

AKS ENGINEERING & FORESTRY, LLC
CONTACT: CHRIS GOODELL
12965 SW HERMAN ROAD, SUITE 100
TUALATIN, OR 97062
PH: 503-563-6151
FAX: 503-563-6152

PROJECT LOCATION: 17495 AND 17601 SW BROOKMAN ROAD
SHERWOOD, OREGON 97140

PROPERTY DESCRIPTION: TAX LOT 103, TAX MAP 3S1 6, AND TAX LOT 100 (ADJUSTED), TAX MAP 3S1 6B, LOCATED IN THE NORTHEAST AND NORTHWEST 1/4'S OF SECTION 6, TOWNSHIP 3 SOUTH, RANGE 1 WEST, WILLAMETTE MERIDIAN, WASHINGTON COUNTY, OREGON.

EXISTING LAND USE: RESIDENTIAL PROPERTIES WITH DRIVEWAYS, HOUSES, ASSOCIATED BUILDINGS AND FARM FIELDS.

PROJECT PURPOSE: RESIDENTIAL SUBDIVISION FOR THE FUTURE CONSTRUCTION OF SINGLE-FAMILY DETACHED HOMES.

VERTICAL DATUM: ELEVATIONS ARE BASED ON WASHINGTON COUNTY BENCHMARK NO. 411, LOCATED ON THE EAST SIDE OF BROOKMAN ROAD, APPROXIMATELY 0.5 MILES EAST OF OBERST ROAD, AT THE 90 DEGREE CORNER IN BROOKMAN ROAD. ELEVATION = 224.328 FEET (NGVD 29).

AKS ENGINEERING & FORESTRY, LLC
12965 SW HERMAN RD STE 100
TUALATIN, OR 97062
P: 503.563.6151
F: 503.563.6152
aks-eng.com

ENGINEERING · SURVEYING · NATURAL RESOURCES
FORESTRY · PLANNING · LANDSCAPE ARCHITECTURE

MIDDLEBROOK SUBDIVISION
SHERWOOD OREGON
WASHINGTON COUNTY TAX MAP 3S 1 06/06B
TAX LOT 103 AND 100 (ADJUSTED)

COVER SHEET WITH VICINITY AND SITE MAPS

DESIGNED BY:	ARS/PAS
DRAWN BY:	ARS/CTS
CHECKED BY:	AHH
SCALE:	AS NOTED
DATE: 12-18-2018	

REGISTERED PROFESSIONAL ENGINEER OREGON JULY 25, 2001 PAUL A. SELLKE
PRELIMINARY NOT FOR CONSTRUCTION
RENEWAL DATE: 6/30/20

REVISIONS

JOB NUMBER 3591

SHEET P01

POTENTIAL PLAN ELEMENTS, LOCATIONS, AND DETAILS AS SHOWN ARE CONCEPTUAL AND SUBJECT TO CHANGE

AKS ENGINEERING & FORESTRY, LLC
12965 SW HERMAN RD STE 100
TUALATIN, OR 97062
P: 503.563.6151
F: 503.563.6152
aks-eng.com

AKS

ENGINEERING · SURVEYING · NATURAL RESOURCES
FORESTRY · PLANNING · LANDSCAPE ARCHITECTURE

MIDDLEBROOK SUBDIVISION

SHERWOOD OREGON
TAX LOT 103 AND 100 (ADJUSTED) WASHINGTON COUNTY TAX MAP 3 1 06

CONCEPTUAL OPEN SPACE PLAN

DESIGNED BY:	NKP
DRAWN BY:	NKP
CHECKED BY:	KAH
SCALE:	AS NOTED

DATE: 12-18-2018

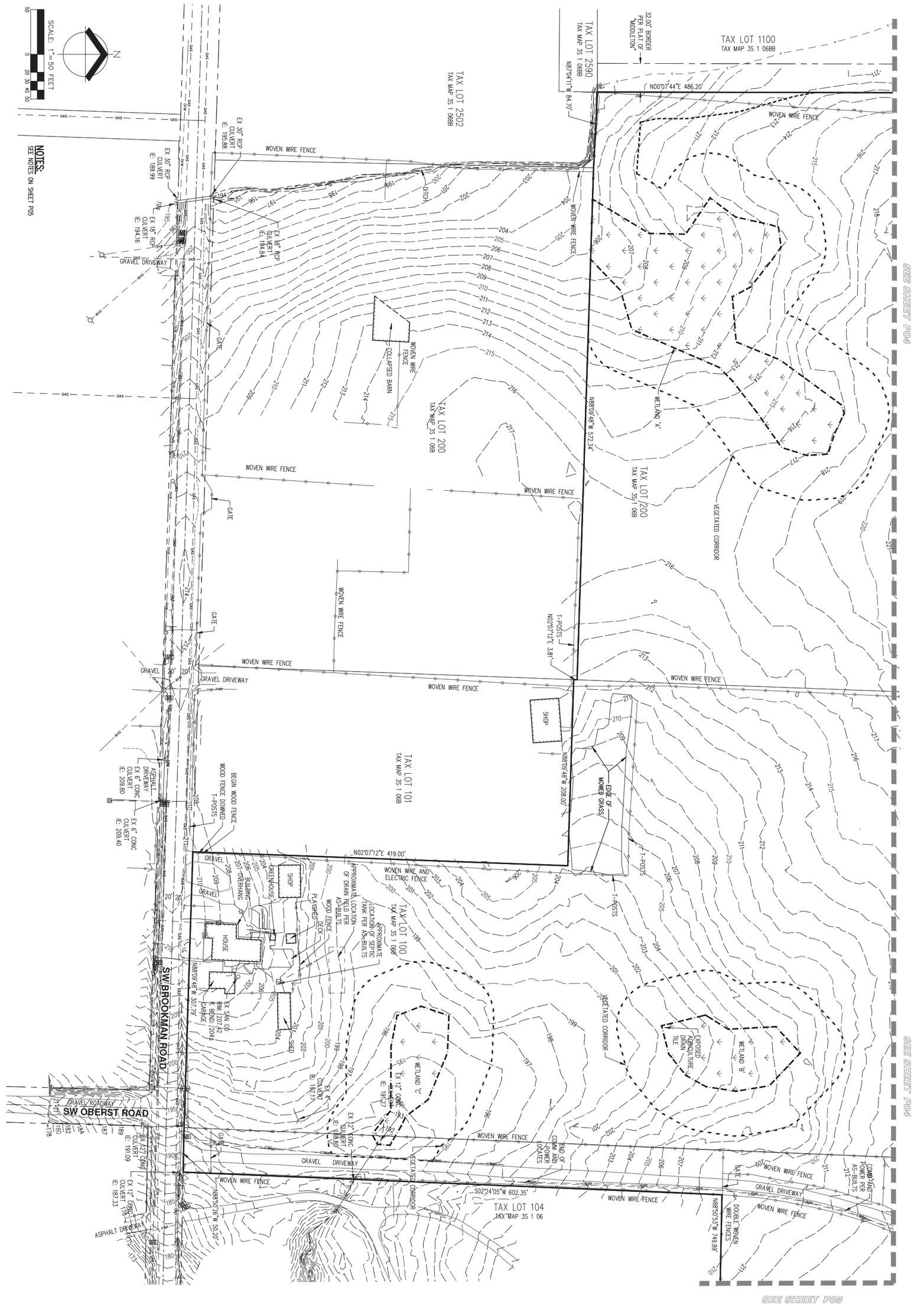
REGISTERED LANDSCAPE ARCHITECT
PRELIMINARY NOT FOR CONSTRUCTION
OREGON
12/06/13

REVISIONS

JOB NUMBER
3591

SHEET
P02

\\...\cad\base_drawings\3591_cth.dwg



EXISTING CONDITIONS PLAN (1 OF 3)

MIDDLEBROOK SUBDIVISION

SHERWOOD OREGON

TAX LOT 103 AND 100 (ADJUSTED) WASHINGTON COUNTY TAX MAP 3S 1 06/06B

JOB NUMBER 3591

SHEET P03

DESIGNED BY: CC/MK
DRAWN BY: MK
CHECKED:
SCALE: AS NOTED
DATE: 12-18-2018

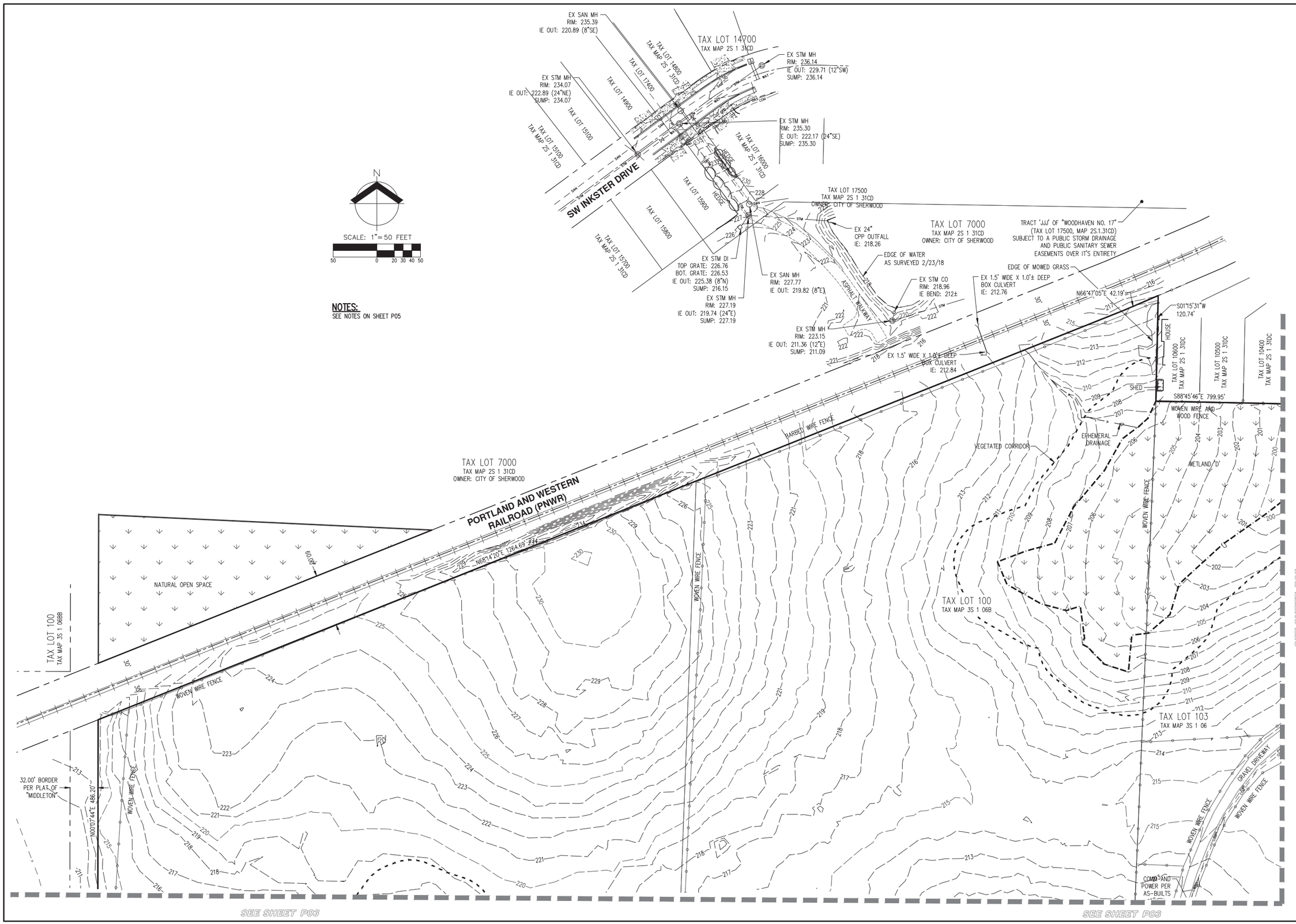
REVISIONS
RENEWAL 6/30/19

REGISTERED PROFESSIONAL LAND SURVEYOR
OREGON JULY 14, 2006 MONTE S. KLING 89558PLS
RENEWAL: 6/30/19

PRELIMINARY NOT FOR CONSTRUCTION

AKS ENGINEERING & FORESTRY, LLC
12965 SW HERMAN RD STE 100
TUALATIN, OR 97062
P: 503.563.6151
F: 503.563.6152
aks-eng.com

ENGINEERING • SURVEYING • NATURAL RESOURCES
FORESTRY • PLANNING • LANDSCAPE ARCHITECTURE



AKS ENGINEERING & FORESTRY, LLC
12965 SW HERMAN RD STE 100
TUALATIN, OR 97062
P: 503.563.6151
F: 503.563.6152
aks-eng.com

ENGINEERING • SURVEYING • NATURAL RESOURCES
FORESTRY • PLANNING • LANDSCAPE ARCHITECTURE

MIDDLEBROOK SUBDIVISION

SHERWOOD OREGON

TAX LOT 103 AND 100 (ADJUSTED)

WASHINGTON COUNTY TAX MAP 3S 1 06/06B

EXISTING CONDITIONS PLAN (2 OF 3)

DESIGNED BY:	
DRAWN BY:	CC/MK
CHECKED	MK
SCALE:	AS NOTED
DATE: 12-18-2018	

REGISTERED PROFESSIONAL LAND SURVEYOR
OREGON
JANUARY 12, 2016
MICHAEL S. KALINA
89558PLS
RENEWS: 6/30/19

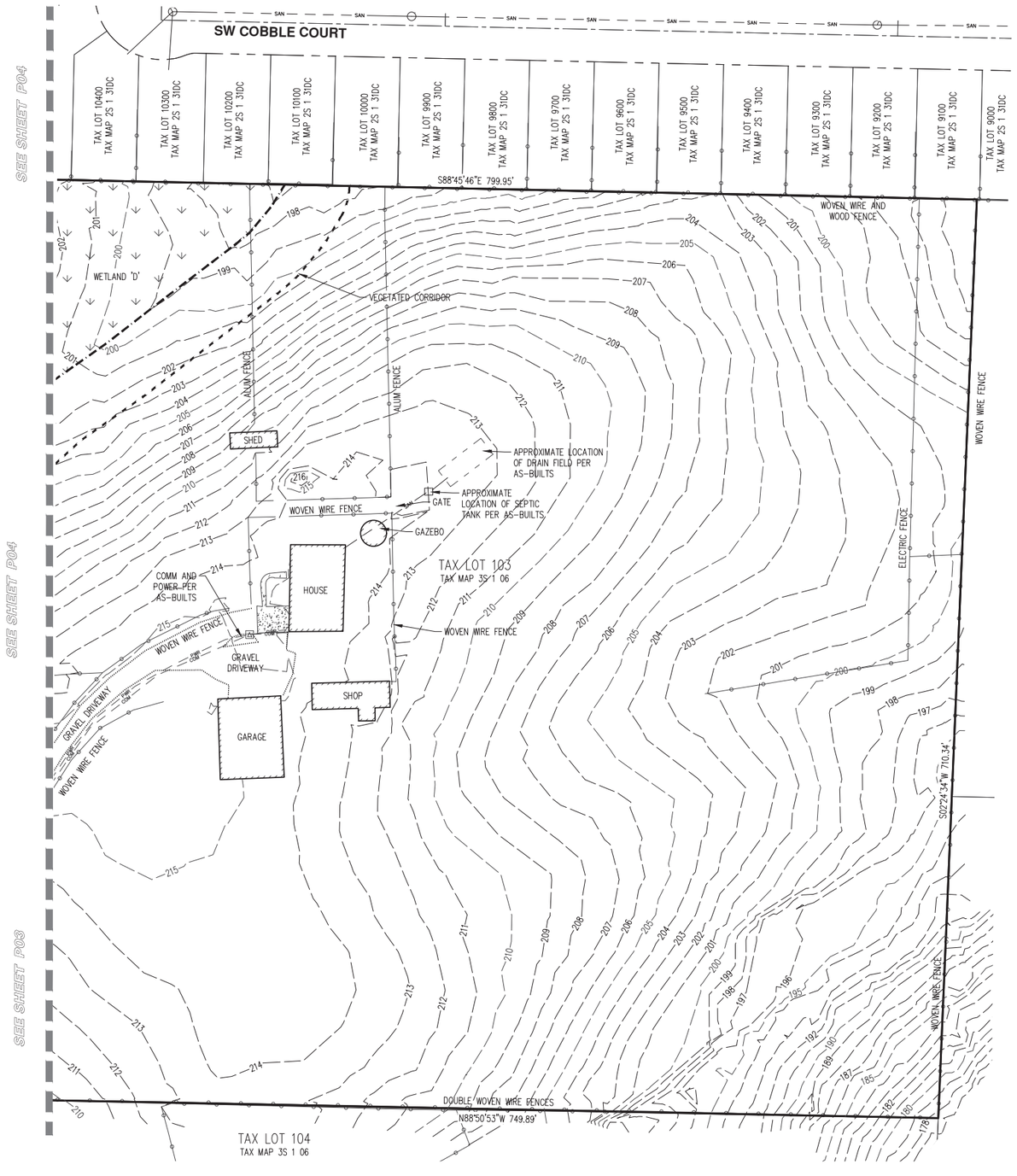
PRELIMINARY NOT FOR CONSTRUCTION

REVISIONS

JOB NUMBER
3591

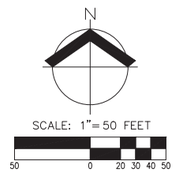
SHEET
P04

AKS DRAWING FILE: 3591 P02 EXCOND.DWG | LAYOUT: P04



NOTES:

1. UTILITIES SHOWN ARE BASED ON UNDERGROUND UTILITY LOCATE MARKINGS AS PROVIDED BY OTHERS, PROVIDED PER UTILITY LOCATE TICKET NUMBERS 18027966 AND 18030724. THE SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND LOCATES REPRESENT THE ONLY UTILITIES IN THE AREA. CONTRACTORS ARE RESPONSIBLE FOR VERIFYING ALL EXISTING CONDITIONS PRIOR TO BEGINNING CONSTRUCTION.
2. FIELD WORK WAS CONDUCTED MARCH 17 – APRIL 13, 2017 AND FEBRUARY 5 – MARCH 2, 2018.
3. VERTICAL DATUM: ELEVATIONS ARE BASED ON WASHINGTON COUNTY BENCHMARK NO. 411, LOCATED ON THE EAST SIDE OF BROOKMAN ROAD, APPROXIMATELY 0.5 MILES EAST OF OBERST ROAD, AT THE 90 DEGREE CORNER IN BROOKMAN ROAD. ELEVATION = 224.328 FEET (NGVD 29).
4. THIS MAP DOES NOT CONSTITUTE A PROPERTY BOUNDARY SURVEY.
5. SURVEY IS ONLY VALID WITH SURVEYOR'S STAMP AND SIGNATURE.
6. BUILDING FOOTPRINTS ARE MEASURED TO SIDING UNLESS NOTED OTHERWISE. CONTACT SURVEYOR WITH QUESTIONS REGARDING BUILDING TIES.
7. CONTOUR INTERVAL IS 1 FOOT.
8. TREE DIAMETERS WERE DETERMINED BY VISUAL INSPECTION. TREE INFORMATION IS SUBJECT TO CHANGE UPON ARBORIST INSPECTION. REFER TO TREE PRESERVATION AND REMOVAL PLAN AND ARBORIST TREE INVENTORY.
9. WETLAND BOUNDARIES SHOWN WERE VERIFIED BY AKS ENGINEERING & FORESTRY, LLC. ON MARCH 22–24, 27, 31, 2017, AND FEBRUARY 14, 2018 AND WERE PROFESSIONALLY SURVEYED BY AKS ON MARCH 28–APRIL 1, 2017 AND FEBRUARY 20, 2018.



AKS ENGINEERING & FORESTRY, LLC
12965 SW HERMAN RD STE 100
TUALATIN, OR 97062
P: 503.563.6151
F: 503.563.6152
aks-eng.com

ENGINEERING • SURVEYING • NATURAL RESOURCES
FORESTRY • PLANNING • LANDSCAPE ARCHITECTURE

MIDDLEBROOK SUBDIVISION

SHERWOOD OREGON
TAX LOT 103 AND 100 (ADJUSTED) WASHINGTON COUNTY TAX MAP 3S 1 06/06B

EXISTING CONDITIONS PLAN (3 OF 3)

DESIGNED BY:
DRAWN BY: CC/MK
CHECKED MK
SCALE: AS NOTED
DATE: 12-18-2018

REGISTERED PROFESSIONAL LAND SURVEYOR
PRELIMINARY NOT FOR CONSTRUCTION
OREGON
JANUARY 12, 2016
MICHAEL S. KALINA
89558PLS
RENEWS: 6/30/19

REVISIONS

JOB NUMBER 3591

SHEET P05

AKS DRAWING FILE: 3591 P02 EXCOND.DWG | LAYOUT: P05

SW INKSTER DRIVE

TAX LOT 15400
TAX MAP 2S 1 31CD

TAX LOT 15500

TAX LOT 15600

TAX LOT 15700
TAX MAP 2S 1 31CD

TAX LOT 7000
TAX MAP 2S 1 31CD
OWNER: CITY OF SHERWOOD

SW COBBLE COURT

TAX LOT 10600
TAX MAP 2S 1 31DC

TAX LOT 10500

TAX LOT 10400

TAX LOT 10300

TAX LOT 10200

TAX LOT 10100

TAX LOT 10000

TAX LOT 9900

TAX LOT 9800

TAX LOT 9700

TAX LOT 9600

TAX LOT 9500

TAX LOT 9400

TAX LOT 9300

TAX LOT 9200

TAX LOT 9100

TAX LOT 9000

TAX LOT 8900
TAX MAP 2S 1 31DC

SW HARRISON STREET

TAX LOT 100
TAX MAP 3S 1 06BB

PORTLAND AND WESTERN RAILROAD (PNWR)

MDRL

MDRL

MDRH

MDRL

TAX LOT 100
TAX MAP 3S 1 06

TAX LOT 1100
TAX MAP 3S 1 06BB

TAX LOT 101
TAX MAP 3S 1 06

TAX LOT 104
TAX MAP 3S 1 06

TAX LOT 2590
TAX MAP 3S 1 06BB

TAX LOT 2502
TAX MAP 3S 1 06BB

TAX LOT 200
TAX MAP 3S 1 06B

TAX LOT 101
TAX MAP 3S 1 06B

SW BROOKMAN ROAD

SW OBERST ROAD

N

SCALE: 1" = 80 FEET

80 0 32 48 64 80

LEGEND

MEDIUM DENSITY RESIDENTIAL LOW – MDRL (±1,482,315 SF)

MEDIUM DENSITY RESIDENTIAL HIGH – MDRH (±171,205 SF)

CITY ZONE LIMITS DEPICTED ON THIS EXHIBIT ARE BASED ON SCALED DIMENSIONS AND ZONING INFORMATION PROVIDED ON THE SHERWOOD PLAN AND ZONE MAP OBTAINED FROM THE CITY OF SHERWOOD WEBSITE.

AKS ENGINEERING & FORESTRY, LLC
12965 SW HERMAN RD STE 100
TUALATIN, OR 97062
P: 503.563.6151
F: 503.563.6152
aks-eng.com

AKS ENGINEERING - SURVEYING - NATURAL RESOURCES
FORESTRY - PLANNING - LANDSCAPE ARCHITECTURE

MIDDLEBROOK SUBDIVISION

SHERWOOD OREGON

TAX LOT 103 AND 100 (ADJUSTED) WASHINGTON COUNTY TAX MAP 3S 1 06/06B

CITY ZONING MAP

DESIGNED BY:	ARS/PAS
DRAWN BY:	ARS/CTS
CHECKED BY:	AHH
SCALE:	AS NOTED

DATE: 12-18-2018

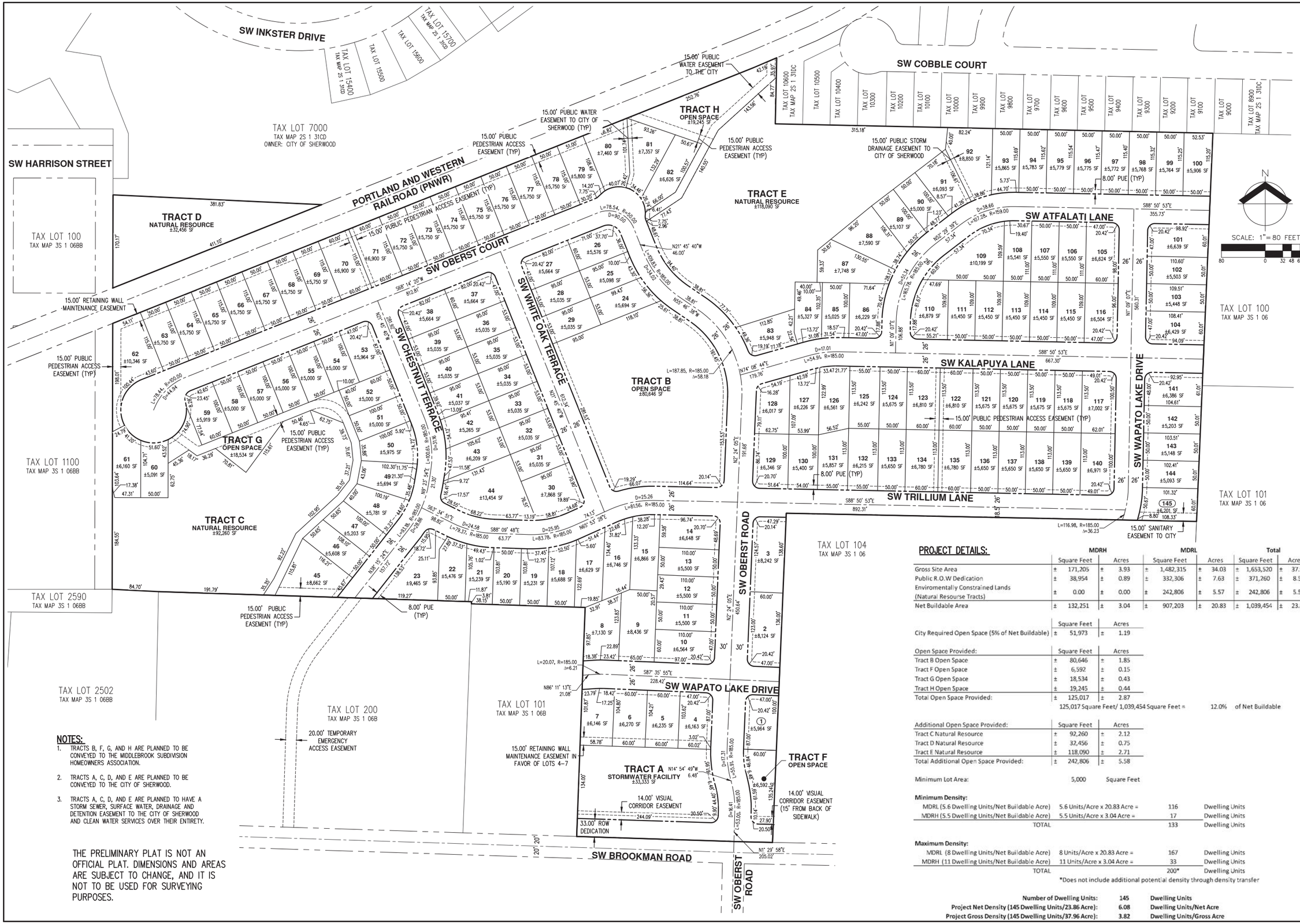
REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 09, 2001
ANDREW H. HARTMAN
PRELIMINARY NOT FOR CONSTRUCTION
RENEWAL DATE: 6/30/20

REVISIONS

JOB NUMBER
3591

SHEET
P06

AKS DRAWING FILE: 3591 P03 CITY ZONE MAP.DWG | LAYOUT: P06



NOTES:

1. TRACTS B, F, G, AND H ARE PLANNED TO BE CONVEYED TO THE MIDDLEBROOK SUBDIVISION HOMEOWNERS ASSOCIATION.
2. TRACTS A, C, D, AND E ARE PLANNED TO BE CONVEYED TO THE CITY OF SHERWOOD.
3. TRACTS A, C, D, AND E ARE PLANNED TO HAVE A STORM SEWER, SURFACE WATER, DRAINAGE AND DETENTION EASEMENT TO THE CITY OF SHERWOOD AND CLEAN WATER SERVICES OVER THEIR ENTIRETY.

THE PRELIMINARY PLAT IS NOT AN OFFICIAL PLAT. DIMENSIONS AND AREAS ARE SUBJECT TO CHANGE, AND IT IS NOT TO BE USED FOR SURVEYING PURPOSES.

PROJECT DETAILS:

	MDRH Square Feet	MDRH Acres	MDRL Square Feet	MDRL Acres	Total Square Feet	Total Acres
Gross Site Area	± 171,205	± 3.93	± 1,482,315	± 34.03	± 1,653,520	± 37.96
Public R.O.W Dedication	± 38,954	± 0.89	± 332,306	± 7.63	± 371,260	± 8.52
Enviromentally Constrained Lands (Natural Resourse Tracts)	± 0.00	± 0.00	± 242,806	± 5.57	± 242,806	± 5.57
Net Buildable Area	± 132,251	± 3.04	± 907,203	± 20.83	± 1,039,454	± 23.86

	Square Feet	Acres
City Required Open Space (5% of Net Buildable)	± 51,973	± 1.19

Open Space Provided:	Square Feet	Acres
Tract B Open Space	± 80,646	± 1.85
Tract F Open Space	± 6,592	± 0.15
Tract G Open Space	± 18,534	± 0.43
Tract H Open Space	± 19,245	± 0.44
Total Open Space Provided:	± 125,017	± 2.87

125,017 Square Feet/ 1,039,454 Square Feet = 12.0% of Net Buildable

Additional Open Space Provided:	Square Feet	Acres
Tract C Natural Resource	± 92,260	± 2.12
Tract D Natural Resource	± 32,456	± 0.75
Tract E Natural Resource	± 118,090	± 2.71
Total Additional Open Space Provided:	± 242,806	± 5.58

Minimum Lot Area: 5,000 Square Feet

Minimum Density:

MDRL (5.6 Dwelling Units/Net Buildable Acre)	5.6 Units/Acre x 20.83 Acre =	116	Dwelling Units
MDRH (5.5 Dwelling Units/Net Buildable Acre)	5.5 Units/Acre x 3.04 Acre =	17	Dwelling Units
TOTAL		133	Dwelling Units

Maximum Density:

MDRL (8 Dwelling Units/Net Buildable Acre)	8 Units/Acre x 20.83 Acre =	167	Dwelling Units
MDRH (11 Dwelling Units/Net Buildable Acre)	11 Units/Acre x 3.04 Acre =	33	Dwelling Units
TOTAL		200*	Dwelling Units

*Does not include additional potential density through density transfer

Number of Dwelling Units: 145 Dwelling Units
Project Net Density (145 Dwelling Units/23.86 Acre): 6.08 Dwelling Units/Net Acre
Project Gross Density (145 Dwelling Units/37.96 Acre): 3.82 Dwelling Units/Gross Acre

AKS ENGINEERING & FORESTRY, LLC
12965 SW HERMAN RD STE 100
TUALATIN, OR 97062
P: 503.563.6151
F: 503.563.6152
aks-eng.com

ENGINEERING - SURVEYING - NATURAL RESOURCES
FORESTRY - PLANNING - LANDSCAPE ARCHITECTURE

MIDDLEBROOK SUBDIVISION

SHERWOOD OREGON
TAX LOT 103 AND 100 (ADJUSTED) WASHINGTON COUNTY TAX MAP 3S 1 06/06B

PRELIMINARY SUBDIVISION PLAT

DESIGNED BY: ARS/PAS
DRAWN BY: ARS/CTS
CHECKED BY: AHH
SCALE: AS NOTED
DATE: 12-18-2018

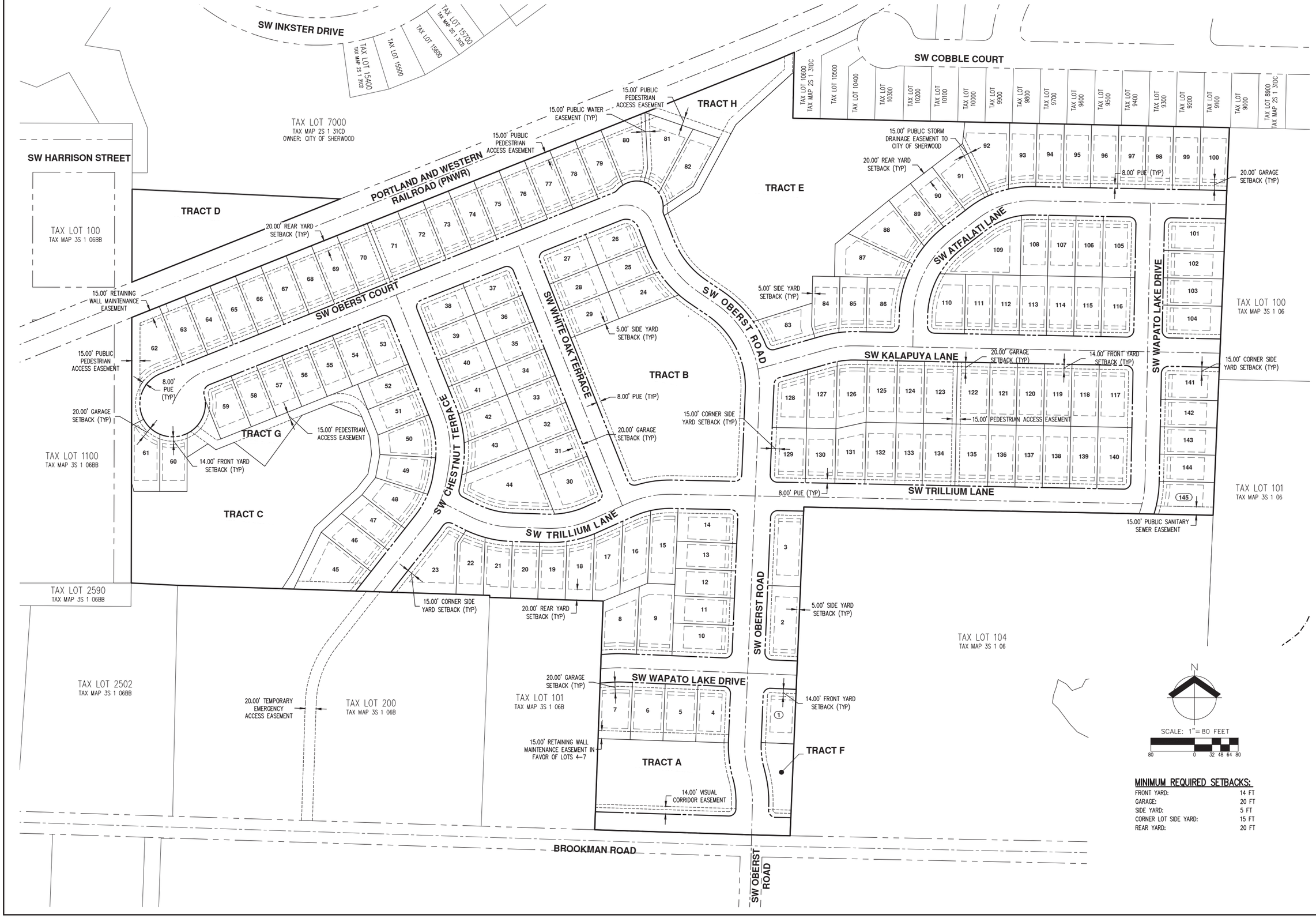
REGISTERED PROFESSIONAL LAND SURVEYOR
PRELIMINARY NOT FOR CONSTRUCTION
OREGON
JANUARY 12, 2016
MICHAEL S. KALINA
89558PLS
RENEWS: 6/30/19

REVISIONS

JOB NUMBER 3591

SHEET P07

AKS DRAWING FILE: 3591 P03 PRELIM PLAT.DWG | LAYOUT: P07



MINIMUM REQUIRED SETBACKS:

FRONT YARD:	14 FT
GARAGE:	20 FT
SIDE YARD:	5 FT
CORNER LOT SIDE YARD:	15 FT
REAR YARD:	20 FT

AKS ENGINEERING & FORESTRY, LLC
12965 SW HERMAN RD STE 100
TUALATIN, OR 97062
P: 503.563.6151
F: 503.563.6152
aks-eng.com

ENGINEERING · SURVEYING · NATURAL RESOURCES
FORESTRY · PLANNING · LANDSCAPE ARCHITECTURE

MIDDLEBROOK SUBDIVISION

SHERWOOD, OREGON

TAX LOT 103 AND 100 (ADJUSTED)

WASHINGTON COUNTY TAX MAP 3S 1 06/06B

CONCEPTUAL FUTURE BUILDING SETBACK PLAN

DESIGNED BY:	ARS/PAS
DRAWN BY:	ARS/CTS
CHECKED BY:	AHH
SCALE:	AS NOTED
DATE:	12-18-2018

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 14, 2006
ANDREW H. HAMPTON
PRELIMINARY NOT FOR CONSTRUCTION OR RECORDING, OR SALE
RENEWAL DATE: 6/30/20

REVISIONS

JOB NUMBER
3591

SHEET
P08

AKS DRAWING FILE: 3591 P04 SETBACK PLAN.DWG | LAYOUT: P08

SEE SHEET P10

SEE SHEET P10

SEE SHEET P11

TRACT G
OPEN SPACE

TRACT C
NATURAL RESOURCE

TRACT A
STORMWATER FACILITY

TRACT F
OPEN SPACE

SW CHESTNUT TERRACE

SW HONEYWHITE OAK TERRACE

SW TRILLIUM LANE

SW OBERST ROAD

SW WAPATO LAKE DRIVE

SW BROOKMAN ROAD

TAX LOT 1100
TAX MAP 3S 1 06BB

TAX LOT 2590
TAX MAP 3S 1 06BB

TAX LOT 2502
TAX MAP 3S 1 06BB

TAX LOT 200
TAX MAP 3S 1 06B

TAX LOT 101
TAX MAP 3S 1 06B

INSTALL STRAW WATTLE WITH TREE PROTECTION FENCE

INSTALL STRAW WATTLE WITH TREE PROTECTION FENCE

N

SCALE: 1"=50 FEET

50 0 20 30 40 50

LEGEND

	DECIDUOUS	CONIFEROUS
EXISTING TREES TO BE PRESERVED	⊙	*
EXISTING TREES TO BE REMOVED	⊙	*
EXISTING GROUND CONTOUR (1 FT)		
EXISTING GROUND CONTOUR (5 FT)		
FINISHED GRADE CONTOUR (1 FT)		
FINISHED GRADE CONTOUR (5 FT)		
SEDIMENT FENCE (TO SERVE AS TREE PROTECTION FENCE WHERE SHOWN)		
TREE PROTECTION FENCE		

NOTES:

1. TREES TO REMAIN IN TRACT B SHALL HAVE BRANCHES PRUNED TO A HEIGHT OF 10 FEET ABOVE GROUND.
2. GRIND STUMPS OF TREES TO BE REMOVED IN TRACT B.
3. SEE DETAILED ARBORIST TREE INVENTORY FOR ADDITIONAL INFORMATION.

AKS ENGINEERING & FORESTRY, LLC
12965 SW HERMAN RD STE 100
TUALATIN, OR 97062
P: 503.563.6151
F: 503.563.6152
aks-eng.com

ENGINEERING · SURVEYING · NATURAL RESOURCES
FORESTRY · PLANNING · LANDSCAPE ARCHITECTURE

MIDDLEBROOK SUBDIVISION

SHERWOOD OREGON
TAX LOT 103 AND 100 (ADJUSTED) WASHINGTON COUNTY TAX MAP 3S 1 06/06B

PRELIMINARY TREE PRESERVATION AND REMOVAL PLAN

DESIGNED BY:	ARS/PAS
DRAWN BY:	ARS/CTS
CHECKED BY:	AHH
SCALE:	AS NOTED
DATE: 12-18-2018	

REVISIONS

JOB NUMBER
3591

SHEET
P09

PRELIMINARY

BRUCE R. BALDWIN
CERTIFICATE NUMBER: PN-6666A
EXPIRATION DATE: 12/31/20

AKS DRAWING FILE: 3591 TREE.DWG | LAYOUT: P09

LEGEND

	DECIDUOUS	CONIFEROUS
EXISTING TREES TO BE PRESERVED	⊙	*
EXISTING TREES TO BE REMOVED	⊙	*
EXISTING GROUND CONTOUR (1 FT)		
EXISTING GROUND CONTOUR (5 FT)	200	
FINISHED GRADE CONTOUR (1 FT)		
FINISHED GRADE CONTOUR (5 FT)	200	
SEDIMENT FENCE (TO SERVE AS TREE PROTECTION FENCE WHERE SHOWN)		
TREE PROTECTION FENCE		

N

SCALE: 1"= 50 FEET

50 0 20 30 40 50

NOTES:

1. TREES TO REMAIN IN TRACT B SHALL HAVE BRANCHES PRUNED TO A HEIGHT OF 10 FEET ABOVE GROUND.
2. GRIND STUMPS OF TREES TO BE REMOVED IN TRACT B.
3. SEE DETAILED ARBORIST TREE INVENTORY FOR ADDITIONAL INFORMATION.

TAX LOT 14700
TAX MAP 2S 1 31CD

TAX LOT 14800

TAX LOT 17400

TAX LOT 14900

TAX LOT 15000

TAX LOT 15100
TAX MAP 2S 1 31CD

SW INKSTER DRIVE

TAX LOT 16000
TAX MAP 2S 1 31CD

TAX LOT 15900

TAX LOT 15800

TAX LOT 15700

TAX LOT 17500 TAX MAP 2S 1 31CD OWNER: CITY OF SHERWOOD

INSTALL STRAW WATTLE WITH TREE PROTECTION FENCE

TRACT "JJJ" OF "WOODHAVEN NO. 17" (TAX LOT 17500, MAP 2S.1.31CD) SUBJECT TO A PUBLIC STORM DRAINAGE AND PUBLIC SANITARY SEWER EASEMENTS OVER IT'S ENTIRETY

TAX LOT 7000
TAX MAP 2S 1 31CD
OWNER: CITY OF SHERWOOD

INSTALL STRAW WATTLE WITH TREE PROTECTION FENCE

TRACT H
OPEN SPACE

TAX LOT 10600
TAX MAP 2S 1 31DC

TAX LOT 10500

TAX LOT 10400

TAX LOT 7000
TAX MAP 2S 1 31CD
OWNER: CITY OF SHERWOOD

PORTLAND AND WESTERN RAILROAD (PNWR)

TRACT D
NATURAL RESOURCE

TREE REMOVAL ON ADJACENT PROPERTY TO BE COORDINATED WITH PROPERTY OWNER

TRACT E
NATURAL RESOURCE

TAX LOT 100
TAX MAP 3S 1 06BB

SW OBERST COURT

SW OBERST ROAD

SW WHITE OAK TERRACE

SW CHESTNUT TERRACE

SW KALAPULYA LANE

TRACT B
OPEN SPACE

32.00' BORDER PER PLAT OF "MIDDLETON"

ARBORIST OBSERVATION REQUIRED DURING TREE REMOVAL BEHIND TREE PROTECTION FENCE.

SEE SHEET P09

SEE SHEET P11

SEE SHEET P09

PRELIMINARY

ROBERT R. BALDWIN
OREGON STATE NUMBER: PN-6666A
EXPIRATION DATE: 12/31/20

AKS ENGINEERING & FORESTRY, LLC
12965 SW HERMAN RD STE 100
TUALATIN, OR 97062
P: 503.563.6151
F: 503.563.6152
aks-eng.com

ENGINEERING · SURVEYING · NATURAL RESOURCES
FORESTRY · PLANNING · LANDSCAPE ARCHITECTURE

MIDDLEBROOK SUBDIVISION

SHERWOOD OREGON
TAX LOT 103 AND 100 (ADJUSTED) WASHINGTON COUNTY TAX MAP 3S 1 06/06B

PRELIMINARY TREE PRESERVATION AND REMOVAL PLAN

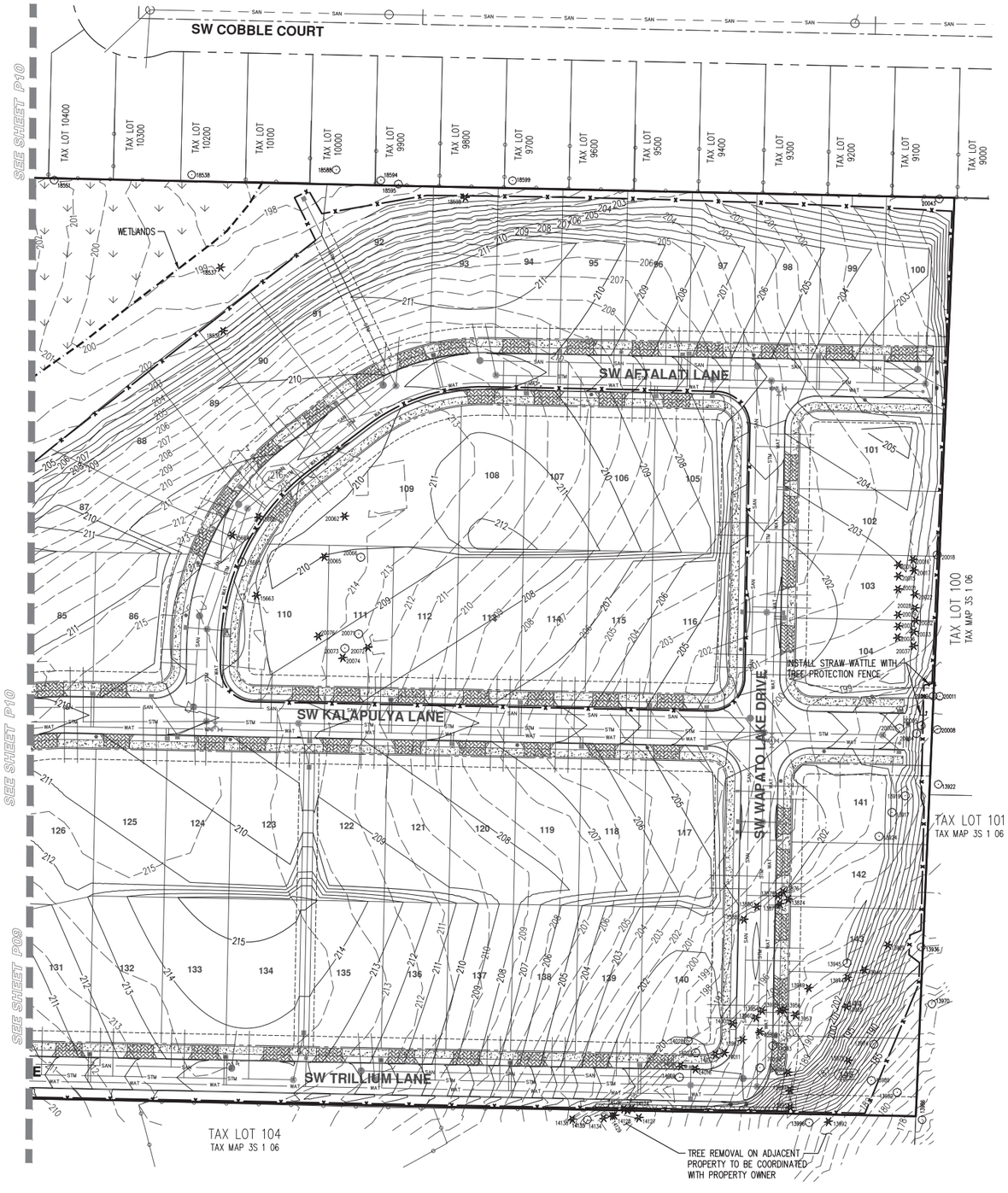
DESIGNED BY:	ARS/PAS
DRAWN BY:	ARS/CTS
CHECKED BY:	AHH
SCALE:	AS NOTED
DATE: 12-18-2018	

REVISIONS

JOB NUMBER
3591

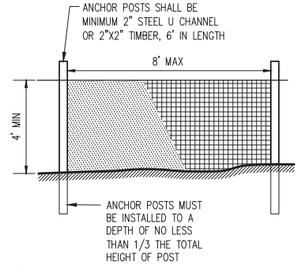
SHEET
P10

AKS DRAWING FILE: 3591 TREE.DWG | LAYOUT: P10



NOTES:

1. TREES TO REMAIN IN TRACT B SHALL HAVE BRANCHES PRUNED TO A HEIGHT OF 10 FEET ABOVE GROUND.
2. GRIND STUMPS OF TREES TO BE REMOVED IN TRACT B.
3. SEE DETAILED ARBORIST TREE INVENTORY FOR ADDITIONAL INFORMATION.



NOTES:
1. BLAZE ORANGE PLASTIC MESH FENCE FOR TREE PROTECTION DEVICE OR APPROVED EQUAL.
2. AVOID DAMAGE TO CRITICAL ROOT ZONE. DO NOT DAMAGE OR SEVER LARGE ROOTS WHEN INSTALLING POSTS.
3. DEVICE SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION.

TREE PROTECTION / CONSTRUCTION FENCE

TREE PRESERVATION NOTES:

PLACING MATERIALS NEAR TREES:

1. NO PERSON MAY CONDUCT ANY ACTIVITY WITHIN THE TREE PROTECTION AREA OF ANY TREE DESIGNATED TO REMAIN, INCLUDING, BUT NOT LIMITED TO, PARKING EQUIPMENT, PLACING SOLVENTS, STORING BUILDING MATERIAL AND SOIL DEPOSITS, DUMPING CONCRETE WASHOUT.

ATTACHMENTS TO TREES:

1. DURING CONSTRUCTION, NO PERSON SHALL ATTACH ANY OBJECT TO ANY TREE DESIGNATED FOR PROTECTION.

GRADING NEAR TREES:

1. THE GRADE SHALL NOT BE ELEVATED OR REDUCED WITHIN THE TREE PROTECTION AREA OF TREES TO BE PRESERVED WITHOUT THE PROJECT ARBORIST'S AUTHORIZATION.
2. IF THE GRADE ADJACENT TO A PRESERVED TREE IS RAISED SUCH THAT IT COULD SLOUGH OR ERODE INTO THE TREE PROTECTION AREA, IT SHALL BE PERMANENTLY STABILIZED TO PREVENT SUFFOCATION OF THE ROOTS.
3. THE APPLICANT SHALL NOT INSTALL AN IMPERVIOUS SURFACE WITHIN THE TREE PROTECTION AREA WITHOUT THE AUTHORIZATION OF THE PROJECT ARBORIST. THE PROJECT ARBORIST MAY REQUIRE SPECIFIC CONSTRUCTION METHODS AND/OR USE OF AERATION DEVICES TO ENSURE THE TREE'S SURVIVAL AND TO MINIMIZE THE POTENTIAL FOR ROOT INDUCED DAMAGE TO THE IMPERVIOUS SURFACE.
4. TO THE GREATEST EXTENT PRACTICAL, UTILITY TRENCHES SHALL BE LOCATED OUTSIDE OF THE TREE PROTECTION AREA. THE PROJECT ARBORIST MAY REQUIRE THAT UTILITIES BE TUNNELED UNDER THE ROOTS OF TREES TO BE RETAINED IF THE PROJECT ARBORIST DETERMINES THAT TRENCHING WOULD SIGNIFICANTLY REDUCE THE CHANCES OF THE TREE'S SURVIVAL.
5. TREES AND OTHER VEGETATION TO BE RETAINED SHALL BE PROTECTED FROM EROSION AND SEDIMENTATION. CLEARING OPERATIONS SHALL BE CONDUCTED SO AS TO EXPOSE THE SMALLEST PRACTICAL AREA OF SOIL FOR THE LEAST POSSIBLE AMOUNT OF TIME. SHRUBS, GROUND COVER, AND STUMPS SHALL BE MAINTAINED TO CONTROL EROSION, WHERE FEASIBLE. WHERE NOT FEASIBLE, APPROPRIATE EROSION CONTROL PRACTICES SHALL BE IMPLEMENTED.

ADDITIONAL REQUIREMENTS:

1. THE PROJECT ARBORIST MAY REQUIRE ADDITIONAL TREE PROTECTION MEASURES WHICH ARE CONSISTENT WITH ACCEPTED URBAN FORESTRY PRACTICES.

PRUNING/TREE REMOVAL NOTES:

1. THE CONTRACTOR SHALL PROVIDE AN ADEQUATE CREW OF PERSONNEL, EQUIPMENT, AND MATERIALS TO SAFELY AND EFFICIENTLY COMPLETE THE ASSIGNED WORK. EACH SUCH CREW SHALL INCLUDE AN INDIVIDUAL WHO SHALL BE DESIGNATED AS THE CREW SUPERVISOR, BE RESPONSIBLE FOR THE CREW'S ACTIVITIES, RECEIVE INSTRUCTION FROM THE OWNER OR THE OWNER'S REPRESENTATIVE, AND DIRECT THE CREW TO ACCOMPLISH SUCH WORK.
2. WHENEVER A TREE, WHICH IS NOT SCHEDULED TO BE REMOVED, MUST BE TRIMMED OR PRUNED, THE CONTRACTOR SHALL ENSURE THAT SUCH TRIMMING AND PRUNING IS CARRIED OUT UNDER THE DIRECT SUPERVISION OF A CERTIFIED ARBORIST. ALL PRUNING AND TRIMMING SHALL BE PERFORMED IN ACCORDANCE WITH THE PROVISIONS OF ANSI A300 "STANDARD PRACTICES FOR TREE, SHRUB AND OTHER WOODY PLANT MAINTENANCE".
3. UNLESS AS OTHERWISE DIRECTED BY THE OWNER, ROOT BALLS FROM TREES BEING REMOVED SHALL BE COMPLETELY REMOVED UNLESS THE ROOT REMOVAL CROSSES ONTO ADJACENT PROPERTIES OR WOULD COMPROMISE TREES BEING PRESERVED. IN THOSE CASES, THE STUMPS SHALL BE GROUND AS NECESSARY SO AS NOT TO CAUSE DAMAGE TO THE ROOT ZONES OF ADJACENT TREES TO BE PRESERVED ON THE SUBJECT PARCEL OR ABUTTING PARCELS. STUMPS NEAR PROPERTY LINES SHALL ALSO BE GROUND AS NECESSARY SO AS NOT TO CAUSE DISTURBANCE TO ADJACENT PARCELS.
4. THE CONTRACTOR SHALL PERFORM ALL WORK IN ACCORDANCE WITH THE LATEST GOVERNMENTAL SAFETY REGULATIONS. ALL WORK SHALL BE PERFORMED IN STRICT ACCORDANCE WITH ANSI Z133.1 "PRUNING, TRIMMING, REPAIRING, MAINTAINING AND REMOVING TREES AND CUTTING BRUSH–SAFETY REQUIREMENTS" WITH SPECIAL EMPHASIS GIVEN TO THE REQUIREMENT THAT ONLY QUALIFIED LINE–CLEARANCE TREE TRIMMERS BE ASSIGNED TO WORK WHERE A POTENTIAL ELECTRICAL HAZARD EXISTS.
5. THE CONTRACTOR SHALL MAKE ALL THE NECESSARY ARRANGEMENTS WITH ANY UTILITY THAT MUST BE PROTECTED OR RELOCATED IN ORDER TO ACCOMPLISH THE WORK. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE PROTECTION OF THE OPERATING CONDITION OF ALL ACTIVE UTILITIES WITHIN THE AREA OF CONSTRUCTION AND SHALL TAKE ALL NECESSARY PRECAUTIONS TO AVOID DAMAGE TO EXISTING UTILITIES.
6. ANY MATERIAL RESULTING FROM THE TRIMMING OR REMOVAL OF ANY TREES SHALL BECOME THE RESPONSIBILITY OF THE CONTRACTOR TO DISPOSE OF.
7. HAZARDOUS TREE REPORTING: ANY PERSON ENGAGED IN TRIMMING OR PRUNING WHO BECOMES AWARE OF A TREE OF DOUBTFUL STRENGTH, THAT COULD BE DANGEROUS TO PERSONS AND PROPERTY, SHALL REPORT SUCH TREE(S) TO THE OWNER OR THE OWNER'S REPRESENTATIVE. SUCH TREES SHALL INCLUDE THOSE THAT ARE OVER MATURE, DISEASED, OR SHOWING SIGNS OF DECAY OR OTHER STRUCTURAL WEAKNESS.
8. TREES DETERMINED TO BE A HAZARD SHALL BE REMOVED AS SOON AS POSSIBLE.
9. DAMAGES: ANY DAMAGE CAUSED BY THE CONTRACTOR, INCLUDING, BUT NOT LIMITED TO, BROKEN SIDEWALK, CURB, RUTTED LAWN, BROKEN WATER SHUT–OFFS, WIRE DAMAGE, BUILDING DAMAGE, STREET DAMAGE, ETC., WILL BE REPAIRED OR REPLACED IN A TIMELY MANNER, TO THE OWNER'S SATISFACTION, AND ALL COSTS PAID BY THE CONTRACTOR.
10. ANY BRUSH CLEARING REQUIRED WITHIN THE TREE PROTECTION AREA SHALL BE ACCOMPLISHED WITH HAND OPERATED EQUIPMENT.
11. TREES TO BE REMOVED SHALL BE FELLED SO AS TO FALL AWAY FROM TREES TO REMAIN AND TO AVOID PULLING AND BREAKING OF ROOTS TO REMAIN. DIRECTIONAL FELLING OF TREES SHALL BE USED TO AVOID DAMAGE TO TREES DESIGNATED FOR RETENTION.
12. ALL DOWNED BRUSH AND TREES SHALL BE REMOVED FROM THE TREE PROTECTION AREA EITHER BY HAND OR WITH EQUIPMENT STAGED OUTSIDE OF THE TREE PROTECTION AREA. EXTRACTION SHALL OCCUR BY LIFTING THE MATERIAL OUT, NOT BY SKIDDING IT ACROSS THE GROUND.
13. IF TEMPORARY HAUL OR ACCESS ROADS MUST PASS OVER TREE PROTECTION AREA, A ROADBED OF STEEL PLATES, OR 6 INCHES OF MULCH, OR 6 INCHES OF GRAVEL SHALL BE PLACED TO PREVENT SOIL COMPACTION IF DETERMINED NECESSARY BY THE PROJECT ARBORIST. THE ROADBED MATERIAL SHALL BE REPLENISHED AS NECESSARY TO MAINTAIN A 6–INCH DEPTH.
14. PRUNING: THE CONTRACTOR SHALL CONSULT WITH THE PROJECT ARBORIST PRIOR TO ANY PRUNING ACTIVITIES NECESSARY FOR CONSTRUCTION ACTIVITIES. ALL PRUNING ACTIVITIES SHALL BE PERFORMED IN ACCORDANCE WITH ANSI A300 PRUNING STANDARDS. PRUNING SHALL BE COMPLETED PRIOR TO THE START OF CONSTRUCTION ACTIVITIES.
15. CUT BRANCHES AND ROOTS WITH SHARP PRUNING INSTRUMENTS THAT DO NOT CHOP OR TEAR.
16. FENCING SHALL BE INSTALLED PRIOR TO ANY CONSTRUCTION ACTIVITIES, INCLUDING, BUT NOT LIMITED TO CLEARING, GRADING, EXCAVATION, OR DEMOLITION WORK, AND SHALL BE REMOVED ONLY AFTER THE COMPLETION OF ALL CONSTRUCTION ACTIVITIES, INCLUDING LANDSCAPING AND IRRIGATION INSTALLATION.
17. TREE PROTECTION FENCING SHALL BE FLUSH WITH THE INITIAL UNDISTURBED GRADE.

LEGEND

	DECIDUOUS	CONIFEROUS
EXISTING TREES TO BE PRESERVED	⊙	*
EXISTING TREES TO BE REMOVED	⊙	*
EXISTING GROUND CONTOUR (1 FT)	— — — — —	
EXISTING GROUND CONTOUR (5 FT)	— — 200- — —	
FINISHED GRADE CONTOUR (1 FT)	———	
FINISHED GRADE CONTOUR (5 FT)	——200——	
SEDIMENT FENCE (TO SERVE AS TREE PROTECTION FENCE WHERE SHOWN)	—x—x—	
TREE PROTECTION FENCE	~~~~~	

N

SCALE: 1"=50 FEET

50 0 20 30 40 50

AKS ENGINEERING & FORESTRY, LLC
12965 SW HERMAN RD STE 100
TUALATIN, OR 97062
P: 503.563.6151
F: 503.563.6152
aks-eng.com

AKS ENGINEERING - SURVEYING - NATURAL RESOURCES
FORESTRY - PLANNING - LANDSCAPE ARCHITECTURE

MIDDLEBROOK SUBDIVISION

SHERWOOD OREGON
TAX LOT 103 AND 100 (ADJUSTED) WASHINGTON COUNTY TAX MAP 3S 1 06/06B

PRELIMINARY TREE PRESERVATION AND REMOVAL PLAN

DESIGNED BY:	ARS/PAS
DRAWN BY:	ARS/CTS
CHECKED BY:	AHH
SCALE:	AS NOTED
DATE:	12-18-2018

REVISIONS

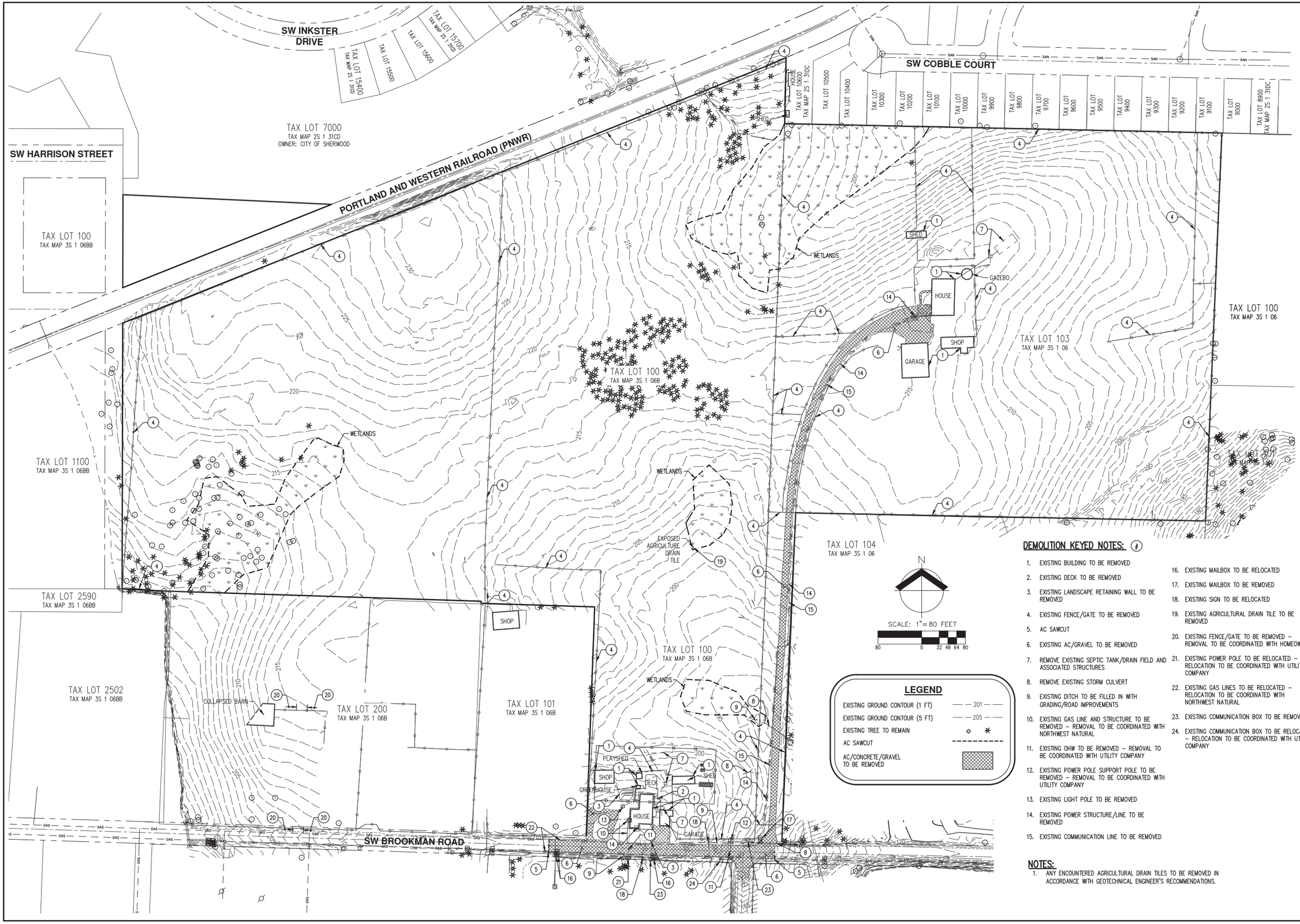
JOB NUMBER 3591

SHEET P11

PRELIMINARY

BRUCE R. BALDWIN
CERTIFICATE NUMBER: PN-6666A
EXPIRATION DATE: 12/31/20

AKS DRAWING FILE: 3591 TREE.DWG | LAYOUT: P11



LEGEND

- EXISTING GROUND CONTOUR (1 FT) — — 201 — —
- EXISTING GROUND CONTOUR (5 FT) — — 205 — —
- EXISTING TREE TO REMAIN
- AC SAWCUT
- AC/CONCRETE/GRAVEL TO BE REMOVED

DEMOLITION KEYED NOTES: (#)

1. EXISTING BUILDING TO BE REMOVED
2. EXISTING DECK TO BE REMOVED
3. EXISTING LANDSCAPE RETAINING WALL TO BE REMOVED
4. EXISTING FENCE/GATE TO BE REMOVED
5. AC SAWCUT
6. EXISTING AC/GRAVEL TO BE REMOVED
7. REMOVE EXISTING SEPTIC TANK/DRAIN FIELD AND ASSOCIATED STRUCTURES
8. REMOVE EXISTING STORM CULVERT
9. EXISTING DITCH TO BE FILLED IN WITH GRADING/ROAD IMPROVEMENTS
10. EXISTING GAS LINE AND STRUCTURE TO BE REMOVED – REMOVAL TO BE COORDINATED WITH NORTHWEST NATURAL
11. EXISTING OHW TO BE REMOVED – REMOVAL TO BE COORDINATED WITH UTILITY COMPANY
12. EXISTING POWER POLE SUPPORT POLE TO BE REMOVED – REMOVAL TO BE COORDINATED WITH UTILITY COMPANY
13. EXISTING LIGHT POLE TO BE REMOVED
14. EXISTING POWER STRUCTURE/LINE TO BE REMOVED
15. EXISTING COMMUNICATION LINE TO BE REMOVED
16. EXISTING MAILBOX TO BE RELOCATED
17. EXISTING MAILBOX TO BE REMOVED
18. EXISTING SIGN TO BE RELOCATED
19. EXISTING AGRICULTURAL DRAIN TILE TO BE REMOVED
20. EXISTING FENCE/GATE TO BE REMOVED – REMOVAL TO BE COORDINATED WITH HOMEOWNER
21. EXISTING POWER POLE TO BE RELOCATED – RELOCATION TO BE COORDINATED WITH UTILITY COMPANY
22. EXISTING GAS LINES TO BE RELOCATED – RELOCATION TO BE COORDINATED WITH NORTHWEST NATURAL
23. EXISTING COMMUNICATION BOX TO BE REMOVED
24. EXISTING COMMUNICATION BOX TO BE RELOCATED – RELOCATION TO BE COORDINATED WITH UTILITY COMPANY

NOTES:

1. ANY ENCOUNTERED AGRICULTURAL DRAIN TILES TO BE REMOVED IN ACCORDANCE WITH GEOTECHNICAL ENGINEER'S RECOMMENDATIONS.

AKS ENGINEERING & FORESTRY, LLC
12965 SW HERMAN RD STE 100
TUALATIN, OR 97062
P: 503.563.6151
F: 503.563.6152
aks-eng.com

ENGINEERING · SURVEYING · NATURAL RESOURCES
FORESTRY · PLANNING · LANDSCAPE ARCHITECTURE

MIDDLEBROOK SUBDIVISION

SHERWOOD OREGON
TAX LOT 103 AND 100 (ADJUSTED) WASHINGTON COUNTY TAX MAP 3S 1 06/06B

PRELIMINARY DEMOLITION PLAN

DESIGNED BY:	ARS/PAS
DRAWN BY:	ARS/CTS
CHECKED BY:	AHH
SCALE:	AS NOTED

DATE: 12-18-2018

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 29, 2001
PAUL A. SELLKE
PRELIMINARY NOT FOR CONSTRUCTION

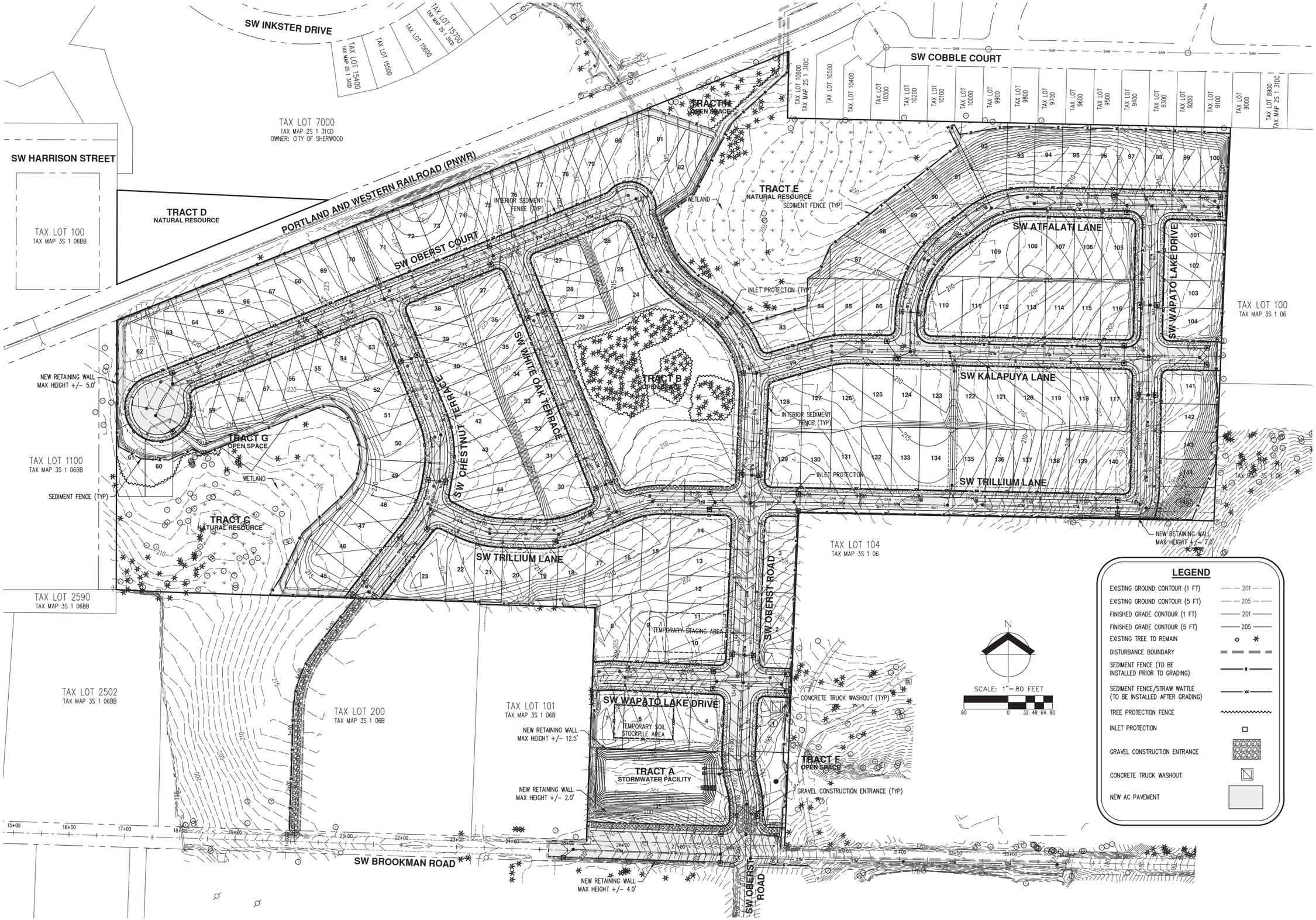
RENEWAL DATE: 6/30/20

REVISIONS

JOB NUMBER
3591

SHEET
P12

AKS DRAWING FILE: 3591 P06 DEMO PLAN.DWG | LAYOUT: P12



AKS ENGINEERING & FORESTRY, LLC
12965 SW HERMAN RD STE 100
TUALATIN, OR 97062
P: 503.563.6151
F: 503.563.6152
aks-eng.com

AKS ENGINEERING - SURVEYING - NATURAL RESOURCES
FORESTRY - PLANNING - LANDSCAPE ARCHITECTURE

MIDDLEBROOK SUBDIVISION

SHERWOOD OREGON

TAX LOT 103 AND 100 (ADJUSTED)

WASHINGTON COUNTY TAX MAP 3S 1 06/06B

PRELIMINARY GRADING AND EROSION AND SEDIMENT CONTROL PLAN

DESIGNED BY:	ARS/PAS
DRAWN BY:	ARS/CTS
CHECKED BY:	AHH
SCALE:	AS NOTED

DATE: 12-18-2018

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 09, 2001
PETER A. SELLKE
PRELIMINARY NOT FOR CONSTRUCTION

RENEWAL DATE: 6/30/20

REVISIONS

JOB NUMBER
3591

SHEET
P13

AKS DRAWING FILE: 3591 P07 GRADING ESC PLANLDWG | LAYOUT: P13

SW INKSTER DRIVE

TAX LOT 15700
TAX MAP 2S 1 31DC

TAX LOT 15600

TAX LOT 15400
TAX MAP 2S 1 31DC

SW COBBLE COURT

TAX LOT 10600
TAX MAP 2S 1 31DC

TAX LOT 10500

TAX LOT 10400

TAX LOT 10300

TAX LOT 10200

TAX LOT 10100

TAX LOT 10000

TAX LOT 9900

TAX LOT 9800

TAX LOT 9700

TAX LOT 9600

TAX LOT 9500

TAX LOT 9400

TAX LOT 9300

TAX LOT 9200

TAX LOT 9100

TAX LOT 9000

TAX LOT 8900
TAX MAP 2S 1 31DC

SW HARRISON STREET

TAX LOT 7000
TAX MAP 2S 1 31CD
OWNER: CITY OF SHERWOOD

15.00' PUBLIC PEDESTRIAN ACCESS EASEMENT

TRACT H
OPEN SPACE

15.00' PUBLIC STORM DRAINAGE EASEMENT TO CITY OF SHERWOOD

TRACT D
NATURAL RESOURCE

PORTLAND AND WESTERN RAILROAD (PNWR)

TAX LOT 100
TAX MAP 3S 1 06BB

15.00' PUBLIC PEDESTRIAN ACCESS EASEMENT

15.00' PUBLIC PEDESTRIAN ACCESS EASEMENT (TYP)

SW OBERST COURT

CL–CL INTERSECTION
STA 24+86.90 SW OBERST COURT
= STA 6+12.34 SW WHITE OAK TERRACE

CL–CL INTERSECTION
STA 27+28.90 SW OBERST COURT
= STA 11+78.92 SW CHESTNUT TERRACE

TRACT E
NATURAL RESOURCE

BEGIN PEDESTRIAN PATH
MATCH PROPOSED SIDEWALK
STA 1+06.55 PATH 1

CL–CL INTERSECTION
STA 24+32.10 SW WAPATO LAKE DRIVE
= STA 7+03.94 SW ATFALATI LANE

END STREET IMPROVEMENTS
STA 8+31.50 SW ATFALATI LANE

SW ATFALATI LANE

SW CHESTNUT TERRACE

SW WHITE OAK TERRACE

SW WAPATO LAKE DRIVE

TAX LOT 100
TAX MAP 3S 1 06

CL–CL INTERSECTION
STA 8+19.45 SW KALAPUYA LANE
= STA 21+60.10 SW WAPATO LAKE DRIVE

END STREET IMPROVEMENTS
STA 9+30.00 SW KALAPUYA LANE

TYPE III BARRICADE (TYP)

RETAINING WALL

TRACT B
OPEN SPACE

CL–CL INTERSECTION
STA 18+74.92 SW OBERST ROAD
= STA 1+00.00 SW KALAPUYA LANE

CL–CL INTERSECTION
STA 3+89.25 SW KALAPUYA LANE
= STA 1+00.00 SW ATFALATI LANE

SW KALAPUYA LANE

END PEDESTRIAN PATH
MATCH PROPOSED SIDEWALK
STA 16+00.36 PATH 1

CENTER OF CUL-DE-SAC
STA 31+92.91 SW OBERST COURT

TRACT G
OPEN SPACE

15.00' PUBLIC PEDESTRIAN ACCESS EASEMENT

15.00' PUBLIC PEDESTRIAN ACCESS EASEMENT

CL–CL INTERSECTION
STA 16+42.17 SW OBERST ROAD
= STA 6+97.85 SW TRILLIUM LANE

SW TRILLIUM LANE

TAX LOT 101
TAX MAP 3S 1 06

TAX LOT 1100
TAX MAP 3S 1 06BB

BEGIN PEDESTRIAN PATH
MATCH PROPOSED SIDEWALK
STA 1+00.00 PATH 2

CL–CL INTERSECTION
STA 1+00.00 SW TRILLIUM LANE
= STA 7+79.88 SW CHESTNUT TERRACE

CL–CL INTERSECTION
STA 4+51.47 SW TRILLIUM LANE
= STA 1+00.00 SW WHITE OAK TERRACE

TRACT C
NATURAL RESOURCE

SW TRILLIUM LANE

TAX LOT 104
TAX MAP 3S 1 06

RETAINING WALL

CL–CL INTERSECTION
STA 14+06.93 SW TRILLIUM LANE
= STA 18+81.27 SW WAPATO LAKE DRIVE

SW OBERST ROAD

TAX LOT 2590
TAX MAP 3S 1 06BB

END PEDESTRIAN PATH
MATCH PROPOSED SIDEWALK
STA 9+29.91 PATH 2

GATE WITH KNOX LOCK

END TEMPORARY ACCESS ROAD
BEGIN STREET IMPROVEMENTS
STA 5+78.24 SW CHESTNUT TERRACE

TYPE III BARRICADE (TYP)

CL–CL INTERSECTION
STA 13+17.53 SW OBERST ROAD
= STA 10+00.00 SW WAPATO LAKE DRIVE

CONCEPTUAL FUTURE ROAD ALIGNMENT

BEGIN STREET IMPROVEMENTS
STA 7+39.46 SW WAPATO LAKE DRIVE

END STREET IMPROVEMENTS
STA 10+80.00 SW WAPATO LAKE DRIVE

CONCEPTUAL FUTURE ROAD ALIGNMENT

TAX LOT 2502
TAX MAP 3S 1 06BB

TAX LOT 200
TAX MAP 3S 1 06B

TAX LOT 101
TAX MAP 3S 1 06B

SW WAPATO LAKE DRIVE

20.00' TEMPORARY EMERGENCY ACCESS EASEMENT

TRACT A
STORMWATER FACILITY

TRACT F
OPEN SPACE

RETAINING WALL

GATE WITH KNOX LOCK

BEGIN STREET IMPROVEMENTS
STA 6+44.67 SW BROOKMAN ROAD

END STREET IMPROVEMENTS
STA 10+57.37 SW BROOKMAN ROAD

CL–CL INTERSECTION
STA 1+85.01 SW BROOKMAN ROAD
= STA 1+00.00 TEMPORARY ACCESS ROAD

SW BROOKMAN ROAD

RETAINING WALL

CL–CL INTERSECTION
BEGIN STREET IMPROVEMENTS
STA 10+00.00 SW OBERST ROAD
= STA 10+00.00 SW BROOKMAN ROAD

SW OBERST ROAD

N

SCALE: 1"= 80 FEET
80 0 32 48 64 80

LEGEND

- CONCRETE SIDEWALK BY CONTRACTOR
- CONCRETE SIDEWALK BY HOMEBUILDER
- NEW AC PAVEMENT
- SAWCUT

AKS ENGINEERING & FORESTRY, LLC
12965 SW HERMAN RD STE 100
TUALATIN, OR 97062
P: 503.563.6151
F: 503.563.6152
aks-eng.com

AKS
ENGINEERING - SURVEYING - NATURAL RESOURCES
FORESTRY - PLANNING - LANDSCAPE ARCHITECTURE

MIDDLEBROOK SUBDIVISION

SHERWOOD OREGON
TAX LOT 103 AND 100 (ADJUSTED)
WASHINGTON COUNTY TAX MAP 3S 1 06/06B

PRELIMINARY STREET PLAN

DESIGNED BY:	ARS/PAS
DRAWN BY:	ARS/CTS
CHECKED BY:	AHH
SCALE:	AS NOTED
DATE: 12-18-2018	

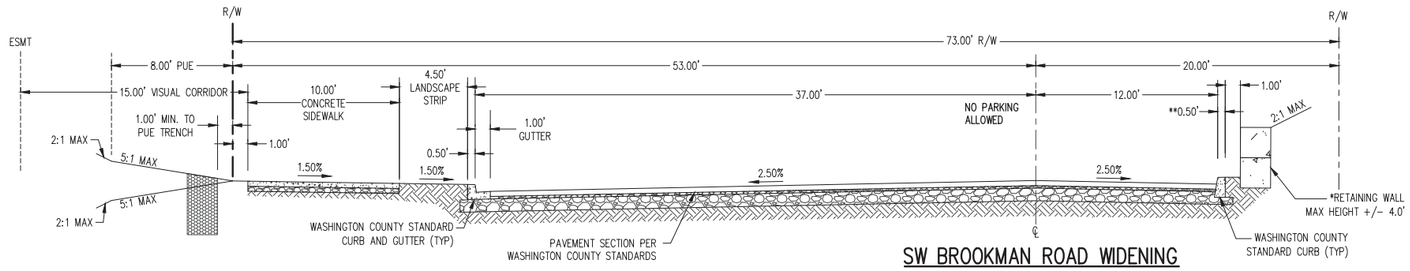
REGISTERED PROFESSIONAL ENGINEER
OREGON
JANUARY 09, 2001
PATRICK A. SELLKE
PRELIMINARY NOT FOR CONSTRUCTION
RENEWAL DATE: 6/30/20

REVISIONS

JOB NUMBER
3591

SHEET
P14

AKS DRAWING FILE: 3591 P08 STREET PLAN.DWG | LAYOUT: P14

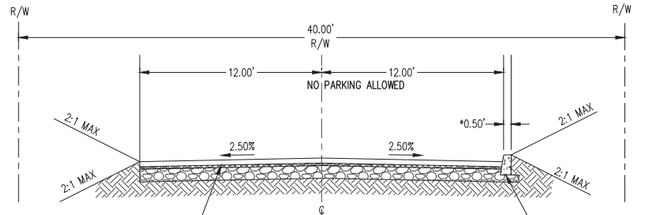


SW BROOKMAN ROAD WIDENING (73' R/W)

TYPICAL SECTION (ARTERIAL)
1"=5'
(STA 7+20.00 – STA 10+57.37)

*RETAINING WALL
STA 7+30.00 – STA 9+26.44

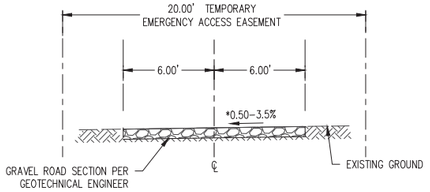
** NO CURB
STA 9+66.72 – STA 10+57.37



SW BROOKMAN ROAD (40' R/W)

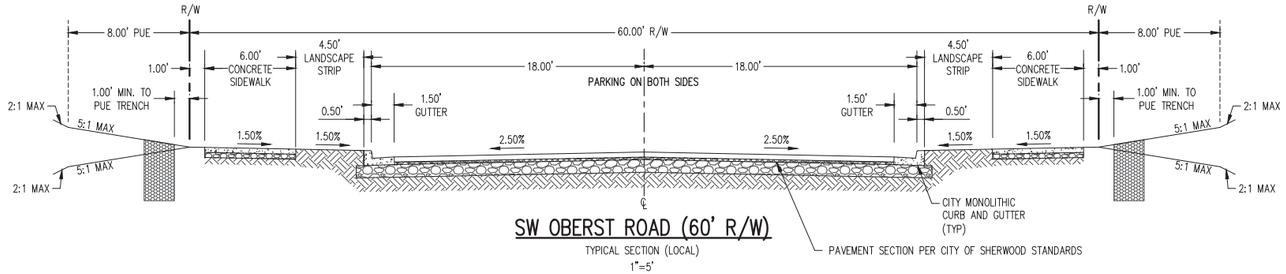
TYPICAL SECTION (ARTERIAL)
1"=5'
(STA 6+44.67 – STA 7+20.00)

*NO CURB
STA 6+44.67 – STA 6+57.23



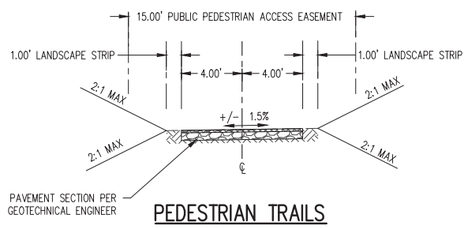
TEMPORARY EMERGENCY ACCESS ROAD

TYPICAL SECTION
1"=5'
*MATCH EXISTING GRADE
(STA 5+95.00 – STA 7+17.49)



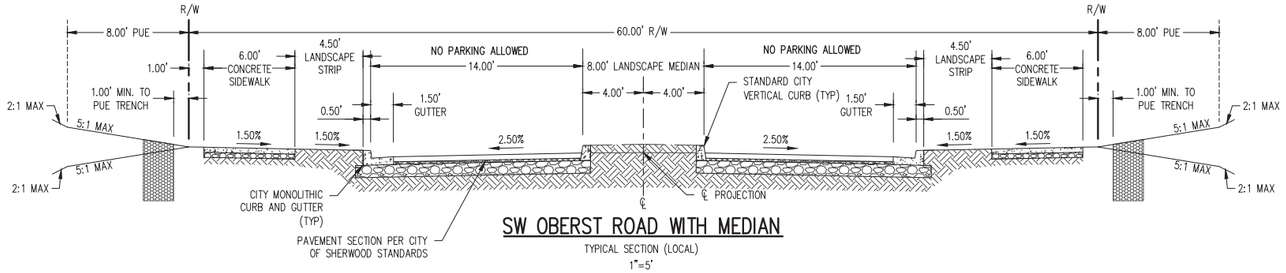
SW OBERST ROAD (60' R/W)

TYPICAL SECTION (LOCAL)
1"=5'
(STA 12+82.53 – STA 16+02.23)



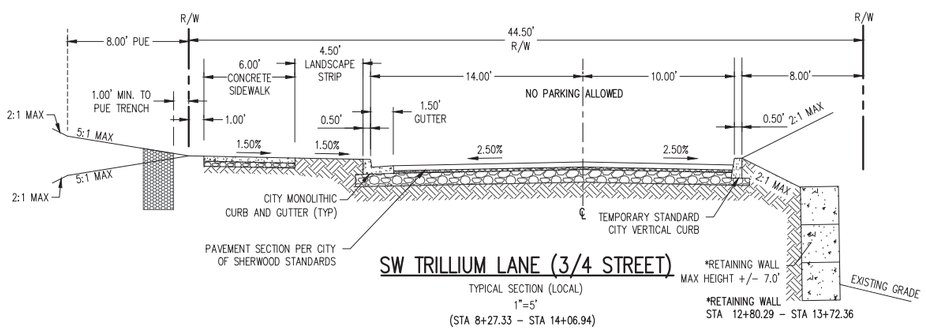
PEDESTRIAN TRAILS

TYPICAL SECTION
1"=5'



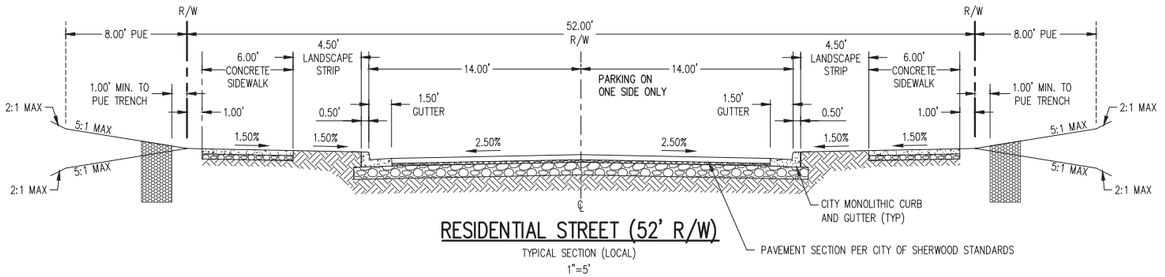
SW OBERST ROAD WITH MEDIAN

TYPICAL SECTION (LOCAL)
1"=5'
(STA 10+00.00 – STA 12+82.53)



SW TRILLIUM LANE (3/4 STREET)

TYPICAL SECTION (LOCAL)
1"=5'
(STA 8+27.33 – STA 14+06.94)



RESIDENTIAL STREET (52' R/W)

TYPICAL SECTION (LOCAL)
1"=5'

SW ATFALATI LANE	(STA 1+00.00 – STA 8+31.50)	SW TRILLIUM LANE	(STA 1+00.00 – STA 8+27.33)
SW CHESTNUT DRIVE	(STA 5+78.24 – STA 11+78.92)	SW WAPATO LAKE DRIVE	(STA 7+39.46 – STA 10+80.00)
SW KALAPUYA LANE	(STA 1+00.00 – STA 9+30.00)	SW WAPATO LAKE DRIVE	(STA 18+81.27 – STA 24+32.10)
SW OBERST ROAD	(STA 16+02.23 – STA 22+55.63)	SW WHITE OAK TERRACE	(STA 1+00.00 – STA 6+12.34)
SW OBERST COURT	(STA 22+55.63 – STA 31+91.91)		

AKS ENGINEERING & FORESTRY, LLC
12965 SW HERMAN RD STE 100
TUALATIN, OR 97062
P: 503.563.6151
F: 503.563.6152
aks-eng.com

AKS ENGINEERING - SURVEYING - NATURAL RESOURCES
FORESTRY - PLANNING - LANDSCAPE ARCHITECTURE

MIDDLEBROOK SUBDIVISION

SHERWOOD, OREGON
TAX LOT 103 AND 100 (ADJUSTED)
WASHINGTON COUNTY TAX MAP 3S 1 06/06B

PRELIMINARY STREET CROSS-SECTIONS

DESIGNED BY:	ARS/PAS
DRAWN BY:	ARS/CTS
CHECKED BY:	AHH
SCALE:	AS NOTED

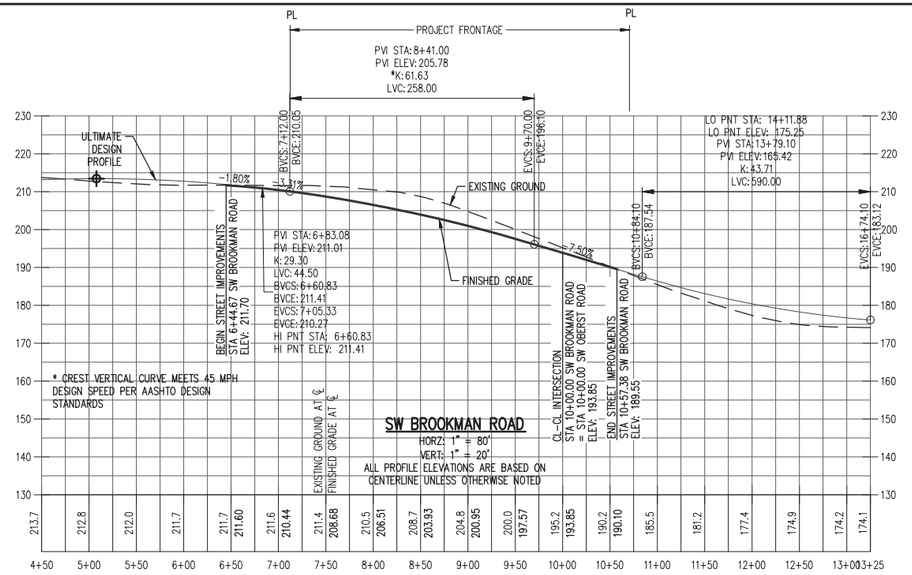
DATE: 12-18-2018

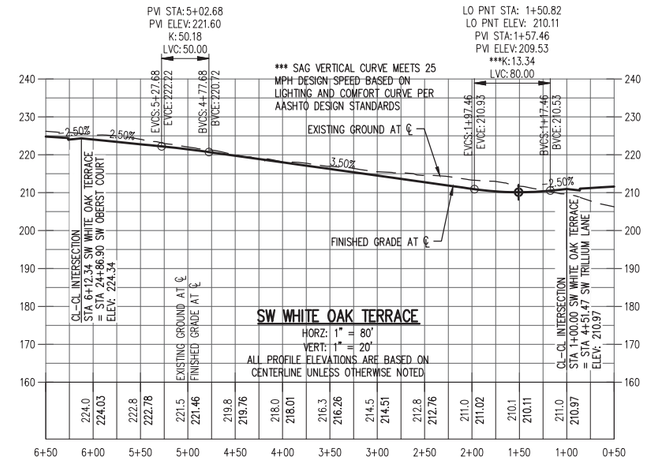
REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 09, 2001
ANDREW H. HARRIS
PRELIMINARY NOT FOR CONSTRUCTION
RENEWAL DATE: 6/30/20

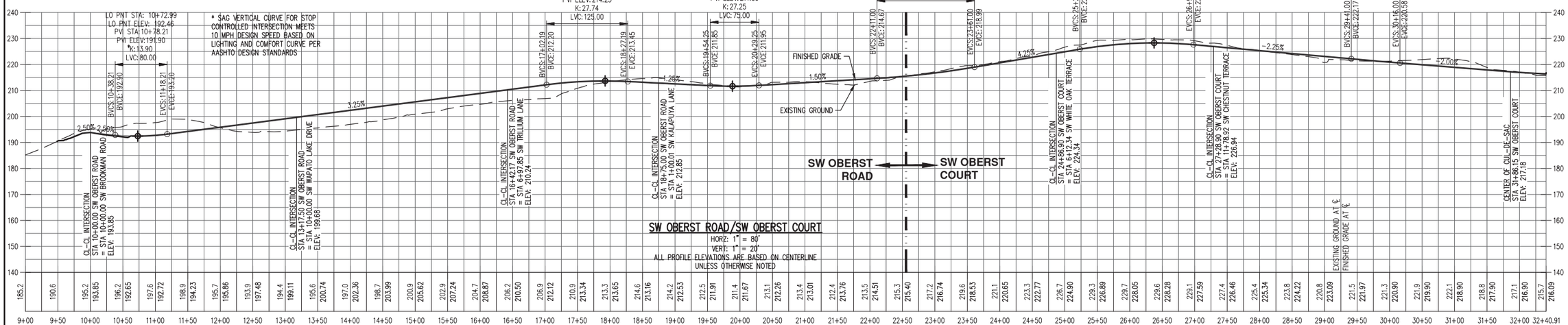
REVISIONS

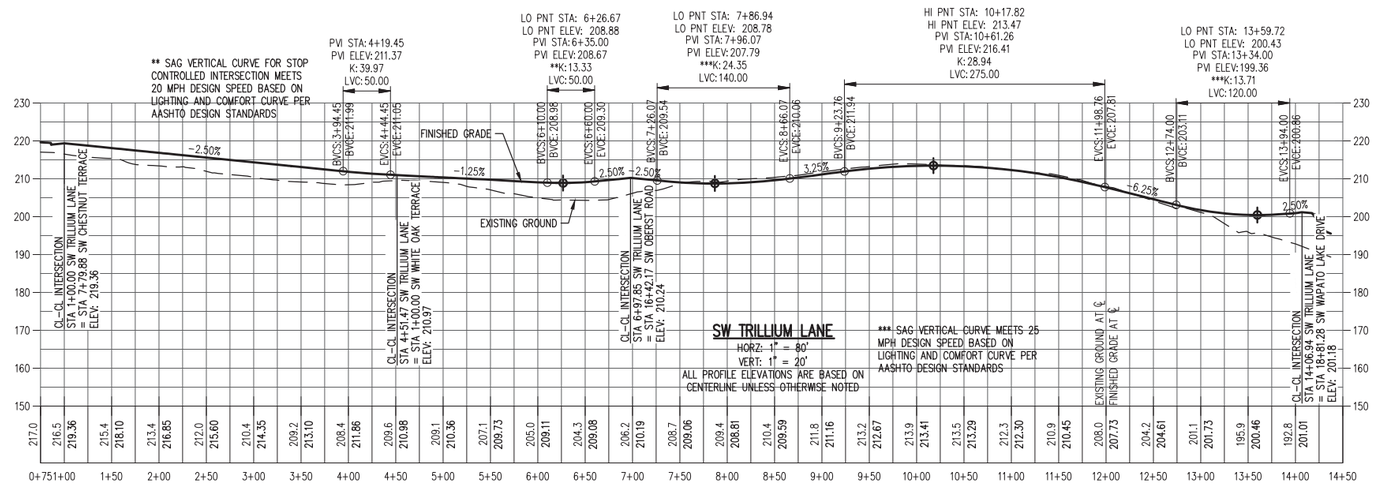
JOB NUMBER
3591

SHEET
P15









AKS ENGINEERING & FORESTRY, LLC
12965 SW HERMAN RD STE 100
TUALATIN, OR 97062
P: 503.563.6151
F: 503.563.6152
aks-eng.com

ENGINEERING · SURVEYING · NATURAL RESOURCES
FORESTRY · PLANNING · LANDSCAPE ARCHITECTURE

MIDDLEBROOK SUBDIVISION

SHERWOOD OREGON

TAX LOT 103 AND 100 (ADJUSTED)

WASHINGTON COUNTY TAX MAP 3S 1 06/06B

PRELIMINARY STREET PROFILES (1 OF 2)

DESIGNED BY:	ARS/PAS
DRAWN BY:	ARS/CTS
CHECKED BY:	AHH
SCALE:	AS NOTED
DATE:	12-18-2018

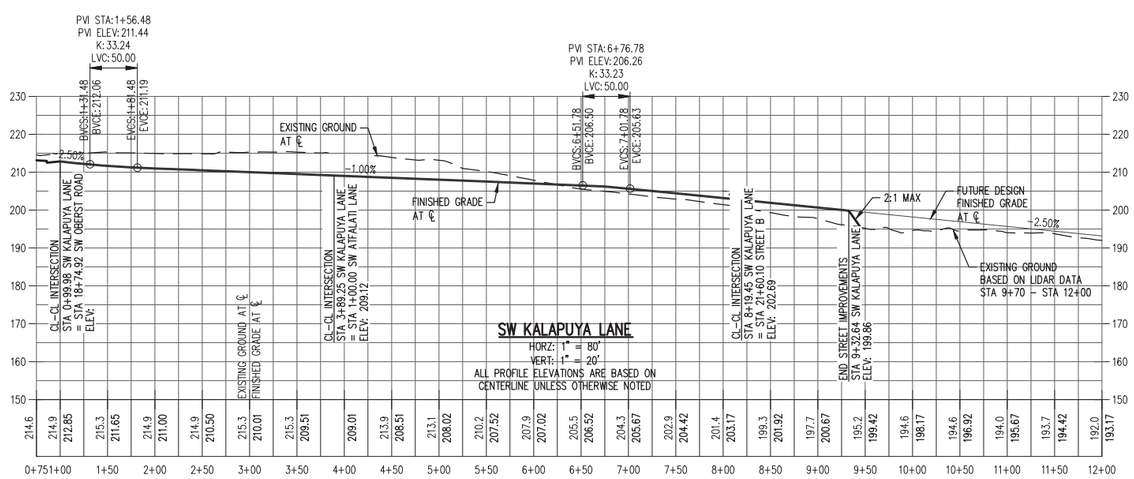
REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 28, 2006
PAUL A. SELLKE
PRELIMINARY NOT FOR CONSTRUCTION
RENEWAL DATE: 6/30/20

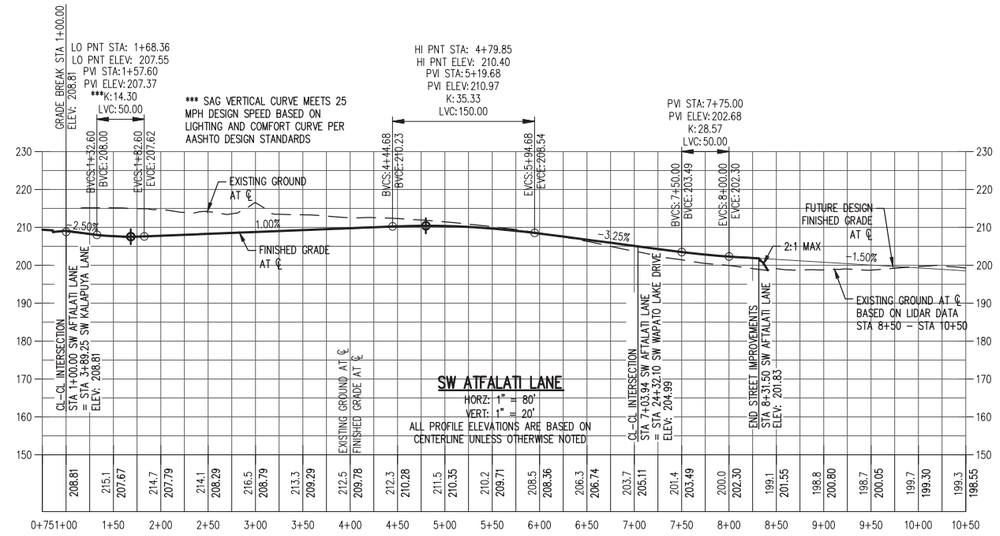
REVISIONS

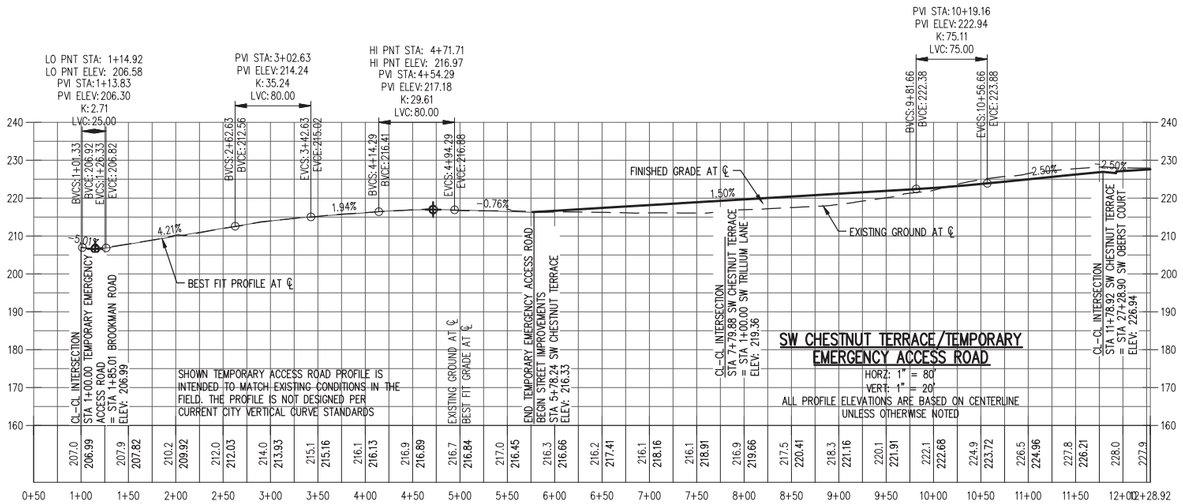
JOB NUMBER
3591

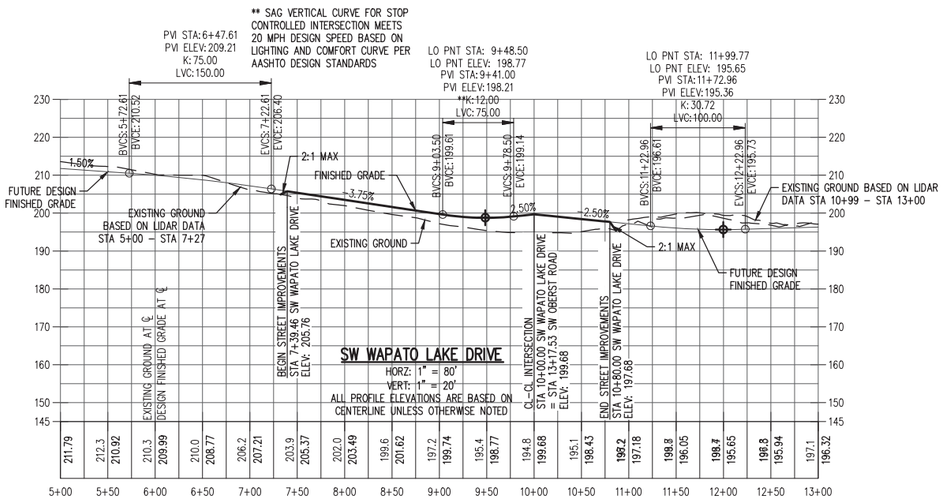
SHEET
P16

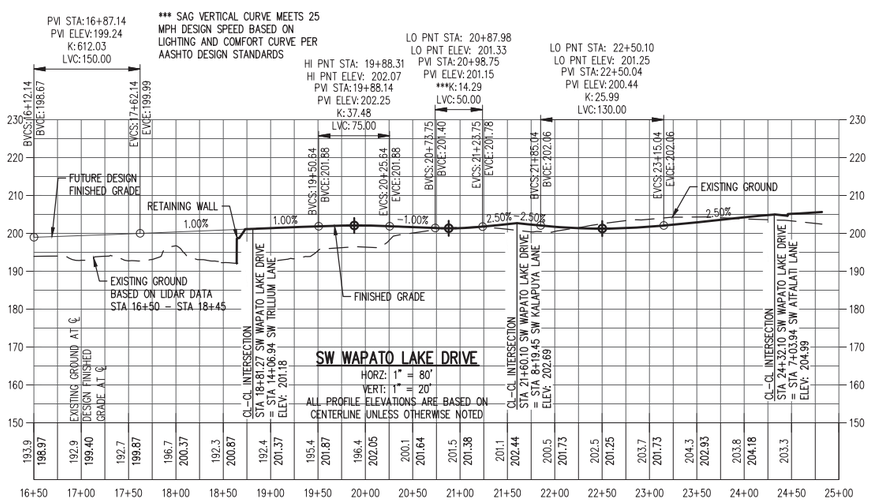
AKS DRAWING FILE: 3591 P08 STREET PLAN.DWG | LAYOUT: P16











AKS ENGINEERING & FORESTRY, LLC
12965 SW HERMAN RD STE 100
TUALATIN, OR 97062
P: 503.563.6151
F: 503.563.6152
aks-eng.com

ENGINEERING · SURVEYING · NATURAL RESOURCES
FORESTRY · PLANNING · LANDSCAPE ARCHITECTURE

MIDDLEBROOK SUBDIVISION

SHERWOOD OREGON

TAX LOT 103 AND 100 (ADJUSTED)

WASHINGTON COUNTY TAX MAP 3S 1 06/06B

PRELIMINARY STREET PROFILES (2 OF 2)

DESIGNED BY:	ARS/PAS
DRAWN BY:	ARS/CTS
CHECKED BY:	AHH
SCALE:	AS NOTED

DATE: 12-18-2018

REGISTERED PROFESSIONAL ENGINEER OREGON JULY 09, 2001 TRAVIS A SELLKE
PRELIMINARY NOT FOR CONSTRUCTION
RENEWAL DATE: 6/30/20

REVISIONS

JOB NUMBER 3591

SHEET P17

AKS DRAWING FILE: 3591 P08 STREET PLAN.DWG | LAYOUT: P17

CONCEPTUAL OFFSITE TURN LANE IMPROVEMENT PLAN

MIDDLEBROOK SUBDIVISION

SHERWOOD OREGON

TAX LOT 103 AND 100 (ADJUSTED) WASHINGTON COUNTY TAX MAP 3S 1 06/06B

AKS ENGINEERING & FORESTRY, LLC
12965 SW HERMAN RD STE 100
TUALATIN, OR 97062
P: 503.563.6151
F: 503.563.6152
aks-eng.com

ENGINEERING • SURVEYING • NATURAL RESOURCES
FORESTRY • PLANNING • LANDSCAPE ARCHITECTURE

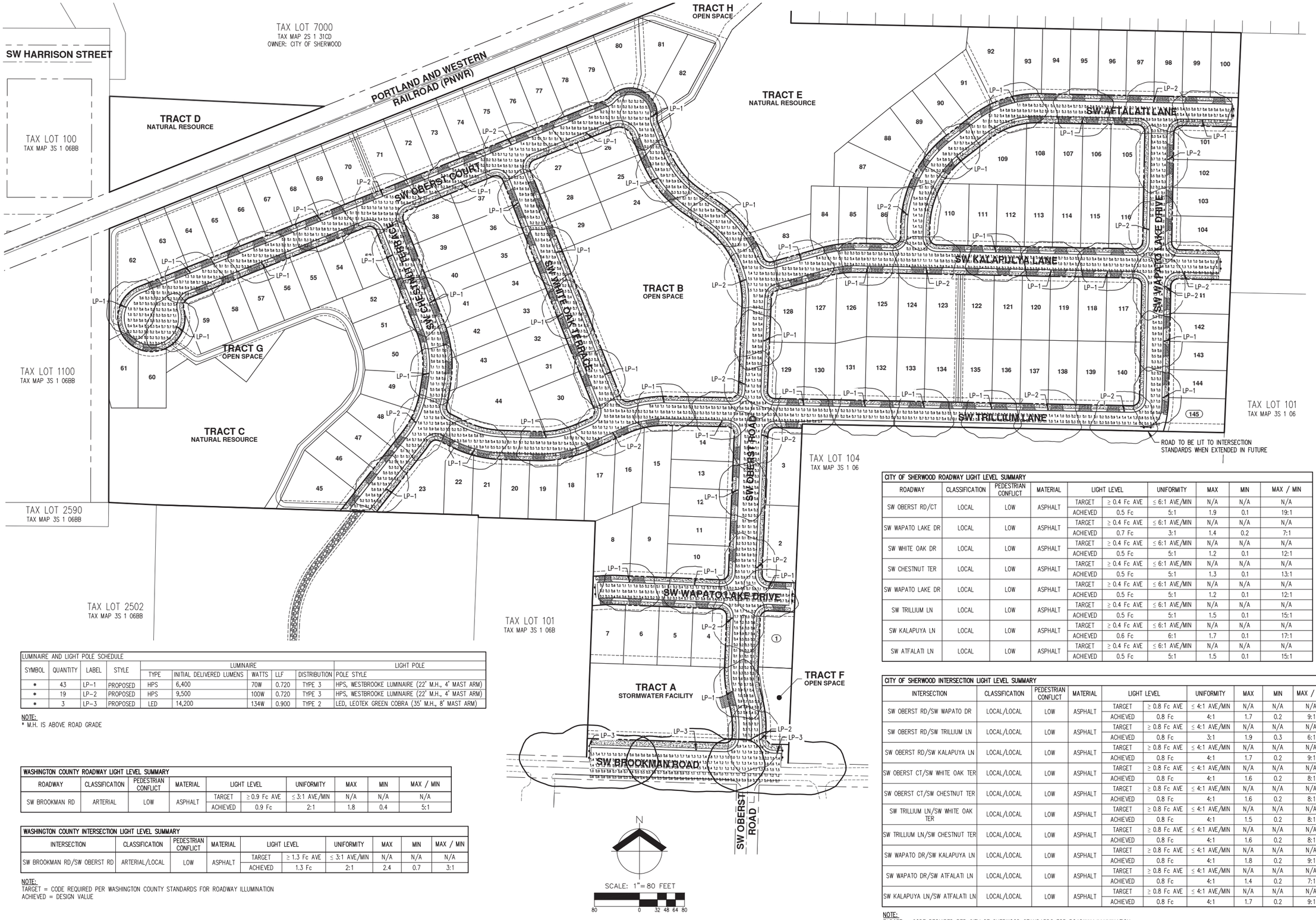
DESIGNED BY: ARS/PAS
DRAWN BY: ARS/CTS
CHECKED BY: ANH
SCALE: AS NOTED
DATE: 12-18-2018

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 24, 2001
BRIAN A. SCLUE
PRELIMINARY PLANS NOT FOR CONSTRUCTION
RENEWAL DATE: 6/30/20

REVISIONS

JOB NUMBER 3591

SHEET P18



LUMINAIRE AND LIGHT POLE SCHEDULE									
SYMBOL	QUANTITY	LABEL	STYLE	LUMINAIRE					LIGHT POLE
				TYPE	INITIAL DELIVERED LUMENS	WATTS	LLF	DISTRIBUTION	POLE STYLE
•	43	LP-1	PROPOSED	HPS	6,400	70W	0.720	TYPE 3	HPS, WESTBROOKE LUMINAIRE (22' M.H., 4' MAST ARM)
•	19	LP-2	PROPOSED	HPS	9,500	100W	0.720	TYPE 3	HPS, WESTBROOKE LUMINAIRE (22' M.H., 4' MAST ARM)
•	3	LP-3	PROPOSED	LED	14,200	134W	0.900	TYPE 2	LED, LEOTEK GREEN COBRA (35' M.H., 8' MAST ARM)

NOTE:
* M.H. IS ABOVE ROAD GRADE

WASHINGTON COUNTY ROADWAY LIGHT LEVEL SUMMARY									
ROADWAY	CLASSIFICATION	PEDESTRIAN CONFLICT	MATERIAL	LIGHT LEVEL		UNIFORMITY	MAX	MIN	MAX / MIN
SW BROOKMAN RD	ARTERIAL	LOW	ASPHALT	TARGET	≥ 0.9 Fc AVE	≤ 3:1 AVE/MIN	N/A	N/A	N/A
				ACHIEVED	0.9 Fc	2:1	1.8	0.4	5:1

WASHINGTON COUNTY INTERSECTION LIGHT LEVEL SUMMARY									
INTERSECTION	CLASSIFICATION	PEDESTRIAN CONFLICT	MATERIAL	LIGHT LEVEL		UNIFORMITY	MAX	MIN	MAX / MIN
SW BROOKMAN RD/SW OBERST RD	ARTERIAL/LOCAL	LOW	ASPHALT	TARGET	≥ 1.3 Fc AVE	≤ 3:1 AVE/MIN	N/A	N/A	N/A
				ACHIEVED	1.3 Fc	2:1	2.4	0.7	3:1

NOTE:
TARGET = CODE REQUIRED PER WASHINGTON COUNTY STANDARDS FOR ROADWAY ILLUMINATION
ACHIEVED = DESIGN VALUE

CITY OF SHERWOOD ROADWAY LIGHT LEVEL SUMMARY									
ROADWAY	CLASSIFICATION	PEDESTRIAN CONFLICT	MATERIAL	LIGHT LEVEL		UNIFORMITY	MAX	MIN	MAX / MIN
SW OBERST RD/CT	LOCAL	LOW	ASPHALT	TARGET	≥ 0.4 Fc AVE	≤ 6:1 AVE/MIN	N/A	N/A	N/A
				ACHIEVED	0.5 Fc	5:1	1.9	0.1	19:1
SW WAPATO LAKE DR	LOCAL	LOW	ASPHALT	TARGET	≥ 0.4 Fc AVE	≤ 6:1 AVE/MIN	N/A	N/A	N/A
				ACHIEVED	0.7 Fc	3:1	1.4	0.2	7:1
SW WHITE OAK DR	LOCAL	LOW	ASPHALT	TARGET	≥ 0.4 Fc AVE	≤ 6:1 AVE/MIN	N/A	N/A	N/A
				ACHIEVED	0.5 Fc	5:1	1.2	0.1	12:1
SW CHESTNUT TER	LOCAL	LOW	ASPHALT	TARGET	≥ 0.4 Fc AVE	≤ 6:1 AVE/MIN	N/A	N/A	N/A
				ACHIEVED	0.5 Fc	5:1	1.3	0.1	13:1
SW WAPATO LAKE DR	LOCAL	LOW	ASPHALT	TARGET	≥ 0.4 Fc AVE	≤ 6:1 AVE/MIN	N/A	N/A	N/A
				ACHIEVED	0.5 Fc	5:1	1.2	0.1	12:1
SW TRILLIUM LN	LOCAL	LOW	ASPHALT	TARGET	≥ 0.4 Fc AVE	≤ 6:1 AVE/MIN	N/A	N/A	N/A
				ACHIEVED	0.5 Fc	5:1	1.5	0.1	15:1
SW KALAPUYA LN	LOCAL	LOW	ASPHALT	TARGET	≥ 0.4 Fc AVE	≤ 6:1 AVE/MIN	N/A	N/A	N/A
				ACHIEVED	0.6 Fc	6:1	1.7	0.1	17:1
SW ATFALATI LN	LOCAL	LOW	ASPHALT	TARGET	≥ 0.4 Fc AVE	≤ 6:1 AVE/MIN	N/A	N/A	N/A
				ACHIEVED	0.5 Fc	5:1	1.5	0.1	15:1

CITY OF SHERWOOD INTERSECTION LIGHT LEVEL SUMMARY									
INTERSECTION	CLASSIFICATION	PEDESTRIAN CONFLICT	MATERIAL	LIGHT LEVEL		UNIFORMITY	MAX	MIN	MAX / MIN
SW OBERST RD/SW WAPATO DR	LOCAL/LOCAL	LOW	ASPHALT	TARGET	≥ 0.8 Fc AVE	≤ 4:1 AVE/MIN	N/A	N/A	N/A
				ACHIEVED	0.8 Fc	4:1	1.7	0.2	9:1
SW OBERST RD/SW TRILLIUM LN	LOCAL/LOCAL	LOW	ASPHALT	TARGET	≥ 0.8 Fc AVE	≤ 4:1 AVE/MIN	N/A	N/A	N/A
				ACHIEVED	0.8 Fc	3:1	1.9	0.3	6:1
SW OBERST RD/SW KALAPUYA LN	LOCAL/LOCAL	LOW	ASPHALT	TARGET	≥ 0.8 Fc AVE	≤ 4:1 AVE/MIN	N/A	N/A	N/A
				ACHIEVED	0.8 Fc	4:1	1.7	0.2	9:1
SW OBERST CT/SW WHITE OAK TER	LOCAL/LOCAL	LOW	ASPHALT	TARGET	≥ 0.8 Fc AVE	≤ 4:1 AVE/MIN	N/A	N/A	N/A
				ACHIEVED	0.8 Fc	4:1	1.6	0.2	8:1
SW OBERST CT/SW CHESTNUT TER	LOCAL/LOCAL	LOW	ASPHALT	TARGET	≥ 0.8 Fc AVE	≤ 4:1 AVE/MIN	N/A	N/A	N/A
				ACHIEVED	0.8 Fc	4:1	1.6	0.2	8:1
SW TRILLIUM LN/SW WHITE OAK TER	LOCAL/LOCAL	LOW	ASPHALT	TARGET	≥ 0.8 Fc AVE	≤ 4:1 AVE/MIN	N/A	N/A	N/A
				ACHIEVED	0.8 Fc	4:1	1.5	0.2	8:1
SW TRILLIUM LN/SW CHESTNUT TER	LOCAL/LOCAL	LOW	ASPHALT	TARGET	≥ 0.8 Fc AVE	≤ 4:1 AVE/MIN	N/A	N/A	N/A
				ACHIEVED	0.8 Fc	4:1	1.6	0.2	8:1
SW WAPATO DR/SW KALAPUYA LN	LOCAL/LOCAL	LOW	ASPHALT	TARGET	≥ 0.8 Fc AVE	≤ 4:1 AVE/MIN	N/A	N/A	N/A
				ACHIEVED	0.8 Fc	4:1	1.8	0.2	9:1
SW WAPATO DR/SW ATFALATI LN	LOCAL/LOCAL	LOW	ASPHALT	TARGET	≥ 0.8 Fc AVE	≤ 4:1 AVE/MIN	N/A	N/A	N/A
				ACHIEVED	0.8 Fc	4:1	1.4	0.2	7:1
SW KALAPUYA LN/SW ATFALATI LN	LOCAL/LOCAL	LOW	ASPHALT	TARGET	≥ 0.8 Fc AVE	≤ 4:1 AVE/MIN	N/A	N/A	N/A
				ACHIEVED	0.8 Fc	4:1	1.7	0.2	9:1

NOTE:
TARGET = CODE REQUIRED PER CITY OF SHERWOOD STANDARDS FOR ROADWAY ILLUMINATION
ACHIEVED = DESIGN VALUE

AKS ENGINEERING & FORESTRY, LLC
12965 SW HERMAN RD STE 100
TUALATIN, OR 97062
P: 503.563.6151
F: 503.563.6152
aks-eng.com

AKS ENGINEERING - SURVEYING - NATURAL RESOURCES
FORESTRY - PLANNING - LANDSCAPE ARCHITECTURE

MIDDLEBROOK SUBDIVISION

SHERWOOD OREGON
TAX LOT 103 AND 100 (ADJUSTED) WASHINGTON COUNTY TAX MAP 3S 1 06/06B

PRELIMINARY STREET LIGHTING PHOTOMETRIC PLAN

DESIGNED BY: MKK
DRAWN BY: MKK
CHECKED BY: MTS
SCALE: AS NOTED
DATE: 12-18-2018

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 13, 2001
MICHAEL T. SELLKE
PRELIMINARY NOT FOR CONSTRUCTION
RENEWAL DATE: 6/30/20

REVISIONS

JOB NUMBER
3591

SHEET
P19

AKS DRAWING FILE: 3591 P09 LIGHTING PLAN.DWG | LAYOUT: P19

SW INKSTER DRIVE

TAX LOT 15400
TAX MAP 2S 1 31CD

TAX LOT 15500

TAX LOT 15600

MATCHLINE - SEE THIS SHEET

TRACT H
OPEN SPACE

TAX LOT 10600
TAX MAP 2S 1 31DC

TAX LOT 10500

TAX LOT 10400

TAX LOT 10300

TAX LOT 10200

TAX LOT 10100

TAX LOT 10000

TAX LOT 9900

TAX LOT 9800

TAX LOT 9700

TAX LOT 9600

TAX LOT 9500

TAX LOT 9400

TAX LOT 9300

TAX LOT 9200

TAX LOT 9100

TAX LOT 9000

TAX LOT 8900
TAX MAP 2S 1 31DC

SW COBBLE COURT

STORM AREA DRAIN (TYP)

15.00' WATER EASEMENT (TYP)

8" WATER MAIN (LOOPED CONNECTION)

15.00' STORM EASEMENT TO CITY OF SHERWOOD

HARRISON STREET

TAX LOT 7000
TAX MAP 2S 1 31CD
OWNER: CITY OF SHERWOOD

12" WATER MAIN

PORTLAND AND WESTERN RAILROAD (PNWR)

TRACT E
NATURAL RESOURCE

WETLAND

SANITARY SEWER MAIN (TYP)

FIR STREET

TAX LOT 100
TAX MAP 3S 1 06BB

TRACT D
NATURAL RESOURCE

SW OBERST COURT

SW ATFALATI LANE

STORM DRAIN (TYP)

SINGLE WATER SERVICE (TYP)

SW CHESTNUT TERRACE

SW WHITE OAK TERRACE

4" STORM DRAIN LATERAL (TYP)

TRACT B
OPEN SPACE

SW KALAPUYA LANE

TAX LOT 100
TAX MAP 3S 1 06

STORM DRAIN MANHOLE (TYP)

FIRE HYDRANT (TYP)

SW WAPATO LAKE DRIVE

TRACT G
OPEN SPACE

4" STORM DRAIN LATERAL (TYP)

TAX LOT 1100
TAX MAP 3S 1 06BB

4" SANITARY SEWER LATERAL (TYP)

TRACT C
NATURAL RESOURCE

WETLAND

SW TRILLIUM LANE

TAX LOT 104
TAX MAP 3S 1 06

STORM CATCH BASIN (TYP)

WATER MAIN (TYP)

CONNECT TO BROOKMAN SANITARY SEWER TRUNK MAIN

TAX LOT 101
TAX MAP 3S 1 06

TAX LOT 2590
TAX MAP 3S 1 06BB

SANITARY SEWER MANHOLE (TYP)

SW OBERST ROAD

SW WAPATO LAKE DRIVE

TAX LOT 101
TAX MAP 3S 1 06B

STORMWATER HIGH FLOW BYPASS

WATER QUALITY MANHOLE

TRACT A
STORMWATER FACILITY
EXTENDED DRY BASIN

TRACT F
OPEN SPACE

FLOW CONTROL MANHOLE

N

SCALE: 1"=80 FEET
80 0 32 48 64 80

STORM CONNECTION TO CULVERT

SW BROOKMAN ROAD

DITCH INLET

EXISTING CULVERT

SW OBERST ROAD

SW INKSTER DRIVE

CONNECT TO EXISTING 12" WATER MAIN

TAX LOT 16100

TAX LOT 16200

TAX LOT 16300

TAX LOT 16400

CONNECT TO EXISTING 8" WATER MAIN

TAX LOT 17000
TAX MAP 2S 1 31CD

TAX LOT 1079
TAX MAP 2S 1 31DC

TAX LOT 16000

TAX LOT 17500 TAX MAP 2S 1 31CD
OWNER: CITY OF SHERWOOD

8" WATER MAIN (LOOPED CONNECTION)

TAX LOT 15900

TAX LOT 15800

TAX LOT 15700

TAX LOT 15600

TAX LOT 15500

12" WATER MAIN

TAX LOT 7000
TAX MAP 2S 1 31CD
OWNER: CITY OF SHERWOOD

PORTLAND AND WESTERN RAILROAD (PNWR)

MATCHLINE - SEE THIS SHEET

AKS ENGINEERING & FORESTRY, LLC
12965 SW HERMAN RD STE 100
TUALATIN, OR 97062
P: 503.563.6151
F: 503.563.6152
aks-eng.com

ENGINEERING • SURVEYING • NATURAL RESOURCES
FORESTRY • PLANNING • LANDSCAPE ARCHITECTURE

MIDDLEBROOK SUBDIVISION

SHERWOOD OREGON

TAX LOT 103 AND 100 (ADJUSTED)
WASHINGTON COUNTY TAX MAP 3S 1 06/06B

PRELIMINARY COMPOSITE UTILITY PLAN

DESIGNED BY:	ARS/PAS
DRAWN BY:	ARS/CTS
CHECKED BY:	AHH
SCALE:	AS NOTED

DATE: 12-18-2018

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 29, 2005
ANDREW H. HAMPTON
PRELIMINARY NOT FOR CONSTRUCTION OR SALE

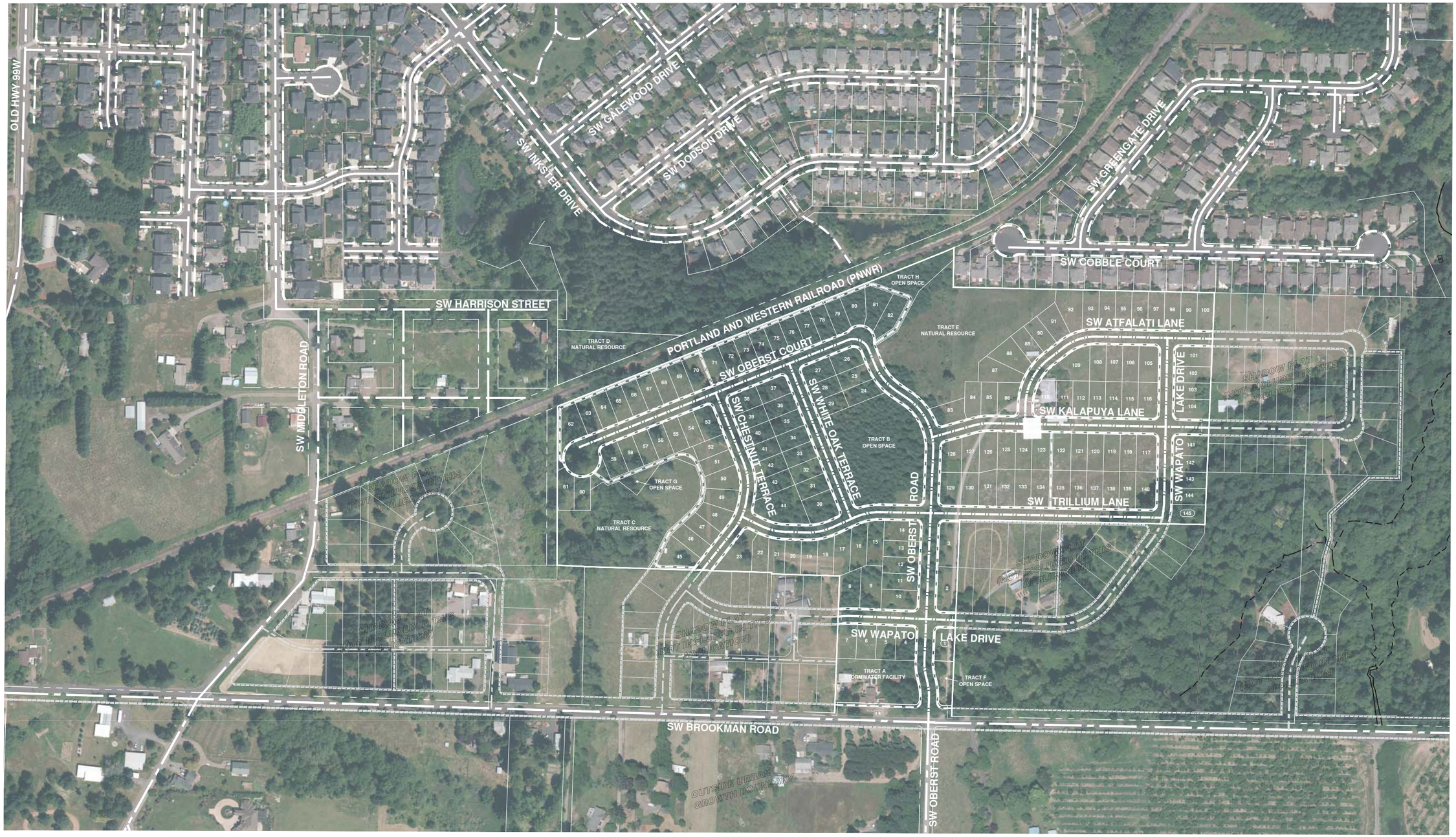
RENEWAL DATE: 6/30/20

REVISIONS

JOB NUMBER
3591

SHEET
P20

AKS DRAWING FILE: 3591 P10 COMPOSITE UTILITY.DWG | LAYOUT: P20



NOTES:

1. POTENTIAL OFF-SITE FUTURE STREET AND TRAILS ARE CONCEPTUAL AND INTENDED FOR ILLUSTRATIVE PURPOSES ONLY AND ARE NOT BINDING ON OFF-SITE PROPERTIES.
2. THESE AREAS ARE NOT INCLUDED IN THE SUBDIVISION APPLICATION AND DEVELOPMENT OF THESE OFF-SITE PROPERTIES IS NOT PROPOSED IN THE PROJECT.

LEGEND

- EXISTING STREETS
- STREET IMPROVEMENTS INCLUDED IN PROJECT
- POTENTIAL STREET IMPROVEMENTS
- EXISTING PEDESTRIAN CONNECTIONS
- PEDESTRIAN IMPROVEMENTS INCLUDED IN PROJECT
- POTENTIAL PEDESTRIAN IMPROVEMENTS
- URBAN GROWTH BOUNDARY

N

SCALE: 1"=150 FEET

150 0 60 90 120 150

AKS ENGINEERING & FORESTRY, LLC
12965 SW HERMAN RD STE 100
TUALATIN, OR 97062
P: 503.563.6151
F: 503.563.6152
aks-eng.com

ENGINEERING · SURVEYING · NATURAL RESOURCES
FORESTRY · PLANNING · LANDSCAPE ARCHITECTURE

MIDDLEBROOK SUBDIVISION

SHERWOOD OREGON
TAX LOT 103 AND 100 (ADJUSTED) WASHINGTON COUNTY TAX MAP 3S 1 06/06B

CONCEPTUAL FUTURE CONNECTIVITY PLAN

DESIGNED BY:	ARS/PAS
DRAWN BY:	ARS/CTS
CHECKED BY:	AHH
SCALE:	AS NOTED
DATE:	12-18-2018

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 13, 2001
ANDREW H. HARTMAN
PRELIMINARY NOT FOR CONSTRUCTION OR FOR A SELLING
RENEWAL DATE: 6/30/20

REVISIONS

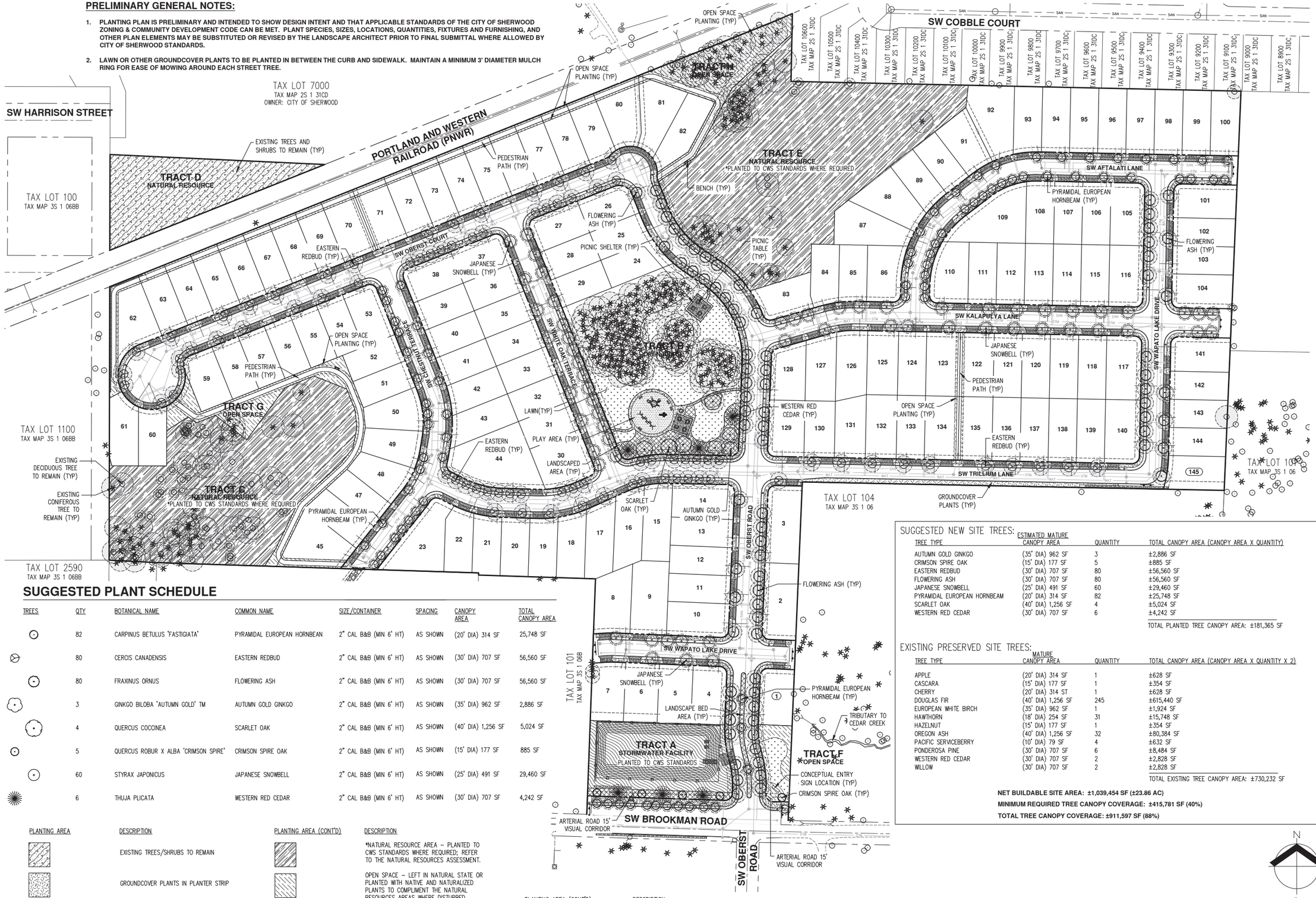
JOB NUMBER
3591

SHEET
P21

AKS DRAWING FILE: 3591 P11 CONNECTIVITY PLAN.DWG | LAYOUT: P21

PRELIMINARY GENERAL NOTES:

1. PLANTING PLAN IS PRELIMINARY AND INTENDED TO SHOW DESIGN INTENT AND THAT APPLICABLE STANDARDS OF THE CITY OF SHERWOOD ZONING & COMMUNITY DEVELOPMENT CODE CAN BE MET. PLANT SPECIES, SIZES, LOCATIONS, QUANTITIES, FIXTURES AND FURNISHING, AND OTHER PLAN ELEMENTS MAY BE SUBSTITUTED OR REVISED BY THE LANDSCAPE ARCHITECT PRIOR TO FINAL SUBMITTAL WHERE ALLOWED BY CITY OF SHERWOOD STANDARDS.
2. LAWN OR OTHER GROUNDCOVER PLANTS TO BE PLANTED IN BETWEEN THE CURB AND SIDEWALK. MAINTAIN A MINIMUM 3' DIAMETER MULCH RING FOR EASE OF MOWING AROUND EACH STREET TREE.



SUGGESTED PLANT SCHEDULE

TREES	QTY	BOTANICAL NAME	COMMON NAME	SIZE/CONTAINER	SPACING	CANOPY AREA	TOTAL CANOPY AREA
	82	CARPINUS BETULUS 'FASTIGIATA'	PYRAMIDAL EUROPEAN HORNBEAN	2" CAL B&B (MIN 6' HT)	AS SHOWN	(20' DIA) 314 SF	25,748 SF
	80	CERCIS CANADENSIS	EASTERN REDBUD	2" CAL B&B (MIN 6' HT)	AS SHOWN	(30' DIA) 707 SF	56,560 SF
	80	FRAXINUS ORNUS	FLOWERING ASH	2" CAL B&B (MIN 6' HT)	AS SHOWN	(30' DIA) 707 SF	56,560 SF
	3	GINKGO BILOBA 'AUTUMN GOLD' TM	AUTUMN GOLD GINKGO	2" CAL B&B (MIN 6' HT)	AS SHOWN	(35' DIA) 962 SF	2,886 SF
	4	QUERCUS COCCINEA	SCARLET OAK	2" CAL B&B (MIN 6' HT)	AS SHOWN	(40' DIA) 1,256 SF	5,024 SF
	5	QUERCUS ROBUR X ALBA 'CRIMSON SPIRE'	CRIMSON SPIRE OAK	2" CAL B&B (MIN 6' HT)	AS SHOWN	(15' DIA) 177 SF	885 SF
	60	STYRAX JAPONICUS	JAPANESE SNOWBELL	2" CAL B&B (MIN 6' HT)	AS SHOWN	(25' DIA) 491 SF	29,460 SF
	6	THUJA PLICATA	WESTERN RED CEDAR	2" CAL B&B (MIN 6' HT)	AS SHOWN	(30' DIA) 707 SF	4,242 SF

PLANTING AREA	DESCRIPTION
	EXISTING TREES/SHRUBS TO REMAIN
	GROUNDCOVER PLANTS IN PLANTER STRIP
	LAWN

PLANTING AREA (CONT'D)	DESCRIPTION
	*NATURAL RESOURCE AREA – PLANTED TO CWS STANDARDS WHERE REQUIRED; REFER TO THE NATURAL RESOURCES ASSESSMENT.
	OPEN SPACE – LEFT IN NATURAL STATE OR PLANTED WITH NATIVE AND NATURALIZED PLANTS TO COMPLIMENT THE NATURAL RESOURCES AREAS WHERE DISTURBED.
	LANDSCAPED AREA
	STORMWATER FACILITY AREA – PLANTED TO CWS STANDARDS

SUGGESTED NEW SITE TREES:

TREE TYPE	ESTIMATED MATURE CANOPY AREA	QUANTITY	TOTAL CANOPY AREA (CANOPY AREA X QUANTITY)
AUTUMN GOLD GINKGO	(35' DIA) 962 SF	3	±2,886 SF
CRIMSON SPIRE OAK	(15' DIA) 177 SF	5	±885 SF
EASTERN REDBUD	(30' DIA) 707 SF	80	±56,560 SF
FLOWERING ASH	(30' DIA) 707 SF	80	±56,560 SF
JAPANESE SNOWBELL	(25' DIA) 491 SF	60	±29,460 SF
PYRAMIDAL EUROPEAN HORNBEAM	(20' DIA) 314 SF	82	±25,748 SF
SCARLET OAK	(40' DIA) 1,256 SF	4	±5,024 SF
WESTERN RED CEDAR	(30' DIA) 707 SF	6	±4,242 SF
			TOTAL PLANTED TREE CANOPY AREA: ±181,365 SF

EXISTING PRESERVED SITE TREES:

TREE TYPE	MATURE CANOPY AREA	QUANTITY	TOTAL CANOPY AREA (CANOPY AREA X QUANTITY X 2)
APPLE	(20' DIA) 314 SF	1	±628 SF
CASCARA	(15' DIA) 177 SF	1	±354 SF
CHERRY	(20' DIA) 314 ST	1	±628 SF
DOUGLAS FIR	(40' DIA) 1,256 SF	245	±615,440 SF
EUROPEAN WHITE BIRCH	(35' DIA) 962 SF	1	±1,924 SF
HAWTHORN	(18' DIA) 254 SF	31	±15,748 SF
HAZELNUT	(15' DIA) 177 SF	1	±354 SF
OREGON ASH	(40' DIA) 1,256 SF	32	±80,384 SF
PACIFIC SERVICEBERRY	(10' DIA) 79 SF	4	±632 SF
PONDEROSA PINE	(30' DIA) 707 SF	6	±8,484 SF
WESTERN RED CEDAR	(30' DIA) 707 SF	2	±2,828 SF
WILLOW	(30' DIA) 707 SF	2	±2,828 SF
			TOTAL EXISTING TREE CANOPY AREA: ±730,232 SF

NET BUILDABLE SITE AREA: ±1,039,454 SF (±23.86 AC)
MINIMUM REQUIRED TREE CANOPY COVERAGE: ±415,781 SF (40%)
TOTAL TREE CANOPY COVERAGE: ±911,597 SF (88%)

N
SCALE: 1"= 80 FEET
80 0 32 48 64 80

AKS ENGINEERING & FORESTRY, LLC
12965 SW HERMAN RD STE 100
TUALATIN, OR 97062
P: 503.563.6151
F: 503.563.6152
aks-eng.com

ENGINEERING • SURVEYING • NATURAL RESOURCES
FORESTRY • PLANNING • LANDSCAPE ARCHITECTURE

MIDDLEBROOK SUBDIVISION

SHERWOOD OREGON
TAX LOT 103 AND 100 (ADJUSTED) WASHINGTON COUNTY TAX MAP 3S 1 06/06B

PRELIMINARY LANDSCAPE, STREET TREE & OPEN SPACE PLAN

DESIGNED BY:	NKP
DRAWN BY:	NKP
CHECKED BY:	KAH
SCALE:	AS NOTED
DATE:	12-18-2018

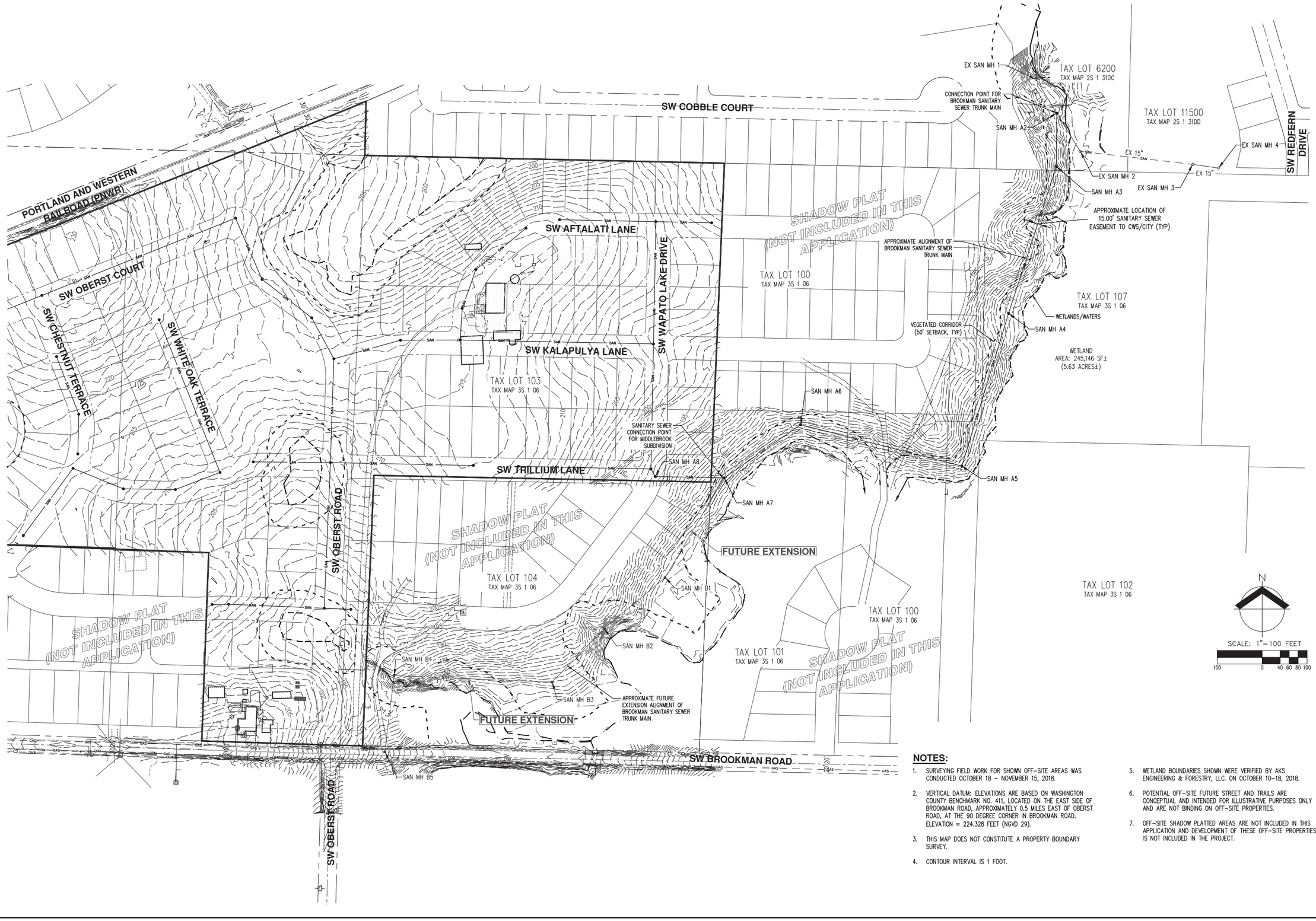
REGISTERED LANDSCAPE ARCHITECT
OREGON
KRISTIN A. HAUSWALD
06/06/13
PRELIMINARY NOT FOR CONSTRUCTION

REVISIONS

JOB NUMBER 3591

SHEET P22

AKS DRAWING FILE: 3591 P15 STREET TREE.DWG | LAYOUT: P22



NOTES:

1. SURVEYING FIELD WORK FOR SHOWN OFF-SITE AREAS WAS CONDUCTED OCTOBER 18 – NOVEMBER 15, 2018.
2. VERTICAL DATUM: ELEVATIONS ARE BASED ON WASHINGTON COUNTY BENCHMARK NO. 411, LOCATED ON THE EAST SIDE OF BROOKMAN ROAD, APPROXIMATELY 0.5 MILES EAST OF OBERST ROAD, AT THE 90 DEGREE CORNER IN BROOKMAN ROAD. ELEVATION = 224.328 FEET (NGVD 29).
3. THIS MAP DOES NOT CONSTITUTE A PROPERTY BOUNDARY SURVEY.
4. CONTOUR INTERVAL IS 1 FOOT.
5. WETLAND BOUNDARIES SHOWN WERE VERIFIED BY AKS ENGINEERING & FORESTRY, LLC. ON OCTOBER 10–18, 2018.
6. POTENTIAL OFF-SITE FUTURE STREET AND TRAILS ARE CONCEPTUAL AND INTENDED FOR ILLUSTRATIVE PURPOSES ONLY AND ARE NOT BINDING ON OFF-SITE PROPERTIES.
7. OFF-SITE SHADOW PLATTED AREAS ARE NOT INCLUDED IN THIS APPLICATION AND DEVELOPMENT OF THESE OFF-SITE PROPERTIES IS NOT INCLUDED IN THE PROJECT.

AKS ENGINEERING & FORESTRY, LLC
12965 SW HERMAN RD STE 100
TUALATIN, OR 97062
P: 503.563.6151
F: 503.563.6152
aks-eng.com

ENGINEERING · SURVEYING · NATURAL RESOURCES
FORESTRY · PLANNING · LANDSCAPE ARCHITECTURE

CLEAN WATER SERVICES
BROOKMAN TRUNK MAIN
SHERWOOD OREGON
WASHINGTON COUNTY

PRELIMINARY OFF-SITE SANITARY SEWER ALIGNMENT PLAN

DESIGNED BY:	ARS/PAS
DRAWN BY:	ARS
CHECKED BY:	AHH
SCALE:	AS NOTED

DATE: 12-18-2018

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 09, 2001
PATRICK A SELLKE
PRELIMINARY NOT FOR CONSTRUCTION

RENEWAL DATE: 6/30/20

REVISIONS

JOB NUMBER
3591

FIGURE
P23

AKS DRAWING FILE: 3591 P23 BROOKMAN TRUNK.DWG | LAYOUT: P23

Exhibit B: City of Sherwood Land Use Application Forms and Subdivision Checklist

AKS Engineering & Forestry, LLC
(Applicant's Consultant)
Contact: Chris Goodell (chrisg@aks-eng.com)
12965 SW Herman Road, Suite 100
Tualatin, OR 97062
Phone: (503) 563-6151
Fax: (503) 563-6152

Case No. _____
Fee _____
Receipt #_____
Date _____
TYPE_____

City of Sherwood Oregon
Home of the Tualatin River National Wildlife Refuge

City of Sherwood
Application for Land Use Action

Type of Land Use Action Requested: (check all that apply)

- ☐ Annexation
- ☐ Plan Amendment (Proposed Zone _____)
- ☐ Planned Unit Development
- ☐ Site Plan (square footage of building and parking area)
- ☐ Variance (list standards to be varied in description)
- ☐ Conditional Use
- ☐ Partition (# of lots _____)
- ■ Subdivision (# of lots 145)
- ☐ Other: _____

By submitting this form the Owner, or Owner's authorized agent/ representative, acknowledges and agrees that City of Sherwood employees, and appointed or elected City Officials, have authority to enter the project site at all reasonable times for the purpose of inspecting project site conditions and gathering information related specifically to the project site.

Note: See City of Sherwood current Fee Schedule, which includes the "Publication/Distribution of Notice" fee, at **www.sherwoodoregon.gov.** Click on Government/Finance/Fee Schedule.

Owner/Applicant Information:

Applicant/Owner: Brookman Development, LLC — Phone: Contact Applicant's Consultant
Applicant Address: P.O. Box 61426, Vancouver, WA 98666 — Email: Contact Applicant's Consultant
Owner: George W. Boyd Rev Living Trust and Carleen H. Brewer Rev Living Trust — Phone: Contact Applicant's Consultant
Owner Address: 17769 SW Brookman Road, Sherwood, OR 97140 — Email: Contact Applicant's Consultant
Contact for Additional Information: Applicant's Consultant

Property Information:

Street Location: 17495, 17601, and 17769 SW Brookman Road
Tax Lot and Map No: 3S106 103 and 3S106B 100/200
Existing Structures/Use: Single-family residential homes and associated accessory buildings
Existing Plan/Zone Designation: Medium Density Residential Low and High (MDRL and MDRH)
Size of Property(ies) +/- 37.95 acres (adjusted)

Proposed Action:

Purpose and Description of Proposed Action:

Subdivision for future single-family residential homes

Proposed Use: Single-family residential

Proposed No. of Phases (one year each): 1

Continued on Reverse

LAND USE APPLICATION FORM

Authorizing Signatures:

I am the owner/authorized agent of the owner empowered to submit this application and affirm that the information submitted with this application is correct to the best of my knowledge.

I further acknowledge that I have read the applicable standards for review of the land use action I am requesting and understand that I must demonstrate to the City review authorities compliance with these standards prior to approval of my request.

Applicant/Owner's Signature — Date: 5/17/18

Owner's Signature — Date: 5.21.18

The following materials must be submitted with your application or it will not be accepted at the counter. Once taken at the counter, the City has up to 30 days to review the materials submitted to determine if we have everything we need to complete the review. Applicant can verify submittal includes specific materials necessary for the application per checklist.

■ **3 Copies of Application Form*** completely filled out and signed by the property owner (or person with authority to make decisions on the property.

■ **Copy of Deed** to verify ownership, easements, etc.

■ **At least 3 folded** sets of plans*

■ **At least 3 copies** of narrative addressing application criteria*

■ **Fee** (along with calculations utilized to determine fee if applicable)

■ **Neighborhood Meeting Verification** including affidavit, sign-in sheet and meeting summary (required for Type III, IV and V projects)

* **Note** that the required numbers of copies identified on the checklist are required for completeness; however, upon initial submittal applicants are encouraged to submit only 3 copies for completeness review. Prior to completeness, the required number of copies identified on the checklist and one full electronic copy will be required to be submitted.

APPLICATION MATERIALS REQUIRED FOR

SUBDIVISION PLAT

Submit the following to the City of Sherwood Planning Department, 22560 SW Pine St., Sherwood, OR 97140: (503) 925-2308.

It is strongly suggested that you have a pre-application meeting with the City prior to submitting for a Subdivision. (See *Pre-application Process* form for information.)

Note: The Clean Water Services (CWS) requires a pre-screening to determine if water quality sensitive areas exist on the property. If these sensitive areas exist, a Site Assessment and Service Provider Letter is required prior to submitting for a subdivision or minor land partition or undertaking any development. **This application will not be accepted without a completed Pre-Screening Form and if required a Service Provider Letter.** Please contact CWS at (503) 681-3600.

If the proposal is next to a Washington County roadway, the applicant must submit an Access Report (Traffic Study) to Washington County Department of Land Use and Transportation (503) 846-8761. **This application will not be accepted until an Access Report (Traffic Study) is submitted to Washington County and the Access Report is deemed complete by the County; or written verification from Washington County that an Access Report is not required is provided.**

✓ **I.** **Fee -** See City of Sherwood current Fee Schedule, which includes the "Publication/Distribution of Notice" fee, at **www.sherwoodoregon.gov.** Click on Departments/Planning/ Fee Schedule.

Note: The above fee is required at the time you submit for a subdivision. Additional fees will be charged for building permit, system development charges, impact fees and other fees applicable to the development. These fees will be charged when you make application for building permit. Building permit application will not be accepted until the final plat is recorded.

✓ **II.** **BACKGROUND INFORMATION** (all materials collated and folded (not rolled) to create fifteen (15) sets)

*****Note that the *final* application must contain fifteen (15) folded sets of the above, however, upon initial submittal of the application and prior to completeness review, the applicant may submit three (3) complete folded sets with the application in lieu of fifteen (15), with the understanding that fifteen (15) complete sets of the application materials will be required before the application is deemed complete and scheduled for review.

☑ **Application Form –** One original and fourteen (14) copies of a completed **City of Sherwood Application for Land Use Action** form. Original signatures from all owners must be on the application form.

☑ **Documentation of Neighborhood Meeting** - Affidavits of mailing, sign-in sheets and a summary of the meeting notes shall be included with the application.

☑ **Tax Map** - Fifteen (15) copies of the latest Tax Map available from the Washington County Assessor's Office showing property within at least 300 feet with scale (1"=100' or 1"= 200') north point, date and legend.

☑ **Mailing Labels –** Two (2) sets of mailing labels for property owners within 1,000 feet of the subject site, including a map of the area showing the properties to receive notice. Mailing labels are available from the Washington County Assessors office or a private title insurance company. . Ownership records shall be based on the most current available information from the Tax Assessor's office. *It is the applicant's responsibility to provide mailing labels that accurately reflect all property owners that reside within 1,000 feet of the subject site.*

☑ **Vicinity Map –** Fifteen (15) copies of a vicinity map. A photocopy of the Thomas Guide is adequate, showing the City limits and the Urban Growth Boundary.

☑ **Narrative –** Fifteen (15) copies and **an electronic copy** of a narrative explaining the proposal in detail and a response to the Required Findings for Subdivision, located in Chapter 16 of the Municipal Code/Zoning & Development, Section 16.120. The Municipal Code/Zoning & Development is available online at www.sherwoodoregon.gov, City Government/Records.

☑ **Electronic Copy –** An electronic copy of the entire application packet. This should include all submittal materials (narrative, vicinity map, mailing labels, site plan, preliminary plat, etc.).

III. REQUIRED PLANS

Submit fifteen (15) sets of the following folded full-size plans and **an electronic copy in PDF format**. Plans must have:

1) The proposed name of the development. If a proposed project name is the same as or similar to other existing projects in the City of Sherwood, the applicant may be required to modify the project name.
2) The name, address and phone of the owner, developer, applicant and plan producer.
3) North arrow,
4) Legend,
5) Date plans were prepared and date of any revisions
6) Scale clearly shown. Other than architectural elevations, all plans must be drawn to an engineer scale.
7) All dimensions clearly shown.

☑ **Existing Conditions Plan** - Existing conditions plan drawn to scale showing: property lines and dimensions, existing structures and other improvements such as streets and utilities, existing vegetation including trees, any floodplains or wetlands and any easements on the property. The existing conditions plan shall also include the slope of the site at 5-foot contour intervals

☑ **Preliminary Development Plans-** Plans must be sufficient for the Hearing Authority to determine compliance with applicable standards. The following information is typically needed for adequate review:

1. The subject parcel(s), its dimensions and area and the buildable area of each lot.

2. The location and dimensions of proposed development, including the following:

Transportation

a. Public and private streets with proposed frontage improvements including curb, gutters, sidewalks, planter strip, street lighting, distances to street centerline, pavement width, right-of-way width, bike lanes and driveway drops.
b. Public and private access easements, width and location.
c. General circulation plan showing location, widths and direction of existing and proposed streets, bicycle and pedestrian ways and transit routes and facilities.
d. Show the location and distance to neighboring driveways and the width and locations of driveways located across the street.
e. The location and size of accesses, sight distance and any fixed objects on collectors or arterial streets.
f. Emergency accesses.

Grading and Erosion Control

g. Indicate the proposed grade at two (2)-foot contour intervals.
h. Indicate the proposed erosion control measures to CWS standards (refer to CWS R&O 07-20).
i. Show areas of cut and fill with areas of structural fill.
j. Show the location of all retaining walls, the type of material to be used, the height of the retaining wall from the bottom of the footing to the top of the wall and the exposed height of the wall.

Utilities

k. Utilities must be shown after proposed grade with 2-foot contour intervals.
l. Map location, purpose, dimensions and ownership of easements.
m. Fire hydrant locations and fire flows.
n. Water, sewer and stormwater line locations, types and sizes.
o. Clearly indicate the private and public portions of the system.
p. Above-ground utilities and manhole locations

Preliminary Stormwater Plan

q. Show location, size and slope of water quality facility.
r. Preliminary calculations justifying size of facility.
s. The total square footage of the new and existing impervious area.
t. Indicate a stormwater facility to CWS standards (CWS R&O 07-20).

Sensitive Areas

u. Show any and all streams, ponds, wetlands and drainage ways.
v. Indicate the vegetative corridor for sensitive areas to CWS standards. (R&O 07-20).
w. Indicate measures to avoid environmental degradation that meet CWS, DSL and Army Corp requirements.
x. Flood elevation.
y. Wetland delineation and buffering proposed.

Land Use

z. The square footage of each building and a break down of square footage by use. (i.e. retail, office, industrial, residential, etc.).
aa. Net buildable acres. (The land remaining after unbuildable areas are taken out, such as the floodplain and wetland areas.)
bb. Net density calculation for residential use.
cc. Existing trees proposed to remain and trees to be removed and the drip-lines of trees proposed to remain.
dd. Street tree location, size and type. (refer to Ch. 8, Section 8.304.06 of the Community Development Code).
ee. Location, size and height of proposed free-standing signs.
ff. Location, height and type of fencing and walls.
gg. For each lot indicated the building envelope.

☑ **Reduced - Proposed Development Plans –** One (1) reduced copy of the Proposed Development Plans on 8 1/2" by 11" sheets and fifteen (15) reduced copies on 11" by 17" sheets.

☑ **Lighting Plan** – Photometric lighting plan indicating foot candle power on and along the perimeter of the site. Proposed locations, height and size of lights. (If outdoor lighting is proposed).

☑ **Surrounding Land Uses –** Existing land use including nature, size and location of existing structures within 300 feet. .

IV. DOCUMENTS REQUIRED

☑ **Title Report** – Two (2) copies of a current preliminary title report available from a private title insurance company.

☑ **CWS Service Provider Letter** – Four (4) copies of the CWS service provider letter.

☐ N/A **Soils Analysis and/or Geotechnical Report** – Four (4) copies completed by a registered Soils Engineer or Geologist including measures to protect natural hazards. (If required by the City Engineer).

☑ **Traffic Study –** Four (4) copies of a traffic study. (If required by the City Engineer

V. ADDITIONAL DOCUMENTS THAT MAY BE REQUIRED

☐ In Process **Army Corps and DSL wetland applications and/or permits –** Four (4) copies of required Divisions of State Lands and/or Army Corp of Engineers permits and/or permit applications if applicable.

☐ N/A **Trip Analysis** - verifying compliance with the Capacity Allocation Program, if required per 16.108.070.

☑ **Tree Report –** Two (2) copies of a tree report prepared by an arborist, forester, landscape architect, botanist or other qualified professional. (If trees are on-site).

☑ **Natural Resource Assessment –** If required by Clean Water Services (CWS). The CWS Pre-Screening indicates as to whether this report is required or not.

☑ **Wetland Delineation Study –** if required by Oregon Division of State Lands (DSL) or the Army Corps of Engineers.

☐ **Other Special Studies and/or Reports –** if required by the Planning Director or the City Engineer to address issues identified in the pre-application meeting or during project review.

N/A

☑ Verification of compliance with other agency standards such as CWS, DSL, Army Corps of Engineers, ODOT, PGE, BPA, Washington County

Exhibit C: Property Ownership Information

FIRST AMERICAN TITLE

Property Research Report

SUBJECT PROPERTY
17495 SW Brookman Rd
R586137
Washington

OWNER
Brookman Development LLC

DATE PREPARED
05/14/2018

PREPARED BY
bmack@firstam.com

First American Title

Customer Service 503.219.8746

cs.oregon@firstam.com

First American Title

Customer Service Department
Phone: 503.219.TRIO (8746)
Fax: 503.790.7872
Email: cs.oregon@firstam.com
Date: 5/14/2018

OWNERSHIP INFORMATION

Owner: Brookman Development LLC
CoOwner:
Site: 17495 SW Brookman Rd Sherwood OR 97140
Mail: PO Box 61426 Vancouver Wa 98666

Parcel #: R586137
Ref Parcel #: 3S1060000103
TRS: 03S / 01W / 06 / NE
County: Washington

PROPERTY DESCRIPTION

Map Grid: 714-F1
Census Tract: 032103 Block: 3029
Neighborhood: CPO 5
School Dist: 88J SHERWOOD
Impr Type: R1 - Residence Single Family
Subdiv/Plat:
Land Use: RMSC - RESIDENTIAL MISCELLANEOUS
Zoning: Sherwood-MDRL - Medium Density Residential Low
Watershed: Fanno Creek-Tualatin River
Legal: ACRES 13.50

ASSESSMENT AND TAXATION

Market Land: $1,954,530.00
Market Impr: $184,950.00
Market Total: $2,139,480.00 (2017)
% Improved: 9%
Assessed Total: $519,980.00 (2017)
Levy Code: 088.14
Tax: $7,844.26 (2017)
Millage Rate: 15.0857

PROPERTY CHARACTERISTICS

Bedrooms: 4	Building Area: 2,414 SqFt	Year Built: 1975
Baths, Total: 3	First Floor: 2,414 SqFt	Eff Year Built:
Baths, Full: 0	Second Floor: 0 SqFt	Lot Size Ac: 13.5 Acres
Baths, Half: 0	Basement Fin: 0 SqFt	Lot Size SF: 588,060 SqFt
Total Units: 0	Basement Unfin: 0 SqFt	Lot Width: 0
# Stories:	Basement Total: 0 SqFt 0 SqFt	Lot Depth: 0
# Fireplaces: 0	Attic Fin: 0 SqFt	Roof Material: Comp Shingle
Cooling: Yes	Attic Unfin: 0 SqFt	Roof Shape:
Heating: Heat Pump	Attic Total: 0 SqFt 0 SqFt	Ext Walls: - Siding
Building Style:	Garage: Garage 528 SqFt	Const Type: Wood Frame

SALES AND LOAN INFORMATION

Owner	Date	Doc #	Sale Price	Deed Type	Loan Amt	Loan Type
BROOKMAN DEV LLC	5/22/2017	0000040512	$1,896,750.00	Grant		Conv/Unk
JAYNES-LOCKWOOD,TERESA	6/30/2010	0000049649	$3,834.00	Trustees		Conv/Unk
RCM DEV LLC	8/30/2005	0000105248	$2,160,000.00	Grant		Conv/Unk

Washington County, Oregon	**2017-040512**
D-DW	
Stn=0 A DUYCK	**05/22/2017 01:26:15 PM**
$10.00 $11.00 $5.00 $20.00 $1,897.00	**$1,943.00**

I, Richard Hobernicht, Director of Assessment and Taxation and Ex-Officio County Clerk for Washington County, Oregon, do hereby certify that the within instrument of writing was received and recorded in the book of records of said county.

Richard Hobernicht, Director of
Assessment and Taxation, Ex-Officio

RECORDING REQUESTED BY:
Fidelity National Title Company of Oregon

5400 SW Meadows Road, Suite 100
Lake Oswego, OR 97035

GRANTOR'S NAME:
Teresa Jaynes-Lockwood

GRANTEE'S NAME:
Brookman Development, LLC an Oregon Limited Liability Company

AFTER RECORDING RETURN TO:
Brookman Development, LLC an Oregon Limited Liability Company
PO Box 61426
Vancouver, WA 98666

SEND TAX STATEMENTS TO:
Brookman Development, LLC an Oregon Limited Liability Company
PO Box 61426
Vancouver, WA 98666

R586137, 3S16-00103
17495 SW Brookman Road, Sherwood, OR 97140

SPACE ABOVE THIS LINE FOR RECORDER'S USE

SPECIAL WARRANTY DEED - STATUTORY FORM
(INDIVIDUAL or CORPORATION)

Teresa Jaynes-Lockwood, Grantor, conveys and specially warrants to **Brookman Development, LLC an Oregon Limited Liability Company**, Grantee, the following described real property free and clear of encumbrances created or suffered by the grantor except as specifically set forth below:

That portion of the North one-half of the Northeast one-quarter of Section 6, Township 3 South, Range 1 West, of the Willamette Meridian, in Washington County, Oregon, described as follows:

Beginning at the Southwest corner of the said North one-half of the Northeast one-quarter of Section 6; thence East, along the South line of the said North one-half of the Northeast one-quarter, a distance of 50 feet to the true point of beginning of the tract to be described; thence North, parallel to the North-South center section line of said Section 6, a distance of 622.3 feet to a point; thence East parallel with the South line of said North one-half of the Northeast one-quarter, a distance of 750 feet, more or less, to the West line of that tract of land conveyed to Lowell E. Weston, et ux, by Deed recorded in Book 962, Page 155, Records of Washington County; thence North along the West line of the Weston tract and the Northerly extension thereof, a distance of 697.7 feet, more or less, to the North line of said Section 6; thence West along the North section line, a distance of 800 feet, more or less, to the North one-quarter corner of said Section; thence South, along the North-South section centerline, a distance of 1320 feet, more or less, to the South line of the North one-half of the Northwest one-quarter of said Section 6; thence East along said South line, a distance of 50 feet to the point of beginning.

Fidelity National Title of Oregon 45141620360-80

The true consideration for this conveyance is One Million Eight Hundred Ninety-Six Thousand Seven Hundred Fifty And No/100 Dollars **($1,896,750.00)**.

Subject to:

Rights of the public to any portion of the Land lying within the area commonly known as streets, roads and highways.

BEFORE SIGNING OR ACCEPTING THIS INSTRUMENT, THE PERSON TRANSFERRING FEE TITLE SHOULD INQUIRE ABOUT THE PERSON'S RIGHTS, IF ANY, UNDER ORS 195.300, 195.301 AND 195.305 TO 195.336 AND SECTIONS 5 TO 11, CHAPTER 424, OREGON LAWS 2007, SECTIONS 2 TO 9 AND 17, CHAPTER 855, OREGON LAWS 2009, AND SECTIONS 2 TO 7, CHAPTER 8, OREGON LAWS 2010. THIS INSTRUMENT DOES NOT ALLOW USE OF THE PROPERTY DESCRIBED IN THIS INSTRUMENT IN VIOLATION OF APPLICABLE LAND USE LAWS AND REGULATIONS. BEFORE SIGNING OR ACCEPTING THIS INSTRUMENT, THE PERSON ACQUIRING FEE TITLE TO THE PROPERTY SHOULD CHECK WITH THE APPROPRIATE CITY OR COUNTY PLANNING DEPARTMENT TO VERIFY THAT THE UNIT OF LAND BEING TRANSFERRED IS A LAWFULLY ESTABLISHED LOT OR PARCEL, AS DEFINED IN ORS 92.010 OR 215.010, TO VERIFY THE APPROVED USES OF THE LOT OR PARCEL, TO DETERMINE ANY LIMITS ON LAWSUITS AGAINST FARMING OR FOREST PRACTICES, AS DEFINED IN ORS 30.930, AND TO INQUIRE ABOUT THE RIGHTS OF NEIGHBORING PROPERTY OWNERS, IF ANY, UNDER ORS 195.300, 195.301 AND 195.305 TO 195.336 AND SECTIONS 5 TO 11, CHAPTER 424, OREGON LAWS 2007, SECTIONS 2 TO 9 AND 17, CHAPTER 855, OREGON LAWS 2009, AND SECTIONS 2 TO 7, CHAPTER 8, OREGON LAWS 2010.

SPECIAL WARRANTY DEED - STATUTORY FORM
(continued)

IN WITNESS WHEREOF, the undersigned have executed this document on the date(s) set forth below.

Dated: 5·22·2017

Teresa Jaynes-Lockwood
Teresa Jaynes-Lockwood

State of Oregon
County of Clackamas

This instrument was acknowledged before me on 5/22/17 by Teresa Jaynes-Lockwood.

Notary Public - State of Oregon

My Commission Expires: 9/22/17

OFFICIAL STAMP
KAREN ANN BLAIR
NOTARY PUBLIC-OREGON
COMMISSION NO. 920303
MY COMMISSION EXPIRES SEPTEMBER 22, 2017

FIRST AMERICAN TITLE

Property Research Report

SUBJECT PROPERTY
17601 SW Brookman Rd
R586431
Washington

OWNER
Brookman Development LLC

DATE PREPARED
05/14/2018

PREPARED BY
bmack@firstam.com

First American Title

Customer Service 503.219.8746

cs.oregon@firstam.com

First American Title

Customer Service Department
Phone: 503.219.TRIO (8746)
Fax: 503.790.7872
Email: cs.oregon@firstam.com
Date: 5/14/2018

OWNERSHIP INFORMATION

Owner: Brookman Development LLC
CoOwner:
Site: 17601 SW Brookman Rd Sherwood OR 97140
Mail: PO Box 61426 Vancouver Wa 98666

Parcel #: R586431
Ref Parcel #: 3S106B000100
TRS: 03S / 01W / 06 / NW
County: Washington

PROPERTY DESCRIPTION

Map Grid: 714-E1
Census Tract: 032103 Block: 3029
Neighborhood: CPO 5
School Dist: 88J SHERWOOD
Impr Type: R1 - Residence Single Family
Subdiv/Plat:
Land Use: VMSC - VACANT MISC
Zoning: Sherwood-MDRL - Medium Density Residential Low
Watershed: Fanno Creek-Tualatin River
Legal: ACRES 12.76, CODE SPLIT

ASSESSMENT AND TAXATION

Market Land: $972,880.00
Market Impr: $1,000.00
Market Total: $973,880.00 (2017)
% Improved: 0%
Assessed Total: $795,630.00 (2017)
Levy Code: 088.14
Tax: $90,264.59 (2017)
Millage Rate: 15.0857

PROPERTY CHARACTERISTICS

Bedrooms: 2	Building Area: 1,875 SqFt	Year Built: 1925
Baths, Total: 1	First Floor: 1,875 SqFt	Eff Year Built: 1965
Baths, Full: 0	Second Floor: 0 SqFt	Lot Size Ac: 12.76 Acres
Baths, Half: 0	Basement Fin: 0 SqFt	Lot Size SF: 555,826 SqFt
Total Units: 0	Basement Unfin: 384 SqFt	Lot Width: 0
# Stories:	Basement Total: 0 SqFt 384 SqFt	Lot Depth: 0
# Fireplaces: 0	Attic Fin: 0 SqFt	Roof Material: Comp Shingle
Cooling:	Attic Unfin: 0 SqFt	Roof Shape:
Heating: Forced Air	Attic Total: 0 SqFt 0 SqFt	Ext Walls: - Siding
Building Style:	Garage: Detached-Garage 324 SqFt	Const Type: Wood Frame

SALES AND LOAN INFORMATION

Owner	Date	Doc #	Sale Price	Deed Type	Loan Amt	Loan Type
BROOKMAN DEV LLC	6/16/2017	0000047893	$3,075,612.00	Warranty	$975,612.00	Const
OWNER NAME UNAVAILABLE	6/22/2007	0000069303		Quit Claim		Conv/Unk
SHERWOOD LAND LLC	7/11/2005	0000079964	$1,628,750.00	Grant		

FIRST AMERICAN TITLE

Property Research Report

SUBJECT PROPERTY
17601 SW Brookman Rd
R586459
Washington

OWNER
Brookman Development LLC

DATE PREPARED
05/14/2018

PREPARED BY
bmack@firstam.com

First American Title

Customer Service 503.219.8746

cs.oregon@firstam.com

First American Title

Customer Service Department
Phone: 503.219.TRIO (8746)
Fax: 503.790.7872
Email: cs.oregon@firstam.com
Date: 5/14/2018

OWNERSHIP INFORMATION

Owner: Brookman Development LLC
CoOwner:
Site: 17601 SW Brookman Rd Sherwood OR 97140
Mail: PO Box 61426 Vancouver Wa 98666

Parcel #: R586459
Ref Parcel #: 3S106B000100
TRS: 03S / 01W / 06 / NW
County: Washington

PROPERTY DESCRIPTION

Map Grid: 714-E1
Census Tract: 032103 Block: 3029
Neighborhood: CPO 5
School Dist: 88J SHERWOOD
Impr Type:
Subdiv/Plat:
Land Use: VMSC - VACANT MISC
Zoning: Sherwood-MDRL - Medium Density Residential Low
Watershed: Fanno Creek-Tualatin River
Legal: ACRES .27, CODE SPLIT

ASSESSMENT AND TAXATION

Market Land: $20,590.00
Market Impr: $0.00
Market Total: $20,590.00 (2017)
% Improved: 0%
Assessed Total: $20,590.00 (2017)
Levy Code: 088.09
Tax: $346.07 (2017)
Millage Rate: 17.0566

PROPERTY CHARACTERISTICS

Bedrooms: 0	Building Area: 0 SqFt	Year Built: 0
Baths, Total: 0	First Floor: 0 SqFt	Eff Year Built:
Baths, Full: 0	Second Floor: 0 SqFt	Lot Size Ac: 0.27 Acres
Baths, Half: 0	Basement Fin: 0 SqFt	Lot Size SF: 11,761 SqFt
Total Units: 0	Basement Unfin: 0 SqFt	Lot Width: 0
# Stories:	Basement Total: 0 SqFt 0 SqFt	Lot Depth: 0
# Fireplaces: 0	Attic Fin: 0 SqFt	Roof Material:
Cooling:	Attic Unfin: 0 SqFt	Roof Shape:
Heating:	Attic Total: 0 SqFt 0 SqFt	Ext Walls: - Wood
Building Style:	Garage: 0 SqFt	Const Type:

SALES AND LOAN INFORMATION

Owner	Date	Doc #	Sale Price	Deed Type	Loan Amt	Loan Type
BROOKMAN DEV LLC	6/16/2017	0000047893	$3,075,612.00	Warranty	$975,612.00	Const
SHERWOOD LAND LLC	6/22/2007	0000069303	$1,628,750.00	Other	$1,900,000.00	Const

Washington County, Oregon	2017-047893
D-DW	
Stn=0 A STROM	06/16/2017 01:35:15 PM
$20.00 $11.00 $5.00 $20.00 $3,076.00	$3,132.00

I, Richard Hobernicht, Director of Assessment and Taxation and Ex-Officio County Clerk for Washington County, Oregon, do hereby certify that the within instrument of writing was received and recorded in the book of records of said county.

Richard Hobernicht, Director of Assessment and Taxation, Ex-Officio

RECORDING REQUESTED BY:
Fidelity National Title Company of Oregon

8564 SW Apple Way
Portland, OR 97225

GRANTOR'S NAME:
Sherwood Land, LLC

GRANTEE'S NAME:
Brookman Development, LLC

AFTER RECORDING RETURN TO:
Order No.: 45141619032-PA
Greg Kubicek
Brookman Development, LLC
PO Box 61426
Vancouver, WA 98666

SEND TAX STATEMENTS TO:
Brookman Development, LLC
PO Box 61426
Vancouver, WA 98666

APN: R586459
R586431
17601 SW Brookman Road, Sherwood, OR 97140

SPACE ABOVE THIS LINE FOR RECORDER'S USE

Fidelity National Title of Oregon 45141619032-04 C

STATUTORY WARRANTY DEED

Sherwood Land, LLC, an Oregon limited liability company, Grantor, conveys and warrants to **Brookman Development, LLC, an Oregon Limited Liabilaity Company**, Grantee, the following described real property, free and clear of encumbrances except as specifically set forth below, situated in the County of Washington, State of Oregon:

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

THE TRUE AND ACTUAL CONSIDERATION FOR THIS CONVEYANCE IS THREE MILLION SEVENTY-FIVE THOUSAND SIX HUNDRED TWELVE AND NO/100 DOLLARS **($3,075,612.00)**. (See ORS 93.030).

BEFORE SIGNING OR ACCEPTING THIS INSTRUMENT, THE PERSON TRANSFERRING FEE TITLE SHOULD INQUIRE ABOUT THE PERSON'S RIGHTS, IF ANY, UNDER ORS 195.300, 195.301 AND 195.305 TO 195.336 AND SECTIONS 5 TO 11, CHAPTER 424, OREGON LAWS 2007, SECTIONS 2 TO 9 AND 17, CHAPTER 855, OREGON LAWS 2009, AND SECTIONS 2 TO 7, CHAPTER 8, OREGON LAWS 2010. THIS INSTRUMENT DOES NOT ALLOW USE OF THE PROPERTY DESCRIBED IN THIS INSTRUMENT IN VIOLATION OF APPLICABLE LAND USE LAWS AND REGULATIONS. BEFORE SIGNING OR ACCEPTING THIS INSTRUMENT, THE PERSON ACQUIRING FEE TITLE TO THE PROPERTY SHOULD CHECK WITH THE APPROPRIATE CITY OR COUNTY PLANNING DEPARTMENT TO VERIFY THAT THE UNIT OF LAND BEING TRANSFERRED IS A LAWFULLY ESTABLISHED LOT OR PARCEL, AS DEFINED IN ORS 92.010 OR 215.010, TO VERIFY THE APPROVED USES OF THE LOT OR PARCEL, TO DETERMINE ANY LIMITS ON LAWSUITS AGAINST FARMING OR FOREST PRACTICES, AS DEFINED IN ORS 30.930, AND TO INQUIRE ABOUT THE RIGHTS OF NEIGHBORING PROPERTY OWNERS, IF ANY, UNDER ORS 195.300, 195.301 AND 195.305 TO 195.336 AND SECTIONS 5 TO 11, CHAPTER 424, OREGON LAWS 2007, SECTIONS 2 TO 9 AND 17, CHAPTER 855, OREGON LAWS 2009, AND SECTIONS 2 TO 7, CHAPTER 8, OREGON LAWS 2010.

STATUTORY WARRANTY DEED
(continued)

IN WITNESS WHEREOF, the undersigned have executed this document on the date(s) set forth below.

Dated: June 13, 2017

Sherwood Land, LLC

BY: _____
George L Lorance, Manager

State of OR
County of WASHINGTON

This instrument was acknowledged before me on June 13, 2017 by George C Lorance as Manager of Sherwood Land, LLC.

_____
Notary Public - State of Oregon

My Commission Expires: 1.11.2019

OFFICIAL STAMP
PAMELA FAY ANDERSON
NOTARY PUBLIC-OREGON
COMMISSION NO. 935145
MY COMMISSION EXPIRES JANUARY 11, 2019

EXHIBIT "A"

Legal Description

Being a part of the Donation Land Claim of Charles Talmage in Section 31, Township 2 South, Range 1 West and Section 6, Township 3 South, Range 1 West of the Willamette Meridian, in the County of Washington and State of Oregon, and being particularly bounded and described as follows, to-wit:

Beginning at the one-quarter section corner on the North line of said Section 6, Township 3 South, Range 1 West of the Willamette Meridian and running thence South on one-half section line 20.19 chains; thence West 16.49 chains; thence North 6.70 chains; thence East 9.27 chains; thence North 12.10 chains to the right-of-way of the S.P. & S. (formerly the P&W VRR); thence following the South boundary line of said right-of-way North 67° East 8.40 chains to the East line of the Southwest one-quarter of said Section 31, Township 2 South, Range 1 West of the Willamette Meridian and thence South 2 chains to the point of beginning.

EXCEPTING THEREFROM that tract described as follows, to-wit:

Beginning at the one-quarter section corner on the North line of said Section 6, Township 3 South, Range 1 West of the Willamette Meridian and running thence South on one-half section line 20.19 chains; thence West 516 feet to the true point of beginning; thence West 572.34 feet; thence North 6.70 chains; thence East 572.34 feet; thence South 6.70 chains to the point of beginning.

ALSO EXCEPTING THEREFROM that tract conveyed to John A. Yeager, et ux, by Deed recorded February 22, 1971 in Book 807, Page 355, Records of Washington County, Oregon.

EXHIBIT TO DEED

Rights of the public to any portion of the Land lying within the limits of streets, roads and highways.

FIRST AMERICAN TITLE

Property Research Report

SUBJECT PROPERTY
17769 SW Brookman Rd
R586468
Washington

OWNER
Boyd, George W Rev Living Trust

DATE PREPARED
05/14/2018

PREPARED BY
bmack@firstam.com

First American Title

Customer Service 503.219.8746

cs.oregon@firstam.com

First American Title

Customer Service Department
Phone: 503.219.TRIO (8746)
Fax: 503.790.7872
Email: cs.oregon@firstam.com
Date: 5/14/2018

OWNERSHIP INFORMATION

Owner: Boyd, George W Rev Living Trust
CoOwner: Brewer, Carleen H Rev Living Trust
Site: 17769 SW Brookman Rd Sherwood OR 97140
Mail: PO Box 85 Tualatin OR 97062

Parcel #: R586468
Ref Parcel #: 3S106B000200
TRS: 03S / 01W / 06 / NW
County: Washington

PROPERTY DESCRIPTION

Map Grid: 714-E2
Census Tract: 032103 Block: 3029
Neighborhood: CPO 5
School Dist: 88J SHERWOOD
Impr Type: R1 - Residence Single Family
Subdiv/Plat:
Land Use: AFAR - FARMS AND CROPS
Zoning: Sherwood-MDRL - Medium Density Residential Low
Watershed: Fanno Creek-Tualatin River
Legal: ACRES 15.82, UNZONED FARMLAND-POTENTIAL ADDITIONAL TAX LIABILITY

ASSESSMENT AND TAXATION

Market Land: $204,710.00
Market Impr: $108,260.00
Market Total: $312,970.00 (2017)
% Improved: 35%
Assessed Total: $243,270.00 (2017)
Levy Code: 088.14
Tax: $3,669.90 (2017)
Millage Rate: 15.0857

PROPERTY CHARACTERISTICS

Bedrooms: 3	Building Area: 1,918 SqFt	Year Built: 1954
Baths, Total: 2	First Floor: 1,918 SqFt	Eff Year Built: 1965
Baths, Full: 0	Second Floor: 0 SqFt	Lot Size Ac: 15.82 Acres
Baths, Half: 0	Basement Fin: 1,280 SqFt	Lot Size SF: 689,119 SqFt
Total Units: 0	Basement Unfin: 0 SqFt	Lot Width: 0
# Stories:	Basement Total: 1,280 SqFt 0 SqFt	Lot Depth: 0
# Fireplaces: 0	Attic Fin: 0 SqFt	Roof Material: Comp Shingle
Cooling:	Attic Unfin: 0 SqFt	Roof Shape:
Heating: Electric	Attic Total: 0 SqFt 0 SqFt	Ext Walls: - Siding
Building Style:	Garage: 0 SqFt	Const Type: Wood Frame

SALES AND LOAN INFORMATION

Owner	Date	Doc #	Sale Price	Deed Type	Loan Amt	Loan Type
BOYD GEORGE W LIVING TRUST	4/7/2010	0000025905		Quit Claim		Conv/Unk
BOYD, GEORGE W REV LIVING TRUST &	4/25/1997	2010025905		DBS		

15
31
2015

Washington County, Oregon 2010-025905
04/07/2010 10:42:28 AM
D-DBS Cnt=1 Stn=12 S PFEIFER
$15.00 $5.00 $11.00 $15.00 $20.00 - Total = $66.00

01469908201000259050030032

I, Richard Hobernicht, Director of Assessment and Taxation and Ex-Officio County Clerk for Washington County, Oregon, do hereby certify that the within instrument of writing was received and recorded in the book of records of said county.

Richard Hobernicht, Director of Assessment and Taxation, Ex-Officio County Clerk

Until a change is requested, all tax statements shall be sent to the following:

George Boyd & Carleen Brewer
P.O. Box 85
Tualatin, OR 97062

After recording, return to:
EIPH
Dean C. Werst, Attorney
1785 Willamette Falls Drive
West Linn, OR 97068

BARGAIN AND SALE DEED

George W. Boyd and Carleen H. Brewer, Grantors, convey to **George W. Boyd, Trustee or his successor Trustee of the George W. Boyd Revocable Living Trust UAD November 12, 2009,** as to an undivided one-half interest, **and to Carleen H. Brewer, Trustee or her successor Trustee of the Carleen H. Brewer Revocable Living Trust UAD November 12, 2009,** as to an undivided one-half interest, Grantees, as tenants-in-common, the following described real property situated in Washington County, Oregon:

Parcel I: A tract of land in Section 6, Township 3 South, Range 1 West of the Willamette Meridian, Washington County, Oregon, described as follows: Beginning at the quarter section corner on the north line of said Section 6, Township 3 South, Range 1 West of the Willamette Meridian; and running thence South on half section line, 20.19 chains; thence West 516 feet to the true place of beginning; thence West 572.34 feet; thence North 6.70 chains; thence East 572.34 feet; thence South 6.70 chains to the place of beginning.

Parcel II: Part of Section 6, Township 3 South, Range 1 West of the Willamette Meridian, in the County of Washington and State of Oregon, described as follows: Commencing at a stake 30 feet North and 30 feet East of the northeast corner of Block 1, in the Town of Middleton, Oregon; running thence due East to a stake 40 rods; from thence due South to a stake 44 rods; from thence due West to a stake 40 rods; from thence due North to the place of beginning, 44 rods. EXCEPTING therefrom a strip of land 60 feet wide running from Northeast to Southwest as described in deed to the Portland and Willamette Valley Railroad Company, recorded in Book 31, Page 217, on May 23, 1891.

SUBJECT ONLY TO THE FOLLOWING ENCUMBRANCES: Rights of the public in and to that portion of the premises herein described lying within the limits of Brookman Road, County Road No. 493.

BEFORE SIGNING OR ACCEPTING THIS INSTRUMENT, THE PERSON TRANSFERRING FEE TITLE SHOULD INQUIRE ABOUT THE PERSON'S RIGHTS, IF ANY, UNDER ORS 195.300, 195.301 AND 195.305 TO 195.336 AND SECTIONS 5 TO 11, CHAPTER 424, OREGON LAWS 2007. THIS INSTRUMENT DOES NOT ALLOW USE OF THE PROPERTY DESCRIBED IN THIS INSTRUMENT IN VIOLATION OF APPLICABLE LAND USE LAWS AND REGULATIONS. BEFORE SIGNING OR ACCEPTING THIS INSTRUMENT, THE PERSON ACQUIRING FEE TITLE TO THE PROPERTY SHOULD CHECK WITH THE APPROPRIATE CITY OR COUNTY PLANNING DEPARTMENT TO VERIFY THAT THE UNIT OF LAND BEING TRANSFERRED IS A LAWFULLY ESTABLISHED LOT OR PARCEL, AS DEFINED IN ORS 92.010 OR 215.0101, TO VERIFY THE APPROVED USES OF THE LOT OR PARCEL, TO VERIFY THE EXISTENCE OF FIRE PROTECTION FOR STRUCTURES, AND TO INQUIRE ABOUT THE RIGHTS OF NEIGHBORING PROPERTY OWNERS, IF ANY, UNDER ORS 195.300, 195.301 AND 195.305 TO 195.336 AND SECTIONS 5 TO 11, CHAPTER 424, OREGON LAWS 2007.

The true consideration for this conveyance is $-NONE-. However, the actual consideration consists of or includes other property or value given or promised which is the whole consideration.

DATED: 1-21, 2010.

George W. Boyd

Carleen H Brewer

Carleen H. Brewer

STATE OF OREGON)
) ss.
County of Clackamas)

Personally appeared the above named **George W. Boyd**, on January 21, 2010, and acknowledged the foregoing instrument to be his voluntary act and deed.

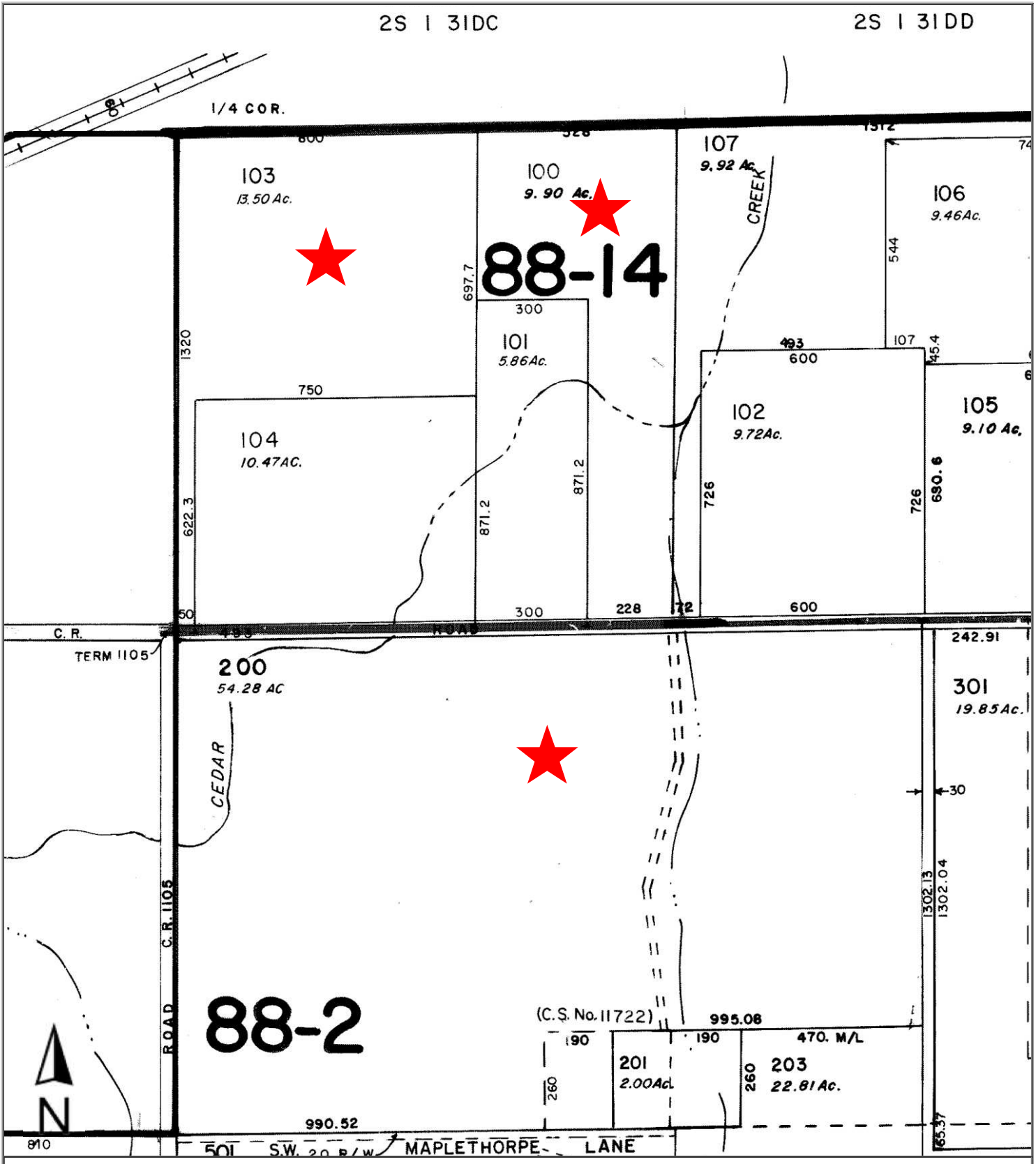
OFFICIAL SEAL
MICHAEL J TURNER
NOTARY PUBLIC-OREGON
COMMISSION NO. 442789
MY COMMISSION EXPIRES SEPT. 21, 2013

NOTARY PUBLIC FOR OREGON
My Commission Expires: 9/21/2013

STATE OF OREGON)
) ss.
County of Clackamas)

Personally appeared the above named **Carleen H. Brewer**, on January 21, 2010, and acknowledged the foregoing instrument to be her voluntary act and deed.

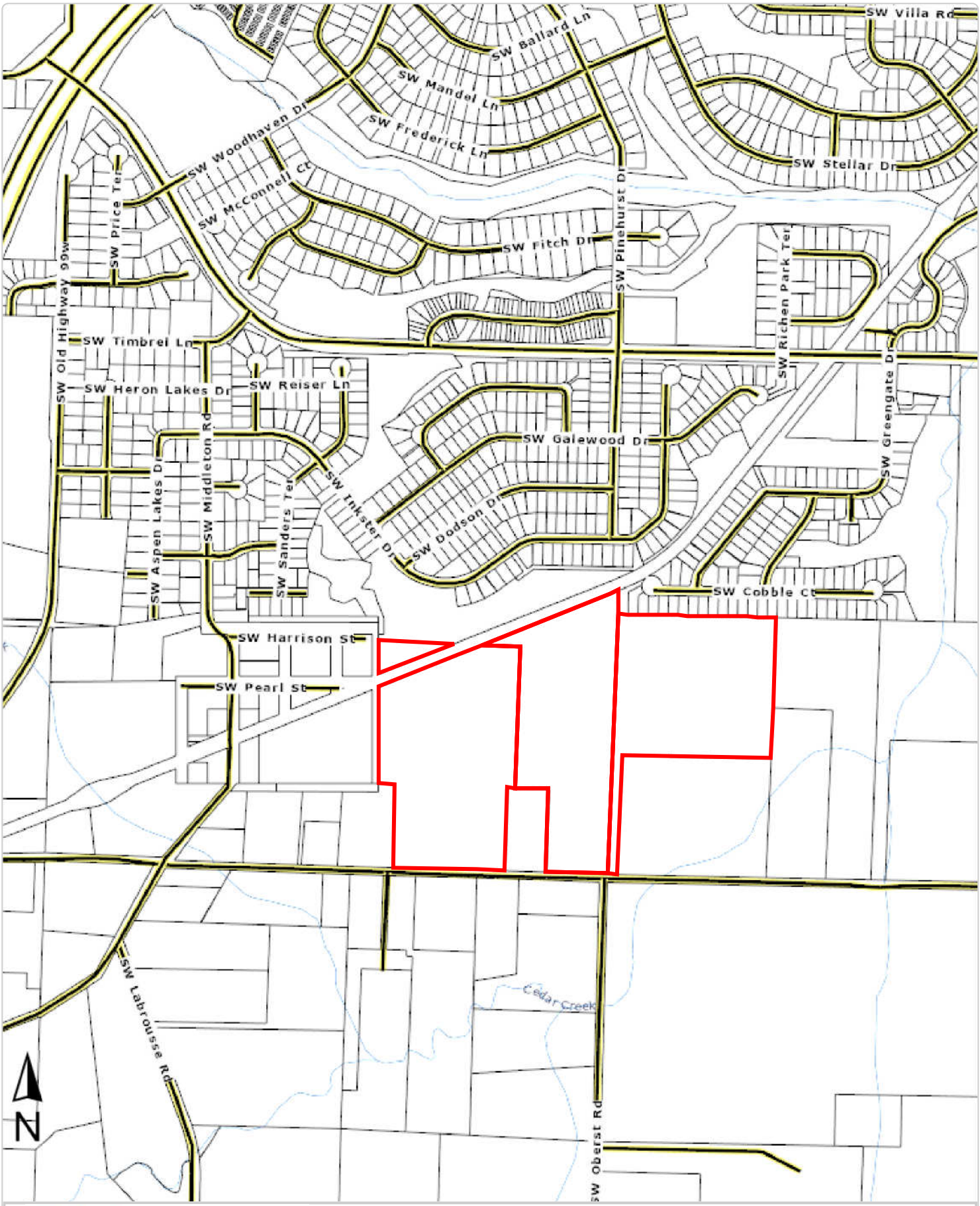
Michael J. Turner
NOTARY PUBLIC FOR OREGON
My Commission Expires: 9/21/2013



First American Title

ParcelID: R586137

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



First American Title

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

Exhibit D: Washington County Assessor's Maps

SECTION 6 T3S R1W W.M.

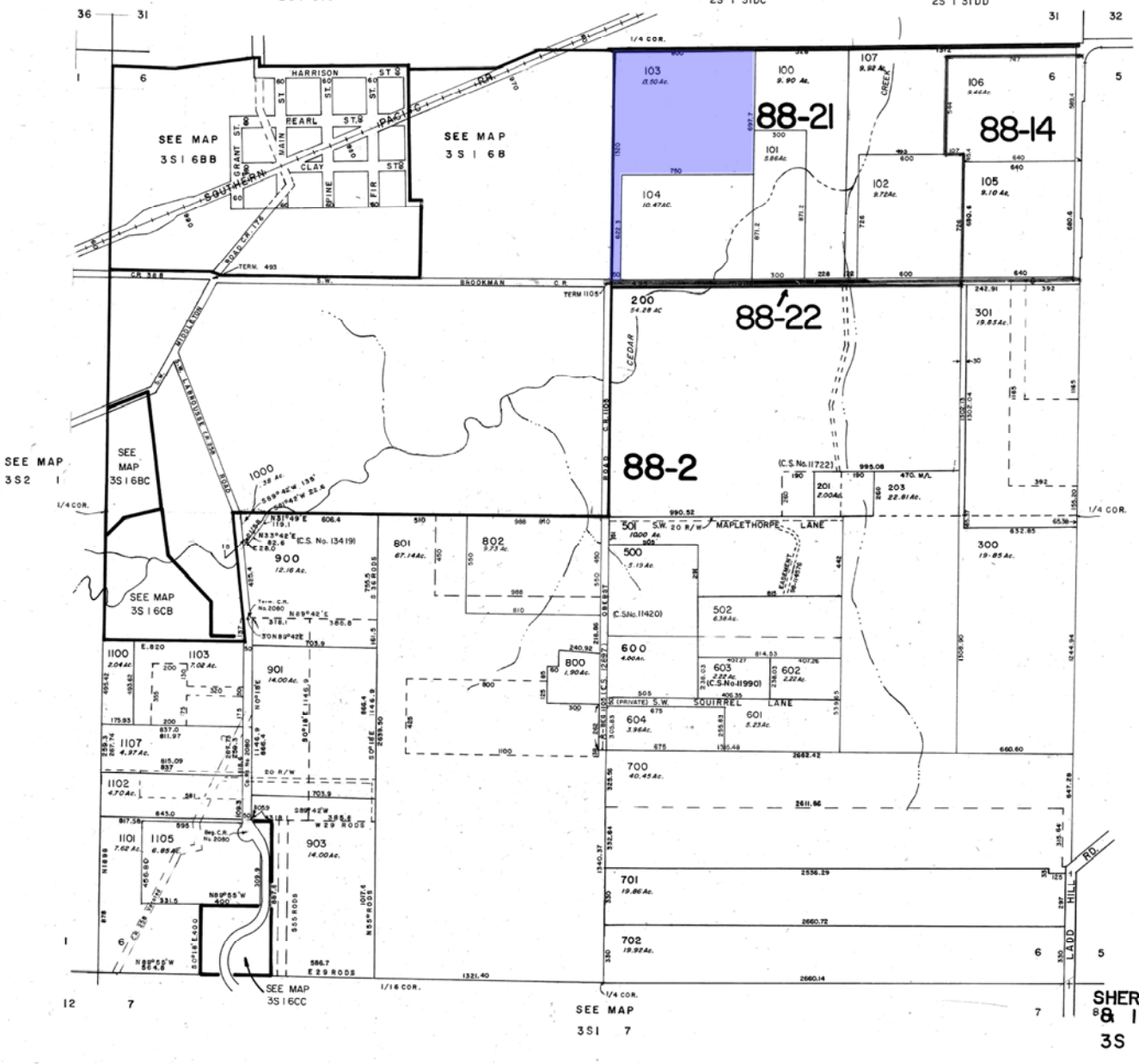
WASHINGTON COUNTY OREGON

SCALE 1"= 400'

3S1 6 & INDEX

FOR ASSESSMENT PURPOSES ONLY
DO NOT RELY ON FOR ANY OTHER USE

CANCELLED 1200, 1290, 1104, 1106, 902, 202, 703, 400, 204,



SHERWOOD & INDEX 3S1 6

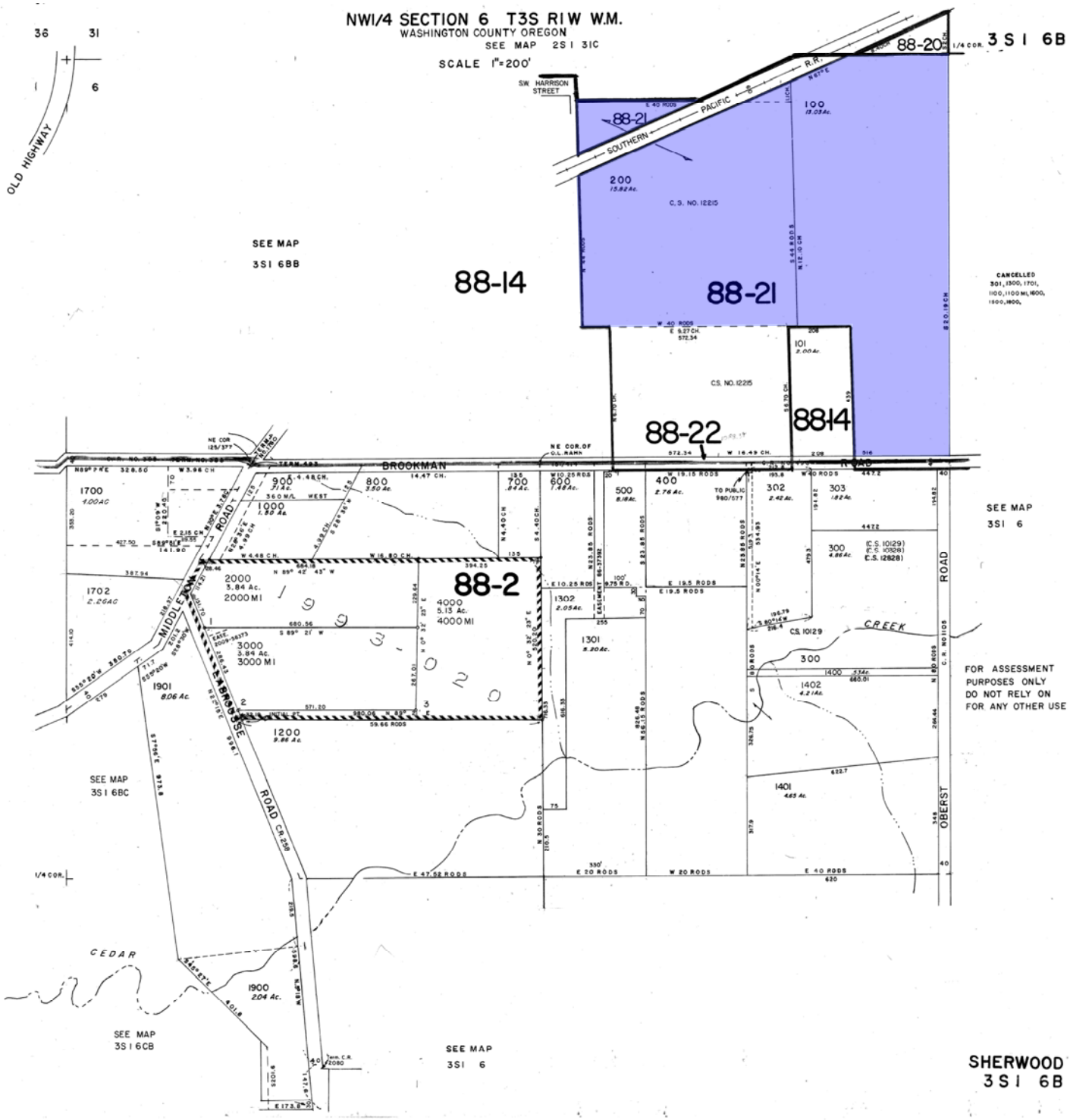
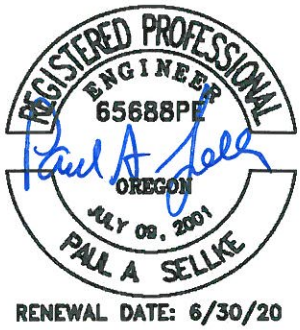

NW1/4 SECTION 6 T3S R1W W.M.
WASHINGTON COUNTY OREGON
SEE MAP 2S1 31C
SCALE 1"=200'
3S1 6B
SW HARRISON STREET
PACIFIC
SOUTHERN
R.R.
88-20
88-21
88-14
88-22
8814
88-2
100
200
101
C.S. NO. 12215
CANCELLED
301, 1300, 1701, 1100, 1100 MI, 1600, 1900, 1800,
SEE MAP 3S1 6BB
SEE MAP 3S1 6
SEE MAP 3S2 1A
SEE MAP 3S1 6BC
SEE MAP 3S1 6CB
SEE MAP 3S1 6
OLD HIGHWAY
BROOKMAN ROAD
MIDDLE CHAPEL ROAD
ROAD CR 209
OBERST ROAD
CREEK
CEDAR
1700
1702
1901
1200
1900
2000
3000
4000
1302
1301
300
1400
1402
1401
302
303
500
400
600
700
800
900
1000
FOR ASSESSMENT PURPOSES ONLY
DO NOT RELY ON
FOR ANY OTHER USE
SHERWOOD
3S1 6B

Exhibit E: Preliminary Stormwater Report

Middlebrook Subdivision
Sherwood, Oregon

Preliminary Stormwater Report

Date:	September 2018
Client:	Brookman Development, LLC P.O. Box 61426 Vancouver, WA 98666
Engineering Contact:	Paul Sellke, PE, GE 503-563-6151 PaulS@aks-eng.com
Engineering Firm:	AKS Engineering & Forestry, LLC 12965 SW Herman Road, Suite 100 Tualatin, OR 97062
AKS Job Number:	3591



RENEWAL DATE: 6/30/20

AKS ENGINEERING & FORESTRY
www.aks-eng.com

Table of Contents

Tables

Figures

Appendices

Preliminary Stormwater Report
MIDDLEBROOK SUBDIVISION
SHERWOOD, OREGON

1.0 Purpose of Report

The purpose of this report is to analyze the effects the proposed development will have on the existing stormwater conveyance system; document the criteria, methodology, and informational sources used to design the proposed stormwater system; and present the results of the hydraulic analysis.

2.0 Project Location/Description

The proposed residential subdivision is located at 17495 and 17601 SW Brookman Road in Sherwood, Oregon. The property is situated north of Brookman Road, south of the Portland and Western Railroad, and encompasses a total area of 37.9 acres (Tax Lot 103, Tax Map 3S 1 6 and Tax Lot 100 (Adjusted), Tax Map 3S 1 6B).

The proposed project consists of a 145-lot residential subdivision for single-family detached homes. The site improvements will also include the construction of public streets, underground utilities, and a stormwater facility.

3.0 Regulatory Design Criteria

3.1 STORMWATER QUANITY

Per Clean Water Services' (CWS) *Design and Construction Standards Manual for Sanitary Sewer and Surface Water Management (R&O 17-05)*, Section 4.03 Water Quantity Control Requirements, on-site detention is required when any of the following conditions exist:

1. *There is an identified downstream deficiency and the District or City determines that detention rather than conveyance system enlargement is the more effective solution.*

2. *There is an identified regional detention site within the boundary of the development.*

3. *Water quantity facilities are required by District-adopted watershed management plans or adopted subbasin master plans.*

Based on CWS standards, the downstream analysis determined that stormwater detention is not required for this project.

SLOPES V (NWR-2014-03-14) criteria requires retention or detention facilities which limit the post-developed discharges to match pre-developed discharge rates up to the 10-year flow. Therefore, the proposed stormwater facility will limit discharge to match pre-developed discharge for the 2-year and the 10-year flow.

3.2 STORMWATER QUALITY

Stormwater quality management for this project will be met by using an extended dry basin designed per the requirements of Clean Water Services' *Design and Construction Standards for Sanitary Sewer and Surface Water Management (R&O 17-05).*

4.0 Design Methodology

The Santa Barbara Urban Hydrograph (SBUH) Method was used to analyze stormwater runoff from the site. This method utilizes the SCS Type 1A 24-hour design storm. HydroCAD 10.0 computer software was used to model the hydrology and stormwater facility hydraulics. Runoff Curve Numbers (CN) which are representative of existing and developed cover conditions and time of concentration (Tc) values were developed in accordance with the U.S. Department of Agriculture (USDA) – Natural Resource Conservation Service's (NRCS) Technical Release 55. Appendices at the end of this report include the parameters used for design.

5.0 Design Parameters

5.1 DESIGN STORMS

Per CWS requirements, the stormwater analysis used the 24-hour storm for the evaluation and design of the proposed stormwater facility. The following rainfall intensities were utilized as the design storm for each recurrence interval.

Table 5-1: Rainfall Intensities

Recurrence Interval (Years)	Total Precipitation Depth (Inches)
Water Quality	0.36
2	2.50
10	3.45
25	3.90

5.2 PRE-DEVELOPED SITE CONDITIONS

5.2.1 Site Topography

Existing on-site grades vary from ±1% to ±15%. The site has a high point of ±230 feet located centrally on the northern property boundary. From the high point the site slopes down toward one of the four wetland areas. The site has a low point of ±180 feet near the southeast property corner.

5.2.2 Land Use

The existing site consists of two single-family residential homes, with associated buildings, driveways, and landscaping areas, surrounded by woodland/pastureland.

5.3 SOIL TYPE

The soil beneath the project site is classified as silt loam and silty clay loams, according to the USDA Soil Survey for Washington County. The following table outlines the Hydrologic Soil Group rating for the soil type:

Table 5-2: Hydrologic Soil Group Ratings

NRCS Map Unit Identification	NRCS Soil Classification	Hydrologic Soil Group Rating
1	Aloha silt loam	C/D
22	Huberly silt loam	C/D
42	Verboort silty clay loam	D
45B	Woodburn silt loam	C

Further information on this soil type is included in the NRCS Soil Resource Report located in Appendix E of this report.

5.4 POST-DEVELOPED SITE CONDITIONS

5.4.1 Site Topography

The on-site slopes will be modified with cuts and fills to accommodate the construction of public streets. Additionally, sloped residential building pads will be constructed adjacent to the public right-of-way.

5.4.2 Land Use

The post-developed site land use will consist of a 145-lot, single-family residential subdivision with associated streets, sidewalks, and underground utilities.

5.4.3 Post-Developed Input Parameters

Appendices A and B provide the HydroCAD reports and input parameters that were generated for the analyzed storm events. This report incudes all the parameters (e.g., impervious/pervious areas, time of concentration, etc.) used to model the site hydrology.

5.4.4 Description of Off-Site Contributing Basins

The off-site drainage basins include a residential property southwest of the site (Tax Lot 101), a portion of the remainder of Tax Lot 200, a portion of SW Brookman Road, and a portion of a residential property on the south side of SW Brookman Road. These off-site basins were incorporated into the hydraulic modeling. The remaining surrounding properties drain toward their own respective storm drainage systems.

6.0 Stormwater Analyses

6.1 PROPOSED STORMWATER CONDUIT SIZING AND INLET SPACING

The proposed on-site curb inlets will be spaced per CWS requirements to properly convey stormwater runoff. The proposed storm system pipes will be designed using Manning's equation to convey the peak flows from the 25-year storm event and will be addressed within the final stormwater report.

6.2 PROPOSED STORMWATER QUANTITY CONTROL FACILITY

Proposed site improvements will impact wetlands and stormwater runoff from the subject site shall be directed into Cedar Creek. Due to the wetland impacts and discharge into waters of the state, the U.S. Army Corps of Engineers (USACE) and Oregon Division of State Lands (DSL) will require stormwater detention to meet SLOPES V requirements for the 2-year and 10-year storm events. The proposed project will construct an extended dry basin with outlet structures designed per CWS standards. The following table outlines the total peak flow discharges from the project for the selected storm events.

Table 6-1: Peak Pre- and Post-Development Flow Comparisons

Recurrence Interval (Years)	Peak Pre-Development Flows (cfs)	Peak Post-Development Flow (cfs)	Peak Flow Increase or (Decrease) - (cfs)
2	6.46	3.79	(2.67)
10	12.80	12.44	(0.36)

6.3 PROPOSED WATER QUALITY CONTROL FACILITIES

An extended dry basin has been designed per the *Clean Water Services Design and Construction Standards for Sanitary Sewer and Surface Water Management (R&O 17-05)* to provide water quality treatment for the proposed site. See Appendix D for water quality treatment calculations.

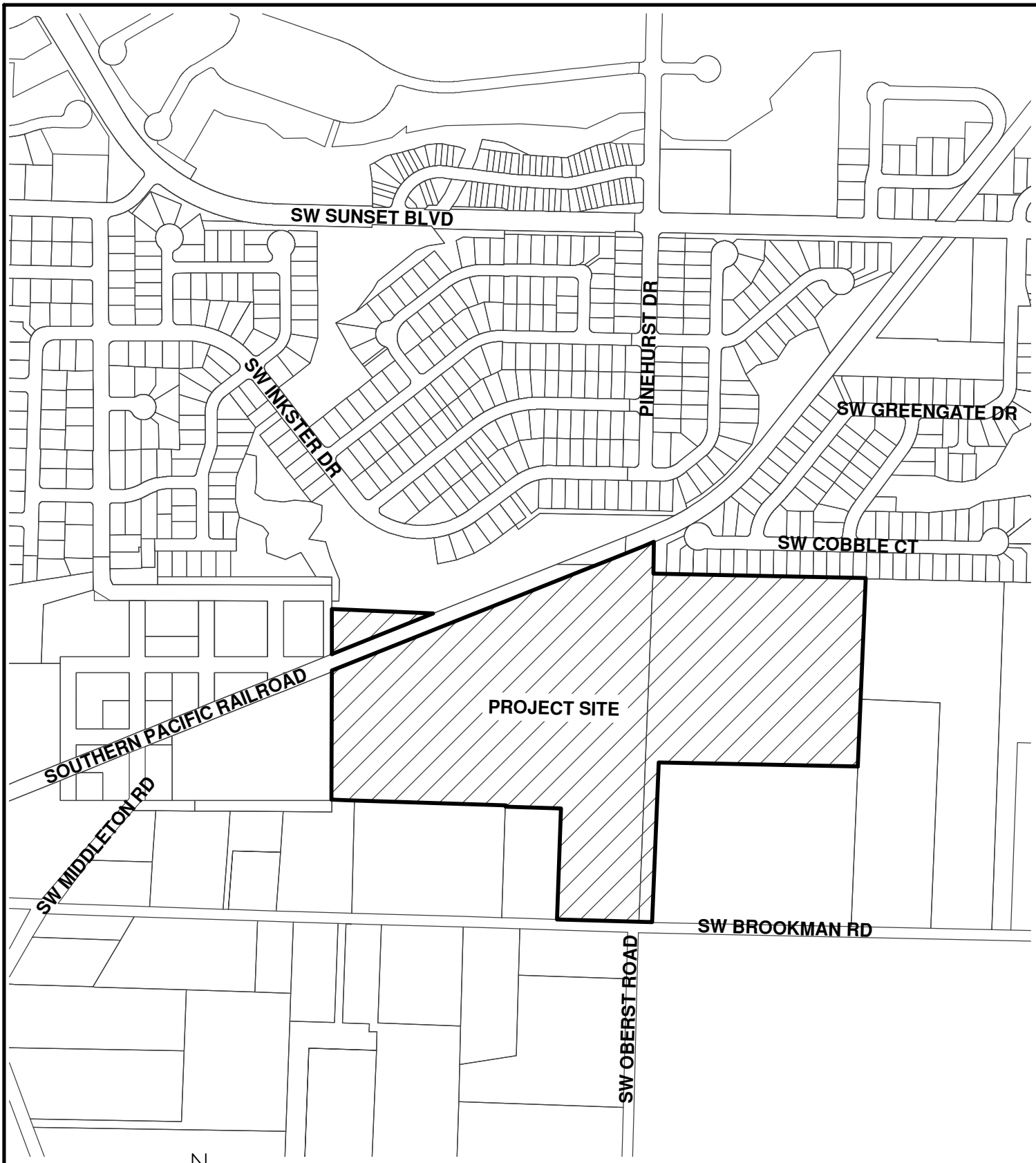
Portions of the proposed pedestrian paths and the gravel temporary emergency access road will be treated by adjacent vegetated corridors; see water quality treatment map. The vegetated corridor width and depth is sufficient to treat all contributing impervious areas and will be enhanced to Good Corridor condition in accordance to CWS requirements. Both the path and gravel temporary emergency access road will have a gravel shoulder trench to ensure runoff is dispersed evenly as sheet flow across the vegetated corridor.

A portion of the pedestrian path along the north boundary of the project will be constructed such that runoff cannot be directed and discharged into the stormwater facility, as shown on the water quality map. This untreated area will be offset by redirecting runoff from existing impervious areas on SW Brookman Road into the stormwater facility for treatment.

6.4 DOWNSTREAM ANALYSIS

The stormwater system will be ultimately discharged to the east into Cedar Creek after treatment. A basin delineation was performed as seen in Figure 6, and the CWS 25-year stormwater flow for Cedar Creek was calculated. The flow for the CWS 25-year event was estimated to be ±450 cfs. Because the increase in flow to Cedar Creek is less than 5%, detention is not required per CWS requirements (see downstream calculations in Appendix C).

A visual investigation of the downstream drainage for Cedar Creek has been performed for one-quarter mile downstream of the project and no observable impacts to structures were noted during our visit.



N

SCALE: 1"= 500 FEET

500 0 200 300 400 500

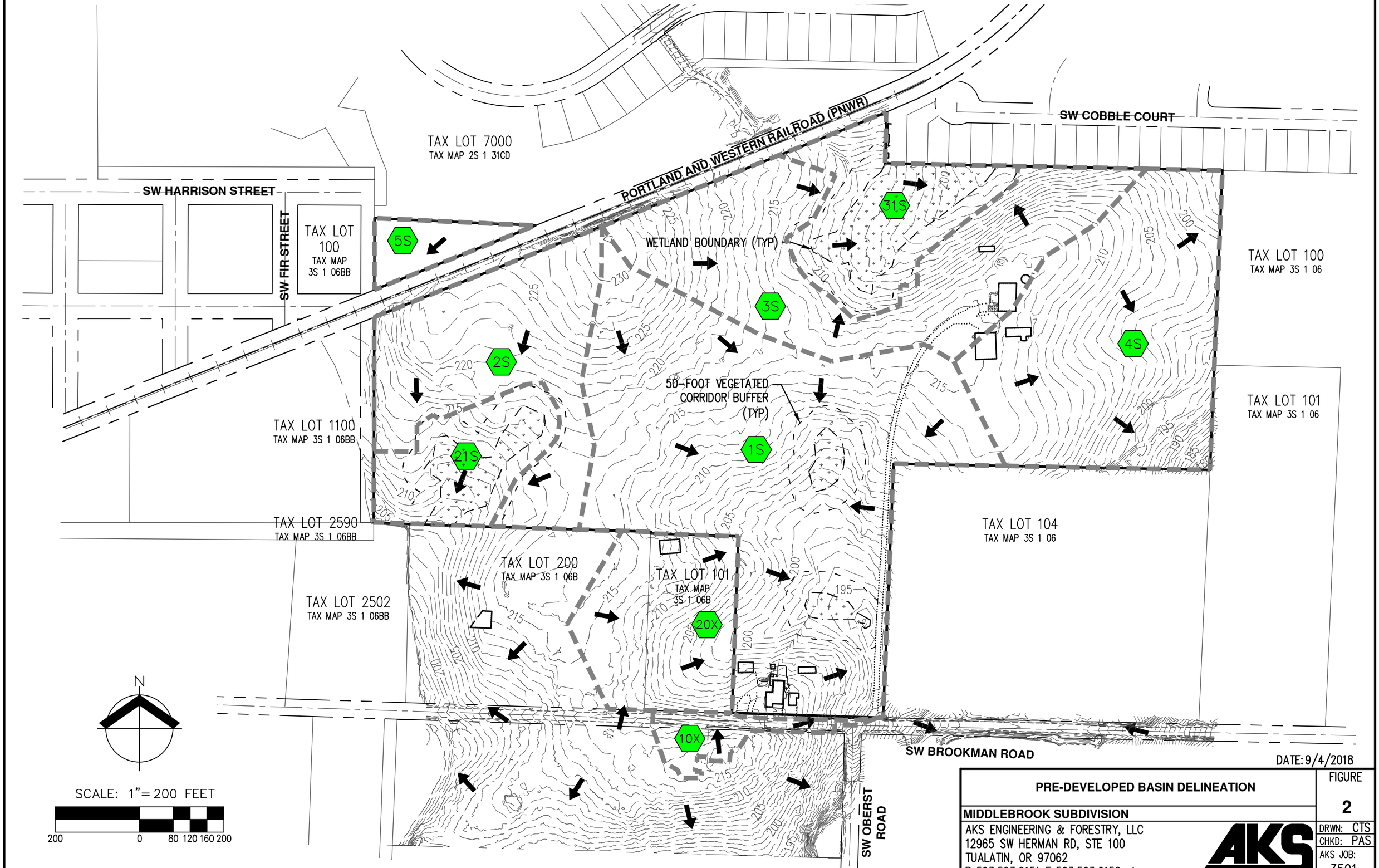
DATE: 9/4/2018

VICINITY MAP

FIGURE 1

AKS ENGINEERING & FORESTRY, LLC
12965 SW HERMAN RD, STE 100
TUALATIN, OR 97062
P: 503.563.6151 F: 503.563.6152 aks-eng.com

DRWN: CTS
CHKD: PAS
AKS JOB: 3591



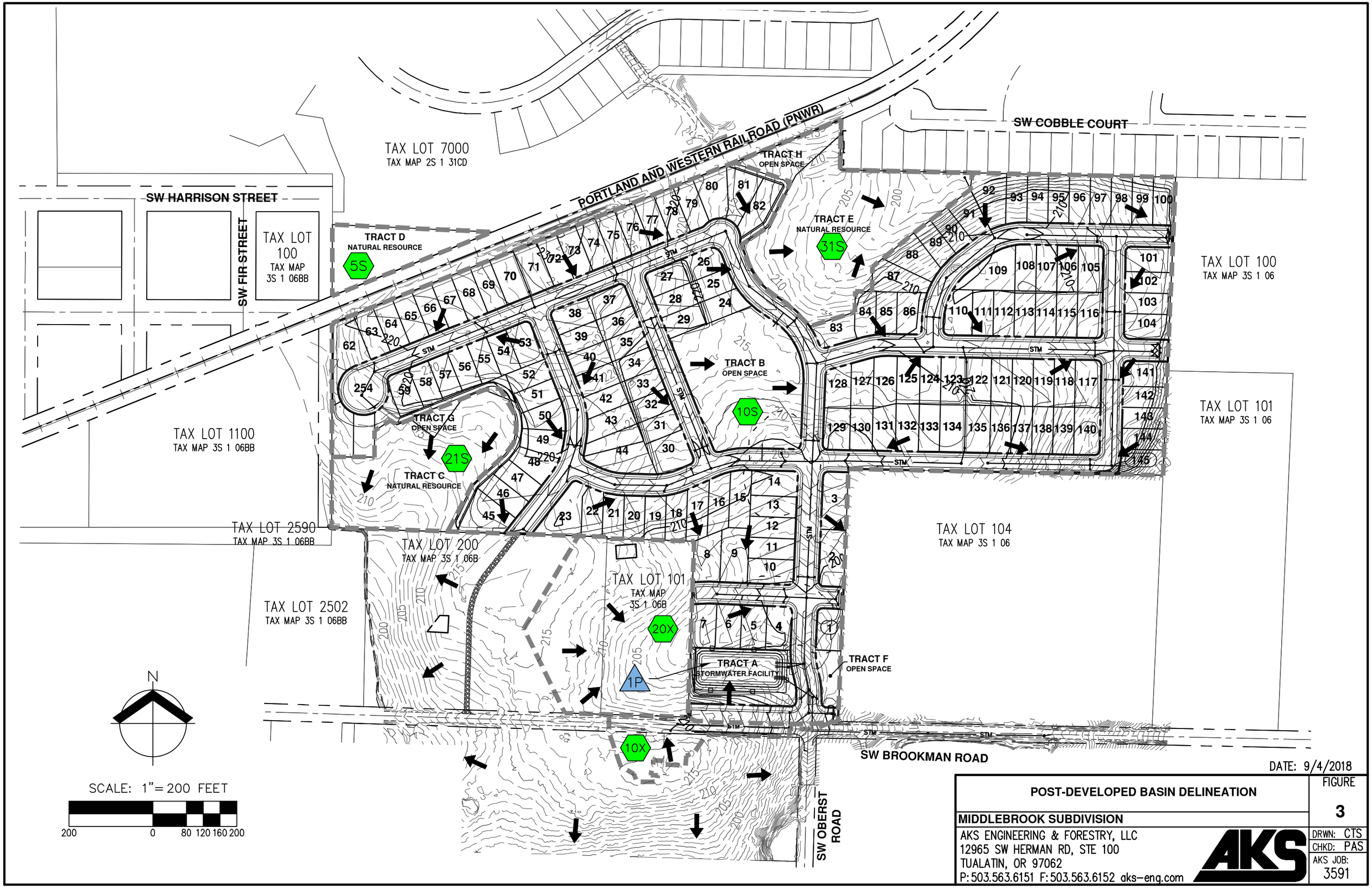
DATE: 9/4/2018

PRE-DEVELOPED BASIN DELINEATION	FIGURE 2
MIDDLEBROOK SUBDIVISION	

AKS ENGINEERING & FORESTRY, LLC
12965 SW HERMAN RD, STE 100
TUALATIN, OR 97062
P: 503.563.6151 F: 503.563.6152 aks-eng.com

DRWN: CTS
CHKD: PAS
AKS JOB: 3591

DWG: 3591 20180323 PRE-DEV BASINS | 2



DWG: 3591 20180328 POST-DEV BASINS | 3

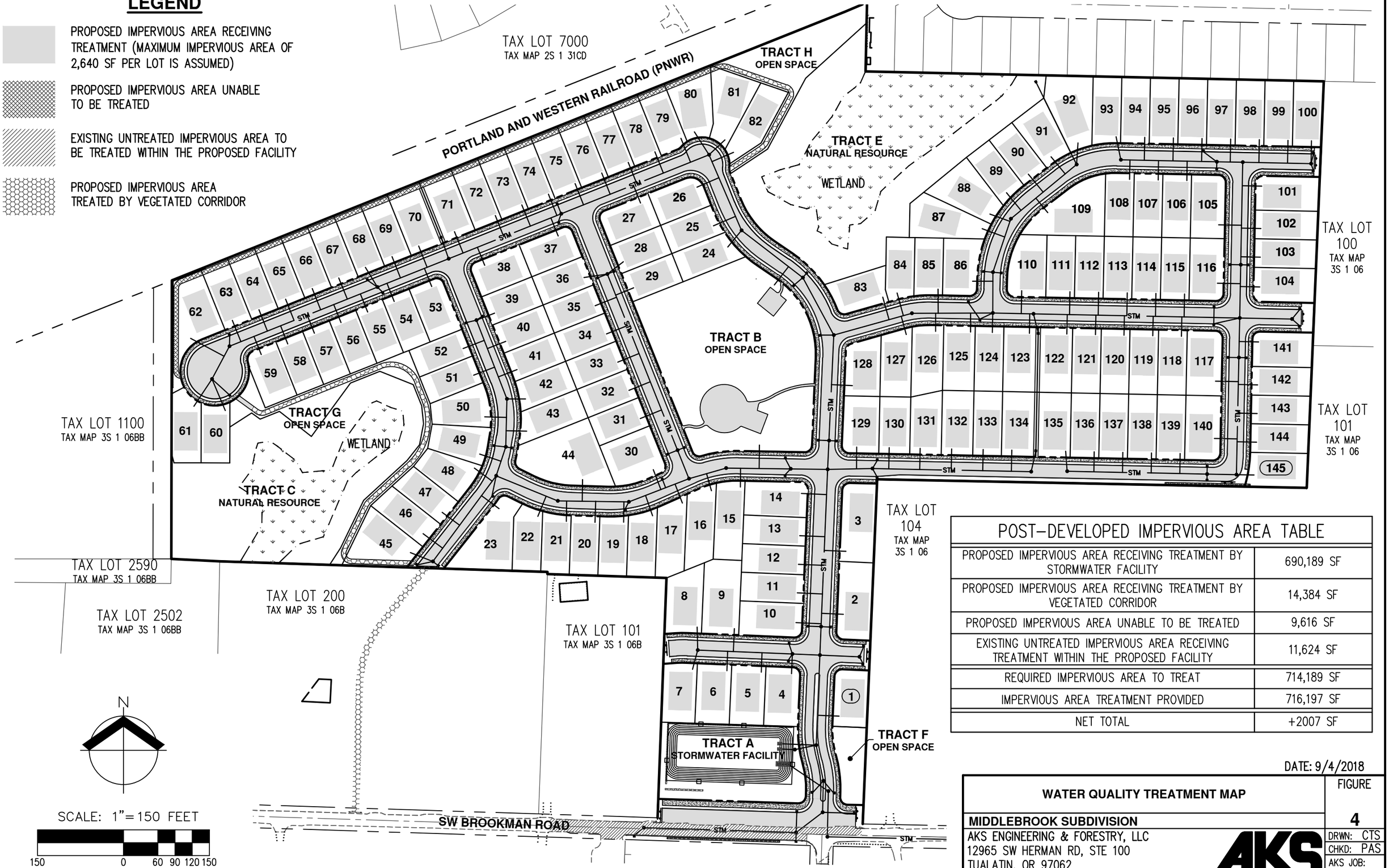
LEGEND

PROPOSED IMPERVIOUS AREA RECEIVING TREATMENT (MAXIMUM IMPERVIOUS AREA OF 2,640 SF PER LOT IS ASSUMED)

PROPOSED IMPERVIOUS AREA UNABLE TO BE TREATED

EXISTING UNTREATED IMPERVIOUS AREA TO BE TREATED WITHIN THE PROPOSED FACILITY

PROPOSED IMPERVIOUS AREA TREATED BY VEGETATED CORRIDOR



POST-DEVELOPED IMPERVIOUS AREA TABLE

PROPOSED IMPERVIOUS AREA RECEIVING TREATMENT BY STORMWATER FACILITY	690,189 SF
PROPOSED IMPERVIOUS AREA RECEIVING TREATMENT BY VEGETATED CORRIDOR	14,384 SF
PROPOSED IMPERVIOUS AREA UNABLE TO BE TREATED	9,616 SF
EXISTING UNTREATED IMPERVIOUS AREA RECEIVING TREATMENT WITHIN THE PROPOSED FACILITY	11,624 SF
REQUIRED IMPERVIOUS AREA TO TREAT	714,189 SF
IMPERVIOUS AREA TREATMENT PROVIDED	716,197 SF
NET TOTAL	+2007 SF

DATE: 9/4/2018

WATER QUALITY TREATMENT MAP

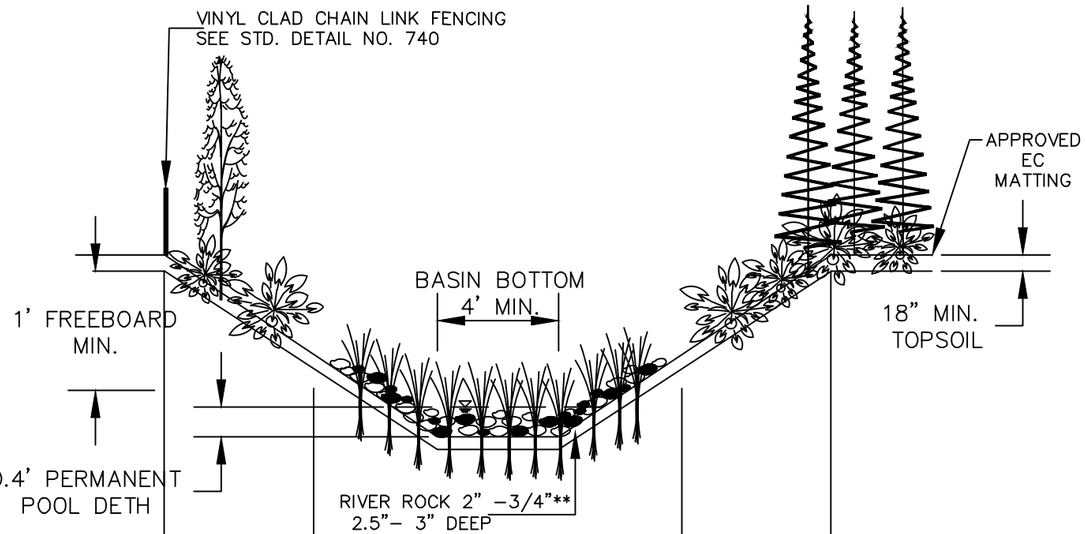
FIGURE 4

MIDDLEBROOK SUBDIVISION

AKS ENGINEERING & FORESTRY, LLC
12965 SW HERMAN RD, STE 100
TUALATIN, OR 97062
P: 503.563.6151 F: 503.563.6152 aks-eng.com

DRWN: CTS
CHKD: PAS
AKS JOB: 3591

DWG: 3591 20180802 WQ TREATMENT MAP | 4



BASIN AREA	FREEBOARD AREA	TREATMENT AREA 4' MINIMUM WIDTH		FREEBOARD AREA	BUFFER/MITIGATION AREA
EC MATTING	ECONOJUTE*	COCONUT FIBER OR GEOJUTE PLUS*		ECONOJUTE*	ECONOJUTE* (S> 20%)
SEED MIX	LOW GROW MIX SEE NOTE #5	NONE		LOW GROW MIX SEE NOTE #5	AS APPROVED BY DISTRICT OR CITY
MAX. SLOPE	3:1	3:1	FLAT BOTTOM 3:1	3:1	NA

* OR AS APPROVED
** IF REQUIRED

NOTES:
1. REFER TO APPENDIX A, CWS DESIGN & CONSTRUCTION STANDARDS, FOR LANDSCAPING REQUIREMENTS INCLUDING TREE PLACEMENT, TOPSOIL AND PLANTING SPECIFICATIONS.
2. PROVIDE IRRIGATION AS APPROVED BY CWS.
3. JUTE MATTING- GEOJUTE PLUS IN TREATMENT AREA, ECONOJUTE FOR ALL OTHER AREAS, OR SIMILIAR FABRICS. COCONUT FIBER IS ALSO ACCEPTABLE.
4. 18-INCHES OF TOPSOIL SHALL BE PLACED THROUGHOUT THE WATER QUALITY TRACT.
5. FREEBOARD AREA SEED MIX, DWARF TALL FESCUE 40%, DWARF PERENIAL RYE 30%, CREEPING RED FESCUE 25%, COLONIAL BENT GRASS 5%. APPLY AT A RATE OF 120# / ACRE.

WATER QUALITY EXTENDED DRY BASIN
NTS

CONSTRUCTION

1. WATER QUALITY BASIN SHALL BE OVER-EXCAVATED AND FILLED TO FINAL GRADE WITH 18-INCH AMENDED TOPSOIL. TOPSOIL AMENDMENTS SHALL BE GARDEN COMPOST, NOT CONVENTIONAL FERTILIZER AMENDMENTS.
2. A BIODEGRADABLE EROSION CONTROL MATTING SHALL BE PLACED OVER THE TOPSOIL THROUGHOUT THE BASIN CROSS SECTION, FABRIC SHALL BE HELD IN PLACE IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION REQUIREMENTS. ANCHOR SPACING SHALL BE BASED ON 3 FPS FLOW OVER THE FABRIC.
   A. UP TO HIGH WATER MARK - HIGH-DENSITY JUTE MATTING (GEOJUTE PLUS OR OTHER APPROVED EQUAL)
   B. ALL OTHER AREAS - LOW-DENSITY JUTE MATTING (ECONOJUTE OR OTHER APPROVED EQUAL)
3. IF REQUIRED, 2.5-3 INCHES OF 2"-¾" RIVER RUN ROCK SHALL BE PLACED OVER THE MATTING EVENLY THROUGHOUT THE LENGTH AND WIDTH OF THE BASIN.
4. PLANT MATERIALS SHALL BE PLACED IN ACCORDANCE WITH THE PLAN AND PLANT TABLE AS SHOWN ON APPROVED PLANS.
   A. SATURATED ZONE (FLAT BOTTOM TO 0.4' PERMANENT POOL) - PLANTED WITH RUSHES, SEDGES, AND OTHER WETLAND SPECIES (OXYGENATORS).
   B. TRANSITION ZONE (PERMANENT POOL TO HIGH WATER MARK) - PLANTED WITH SEDGES, RUSHES, PERENNIALS, FERN AND SHRUBS WHICH TOLERATE MOIST CONDITIONS.
   C. DRY ZONE (ABOVE HIGH WATER MARK) - PLANTED WITH SELF-SUSTAINING, LOW MAINTENANCE GRASS, PERENNIALS AND SHRUBS.
5. EXTENDED DRY BASIN PLANTINGS CAN BE DEEMED "SUBSTANTIALLY COMPLETE" ONCE ACTIVE GREEN GROWTH HAS OCCURRED TO AN AVERAGE GROWTH OF 3" AND PLANT DENSITY IS AN AVERAGE OF APPROX. 6 PLANTS (MINIMUM 1-INCH PLUGS OR EQUIVALENT) PER SQUARE FOOT.
6. THE FACILITY SHALL BE DEEMED ACCEPTABLE TO BEGIN THE MAINTENANCE PERIOD WHEN PLANT GROWTH AND DENSITY MATCHES THE ENGINEER'S DESIGN AS SHOWN ON THE APPROVED PLANS AND ALL OTHER REQUIREMENTS HAVE BEEN MET. THE ENGINEER MUST CERTIFY THE FACILITY TO BE FUNCTIONAL, IN ACCORDANCE WITH THE APPROVED PLAN DESIGN TO BEGIN THE TWO-YEAR MAINTENANCE PERIOD.

MAINTENANCE

1. THE PERMITTEE IS RESPONSIBLE FOR THE MAINTENANCE OF THIS FACILITY FOR A MINIMUM OF TWO YEARS FOLLOWING CONSTRUCTION AND ACCEPTANCE OF THIS FACILITY PER CHAPTER 2.
2. IRRIGATION IS TO BE PROVIDED PER SEPARATE IRRIGATION PLAN AS APPROVED.
   NOTE: IRRIGATION NEEDS ARE TO BE MET USING A TEMPORARY IRRIGATION SYSTEM WITH A TIMER DURING THE DRY SEASON. SYSTEMS SHOULD BE WINTERIZED DURING THE WET SEASON TO ASSURE LONGEVITY AND GUARD AGAINST DAMAGE FROM FREEZING TEMPERATURES. WATER SOURCE SHALL BE AS SHOWN ON THE APPROVED PLANS.
3. ENGINEER OR OWNERS REPRESENTATIVE IS TO VISIT AND EVALUATE THE SITE A MINIMUM OF ONCE ANNUALLY (FALL). THE LANDSCAPING SHALL BE EVALUATED AND REPLANTED AS NECESSARY TO ENSURE A MINIMUM OF 80% SURVIVAL RATE OF THE REQUIRED VEGETATION AND 90% AERIAL COVERAGE.
4. THE FACILITY SHALL BE RE-EXCAVATED AND PLANTED IF SILTATION GREATER THAN 4 INCHES IN DEPTH OCCURS WITHIN THE TWO-YEAR MAINTENANCE PERIOD.

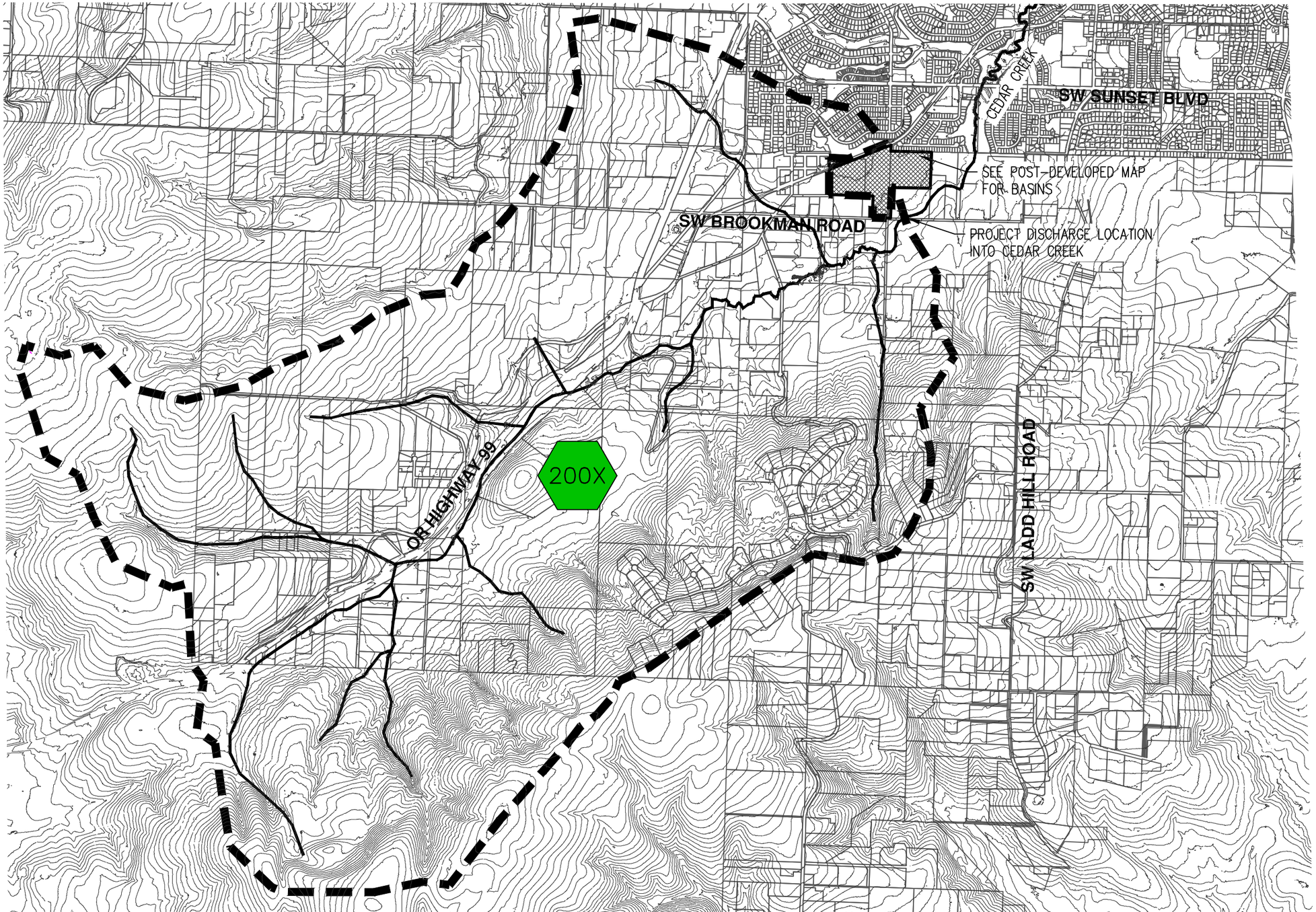
WATER QUALITY EXTENDED DRY BASIN
CONSTRUCTION & MAINTENANCE NOTES

DATE: 9/4/2018

EXTENDED DRY BASIN DETAILS	FIGURE
MIDDLEBROOK SUBDIVISION	5

AKS ENGINEERING & FORESTRY, LLC
12965 SW HERMAN RD, STE 100
TUALATIN, OR 97062
P: 503.563.6151 F: 503.563.6152 aks-eng.com

DRWN: ARS
CHKD: PAS
AKS JOB: 3591



N

SCALE: 1"= 2000 FEET

2000 0 1000 2000

LEGEND

- MIDDLEBROOK SUBDIVISION
- DRAINAGE BASIN
- STREAMS/CREEKS

DATE: 9/4/2018

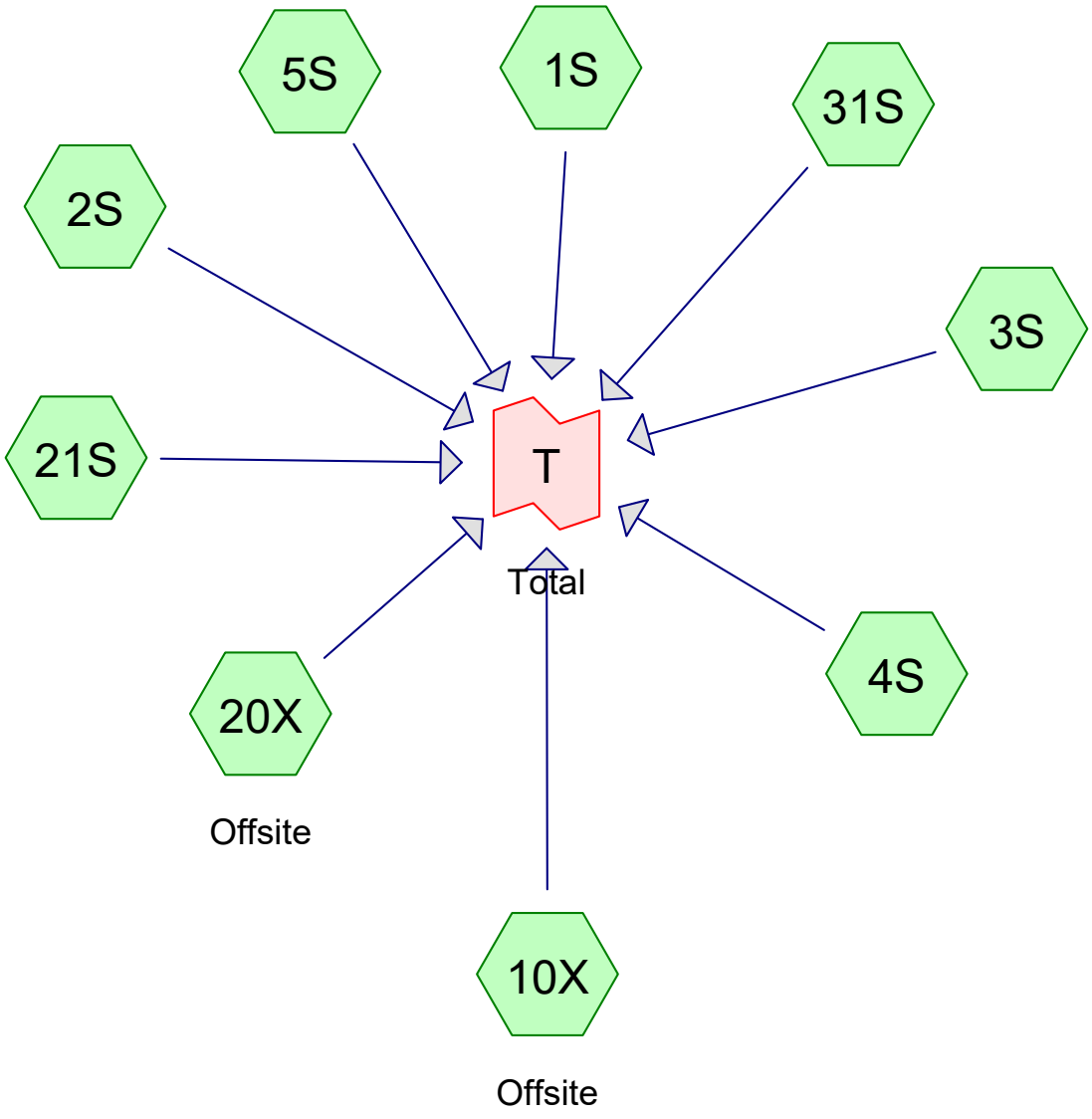
CEDAR CREEK BASIN DELINEATION	FIGURE
MIDDLEBROOK SUBDIVISON	6

AKS ENGINEERING & FORESTRY, LLC
12965 SW HERMAN RD, STE 100
TUALATIN, OR 97062
P: 503.563.6151 F: 503.563.6152 aks-eng.com

AKS

DRWN: ARS
CHKD: PAS
AKS JOB: 3591

Appendix A:
HydroCAD Reports for
Pre-Developed Condition Storm Events
(2-Year Storm Event Analysis Summary)
(10-Year Storm Event Analysis Analysis)



Subcat Reach Pond Link

Routing Diagram for 3591 Pre-Dev
Prepared by AKS Engineering & Forestry, Printed 8/14/2018

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
15,564	80	>75% Grass cover, Good, HSG D (10X)
28,205	91	Gravel roads, HSG D (1S, 3S, 20X)
229,398	84	Pasture/Grass/Woods (Wetlands), Fair, HSG D (21S, 31S)
85,744	79	Pasture/grassland/range, Fair, HSG C (4S)
703,101	84	Pasture/grassland/range, Fair, HSG D (1S, 2S, 3S, 4S, 20X)
4,133	98	Roofs (4S)
6,066	98	Roofs and Deck (1S)
29,217	98	Roofs and Driveway (3S, 10X, 20X)
215,168	79	Woods, Fair, HSG D (3S, 5S)
26,088	70	Woods, Good, HSG C (4S)
357,570	77	Woods, Good, HSG D (1S, 2S)
131,834	82	Woods/grass comb., Fair, HSG D (1S)
1,832,088	**82**	**TOTAL AREA**

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SBUH method, Split Pervious/Imperv.
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Runoff Area=581,160 sf 1.04% Impervious Runoff Depth>0.89"
Flow Length=1,219' Tc=28.3 min CN=80/98 Runoff=1.59 cfs 42,977 cf

Subcatchment 2S: Runoff Area=211,159 sf 0.00% Impervious Runoff Depth>0.99"
Flow Length=832' Tc=21.2 min CN=82/0 Runoff=0.77 cfs 17,342 cf

Subcatchment 3S: Runoff Area=280,917 sf 1.47% Impervious Runoff Depth>0.95"
Flow Length=1,011' Tc=26.0 min CN=81/98 Runoff=0.89 cfs 22,165 cf

Subcatchment 4S: Runoff Area=320,762 sf 1.29% Impervious Runoff Depth>0.94"
Flow Length=693' Tc=25.4 min CN=81/98 Runoff=1.02 cfs 25,255 cf

Subcatchment 5S: Runoff Area=32,455 sf 0.00% Impervious Runoff Depth>0.83"
Flow Length=385' Tc=17.6 min CN=79/0 Runoff=0.09 cfs 2,239 cf

Subcatchment 10X: Offsite Runoff Area=32,768 sf 52.50% Impervious Runoff Depth>1.61"
Flow Length=520' Tc=6.9 min CN=80/98 Runoff=0.28 cfs 4,396 cf

Subcatchment 20X: Offsite Runoff Area=143,469 sf 5.50% Impervious Runoff Depth>1.17"
Flow Length=792' Tc=19.3 min CN=84/98 Runoff=0.70 cfs 13,955 cf

Subcatchment 21S: Runoff Area=96,180 sf 0.00% Impervious Runoff Depth>1.10"
Flow Length=406' Slope=0.0330 '/' Tc=17.9 min CN=84/0 Runoff=0.45 cfs 8,855 cf

Subcatchment 31S: Runoff Area=133,218 sf 0.00% Impervious Runoff Depth>1.11"
Flow Length=505' Slope=0.0330 '/' Tc=11.2 min CN=84/0 Runoff=0.70 cfs 12,312 cf

Link T: Total Inflow=6.46 cfs 149,497 cf
Primary=6.46 cfs 149,497 cf

Total Runoff Area = 1,832,088 sf Runoff Volume = 149,497 cf Average Runoff Depth = 0.98"
97.85% Pervious = 1,792,672 sf 2.15% Impervious = 39,416 sf

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SBUH method, Split Pervious/Imperv.
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Runoff Area=581,160 sf 1.04% Impervious Runoff Depth>1.59"
Flow Length=1,219' Tc=28.3 min CN=80/98 Runoff=3.39 cfs 76,938 cf

Subcatchment 2S: Runoff Area=211,159 sf 0.00% Impervious Runoff Depth>1.72"
Flow Length=832' Tc=21.2 min CN=82/0 Runoff=1.54 cfs 30,303 cf

Subcatchment 3S: Runoff Area=280,917 sf 1.47% Impervious Runoff Depth>1.67"
Flow Length=1,011' Tc=26.0 min CN=81/98 Runoff=1.82 cfs 39,034 cf

Subcatchment 4S: Runoff Area=320,762 sf 1.29% Impervious Runoff Depth>1.67"
Flow Length=693' Tc=25.4 min CN=81/98 Runoff=2.09 cfs 44,512 cf

Subcatchment 5S: Runoff Area=32,455 sf 0.00% Impervious Runoff Depth>1.51"
Flow Length=385' Tc=17.6 min CN=79/0 Runoff=0.21 cfs 4,090 cf

Subcatchment 10X: Offsite Runoff Area=32,768 sf 52.50% Impervious Runoff Depth>2.44"
Flow Length=520' Tc=6.9 min CN=80/98 Runoff=0.44 cfs 6,664 cf

Subcatchment 20X: Offsite Runoff Area=143,469 sf 5.50% Impervious Runoff Depth>1.95"
Flow Length=792' Tc=19.3 min CN=84/98 Runoff=1.27 cfs 23,290 cf

Subcatchment 21S: Runoff Area=96,180 sf 0.00% Impervious Runoff Depth>1.88"
Flow Length=406' Slope=0.0330 '/' Tc=17.9 min CN=84/0 Runoff=0.83 cfs 15,043 cf

Subcatchment 31S: Runoff Area=133,218 sf 0.00% Impervious Runoff Depth>1.88"
Flow Length=505' Slope=0.0330 '/' Tc=11.2 min CN=84/0 Runoff=1.29 cfs 20,907 cf

Link T: Total Inflow=12.80 cfs 260,780 cf
Primary=12.80 cfs 260,780 cf

Total Runoff Area = 1,832,088 sf Runoff Volume = 260,780 cf Average Runoff Depth = 1.71"
97.85% Pervious = 1,792,672 sf 2.15% Impervious = 39,416 sf

Summary for Subcatchment 1S:

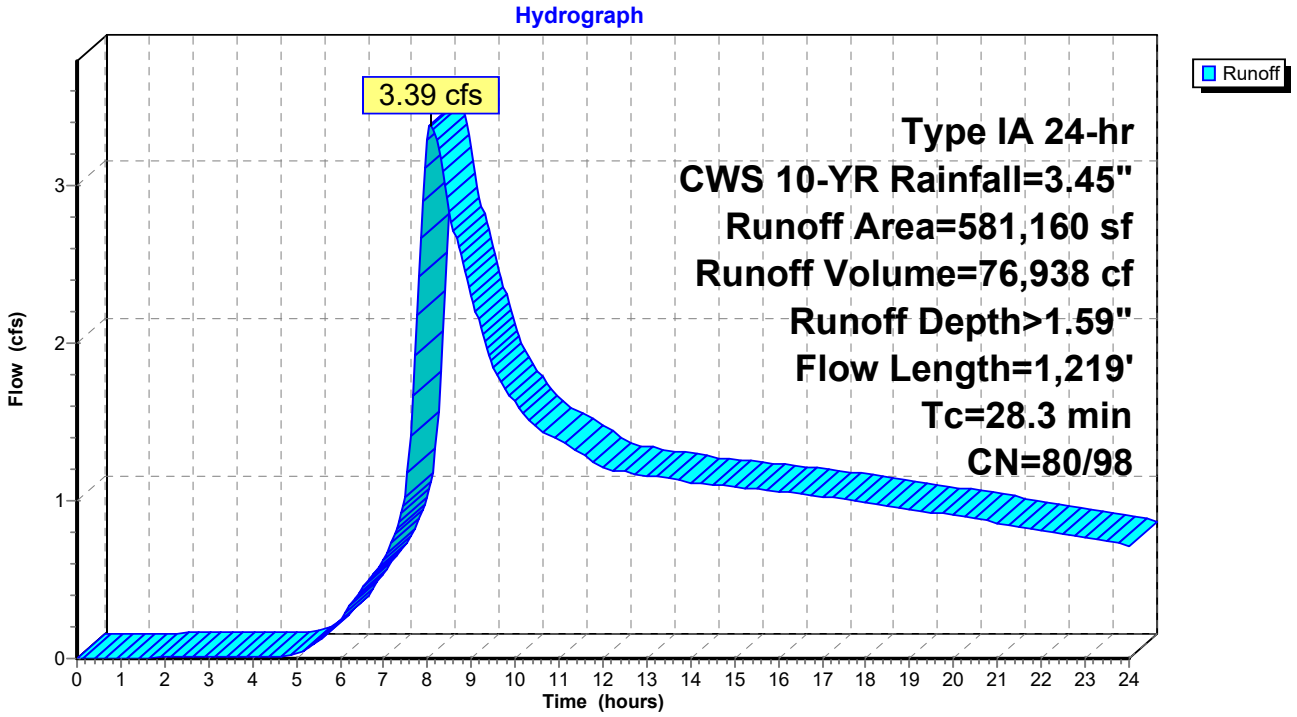
Runoff = 3.39 cfs @ 8.07 hrs, Volume= 76,938 cf, Depth> 1.59"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr CWS 10-YR Rainfall=3.45"

	Area (sf)	CN	Description
*	6,066	98	Roofs and Deck
	15,968	91	Gravel roads, HSG D
	290,199	77	Woods, Good, HSG D
	137,093	84	Pasture/grassland/range, Fair, HSG D
	131,834	82	Woods/grass comb., Fair, HSG D
	581,160	80	Weighted Average
	575,094	80	98.96% Pervious Area
	6,066	98	1.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.8	50	0.0480	0.08		**Sheet Flow, Woods Sheet** Woods: Light underbrush n= 0.400 P2= 2.50"
11.7	667	0.0360	0.95		**Shallow Concentrated Flow, Woods Shallow** Woodland Kv= 5.0 fps
2.2	182	0.0400	1.40		**Shallow Concentrated Flow, Woods Shallow** Short Grass Pasture Kv= 7.0 fps
1.4	57	0.0190	0.69		**Shallow Concentrated Flow, Woods Shallow** Woodland Kv= 5.0 fps
1.4	94	0.0270	1.15		**Shallow Concentrated Flow, Woods/grass Shallow** Short Grass Pasture Kv= 7.0 fps
1.4	104	0.0310	1.23		**Shallow Concentrated Flow, Grass Shallow** Short Grass Pasture Kv= 7.0 fps
0.3	16	0.0270	0.82		**Shallow Concentrated Flow, Woods Shallow** Woodland Kv= 5.0 fps
0.1	49	0.0490	11.87	9.32	**Pipe Channel, Culvert** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.011 Concrete pipe, straight & clean
28.3	1,219	Total			

Subcatchment 1S:



Summary for Subcatchment 2S:

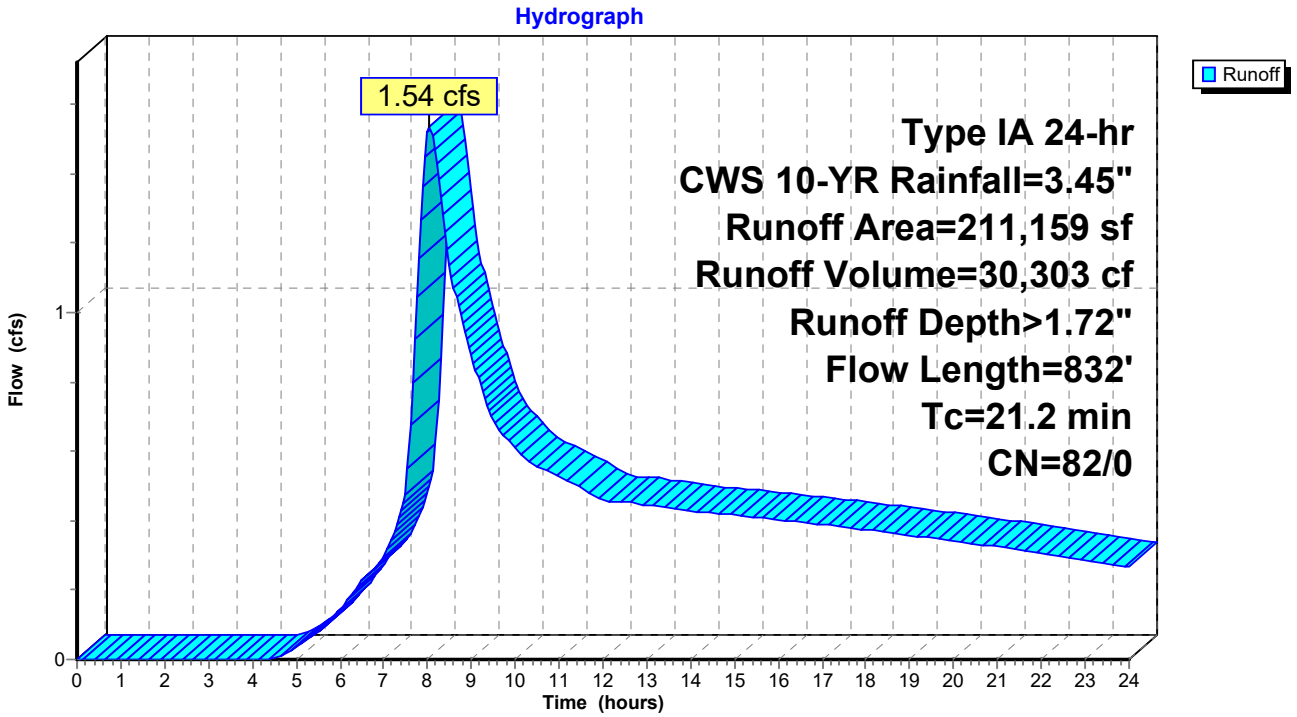
Runoff = 1.54 cfs @ 8.04 hrs, Volume= 30,303 cf, Depth> 1.72"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr CWS 10-YR Rainfall=3.45"

Area (sf)	CN	Description
67,371	77	Woods, Good, HSG D
143,788	84	Pasture/grassland/range, Fair, HSG D
211,159	82	Weighted Average
211,159	82	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	50	0.0570	0.09		**Sheet Flow, Woods Sheet** Woods: Light underbrush n= 0.400 P2= 2.50"
4.1	291	0.0290	1.19		**Shallow Concentrated Flow, Grass Shallow** Short Grass Pasture Kv= 7.0 fps
2.9	216	0.0310	1.23		**Shallow Concentrated Flow, Grass Shallow** Short Grass Pasture Kv= 7.0 fps
5.0	275	0.0330	0.91		**Shallow Concentrated Flow, Woods Shallow** Woodland Kv= 5.0 fps
21.2	832	Total			

Subcatchment 2S:



Summary for Subcatchment 3S:

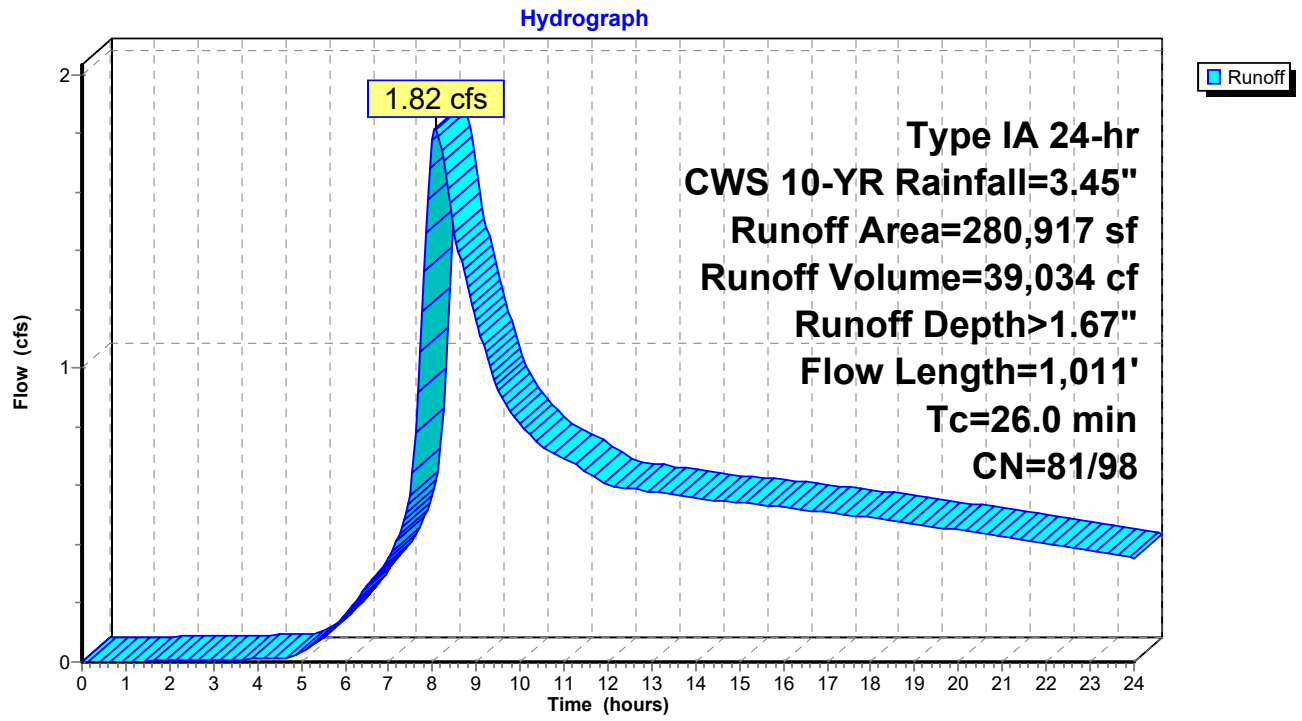
Runoff = 1.82 cfs @ 8.06 hrs, Volume= 39,034 cf, Depth> 1.67"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr CWS 10-YR Rainfall=3.45"

	Area (sf)	CN	Description
*	4,126	98	Roofs and Driveway
	4,924	91	Gravel roads, HSG D
	182,713	79	Woods, Fair, HSG D
	89,154	84	Pasture/grassland/range, Fair, HSG D
	280,917	81	Weighted Average
	276,791	81	98.53% Pervious Area
	4,126	98	1.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.4	50	0.0530	0.09		**Sheet Flow, Woods Sheet** Woods: Light underbrush n= 0.400 P2= 2.50"
7.3	456	0.0430	1.04		**Shallow Concentrated Flow, Woods Shallow** Woodland Kv= 5.0 fps
9.3	505	0.0330	0.91		**Shallow Concentrated Flow, Woods Shallow** Woodland Kv= 5.0 fps
26.0	1,011	Total			

Subcatchment 3S:



Summary for Subcatchment 4S:

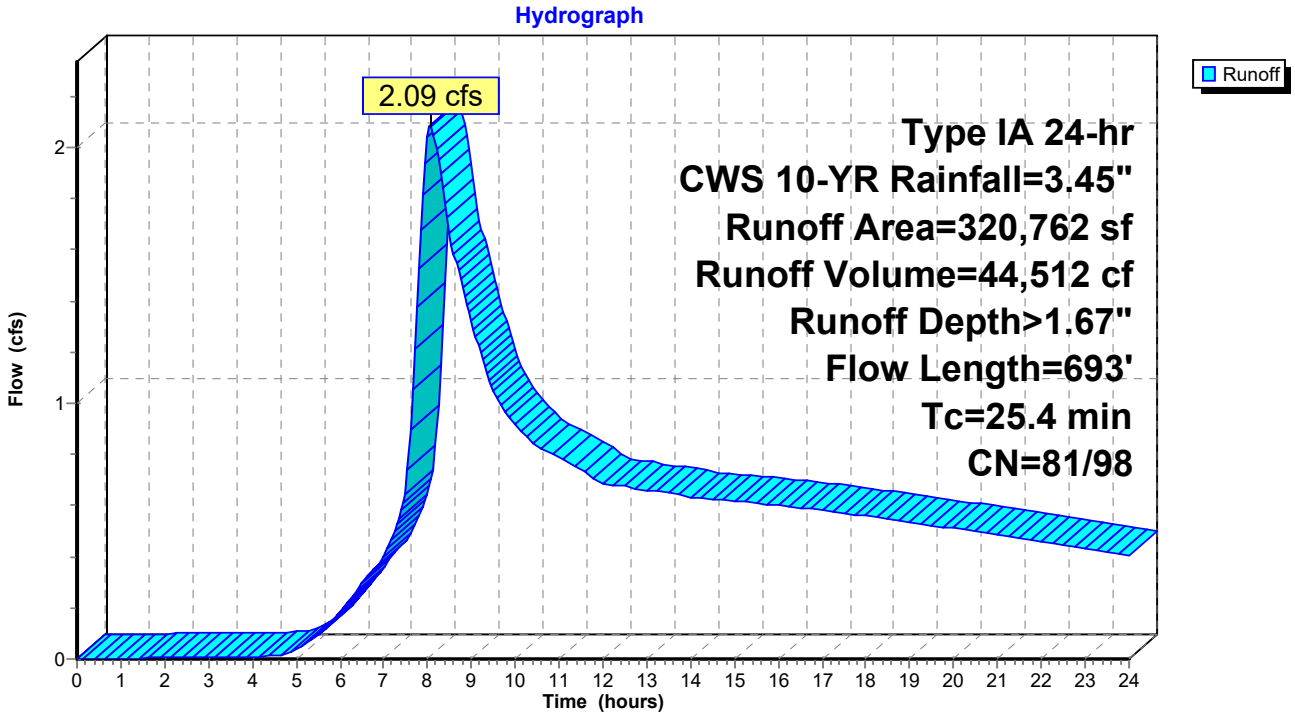
Runoff = 2.09 cfs @ 8.06 hrs, Volume= 44,512 cf, Depth> 1.67"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr CWS 10-YR Rainfall=3.45"

	Area (sf)	CN	Description
*	4,133	98	Roofs
	26,088	70	Woods, Good, HSG C
	204,797	84	Pasture/grassland/range, Fair, HSG D
	85,744	79	Pasture/grassland/range, Fair, HSG C
	320,762	82	Weighted Average
	316,629	81	98.71% Pervious Area
	4,133	98	1.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.0	50	0.0020	0.05		**Sheet Flow, Grass Sheet** Grass: Short n= 0.150 P2= 2.50"
2.6	98	0.0080	0.63		**Shallow Concentrated Flow, Grass Shallow** Short Grass Pasture Kv= 7.0 fps
6.8	545	0.0360	1.33		**Shallow Concentrated Flow, Grass Shallow** Short Grass Pasture Kv= 7.0 fps
25.4	693	Total			

Subcatchment 4S:



Summary for Subcatchment 5S:

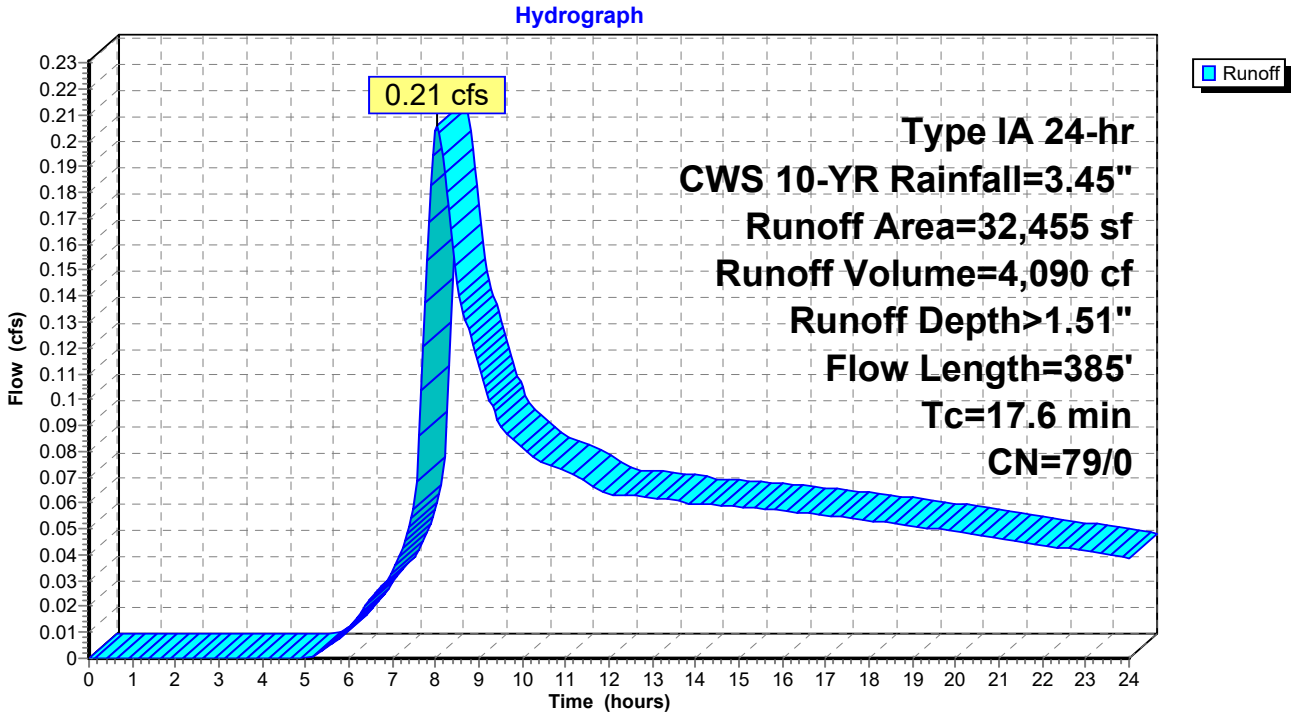
Runoff = 0.21 cfs @ 8.04 hrs, Volume= 4,090 cf, Depth> 1.51"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr CWS 10-YR Rainfall=3.45"

Area (sf)	CN	Description
32,455	79	Woods, Fair, HSG D
32,455	79	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	50	0.0700	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.50"
9.1	335	0.0150	0.61		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
17.6	385	Total			

Subcatchment 5S:



Summary for Subcatchment 10X: Offsite

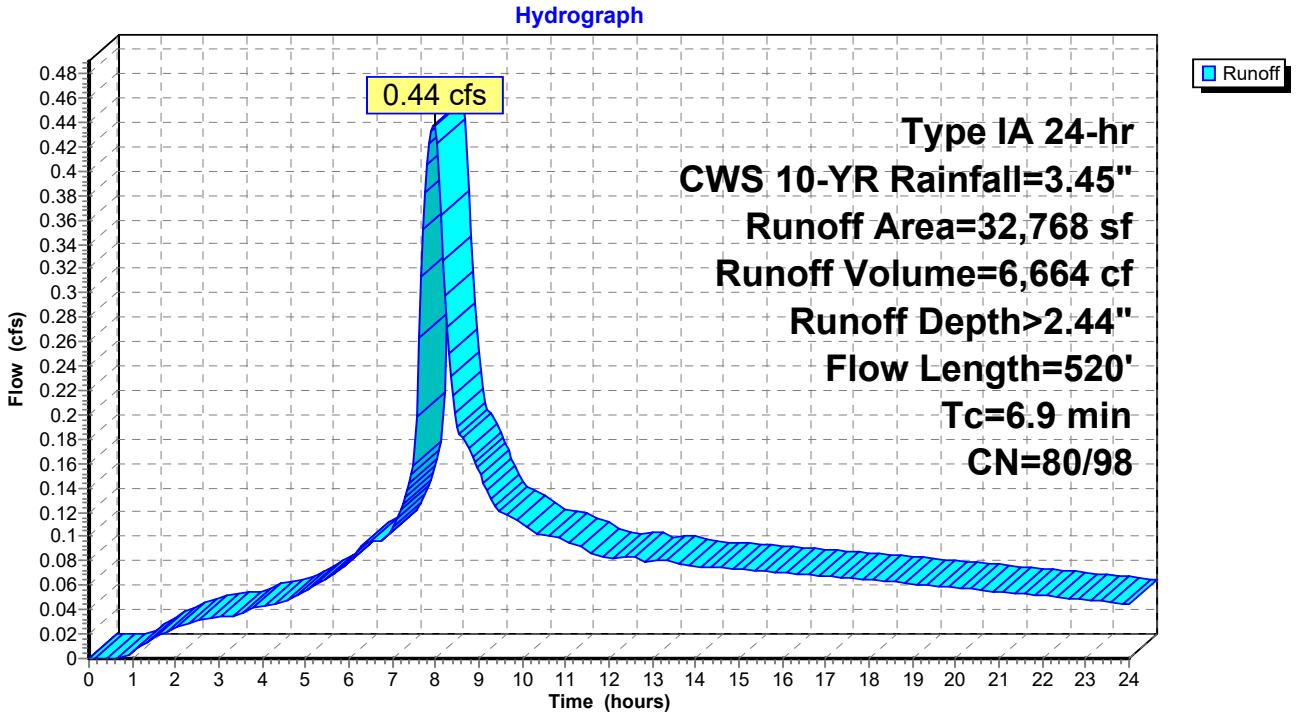
Runoff = 0.44 cfs @ 7.96 hrs, Volume= 6,664 cf, Depth> 2.44"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr CWS 10-YR Rainfall=3.45"

	Area (sf)	CN	Description
*	17,204	98	Roofs and Driveway
	15,564	80	>75% Grass cover, Good, HSG D
	32,768	89	Weighted Average
	15,564	80	47.50% Pervious Area
	17,204	98	52.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	50	0.0280	0.15		**Sheet Flow, Grass** Grass: Short n= 0.150 P2= 2.50"
0.4	68	0.0300	2.60		**Shallow Concentrated Flow, Grass** Grassed Waterway Kv= 15.0 fps
0.2	57	0.0175	6.15	14.77	**Channel Flow, Roadside Ditch** Area= 2.4 sf Perim= 4.2' r= 0.57' n= 0.022 Earth, clean & straight
0.2	45	0.0088	3.17	0.62	**Pipe Channel, Culvert** 6.0" Round Area= 0.2 sf Perim= 1.6' r= 0.13' n= 0.011 Concrete pipe, straight & clean
0.5	300	0.0400	9.30	22.33	**Channel Flow, Roadside Ditch** Area= 2.4 sf Perim= 4.2' r= 0.57' n= 0.022 Earth, clean & straight
6.9	520	Total			

Subcatchment 10X: Offsite



Summary for Subcatchment 20X: Offsite

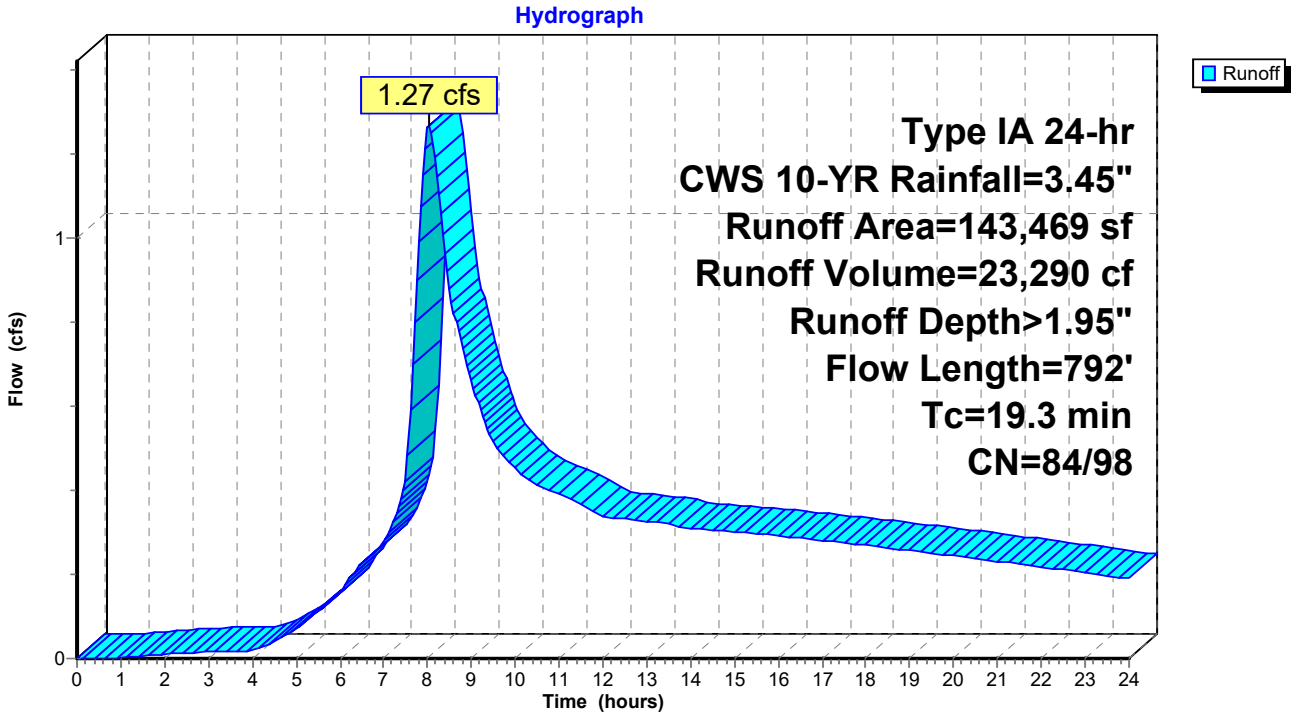
Runoff = 1.27 cfs @ 8.03 hrs, Volume= 23,290 cf, Depth> 1.95"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr CWS 10-YR Rainfall=3.45"

	Area (sf)	CN	Description
	7,313	91	Gravel roads, HSG D
*	7,887	98	Roofs and Driveway
	128,269	84	Pasture/grassland/range, Fair, HSG D
	143,469	85	Weighted Average
	135,582	84	94.50% Pervious Area
	7,887	98	5.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	50	0.0200	0.09		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.50"
0.8	48	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.1	196	0.0500	1.57		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.4	101	0.0290	1.19		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.6	348	0.0220	1.04		**Shallow Concentrated Flow, Grass Shallow** Short Grass Pasture Kv= 7.0 fps
0.1	49	0.0490	11.87	9.32	**Pipe Channel, Culvert** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.011
19.3	792	Total			

Subcatchment 20X: Offsite



Summary for Subcatchment 21S:

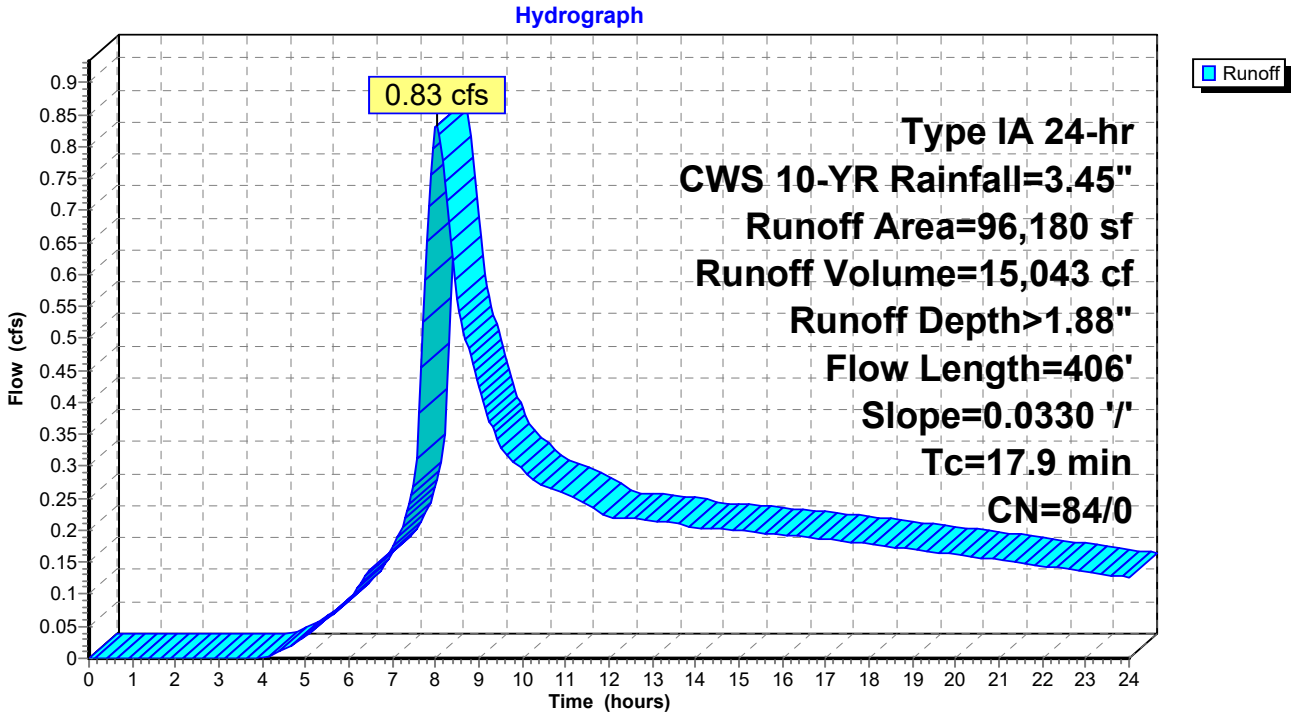
Runoff = 0.83 cfs @ 8.03 hrs, Volume= 15,043 cf, Depth> 1.88"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr CWS 10-YR Rainfall=3.45"

	Area (sf)	CN	Description
*	96,180	84	Pasture/Grass/Woods (Wetlands), Fair, HSG D
	96,180	84	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	50	0.0330	0.07		**Sheet Flow, Woods Shallow** Woods: Light underbrush n= 0.400 P2= 2.50"
6.5	356	0.0330	0.91		**Shallow Concentrated Flow, Woods Shallow** Woodland Kv= 5.0 fps
17.9	406	Total			

Subcatchment 21S:



Summary for Subcatchment 31S:

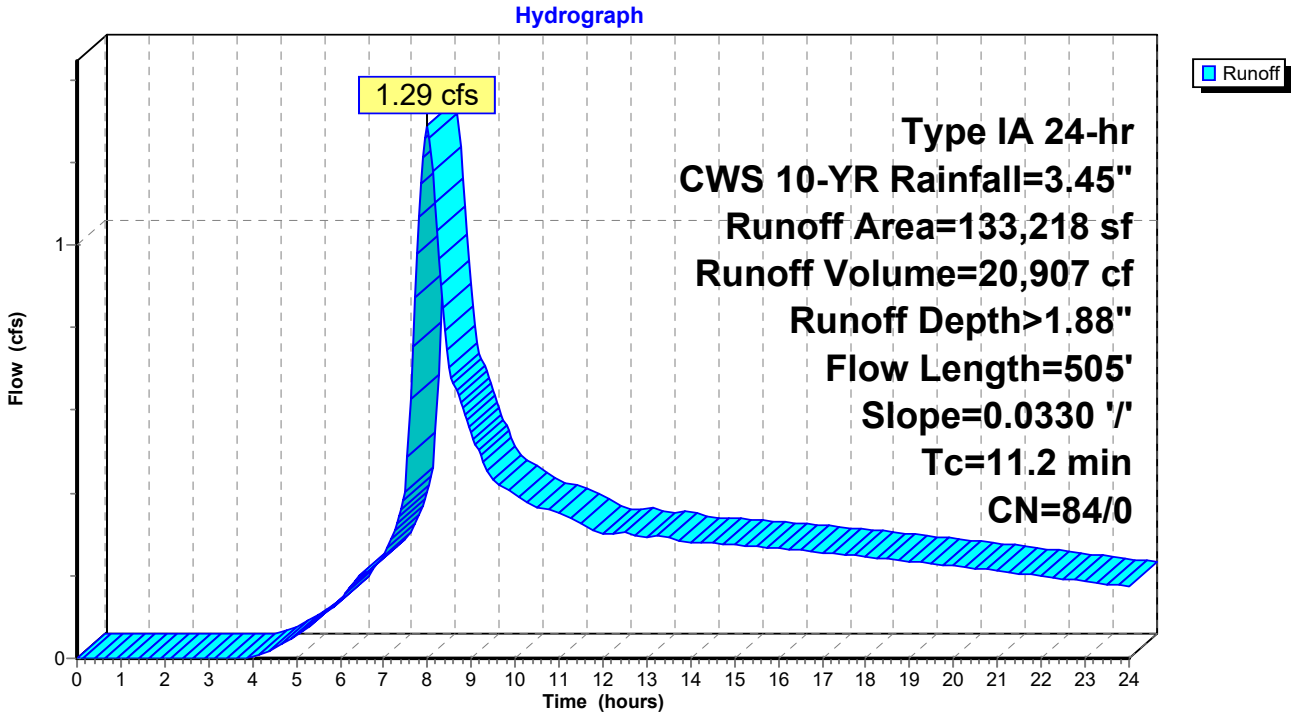
Runoff = 1.29 cfs @ 8.00 hrs, Volume= 20,907 cf, Depth> 1.88"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr CWS 10-YR Rainfall=3.45"

	Area (sf)	CN	Description
*	133,218	84	Pasture/Grass/Woods (Wetlands), Fair, HSG D
	133,218	84	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	50	0.0330	0.16		**Sheet Flow, Grass Shallow** Grass: Short n= 0.150 P2= 2.50"
6.0	455	0.0330	1.27		**Shallow Concentrated Flow, Grass Shallow** Short Grass Pasture Kv= 7.0 fps
11.2	505	Total			

Subcatchment 31S:

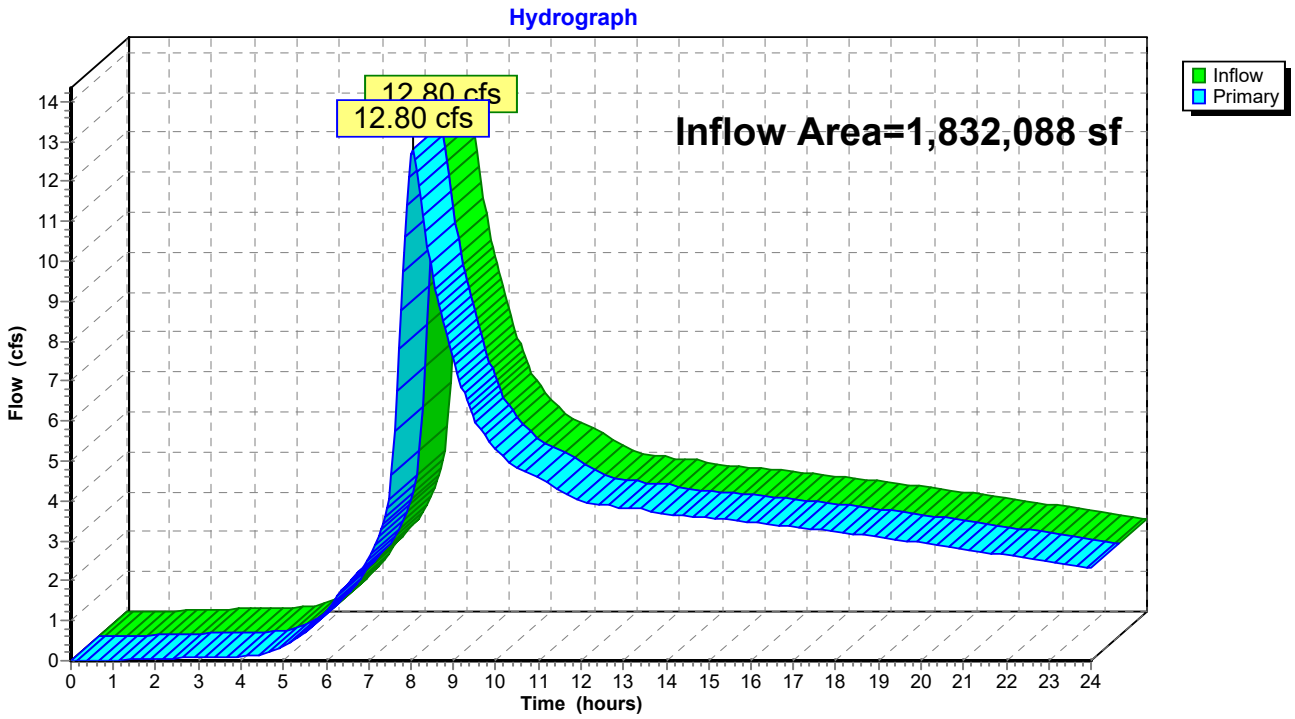


Summary for Link T: Total

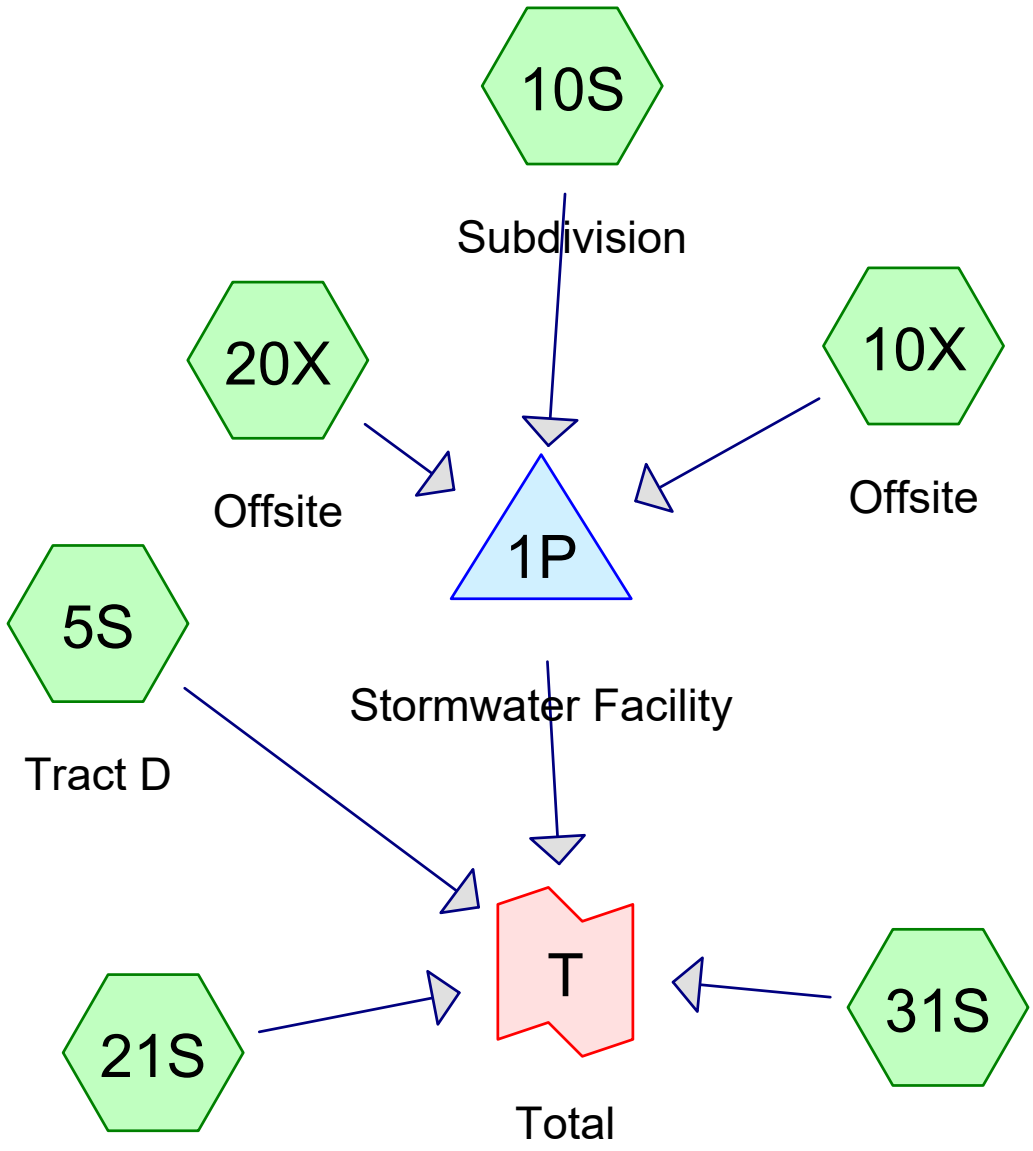
Inflow Area = 1,832,088 sf, 2.15% Impervious, Inflow Depth > 1.71" for CWS 10-YR event
Inflow = 12.80 cfs @ 8.04 hrs, Volume= 260,780 cf
Primary = 12.80 cfs @ 8.04 hrs, Volume= 260,780 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link T: Total



Appendix B:
HydroCAD Reports for Post-Developed Condition Storm Events (2-Year Storm Event Analysis Summary) (10-Year Storm Event Analysis Analysis)



Subcat Reach Pond Link

Routing Diagram for 3591 Post-Dev
Prepared by AKS Engineering & Forestry, Printed 8/14/2018

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
52,387	74	>75% Grass cover, Good, HSG C (10S)
648,600	80	>75% Grass cover, Good, HSG D (10S, 10X)
7,313	91	Gravel roads, HSG D (20X)
295,485	98	Impervious Roads and Sidewalks (10S)
9,005	98	Park Hardscape (10S)
229,398	84	Pasture/Grass (Wetlands), Fair, HSG D (21S, 31S)
128,269	84	Pasture/grassland/range, Fair, HSG D (20X)
21,285	98	Path Pavement (10S)
382,800	98	Paved Driveways, Roofs, and Patios (2640 sf x 145 Lots) (10S)
25,091	98	Roofs and Driveway (10X, 20X)
32,455	79	Woods, Fair, HSG D (5S)
1,832,088	**88**	**TOTAL AREA**

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SBUH method, Split Pervious/Imperv.
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 5S: Tract D Runoff Area=32,455 sf 0.00% Impervious Runoff Depth>0.83"
Flow Length=385' Tc=17.6 min CN=79/0 Runoff=0.09 cfs 2,239 cf

Subcatchment 10S: Subdivision Runoff Area=1,393,998 sf 50.83% Impervious Runoff Depth>1.59"
Tc=5.0 min CN=80/98 Runoff=12.04 cfs 184,468 cf

Subcatchment 10X: Offsite Runoff Area=32,768 sf 52.50% Impervious Runoff Depth>1.61"
Flow Length=520' Tc=6.9 min CN=80/98 Runoff=0.28 cfs 4,396 cf

Subcatchment 20X: Offsite Runoff Area=143,469 sf 5.50% Impervious Runoff Depth>1.17"
Flow Length=395' Tc=13.6 min CN=84/98 Runoff=0.77 cfs 13,999 cf

Subcatchment 21S: Runoff Area=96,180 sf 0.00% Impervious Runoff Depth>1.10"
Flow Length=406' Slope=0.0330 '/' Tc=17.9 min CN=84/0 Runoff=0.45 cfs 8,855 cf

Subcatchment 31S: Runoff Area=133,218 sf 0.00% Impervious Runoff Depth>1.11"
Flow Length=505' Slope=0.0330 '/' Tc=11.2 min CN=84/0 Runoff=0.70 cfs 12,312 cf

Pond 1P: Stormwater Facility Peak Elev=190.72' Storage=69,919 cf Inflow=13.06 cfs 202,862 cf
Discarded=0.21 cfs 14,863 cf Primary=3.31 cfs 124,107 cf Outflow=3.52 cfs 138,970 cf

Link T: Total Inflow=3.79 cfs 147,514 cf
Primary=3.79 cfs 147,514 cf

Total Runoff Area = 1,832,088 sf Runoff Volume = 226,269 cf Average Runoff Depth = 1.48"
59.95% Pervious = 1,098,422 sf 40.05% Impervious = 733,666 sf

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SBUH method, Split Pervious/Imperv.
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 5S: Tract D Runoff Area=32,455 sf 0.00% Impervious Runoff Depth>1.51"
Flow Length=385' Tc=17.6 min CN=79/0 Runoff=0.21 cfs 4,090 cf

Subcatchment 10S: Subdivision Runoff Area=1,393,998 sf 50.83% Impervious Runoff Depth>2.42"
Tc=5.0 min CN=80/98 Runoff=18.71 cfs 280,576 cf

Subcatchment 10X: Offsite Runoff Area=32,768 sf 52.50% Impervious Runoff Depth>2.44"
Flow Length=520' Tc=6.9 min CN=80/98 Runoff=0.44 cfs 6,664 cf

Subcatchment 20X: Offsite Runoff Area=143,469 sf 5.50% Impervious Runoff Depth>1.95"
Flow Length=395' Tc=13.6 min CN=84/98 Runoff=1.39 cfs 23,356 cf

Subcatchment 21S: Runoff Area=96,180 sf 0.00% Impervious Runoff Depth>1.88"
Flow Length=406' Slope=0.0330 '/' Tc=17.9 min CN=84/0 Runoff=0.83 cfs 15,043 cf

Subcatchment 31S: Runoff Area=133,218 sf 0.00% Impervious Runoff Depth>1.88"
Flow Length=505' Slope=0.0330 '/' Tc=11.2 min CN=84/0 Runoff=1.29 cfs 20,907 cf

Pond 1P: Stormwater Facility Peak Elev=191.47' Storage=83,470 cf Inflow=20.48 cfs 310,597 cf
Discarded=0.22 cfs 15,555 cf Primary=10.67 cfs 228,685 cf Outflow=10.89 cfs 244,240 cf

Link T: Total Inflow=12.44 cfs 268,725 cf
Primary=12.44 cfs 268,725 cf

Total Runoff Area = 1,832,088 sf Runoff Volume = 350,636 cf Average Runoff Depth = 2.30"
59.95% Pervious = 1,098,422 sf 40.05% Impervious = 733,666 sf

Summary for Subcatchment 5S: Tract D

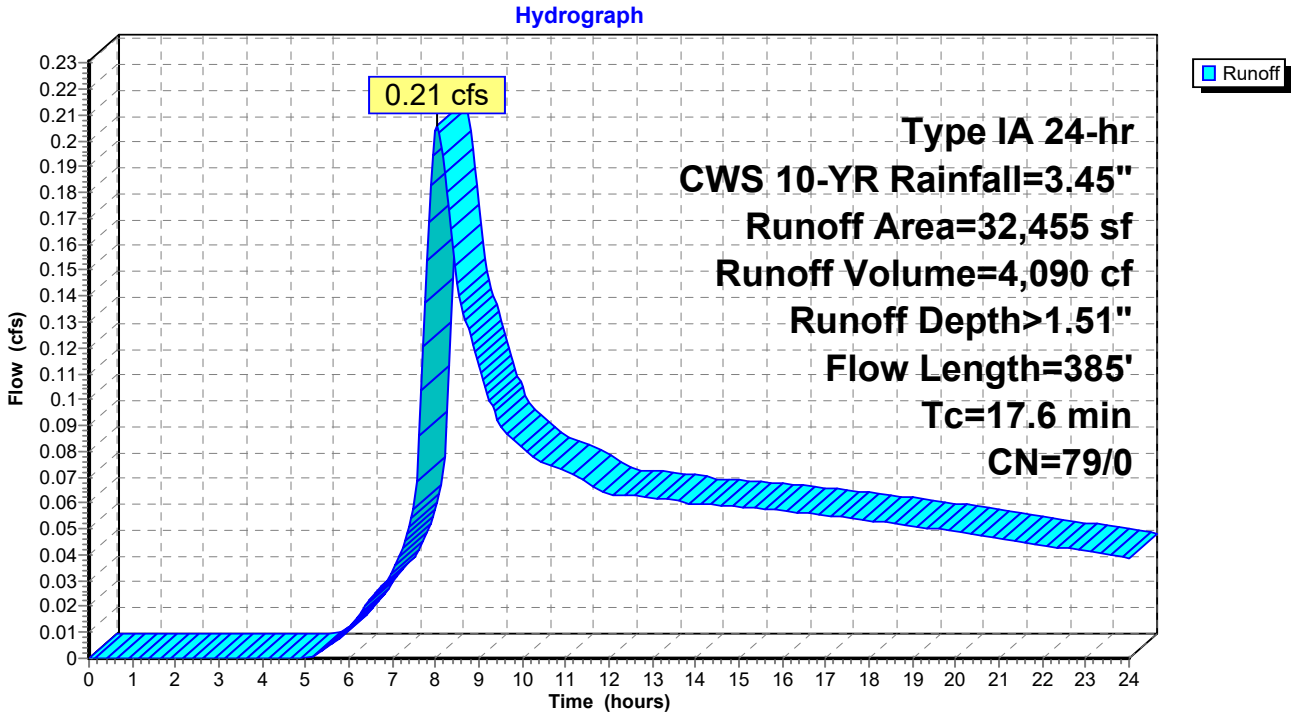
Runoff = 0.21 cfs @ 8.04 hrs, Volume= 4,090 cf, Depth> 1.51"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr CWS 10-YR Rainfall=3.45"

Area (sf)	CN	Description
32,455	79	Woods, Fair, HSG D
32,455	79	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	50	0.0700	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.50"
9.1	335	0.0150	0.61		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
17.6	385	Total			

Subcatchment 5S: Tract D



Summary for Subcatchment 10S: Subdivision

[49] Hint: Tc<2dt may require smaller dt

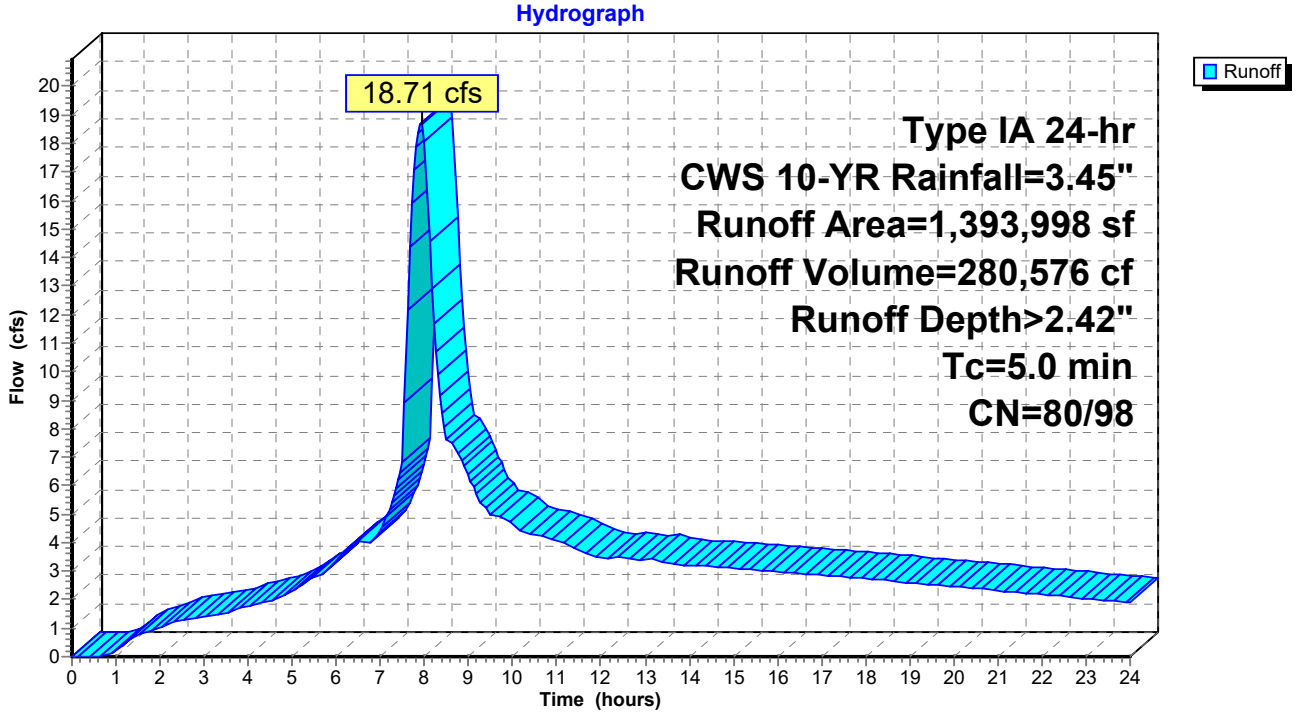
Runoff = 18.71 cfs @ 7.93 hrs, Volume= 280,576 cf, Depth> 2.42"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr CWS 10-YR Rainfall=3.45"

	Area (sf)	CN	Description
*	295,485	98	Impervious Roads and Sidewalks
*	382,800	98	Paved Driveways, Roofs, and Patios (2640 sf x 145 Lots)
*	9,005	98	Park Hardscape
	633,036	80	>75% Grass cover, Good, HSG D
	52,387	74	>75% Grass cover, Good, HSG C
*	21,285	98	Path Pavement
	1,393,998	89	Weighted Average
	685,423	80	49.17% Pervious Area
	708,575	98	50.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 10S: Subdivision



Summary for Subcatchment 10X: Offsite

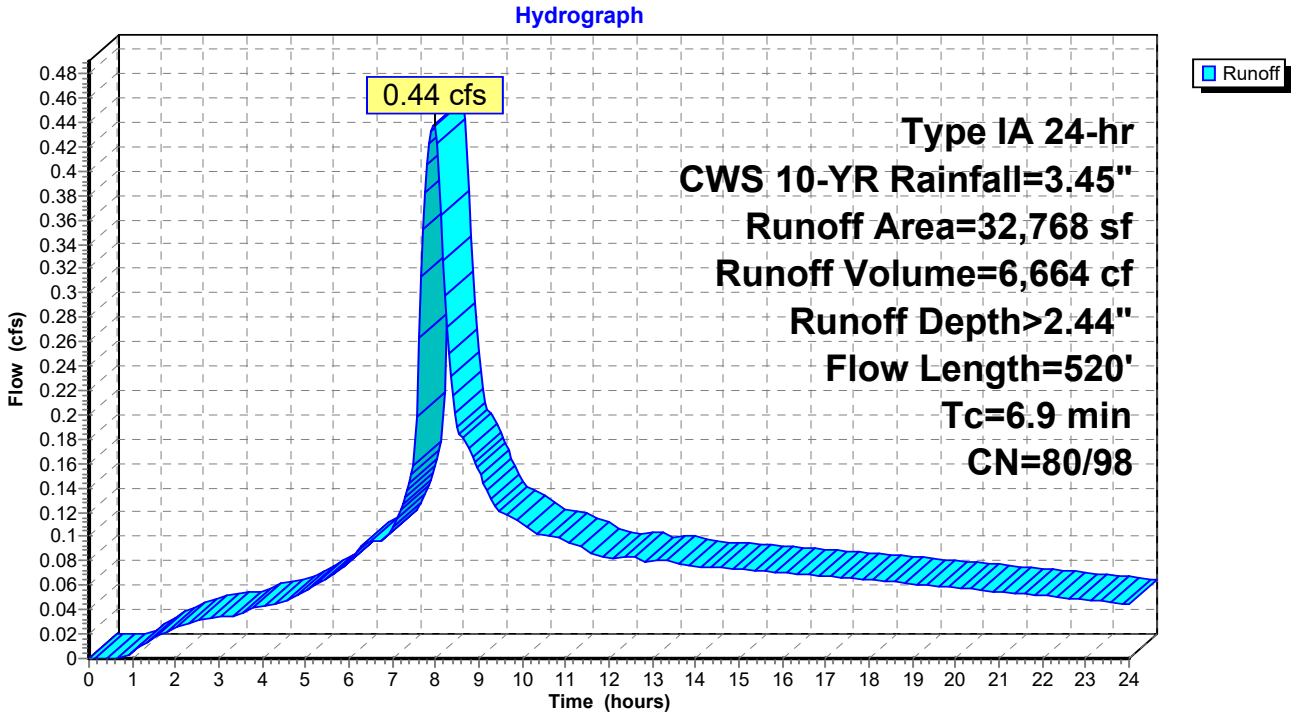
Runoff = 0.44 cfs @ 7.96 hrs, Volume= 6,664 cf, Depth> 2.44"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr CWS 10-YR Rainfall=3.45"

	Area (sf)	CN	Description
*	17,204	98	Roofs and Driveway
	15,564	80	>75% Grass cover, Good, HSG D
	32,768	89	Weighted Average
	15,564	80	47.50% Pervious Area
	17,204	98	52.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	50	0.0280	0.15		**Sheet Flow, Grass** Grass: Short n= 0.150 P2= 2.50"
0.4	68	0.0300	2.60		**Shallow Concentrated Flow, Grass** Grassed Waterway Kv= 15.0 fps
0.2	57	0.0175	6.15	14.77	**Channel Flow, Roadside Ditch** Area= 2.4 sf Perim= 4.2' r= 0.57' n= 0.022 Earth, clean & straight
0.2	45	0.0088	3.17	0.62	**Pipe Channel, Culvert** 6.0" Round Area= 0.2 sf Perim= 1.6' r= 0.13' n= 0.011 Concrete pipe, straight & clean
0.5	300	0.0400	9.30	22.33	**Channel Flow, Roadside Ditch** Area= 2.4 sf Perim= 4.2' r= 0.57' n= 0.022 Earth, clean & straight
6.9	520	Total			

Subcatchment 10X: Offsite



Summary for Subcatchment 20X: Offsite

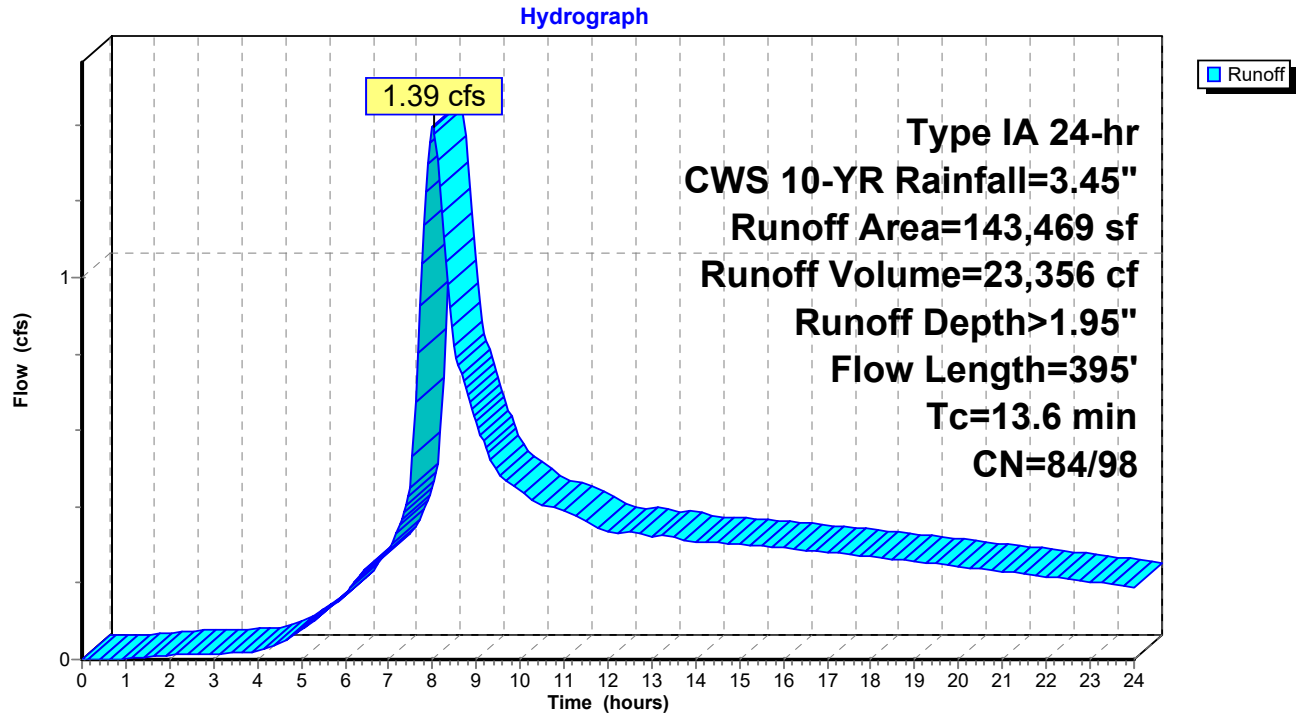
Runoff = 1.39 cfs @ 8.01 hrs, Volume= 23,356 cf, Depth> 1.95"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr CWS 10-YR Rainfall=3.45"

	Area (sf)	CN	Description
	7,313	91	Gravel roads, HSG D
*	7,887	98	Roofs and Driveway
	128,269	84	Pasture/grassland/range, Fair, HSG D
	143,469	85	Weighted Average
	135,582	84	94.50% Pervious Area
	7,887	98	5.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	50	0.0200	0.09		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.50"
0.8	48	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.1	196	0.0500	1.57		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.4	101	0.0290	1.19		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
13.6	395	Total			

Subcatchment 20X: Offsite



Summary for Subcatchment 21S:

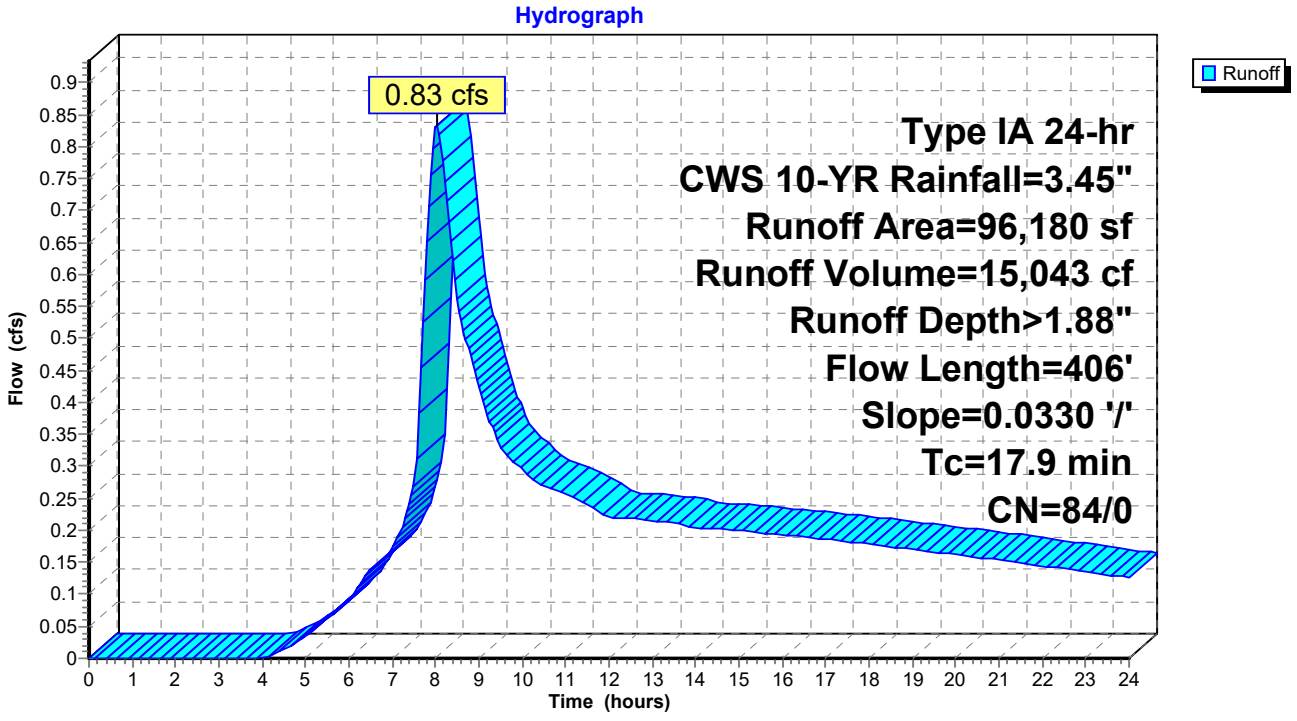
Runoff = 0.83 cfs @ 8.03 hrs, Volume= 15,043 cf, Depth> 1.88"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr CWS 10-YR Rainfall=3.45"

	Area (sf)	CN	Description
*	96,180	84	Pasture/Grass (Wetlands), Fair, HSG D
	96,180	84	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	50	0.0330	0.07		**Sheet Flow, Woods Shallow** Woods: Light underbrush n= 0.400 P2= 2.50"
6.5	356	0.0330	0.91		**Shallow Concentrated Flow, Woods Shallow** Woodland Kv= 5.0 fps
17.9	406	Total			

Subcatchment 21S:



Summary for Subcatchment 31S:

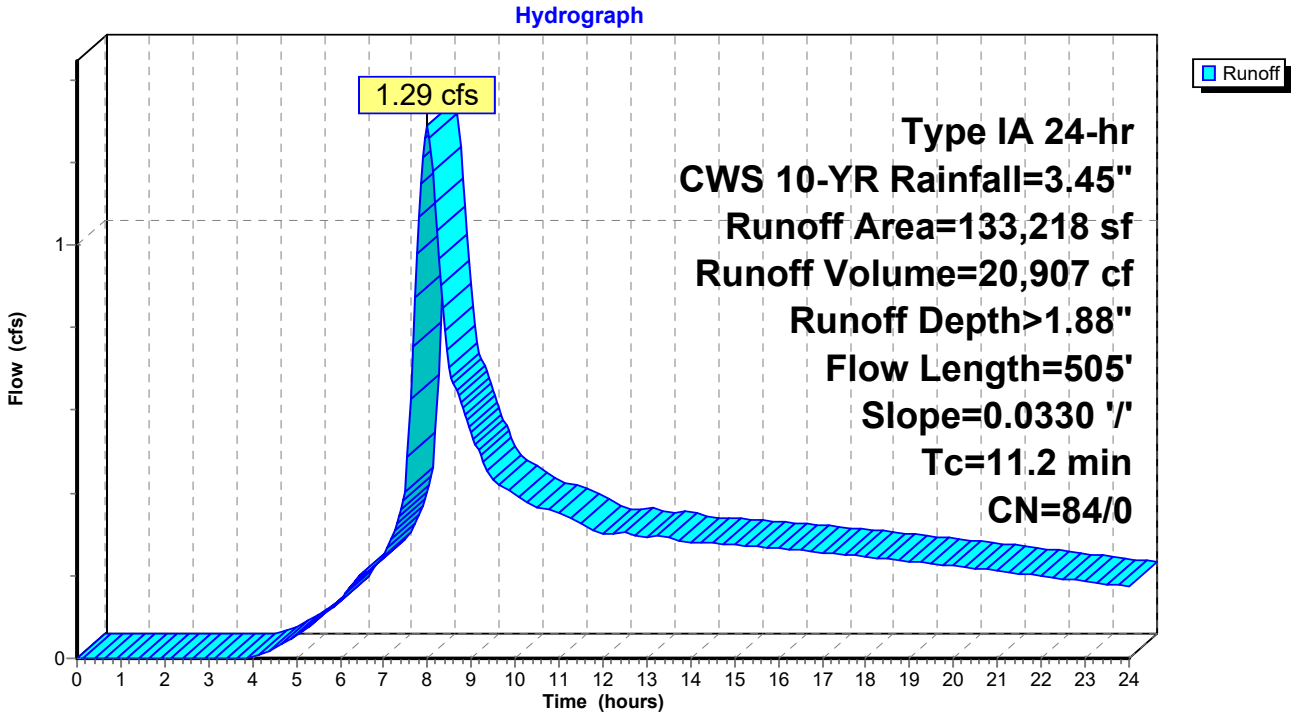
Runoff = 1.29 cfs @ 8.00 hrs, Volume= 20,907 cf, Depth> 1.88"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr CWS 10-YR Rainfall=3.45"

	Area (sf)	CN	Description
*	133,218	84	Pasture/Grass (Wetlands), Fair, HSG D
	133,218	84	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	50	0.0330	0.16		**Sheet Flow, Grass Shallow** Grass: Short n= 0.150 P2= 2.50"
6.0	455	0.0330	1.27		**Shallow Concentrated Flow, Grass Shallow** Short Grass Pasture Kv= 7.0 fps
11.2	505	Total			

Subcatchment 31S:



Summary for Pond 1P: Stormwater Facility

Inflow Area = 1,570,235 sf, 46.72% Impervious, Inflow Depth > 2.37" for CWS 10-YR event
Inflow = 20.48 cfs @ 7.94 hrs, Volume= 310,597 cf
Outflow = 10.89 cfs @ 8.32 hrs, Volume= 244,240 cf, Atten= 47%, Lag= 22.6 min
Discarded = 0.22 cfs @ 8.32 hrs, Volume= 15,555 cf
Primary = 10.67 cfs @ 8.32 hrs, Volume= 228,685 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 191.47' @ 8.32 hrs Surf.Area= 18,691 sf Storage= 83,470 cf
Flood Elev= 192.50' Surf.Area= 19,995 sf Storage= 103,486 cf

Plug-Flow detention time= 253.1 min calculated for 244,240 cf (79% of inflow)
Center-of-Mass det. time= 116.3 min (832.8 - 716.5)

Volume	Invert	Avail.Storage	Storage Description
#1	185.50'	124,055 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

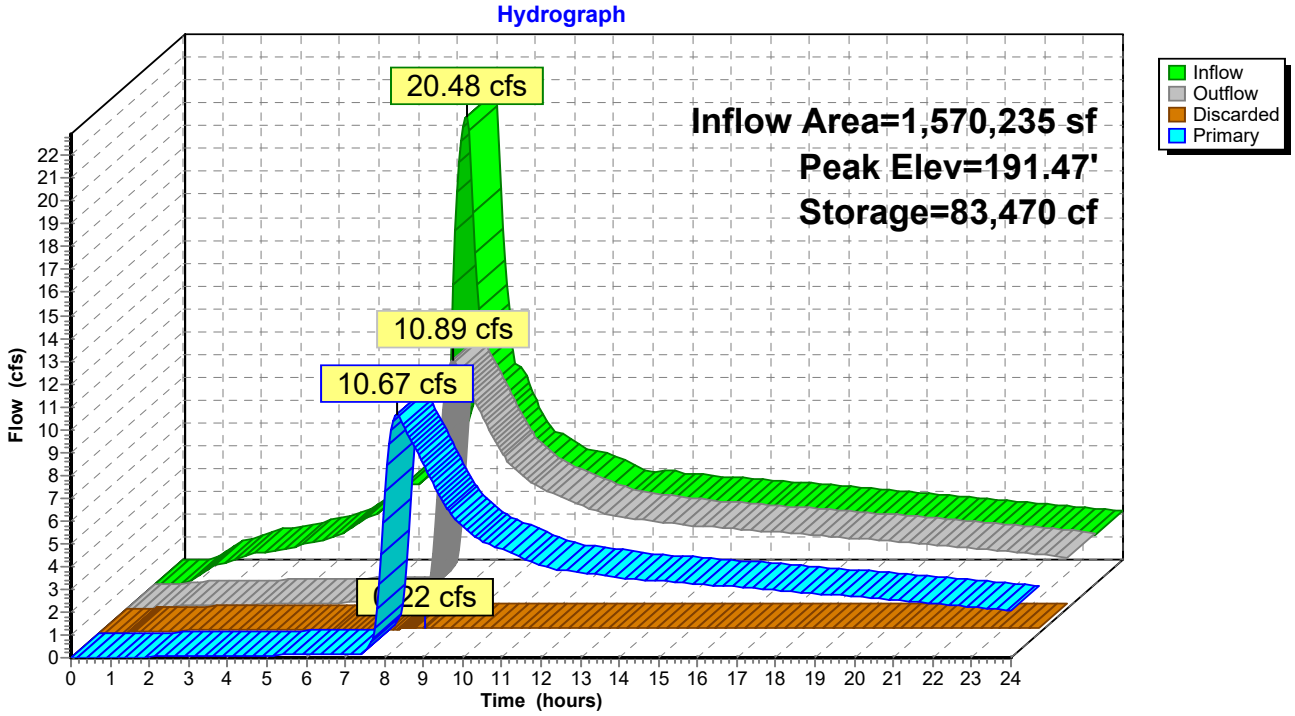
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
185.50	9,553	0	0	9,553
186.00	10,245	4,948	4,948	10,267
187.00	11,676	10,953	15,901	11,745
188.00	13,162	12,412	28,313	13,283
189.00	14,705	13,926	42,239	14,882
190.00	16,304	15,498	57,737	16,540
191.00	17,960	17,125	74,862	18,260
192.00	19,534	18,741	93,604	19,907
193.00	20,461	19,996	113,599	20,961
193.50	21,366	10,456	124,055	21,902

Device	Routing	Invert	Outlet Devices
#1	Device 2	185.50'	**2.0' long (Profile 17) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 1.97 2.46 2.95 Coef. (English) 2.84 3.13 3.26 3.30 3.31 3.31
#2	Device 4	185.50'	**1.8" Vert. WQ Orifice** C= 0.620
#3	Device 4	190.20'	**2.0' long (Profile 17) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 1.97 2.46 2.95 Coef. (English) 2.84 3.13 3.26 3.30 3.31 3.31
#4	Primary	185.00'	**36.0" Round Culvert** L= 24.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 185.00' / 184.88' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 7.07 sf
#5	Discarded	185.50'	**0.500 in/hr Exfiltration over Wetted area**
#6	Device 4	189.50'	**6.0" Vert. Detention Orifice** C= 0.620

Discarded OutFlow Max=0.22 cfs @ 8.32 hrs HW=191.47' (Free Discharge)
└**5=Exfiltration** (Exfiltration Controls 0.22 cfs)

Primary OutFlow Max=10.65 cfs @ 8.32 hrs HW=191.47' TW=0.00' (Dynamic Tailwater)
└**4=Culvert** (Passes 10.65 cfs of 75.87 cfs potential flow)
  └**2=WQ Orifice** (Orifice Controls 0.21 cfs @ 12.08 fps)
    └**1=Broad-Crested Rectangular Weir** (Passes 0.21 cfs of 96.53 cfs potential flow)
  └**3=Broad-Crested Rectangular Weir** (Weir Controls 9.16 cfs @ 3.61 fps)
  └**6=Detention Orifice** (Orifice Controls 1.28 cfs @ 6.52 fps)

Pond 1P: Stormwater Facility

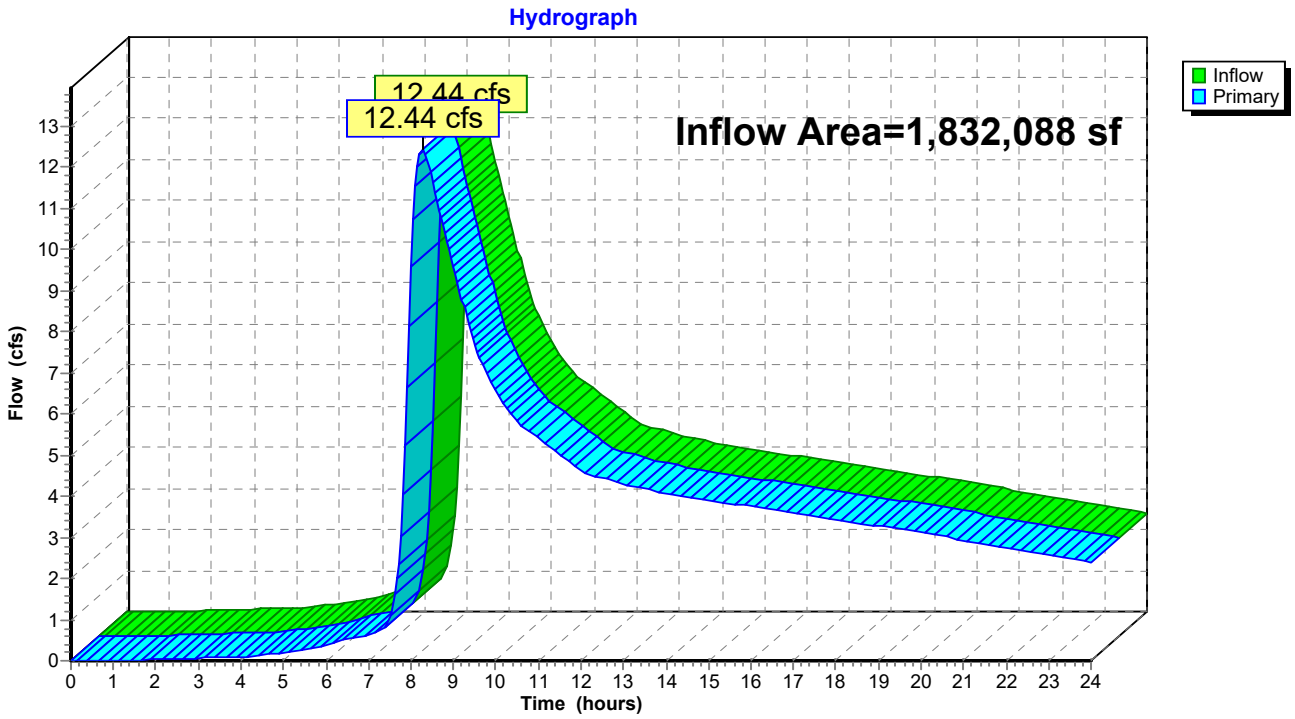


Summary for Link T: Total

Inflow Area = 1,832,088 sf, 40.05% Impervious, Inflow Depth > 1.76" for CWS 10-YR event
Inflow = 12.44 cfs @ 8.27 hrs, Volume= 268,725 cf
Primary = 12.44 cfs @ 8.27 hrs, Volume= 268,725 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link T: Total



Appendix C:
Downstream Analysis Calculations and HydroCAD Reports

DOWNSTREAM ANALYSIS CALCULATIONS

Client: Brookman Development, LLC
Project: Middlebrook Subdivision
AKS Job No.: 3591
Date: August 21, 2018
Done By: ARS
Checked By: PAS

CEDAR CREEK BASIN

Pre-Developed Flows for 25-Yr Storm Event:	16.08	cfs
Post-Developed Flows for 25-Yr Storm Event:	17.78	cfs
Additional Flow Created from Development:	1.70	cfs

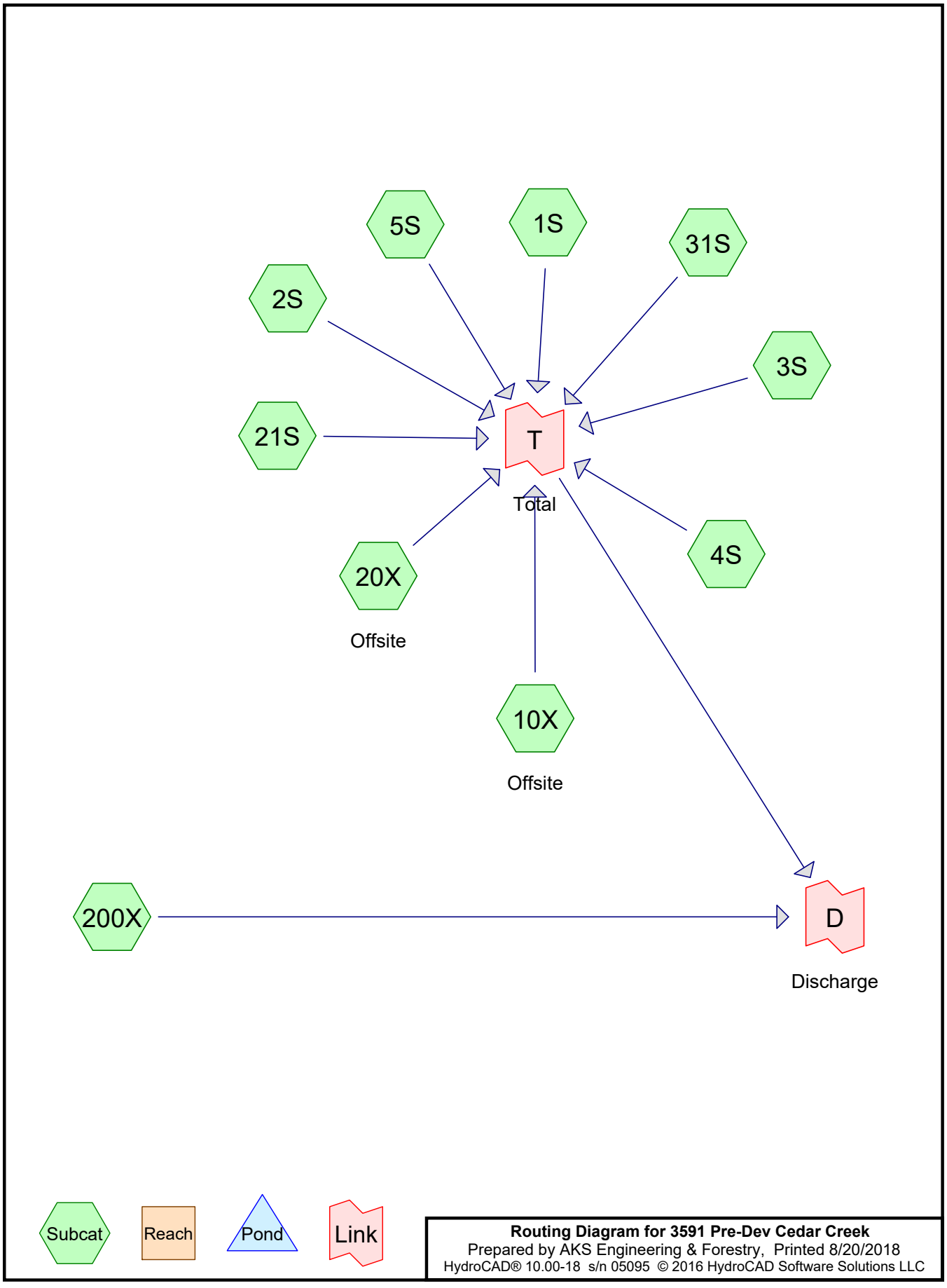
Downstream Analysis required until additional flow created from development constitutes less than 5% of total tributary flow.

Calculated Tributary Flow (Q):

$$Q = 462.48 \text{ cfs}$$

Percent Increase in Stormwater Flow from Development at Selected Discharge Point:

$$\frac{1.70 \text{ cfs}}{462.48 \text{ cfs}} = 0.37\%$$



Routing Diagram for 3591 Pre-Dev Cedar Creek
Prepared by AKS Engineering & Forestry, Printed 8/20/2018
HydroCAD® 10.00-18 s/n 05095 © 2016 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
2,714,532	83	1/4 acre lots, 38% imp, HSG C (200X)
9,384,262	77	2 acre lots, 12% imp, HSG C (200X)
15,564	80	>75% Grass cover, Good, HSG D (10X)
28,205	91	Gravel roads, HSG D (1S, 3S, 20X)
229,398	84	Pasture/Grass/Woods (Wetlands), Fair, HSG D (21S, 31S)
85,744	79	Pasture/grassland/range, Fair, HSG C (4S)
703,101	84	Pasture/grassland/range, Fair, HSG D (1S, 2S, 3S, 4S, 20X)
45,511,730	74	Pasture/grassland/range, Good, HSG C (200X)
2,238,282	98	Paved roads and Roofs (200X)
4,133	98	Roofs (4S)
6,066	98	Roofs and Deck (1S)
29,217	98	Roofs and Driveway (3S, 10X, 20X)
215,168	79	Woods, Fair, HSG D (3S, 5S)
49,268,288	70	Woods, Good, HSG C (4S, 200X)
357,570	77	Woods, Good, HSG D (1S, 2S)
131,834	82	Woods/grass comb., Fair, HSG D (1S)
52,226,576	72	Woods/grass comb., Good, HSG C (200X)
163,149,670	**73**	**TOTAL AREA**

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SBUH method, Split Pervious/Imperv.
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: Runoff Area=581,160 sf 1.04% Impervious Runoff Depth>1.95"
Flow Length=1,219' Tc=28.3 min CN=80/98 Runoff=4.33 cfs 94,327 cf

Subcatchment 2S: Runoff Area=211,159 sf 0.00% Impervious Runoff Depth>2.10"
Flow Length=832' Tc=21.2 min CN=82/0 Runoff=1.93 cfs 36,868 cf

Subcatchment 3S: Runoff Area=280,917 sf 1.47% Impervious Runoff Depth>2.03"
Flow Length=1,011' Tc=26.0 min CN=81/98 Runoff=2.30 cfs 47,618 cf

Subcatchment 4S: Runoff Area=320,762 sf 1.29% Impervious Runoff Depth>2.03"
Flow Length=693' Tc=25.4 min CN=81/98 Runoff=2.64 cfs 54,312 cf

Subcatchment 5S: Runoff Area=32,455 sf 0.00% Impervious Runoff Depth>1.86"
Flow Length=385' Tc=17.6 min CN=79/0 Runoff=0.27 cfs 5,044 cf

Subcatchment 10X: Offsite Runoff Area=32,768 sf 52.50% Impervious Runoff Depth>2.85"
Flow Length=520' Tc=6.9 min CN=80/98 Runoff=0.51 cfs 7,775 cf

Subcatchment 20X: Offsite Runoff Area=143,469 sf 5.50% Impervious Runoff Depth>2.34"
Flow Length=792' Tc=19.3 min CN=84/98 Runoff=1.56 cfs 27,951 cf

Subcatchment 21S: Runoff Area=96,180 sf 0.00% Impervious Runoff Depth>2.26"
Flow Length=406' Slope=0.0330 '/' Tc=17.9 min CN=84/0 Runoff=1.03 cfs 18,143 cf

Subcatchment 31S: Runoff Area=133,218 sf 0.00% Impervious Runoff Depth>2.27"
Flow Length=505' Slope=0.0330 '/' Tc=11.2 min CN=84/0 Runoff=1.59 cfs 25,212 cf

Subcatchment 200X: Runoff Area=161,317,582 sf 2.73% Impervious Runoff Depth>1.37"
Flow Length=23,830' Tc=84.1 min CN=72/98 Runoff=452.94 cfs 18,464,833 cf

Link D: Discharge Inflow=462.48 cfs 18,782,082 cf
Primary=462.48 cfs 18,782,082 cf

Link T: Total Inflow=16.08 cfs 317,249 cf
Primary=16.08 cfs 317,249 cf

Total Runoff Area = 163,149,670 sf Runoff Volume = 18,782,082 cf Average Runoff Depth = 1.38"
97.28% Pervious = 158,714,338 sf 2.72% Impervious = 4,435,332 sf

Summary for Subcatchment 1S:

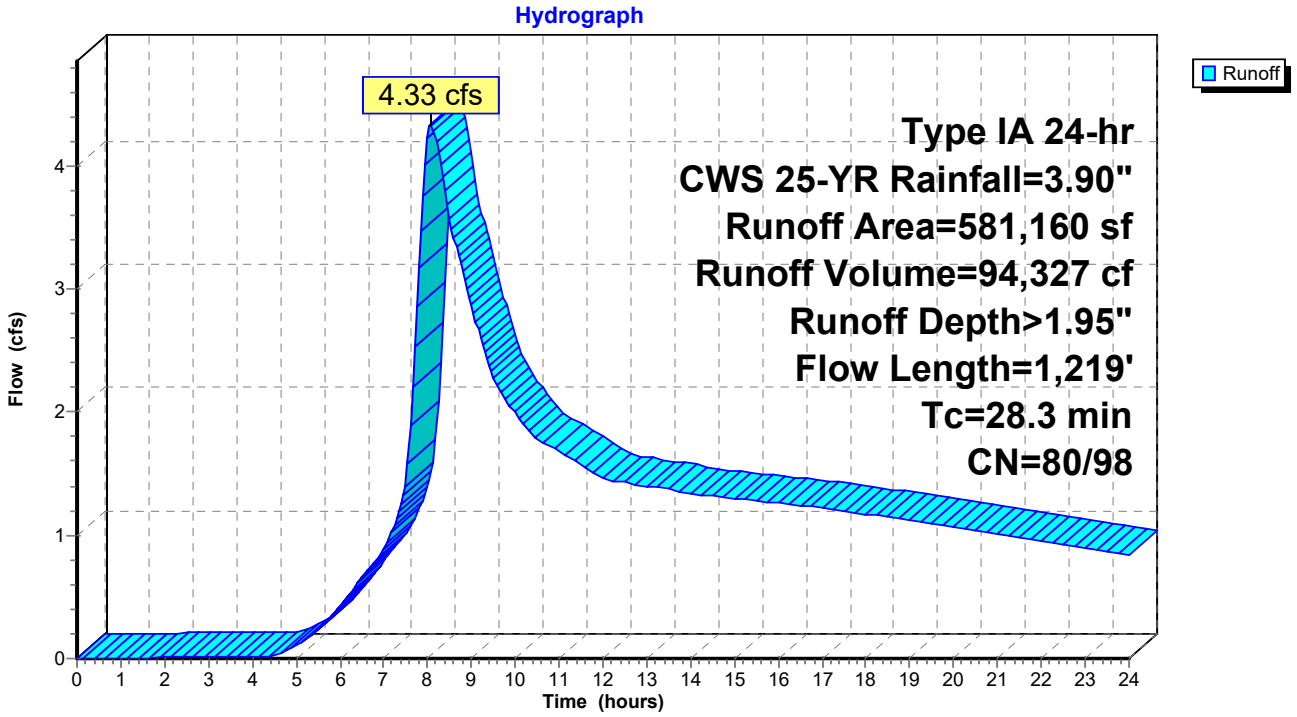
Runoff = 4.33 cfs @ 8.07 hrs, Volume= 94,327 cf, Depth> 1.95"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr CWS 25-YR Rainfall=3.90"

	Area (sf)	CN	Description
*	6,066	98	Roofs and Deck
	15,968	91	Gravel roads, HSG D
	290,199	77	Woods, Good, HSG D
	137,093	84	Pasture/grassland/range, Fair, HSG D
	131,834	82	Woods/grass comb., Fair, HSG D
	581,160	80	Weighted Average
	575,094	80	98.96% Pervious Area
	6,066	98	1.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.8	50	0.0480	0.08		**Sheet Flow, Woods Sheet** Woods: Light underbrush n= 0.400 P2= 2.50"
11.7	667	0.0360	0.95		**Shallow Concentrated Flow, Woods Shallow** Woodland Kv= 5.0 fps
2.2	182	0.0400	1.40		**Shallow Concentrated Flow, Woods Shallow** Short Grass Pasture Kv= 7.0 fps
1.4	57	0.0190	0.69		**Shallow Concentrated Flow, Woods Shallow** Woodland Kv= 5.0 fps
1.4	94	0.0270	1.15		**Shallow Concentrated Flow, Woods/grass Shallow** Short Grass Pasture Kv= 7.0 fps
1.4	104	0.0310	1.23		**Shallow Concentrated Flow, Grass Shallow** Short Grass Pasture Kv= 7.0 fps
0.3	16	0.0270	0.82		**Shallow Concentrated Flow, Woods Shallow** Woodland Kv= 5.0 fps
0.1	49	0.0490	11.87	9.32	**Pipe Channel, Culvert** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.011 Concrete pipe, straight & clean
28.3	1,219	Total			

Subcatchment 1S:



Summary for Subcatchment 2S:

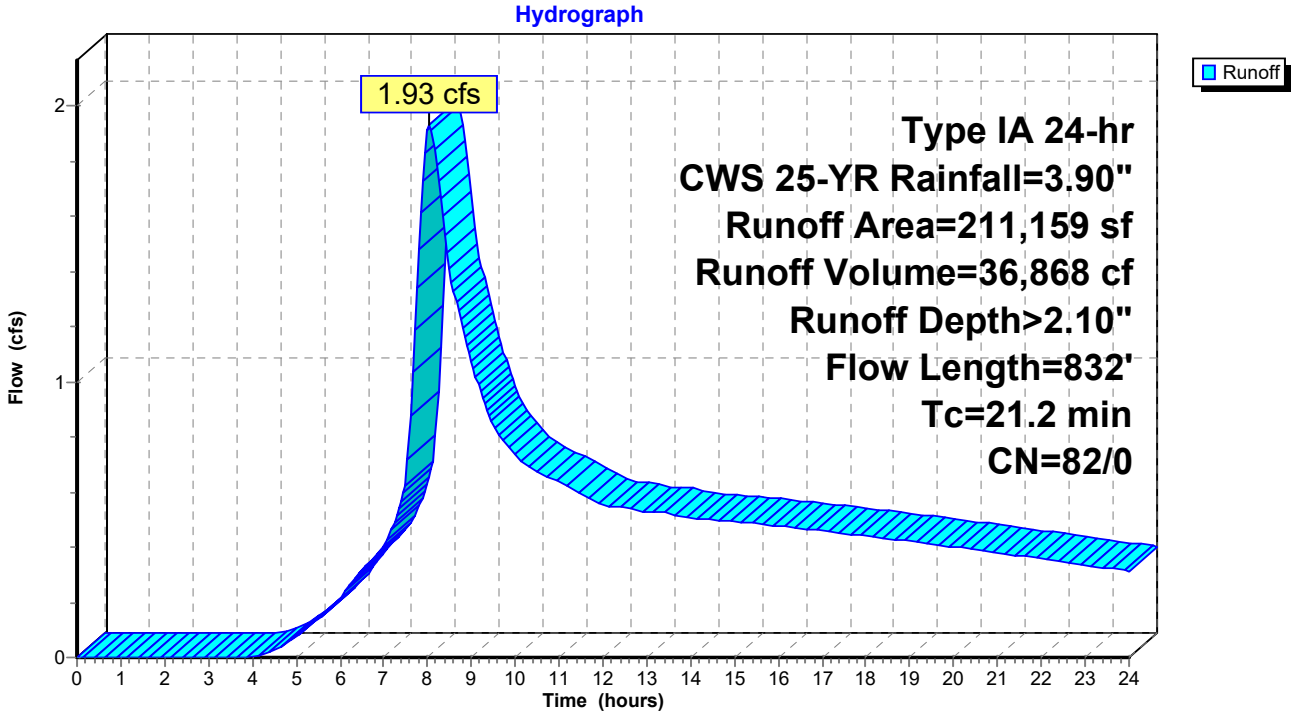
Runoff = 1.93 cfs @ 8.04 hrs, Volume= 36,868 cf, Depth> 2.10"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr CWS 25-YR Rainfall=3.90"

Area (sf)	CN	Description
67,371	77	Woods, Good, HSG D
143,788	84	Pasture/grassland/range, Fair, HSG D
211,159	82	Weighted Average
211,159	82	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	50	0.0570	0.09		**Sheet Flow, Woods Sheet** Woods: Light underbrush n= 0.400 P2= 2.50"
4.1	291	0.0290	1.19		**Shallow Concentrated Flow, Grass Shallow** Short Grass Pasture Kv= 7.0 fps
2.9	216	0.0310	1.23		**Shallow Concentrated Flow, Grass Shallow** Short Grass Pasture Kv= 7.0 fps
5.0	275	0.0330	0.91		**Shallow Concentrated Flow, Woods Shallow** Woodland Kv= 5.0 fps
21.2	832	Total			

Subcatchment 2S:



Summary for Subcatchment 3S:

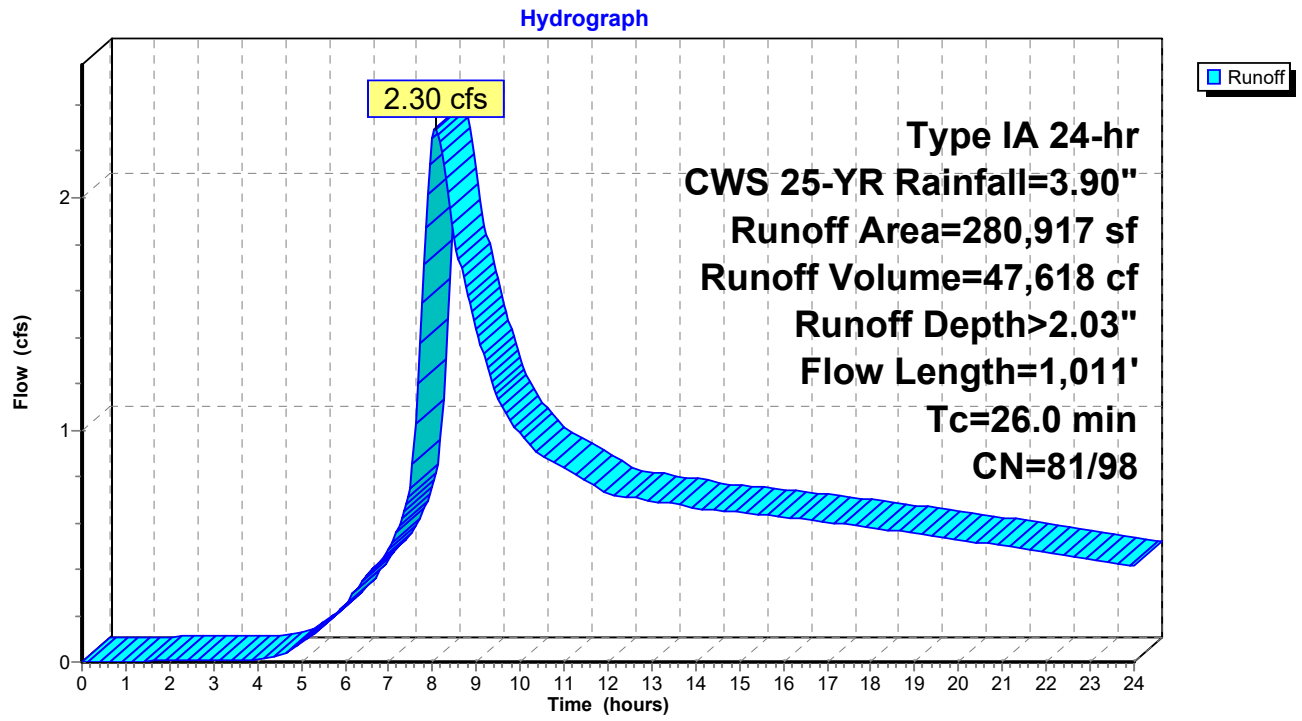
Runoff = 2.30 cfs @ 8.06 hrs, Volume= 47,618 cf, Depth> 2.03"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr CWS 25-YR Rainfall=3.90"

	Area (sf)	CN	Description
*	4,126	98	Roofs and Driveway
	4,924	91	Gravel roads, HSG D
	182,713	79	Woods, Fair, HSG D
	89,154	84	Pasture/grassland/range, Fair, HSG D
	280,917	81	Weighted Average
	276,791	81	98.53% Pervious Area
	4,126	98	1.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.4	50	0.0530	0.09		**Sheet Flow, Woods Sheet** Woods: Light underbrush n= 0.400 P2= 2.50"
7.3	456	0.0430	1.04		**Shallow Concentrated Flow, Woods Shallow** Woodland Kv= 5.0 fps
9.3	505	0.0330	0.91		**Shallow Concentrated Flow, Woods Shallow** Woodland Kv= 5.0 fps
26.0	1,011	Total			

Subcatchment 3S:



Summary for Subcatchment 4S:

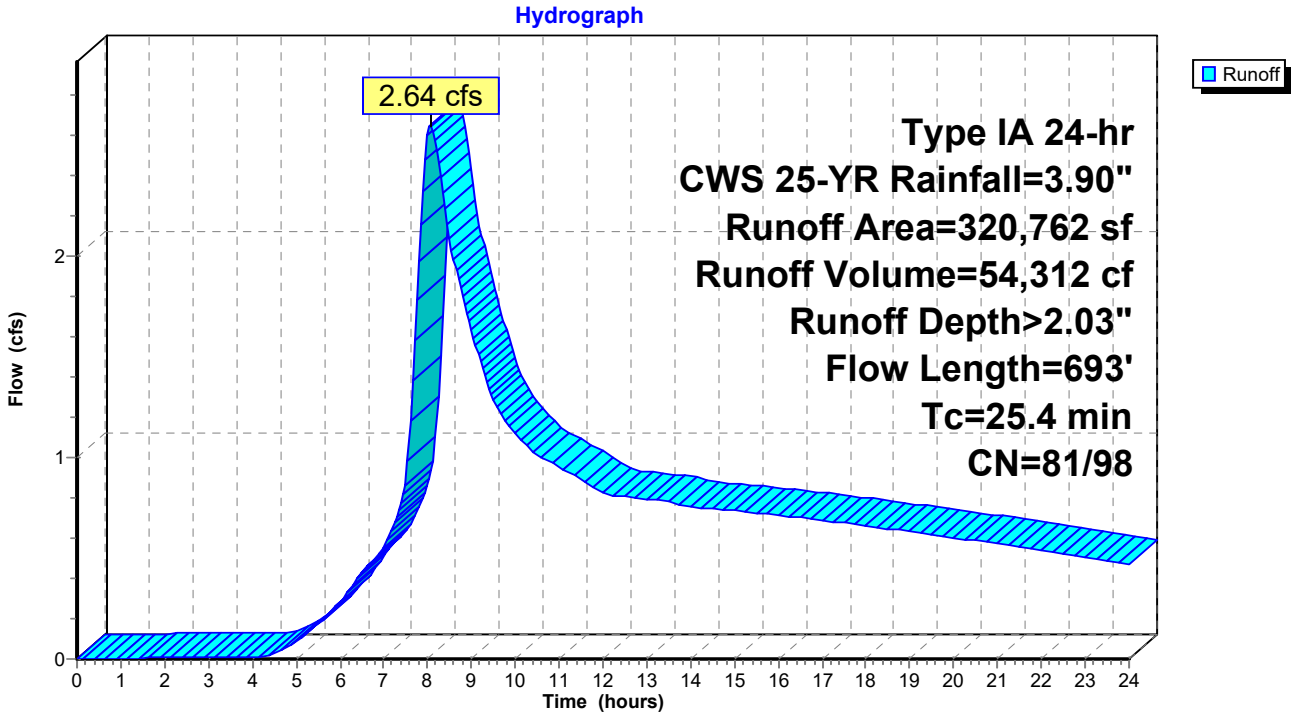
Runoff = 2.64 cfs @ 8.06 hrs, Volume= 54,312 cf, Depth> 2.03"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr CWS 25-YR Rainfall=3.90"

	Area (sf)	CN	Description
*	4,133	98	Roofs
	26,088	70	Woods, Good, HSG C
	204,797	84	Pasture/grassland/range, Fair, HSG D
	85,744	79	Pasture/grassland/range, Fair, HSG C
	320,762	82	Weighted Average
	316,629	81	98.71% Pervious Area
	4,133	98	1.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.0	50	0.0020	0.05		**Sheet Flow, Grass Sheet** Grass: Short n= 0.150 P2= 2.50"
2.6	98	0.0080	0.63		**Shallow Concentrated Flow, Grass Shallow** Short Grass Pasture Kv= 7.0 fps
6.8	545	0.0360	1.33		**Shallow Concentrated Flow, Grass Shallow** Short Grass Pasture Kv= 7.0 fps
25.4	693	Total			

Subcatchment 4S:



Summary for Subcatchment 5S:

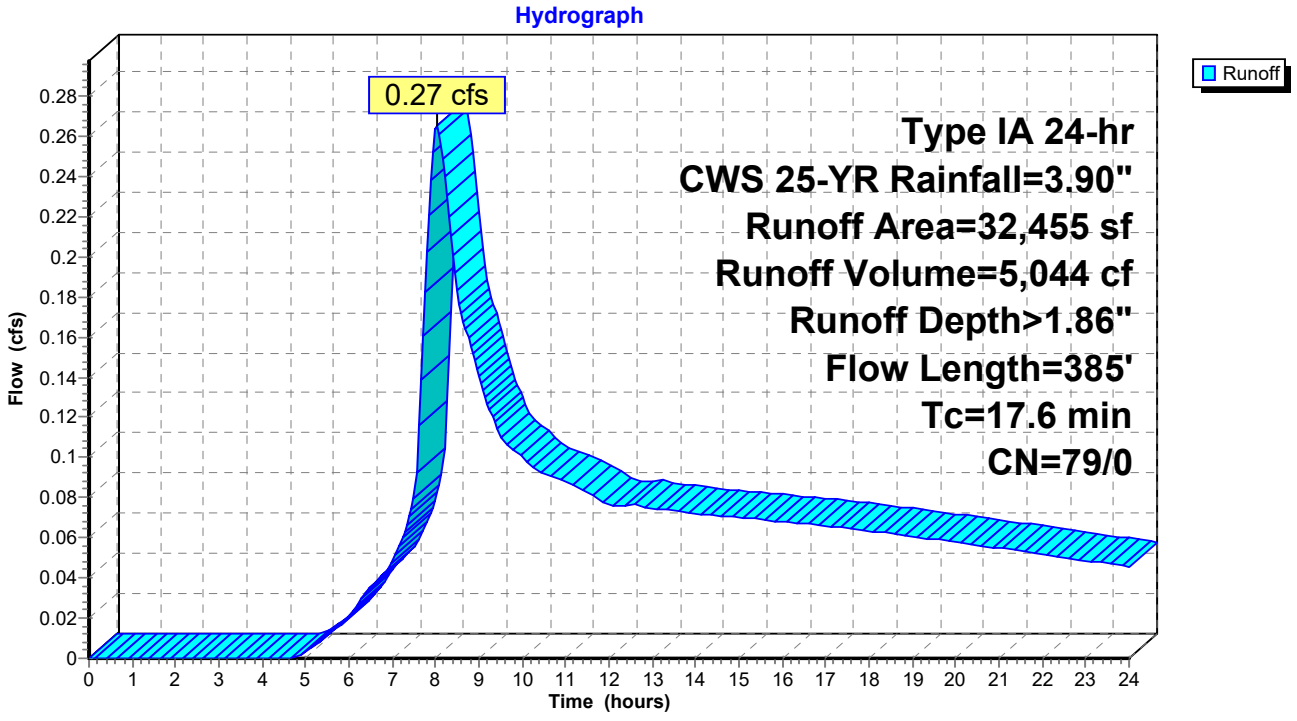
Runoff = 0.27 cfs @ 8.03 hrs, Volume= 5,044 cf, Depth> 1.86"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr CWS 25-YR Rainfall=3.90"

Area (sf)	CN	Description
32,455	79	Woods, Fair, HSG D
32,455	79	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	50	0.0700	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.50"
9.1	335	0.0150	0.61		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
17.6	385	Total			

Subcatchment 5S:



Summary for Subcatchment 10X: Offsite

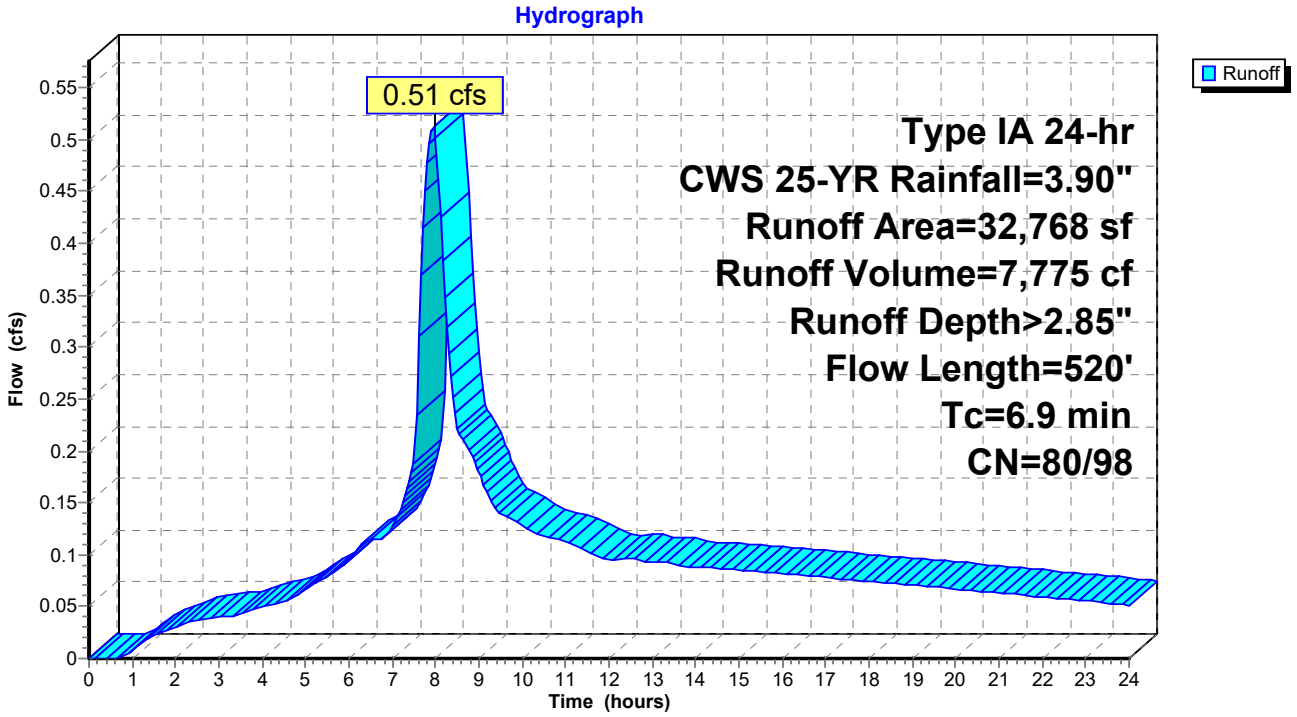
Runoff = 0.51 cfs @ 7.96 hrs, Volume= 7,775 cf, Depth> 2.85"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr CWS 25-YR Rainfall=3.90"

	Area (sf)	CN	Description
*	17,204	98	Roofs and Driveway
	15,564	80	>75% Grass cover, Good, HSG D
	32,768	89	Weighted Average
	15,564	80	47.50% Pervious Area
	17,204	98	52.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	50	0.0280	0.15		**Sheet Flow, Grass** Grass: Short n= 0.150 P2= 2.50"
0.4	68	0.0300	2.60		**Shallow Concentrated Flow, Grass** Grassed Waterway Kv= 15.0 fps
0.2	57	0.0175	6.15	14.77	**Channel Flow, Roadside Ditch** Area= 2.4 sf Perim= 4.2' r= 0.57' n= 0.022 Earth, clean & straight
0.2	45	0.0088	3.17	0.62	**Pipe Channel, Culvert** 6.0" Round Area= 0.2 sf Perim= 1.6' r= 0.13' n= 0.011 Concrete pipe, straight & clean
0.5	300	0.0400	9.30	22.33	**Channel Flow, Roadside Ditch** Area= 2.4 sf Perim= 4.2' r= 0.57' n= 0.022 Earth, clean & straight
6.9	520	Total			

Subcatchment 10X: Offsite



Summary for Subcatchment 20X: Offsite

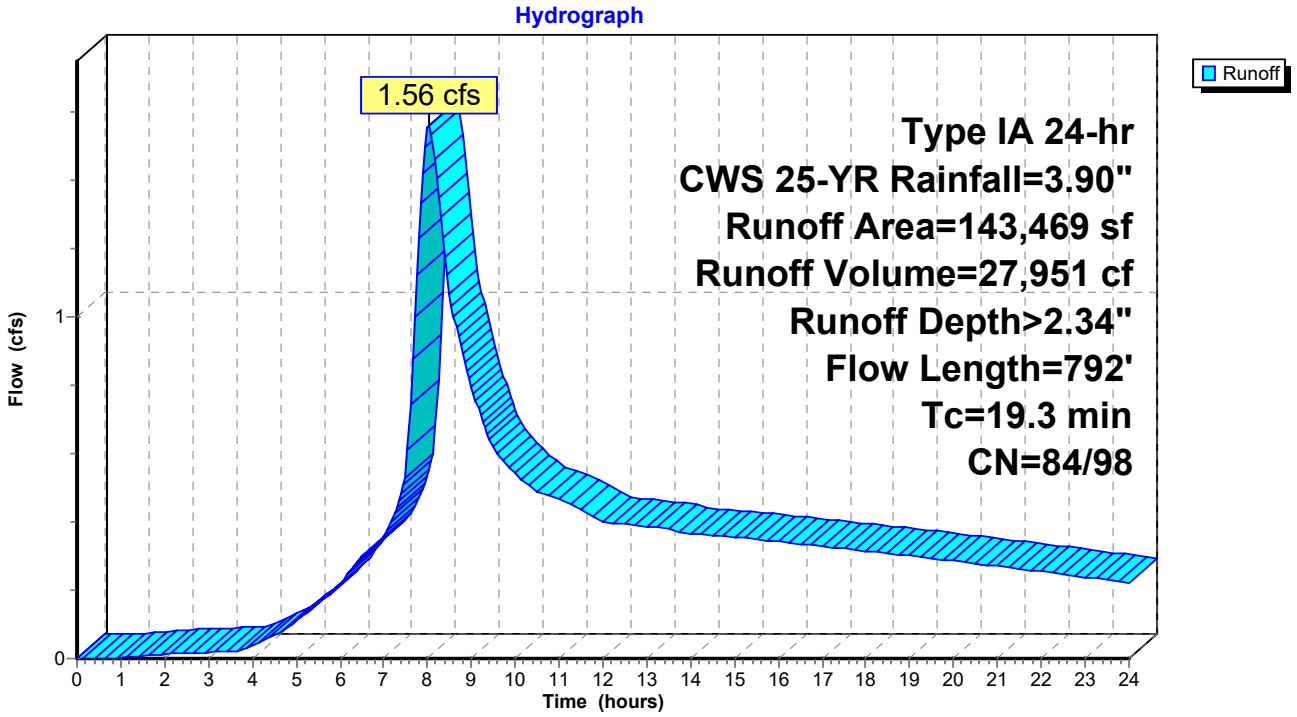
Runoff = 1.56 cfs @ 8.03 hrs, Volume= 27,951 cf, Depth> 2.34"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr CWS 25-YR Rainfall=3.90"

	Area (sf)	CN	Description
	7,313	91	Gravel roads, HSG D
*	7,887	98	Roofs and Driveway
	128,269	84	Pasture/grassland/range, Fair, HSG D
	143,469	85	Weighted Average
	135,582	84	94.50% Pervious Area
	7,887	98	5.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	50	0.0200	0.09		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.50"
0.8	48	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.1	196	0.0500	1.57		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.4	101	0.0290	1.19		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.6	348	0.0220	1.04		**Shallow Concentrated Flow, Grass Shallow** Short Grass Pasture Kv= 7.0 fps
0.1	49	0.0490	11.87	9.32	**Pipe Channel, Culvert** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.011
19.3	792	Total			

Subcatchment 20X: Offsite



Summary for Subcatchment 21S:

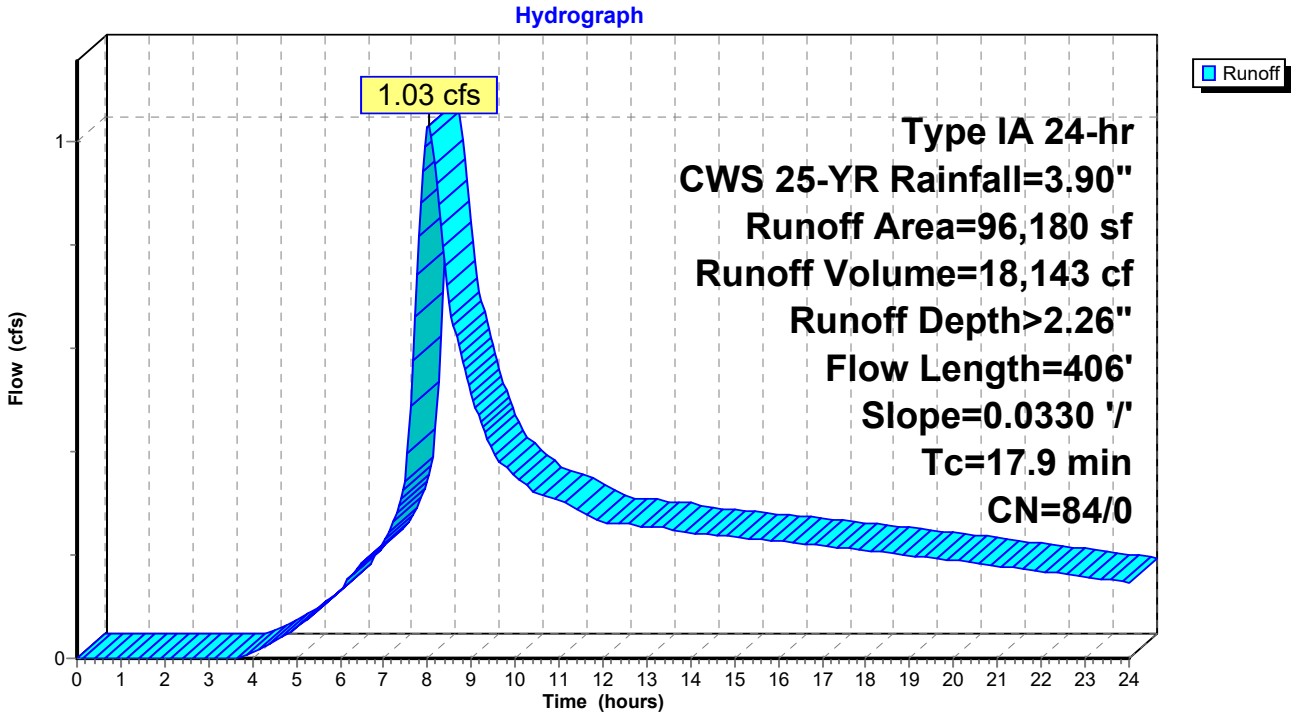
Runoff = 1.03 cfs @ 8.02 hrs, Volume= 18,143 cf, Depth> 2.26"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr CWS 25-YR Rainfall=3.90"

	Area (sf)	CN	Description
*	96,180	84	Pasture/Grass/Woods (Wetlands), Fair, HSG D
	96,180	84	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	50	0.0330	0.07		**Sheet Flow, Woods Shallow** Woods: Light underbrush n= 0.400 P2= 2.50"
6.5	356	0.0330	0.91		**Shallow Concentrated Flow, Woods Shallow** Woodland Kv= 5.0 fps
17.9	406	Total			

Subcatchment 21S:



Summary for Subcatchment 31S:

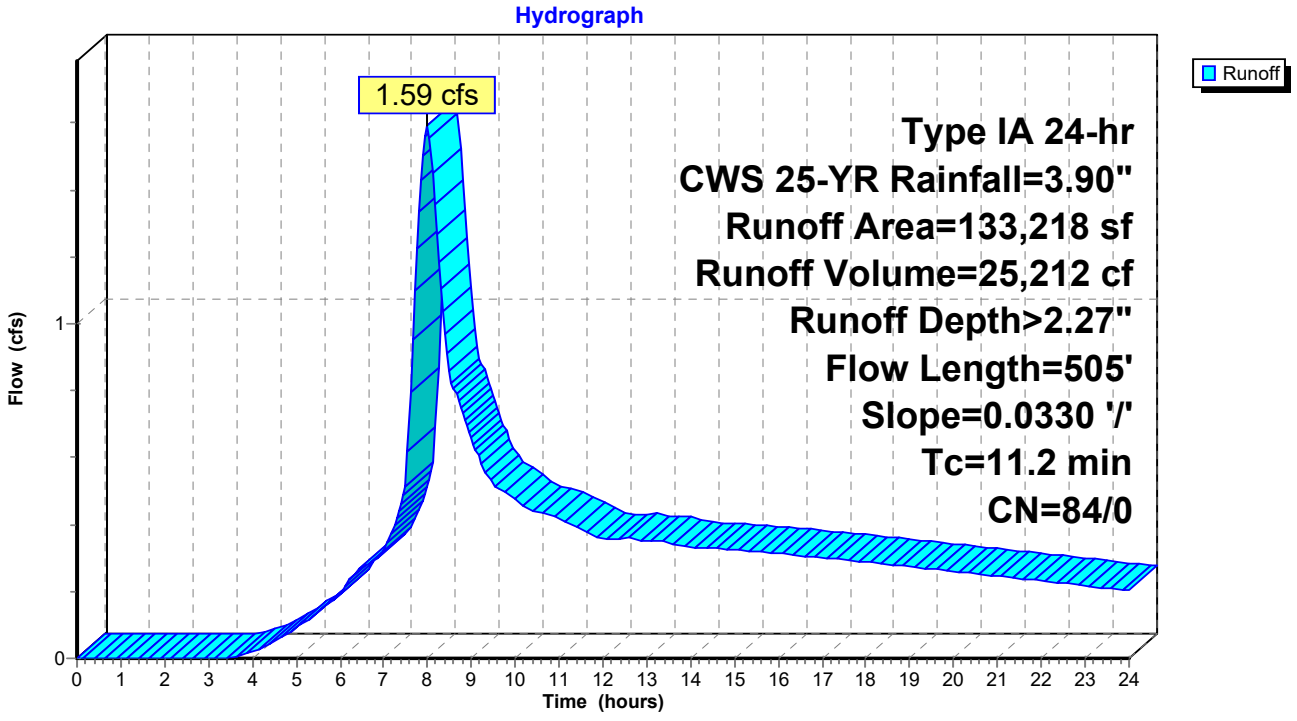
Runoff = 1.59 cfs @ 8.00 hrs, Volume= 25,212 cf, Depth> 2.27"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr CWS 25-YR Rainfall=3.90"

	Area (sf)	CN	Description
*	133,218	84	Pasture/Grass/Woods (Wetlands), Fair, HSG D
	133,218	84	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	50	0.0330	0.16		**Sheet Flow, Grass Shallow** Grass: Short n= 0.150 P2= 2.50"
6.0	455	0.0330	1.27		**Shallow Concentrated Flow, Grass Shallow** Short Grass Pasture Kv= 7.0 fps
11.2	505	Total			

Subcatchment 31S:



Summary for Subcatchment 200X:

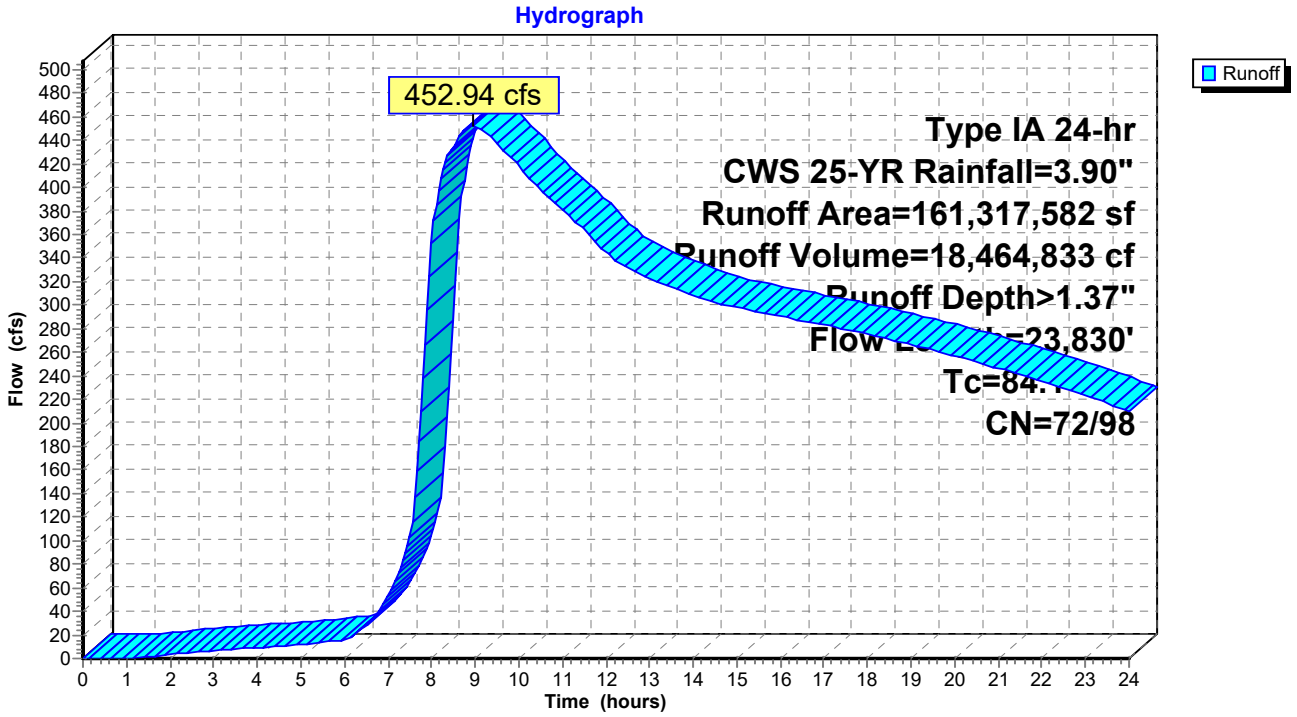
Runoff = 452.94 cfs @ 8.97 hrs, Volume= 18,464,833 cf, Depth> 1.37"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr CWS 25-YR Rainfall=3.90"

	Area (sf)	CN	Description
	45,511,730	74	Pasture/grassland/range, Good, HSG C
	49,242,200	70	Woods, Good, HSG C
*	2,238,282	98	Paved roads and Roofs
	52,226,576	72	Woods/grass comb., Good, HSG C
	9,384,262	77	2 acre lots, 12% imp, HSG C
	2,714,532	83	1/4 acre lots, 38% imp, HSG C
	161,317,582	73	Weighted Average
	156,921,666	72	97.27% Pervious Area
	4,395,916	98	2.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	50	0.1000	0.25		**Sheet Flow, Grass Sheet** Grass: Short n= 0.150 P2= 2.50"
19.5	2,462	0.0900	2.10		**Shallow Concentrated Flow, Grass Shallow** Short Grass Pasture Kv= 7.0 fps
11.3	7,053	0.0510	10.38	436.14	**Channel Flow, Cedar Creek** Area= 42.0 sf Perim= 30.5' r= 1.38' n= 0.040 Winding stream, pools & shoals
9.5	2,992	0.0130	5.24	220.20	**Channel Flow, Cedar Creek** Area= 42.0 sf Perim= 30.5' r= 1.38' n= 0.040 Winding stream, pools & shoals
5.8	4,665	0.0860	13.48	566.36	**Channel Flow, Cedar Creek** Area= 42.0 sf Perim= 30.5' r= 1.38' n= 0.040 Winding stream, pools & shoals
26.8	4,669	0.0040	2.91	122.14	**Channel Flow, Cedar Creek** Area= 42.0 sf Perim= 30.5' r= 1.38' n= 0.040 Winding stream, pools & shoals
7.9	1,939	0.0080	4.11	172.74	**Channel Flow, Cedar Creek** Area= 42.0 sf Perim= 30.5' r= 1.38' n= 0.040 Winding stream, pools & shoals
84.1	23,830	Total			

Subcatchment 200X:

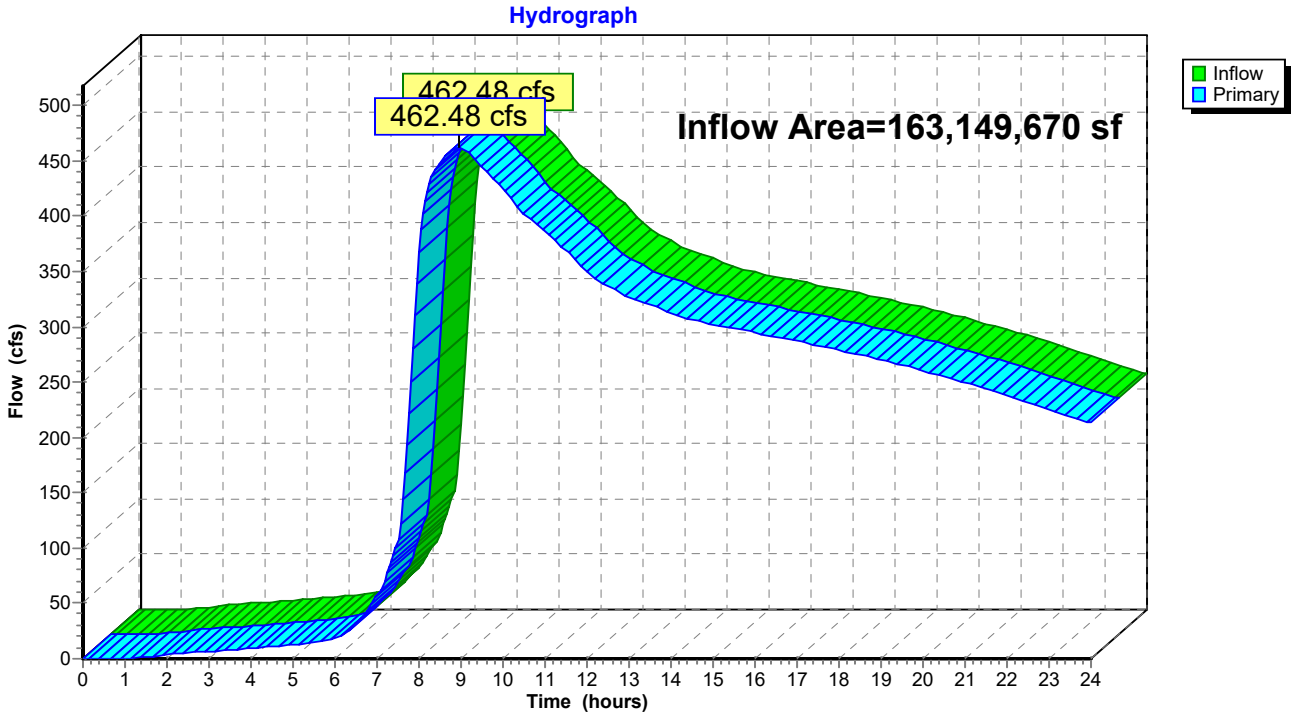


Summary for Link D: Discharge

Inflow Area = 163,149,670 sf, 2.72% Impervious, Inflow Depth > 1.38" for CWS 25-YR event
Inflow = 462.48 cfs @ 8.93 hrs, Volume= 18,782,082 cf
Primary = 462.48 cfs @ 8.93 hrs, Volume= 18,782,082 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link D: Discharge

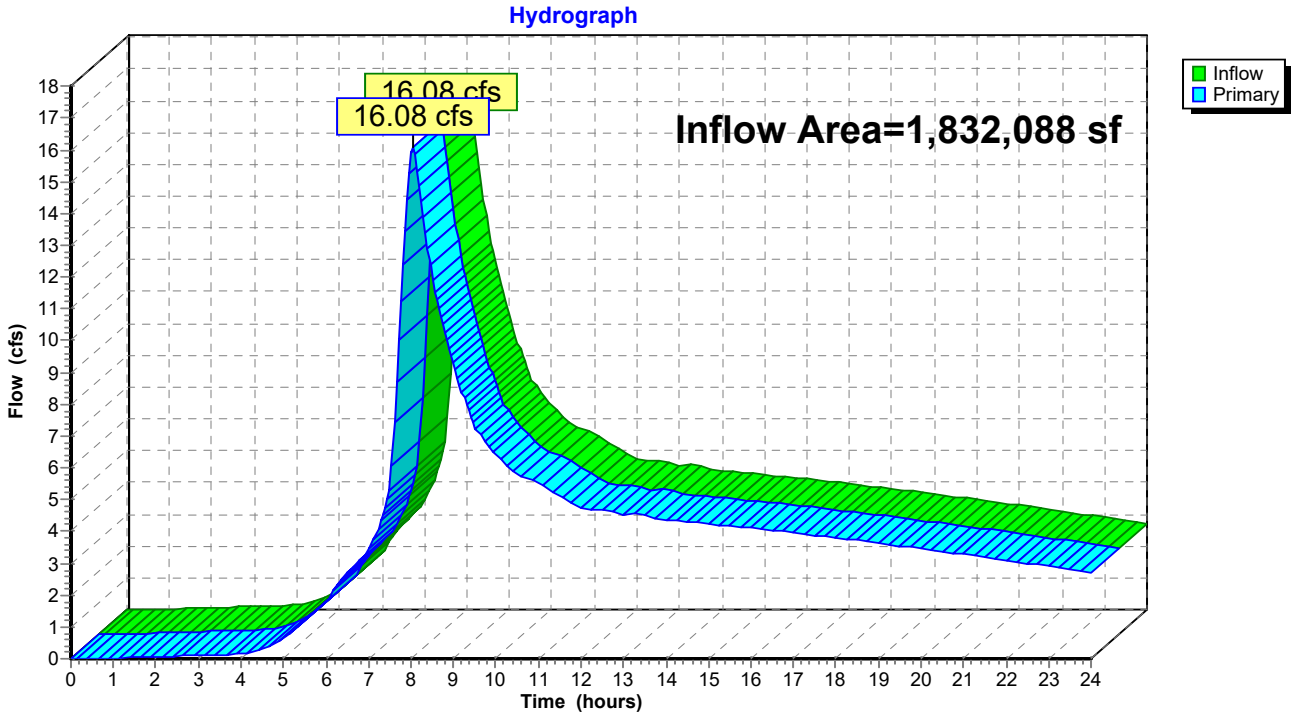


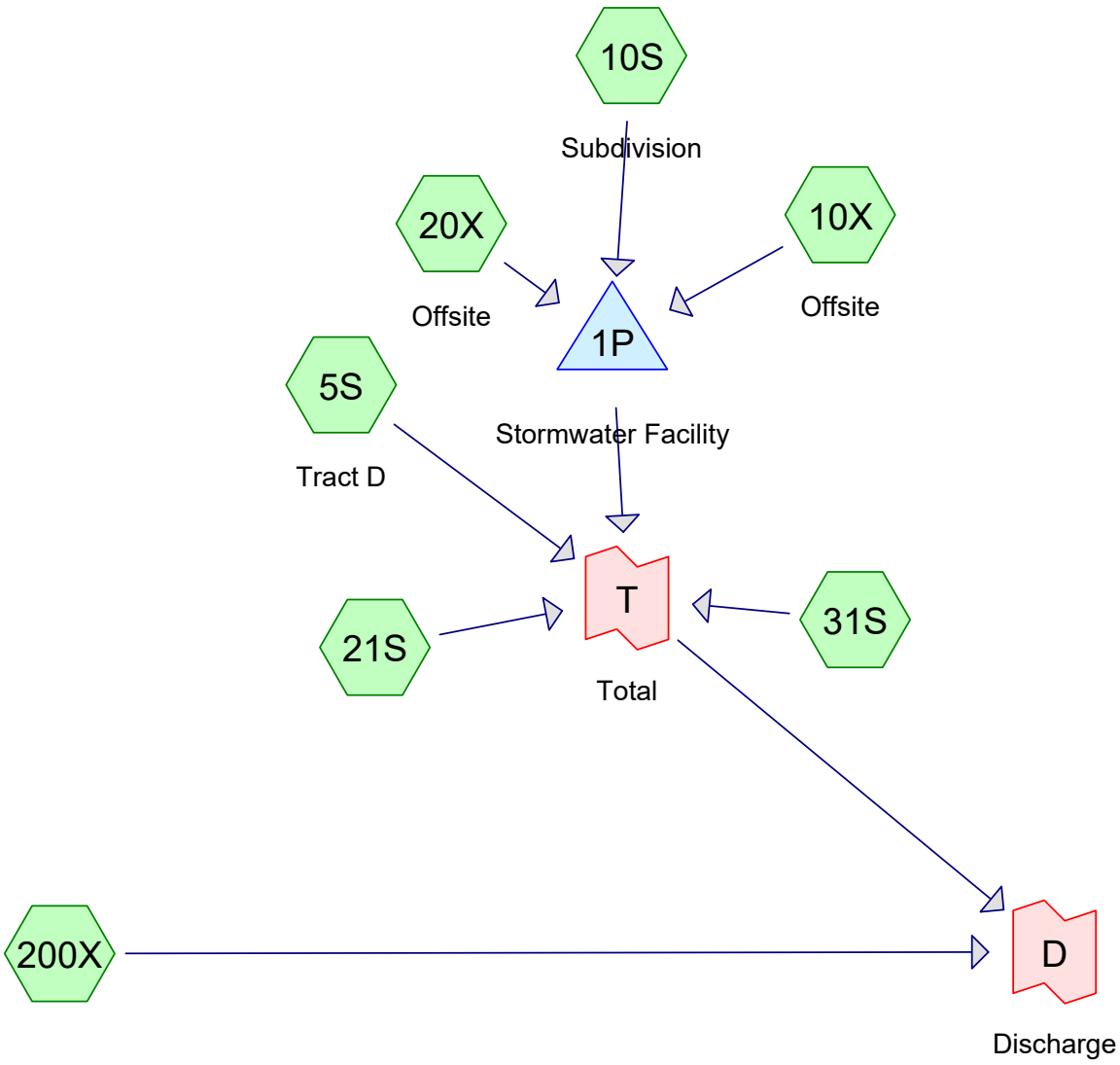
Summary for Link T: Total

Inflow Area = 1,832,088 sf, 2.15% Impervious, Inflow Depth > 2.08" for CWS 25-YR event
Inflow = 16.08 cfs @ 8.04 hrs, Volume= 317,249 cf
Primary = 16.08 cfs @ 8.04 hrs, Volume= 317,249 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link T: Total





Subcat Reach Pond Link

Routing Diagram for 3591 Post-Dev Cedar Creek
Prepared by AKS Engineering & Forestry, Printed 8/20/2018

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
2,714,532	83	1/4 acre lots, 38% imp, HSG C (200X)
9,384,262	77	2 acre lots, 12% imp, HSG C (200X)
52,387	74	>75% Grass cover, Good, HSG C (10S)
648,600	80	>75% Grass cover, Good, HSG D (10S, 10X)
7,313	91	Gravel roads, HSG D (20X)
295,485	98	Impervious Roads and Sidewalks (10S)
9,005	98	Park Hardscape (10S)
229,398	84	Pasture/Grass (Wetlands), Fair, HSG D (21S, 31S)
128,269	84	Pasture/grassland/range, Fair, HSG D (20X)
45,511,730	74	Pasture/grassland/range, Good, HSG C (200X)
21,285	98	Path Pavement (10S)
382,800	98	Paved Driveways, Roofs, and Patios (2640 sf x 145 Lots) (10S)
2,238,282	98	Paved roads and Roofs (200X)
25,091	98	Roofs and Driveway (10X, 20X)
32,455	79	Woods, Fair, HSG D (5S)
49,242,200	70	Woods, Good, HSG C (200X)
52,226,576	72	Woods/grass comb., Good, HSG C (200X)
163,149,670	**73**	**TOTAL AREA**

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SBUH method, Split Pervious/Imperv.
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 5S: Tract D Runoff Area=32,455 sf 0.00% Impervious Runoff Depth>1.86"
Flow Length=385' Tc=17.6 min CN=79/0 Runoff=0.27 cfs 5,044 cf

Subcatchment 10S: Subdivision Runoff Area=1,393,998 sf 50.83% Impervious Runoff Depth>2.82"
Tc=5.0 min CN=80/98 Runoff=22.00 cfs 327,695 cf

Subcatchment 10X: Offsite Runoff Area=32,768 sf 52.50% Impervious Runoff Depth>2.85"
Flow Length=520' Tc=6.9 min CN=80/98 Runoff=0.51 cfs 7,775 cf

Subcatchment 20X: Offsite Runoff Area=143,469 sf 5.50% Impervious Runoff Depth>2.34"
Flow Length=395' Tc=13.6 min CN=84/98 Runoff=1.71 cfs 28,027 cf

Subcatchment 21S: Runoff Area=96,180 sf 0.00% Impervious Runoff Depth>2.26"
Flow Length=406' Slope=0.0330 '/' Tc=17.9 min CN=84/0 Runoff=1.03 cfs 18,143 cf

Subcatchment 31S: Runoff Area=133,218 sf 0.00% Impervious Runoff Depth>2.27"
Flow Length=505' Slope=0.0330 '/' Tc=11.2 min CN=84/0 Runoff=1.59 cfs 25,212 cf

Subcatchment 200X: Runoff Area=161,317,582 sf 2.73% Impervious Runoff Depth>1.37"
Flow Length=23,830' Tc=84.1 min CN=72/98 Runoff=452.94 cfs 18,464,833 cf

Pond 1P: Stormwater Facility Peak Elev=191.83' Storage=90,390 cf Inflow=24.15 cfs 363,497 cf
Discarded=0.23 cfs 15,834 cf Primary=15.31 cfs 280,286 cf Outflow=15.53 cfs 296,120 cf

Link D: Discharge Inflow=464.97 cfs 18,793,518 cf
Primary=464.97 cfs 18,793,518 cf

Link T: Total Inflow=17.78 cfs 328,685 cf
Primary=17.78 cfs 328,685 cf

Total Runoff Area = 163,149,670 sf Runoff Volume = 18,876,728 cf Average Runoff Depth = 1.39"
96.86% Pervious = 158,020,088 sf 3.14% Impervious = 5,129,582 sf

Summary for Subcatchment 5S: Tract D

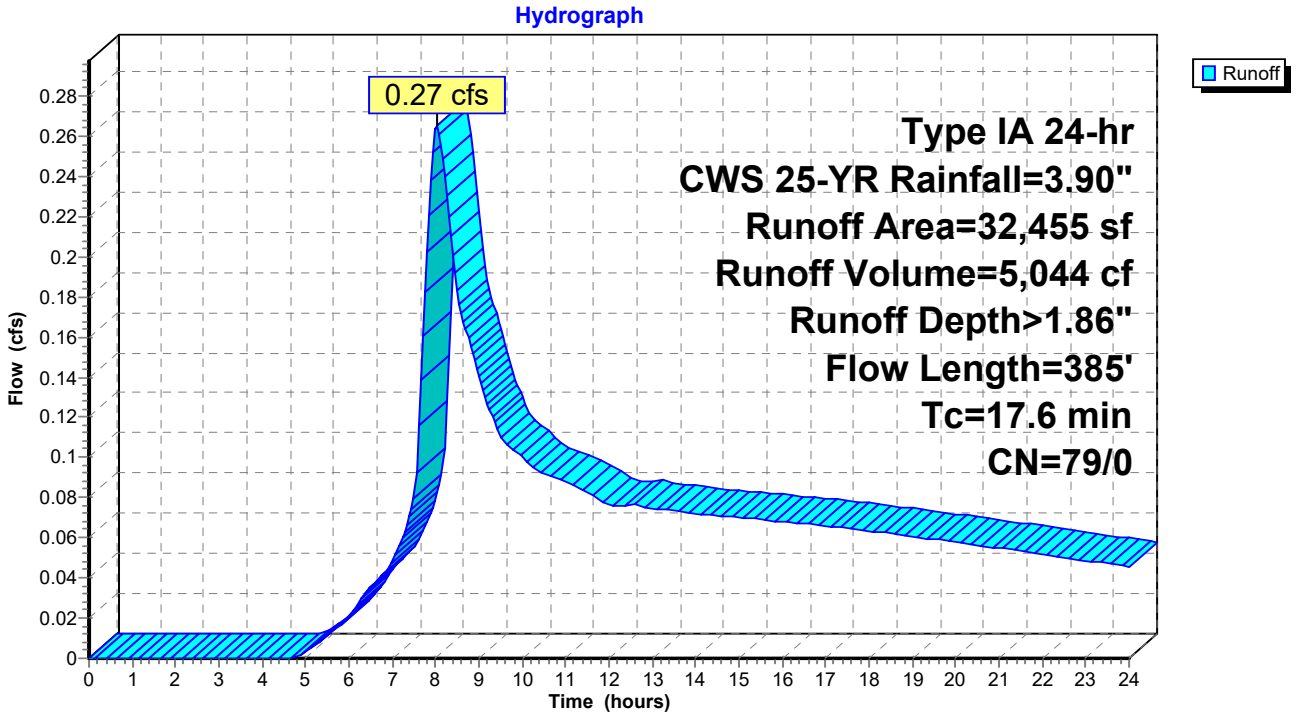
Runoff = 0.27 cfs @ 8.03 hrs, Volume= 5,044 cf, Depth> 1.86"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr CWS 25-YR Rainfall=3.90"

Area (sf)	CN	Description
32,455	79	Woods, Fair, HSG D
32,455	79	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	50	0.0700	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.50"
9.1	335	0.0150	0.61		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
17.6	385	Total			

Subcatchment 5S: Tract D



Summary for Subcatchment 10S: Subdivision

[49] Hint: Tc<2dt may require smaller dt

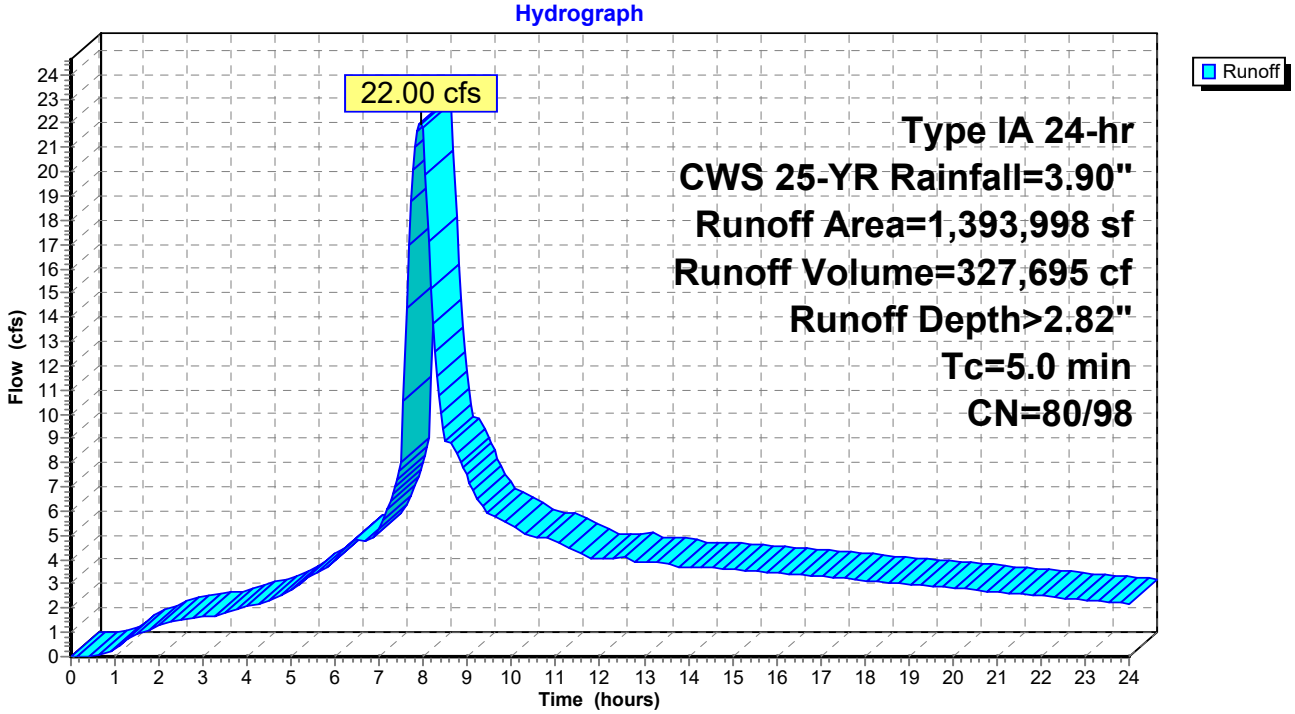
Runoff = 22.00 cfs @ 7.93 hrs, Volume= 327,695 cf, Depth> 2.82"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr CWS 25-YR Rainfall=3.90"

	Area (sf)	CN	Description
*	295,485	98	Impervious Roads and Sidewalks
*	382,800	98	Paved Driveways, Roofs, and Patios (2640 sf x 145 Lots)
*	9,005	98	Park Hardscape
	633,036	80	>75% Grass cover, Good, HSG D
	52,387	74	>75% Grass cover, Good, HSG C
*	21,285	98	Path Pavement
	1,393,998	89	Weighted Average
	685,423	80	49.17% Pervious Area
	708,575	98	50.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 10S: Subdivision



Summary for Subcatchment 10X: Offsite

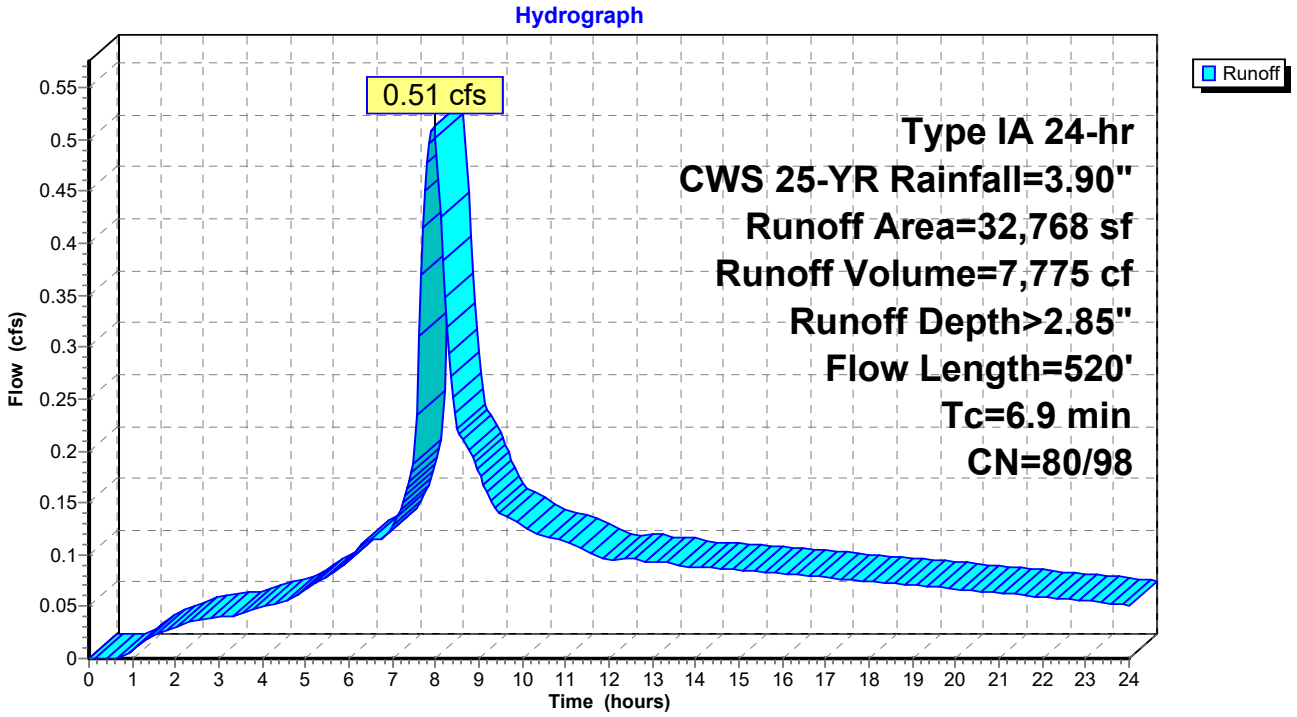
Runoff = 0.51 cfs @ 7.96 hrs, Volume= 7,775 cf, Depth> 2.85"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr CWS 25-YR Rainfall=3.90"

	Area (sf)	CN	Description
*	17,204	98	Roofs and Driveway
	15,564	80	>75% Grass cover, Good, HSG D
	32,768	89	Weighted Average
	15,564	80	47.50% Pervious Area
	17,204	98	52.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	50	0.0280	0.15		**Sheet Flow, Grass** Grass: Short n= 0.150 P2= 2.50"
0.4	68	0.0300	2.60		**Shallow Concentrated Flow, Grass** Grassed Waterway Kv= 15.0 fps
0.2	57	0.0175	6.15	14.77	**Channel Flow, Roadside Ditch** Area= 2.4 sf Perim= 4.2' r= 0.57' n= 0.022 Earth, clean & straight
0.2	45	0.0088	3.17	0.62	**Pipe Channel, Culvert** 6.0" Round Area= 0.2 sf Perim= 1.6' r= 0.13' n= 0.011 Concrete pipe, straight & clean
0.5	300	0.0400	9.30	22.33	**Channel Flow, Roadside Ditch** Area= 2.4 sf Perim= 4.2' r= 0.57' n= 0.022 Earth, clean & straight
6.9	520	Total			

Subcatchment 10X: Offsite



Summary for Subcatchment 20X: Offsite

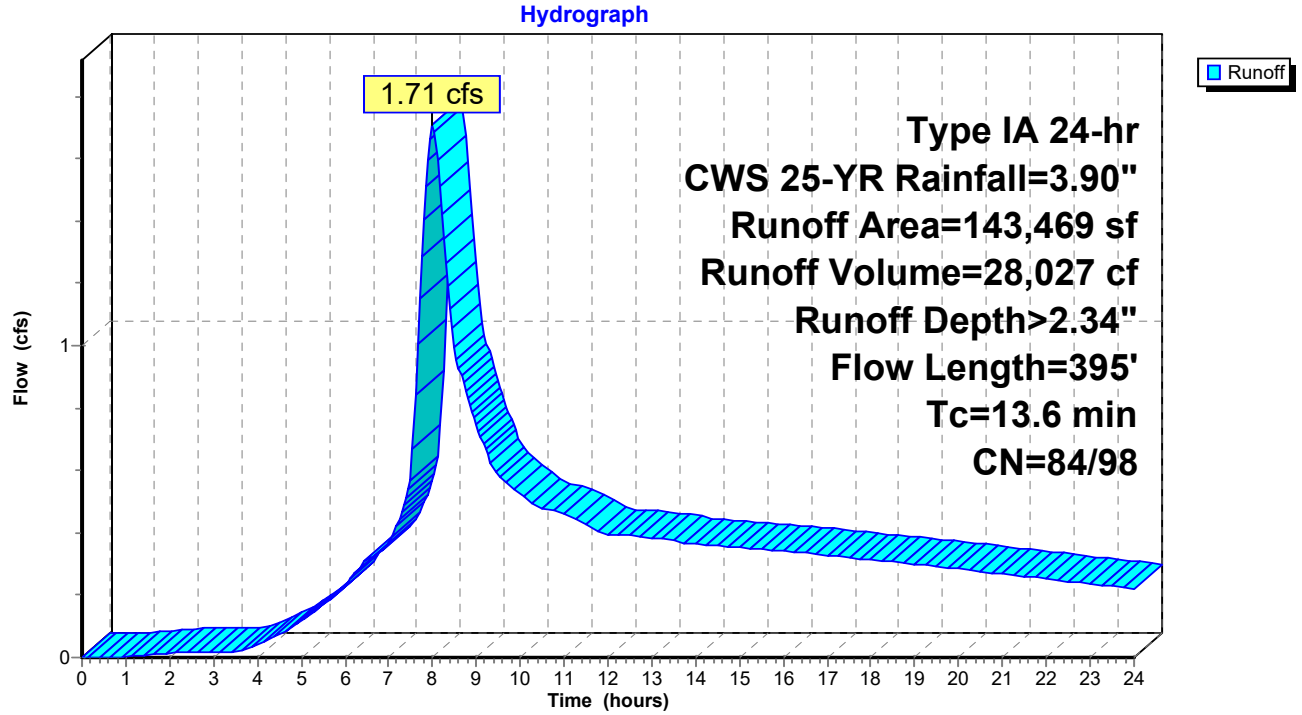
Runoff = 1.71 cfs @ 8.01 hrs, Volume= 28,027 cf, Depth> 2.34"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr CWS 25-YR Rainfall=3.90"

	Area (sf)	CN	Description
	7,313	91	Gravel roads, HSG D
*	7,887	98	Roofs and Driveway
	128,269	84	Pasture/grassland/range, Fair, HSG D
	143,469	85	Weighted Average
	135,582	84	94.50% Pervious Area
	7,887	98	5.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	50	0.0200	0.09		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.50"
0.8	48	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.1	196	0.0500	1.57		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.4	101	0.0290	1.19		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
13.6	395	Total			

Subcatchment 20X: Offsite



Summary for Subcatchment 21S:

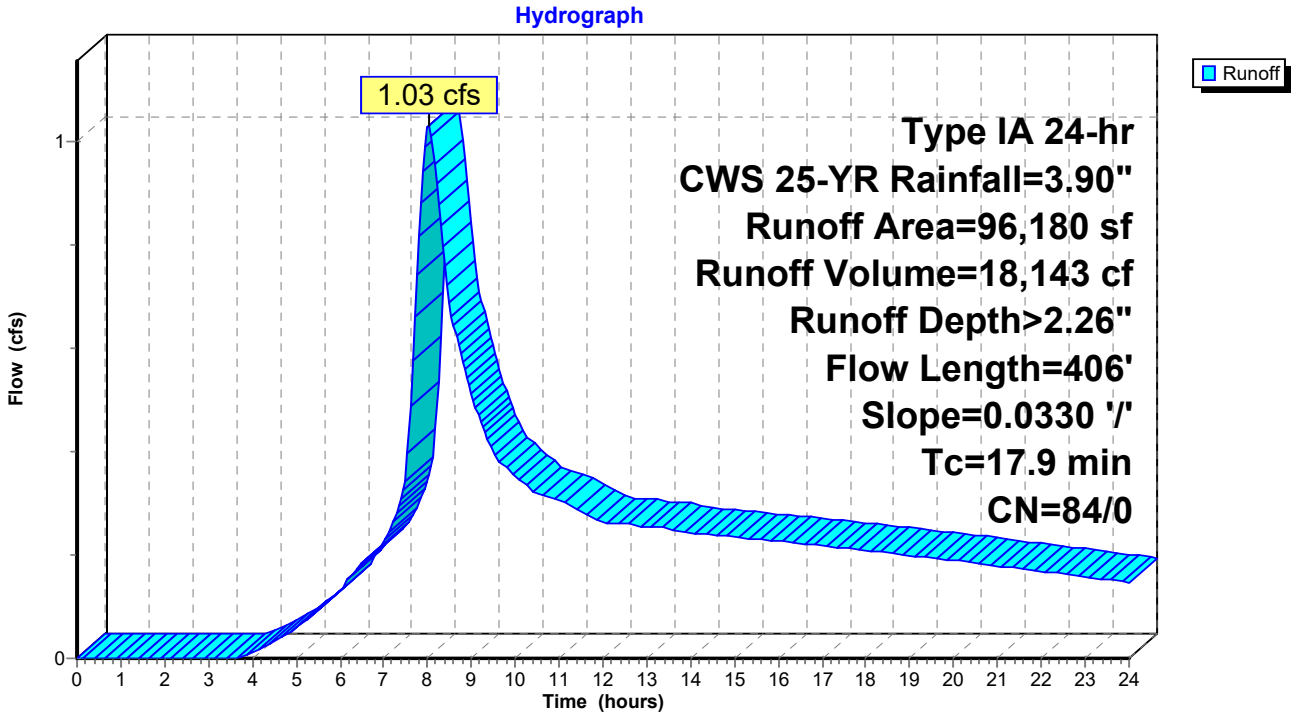
Runoff = 1.03 cfs @ 8.02 hrs, Volume= 18,143 cf, Depth> 2.26"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr CWS 25-YR Rainfall=3.90"

	Area (sf)	CN	Description
*	96,180	84	Pasture/Grass (Wetlands), Fair, HSG D
	96,180	84	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	50	0.0330	0.07		**Sheet Flow, Woods Shallow** Woods: Light underbrush n= 0.400 P2= 2.50"
6.5	356	0.0330	0.91		**Shallow Concentrated Flow, Woods Shallow** Woodland Kv= 5.0 fps
17.9	406	Total			

Subcatchment 21S:



Summary for Subcatchment 31S:

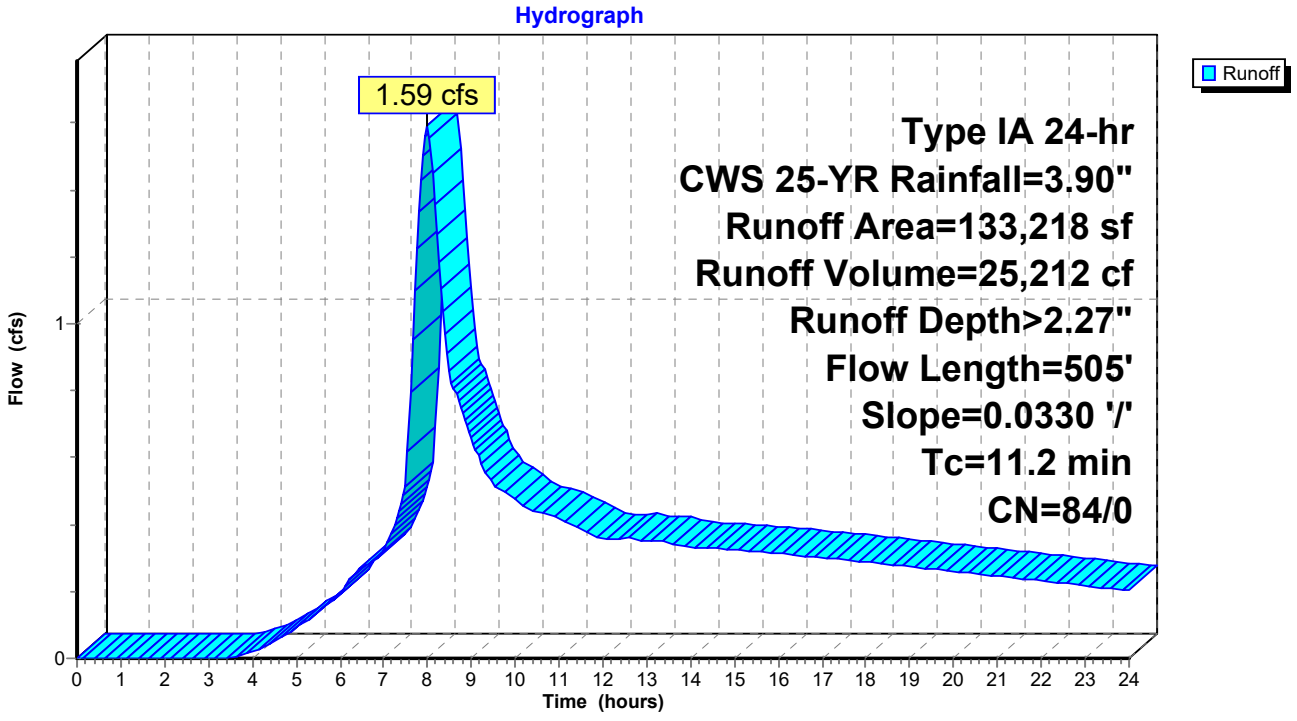
Runoff = 1.59 cfs @ 8.00 hrs, Volume= 25,212 cf, Depth> 2.27"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr CWS 25-YR Rainfall=3.90"

	Area (sf)	CN	Description
*	133,218	84	Pasture/Grass (Wetlands), Fair, HSG D
	133,218	84	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	50	0.0330	0.16		**Sheet Flow, Grass Shallow** Grass: Short n= 0.150 P2= 2.50"
6.0	455	0.0330	1.27		**Shallow Concentrated Flow, Grass Shallow** Short Grass Pasture Kv= 7.0 fps
11.2	505	Total			

Subcatchment 31S:



Summary for Subcatchment 200X:

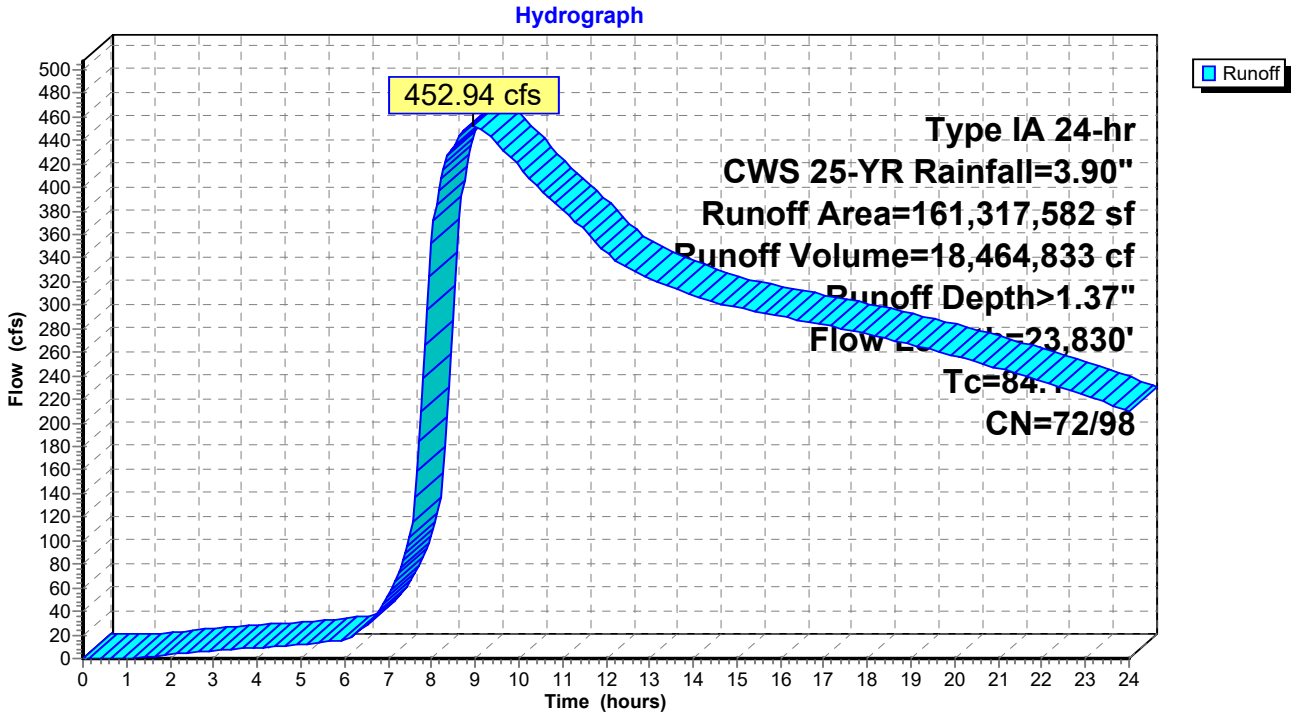
Runoff = 452.94 cfs @ 8.97 hrs, Volume= 18,464,833 cf, Depth> 1.37"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr CWS 25-YR Rainfall=3.90"

	Area (sf)	CN	Description
	45,511,730	74	Pasture/grassland/range, Good, HSG C
	49,242,200	70	Woods, Good, HSG C
*	2,238,282	98	Paved roads and Roofs
	52,226,576	72	Woods/grass comb., Good, HSG C
	9,384,262	77	2 acre lots, 12% imp, HSG C
	2,714,532	83	1/4 acre lots, 38% imp, HSG C
	161,317,582	73	Weighted Average
	156,921,666	72	97.27% Pervious Area
	4,395,916	98	2.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	50	0.1000	0.25		**Sheet Flow, Grass Sheet** Grass: Short n= 0.150 P2= 2.50"
19.5	2,462	0.0900	2.10		**Shallow Concentrated Flow, Grass Shallow** Short Grass Pasture Kv= 7.0 fps
11.3	7,053	0.0510	10.38	436.14	**Channel Flow, Cedar Creek** Area= 42.0 sf Perim= 30.5' r= 1.38' n= 0.040 Winding stream, pools & shoals
9.5	2,992	0.0130	5.24	220.20	**Channel Flow, Cedar Creek** Area= 42.0 sf Perim= 30.5' r= 1.38' n= 0.040 Winding stream, pools & shoals
5.8	4,665	0.0860	13.48	566.36	**Channel Flow, Cedar Creek** Area= 42.0 sf Perim= 30.5' r= 1.38' n= 0.040 Winding stream, pools & shoals
26.8	4,669	0.0040	2.91	122.14	**Channel Flow, Cedar Creek** Area= 42.0 sf Perim= 30.5' r= 1.38' n= 0.040 Winding stream, pools & shoals
7.9	1,939	0.0080	4.11	172.74	**Channel Flow, Cedar Creek** Area= 42.0 sf Perim= 30.5' r= 1.38' n= 0.040 Winding stream, pools & shoals
84.1	23,830	Total			

Subcatchment 200X:



Summary for Pond 1P: Stormwater Facility

Inflow Area = 1,570,235 sf, 46.72% Impervious, Inflow Depth > 2.78" for CWS 25-YR event
Inflow = 24.15 cfs @ 7.94 hrs, Volume= 363,497 cf
Outflow = 15.53 cfs @ 8.20 hrs, Volume= 296,120 cf, Atten= 36%, Lag= 15.7 min
Discarded = 0.23 cfs @ 8.20 hrs, Volume= 15,834 cf
Primary = 15.31 cfs @ 8.20 hrs, Volume= 280,286 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 191.83' @ 8.20 hrs Surf.Area= 19,269 sf Storage= 90,390 cf
Flood Elev= 192.50' Surf.Area= 19,995 sf Storage= 103,486 cf

Plug-Flow detention time= 224.1 min calculated for 295,504 cf (81% of inflow)
Center-of-Mass det. time= 103.6 min (815.9 - 712.3)

Volume	Invert	Avail.Storage	Storage Description
#1	185.50'	124,055 cf	**Custom Stage Data (Conic)**Listed below (Recalc)

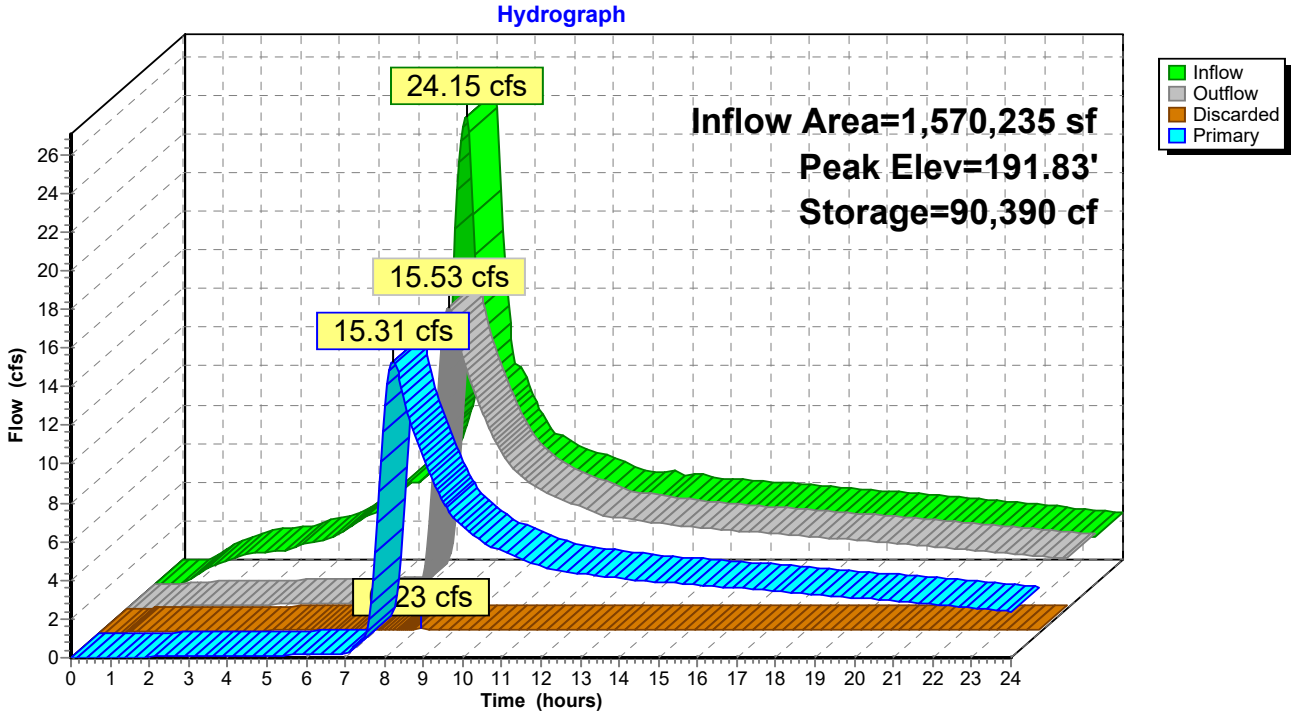
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
185.50	9,553	0	0	9,553
186.00	10,245	4,948	4,948	10,267
187.00	11,676	10,953	15,901	11,745
188.00	13,162	12,412	28,313	13,283
189.00	14,705	13,926	42,239	14,882
190.00	16,304	15,498	57,737	16,540
191.00	17,960	17,125	74,862	18,260
192.00	19,534	18,741	93,604	19,907
193.00	20,461	19,996	113,599	20,961
193.50	21,366	10,456	124,055	21,902

Device	Routing	Invert	Outlet Devices
#1	Device 2	185.50'	**2.0' long (Profile 17) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 1.97 2.46 2.95 Coef. (English) 2.84 3.13 3.26 3.30 3.31 3.31
#2	Device 4	185.50'	**1.8" Vert. WQ Orifice** C= 0.620
#3	Device 4	190.20'	**2.0' long (Profile 17) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 1.97 2.46 2.95 Coef. (English) 2.84 3.13 3.26 3.30 3.31 3.31
#4	Primary	185.00'	**36.0" Round Culvert** L= 24.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 185.00' / 184.88' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 7.07 sf
#5	Discarded	185.50'	**0.500 in/hr Exfiltration over Wetted area**
#6	Device 4	189.50'	**6.0" Vert. Detention Orifice** C= 0.620

Discarded OutFlow Max=0.23 cfs @ 8.20 hrs HW=191.83' (Free Discharge)
└**5=Exfiltration** (Exfiltration Controls 0.23 cfs)

Primary OutFlow Max=15.30 cfs @ 8.20 hrs HW=191.83' TW=0.00' (Dynamic Tailwater)
└**4=Culvert** (Passes 15.30 cfs of 78.61 cfs potential flow)
  └**2=WQ Orifice** (Orifice Controls 0.22 cfs @ 12.45 fps)
    └**1=Broad-Crested Rectangular Weir** (Passes 0.22 cfs of 105.53 cfs potential flow)
  └**3=Broad-Crested Rectangular Weir** (Weir Controls 13.67 cfs @ 4.18 fps)
  └**6=Detention Orifice** (Orifice Controls 1.41 cfs @ 7.18 fps)

Pond 1P: Stormwater Facility

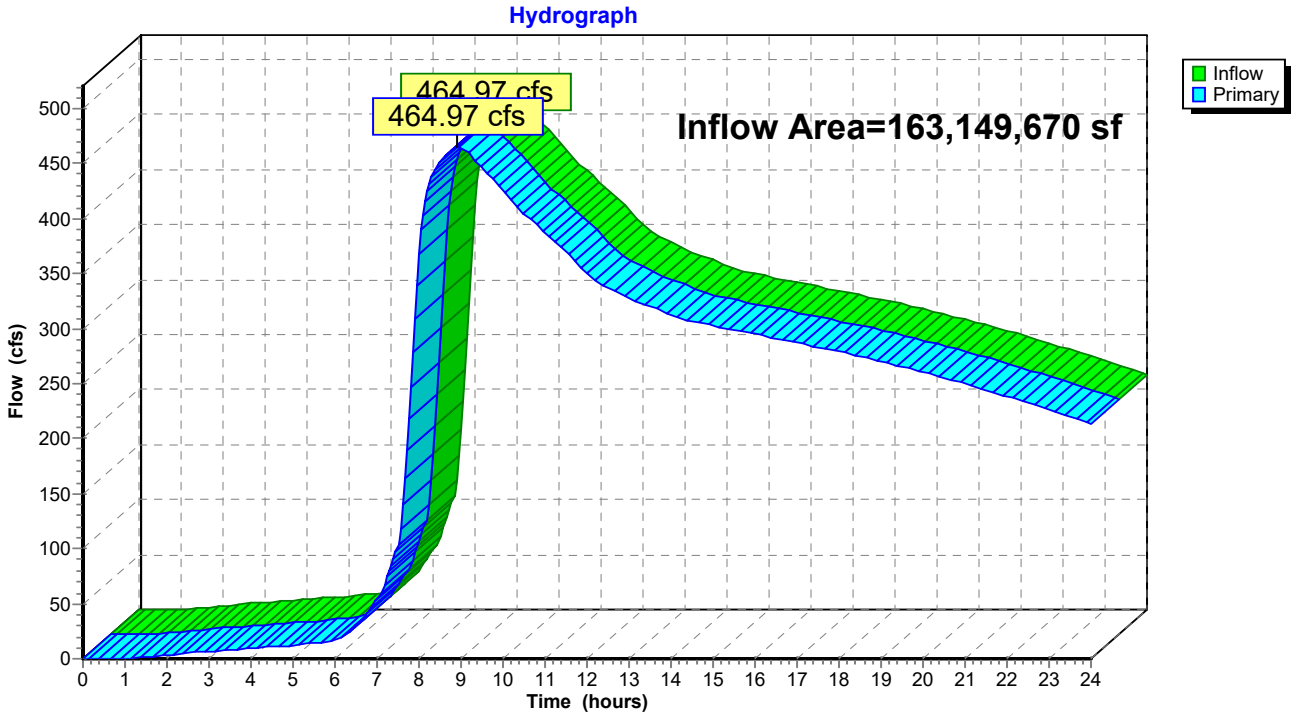


Summary for Link D: Discharge

Inflow Area = 163,149,670 sf, 3.14% Impervious, Inflow Depth > 1.38" for CWS 25-YR event
Inflow = 464.97 cfs @ 8.92 hrs, Volume= 18,793,518 cf
Primary = 464.97 cfs @ 8.92 hrs, Volume= 18,793,518 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link D: Discharge

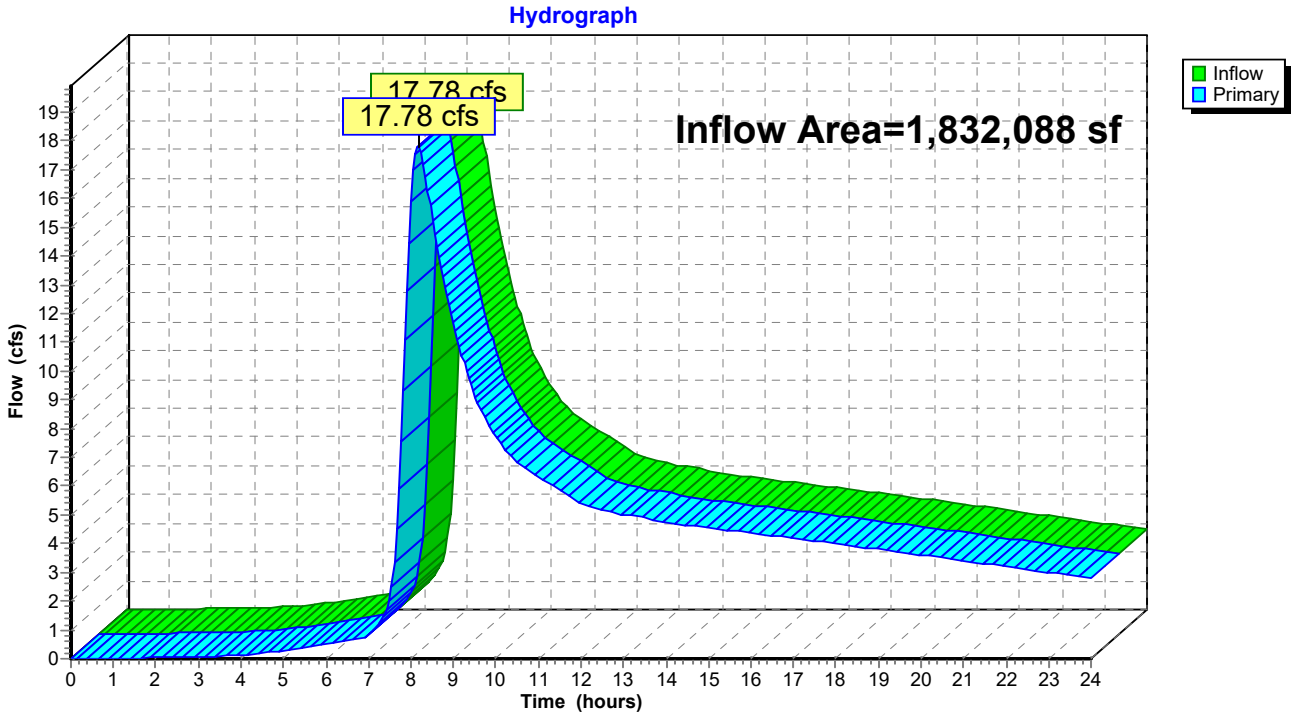


Summary for Link T: Total

Inflow Area = 1,832,088 sf, 40.05% Impervious, Inflow Depth > 2.15" for CWS 25-YR event
Inflow = 17.78 cfs @ 8.17 hrs, Volume= 328,685 cf
Primary = 17.78 cfs @ 8.17 hrs, Volume= 328,685 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link T: Total



Appendix D:
Stormwater Quality Calculations

STORMWATER QUALITY CALCULATIONS

Client: Brookman Development, LLC
Project: Middlebrook Subdivision
AKS Job No.: 3591
Date: 9/4/2018
Done By: CTS/ARS
Checked By: PAS

IMPERVIOUS AREA

Total Site Area:	37.96	acres
Total Site Area:	1,653,520	square feet (sf)
Number of Lots:	145	
Impervious Area Per Lot:	2,640	sf
Total Impervious Lot Area:	382,800	sf
Roads and SW Impervious Area:	307,108	sf
Pedestrian Paths/Park Hardscape	11,904	sf
Total Impervious Area:	701,812	sf

WATER DESIGN QUALITY VOLUME (WQV)

(Per CWS 4.05.6b - R&O 17-05)

$$WQV = \frac{0.36" \text{ X Area (ft)}}{12" \text{ per ft}} = \textbf{21,054 cubic feet}$$

WATER QUALITY FLOW (WQF)

(Per CWS 4.05.6b - R&O 17-05)

$$WQF = \frac{WQV \text{ (sf)}}{4*60*60} = \textbf{1.46 cfs}$$

EXTENDED DRY BASIN DESIGN & CALCULATIONS

Hydraulic Design Criteria (Per CWS 4.06.2 - R&O 17-05)

Permanent Pool Depth: 0.4 ft
Permanent Pool covers bottom of basin
Design Detention Volume: 1.0 x Water Quality Volume (WQV)
Water Quality Drawdown Time: 48 hours
Maximum Depth of WQ Pool: 4 ft
Avoid direct flow across WQ pond to avoid short circuiting

Extended Dry Basin Sizing Design:

Bottom Slope (ft/ft)	**Minimum Bottom Width** (ft)	**Side Slopes** H:V	**Top of Pond Elev.** (ft)	**Perm. Pool Depth** (ft)	**Pool Bottom Area** (sf)	**Bottom of Pool Elev.** (ft)
0.0	57	3.0	193.5	0.4	9553	185.5

Water Quality Flow Hydraulic Calculations:

Q (cfs)	**Pool Elev. at WQV** (ft)	**Orifice CL Elevation** (ft)	**Calculated Orifice Diameter*** (in)	**Max. Pool Elev., 25-yr Event** (ft)	**Calculated Pond WQV** (cubic feet)	**Calculated WQV Pool Depth** (ft)
0.12	189.5	185.57	1.77	191.83	49,788	4.0

*Orifice Diameter calculated for the CWS water quality volume at 187.5 ft

Check Against Design Criteria:	Calculated		**Meet CWS Criteria?**			
Minimum Freeboard:	1.7	feet	**Yes**	more than	1.0	foot
Minimum Bottom Width:	57	feet	**Yes**	greater than	4	feet
Maximum Pool Depth at WQV:	4.0	feet	**Yes**	less than	4	feet
Detained Water Quality Volume:	49,788	cubic feet**	**Yes**	greater than	21,054	cubic feet

**Additional water quality volume required to meet SLOPES V & ODEQ requirements.

STORMWATER QUALITY CALCULATIONS
VEGETATED CORRIDOR FILTER STRIP ANALYSIS

Client: Brookman Development, LLC
Project: Middlebrook Subdivision
AKS Job No.: 3591
Date: August 27, 2018
Done By: ARS
Checked By: PAS

Vegetated Corridor (VC) as Filter Strip Requirements per CWS 4.06.11 and 4.05.6.C (R&O 17-5)

Vegetated Corridor 21S

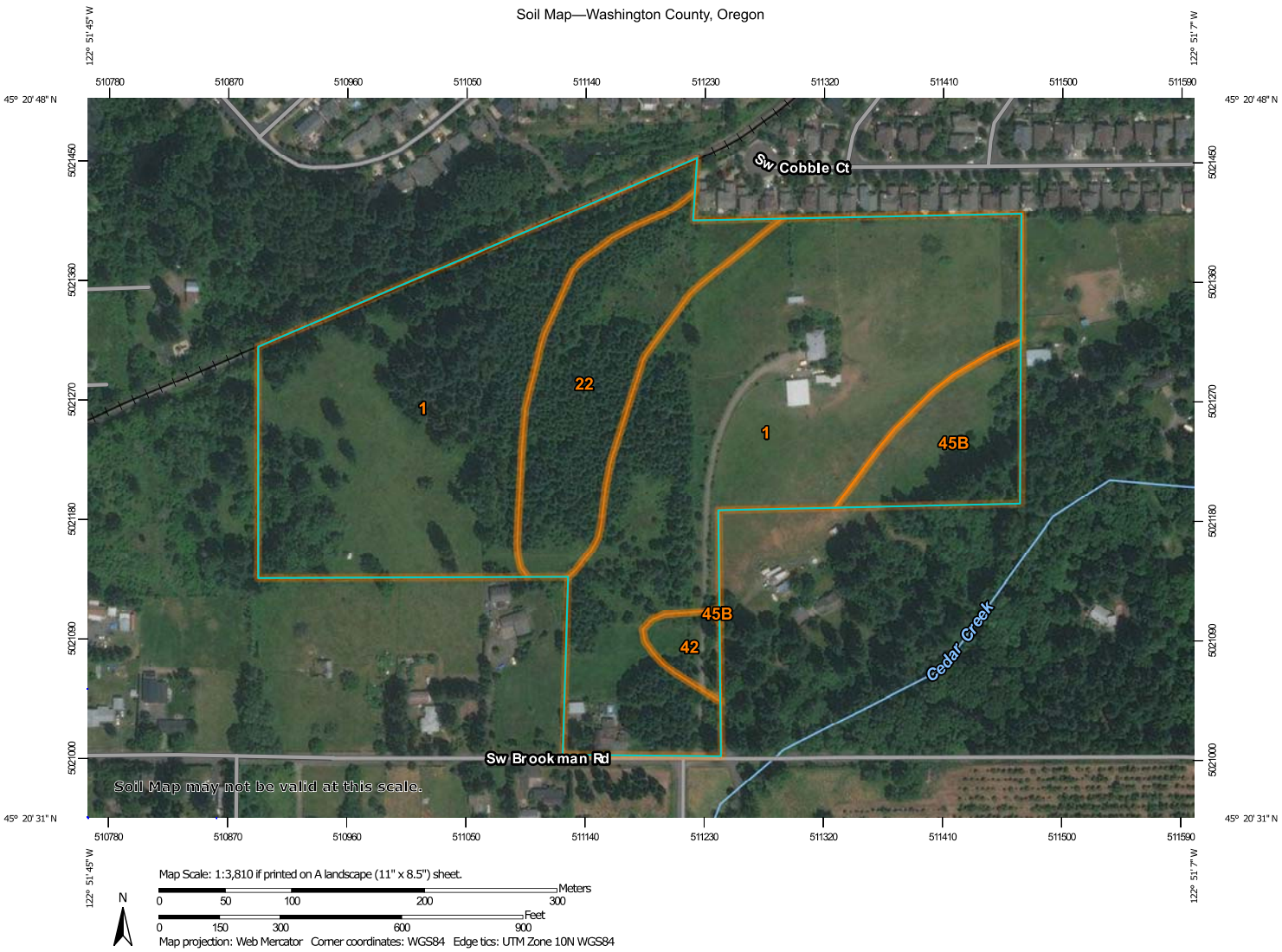
Impervious Area (SF)	6384
Impervious Area Depth (Feet)	8
VC Approximate Width (Feet)	50
VC Filter Strip Length (Feet)	730
Impervious Area / VC Filter Strip Length (SF/Foot)	8.75
Less than Max Contributing Impervious Surface (2640 SF per 50' of VC Width)	Yes
Impervious Area Adjacent or within the outer 40% of VC	Yes
Impervious Areas Less than 15,000 SF (Then no Pretreatment Required)	Yes
Slopes between 0.5-6%	Yes
Enhanced to 'Good Corridor Condition'	Yes
VC Depth > 3 Times Impervious Depth	Yes

Vegetated Corridor 31S

Impervious Area (SF)	2385
Impervious Area Depth (Feet)	8
VC Approximate Width (Feet)	50
VC Filter Strip Length (Feet)	335
Impervious Area / VC Filter Strip Length (SF/Foot)	7.12
Less than Max Contributing Impervious Surface (2640 SF per 50' of VC Width)	Yes
Impervious Area Adjacent or within the outer 40% of VC	Yes
Impervious Areas Less than 15,000 SF (Then no Pretreatment Required)	Yes
Slopes between 0.5-6%	Yes
Enhanced to 'Good Corridor Condition'	Yes
VC Depth > 3 Times Impervious Depth	Yes

Appendix E:
USDA-NRCS Soil Resource Report

Soil Map—Washington County, Oregon



Map Scale: 1:3,810 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 50 100 200 300

Feet
0 150 300 600 900

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Washington County, Oregon
Survey Area Data: Version 15, Sep 19, 2017

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 19, 2015—Sep 13, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
1	Aloha silt loam	28.8	77.0%
22	Huberly silt loam	5.4	14.3%
42	Verboort silty clay loam	0.7	1.7%
45B	Woodburn silt loam, 3 to 7 percent slopes	2.6	7.0%
Totals for Area of Interest		**37.5**	**100.0%**

Hydrologic Soil Group and Surface Runoff

This table gives estimates of various soil water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas.

Surface runoff refers to the loss of water from an area by flow over the land surface. Surface runoff classes are based on slope, climate, and vegetative cover. The concept indicates relative runoff for very specific conditions. It is assumed that the surface of the soil is bare and that the retention of surface water resulting from irregularities in the ground surface is minimal. The classes are negligible, very low, low, medium, high, and very high.

Report—Hydrologic Soil Group and Surface Runoff

Absence of an entry indicates that the data were not estimated. The dash indicates no documented presence.

Hydrologic Soil Group and Surface Runoff–Washington County, Oregon			
Map symbol and soil name	**Pct. of map unit**	**Surface Runoff**	**Hydrologic Soil Group**
1—Aloha silt loam			
Aloha	90	—	C/D

Hydrologic Soil Group and Surface Runoff–Washington County, Oregon			
Map symbol and soil name	**Pct. of map unit**	**Surface Runoff**	**Hydrologic Soil Group**
22—Huberly silt loam			
Huberly	90	—	C/D
42—Verboort silty clay loam			
Verboort	90	—	D
45B—Woodburn silt loam, 3 to 7 percent slopes			
Woodburn	85	—	C

Data Source Information

Soil Survey Area: Washington County, Oregon
Survey Area Data: Version 15, Sep 19, 2017

Appendix F:
TR55 Runoff Curve Numbers

Table 2-2a Runoff curve numbers for urban areas [1/]

Cover description: Cover type and hydrologic condition	Average percent impervious area [2/]	Curve numbers for hydrologic soil group: A	B	C	D
Fully developed urban areas (vegetation established)					
Open space (lawns, parks, golf courses, cemeteries, etc.) [3/]:					
Poor condition (grass cover < 50%)		68	79	86	89
Fair condition (grass cover 50% to 75%)		49	69	79	84
Good condition (grass cover > 75%)		39	61	74	80
Impervious areas:					
Paved parking lots, roofs, driveways, etc. (excluding right-of-way)		98	98	98	98
Streets and roads:					
Paved; curbs and storm sewers (excluding right-of-way)		98	98	98	98
Paved; open ditches (including right-of-way)		83	89	92	93
Gravel (including right-of-way)		76	85	89	91
Dirt (including right-of-way)		72	82	87	89
Western desert urban areas:					
Natural desert landscaping (pervious areas only) [4/]		63	77	85	88
Artificial desert landscaping (impervious weed barrier, desert shrub with 1- to 2-inch sand or gravel mulch and basin borders)		96	96	96	96
Urban districts:					
Commercial and business	85	89	92	94	95
Industrial	72	81	88	91	93
Residential districts by average lot size:					
1/8 acre or less (town houses)	65	77	85	90	92
1/4 acre	38	61	75	83	87
1/3 acre	30	57	72	81	86
1/2 acre	25	54	70	80	85
1 acre	20	51	68	79	84
2 acres	12	46	65	77	82
Developing urban areas					
Newly graded areas (pervious areas only, no vegetation) [5/]		77	86	91	94
Idle lands (CN's are determined using cover types similar to those in table 2-2c).					

[1] Average runoff condition, and $I_a = 0.2S$.

[2] The average percent impervious area shown was used to develop the composite CN's. Other assumptions are as follows: impervious areas are directly connected to the drainage system, impervious areas have a CN of 98, and pervious areas are considered equivalent to open space in good hydrologic condition. CN's for other combinations of conditions may be computed using figure 2-3 or 2-4.

[3] CN's shown are equivalent to those of pasture. Composite CN's may be computed for other combinations of open space cover type.

[4] Composite CN's for natural desert landscaping should be computed using figures 2-3 or 2-4 based on the impervious area percentage (CN = 98) and the pervious area CN. The pervious area CN's are assumed equivalent to desert shrub in poor hydrologic condition.

[5] Composite CN's to use for the design of temporary measures during grading and construction should be computed using figure 2-3 or 2-4 based on the degree of development (impervious area percentage) and the CN's for the newly graded pervious areas.

Table 2-2b Runoff curve numbers for cultivated agricultural lands [1/]

Cover description			Curve numbers for hydrologic soil group			
Cover type	Treatment [2/]	Hydrologic condition [3/]	A	B	C	D
Fallow	Bare soil	—	77	86	91	94
	Crop residue cover (CR)	Poor	76	85	90	93
		Good	74	83	88	90
Row crops	Straight row (SR)	Poor	72	81	88	91
		Good	67	78	85	89
	SR + CR	Poor	71	80	87	90
		Good	64	75	82	85
	Contoured (C)	Poor	70	79	84	88
		Good	65	75	82	86
	C + CR	Poor	69	78	83	87
		Good	64	74	81	85
	Contoured & terraced (C&T)	Poor	66	74	80	82
		Good	62	71	78	81
	C&T+ CR	Poor	65	73	79	81
		Good	61	70	77	80
Small grain	SR	Poor	65	76	84	88
		Good	63	75	83	87
	SR + CR	Poor	64	75	83	86
		Good	60	72	80	84
	C	Poor	63	74	82	85
		Good	61	73	81	84
	C + CR	Poor	62	73	81	84
		Good	60	72	80	83
	C&T	Poor	61	72	79	82
		Good	59	70	78	81
	C&T+ CR	Poor	60	71	78	81
		Good	58	69	77	80
Close-seeded or broadcast legumes or rotation meadow	SR	Poor	66	77	85	89
		Good	58	72	81	85
	C	Poor	64	75	83	85
		Good	55	69	78	83
	C&T	Poor	63	73	80	83
		Good	51	67	76	80

[1] Average runoff condition, and I_a=0.2S

[2] Crop residue cover applies only if residue is on at least 5% of the surface throughout the year.

[3] Hydraulic condition is based on combination factors that affect infiltration and runoff, including (a) density and canopy of vegetative areas, (b) amount of year-round cover, (c) amount of grass or close-seeded legumes, (d) percent of residue cover on the land surface (good ≥ 20%), and (e) degree of surface roughness.

Poor: Factors impair infiltration and tend to increase runoff.

Good: Factors encourage average and better than average infiltration and tend to decrease runoff.

Table 2-2c Runoff curve numbers for other agricultural lands [1/]

Cover description		Curve numbers for hydrologic soil group			
Cover type	Hydrologic condition	A	B	C	D
Pasture, grassland, or range—continuous forage for grazing. [2/]	Poor	68	79	86	89
	Fair	49	69	79	84
	Good	39	61	74	80
Meadow—continuous grass, protected from grazing and generally mowed for hay.	—	30	58	71	78
Brush—brush-weed-grass mixture with brush the major element. [3/]	Poor	48	67	77	83
	Fair	35	56	70	77
	Good	30 [4/]	48	65	73
Woods—grass combination (orchard or tree farm). [5/]	Poor	57	73	82	86
	Fair	43	65	76	82
	Good	32	58	72	79
Woods. [6/]	Poor	45	66	77	83
	Fair	36	60	73	79
	Good	30 [4/]	55	70	77
Farmsteads—buildings, lanes, driveways, and surrounding lots.	—	59	74	82	86

1 Average runoff condition, and $I_a = 0.2S$.

2 *Poor:* <50%) ground cover or heavily grazed with no mulch.
Fair: 50 to 75% ground cover and not heavily grazed.
Good: > 75% ground cover and lightly or only occasionally grazed.

3 *Poor*: <50% ground cover.
Fair: 50 to 75% ground cover.
Good: >75% ground cover.

4 Actual curve number is less than 30; use CN = 30 for runoff computations.

5 CN's shown were computed for areas with 50% woods and 50% grass (pasture) cover. Other combinations of conditions may be computed from the CN's for woods and pasture.

6 *Poor:* Forest litter, small trees, and brush are destroyed by heavy grazing or regular burning.
Fair: Woods are grazed but not burned, and some forest litter covers the soil.
Good: Woods are protected from grazing, and litter and brush adequately cover the soil.

Table 2-2d Runoff curve numbers for arid and semiarid rangelands [1/]

Cover description		Curve numbers for hydrologic soil group			
Cover type	Hydrologic condition [2/]	A [3/]	B	C	D
Herbaceous—mixture of grass, weeds, and low-growing brush, with brush the minor element.	Poor		80	87	93
	Fair		71	81	89
	Good		62	74	85
Oak-aspen—mountain brush mixture of oak brush, aspen, mountain mahogany, bitter brush, maple, and other brush.	Poor		66	74	79
	Fair		48	57	63
	Good		30	41	48
Pinyon-juniper—pinyon, juniper, or both; grass understory.	Poor		75	85	89
	Fair		58	73	80
	Good		41	61	71
Sagebrush with grass understory.	Poor		67	80	85
	Fair		51	63	70
	Good		35	47	55
Desert shrub—major plants include saltbush, greasewood, creosotebush, blackbrush, bursage, palo verde, mesquite, and cactus.	Poor	63	77	85	88
	Fair	55	72	81	86
	Good	49	68	79	84

1 Average runoff condition, and I_a, = 0.2S. For range in humid regions, use table 2-2c.
2 Poor: <30% ground cover (litter, grass, and brush overstory).
Fair: 30 to 70% ground cover.
Good: > 70% ground cover.
3 Curve numbers for group A have been developed only for desert shrub.

Exhibit F:
Documentation of Neighborhood Meeting

April 30, 2018

RE: Neighborhood Meeting
Brookman Residential Subdivision

Dear Property Owner/Neighbor:

AKS Engineering & Forestry, LLC is holding a neighborhood meeting regarding 3 properties totaling +/- 37.95 acres. The site addresses and Washington County Assessor's map numbers are: 17495 SW Brookman Road (3S1060000103), 17601 SW Brookman Road (3S106B0000100), and 17769 SW Brookman Road (3S106B000200). The attached map shows the site location. The project is planned to be a residential subdivision. We would like to take the opportunity to discuss the project in more detail with you prior to applying to the City of Sherwood.

This meeting is planned as an open house type forum where surrounding property owners/residents can meet with project team members and discuss the project before the application is submitted to the City. This meeting gives you the opportunity to share with us any specific information you know about the property.

Pursuant to Sherwood Zoning and Community Development Code Section 16.70.020, you are invited to attend a meeting on:

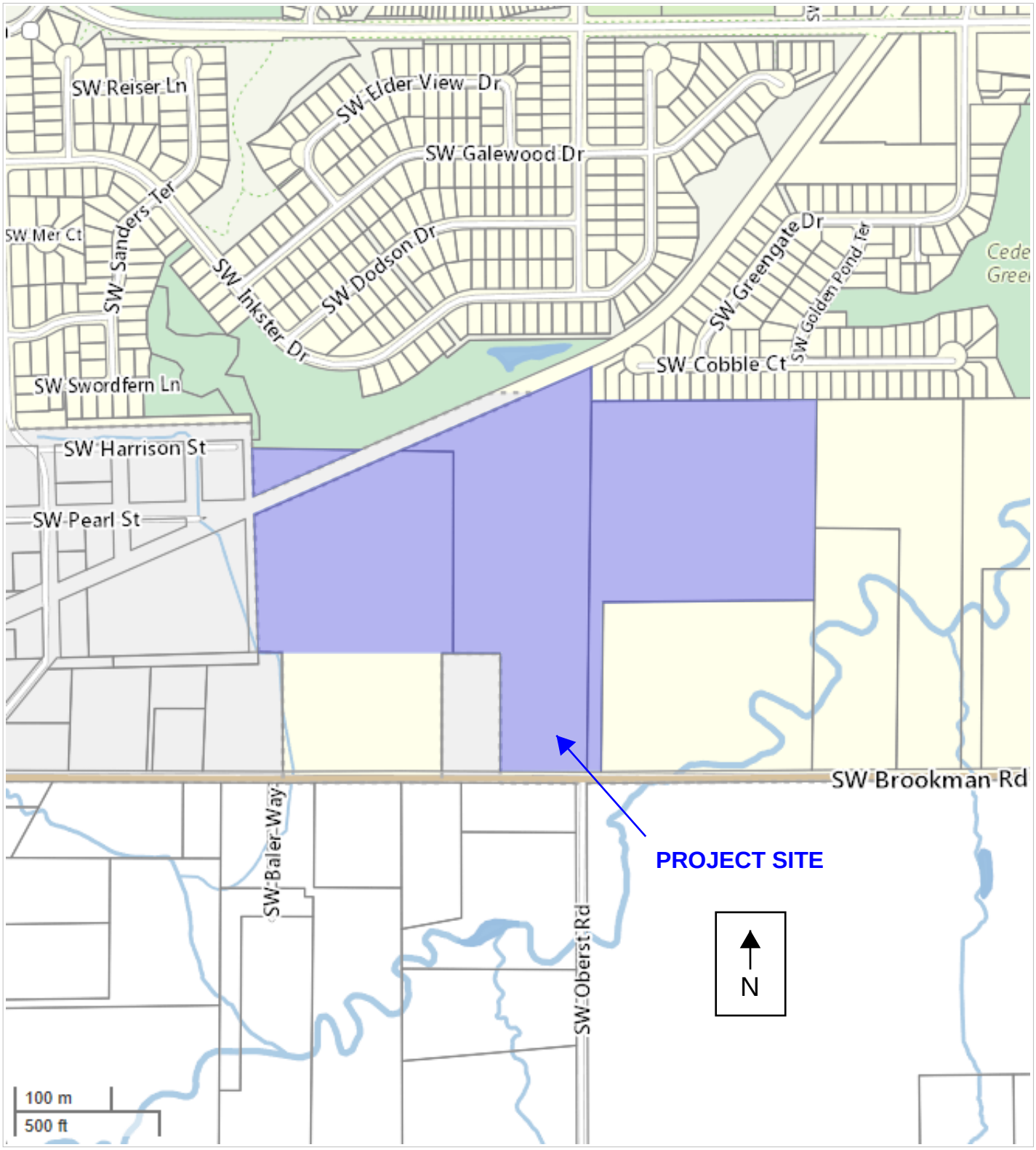
May 16, 2018 at 6:00 p.m.
Marjorie Stewart Community Center
21907 SW Sherwood Blvd, Sherwood, OR 97140

This will be an informational meeting focusing on preliminary plans. These plans may be altered prior to submittal of the application to the City. You may receive official notice from the City of Sherwood providing the opportunity to participate with written comments and/or attend a public hearing, depending on the type of land use action required.

We look forward to discussing this project with you. If you have questions, but will be unable to attend, please feel free to call at 503-563-6151.

Sincerely,
AKS ENGINEERING & FORESTRY, LLC

Melissa Slotemaker
503-563-6151


SW Reiser Ln
SW Elder View Dr
SW Galewood Dr
SW Sanders Ter
SW Mer Ct
SW Inkster Dr
SW Dodson Dr
SW Greengate Dr
SW Golden Pond Ter
SW Cobble Ct
SW Swordfern Ln
SW Harrison St
SW Pearl St
SW Brookman Rd
SW Baler Way
SW Oberst Rd
PROJECT SITE
N
100 m
500 ft

AFFIDAVIT OF MAILING

STATE OF OREGON)

)ss

COUNTY OF WASHINGTON)

I, Zachary Wasula, being duly sworn, depose and say that on 4/30/18, I caused to have mailed to each of the persons on the attached list a notice of a meeting to discuss a proposed development located at SW Brookman Road, a copy of which notice so mailed is attached hereto and made a part of hereof.

I further state that said notices were enclosed in envelopes plainly addressed to said persons and were deposited on the date indicated above in the United States Post Office with postage prepaid thereon.

Signature

Subscribed and sworn to, or affirmed, before me this 30th day of April, 2018.

OFFICIAL STAMP
GOLDIE MARIE HAMILTON
NOTARY PUBLIC-OREGON
COMMISSION NO. 950615
MY COMMISSION EXPIRES MAY 17, 2020

Notary Public for the State of Oregon

My Commission Expires May 17, 2020

First American

Date of Production: Wednesday, April 18, 2018

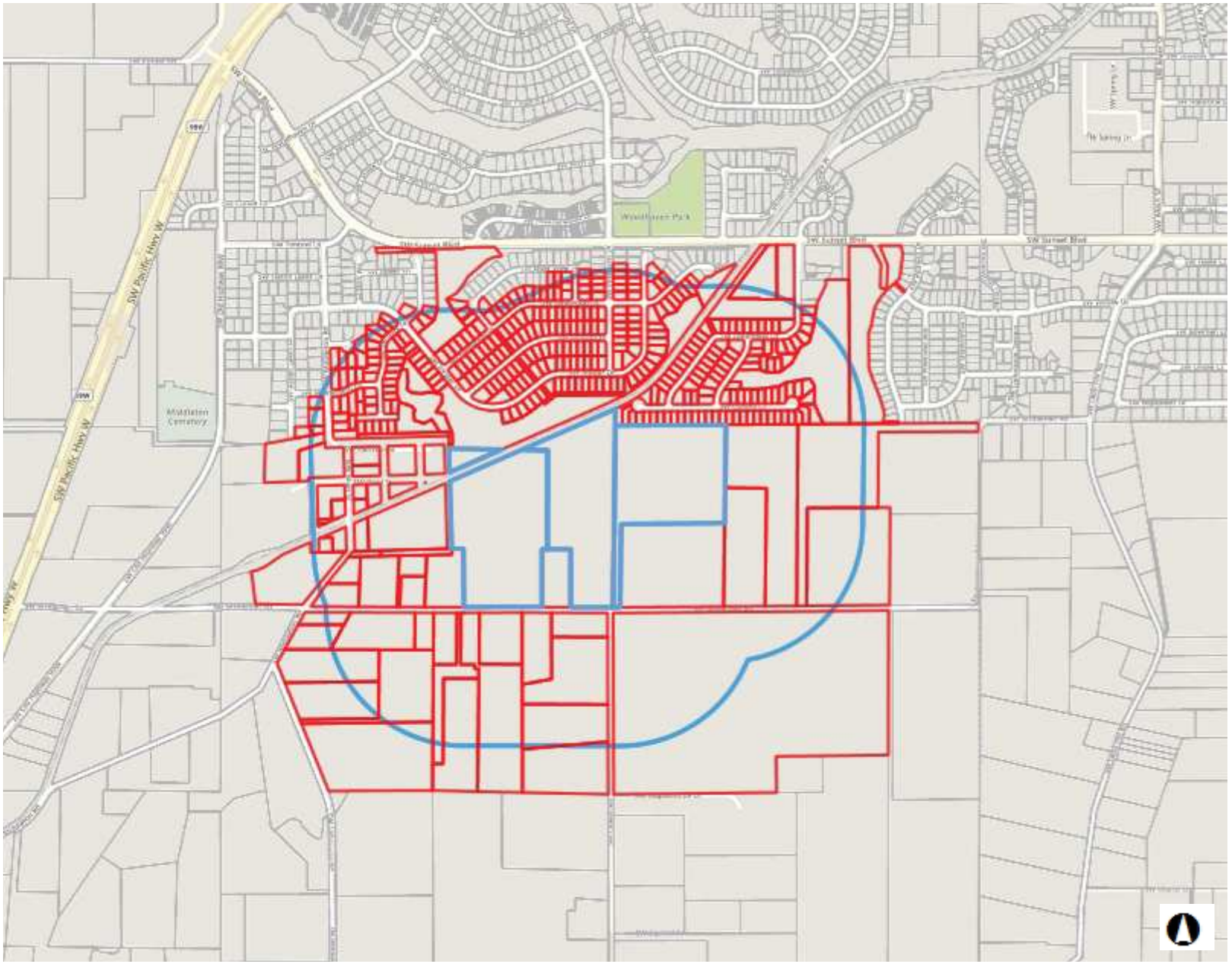
The ownership information enclosed is time sensitive and should be utilized as soon as possible.

This mailing list was produced with taxlot data from the Portland Metro regional government.

First American Title Company makes no express or implied warranty respecting the information presented and assumes no responsibility for errors or omissions

Thank you for your business and for using First American Title.

1000 ft Buffer - 3S1060000103, 3S106B000100, 3S106B000200



First American Title™

Subject

Radius

Radius Properties

4/18/2018

Notes

17495, 17601, and 17760 SW Brookman Road, Sherwood 97140

0.6 0 0.28 0.6 Miles

First American Title™

Customer Service Department
121 SW Morrison St., Suite 300 Portland, OR 97204
Phone: 503.219.8746(TRIO) | Fax: 503.790.7872
Email: cs.portland@firstam.com
Report Generated: 4/18/2018

Ownership

Legal Owner(s): Boyd George W Rev Living Trust & Brewer Carleen H Rev Living Trust
Site Address: 17769 SW Brookman Rd Sherwood, OR 97140
Mailing Address: Po Box 85 Tualatin, OR 97062

Parcel #: 3S106B0-00200
APN: R586468
County: Washington

Property Characteristics

Bedrooms:	3	**Year Built:**	1954	**Lot SqFt:**	689119
Total Bathrooms:	2	**Building SqFt:**	3198	**Lot Acres:**	16.38
Full Bathrooms:	2	**First Floor SqFt:**	0	**Roof Type:**	Composition Shingle
Half Bathrooms:	0	**Basement Sqft:**	1280	**Roof Shape:**	
Units:	0	**Basment Type:**	Improved	**Porch Type:**	
Stories:				**Building Style:**	
Fire Place:	N			**Garage:**	
Air Conditioning:				**Garage SqFt:**	0
Heating Type:	Floor/Wall			**Parking Spots:**	0
Electric Type:				**Pool:**	

Property Information

Land Use: RESIDENTIAL
County Use: 5414
Legal Description: ACRES 15.82, UNZONED FARMLAND-POTENTIAL ADDITIONAL TAX LIABILITY

Neighborhood:
School District:
Zoning: MDRL

Assessor & Tax

Market Land: $204,710
Market Total: $333,920
Market Structure: $1,100,640
Assessed Total: $243,270

Taxes: $3,669.90
% Improved:
Levy Code: 088.14
Millage Rate: 15.0857

Sale History

Last Sale Date: 4/23/1997
Prior Sale Date:

Doc #: 97037165
Prior Doc #:

Last Sale Price: $128,900
Prior Sale Price: $0

Mortgage

1st Mortgage Date:
1st Mortgage Type:
2nd Mortgage Type:

Doc #:
1st Mortgage Lender:

1st Mortgage: $0
2nd Mortgage: $0

First American Title™

Customer Service Department
121 SW Morrison St., Suite 300 Portland, OR 97204
Phone: 503.219.8746(TRIO) | Fax: 503.790.7872
Email: cs.portland@firstam.com
Report Generated: 4/18/2018

Ownership

Legal Owner(s): Brookman Development Llc
Site Address: 17495 SW Brookman Rd Sherwood, OR 97140
Mailing Address: Po Box 61426 Vancouver, WA 98666

Parcel #: 3S10600-00103
APN: R586137
County: Washington

Property Characteristics

Bedrooms: 4
Total Bathrooms: 3
Full Bathrooms: 3
Half Bathrooms: 0
Units: 0
Stories:
Fire Place: N
Air Conditioning:
Heating Type: Heat Pump
Electric Type:

Year Built: 1975
Building SqFt: 2414
First Floor SqFt: 0
Basement Sqft: 0
Basment Type:

Lot SqFt: 588060
Lot Acres: 13.75
Roof Type: Composition Shingle
Roof Shape:
Porch Type:
Building Style:
Garage: Garage
Garage SqFt: 528
Parking Spots: 2
Pool:

Property Information

Land Use: RESIDENTIAL
County Use: 1910
Legal Description: ACRES 13.50

Neighborhood:
School District:
Zoning: MDRL

Assessor & Tax

Market Land: $1,954,530
Market Total: $2,139,480
Market Structure: $172,000
Assessed Total: $519,980

Taxes: $7,844.26
% Improved:
Levy Code: 088.14
Millage Rate: 15.0857

Sale History

Last Sale Date: 5/22/2017
Prior Sale Date: 6/30/2010

Doc #: 2017-040512
Prior Doc #: 2010-049649

Last Sale Price: $1,896,750
Prior Sale Price: $0

Mortgage

1st Mortgage Date:
1st Mortgage Type:
2nd Mortgage Type:

Doc #:
1st Mortgage Lender:

1st Mortgage: $0
2nd Mortgage: $0

First American Title™

Customer Service Department
121 SW Morrison St., Suite 300 Portland, OR 97204
Phone: 503.219.8746(TRIO) | Fax: 503.790.7872
Email: cs.portland@firstam.com
Report Generated: 4/18/2018

Ownership

Legal Owner(s): Brookman Development Llc
Site Address: 17601 SW Brookman Rd Sherwood, OR 97140
Mailing Address: Po Box 61426 Vancouver, WA 98666

Parcel #: 3S106B0-00100
APN: R586431
County: Washington

Property Characteristics

Bedrooms: 2
Total Bathrooms: 1
Full Bathrooms: 1
Half Bathrooms: 0
Units: 0
Stories:
Fire Place: N
Air Conditioning:
Heating Type: Forced air unit
Electric Type:

Year Built: 1925
Building SqFt: 2259
First Floor SqFt: 0
Basement Sqft: 384
Basment Type: Unfinished

Lot SqFt: 567587
Lot Acres: 13.27
Roof Type: Composition Shingle
Roof Shape:
Porch Type: Porch - Open
Building Style:
Garage: Detached Garage
Garage SqFt: 324
Parking Spots: 1
Pool:

Property Information

Land Use: RESIDENTIAL
County Use: 6611
Legal Description: ACRES 12.76, CODE SPLIT, FORESTLAND, SMALL TRACT FORESTLAND, POTENTIAL ADDITIONAL TAX LIABILITY

Neighborhood:
School District:
Zoning: MDRL

Assessor & Tax

Market Land: $972,880
Market Total: $973,880
Market Structure: $1,492,810
Assessed Total: $795,630

Taxes: $0.59
% Improved:
Levy Code: 088.14
Millage Rate: 15.0857

Sale History

Last Sale Date: 6/16/2017
Prior Sale Date: 7/11/2005

Doc #: 2017-047893
Prior Doc #: 2005-079964

Last Sale Price: $3,075,612
Prior Sale Price: $1,628,750

Mortgage

1st Mortgage Date: 6/16/2017
1st Mortgage Type:
2nd Mortgage Type:

Doc #: 2017-047894
1st Mortgage Lender: Sherwood Land Llc

1st Mortgage: $975,612
2nd Mortgage: $0

2S131DC-03800
17328 Sw Greengate Drive Llc
4130 SE Division St
Portland, OR 97202

2S131DC-06400
Abney Revard (Owners Of Lots 8-11)

,

2S131CD-07500
Bill Alti
16643 NW Canton St
Portland, OR 97229

2S131CD-12700
Michael & Erin Ard
17790 SW Dodson Dr
Sherwood, OR 97140

2S131DC-08300
John Arzner
17080 SW Cobble Ct
Sherwood, OR 97140

2S131CD-17800
Donald & Candace Bailly
17671 SW Galewood Dr
Sherwood, OR 97140

3S106B0-00101
Thomas & Marie Bartlett
17687 SW Brookman Rd
Sherwood, OR 97140

2S131CD-16900
Walter & Joelle Beach
17496 SW Inkster Dr
Sherwood, OR 97140

2S131CD-12500
Allen & Amy Berry
17824 SW Dodson Dr
Sherwood, OR 97140

2S131CD-19600
Rachel Bissegger
17623 SW Elder View Dr
Sherwood, OR 97140

2S131DC-09800
17374 Sw Cobble Ct Llc
17374 SW Cobble Ct
Sherwood, OR 97140

2S131CD-09300
David Allen
17596 SW Galewood Dr
Sherwood, OR 97140

2S131DC-02500
James Anderson Jr & Patricia
23907 SW Golden Pond Ter
Sherwood, OR 97140

2S131DC-04500
Brandon Armatas & Mindi
17297 SW Greengate Dr
Sherwood, OR 97140

2S131CD-13200
Michael Babick
17654 SW Dodson Dr
Sherwood, OR 97140

2S131CD-00900
Susan Baker
23654 SW Sanders Ter
Sherwood, OR 97140

3S106BB-02400
Bascom Living Trust
18127 SW Brookman Rd
Sherwood, OR 97140

2S131CC-19500
Cameron Bean & Josie Dayton
23960 SW Middleton Rd
Sherwood, OR 97140

2S131DC-10600
Paul & Sarah Billeci
17961 SW Bridger Ln
Sherwood, OR 97140

3S10600-00102
Charles & Louise Bissett
16871 SW Brookman Rd
Sherwood, OR 97140

2S131CD-16700
17536 Sw Inkster Llc
20616 S South End Rd
Oregon City, OR 97045

2S131CD-03800
Matthew & Bernadette Almgren
17765 SW Galewood Dr
Sherwood, OR 97140

2S131CD-11400
Jeanette Ao
17831 SW Dodson Dr
Sherwood, OR 97140

2S131CD-01800
Laura & Michael Armstrong
17910 SW Inkster Dr
Sherwood, OR 97140

2S131CC-15000
Robert Bailey
18101 SW Swordfern Ln
Sherwood, OR 97140

2S131CD-15800
Kristofer & Sara Barr
17716 SW Inkster Dr
Sherwood, OR 97140

2S131DC-15600
Anthony & Jennifer Bass
17306 SW Galewood Dr
Sherwood, OR 97140

2S131CC-15100
Andrew Bently
18121 SW Swordfern Ln
Sherwood, OR 97140

2S131CC-14400
Patrick & Michele Birbeck
18185 SW Swordfern Ln
Sherwood, OR 97140

2S131DC-09500
Karen Blair
17286 SW Cobble Ct
Sherwood, OR 97140

2S131CD-13800
Chad & Cari Blanchard
17514 SW Dodson Dr
Sherwood, OR 97140

2S131CC-13500
Donovan & Mary Boell
23819 SW Sanders Ter
Sherwood, OR 97140

2S131DC-05400
Stephan Bourasa
17205 SW Greengate Dr
Sherwood, OR 97140

3S106B0-00200
Boyd George W Rev Living Trust &
Po Box 85
Tualatin, OR 97062

2S131DC-08400
Jodi Briggs
17094 SW Cobble Ct
Sherwood, OR 97140

3S106BB-01803
Michael Brock
18230 SW Pearl St
Sherwood, OR 97140

3S106B0-00100
Brookman Development Llc
Po Box 61426
Vancouver, WA 98666

2S131CD-01000
Kyle & Kristen Bryson
23672 SW Sanders Ter
Sherwood, OR 97140

2S131DC-11100
Nathan & Rebecca Bush
17363 SW Cobble Ct
Sherwood, OR 97140

2S131DC-11300
Stephanie Charters
17281 SW Cobble Ct
Sherwood, OR 97140

2S131CD-06100
Ted Blossom
17781 SW Elder View Dr
Sherwood, OR 97140

2S131DC-01600
Debra Boquist
23867 SW Fox Run Pl
Sherwood, OR 97140

2S131CD-16400
Julie Bouris
17612 SW Inkster Dr
Sherwood, OR 97140

2S131CC-19600
Aaron & Meagan Bozeman
23976 SW Middleton Rd
Sherwood, OR 97140

3S106BB-00500
Michael Brock
18230 SW Pearl St
Sherwood, OR 97140

2S131CD-09900
Terry & Sandra Brookshaw
11302 SW Meadowlark Ln
Beaverton, OR 97007

2S131DC-06700
Marsha & Larry Brown
17157 SW Cobble Ct
Sherwood, OR 97140

2S131CC-15400
James & Samarra Buchanan
23906 SW Sanders Ter
Sherwood, OR 97140

2S131DC-03900
Todd & Erin Card
17340 SW Greengate Dr
Sherwood, OR 97140

2S131DC-12600
Michael & Rebecca Cherba
17445 SW Inkster Dr
Sherwood, OR 97140

2S131DC-03500
Steven & Kori Boddington
17290 SW Greengate Dr
Sherwood, OR 97140

2S131DC-05000
Slim Bouaicha
17237 SW Greengate Dr
Sherwood, OR 97140

2S131CD-02400
Stanley & Rebecca Bowling
17852 SW Galewood Dr
Sherwood, OR 97140

2S131CD-16200
Kaitlyn Brewington & Adam Ellis
17646 SW Inkster Dr
Sherwood, OR 97140

3S106BB-01801
Michael Brock
18230 SW Pearl St
Sherwood, OR 97140

3S10600-00103
Brookman Development Llc
Po Box 61426
Vancouver, WA 98666

3S106B0-01302
Susan Bryant
Po Box 1256
Sherwood, OR 97140

2S131CD-14200
Joseph & Rebecca Budge
13387 SW Morgan Rd
Sherwood, OR 97140

2S131CD-12900
Jennifer Cerny
17740 SW Dodson Dr
Sherwood, OR 97140

3S106BB-02600
Jason & Michelle Christensen
24025 SW Middleton Rd
Sherwood, OR 97140

3S10600-00107
Wayne & Linda Chronister
Po Box 1474
Sherwood, OR 97140

2S131CD-06600
Carol Clark
17869 SW Galewood Dr
Sherwood, OR 97140

3S106BB-01100
Jerry & Elisabeth Clark
Po Box 397
Tualatin, OR 97062

3S106BB-02302
Jerry & Elisabeth Clark
Po Box 397
Tualatin, OR 97062

3S106BB-02590
Jerry & Elisabeth Clark
Po Box 397
Tualatin, OR 97062

2S131CD-07400
George & Jill Clayburn
23662 SW Pinehurst Dr
Sherwood, OR 97140

2S131DC-13500
Bradford & Kelly Clem
17369 SW Inkster Dr
Sherwood, OR 97140

2S131DC-02800
Thomas Clemo
2520 3rd St APT 10
Santa Monica, CA 90405

3S106BB-00600
Adam & Sarah Cluff
22808 SW Hosler Way
Sherwood, OR 97140

2S131CC-18600
James & Rachael Coday
18266 SW Mer Ct
Sherwood, OR 97140

2S131CD-10700
Anthony & Katrina Cole
17713 SW Dodson Dr
Sherwood, OR 97140

2S131CD-13900
Chuck Comstock
17515 SW Inkster Dr
Sherwood, OR 97140

2S131DC-09300
Thomas & Kristina Conner
17232 SW Cobble Ct
Sherwood, OR 97140

2S131DC-07900
Teresa Conrad
17024 SW Cobble Ct
Sherwood, OR 97140

2S131CD-16500
Katie Cook
17588 SW Inkster Dr
Sherwood, OR 97140

2S131DC-16700
Corello Family Trust
17434 SW Inkster Dr
Sherwood, OR 97140

2S131DC-10700
Michael & Kristine Cornett
17461 SW Cobble Ct
Sherwood, OR 97140

2S131DC-08600
Costley Robert A Trust & Costley
50485 Spyglass Hill Dr
La Quinta, CA 92253

2S131CC-13000
David & Jill Cox
23707 SW Sanders Ter
Sherwood, OR 97140

3S10600-00101
Bonnie David
17117 SW Brookman Rd
Sherwood, OR 97140

2S131CD-01100
Andrew & Dayna Davis
23690 SW Sanders Ter
Sherwood, OR 97140

2S131CD-07700
Craig & Regina Davis
23592 SW Pinehurst Dr
Sherwood, OR 97140

2S131CD-05900
Christina Day & James Aimonetti
17769 SW Elder View Dr
Sherwood, OR 97140

2S131DC-16200
Debra Decker
17378 SW Galewood Dr
Sherwood, OR 97140

2S131DC-01400
Elizabeth Delong
23836 SW Fox Run Pl
Sherwood, OR 97140

2S131DC-09400
Scott & Laurel Demming
17258 SW Cobble Ct
Sherwood, OR 97140

2S131DC-12100
Taranvir & Surinder Dhillon
23758 SW Pinehurst Dr
Sherwood, OR 97140

2S131CD-08500
Patrick & Marian Doran
4155 NW Widgeon Pl
Corvallis, OR 97330

3S106BB-01700
H Duffield
24297 SW Middleton Rd
Sherwood, OR 97140

2S131CC-15300
Jennifer & Gabriel Dunaway
23928 SW Sanders Ter
Sherwood, OR 97140

2S131DC-11800
Paula Dungan
23710 SW Pinehurst Dr
Sherwood, OR 97140

3S106B0-00300
Kevin Durrell & Stephanie Garrison
24661 SW Oberst Rd
Sherwood, OR 97140

2S131CC-04800
Ronald Dyches
13784 SW 72nd Ave
Portland, OR 97223

2S131CC-17800
Kelly & Laura Eisenbeiss
23933 SW Middleton Rd
Sherwood, OR 97140

2S131CD-17700
Christa Ellis
17685 SW Galewood Dr
Sherwood, OR 97140

2S131CC-18900
Paul & Sandra Gary
18289 SW Maidenfern Ln
Sherwood, OR 97140

2S131DC-01000
Gary & Lynda Elmore
17128 SW Greengate Dr
Sherwood, OR 97140

2S131CC-14100
Mark & Michelle Enger
23929 SW Sanders Ter
Sherwood, OR 97140

2S131CC-15700
Dave & Deanne Enger
23842 SW Sanders Ter
Sherwood, OR 97140

2S131DC-07500
Stefanie English
17033 SW Cobble Ct
Sherwood, OR 97140

2S131CC-16100
Julien & Michele Erard
23710 SW Sanders Ter
Sherwood, OR 97140

2S131CC-14800
Brad Erickson
18120 SW Swordfern Ln
Sherwood, OR 97140

2S131DC-16600
Richard & Laura Ernst
17428 SW Inkster Dr
Sherwood, OR 97140

2S131DC-14400
Ryan & Jennifer Evans
17337 SW Galewood Dr
Sherwood, OR 97140

2S131CC-13800
Jennfer & Mark Fagerstrom
23897 SW Sanders Ter
Sherwood, OR 97140

2S131CD-18000
David & Ann Falcon
17606 SW Elder View Dr
Sherwood, OR 97140

2S131CC-16000
Holly Fawks
23740 SW Sanders Ter
Sherwood, OR 97140

2S131CD-11500
Matthew & Amy Fehrenbacher
17843 SW Dodson Dr
Sherwood, OR 97140

2S131CD-01700
James & Marian Folgate
Po Box 313
Sublimity, OR 97385

2S131CD-06300
Rod Forrester
17823 SW Galewood Dr
Sherwood, OR 97140

2S131DC-07400
Ryan & Anna Forsyth
17057 SW Cobble Ct
Sherwood, OR 97140

2S131DC-08500
Robert Frailey & Lin Zhang
17108 SW Cobble Ct
Sherwood, OR 97140

2S131DC-11200
Trisha French & Douglas Clark
17315 SW Cobble Ct
Sherwood, OR 97140

2S131CC-14600
Thomas Freuler
18164 SW Swordfern Ln
Sherwood, OR 97140

2S131DC-08000
Fullmer Marcia R Revocable &
257 Meadows Ln
Kalispell, MT 59901

3S106B0-00400
Michael & Pamela Fullmer
17878 SW Brookman Rd
Sherwood, OR 97140

2S131DC-07800
Thomas & Laura Gall
17010 SW Cobble Ct
Sherwood, OR 97140

2S131DC-14200
Paul Gamboa & Julianne Wilson
17371 SW Galewood Dr
Sherwood, OR 97140

2S131DC-08900
Adam & Rachel Gemmil
17164 SW Cobble Ct
Sherwood, OR 97140

2S131CC-19400
Benjamin & Stephanie Gengler
18296 SW Maidenfern Ln
Sherwood, OR 97140

2S131CD-01500
Howard & Jennifer Gerber
17946 SW Inkster Dr
Sherwood, OR 97140

2S131CC-14300
Aron & Kara Gladstone
23993 SW Sanders Ter
Sherwood, OR 97140

2S131DC-12500
John & Tara Golden
17463 SW Inkster Dr
Sherwood, OR 97140

2S131DC-16300
Shirley Groom
17390 SW Galewood Dr
Sherwood, OR 97140

2S131DC-01800
Suzanne Hall & Carrieann Lucas
17182 SW Greengate Dr
Sherwood, OR 97140

2S131DC-09000
Sherryl Hardman
17178 SW Cobble Ct
Sherwood, OR 97140

2S131DC-05800
William Harmon & Victoria Lafrance
17169 SW Greengate Dr
Sherwood, OR 97140

2S131CD-08400
Douglas & Lindsey Hawkins
23597 SW Pinehurst Dr
Sherwood, OR 97140

2S131DC-15900
Brian & Mary Hennessy
17342 SW Galewood Dr
Sherwood, OR 97140

2S131CD-06400
Daniel Hernandez & Bethany Wittig
17835 SW Galewood Dr
Sherwood, OR 97140

2S131DC-04300
Kimberly Ghioni
17321 SW Greengate Dr
Sherwood, OR 97140

2S131CD-09700
Kristen Glanville
17508 SW Galewood Dr
Sherwood, OR 97140

2S131CC-14000
Ryan & Jill Gorretta
18190 SW Maidenfern Ln
Sherwood, OR 97140

2S131DC-04900
Darren & Kimberly Guarnaccia
28055 NE Mountain Top Rd
Newberg, OR 97132

2S131CD-15100
Jeffrey & Melissa Hamm
17741 SW Inkster Dr
Sherwood, OR 97140

3S106B0-00900
Scott & Dana Hardman
24560 SW Middleton Rd
Sherwood, OR 97140

2S131DC-07600
James Hass & Denise Angela
17019 SW Cobble Ct
Sherwood, OR 97140

2S131CD-08900
Pankaj Hazarika & Jonali Saikia
17678 SW Galewood Dr
Sherwood, OR 97140

2S131CD-14700
Bryan & Michelle Henson
17689 SW Inkster Dr
Sherwood, OR 97140

3S106B0-00303
Clearway Realty Llc
Po Box 80794
Portland, OR 97280

2S131CD-17600
Robert Gladheim & Windy Parsons
17700 SW Galewood Dr
Sherwood, OR 97140

2S131CD-17000
Scott Glenn
17480 SW Inkster Dr
Sherwood, OR 97140

2S131CD-14000
Joseph Green
17543 SW Inkster Dr
Sherwood, OR 97140

2S131DC-08100
Jospeh & Jessica Gurule
17052 SW Cobble Ct
Hillsboro, OR 97124

2S131DC-15800
Ryan & Melissa Hardaker
17330 SW Galewood Dr
Sherwood, OR 97140

3S106B0-01000
Scott Hardman
24560 SW Middleton Rd
Sherwood, OR 97140

2S131CD-06500
Donald & Ketaki Hawkins
17847 SW Galewood Dr
Sherwood, OR 97140

3S106BB-02001
Heilman Kevin C & Patricia L Trust
24041 SW Middleton Rd
Sherwood, OR 97140

2S131DC-05500
Joseph & Susie Heredia
17197 SW Greengate Dr
Sherwood, OR 97140

2S131CD-15000
Bonnie Hicks
17723 SW Inkster Dr
Sherwood, OR 97140

3S106B0-00500
Jason & Lori Higgins
17890 SW Brookman Rd
Sherwood, OR 97140

2S131DC-02600
Nathan & Emily Hill
14980 SW Scholls Ferry Rd APT D201
Beaverton, OR 97007

2S131DC-08800
Hoang Ho
17150 SW Cobble Ct
Sherwood, OR 97140

2S131DC-11500
James Hoekema & Jennifer
17062 SW Greengate Dr
Sherwood, OR 97140

2S131CD-16800
Laurie Holm
17510 SW Inkster Dr
Sherwood, OR 97140

2S131DC-04400
John & Jeanne Hoogstad
17309 SW Greengate Dr
Sherwood, OR 97140

2S131CD-12000
Shirley & Jean Householder
17884 SW Dodson Dr
Sherwood, OR 97140

2S131CD-03900
Kristina Hughes
17779 SW Galewood Dr
Sherwood, OR 97140

3S106BB-00800
Gary Irvine & Maureen Pierce
18180 SW Pearl St
Sherwood, OR 97140

2S131CC-13900
Jonathan & Sultana Johansen
18191 SW Maidenfern Ln
Sherwood, OR 97140

2S131CC-13600
Jeremy & Lorraine Hill
23845 SW Sanders Ter
Sherwood, OR 97140

2S131DC-11000
Stephen & Jean Hilt
17369 SW Greengate Dr
Sherwood, OR 97140

2S131DC-17000
Matthew & Shelly Hochstetler
17458 SW Inkster Dr
Sherwood, OR 97140

2S131CD-16100
Michael & Karen Hogue
17668 SW Inkster Dr
Sherwood, OR 97140

2S131CD-03500
Caleb & Lara Holt
17719 SW Galewood Dr
Sherwood, OR 97140

2S131CC-14700
Sean & Mia Horvath
18148 SW Swordfern Ln
Sherwood, OR 97140

2S131DC-13000
Hpa Borrower 2016-2 Llc
180 N Stetson Ave STE 3650
Chicago, IL 60601

2S131CC-14200
James & Rachelle Humphrey
23955 SW Sanders Ter
Sherwood, OR 97140

3S106BB-00900
Gary Irvine & Maureen Pierce
18180 SW Pearl St
Sherwood, OR 97140

2S131CD-06000
Johnson Lenore C Revocable Trus
17775 SW Elder View Dr
Sherwood, OR 97140

2S131DC-02000
Lawrence Hill & Terry Muldowney-Hill
23818 SW Golden Pond Ter
Sherwood, OR 97140

2S131CD-04100
Annette Hiser
17766 SW Elder View Dr
Sherwood, OR 97140

2S131CD-10000
Jeffrey & Michele Hodney
17555 SW Dodson Dr
Sherwood, OR 97140

2S131CD-10300
Adam & Lindsay Holden
17625 SW Dodson Dr
Sherwood, OR 97140

2S131DC-01200
Kirk & Barbara Holt
17152 SW Greengate Dr
Sherwood, OR 97140

2S131DC-03200
Houghton Living Trust
17252 SW Greengate Dr
Sherwood, OR 97140

2S131CD-19900
Jeffrey Hrdina
17605 SW Elder View Dr
Sherwood, OR 97140

2S131CD-19700
Greg & Deborah Imus
17895 SW 109th Ave
Tualatin, OR 97062

2S131DC-01300
Kristy Iversen
17164 SW Greengate Dr
Sherwood, OR 97140

2S131CD-10100
Randal & Andrea Johnson
17579 SW Dodson Dr
Sherwood, OR 97140

2S131CD-15700
Johnson Carol Ann Revoc Trust
17734 SW Inkster Dr
Sherwood, OR 97140

2S131DC-13100
Joel & Lydia Johnson
17401 SW Inkster Dr
Sherwood, OR 97140

2S131CD-15500
Laura & Dean Jolley
17764 SW Inkster Dr
Sherwood, OR 97140

2S131CC-18800
Michael & Stephanie Jones
18282 SW Mer Ct
Sherwood, OR 97140

2S131DC-10400
Franklin & Lisa Jones
17470 SW Cobble Ct
Sherwood, OR 97140

2S131CD-08800
Antonio & Nelly Juarez
17696 SW Galewood Dr
Sherwood, OR 97140

2S131CD-08700
Scott & Melissa Juskowiak
23667 SW Pinehurst Dr
Sherwood, OR 97140

2S131CC-15200
Paul & Gaily Kalkman
26954 SW Sanders Ter
Sherwood, OR 97140

2S131CD-12300
Marty & Kaori Kammerzell
17848 SW Dodson Dr
Sherwood, OR 97140

2S131CD-02600
Aziz Karim
17828 SW Galewood Dr
Sherwood, OR 97140

2S131CD-03600
Figler Kenneally
17735 SW Galewood Dr
Sherwood, OR 97140

2S131DC-16900
Zachary & Morgan Kibby
17450 SW Inkster Dr
Sherwood, OR 97140

2S131CD-14300
Douglas & Cara King
17619 SW Inkster Dr
Sherwood, OR 97140

2S131DC-13200
August Klatt
17393 SW Inkster Dr
Sherwood, OR 97140

3S106B0-00600
Walter & Rebecca Kluser
17982 SW Brookman Rd
Sherwood, OR 97140

2S131DC-11400
Karen Koehler
23935 SW Golden Pond Ter
Sherwood, OR 97140

3S106B0-01402
Kenneth & Leslie Kolb
24799 SW Oberst Rd
Sherwood, OR 97140

2S131DC-10500
Ryan & Holly Krause
17484 SW Cobble Ct
Sherwood, OR 97140

2S131DC-17100
Robert & Denise Kruger
17466 SW Inkster Dr
Sherwood, OR 97140

2S131DC-04600
Jeffrey & Janice Kuppenbender
17285 SW Greengate Dr
Sherwood, OR 97140

2S131CD-16600
Stephen Kuske & Michelle Percey
17562 SW Inkster Dr
Sherwood, OR 97140

2S131CC-17900
Dan & Amy Kutzkey
23955 SW Middleton Rd
Sherwood, OR 97140

2S131DC-06800
Naoki Kuze & Minh Luu
17143 SW Cobble Ct
Sherwood, OR 97140

2S131CD-13700
Kevin & Angie Lahart
17538 SW Dodson Dr
Sherwood, OR 97140

2S131DC-07000
John & Shawna Lapp
17115 SW Cobble Ct
Sherwood, OR 97140

3S10600-00200
Philip & Nancy Lapp
17400 SW Brookman Rd
Sherwood, OR 97140

2S131DC-03000
Jeffrey & Maria Lathrop
9265 SW Iowa Dr
Tualatin, OR 97062

2S131CD-18100
Tom & Todd Laune
17614 SW Elder View Dr
Sherwood, OR 97140

2S131CD-09000
Wilfred Liew
17662 SW Galewood Dr
Sherwood, OR 97140

2S131CD-14500
Matthew & Mary Liles
17651 SW Inkster Dr
Sherwood, OR 97140

2S131CC-16200
Sung Lim & Lim Kang
17970 SW Inkster Dr
Sherwood, OR 97140

2S131CD-18400
Gary & Cheryl Lite
17680 SW Elder View Dr
Sherwood, OR 97140

2S131CD-18300
Shannon Lopez
17672 SW Elder View Dr
Sherwood, OR 97140

2S131CD-09500
Jean & John Macaulay
17552 SW Galewood Dr
Sherwood, OR 97140

2S131DC-04800
Marchant & Susan Marchant
17261 SW Greengate Dr
Sherwood, OR 97140

2S131CD-12100
Joshua Martin
17872 SW Dodson Dr
Sherwood, OR 97140

2S131DC-05700
Kyal & Tricia Matte
17177 SW Greengate Dr
Sherwood, OR 97140

2S131DC-05300
Marcia Mcdonald
17213 SW Greengate Dr
Sherwood, OR 97140

2S131DC-04000
Melissa & Matthew Mckinney
17357 SW Greengate Dr
Sherwood, OR 97140

2S131DC-10200
Eric & Laurie Mcmuldren
17442 SW Cobble Ct
Sherwood, OR 97140

2S131DC-10000
Micah Ling
17414 SW Cobble Ct
Sherwood, OR 97140

2S131CD-04000
John & Sandra Lomison
Po Box 188
Twisp, WA 98856

2S131CD-11200
Laurence Lowe
17807 SW Dodson Dr
Sherwood, OR 97140

2S131DC-15700
Eric & Angela Machado
17318 SW Galewood Dr
Sherwood, OR 97140

2S131DC-09700
Christine Marr
17348 SW Cobble Ct
Sherwood, OR 97140

2S131DC-12800
Tad & Kristina Martin
17419 SW Inkster Dr
Sherwood, OR 97140

2S131CD-10400
Kevin & Amanda Mcconnell
17647 SW Dodson Dr
Sherwood, OR 97140

2S131CC-18700
Andrew & Wendy Mckechnie
18274 SW Mer Ct
Sherwood, OR 97140

2S131DC-12200
Jonathan Mcleod & Shannah Bode
23774 SW Pinehurst Dr
Sherwood, OR 97140

2S131CD-13300
Ryan & Leanne Fobert
17632 SW Dodson Dr
Sherwood, OR 97140

2S131CD-01900
Liston & Molly Liston
17898 SW Inkster Dr
Sherwood, OR 97140

2S131CD-02300
David & Patricia Long
1515 SW 5th Ave
Portland, OR 97201

2S131CD-03700
Richard Lowry
17749 SW Galewood Dr
Sherwood, OR 97140

2S131CD-10200
Laura Magana
17603 SW Dodson Dr
Sherwood, OR 97140

2S131CC-19200
Kevin & Lisa Marshall
18280 SW Maidenfern Ln
Sherwood, OR 97140

2S131CC-13400
Michael & Tamara Mathews
23791 SW Sanders Ter
Sherwood, OR 97140

2S131CD-17900
Mcdonnell Marilyn J Trust
17650 SW Mandel Ln
Sherwood, OR 97140

2S131CD-10600
Andrew Mckeever & Mary Huffman
17691 SW Dodson Dr
Sherwood, OR 97140

2S131CD-06800
Marilyn Mcmanimie
17893 SW Galewood Dr
Sherwood, OR 97140

2S131CC-19700
Christopher & Meerta Meyer
24002 SW Middleton Rd
Sherwood, OR 97140

2S131DC-07300
Richard Mikulak
17073 SW Cobble Ct
Sherwood, OR 97140

3S106BB-02502
Bradley Miller
18025 SW Brookman Rd
Sherwood, OR 97140

3S106BB-00200
Libardo Mitchell & Shane Bridges
10864 SW Brown St
Tualatin, OR 97062

2S131DC-10100
Nicholas & Laura Morad
17428 SW Cobble Ct
Sherwood, OR 97140

2S131CC-13700
David & Colleen Mulvihill
23871 SW Sanders Ter
Sherwood, OR 97140

2S131CD-15200
Thomas & Ilana Murray
17759 SW Inkster Dr
Sherwood, OR 97140

2S131CD-03300
Scott & Darlene Nakasone
17714 SW Galewood Dr
Sherwood, OR 97140

3S106B0-04000
Cesar & Zulma Rey
17354 SW Galewood Dr
Sherwood, OR 97140

2S131DC-03300
Ihab Obeidi
3 Becket St
Lake Oswego, OR 97035

3S106B0-01200
Timothy & Kathy Oldenstadt
24830 SW Labrousse Rd
Sherwood, OR 97140

2S131CC-19000
Jefferson Mildenberger
18281 SW Maidenfern Ln
Sherwood, OR 97140

2S131CC-13200
Aaron & Shannon Milton
23739 SW Sanders Ter
Sherwood, OR 97140

3S106BB-00700
Libardo Mitchell & Shane Bridges
10864 SW Brown St
Tualatin, OR 97062

2S131CD-15600
Barbara Morgan
17752 SW Inkster Dr
Sherwood, OR 97140

3S106B0-02000
Daniel Muro
24700 SW Labrousse Rd
Sherwood, OR 97140

2S131CD-09100
Faizuddin Mohhammed & Amtul Hajira
17644 SW Galewood Dr
Hanalei, HI 96714

3S106B0-03000
Jerry Josphine
1816 SW Salmin Berryd R
Sherwood, OR 97140

2S131CC-15600
Christine & David Nickerson
23868 SW Sanders Ter
Sherwood, OR 97140

2S131CD-12600
Lauri O'Connor
17812 SW Dodson Dr
Sherwood, OR 97140

2S131CD-03200
Scott & Tara Olheiser
17744 SW Galewood Dr
Sherwood, OR 97140

2S131CD-02500
Marjorie Miller
17840 SW Galewood Dr
Sherwood, OR 97140

2S131DC-12300
Matthew Mintun & Asha Fieldhouse
23790 SW Pinehurst Dr
Sherwood, OR 97140

3S106BB-01000
Libardo Mitchell & Shane Bridges
10864 SW Brown St
Tualatin, OR 97062

3S106B0-00302
Moser Delores A & Leroy J Trs
6424 Washington Ct
Lake Oswego, OR 97035

2S131DC-12700
Christopher & Katie Murphy
17425 SW Inkster Dr
Sherwood, OR 97140

2S131CD-15900
Robert Nairne
17700 SW Inkster Dr
Sherwood, OR 97140

2S131DC-09200
Scott Nelson & Lynn Debbie
17206 SW Cobble Ct
Sherwood, OR 97140

2S131CD-09200
Lindsay Norton
17618 SW Galewood Dr
Sherwood, OR 97140

2S131DC-01700
O'Hogan Living Trust
23841 SW Fox Run Pl
Sherwood, OR 97140

2S131DC-02100
Victor & Sharon Orella
23832 SW Golden Pond Ter
Sherwood, OR 97140

3S10600-00100
Gerald & Liz Ouellette
Po Box 1468
Sherwood, OR 97140

2S131CC-02700
Marshall Payne & Frances
23679 SW Sanders Ter
Sherwood, OR 97140

2S131CD-13600
Jeffrey Phelps & Maysia Cha
17560 SW Dodson Dr
Sherwood, OR 97140

2S131CC-19100
Donald & Debbie Price
18273 SW Maidenfern Ln
Sherwood, OR 97140

2S131DC-00900
Rader & Julie Rader
17116 SW Greengate Dr
Sherwood, OR 97140

2S131CD-02700
John Rances & Kelsey Darr
17816 SW Galewood Dr
Sherwood, OR 97140

2S131CD-10800
Erich & Julie Rebenstorf
17729 SW Dodson Dr
Sherwood, OR 97140

2S131DC-12400
Christie & Patrick Regan
17487 SW Inkster Dr
Sherwood, OR 97140

2S131CD-11700
Steven & Connie Rice
17867 SW Dodson Dr
Sherwood, OR 97140

2S131DC-09600
Lisa Ring
17320 SW Cobble Ct
Sherwood, OR 97140

2S131DC-01100
Christian & Elaine Owcarz
17140 SW Greengate Dr
Sherwood, OR 97140

2S131DC-03600
Kimra Peffers
17302 SW Greengate Dr
Sherwood, OR 97140

2S131DC-16100
Daniel & Theresa Pike
17366 SW Galewood Dr
Sherwood, OR 97140

2S131DC-09100
Jeremy & Cheryl Price
17192 SW Cobble Ct
Sherwood, OR 97140

2S131DC-13400
Sethu Radhakrishnan & Meenakshi
13216 NW Alvada St
Portland, OR 97229

3S106BB-02500
Donald & Joann Randall
10800 SW North Dakota St
Portland, OR 97223

2S131CD-15400
Joseph & Jessica Rector
17786 SW Inkster Dr
Sherwood, OR 97140

2S131CD-11000
Aaron & Kim Renner
17793 SW Dodson Dr
Sherwood, OR 97140

2S131DC-14300
Ridehalgh Pierce Living Trust
17855 SW Heatherwood Ln
Sherwood, OR 97140

3S106BB-00300
Steve & Amerilyn Rivett
24100 SW Middleton Rd
Sherwood, OR 97140

2S131CD-14900
Robert & Diane Paetsch
17709 SW Inkster Dr
Sherwood, OR 97140

2S131DC-03700
Melissa & Barend Pennings
80 Central Park W APT 22G
New York, NY 10023

2S131DC-02200
Dhia & Shelley Saleh
16800 NE Mountain Home Rd
Sherwood, OR 97140

2S131CD-11900
Juan & Nicette Quintero
17895 SW Dodson Dr
Sherwood, OR 97140

2S131CD-06200
Veronica Ramos & Samuel Aguilera
17811 SW Galewood Dr
Sherwood, OR 97140

2S131CD-12200
Frank Ray & Ame Heironimus-Ray
17860 SW Dodson Dr
Sherwood, OR 97140

2S131CD-02200
Melissa Regan
17876 SW Galewood Dr
Sherwood, OR 97140

2S131DC-16000
Neil & Lindsay Roberts
17354 SW Galewood Dr
Sherwood, OR 97140

2S131CD-16300
Anthony & Angela Rieger
17630 SW Inkster Dr
Sherwood, OR 97140

2S131DC-06600
Donald & Tina Rogie
17171 SW Cobble Ct
Sherwood, OR 97140

2S131DC-03100
Frank & Sara Rossi
23811 SW Golden Pond Ter
Sherwood, OR 97140

2S131DC-01500
Jeffrey & Salina Rygh
23862 SW Fox Run Pl
Sherwood, OR 97140

2S131CD-07600
Rene & Chelsea Saldivar
23614 SW Pinehurst Dr
Sherwood, OR 97140

2S131DC-02700
Sandberg & Cristina Sandberg
23879 SW Golden Pond Ter
Sherwood, OR 97140

2S131DC-16800
Mark & Mindy Sandilands
17442 SW Inkster Dr
Sherwood, OR 97140

2S131CD-18200
Benjamin & Katie Sandvick
17620 SW Elder View Dr
Sherwood, OR 97140

2S131CD-14400
Honrado & Maria Sapitan
4720 Masters Dr
Newberg, OR 97132

2S131CD-02900
J Savage
17788 SW Galewood Dr
Sherwood, OR 97140

2S131DC-08700
Robert & Debra Savage
17136 SW Cobble Ct
Sherwood, OR 97140

2S131CD-13100
Timothy & Elizabeth Schaefer
17676 SW Dodson Dr
Sherwood, OR 97140

2S131CD-13000
Gregory & Marie Schapp
17708 SW Dodson Dr
Sherwood, OR 97140

2S131DC-14100
Paul Schierholtz & Moran Colleen
17364 SW Inkster Dr
Sherwood, OR 97140

2S131CC-18500
Bjorn & Timi Schulze
18258 SW Mer Ct
Sherwood, OR 97140

2S131CC-15900
Timothy & Erin Schweitzer
23796 SW Sanders Ter
Sherwood, OR 97140

3S10600-00104
Linda & Richard Scott
17433 SW Brookman Rd
Sherwood, OR 97140

2S131CD-11600
Mark Sena & Catherine Boykin-Sena
17855 SW Dodson Dr
Sherwood, OR 97140

2S131DC-12900
Allison Shaw
17413 SW Inkster Dr
Sherwood, OR 97140

2S131DC-10900
Cameron & Miran Shayegi
17419 SW Cobble Ct
Sherwood, OR 97140

2S131CD-02000
Marcy Sherfery
17886 SW Inkster Dr
Sherwood, OR 97140

2S131CC-16300
Sherwood City Of
22560 SW Pine St
Sherwood, OR 97140

2S131CC-18000
Sherwood City Of
22560 SW Pine St
Sherwood, OR 97140

2S131CC-19800
Sherwood City Of
22560 SW Pine St
Sherwood, OR 97140

2S131CD-01200
Sherwood City Of
22560 SW Pine St
Sherwood, OR 97140

2S131CD-01300
Sherwood City Of
22560 SW Pine St
Sherwood, OR 97140

2S131CD-06900
Sherwood City Of
22560 SW Pine St
Sherwood, OR 97140

2S131CD-07000
Sherwood City Of
22560 SW Pine St
Sherwood, OR 97140

2S131CD-07100
Sherwood City Of
22560 SW Pine St
Sherwood, OR 97140

2S131CD-07300
Sherwood City Of
22560 SW Pine St
Sherwood, OR 97140

2S131CD-17300
Sherwood City Of
22560 SW Pine St
Sherwood, OR 97140

2S131CD-17400
Sherwood City Of
22560 SW Pine St
Sherwood, OR 97140

2S131CD-17500
Sherwood City Of
22560 SW Pine St
Sherwood, OR 97140

2S131DC-06200
Sherwood City Of
22560 SW Pine St
Sherwood, OR 97140

2S131DC-06300
Sherwood City Of
22560 SW Pine St
Sherwood, OR 97140

2S131DC-17300
Sherwood City Of
22560 SW Pine St
Sherwood, OR 97140

2S131DC-17400
Sherwood City Of
22560 SW Pine St
Sherwood, OR 97140

2S131DD-11500
Sherwood City Of
22560 SW Pine St
Sherwood, OR 97140

2S131DC-05900
Jon & Stacey Shields
17135 SW Greengate Dr
Sherwood, OR 97140

2S131CD-14600
Quinn & Tia Shimer
17673 SW Inkster Dr
Sherwood, OR 97140

2S131DC-05200
Anthony Shires
17221 SW Greengate Dr
Sherwood, OR 97140

2S131DC-06900
Satish Singh
17129 SW Cobble Ct
Sherwood, OR 97140

3S106BB-02501
Larry Skoglund & Marie
18063 SW Brookman Rd
Sherwood, OR 97140

3S106BB-01600
Travis Smallwood
3001 N Meridian St
Newberg, OR 97132

3S106B0-01301
Snider Family Trust
Po Box 426
Sherwood, OR 97140

2S131DC-03400
Anna Song & Blake Applegate
17278 SW Greengate Dr
Sherwood, OR 97140

2S131CD-11100
Soto & Sarah Soto
17836 SW Dodson Dr
Sherwood, OR 97140

2S131CD-12400
Joseph & Sarah Soto
17836 SW Dodson Dr
Sherwood, OR 97140

2S131DC-16400
Matthew & Jennifer Soukup
17416 SW Inkster Dr
Sherwood, OR 97140

2S131CC-14900
Christopher & Michelle Sparks
18102 SW Swordfern Ln
Sherwood, OR 97140

2S131DC-10300
Brant & Katrien Stai
17456 SW Cobble Ct
Sherwood, OR 97140

2S131CC-17000
Adam & Alison Starling
24006 SW Aspen Lakes Dr
Sherwood, OR 97140

2S131CD-02100
George & Constance Staubach
17888 SW Galewood Dr
Sherwood, OR 97140

2S131DC-00300
Steel Tek Industries Inc
Po Box 908
Sherwood, OR 97140

2S131DC-00400
Steel Tek Industries Inc
Po Box 908
Sherwood, OR 97140

2S131DC-00500
Steel Tek Industries Inc
Po Box 908
Sherwood, OR 97140

2S131CC-13100
Scott & Christine Steiner
23713 SW Sanders Ter
Sherwood, OR 97140

2S131CD-10900
Richard & Teresa Steph
56 S Arroyo Dr
Saint George, UT 84790

2S131DC-00800
Casey & Randy Stewart
17104 SW Greengate Dr
Sherwood, OR 97140

2S131DC-07100
Karen Stewart
230 4th St
Lake Oswego, OR 97034

2S131CD-03000
Kenneth Stoller & Lindsay Johnson
17774 SW Galewood Dr
Sherwood, OR 97140

2S131CD-01600
Suzanne & Troy Strom
17934 SW Inkster Dr
Sherwood, OR 97140

2S131DC-04700
Diane & Dimitrios Golemis
17273 SW Greengate Dr
Sherwood, OR 97140

3S106BB-02301
Mark Symonds
24400 SW Middleton Rd
Sherwood, OR 97140

2S131CD-14800
Yanyang Tan & Ling Cui
17046 SW Cobblestone Dr
Sherwood, OR 97140

3S106BB-02200
Danny & Joanne Tatman
24351 SW Middleton Rd
Sherwood, OR 97140

2S131DC-09900
Clifton Taylor & Dorothy Houlihan
17400 SW Cobble Ct
Sherwood, OR 97140

2S131CD-09400
Fernando & Martha Marquez
17574 SW Galewood Dr
Sherwood, OR 97140

2S131CD-08600
Dylan & Molly Stinson
23645 SW Pinehurst Dr
Sherwood, OR 97140

2S131CD-09800
Peter Tumanoff & Carmen Enersen
17509 SW Dodson Dr
Sherwood, OR 97140

2S131DC-02300
Wayne Vaincourt & Catherine Ingram
23898 SW Golden Pond Ter
Sherwood, OR 97140

2S131CD-03400
Luther & Karla Vanderburg
17705 SW Galewood Dr
Sherwood, OR 97140

2S131DC-13300
Sathish Janjam V & Sheela Surisetty V
17385 SW Inkster Dr
Sherwood, OR 97140

2S131CD-13400
Tamarisk Llc
3 Crestwind Dr
Rancho Palos Verdes, CA 90275

2S131DC-05100
James Tanabe & Kay Dianne
17229 SW Greengate Dr
Sherwood, OR 97140

2S131CD-14100
Riley & Lindsay Taylor
17567 SW Inkster Dr
Sherwood, OR 97140

2S131DC-05600
Ronald & Diana Thompson
6655 SW Kingsview Ct
Portland, OR 97223

2S131DC-04200
Justin & Pamela Tishendorf
17333 SW Greengate Dr
Sherwood, OR 97140

2S131CD-10500
Kristin Trost
17669 SW Dodson Dr
Sherwood, OR 97140

2S131DC-11900
Hiliary & Juel Turner
514 Country Club Rd
Lake Oswego, OR 97034

2S131CD-06700
Valeriani Family Trust
17881 SW Galewood Dr
Sherwood, OR 97140

3S106BB-00400
Joel Vasey
18167 SW Pearl St
Sherwood, OR 97140

3S106BB-02300
Mark Symonds
24400 SW Middleton Rd
Sherwood, OR 97140

2S131CD-07800
Richard & Anna Tamburro
23564 SW Pinehurst Dr
Sherwood, OR 97140

3S106BB-01900
Danny & Joanne Tatman
24351 SW Middleton Rd
Sherwood, OR 97140

2S131DC-02900
Mo & Holly Taylor
23851 SW Golden Pond Ter
Sherwood, OR 97140

2S131DC-16500
Linda & James Thompson
17422 SW Inkster Dr
Sherwood, OR 97140

2S131DC-08200
Isidro Toscano & Rogelio Onofre
17066 SW Cobble Ct
Sherwood, OR 97140

2S131CD-19800
Jessica Tsui
17611 SW Elder View Dr
Sherwood, OR 97140

2S131CD-15300
Twombly Eline O Rev Liv Trust
17797 SW Inkster Dr
Sherwood, OR 97140

2S131DC-06500
Jessica Vanbergen
17185 SW Cobble Ct
Sherwood, OR 97140

2S131CD-02800
Barbara Verboort
23905 Butteville Rd NE
Aurora, OR 97002

2S131CD-12800
Miguel Villa & Rovi Japin
17768 SW Dodson Dr
Sherwood, OR 97140

2S131CD-13500
Lisa & Brian Villar
17586 SW Dodson Dr
Sherwood, OR 97140

2S131CD-16000
Matthew Vondrachek
17684 SW Inkster Dr
Sherwood, OR 97140

2S131CC-14500
Michael & Dana Walsh
18184 SW Swordfern Ln
Sherwood, OR 97140

3S106B0-01401
Wendy & Lawrence Wells
24895 SW Oberst Rd
Sherwood, OR 97140

2S131CC-19300
John & Christy Westover
18288 SW Maidenfern Ln
Sherwood, OR 97140

2S131CC-15800
Christopher & Tracie Wickham
23816 SW Sanders Ter
Sherwood, OR 97140

2S131DC-10800
Rod & Sandra Widows
17433 SW Cobble Ct
Sherwood, OR 97140

2S131DC-01900
Douglas Williamson & Cecile Valastro
23804 SW Golden Pond Ter
Sherwood, OR 97140

2S131CD-03100
Lisa Winchester
4231 NE 66th Ave
Portland, OR 97218

2S131DC-07200
Jonathan Wisniewski
17087 SW Cobble Ct
Sherwood, OR 97140

2S131CD-09600
Wei Zha & Juanjuan Yang
17530 SW Galewood Dr
Sherwood, OR 97140

2S131CD-11300
Carl & Marie Wright
22992 SW Saunders Dr
Sherwood, OR 97140

3S106BB-00100
James & Karly Wright
18000 SW Harrison St
Sherwood, OR 97140

2S131DC-02400
Eitoku & Naoko Yamanaka
23921 SW Golden Pond Ter
Sherwood, OR 97140

2S131CC-13300
Young Jay Scott & Young Kimberly S
23765 SW Sanders Ter
Sherwood, OR 97140

2S131CC-18400
John & Kristin Young
18251 SW Mer Ct
Sherwood, OR 97140

2S131DC-04100
Baolin Wan
17345 SW Greengate Dr
Sherwood, OR 97140

2S131DC-17200
Nasrin Zaman
2519 Sierra Sage St
Las Vegas, NV 89134

2S131DC-12000
Gabriel & Adina Zapodeanu
23742 SW Pinehurst Dr
Sherwood, OR 97140

2S131CD-11800
Bruce & Angela Zappe
17879 SW Dodson Dr
Sherwood, OR 97140

3S106B0-00700
Carol Zarzana
Po Box 781
Sherwood, OR 97140

3S106B0-00800
Carol Zarzana
Po Box 781
Sherwood, OR 97140

2S131CC-15500
Daniel & Jeannette Ziegler
23894 SW Sanders Ter
Sherwood, OR 97140

2S131DC-07700
Anthony Zukauskas
17005 SW Cobble Ct
Sherwood, OR 97140

Raymond & Bonnie Wright
16450 SW Brookman Road
Sherwood, OR 97140

Neil Shannon
23997 SW Red Fern Drive
Sherwood, OR 97140

Don Richards
P.O. Box 1488
Wilsonville, OR 97070

AKS ENGINEERING & FORESTRY, LLC
12965 SW Herman Road, Suite 100, Tualatin, OR 97062
P: (503) 563-6151 F: (503) 563-6152

OFFICES IN: TUALATIN, OR - VANCOUVER, WA - KEIZER, OR - BEND, OR

Brookman Residential Subdivision	Neighborhood Meeting
May 16, 2018	Marjorie Stewart Community Center
6:00 p.m.	21907 SW Sherwood Blvd, Sherwood, OR 97140

PLEASE PRINT CLEARLY

Printed Name	Full Mailing Address	Email Address	Zip Code	Phone #
Cliff Taylor Dorothy Howlihan Taylor	17400 SW Cobble CT Sherwood, OR	Gentaylor@ Comcast.net	97140	503-625- 9120
Bonnie DAVID	17117 SW Brookman ed	doug.david512 @yahoo.com	97140	~~503-504-~~ ~~6412~~ 6472 503 504 6412
Steve Y Ameilyn Livett	24100 SW Middleton Rd Sherwood 97140	mernyn@comcast.net	97140	503-625-6486

AKS ENGINEERING & FORESTRY, LLC
12965 SW Herman Road, Suite 100, Tualatin, OR 97062
P: (503) 563-6151 F: (503) 563-6152
OFFICES IN: TUALATIN, OR - VANCOUVER, WA - KEIZER, OR - BEND, OR

Brookman Residential Subdivision	Neighborhood Meeting
May 16, 2018	Marjorie Stewart Community Center
6:00 p.m.	21907 SW Sherwood Blvd, Sherwood, OR 97140

PLEASE PRINT CLEARLY

Printed Name	Full Mailing Address	Email Address	Zip Code	Phone #
Dodie Jensen	850 SW 67th	dodiejensen@msn.com	97225	503 793-2816
Joe Broadhurst			97140	

AKS ENGINEERING & FORESTRY, LLC
12965 SW Herman Road, Suite 100, Tualatin, OR 97062
P: (503) 563-6151 F: (503) 563-6152
OFFICES IN: TUALATIN, OR - VANCOUVER, WA - KEIZER, OR - BEND, OR

Brookman Residential Subdivision	Neighborhood Meeting
May 16, 2018	Marjorie Stewart Community Center
6:00 p.m.	21907 SW Sherwood Blvd, Sherwood, OR 97140

PLEASE PRINT CLEARLY

Printed Name	Full Mailing Address	Email Address	Zip Code	Phone #
BUZZ BONNIE WRIGHT	16450 SW BROOKMAN SHERWOOD, OR 97140	GARDENINGDAZE@HOTMAIL.COM	97140	303-725-4039

AKS ENGINEERING & FORESTRY, LLC
12965 SW Herman Road, Suite 100, Tualatin, OR 97062
P: (503) 563-6151 F: (503) 563-6152

OFFICES IN: TUALATIN, OR - VANCOUVER, WA - KEIZER, OR - BEND, OR

Brookman Residential Subdivision	Neighborhood Meeting
May 16, 2018	Marjorie Stewart Community Center
6:00 p.m.	21907 SW Sherwood Blvd, Sherwood, OR 97140

PLEASE PRINT CLEARLY

Printed Name	Full Mailing Address	Email Address	Zip Code	Phone #
Sue Drown	16350 SW Brookman	SJD752@yahoo.com	97140	
Don Richards	P.O. Box 1488 Wilsonville, OR 97070	donrichards.law@gmail.com	97070	503-694-5101 503-577-6160

May 17, 2018

Neighborhood Meeting Notes: Brookman Residential Subdivision

Meeting Date: May 16, 2018
Time: 6:00 PM
Location: Marjorie Stewart Senior Center, 21907 SW Sherwood Boulevard, Sherwood, OR

In preparation for the submission of a land use application to the City of Sherwood, the applicant conducted a neighborhood meeting in accordance with applicable City regulations. Chris Goodell and Melissa Slotemaker from AKS Engineering & Forestry were present and met with attendees. The meeting was held in an open house type format where attendees could view the project's conceptual plans and ask questions of the applicant's consultants. Two layout options were displayed: a conceptual Subdivision Plan and a conceptual Planned Unit Development Plan. Sign-in sheets, business cards, and a handout describing the exhibits were provided.

The following list includes the primary topics of conversation:

- Past planning efforts including the UGB amendment, the Brookman Addition Concept Plan, and annexation
- The City application process and anticipated schedule for the land use application, construction permitting, site work/infrastructure improvements, and home construction
- Site topography as it relates to necessary earthwork and drainage in proximity to neighboring properties
- The planned trail/pedestrian connection system including proximity to existing adjacent neighborhoods
- The relationship between this project and surrounding properties (and their potential future development) including connections for transportation, open space, utility connections (principally public sanitary sewer).
- The location of the project's access to SW Brookman Road (opposite SW Oberst Road) including a discussion of sight distance requirements, anticipated frontage improvements, and right-of-way dedication
- The potential timing for anticipated improvements to SW Brookman Road
- The existing geometry and configuration of SW Brookman Road (horizontal curves, vertical curves, road width) as it relates to safety for all modes of traffic
- Jurisdictional regulatory authority for SW Brookman Road
- Existing speed limit violations on SW Brookman Road
- Attendees stated a preference for the Subdivision layout with a lower density over the PUD layout with a higher density

The meeting concluded at approximately 7:00 p.m.

Sincerely,
AKS ENGINEERING & FORESTRY, LLC

Chris Goodell, AICP, LEED[AP]

Exhibit G: Natural Resource Assessment

Brookman Property PLA and Residential Subdivision
Tier 2 – Alternatives Analysis
Natural Resource Assessment

Date: May 8, 2018

Prepared For:
Brookman Development, LLC
P.O. Box 61426
Vancouver, Washington 98666

Prepared By:
AKS Engineering & Forestry, LLC
Kayla Katkin, AWB, Natural Resource Specialist

Site Information:
T3S, R1W, Section 06B, Tax Lots 100 and 200
And T3S, R1W, Section 06, Tax Lot 103
Sherwood, Washington County, Oregon

AKS ENGINEERING & FORESTRY
12965 SW Herman Road, Suite 100
Tualatin, OR 97062
(503) 563-6151

Table of Contents

Tables

Figures

Appendices

Appendix A: Brookman Residential Subdivision Wetland Determination Data Sheets and DSL Concurrence Letter

Appendix B: VECO Data Sheets (VECO Plots A-G)

Appendix C: Representative Site Photographs

Appendix D: Brookman Residential Subdivision Vegetated Corridor Mitigation and Enhancement Planting Specification Table

Appendix E: Streamflow Duration Assessment Method for the Pacific Northwest

Introduction

AKS Engineering & Forestry, LLC (AKS) conducted a site assessment on Tax Lots 100 and 200 of Tax Map 3S 1 6B and Tax Lot 103 of Tax Map 3S 1 6. The project site is located north of the SW Brookman Road and SW Oberst Road intersection, in Sherwood, Washington County, Oregon (attached Figures 1 and 2A-2B).

The on-site boundaries of five wetlands (referred to as Wetland A through E) and a non-jurisdictional ephemeral drainage were delineated by AKS. Slopes adjacent to all wetlands on the project site (water quality sensitive areas) are less than 25 percent, requiring a 50-foot wide vegetated corridor (undisturbed buffer) from the edge of all wetlands. The ephemeral drainage does not require a vegetated corridor.

The project, referred to as Brookman Residential Subdivision, consists of a single-phase subdivision. The layout includes single-family housing, local streets, a stormwater treatment facility, a community park, pedestrian foot paths, and open spaces.

In addition to a Service Provider Letter (SPL) for the subdivision, the applicant requests a SPL for a property line adjustment (PLA) for Tax Lots 100 and 200. The subdivision will occur on the revised Tax Lot 100 and 103. The applicant will not own the revised Tax Lot 200. Off-site improvements on Tax Lot 200 consisting of an emergency vehicle gravel road is required as part of the subdivision project. The applicant will obtain an easement for the off-site improvements.

To accommodate site development, permanent fill to two wetlands (Wetlands B and C) is necessary, requiring a Tier 2 Alternatives Analysis Assessment. Permanent impact to less than 20 percent the width of *degraded* and *marginal* condition vegetated corridor for lots requires a Minor Encroachment review. An 8-foot wide paved path, providing pedestrian access throughout the development, requires vegetated corridor impacts, which is considered an Allowed Use per Section 3.05.8 of CWS Design and Construction Standards. Removal of one native tree with greater than 6-inch diameter breast height (DBH) is required for a portion of the pedestrian path within the outer 5 feet of the vegetated corridor, requiring a Minor Encroachment review. Permanent impact to less than 30 percent of the width of *marginal* condition vegetated corridor for lots west of Tract C require a Tier 1 Alternatives Analysis Assessment review. Temporary impacts to *degraded* condition vegetated corridor will occur for the installation of utility infrastructure, which is considered an Allowed use per Section 3.05.5 of the CWS Design and Construction Standards.

Permanent vegetated corridor impacts associated with allowed use, minor encroachment and Tier 1 review will be mitigated through on-site replacement mitigation at a 1:1 ratio. The replacement mitigation area will be contiguous with existing on-site vegetated corridor and will be planted with native trees and shrubs to meet *good* corridor condition standards as defined in Section 3.14.2 of CWS Design and Construction Standards. Wetland fill will be mitigated through the purchase of wetland mitigation bank credits at an approved mitigation bank. The vegetated corridor adjacent to wetlands that will be completely filled will be mitigated through payment to provide, via wetland mitigation bank credit purchase.

This memo has been prepared to meet CWS natural resource assessment requirements listed under Chapter 3 of the April 2017 R&O Design and Construction Standards.

Property Line Adjustment

The project requires a PLA between Tax Lots 100 and 200 of Tax Map 3S 1 6B. The two properties comprise a total area of approximately 29.72 acres. As a result of the PLA, Tax Lot 100 will increase to approximately 24.20 acres and Tax Lot 200 will decrease to approximately 5.52 acres. The approximate wetland boundary and 50-foot vegetated corridor are shown on the PLA figure included as Figure 5. Tax Lot 200 is dominant in non-native grasses with the approximated vegetated corridor in *degraded condition*. The PLA adheres to Section 3.09.2 of CWS Design and Construction Standards and 4.10 acres (178,359 square feet) of buildable area on Tax Lot 200 will be retained for future development, triggering future vegetated corridor enhancement. Vegetated corridor enhancement within the revised portions of Tax Lot 200 are not proposed as part of the Brookman Residential Subdivision project. Vegetated corridor does not extend within the off-site easement for the gravel emergency road on the revised tax lot 200.

Existing Conditions and Background

Site Development Property

The land use in the project site is currently and has been historically used for rural residential purposes. The surrounding area land use is rural residential with high density residential land use to the north. The study area contains a single-family home and outbuildings on Tax Lots 100 and 103 with the majority of the study area occupied by open fields actively used for cattle and horse grazing. The western portion of the project site, is dominated by Oregon ash (*Fraxinus latifolia*, FACW), Douglas-fir (*Pseudotsuga menziesii*, FACU), Ponderosa pine (*Pinus ponderosa*, FACU), English hawthorn (*Crataegus monogyna*, FAC), Himalayan blackberry (*Rubus armeniacus*, FAC), red alder (*Alnus rubra*, FAC), tall false rye grass *(Schedonorus arundinaceus*, FAC*),* colonial bent (*Agrostis capillaris*, FAC), English holly (*Ilex aquifolium*, FACU), field meadow-foxtail (*Alopecurus pratensis*, FAC), common velvet grass (*Holcus lanatus*, FAC), dovefoot geranium (*Geranium molle*, NOL), bluegrass (*Poa* species, FAC), and common dandelion (*Taraxacum officinale*, FACU). The central portion of the site is dominated by a planted Douglas-fir forest that generally lacks a woody understory. The eastern portion of the site is heavily grazed by horses and is dominated by colonial bent and common rush (*Juncus effusus*, FACW) with the southeast corner of the tax lot dominated by Douglas-fir, red alder, English holly, Himalayan blackberry, dovefoot geranium and creeping wild rye. A gravel driveway extends from SW Brookman Road to access the home and outbuildings on Tax Lot 103.

The topography of the study area in the west, slopes westward toward Wetland A. The central portion and higher elevations of the study area gradually slope northerly. The topography in the southeast area slopes easterly towards Cedar Creek, located off-site to the east.

The following soil units are mapped within the study area, according to the Natural Resources Conservation Service (NRCS) Washington County Area Soil Survey Map (Figure 3 in Appendix A):

- Aloha silt loam, (Unit 1) – Non-hydric, 1% hydric Huberly inclusions in terraces
- Huberly silt loam, (Unit 22) – Hydric, 3% hydric Verboort inclusions in floodplains
- Verboort silty clay loam, (Unit 42) – Hydric, 4% hydric Dayton inclusions in floodplains, 3% hydric Wapato inclusions in terraces, 2% hydric Labish inclusions in relict lakebeds, 1% hydric Cove, silty clay loam surface inclusions in floodplains
- Wapato silty clay loam, (Unit 43) – Hydric, 4% hydric Cove, silty clay loam inclusions in floodplains, 3% hydric Labish inclusions in relict lakebeds

- Woodburn silt loam, 3% - 7% slopes, (Unit 45B) – Non-hydric, 1% hydric Dayton inclusions in terraces

USFWS National Wetland Inventory

The U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) maps one small freshwater emergent wetland off-site to the west as seen on Figure 4. Wetlands A through E and the ephemeral drainage delineated under this study were not present on the NWI map. The study area was not included in the City of Sherwood Local Wetland Inventory.

Water Quality Sensitive Areas

The methodology used to determine the presence of wetlands followed the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory, 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* (Version 2.0) (Wakeley et al., 2010). The *National Wetland Plant List: 2016 Wetland Ratings* (Lichvar et al., 2016) was used to assign wetland indicator status for the appropriate region. The flow regime for the on-site portion of the ephemeral drainage was assessed using the *Streamflow Duration Assessment Method for the Pacific Northwest*, (EPA, 2015). The streamflow duration field assessment form is included in Appendix E.

A total of five wetlands, one of which is isolated and an ephemeral drainage were delineated on the project site. The wetland and water boundaries, and sample plot locations were flagged in the field and professionally land surveyed by AKS and are shown in Figures 6–6D, Existing Conditions Figures.

A wetland delineation report was prepared by AKS and describes wetland and water features delineated on-site. The report was submitted to DSL and received concurrence from DSL. The DSL delineation concurrence letter and wetland determination data sheets are included as Appendix A.

Summary of On-Site Water Quality Sensitive Areas

Wetlands A through E consist of generally Palustrine Emergent (PEM) wetlands (a portion of Wetland A is Palustrine Forested (PFO) wetland and a portion of Wetland D is Palustrine Scrub Shrub (PSS) with Slope, Slope Outflow or Slope/ Flats hydrogeomorphic (HGM) classifications. The wetland boundaries were delineated based on a change in the landform from concave low elevation areas to a higher elevation convex relief landform in the adjacent upland. Adjacent uplands also lacked hydric soil indicators.

Wetlands

Wetland A is mostly a PEM wetland, with a small forested community (PFO) located in the western portion of the study area near the toe of a hillslope. Wetland conditions extend off-site to the south. The PFO portion of Wetland A was dominated by a marginally dense canopy of Oregon ash, with a generally open understory of Himalayan blackberry, common velvet grass, and dovefoot geranium. The emergent portion of the wetland was dominated by grazed field meadow-foxtail and bluegrass.

Wetlands B and C are PEM wetlands located entirely within Tax Lot 100. Both wetlands are concave depressions located on a hillslope. Wetland B appears to have a subsurface hydrologic connection to Wetland C via an agricultural drain tile located at the southern portion of Wetland B. Wetland C hydrology extends off-site to the southeast via a 12-inch concrete culvert under a gravel driveway to the east. The off-site culvert outlet appears to discharge into a channel that has a connection to Cedar Creek located off-site. Wetland B is dominated by tall false rye grass. Wetland C is dominated by tall false rye grass, colonial bent and annual blue grass (*Poa annua*, FAC).

Wetland D is mostly a PEM wetland with a PSS community in the northwestern portion of the wetland located in the northeastern portion of Tax Lot 100 and the northwestern portion of Tax Lot 103. Wetland D is located along a northeasterly facing hillslope. Wetland conditions extend off-site slightly to the north. An ephemeral drainage discharges into the wetland from the northwest. The PSS portion of Wetland D (located on Tax Lot 100) was dominated by scattered English hawthorn and clustered rose (*Rosa pisocarpa*, FAC) with colonial bent, bluegrass, and tall false rye grass in the herbaceous layer. Vegetation in the PEM portion of the wetland was actively grazed by horses during our site visits and was dominated by colonial bent and common rush.

Wetland E is a PFO wetland located in the northwestern portion of the project area, north of the railroad. Wetland conditions extend off-site. The on-site wetland is dominated by Oregon ash and slough sedge (*Carex obnupta*, OBL).

Non-Wetland Water

The centerline for an ***ephemeral drainage*** was delineated in the northeastern portion of Tax Lot 100. This feature conveys upland surface runoff only during heavy rain events. It does not convey groundwater, as supported by a lack of hydrophytic vegetation in the vicinity of the feature. The on-site portion of the drainage enters the site from the north, just east of an 18-inch culvert located under the railroad, and flows southwesterly discharging into Wetland D. Within the study area, the channel averages an approximately 1-foot wide bed with approximately 6-inch tall banks. Flow within the channel was approximately 3-inches deep during our March 2017 site visits, which was after a period of heavy rainfall. The channel bed is unvegetated.

Extent of the Vegetated Corridor

The slopes adjacent to Wetlands A-E are less than 25 percent, requiring a 50-foot wide vegetated corridor. The extent of the vegetated corridor was determined based on CWS Standards Section 3.03. Wetland conditions associated with Wetland E extend beyond the study area. The actively used railroad severs the vegetated corridor associated with Wetland E from extending onto the project site.

According to Section 1.03.56, a Sensitive Area only includes intermittent or perennial streams. Therefore, the ephemeral drainage does not require a vegetated corridor.

Representative slope measurements and the extent of the vegetated corridor are shown on attached Figures 6-6D. Table 1 describes the on-site area associated with each delineated water quality sensitive area and the associated vegetated corridor.

Table 1. Water Quality Sensitive Areas and the Associated Vegetated Corridor Widths

Water Quality Sensitive Area	Classification	Vegetated Corridor Width (feet)
Wetland A	PFO/PEM	50
Wetland B	PEM	50
Wetland C	PEM	50
Wetland D	PSS/PEM	50

Existing Condition of the Vegetated Corridor

The existing conditions of the on-site vegetated corridors were determined according to CWS vegetated corridor Standards in Table 3-3. The CWS vegetated corridor standards are based on the presence of tree canopy and percent cover of native trees, shrubs, and groundcovers. Vegetation communities present within the on-site vegetated corridor are documented at vegetated corridor plots (VECO Plot) A through G. The locations of the VECO Plots are shown on Figures 6A-6D. VECO Plot datasheets are provided in Appendix B. Representative photographs of the existing conditions of the vegetated corridor are included in Appendix C.

VECO Plot A is located in the western portion of the project site and documents the adjacent corridor to the west of Wetland A. The vegetation community documented at VECO Plot A consists of a Douglas-fir and Oregon ash tree canopy with a shrub layer that includes beaked hazelnut (*Corylus cornuta*, FACU) and non-native English Hawthorn. The herbaceous layer is dominant in non-native grasses. Due to the native tree canopy of 60 percent and predominant cover by non-native species (90 percent), the vegetated corridor associated with VECO Plot A was determined to be in ***marginal*** condition.

VECO Plot B is located in the western portion of the project site and documents the adjacent corridor to the east of Wetland A. The vegetation community documented at VECO Plot B consists of a lack of tree canopy and shrub layer and an herbaceous layer dominant in tall false rye grass, colonial bent and common dandelion. Due to an absent tree canopy and shrub layer and predominant cover by non-native species (100 percent), the vegetated corridor associated with VECO Plot B was determined to be in ***degraded*** condition.

VECO Plot C is located in the northern portion of the project area and documents the adjacent corridor to the west of Wetland D. The vegetation community at VECO Plot C consists of a minimal Douglas-fir tree canopy (15 percent) with a shrub layer dominant in English hawthorn and Scot's broom (*Cytisus scoparius*, NOL) with clustered rose and Himalayan blackberry. The herbaceous layer is dominant in non-native weedy grasses throughout the corridor. Due to the lack of a dense tree canopy and predominant cover by non-native species (115 percent) the vegetated corridor associated with VECO Plot C was determined to be in ***degraded*** condition.

VECO Plot D documents the adjacent corridor to the east of Wetland D. The vegetation community documented at VECO Plot D consists of a lack of tree and shrub canopy and an herbaceous layer dominant in colonial bent with lesser amounts of common selfheal (*Prunella vulgaris*, FACU) and tall false rye grass. Due to an absent tree canopy and shrub layer and predominant cover by non-native species (100 percent), the vegetated corridor associated with VECO Plot D was determined to be in ***degraded*** condition.

VECO Plot E is centrally located in the project area and documents the condition of the corridor associated with Wetland B. The vegetation community documented at VECO Plot E consists of a tree canopy dominant in Douglas-fir and English hawthorn and a shrub layer dominant in Himalayan blackberry and clustered rose. The herbaceous layer is dominant in tall false rye grass with Canadian thistle (*Cirsium arvense*, FAC) and sticky-willy (*Galium aparine*, FACU). Due to a tree canopy of 50 percent and predominant cover by non-native species (95 percent), the vegetated corridor associated with VECO Plot E was determined to be in ***marginal*** condition.

VECO Plot F documents the majority of the adjacent corridor that surrounds Wetland C. The vegetation community documented at VECO Plot F consists of a lack of tree and shrub canopy and an herbaceous

layer dominant in non-native grasses. Due to an absent tree canopy and shrub layer and predominant cover by non-native species (90 percent), the vegetated corridor associated with VECO Plot F was determined to be in ***degraded*** condition.

VECO Plot G documents the condition of the southern portion of the corridor associated with Wetland C. The vegetation community documented at VECO Plot G consists of a tree canopy dominant in Douglas-fir. The sparse herbaceous layer is dominant in tall false rye grass and pineland sword fern (*Polystichum munitum*, FACU). Due to the tree canopy of 60 percent and predominant cover by native species (65 percent), the vegetated corridor associated with VECO Plot G was determined to be in ***marginal*** condition.

Project

Project Overview and Impact Summary

The project consists of a single phase residential subdivision. The key components of the subdivision include single-family housing (consistent with City zoning), local streets, a stormwater facility, a community park and open spaces, pedestrian paths, and the enhancement of the marginal and degraded condition vegetated corridor. An easement will be recorded on adjacent off-site tax lot 200 to allow fire truck access to the subdivision in case of emergency. The off-site improvements are not located in vegetated corridor.

The table below summarizes the vegetated corridor encroachment for the project and whether the impact can be viewed as an Allowed Use, Minor encroachment, Tier 1 encroachment, or Tier 2 encroachment. The site plan figures are included as Figures 7-7C.

Table 2. Summary of Vegetated Corridor Encroachment Activities

Development Activity	Encroachment	Encroachment Standard
Lots West of Tract C	Permanent	Tier 1 – Encroaches <30% of the VC depth
Paved Pedestrian Path	Permanent	Allowed Use/ Minor Encroachment – Encroaches <20% of the VC depth where native tree is removed
A Street ROW for utility installation (West of Tract E)	Temporary	Allowed Use
Lots South and East of Tract E	Permanent	Minor Encroachment - Encroaches <20% of the VC depth
A Street, Road A, Road B and Adjacent Lots	Permanent	Tier 2 – Complete Wetland Fill

Allowed Use/ Minor Encroachment

Permanent encroachment will occur within *degraded and marginal* condition vegetated corridor for an 8-foot wide paved path. The path alignment is located in the outermost portion of the vegetated corridor. The majority of the path in vegetated corridor is in accordance with the Allowed use standards set forth under Section 3.05.8. Path construction will require removal of one native tree greater than 6-inch DBH in the outer 5-feet of the vegetated corridor adjacent to Tract E. This portion of the trail can be

processed under Minor Encroachment as encroachment for tree removal does not exceed the 20% depth encroachment allowance.

The encroachment associated with lots adjacent to Tract E, are located in the outer 10 feet of the 50-foot wide *degraded* condition vegetated corridor. This development activity does not exceed the 20% depth encroachment allowance and can be processed under Minor Encroachment. Replacement mitigation at 1:1 will offset the impacts.

Temporary impacts to *degraded* condition vegetated corridor will occur for the installation of utility infrastructure, which is considered an Allowed use per Section 3.05.5 of the CWS Design and Construction Standards. Temporary impacts will be restored to good condition in accordance with the Allowed use standards set forth under Section 3.05.5.a.4.

Tier 1 Encroachment

The *marginal* condition vegetated corridor encroachment associated with the lots west of Tract C are located in the outer 15 feet of the 50-foot wide vegetated corridor. These development activities do not exceed the 30% depth and 40% length encroachment allowance and can be processed under a Tier 1 Alternatives Analysis. Replacement mitigation at 1:1 will offset the impacts.

Tier 2 Encroachment

The project requires permanent fill to two small wetlands and their associated vegetated corridor in their entirety, requiring a Tier 2 Alternatives Analysis review (Wetlands B and C). Permits from both DSL and the Corps will be obtained for all work in wetlands.

Vegetated Corridor Mitigation

The replacement mitigation locations are shown on attached Site Plan Figures 7-7C. Replacement mitigation is located continuous and adjacent to existing remaining vegetated corridor. Replacement mitigation for the pedestrian path will occur for the portions of the trail beyond 3-feet in width. Replacement mitigation will be enhanced to *good* condition, meeting the mitigation requirements listed under Section 3.08.

Vegetated Corridor Enhancement

In addition to enhancement of the on-site replacement mitigation area, the remaining *degraded* and *marginal* condition vegetated corridor will be enhanced to *good* corridor condition as defined in Section 3.14.2 of CWS Design and Construction Standards. The recommended planting tables are included in Appendix D.

Tier 1 and Tier 2 Alternatives Analysis

The following Alternatives Analysis is addressed for Tier 1 encroachment associated with the vegetated corridor west of Tract C and for Tier 2 encroachment associated with fill to Wetland B and Wetland C, per Sections 3.07.3.c and 3.07.4.c. of CWS Design and Construction Standards.

> *3.07.3.b. and 3.07.4.b.1 Description of why the encroachment is needed including rejected alternatives that would result in less encroachment.*

Tier 1: Impacts to the outer 15 feet of *marginal* condition vegetated corridor for the lots adjacent to Tract C are necessary in order to meet the minimum lot size requirements for the City of Sherwood. Along with the rest of the Portland region, the City has been growing at an annual rate of 3%-8% since 1990 making a strong demand for housing. Due to the City's lot sizing requirements, there are no alternatives to avoiding vegetated corridor impacts at this location.

Tier 2: Impacts to Wetland B and Wetland C are necessary in order to meet the City of Sherwood's requirement for a local road to SW Brookman Road. Both wetlands proposed for impact scored low for existing functional capacity and value. Wetlands B and C are located in the middle of the site, within the only tax lot that connects to SW Brookman Road making complete avoidance impracticable. Avoidance to Wetlands B and C would result in the loss of at least fifteen lots and the only entry/ exit road for the subdivision. Alternatively, constructing a road that avoids Wetlands B and C and aligns with SW Oberst Road per County requirements, would result in a radius that is too tight to meet road construction standards making wetland encroachment unavoidable. A joint wetland permit application, with an extensive alternatives analysis, will be submitted to DSL and the Corps for wetland impacts.

> *3.07.3.c.1 and 3.07.4.c.1 The proposed encroachment area is mitigated in accordance with Section 3.08.*

Tier 1: The permanent vegetated corridor encroachment will be mitigated on-site in accordance with Section 3.08.2 Replacement Mitigation, at a ratio of 1:1. The replacement mitigation area will be contiguous to existing remaining vegetated corridor, and enhanced to *good* corridor condition, per the *Brookman Residential Subdivision Vegetated Corridor Mitigation and Enhancement Planting Specification Tables* (Appendix D).

Tier 2: Wetland fill will be mitigated in accordance with Section 3.08.3 Payment to Provide Mitigation. The purchase of wetland mitigation bank credits from an approved mitigation bank will compensate for the total area of wetland to be filled, and associated vegetated corridor.

> *3.07.4.c.2 The replacement mitigation protects the functions and values of the Vegetated Corridor and Sensitive Area.*

Tier 1: The replacement mitigation area is currently dominant in non-native vegetation. The mitigation area will be densely planted with native trees and shrubs. The on-site replacement area will be located contiguous to existing vegetated corridor. The native woody plantings and added native understory will significantly improve the sites wildlife habitat structure, thereby protecting and improving the functions and values of the remaining wetlands.

Tier 2: The wetland mitigation bank provides local replacement for locally important functions and values by restoring and enhancing wetland habitats that have been disproportionately lost in the region. In addition, the wetlands proposed for impact provide low function and value to the local watershed. The mitigation site preserves high functioning wetlands. Therefore, the purchase of mitigation bank credits will more than replace the minimal wetland functions lost at the project site.

> *3.07.3.c.2 and 3.07.4.c.3 Enhancement of the replacement area, if not already in Good Corridor Condition, and either the remaining Vegetated Corridor on the site or the first 50 feet of width closest to the resource, whichever is less, to a Good Corridor Condition.*

Tier 1 and Tier 2: The site plan includes enhancement of replacement mitigation area, remaining *degraded* and *marginal* condition vegetated corridor, and the public benefit mitigation areas. These areas will be enhanced to *good* corridor condition per the *Brookman Residential Subdivision Vegetated Corridor Mitigation and Enhancement Planting Specification Tables* (Appendix D).

3.07.4.c.5 and 3.07.4.c.5 Location of the development and site planning minimizes incursion into the Vegetated Corridor.

Tier 1: Impacts to the vegetated corridor are located in the outermost 15 feet. Lot sizes are designed to meet the minimum size and grading requirements per the City of Sherwood, minimizing incursion in to the vegetated corridor.

Tier 2: Wetland impact is necessary to provide access to SW Brookman Road within County and City road construction standards and to meet lot density requirements. The existing wetlands currently provide low functional opportunity. Mitigation at the wetland mitigation bank provides more benefit to the local watershed than avoiding impact to the small low function and value wetlands.

3.07.4.c.6 and 3.07.4.c.6 No practicable alternative to the location of the development exists that will not disturb the Sensitive Area or Vegetated Corridor.

Tier 1: The location of the lots that encroach in to the vegetated corridor are placed at the outermost edges of the vegetated corridor. Lot 61 is located adjacent to the western property line and can therefore not be relocated to avoid these impacts. Shifting Lot 60 to the east would result in a greater depth encroachment in to the vegetated corridor. Therefore, no practicable alternative exists that will not disturb the vegetated corridor in this area.

Tier 2: Due to the requirement to align with existing SW Oberst Road, road construction standards and required lot widths, depths and density requirements, there are no alternatives that avoid encroachment to Wetlands B and C. Preserving these small wetlands was determined to provide very minimal functional gain to the local watershed, since the existing condition of these wetlands are low quality. The purchase of wetland mitigation bank credits will provide an overall net benefit to the local watershed over preserving the low-functioning, isolated wetlands.

3.07.4.c.7 The proposed encroachment provides public benefits.

Tier 2: The project includes a total of approximately 7,571 square feet of additional replacement vegetated corridor enhancement area, located continuous and adjacent to existing vegetated corridor to serve as a water quality public benefit for the Tier 2 impacts. The location of public benefit mitigation is shown on attached Figure 7C. The existing condition of the public benefit area is *marginal*, lacking native species diversity in the tree and shrub canopy and will be enhanced to *good* condition through native tree and shrub plantings, per the planting specification table included in Appendix D. The addition of enhanced vegetated corridor will provide an increase in water quality benefit for the local watershed, as well as additional on-site wildlife habitat.

Tier 2 Functional Assessment

Wetlands

Wetlands B and C are palustrine emergent wetlands (PEM) that will be permanently impacted in their entirety. These wetlands belong to the Slope and Slope Outflow HGM subclasses. The existing wetland functions were evaluated together using the *Assessment of HGM Function Capacity: Reference Based Method for Slope/Flats*. The raw data of the function assessment capacity scores can be provided in Excel format upon request.

Table 3. Existing Wetlands B and C Function Assessment Capacity Scores

Existing Function	Wetland B Functional Capacity Score 1 = highest; 0 = lowest	Wetland C Functional Capacity Score 1 = highest; 0 = lowest
Water storage and delay	0.00	0.00
Sediment stabilization and phosphorus retention	0.36	0.19
Nitrogen removal	0.48	0.39
Primary production	0.52	0.43
Invertebrate habitat support	0.23	0.19
Amphibian and turtle habitat	0.46	0.43
Breeding waterbird support	0.00	0.00
Wintering and migrating waterbird support	0.16	0.11
Songbird habitat support	0.42	0.42
Support of characteristic vegetation	0.36	0.36

The existing conditions of Wetlands B and C scored low to moderate on all functions assessed. Amphibian and turtle habitat and songbird habitat support functions scored moderate, however, the likelihood of this disturbed site supporting turtle and amphibian habitat is very low, due to lack of seasonal inundation, woody vegetation or suitable basking sites. The overall average score across all functions assessed is 0.29 for Wetland B and 0.25 for Wetland C, which is considered low. The vegetation communities within both wetlands lack native species diversity. The purchase of credits at an approved wetland mitigation bank will protect higher functioning wetlands.

Please do not hesitate to contact us with any questions concerning this project.

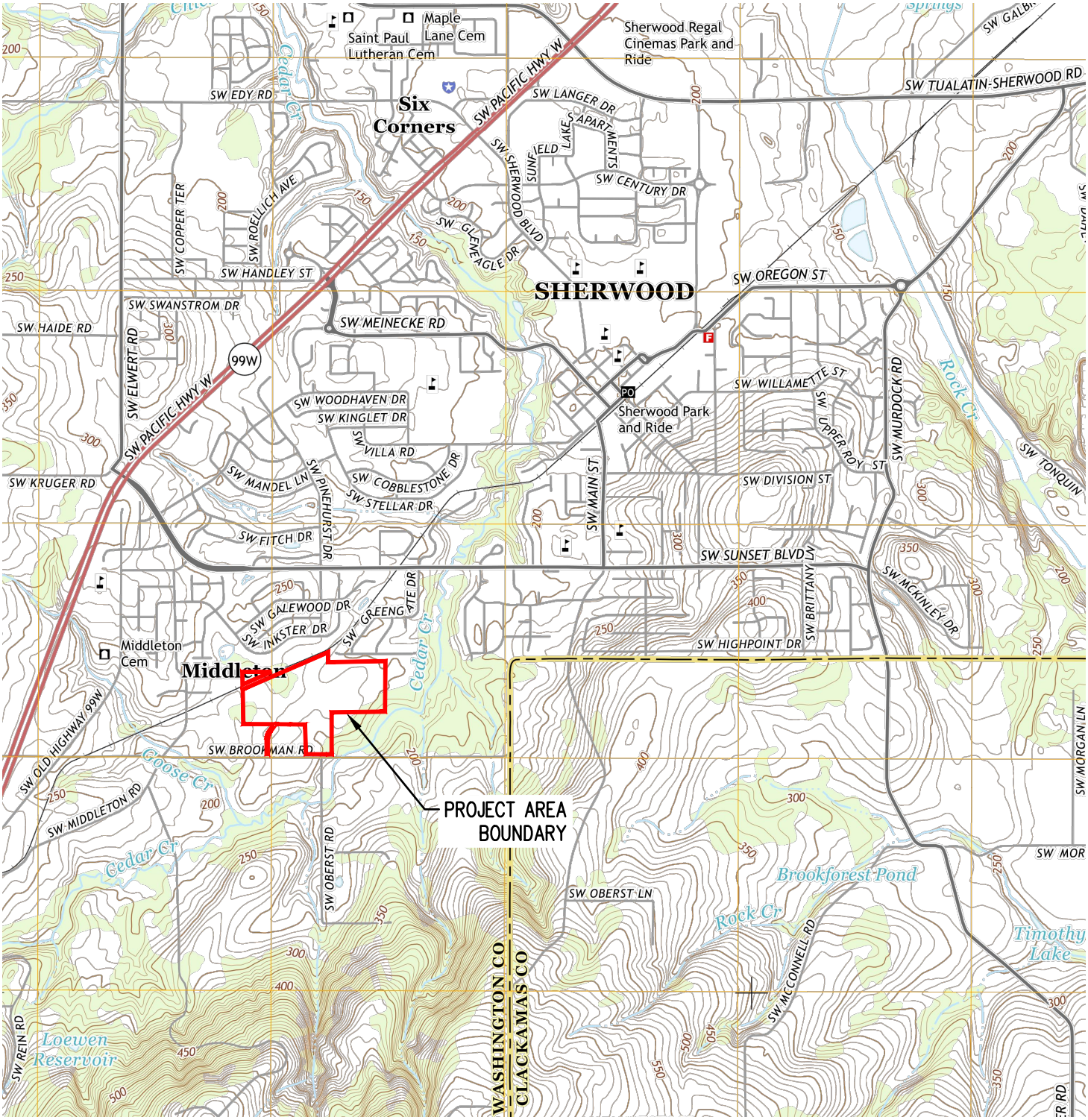
List of Preparers

K. Katkin

Kayla Katkin, AWB
Natural Resource Specialist
Fieldwork and Report Preparation

Stacey Reed

Stacey Reed, PWS
Senior Wetland Scientist
Fieldwork and Report QA/QC



USGS 7.5' TOPOGRAPHIC SERIES
QUADRANGLE: SHERWOOD, OR (2014)

N

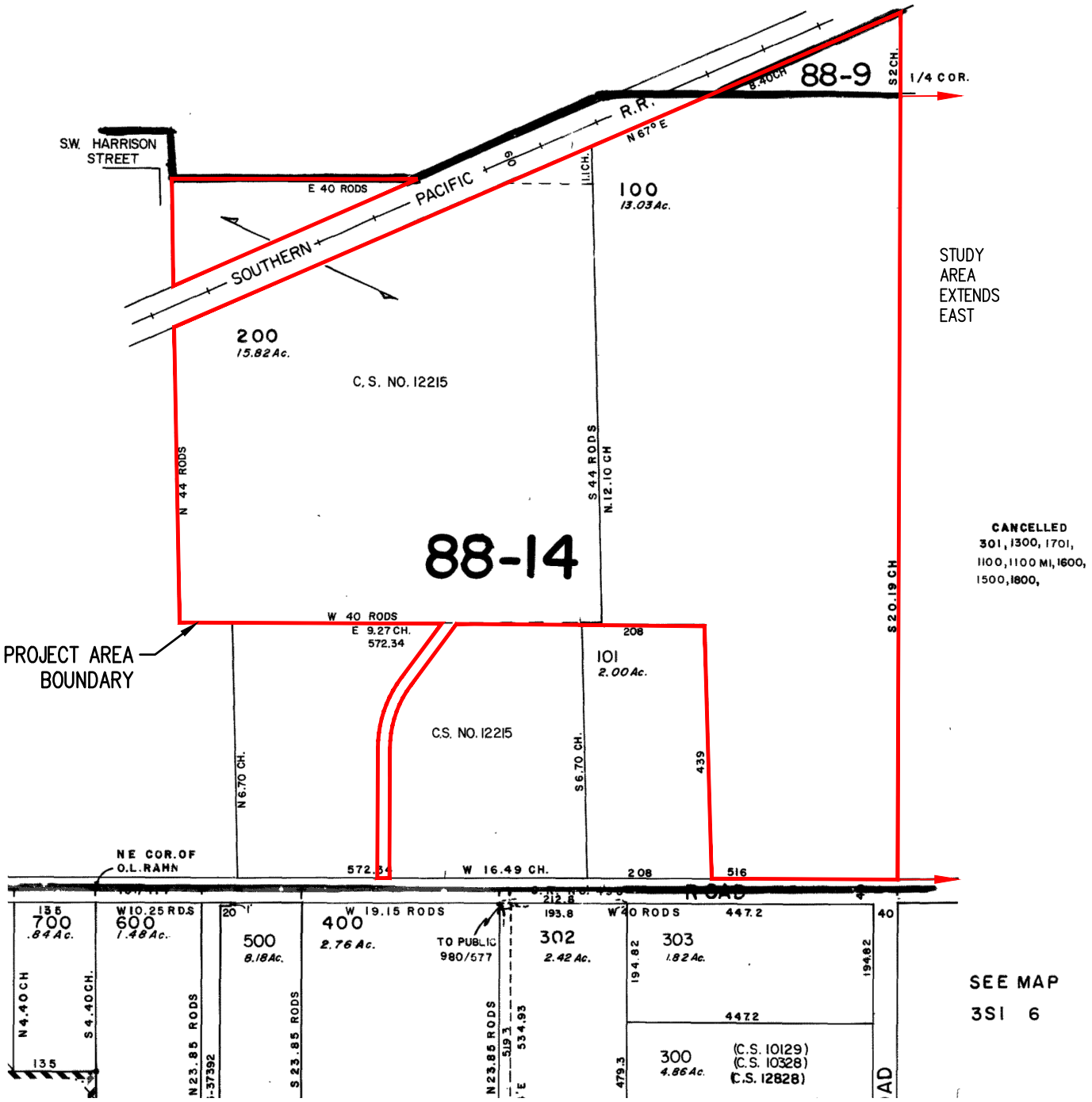
SCALE: 1"= 2000 FEET

2000 0 800 1200 1600 2000

DATE: 04/30/2018

USGS VICINITY MAP BROOKMAN RESIDENTIAL SUBDIVISION NATURAL RESOURCE ASSESSMENT	FIGURE 1
AKS ENGINEERING & FORESTRY, LLC 12965 SW HERMAN RD SUITE 100 TUALATIN, OR 97062 www.aks-eng.com PHONE: 503.563.6151 FAX: 503.563.6152	DRWN: KMK CHKD: SAR AKS JOB: 3591

DWG: 3591 NRA FIGURES | FIGURE 1



WASHINGTON COUNTY
TAX LOT 100 AND PORTION OF 200
TAX MAP 3S 1 6B

N

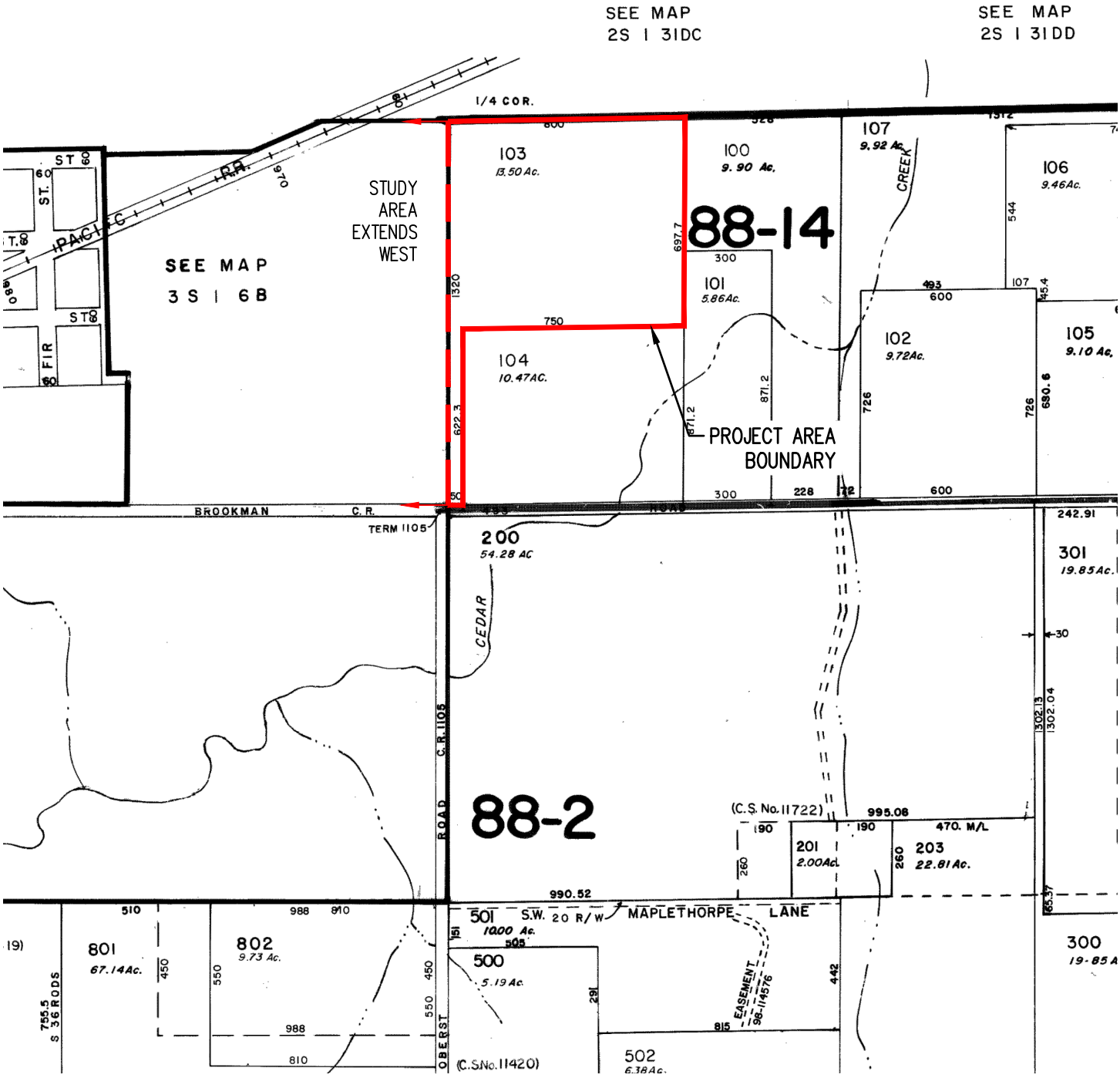
SCALE: 1"= 250 FEET

250 0 100 150 200 250

DATE: 04/30/2018

TAX MAP (MAP 3S 1 6B) **BROOKMAN RESIDENTIAL SUBDIVISION NATURAL RESOURCE ASSESSMENT**	FIGURE **2A**
AKS ENGINEERING & FORESTRY, LLC 12965 SW HERMAN RD SUITE 100 TUALATIN, OR 97062 www.aks-eng.com PHONE: 503.563.6151 FAX: 503.563.6152	DRWN: KMK CHKD: SAR AKS JOB: 3591

DWG: 3591 NRA FIGURES | FIGURE 2A

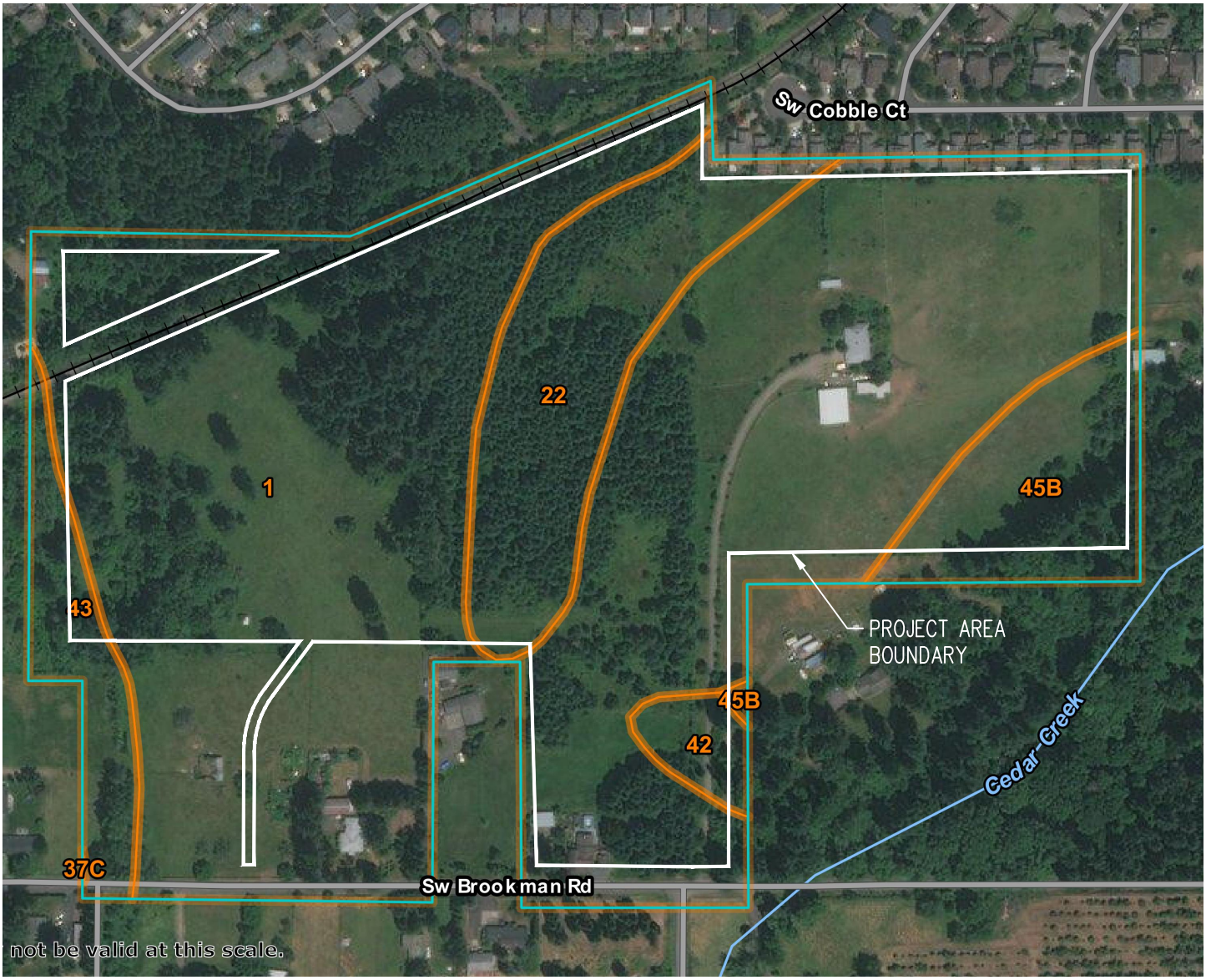


WASHINGTON COUNTY
TAX LOT 103
TAX MAP 3S 1 6

DATE: 04/30/2018

TAX MAP (MAP 3S 1 6) BROOKMAN RESIDENTIAL SUBDIVISION NATURAL RESOURCE ASSESSMENT	FIGURE 2B
AKS ENGINEERING & FORESTRY, LLC 12965 SW HERMAN RD SUITE 100 TUALATIN, OR 97062 www.aks-eng.com PHONE: 503.563.6151 FAX: 503.563.6152	DRWN: KMK CHKD: SAR AKS JOB: 3591

DWG: 3591 NRA FIGURES | FIGURE 2B



MAP UNIT SYMBOL	MAP UNIT NAME
1	ALOHA SILT LOAM; NON-HYDRIC
22	HUBERLY SILT LOAM; HYDRIC
42	VERBOORT SILTY CLAY LOAM; HYDRIC
43	WAPATO SILTY CLAY LOAM; HYDRIC
45B	WOODBURN SILT LOAM, 3% TO 7% SLOPES; NON-HYDRIC

NRCS WEB SOIL SURVEY FOR
WASHINGTON COUNTY

N

SCALE: 1"= 300 FEET

300 0 120 180 240 300

DATE: 04/30/2018

NRCS SOIL SURVEY MAP
BROOKMAN RESIDENTIAL SUBDIVISION NATURAL RESOURCE ASSESSMENT

FIGURE 3

AKS ENGINEERING & FORESTRY, LLC
12965 SW HERMAN RD SUITE 100
TUALATIN, OR 97062 www.aks-eng.com
PHONE: 503.563.6151 FAX: 503.563.6152

DRWN: KMK
CHKD: SAR
AKS JOB: 3591

N

SCALE: 1"= 300 FEET

300 0 120 180 240 300

US FISH & WILDLIFE SERVICE
NATIONAL WETLAND INVENTORY (2017)

DATE: 04/30/2018

NATIONAL WETLAND INVENTORY MAP
BROOKMAN RESIDENTIAL SUBDIVISION NATURAL RESOURCE ASSESSMENT

FIGURE 4

AKS ENGINEERING & FORESTRY, LLC
12965 SW HERMAN RD SUITE 100
TUALATIN, OR 97062 www.aks-eng.com
PHONE: 503.563.6151 FAX: 503.563.6152

DRWN: KMK
CHKD: SAR
AKS JOB: 3591

LEGEND:

ON-SITE WETLANDS TOTAL: 167,365 SF± (3.19 ACRES±)

WETLAND A: 32,182 SF± (0.74 ACRES±)
WETLAND B: 8,843 SF± (0.20 ACRES±)
WETLAND C: 6,879 SF± (0.16 ACRES±)
WETLAND D: 58,411 SF± (1.34 ACRES±)
WETLAND E: 32,456 SF± (0.75 ACRES±)

ON-SITE PORTION OF EPHEMERAL DRAINAGE: 170 SF± (170 LINEAR FT±)

TOTAL ON-SITE VEGETATED CORRIDOR: 162,836 SF± (3.74 ACRES±)

MARGINAL CONDITION VEGETATED CORRIDOR TOTAL: 59,720 SF± (1.37 ACRES±)

DEGRADED CONDITION VEGETATED CORRIDOR TOTAL: 103,116 SF± (2.37 ACRES±)

WETLAND AND WATER BOUNDARIES SHOWN WERE DELINEATED BY AKS ENGINEERING & FORESTRY, LLC ON MARCH 29-31, 2017 AND FEBRUARY 14, 2018 AND WERE PROFESSIONALLY LAND SURVEYED BY AKS ON APRIL 7-13, 2017 AND FEBRUARY 20, 2018.

1-FOOT INTERVAL GROUND CONTOURS DERIVED FROM LAND SURVEY.

DATE: 05/01/2018

PROPERTY LINE ADJUSTMENT

BROOKMAN RESIDENTIAL SUBDIVISION NATURAL RESOURCE ASSESSMENT

FIGURE 5

AKS ENGINEERING & FORESTRY, LLC
12965 SW HERMAN RD, STE 100
TUALATIN, OR 97062
P: 503.563.6151 F: 503.563.6152 aks-eng.com

DRWN: KMK
CHKD: SAR
AKS JOB: 3591

N

SCALE: 1"= 200 FEET

200 0 80 120 160 200

COLOR COPY
11 X 17

LEGEND:

ON-SITE WETLANDS TOTAL: 138,771 SF± (3.19 ACRES±)

WETLAND A: 32,182 SF± (0.74 ACRES±)
WETLAND B: 8,843 SF± (0.20 ACRES±)
WETLAND C: 6,879 SF± (0.16 ACRES±)
WETLAND D: 58,411 SF± (1.34 ACRES±)
WETLAND E: 32,456 SF± (0.75 ACRES±)

ON-SITE PORTION OF EPHEMERAL DRAINAGE: 170 SF± (170 LINEAR FT±)

TOTAL ON-SITE VEGETATED CORRIDOR: 162,836 SF± (3.74 ACRES±)

MARGINAL CONDITION VEGETATED CORRIDOR TOTAL: 59,720 SF± (1.37 ACRES±)

DEGRADED CONDITION VEGETATED CORRIDOR TOTAL: 103,116 SF± (2.37 ACRES±)

WETLAND AND WATER BOUNDARIES SHOWN WERE DELINEATED BY AKS ENGINEERING & FORESTRY, LLC ON MARCH 29-31, 2017 AND FEBRUARY 14, 2018 AND WERE PROFESSIONALLY LAND SURVEYED BY AKS ON APRIL 7-13, 2017 AND FEBRUARY 20, 2018.

1-FOOT INTERVAL GROUND CONTOURS DERIVED FROM LAND SURVEY.

DATE: 05/01/2018

EXISTING CONDITIONS MAP

BROOKMAN RESIDENTIAL SUBDIVISION NATURAL RESOURCE ASSESSMENT

FIGURE 6

AKS ENGINEERING & FORESTRY, LLC
12965 SW HERMAN RD, STE 100
TUALATIN, OR 97062
P: 503.563.6151 F: 503.563.6152 aks-eng.com

DRWN: KMK
CHKD: SAR
AKS JOB: 3591

WETLAND EXTENDS OFF-SITE

WETLAND 'E'
AREA: 32,456 SF±

PLOT 2

TAX LOT 200
TAX MAP 3S 1 06B

PORTLAND AND WESTERN RAILROAD (PNWR)

WETLAND EXTENDS OFF-SITE

30'

30'

WOVEN WIRE FENCE

WOVEN WIRE FENCE

WOVEN WIRE FENCE

230

230

225

220

220

215

TAX LOT 200
TAX MAP 3S 1 06B

50' CWS MARGINAL CONDITION VEGETATED CORRIDOR

PLOT 17

PLOT 18

PLOT 3

PLOT 4

VECO PLOT B

50'

1.4%

N

SCALE: 1"= 60 FEET

60 0 24 36 48 60

COLOR COPY
11 X 17

LEGEND:

ON-SITE WETLANDS TOTAL: 138,771 SF± (3.19 ACRES±)

WETLAND A: 32,182 SF± (0.74 ACRES±)
WETLAND B: 8,843 SF± (0.20 ACRES±)
WETLAND C: 6,879 SF± (0.16 ACRES±)
WETLAND D: 58,411 SF± (1.34 ACRES±)
WETLAND E: 32,456 SF± (0.75 ACRES±)

ON-SITE PORTION OF EPHEMERAL DRAINAGE:
170 SF± (170 LINEAR FT±)

TOTAL ON-SITE VEGETATED CORRIDOR:
162,836 SF± (3.74 ACRES±)

MARGINAL CONDITION VEGETATED CORRIDOR TOTAL:
59,720 SF± (1.37 ACRES±)

DEGRADED CONDITION VEGETATED CORRIDOR TOTAL:
103,116 SF± (2.37 ACRES±)

WETLAND AND WATER BOUNDARIES SHOWN WERE DELINEATED BY AKS ENGINEERING & FORESTRY, LLC ON MARCH 29-31, 2017 AND FEBRUARY 14, 2018 AND WERE PROFESSIONALLY LAND SURVEYED BY AKS ON APRIL 7-13, 2017 AND FEBRUARY 20, 2018.

1-FOOT INTERVAL GROUND CONTOURS DERIVED FROM LAND SURVEY.

DATE: 05/01/2018

EXISTING CONDITIONS MAP

FIGURE 6A

BROOKMAN RESIDENTIAL SUBDIVISION NATURAL RESOURCE ASSESSMENT

AKS ENGINEERING & FORESTRY, LLC
12965 SW HERMAN RD, STE 100
TUALATIN, OR 97062
P: 503.563.6151 F: 503.563.6152 aks-eng.com

DRWN: KMK
CHKD: SAR
AKS JOB: 3591

50' CWS DEGRADED CONDITION
VEGETATED CORRIDOR

WOVEN WIRE FENCE

50' CWS MARGINAL CONDITION
VEGETATED CORRIDOR

T-POSTS

T-POSTS

EDGE OF
MOWED GRASS
FROM ADJOINER

PLOT 7

PLOT 5

PLOT 6

VECO PLOT A

WETLAND A'
AREA: 32,182 SF±

50'

8.6%

1.4%

590
06BB

WETLAND EXTENDS
OFF-SITE

TAX LOT 200
TAX MAP 3S 1 06B

SHOP

TAX LOT 2502
TAX MAP 3S 1 06BB

EX 18" RCP
CULVERT
IE: 194.84

EX 30" RCP
CULVERT
IE: 195.88

LEGEND:

ON-SITE WETLANDS TOTAL: 138,771 SF± (3.19 ACRES±)

WETLAND A: 32,182 SF± (0.74 ACRES±)
WETLAND B: 8,843 SF± (0.20 ACRES±)
WETLAND C: 6,879 SF± (0.16 ACRES±)
WETLAND D: 58,411 SF± (1.34 ACRES±)
WETLAND E: 32,456 SF± (0.75 ACRES±)

ON-SITE PORTION OF EPHEMERAL DRAINAGE:
170 SF± (170 LINEAR FT±)

TOTAL ON-SITE VEGETATED CORRIDOR:
162,836 SF± (3.74 ACRES±)

MARGINAL CONDITION VEGETATED CORRIDOR TOTAL:
59,720 SF± (1.37 ACRES±)

DEGRADED CONDITION VEGETATED CORRIDOR TOTAL:
103,116 SF± (2.37 ACRES±)

WETLAND AND WATER BOUNDARIES SHOWN WERE DELINEATED BY AKS ENGINEERING & FORESTRY, LLC ON MARCH 29-31, 2017 AND FEBRUARY 14, 2018 AND WERE PROFESSIONALLY LAND SURVEYED BY AKS ON APRIL 7-13, 2017 AND FEBRUARY 20, 2018.

1-FOOT INTERVAL GROUND CONTOURS DERIVED FROM LAND SURVEY.

N

SCALE: 1"= 60 FEET

60 0 24 36 48 60

COLOR COPY
11 X 17

DATE: 03/28/2018

EXISTING CONDITIONS MAP

BROOKMAN RESIDENTIAL SUBDIVISION NATURAL RESOURCE ASSESSMENT

FIGURE 6B

AKS ENGINEERING & FORESTRY, LLC
12965 SW HERMAN RD, STE 100
TUALATIN, OR 97062
P: 503.563.6151 F: 503.563.6152 aks-eng.com

DRWN: KMK
CHKD: SAR
AKS JOB: 3591

WETLAND 'B'
AREA: 8,843 SF±

VECO PLOT E

50'

4.2%

TAX LOT 100
TAX MAP 3S 1 06B

TAX LOT 103
TAX MAP 3S 1 06

GATE

WOVEN WIRE FENCE

215

210

205

200

PLOT 8

PLOT 9

PLOT 11

PLOT 10

50' CWS MARGINAL CONDITION
VEGETATED CORRIDOR

T-POSTS

EDGE OF
MOWED GRASS
FROM ADJOINER

GRAVEL DRIVEWAY

WOVEN WIRE FENCE

TAX LOT 104
TAX MAP 3S 1 06

TAX LOT 101
TAX MAP 3S 1 06B

50' CWS DEGRADED CONDITION
VEGETATED CORRIDOR

PLOT 12

WOVEN WIRE FENCE

VECO PLOT F

WETLAND 'C'
AREA: 6,879 SF±

50'

1.5%

195

PLOT 14

PLOT 15

PLOT 16

PLOT 13

WOVEN WIRE AND
ELECTRIC FENCE

EX 12" CONC CULVERT
IE: 191.27 (NW)
IE: 188.88 (SE)

VECO PLOT G

195

GRAVEL DRIVEWAY

50' CWS MARGINAL CONDITION

N

SCALE: 1"= 60 FEET

60 0 24 36 48 60

SCALE 11 X 17"
COLOR COPY
11 X 17

LEGEND:

ON-SITE WETLANDS TOTAL: 138,771 SF± (3.19 ACRES±)

WETLAND A: 32,182 SF± (0.74 ACRES±)
WETLAND B: 8,843 SF± (0.20 ACRES±)
WETLAND C: 6,879 SF± (0.16 ACRES±)
WETLAND D: 58,411 SF± (1.34 ACRES±)
WETLAND E: 32,456 SF± (0.75 ACRES±)

ON-SITE PORTION OF EPHEMERAL DRAINAGE:
170 SF± (170 LINEAR FT±)

TOTAL ON-SITE VEGETATED CORRIDOR:
162,836 SF± (3.74 ACRES±)

MARGINAL CONDITION VEGETATED CORRIDOR TOTAL:
59,720 SF± (1.37 ACRES±)

DEGRADED CONDITION VEGETATED CORRIDOR TOTAL:
103,116 SF± (2.37 ACRES±)

WETLAND AND WATER BOUNDARIES SHOWN WERE DELINEATED BY AKS ENGINEERING & FORESTRY, LLC ON MARCH 29-31, 2017 AND FEBRUARY 14, 2018 AND WERE PROFESSIONALLY LAND SURVEYED BY AKS ON APRIL 7-13, 2017 AND FEBRUARY 20, 2018.

1-FOOT INTERVAL GROUND CONTOURS DERIVED FROM LAND SURVEY.

DATE: 05/01/2018

EXISTING CONDITIONS MAP

FIGURE 6C

BROOKMAN RESIDENTIAL SUBDIVISION NATURAL RESOURCE ASSESSMENT

AKS ENGINEERING & FORESTRY, LLC
12965 SW HERMAN RD, STE 100
TUALATIN, OR 97062
P: 503.563.6151 F: 503.563.6152 aks-eng.com

DRWN: KMK
CHKD: SAR
AKS JOB: 3591

EX STM CO
RIM: 218.96
IE BEND: 212±

EX 1.5' WIDE X 1.0'± DEEP
BOX CULVERT
IE: 212.76

EX 1.5' WIDE X 1.0'± DEEP
BOX CULVERT
IE: 212.84

DRAINAGE EXTENDS
OFF-SITE

SW COBBLE COURT

TAX LOT 10600 TAX MAP 2S 1 31D
TAX LOT 10500 TAX MAP 2S 1 31D
TAX LOT 10400 TAX MAP 2S 1 31D
TAX LOT 10300 TAX MAP 2S 1 31D
TAX LOT 10200 TAX MAP 2S 1 31D
TAX LOT 10100 TAX MAP 2S 1 31D
TAX LOT 10000 TAX MAP 2S 1 31D
TAX LOT 9900 TAX MAP 2S 1 31D
TAX LOT 9800 TAX MAP 2S 1 31D

WETLAND EXTENDS
SLIGHTLY OFF-SITE

EPHEMERAL DRAINAGE:
170 LINEAR FT±

WOVEN WIRE FENCE

VECO PLOT C
VECO PLOT D

PLOT 19
PLOT 20
PLOT 21
PLOT 22
PLOT 23
PLOT 24
PLOT 25

WETLAND 'D'
AREA: 58,411 SF±

TAX LOT 103
TAX MAP 3S 1 06

50' CWS DEGRADED CONDITION
VEGETATED CORRIDOR

TAX LOT 100
TAX MAP 3S 1 06B

5.6%

N

SCALE: 1"=60 FEET

60 0 24 36 48 60

SCALE 11 X 17"
COLOR COPY
11 X 17

LEGEND:

ON-SITE WETLANDS TOTAL: 138,771 SF± (3.19 ACRES±)

WETLAND A: 32,182 SF± (0.74 ACRES±)
WETLAND B: 8,843 SF± (0.20 ACRES±)
WETLAND C: 6,879 SF± (0.16 ACRES±)
WETLAND D: 58,411 SF± (1.34 ACRES±)
WETLAND E: 32,456 SF± (0.75 ACRES±)

ON-SITE PORTION OF EPHEMERAL DRAINAGE:
170 SF± (170 LINEAR FT±)

TOTAL ON-SITE VEGETATED CORRIDOR:
162,836 SF± (3.74 ACRES±)

MARGINAL CONDITION VEGETATED CORRIDOR TOTAL:
59,720 SF± (1.37 ACRES±)

DEGRADED CONDITION VEGETATED CORRIDOR TOTAL:
103,116 SF± (2.37 ACRES±)

WETLAND AND WATER BOUNDARIES SHOWN WERE DELINEATED BY AKS ENGINEERING & FORESTRY, LLC ON MARCH 29-31, 2017 AND FEBRUARY 14, 2018 AND WERE PROFESSIONALLY LAND SURVEYED BY AKS ON APRIL 7-13, 2017 AND FEBRUARY 20, 2018.

1-FOOT INTERVAL GROUND CONTOURS DERIVED FROM LAND SURVEY.

DATE: 05/01/2018

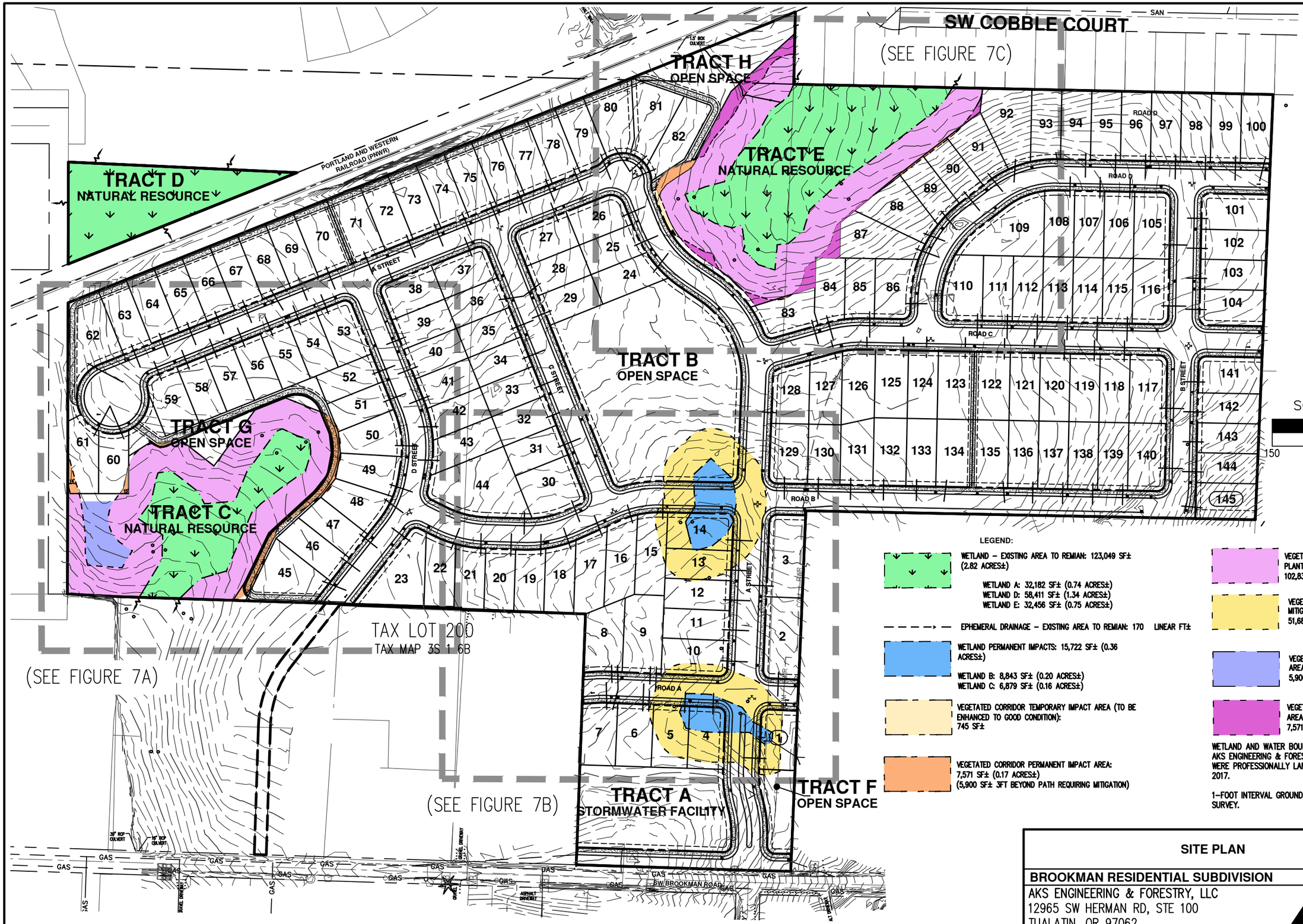
EXISTING CONDITIONS MAP

FIGURE 6D

BROOKMAN RESIDENTIAL SUBDIVISION NATURAL RESOURCE ASSESSMENT

AKS ENGINEERING & FORESTRY, LLC
12965 SW HERMAN RD, STE 100
TUALATIN, OR 97062
P: 503.563.6151 F: 503.563.6152 aks-eng.com

DRWN: KMK
CHKD: SAR
AKS JOB: 3591



LEGEND:

- WETLAND – EXISTING AREA TO REMIAN: 123,049 SF± (2.82 ACRES±)
  - WETLAND A: 32,182 SF± (0.74 ACRES±)
  - WETLAND D: 58,411 SF± (1.34 ACRES±)
  - WETLAND E: 32,456 SF± (0.75 ACRES±)
- EPHEMERAL DRAINAGE – EXISTING AREA TO REMIAN: 170 LINEAR FT±
- WETLAND PERMANENT IMPACTS: 15,722 SF± (0.36 ACRES±)
  - WETLAND B: 8,843 SF± (0.20 ACRES±)
  - WETLAND C: 6,879 SF± (0.16 ACRES±)
- VEGETATED CORRIDOR TEMPORARY IMPACT AREA (TO BE ENHANCED TO GOOD CONDITION): 745 SF±
- VEGETATED CORRIDOR PERMANENT IMPACT AREA: 7,571 SF± (0.17 ACRES±) (5,900 SF± 3FT BEYOND PATH REQUIRING MITIGATION)
- VEGETATED CORRIDOR ENHANCEMENT AREA (TO BE PLANTED TO GOOD CONDITION): 102,839 SF± (2.36 ACRES±)
- VEGETATED CORRIDOR PERMANENT IMPACT AREA TO BE MITIGATED THROUGH WETLAND BANK CREDIT PURCHASE: 51,681 SF± (1.19 ACRES±)
- VEGETATED CORRIDOR REPLACEMENT MITIGATION AREA: 5,900 SF± (0.14 ACRES±)
- VEGETATED CORRIDOR PUBLIC BENEFIT MITIGATION AREA (TO BE PLANTED TO GOOD CONDITION): 7,571 SF± (0.17 ACRES±)

WETLAND AND WATER BOUNDARIES SHOWN WERE DELINEATED BY AKS ENGINEERING & FORESTRY, LLC ON MARCH 29–31, 2017 AND WERE PROFESSIONALLY LAND SURVEYED BY AKS ON APRIL 7–13, 2017.

1–FOOT INTERVAL GROUND CONTOURS DERIVED FROM LAND SURVEY.

DATE: 05/01/2018

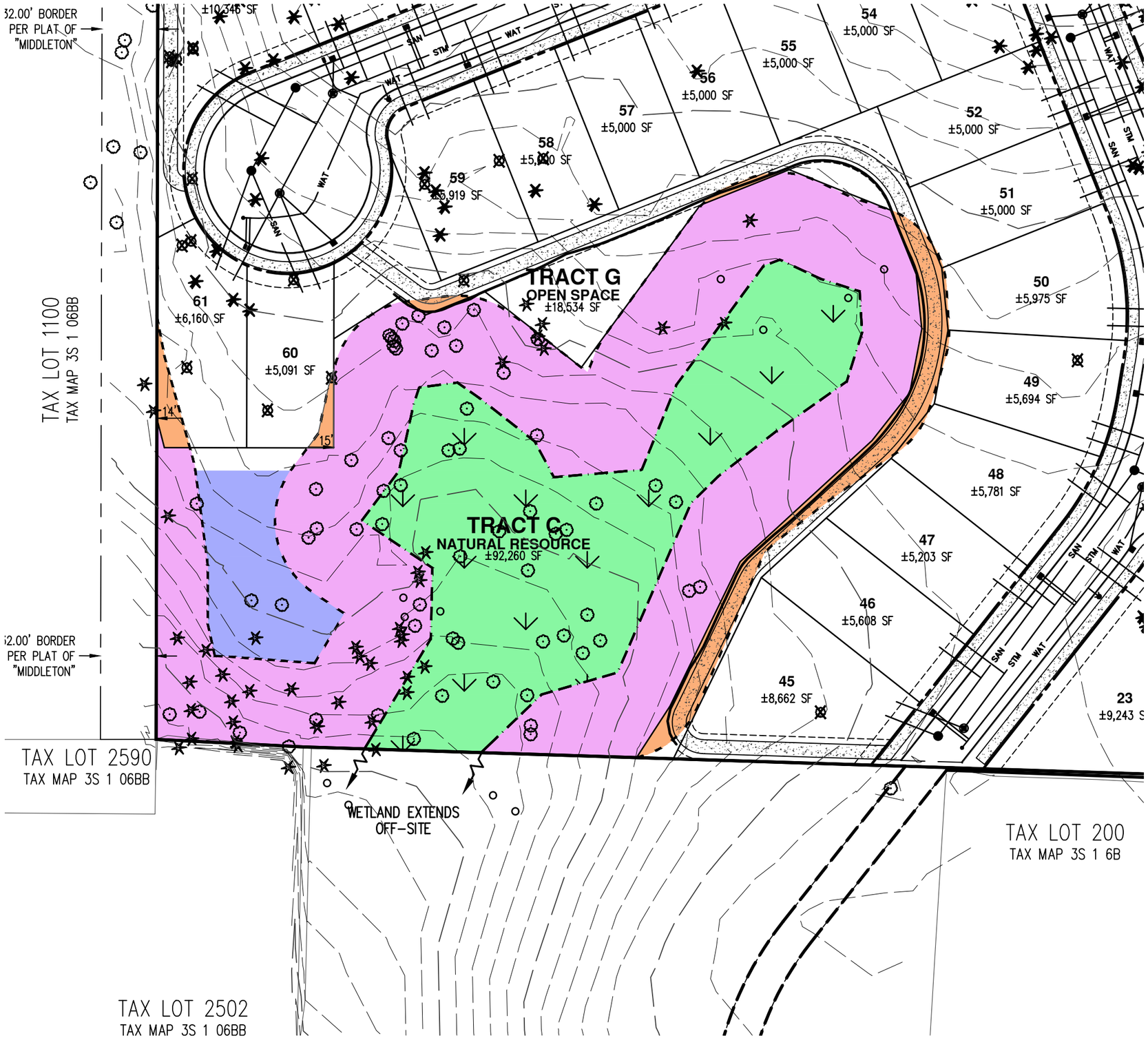
SITE PLAN

BROOKMAN RESIDENTIAL SUBDIVISION

FIGURE 7

AKS ENGINEERING & FORESTRY, LLC
12965 SW HERMAN RD, STE 100
TUALATIN, OR 97062
P: 503.563.6151 F: 503.563.6152 aks-eng.com

DRWN: KMK
CHKD: SAR
AKS JOB: 3591



LEGEND:

WETLAND – EXISTING AREA TO REMIAN: 123,049 SF± (2.83 ACRES±)

WETLAND A: 32,182 SF± (0.74 ACRES±)
WETLAND D: 58,411 SF± (1.34 ACRES±)
WETLAND E: 32,456 SF± (0.75 ACRES±)

EPHEMERAL DRAINAGE – EXISTING AREA TO REMIAN: 170 LINEAR FT±

WETLAND PERMANENT IMPACTS: 15,722 SF± (0.36 ACRES±)

WETLAND B: 8,843 SF± (0.20 ACRES±)
WETLAND C: 6,879 SF± (0.16 ACRES±)

VEGETATED CORRIDOR TEMPORARY IMPACT AREA (TO BE ENHANCED TO GOOD CONDITION):
745 SF±

VEGETATED CORRIDOR PERMANENT IMPACT AREA:
7,571 SF± (0.17 ACRES±)
(5,900 SF± 3FT BEYOND PATH REQUIRING MITIGATION)

VEGETATED CORRIDOR ENHANCEMENT AREA (TO BE PLANTED TO GOOD CONDITION):
102,839 SF± (2.36 ACRES±)

VEGETATED CORRIDOR PERMANENT IMPACT AREA TO BE MITIGATED THROUGH WETLAND BANK CREDIT PURCHASE:
51,681 SF± (1.19 ACRES±)

VEGETATED CORRIDOR REPLACEMENT MITIGATION AREA:
5,900 SF± (0.14 ACRES±)

VEGETATED CORRIDOR PUBLIC BENEFIT MITIGATION AREA (TO BE PLANTED TO GOOD CONDITION):
7,571 SF± (0.17 ACRES±)

WETLAND AND WATER BOUNDARIES SHOWN WERE DELINEATED BY AKS ENGINEERING & FORESTRY, LLC ON MARCH 29–31, 2017 AND WERE PROFESSIONALLY LAND SURVEYED BY AKS ON APRIL 7–13, 2017.

1–FOOT INTERVAL GROUND CONTOURS DERIVED FROM LAND SURVEY.

SCALE: 1"= 60 FEET

60 0 24 36 48 60

COLOR COPY
11 X 17

N

DATE: 05/01/2018

SITE PLAN	FIGURE 7A
BROOKMAN RESIDENTIAL SUBDIVISION	

AKS ENGINEERING & FORESTRY, LLC
12965 SW HERMAN RD, STE 100
TUALATIN, OR 97062
P: 503.563.6151 F: 503.563.6152 aks-eng.com

DRWN: KMK
CHKD: SAR
AKS JOB: 3591

DWG: 3591 SITE PLAN_NRA | FIGURE 7A

LEGEND:

WETLAND – EXISTING AREA TO REMIAN: 123,049 SF± (2.83 ACRES±)

WETLAND A: 32,182 SF± (0.74 ACRES±)
WETLAND D: 58,411 SF± (1.34 ACRES±)
WETLAND E: 32,456 SF± (0.75 ACRES±)

EPHEMERAL DRAINAGE – EXISTING AREA TO REMIAN: 170 LINEAR FT±

WETLAND PERMANENT IMPACTS: 15,722 SF± (0.36 ACRES±)

WETLAND B: 8,843 SF± (0.20 ACRES±)
WETLAND C: 6,879 SF± (0.16 ACRES±)

VEGETATED CORRIDOR TEMPORARY IMPACT AREA (TO BE ENHANCED TO GOOD CONDITION):
745 SF±

VEGETATED CORRIDOR PERMANENT IMPACT AREA:
7,571 SF± (0.17 ACRES±)
(5,900 SF± 3FT BEYOND PATH REQUIRING MITIGATION)

VEGETATED CORRIDOR ENHANCEMENT AREA (TO BE PLANTED TO GOOD CONDITION):
102,839 SF± (2.36 ACRES±)

VEGETATED CORRIDOR PERMANENT IMPACT AREA TO BE MITIGATED THROUGH WETLAND BANK CREDIT PURCHASE:
51,681 SF± (1.19 ACRES±)

VEGETATED CORRIDOR REPLACEMENT MITIGATION AREA:
5,900 SF± (0.14 ACRES±)

VEGETATED CORRIDOR PUBLIC BENEFIT MITIGATION AREA (TO BE PLANTED TO GOOD CONDITION):
7,571 SF± (0.17 ACRES±)

WETLAND AND WATER BOUNDARIES SHOWN WERE DELINEATED BY AKS ENGINEERING & FORESTRY, LLC ON MARCH 29–31, 2017 AND WERE PROFESSIONALLY LAND SURVEYED BY AKS ON APRIL 7–13, 2017.

1-FOOT INTERVAL GROUND CONTOURS DERIVED FROM LAND SURVEY.

N

SCALE: 1"= 60 FEET

60 0 24 36 48 60

COLOR COPY
11 X 17

DATE: 05/01/2018

SITE PLAN	FIGURE
BROOKMAN RESIDENTIAL SUBDIVISION	**7B**

AKS ENGINEERING & FORESTRY, LLC
12965 SW HERMAN RD, STE 100
TUALATIN, OR 97062
P: 503.563.6151 F: 503.563.6152 aks-eng.com

DRWN: KMK
CHKD: SAR
AKS JOB: 3591

OWNER: CITY OF SHERWOOD

SUBJECT TO A PUBLIC STORM DRAINAGE AND PUBLIC SANITARY SEWER EASEMENTS OVER IT'S ENTIRETY

EX 1.5' WIDE X 1.0'± DEEP BOX CULVERT IE: 212.76

1.5' BOX CULVERT

E X 1.0'± DEEP BOX CULVERT IE: 212.84

30'

30'

STM

SAN

SAN

SAN

SW COBBLE COURT

TAX LOT 10600 TAX MAP 2S 1 31DC

TAX LOT 10500 TAX MAP 2S 1 31DC

TAX LOT 10400 TAX MAP 2S 1 31DC

TAX LOT 10300 TAX MAP 2S 1 31DC

TAX LOT 10200 TAX MAP 2S 1 31DC

TAX LOT 10100 TAX MAP 2S 1 31DC

TAX LOT 10000 TAX MAP 2S 1 31DC

WETLAND EXTENDS SLIGHTLY OFF-SITE

TRACT H
OPEN SPACE
±19,258 SF

TRACT E
NATURAL RESOURCE
±118,090 SF

A STREET

81
±7,347 SF

82
±6,693 SF

83
±5,948 SF

84
±5,327 SF

85
±5,025 SF

86
±6,229 SF

87
±7,748 SF

88
±7,590 SF

89
±5,107 SF

90
±5,000 SF

91
±6,093 SF

110
±6,879 SF

111
±5,450

±8,694 SF

SAN

STM

WAT

PWR

COM

LEGEND:

WETLAND – EXISTING AREA TO REMIAN: 123,049 SF± (2.83 ACRES±)

WETLAND A: 32,182 SF± (0.74 ACRES±)
WETLAND D: 58,411 SF± (1.34 ACRES±)
WETLAND E: 32,456 SF± (0.75 ACRES±)

EPHEMERAL DRAINAGE – EXISTING AREA TO REMIAN: 170 LINEAR FT±

WETLAND PERMANENT IMPACTS: 15,722 SF± (0.36 ACRES±)

WETLAND B: 8,843 SF± (0.20 ACRES±)
WETLAND C: 6,879 SF± (0.16 ACRES±)

VEGETATED CORRIDOR TEMPORARY IMPACT AREA (TO BE ENHANCED TO GOOD CONDITION): 745 SF±

VEGETATED CORRIDOR PERMANENT IMPACT AREA: 7,571 SF± (0.17 ACRES±) (5,900 SF± 3FT BEYOND PATH REQUIRING MITIGATION)

VEGETATED CORRIDOR ENHANCEMENT AREA (TO BE PLANTED TO GOOD CONDITION): 102,839 SF± (2.36 ACRES±)

VEGETATED CORRIDOR PERMANENT IMPACT AREA TO BE MITIGATED THROUGH WETLAND BANK CREDIT PURCHASE: 51,681 SF± (1.19 ACRES±)

VEGETATED CORRIDOR REPLACEMENT MITIGATION AREA: 5,900 SF± (0.14 ACRES±)

VEGETATED CORRIDOR PUBLIC BENEFIT MITIGATION AREA (TO BE PLANTED TO GOOD CONDITION): 7,571 SF± (0.17 ACRES±)

WETLAND AND WATER BOUNDARIES SHOWN WERE DELINEATED BY AKS ENGINEERING & FORESTRY, LLC ON MARCH 29–31, 2017 AND WERE PROFESSIONALLY LAND SURVEYED BY AKS ON APRIL 7–13, 2017.

N

SCALE: 1"= 60 FEET

60 0 24 36 48 60

COLOR COPY
11 X 17

DATE: 05/01/2018

SITE PLAN	FIGURE 7C
BROOKMAN RESIDENTIAL SUBDIVISION	

AKS ENGINEERING & FORESTRY, LLC
12965 SW HERMAN RD, STE 100
TUALATIN, OR 97062
P: 503.563.6151 F: 503.563.6152 aks-eng.com

DRWN: KMK
CHKD: SAR
AKS JOB: 3591

DWG: 3591 SITE PLAN_NRA | FIGURE 7C

Appendix A: Brookman Residential Subdivision Wetland Determination Data Sheets and DSL Concurrence Letter

Oregon
Kate Brown, Governor

Department of State Lands
775 Summer Street NE, Suite 100
Salem, OR 97301-1279
(503) 986-5200
FAX (503) 378-4844
www.oregon.gov/dsl

June 27, 2018

Brookman Development, LLC
Attn: Joe Schiewe
P.O. Box 61426
Vancouver, WA 98666

Re: WD # 2018-0275 Wetland Delineation Report for the Proposed Brookman Park Subdivision, Washington County;
T 3S R 1W S TL 103; S 6B TL 100 and (200) portion;

Dear Mr. Schiewe:

The Department of State Lands has reviewed the wetland delineation report prepared by AKS Engineering & Forestry LLC for the site referenced above. Please note that the study area includes only a portion of the tax lots described above (see the attached map). Based upon the information presented in the report, and additional information submitted upon request, we concur with the wetland and waterway boundaries as mapped in Figure 5 and 5A – 5C of the report. Within the study area, four wetlands (Wetland A-D, totaling approximately 2.44 acres) and one waterway (Ephemeral Drainage) were identified.

The wetlands are subject to the permit requirements of the state Removal-Fill Law. However, the waterway is exempt per OAR 141-085-0515 (3); therefore, it is not subject to these state permit requirements. Under current regulations, a state permit is required for cumulative fill or annual excavation of 50 cubic yards or more in wetlands or below the ordinary high-water line (OHWL) of the waterway (or the 2-year recurrence interval flood elevation if OHWL cannot be determined).

This concurrence is for purposes of the state Removal-Fill Law only. Federal or local permit requirements may apply as well. The Army Corps of Engineers will determine jurisdiction for purposes of the Clean Water Act. We recommend that you attach a copy of this concurrence letter to both copies of any subsequent joint permit application to speed application review.

Please be advised that state law establishes a preference for avoidance of wetland impacts. Because measures to avoid and minimize wetland impacts may include reconfiguring parcel layout and size or development design, we recommend that you work with Department staff on appropriate site design before completing the city or county land use approval process.

This concurrence is based on information provided to the agency. The jurisdictional determination is valid for five years from the date of this letter unless new information necessitates a revision. Circumstances under which the Department may change a determination are found in OAR 141-090-0045 (available on our web site or upon request). In addition, laws enacted by the legislature and/or rules adopted by the Department may result in a change in jurisdiction; individuals and applicants are subject to the regulations that are in effect at the time of the removal-fill activity or complete permit application. The applicant, landowner, or agent may submit a request for reconsideration of this determination in writing within six months of the date of this letter.

Thank you for having the site evaluated. Please phone me at 503-986-5232 if you have any questions.

Sincerely,

Peter Ryan, PWS
Jurisdiction Coordinator

Approved by

Kathy Verble, CPSS
Aquatic Resource Specialist

Enclosures

ec: Kayla Katkin, AWB, AKS Engineering & Forestry, LLC
City of Sherwood Planning Department (Maps enclosed for updating LWI)
Kinsey Friesen, Corps of Engineers
Lindsey Obermiller, Clean Water Services
Anita Huffman, DSL

WETLAND DELINEATION / DETERMINATION REPORT COVER FORM

Fully completed and signed report cover forms and applicable fees are required before report review timelines are initiated by the Department of State Lands. Make checks payable to the Oregon Department of State Lands. To pay fees by credit card, go online at: https://apps.oregon.gov/DSL/EPS/program?key=4.

Attach this completed and signed form to the front of an unbound report or include a hard copy with a digital version (single PDF file of the report cover form and report, minimum 300 dpi resolution) and submit to: **Oregon Department of State Lands, 775 Summer Street NE, Suite 100, Salem, OR 97301-1279.** A single PDF of the completed cover from and report may be e-mailed to: **Wetland_Delineation@dsl.state.or.us**. For submittal of PDF files larger than 10 MB, e-mail DSL instructions on how to access the file from your ftp or other file sharing website.

Contact and Authorization Information

☒ Applicant ☐ Owner Name, Firm and Address:
Brookman Development, LLC
Joe Schiewe
P.O. Box 61426
Vancouver, WA 98666

RECEIVED
MAY 08 2018
RECEIVED $ 437.00
DEPARTMENT OF STATE LANDS
✓#29017

Business phone # (360) 892-0514
Mobile phone # (optional)
E-mail: joe@holthomes.com

☒ Authorized Legal Agent, Name and Address (if different):
Same as Applicant

Business phone #
Mobile phone # (optional)
E-mail:

I either own the property described below or I have legal authority to allow access to the property. I authorize the Department to access the property for the purpose of confirming the information in the report, after prior notification to the primary contact.

Typed/Printed Name: Joe Schiewe **Signature:** Joe Schiewe
Date: 4/9/18 Special instructions regarding site access: ____

Project and Site Information

Project Name: Brookman Residential Subdivision

Latitude: 45.344845 Longitude: -122.857888
decimal degree - centroid of site or start & end points of linear project

Proposed Use:
Residential Development

Tax Map # 3S 1 6B
Tax Lot(s) Tax Lot 100 and a Portion of Tax 200

Tax Map # 3S 1 6
Tax Lot(s) Tax Lot 103

Project Street Address (or other descriptive location):
North of the SW Brookman Road and SW Oberst Road

Township 3S Range 1W Section 6 QQ B
Use separate sheet for additional tax and location information

City: Sherwood County: Washington

Waterway: N/A River Mile: N/A

Wetland Delineation Information

Wetland Consultant Name, Firm and Address:
Kayla Katkin, AWB
AKS Engineering & Forestry, LLC
12965 SW Herman Road, Suite 100
Tualatin, OR 97062

Phone # (503) 563-6151
Mobile phone # (if applicable)
E-mail: katkink@aks-eng.com

The information and conclusions on this form and in the attached report are true and correct to the best of my knowledge.
Consultant Signature: K Katkin Date: 04/03/2018

Primary Contact for report review and site access is ☒ Consultant ☐ Applicant/Owner ☐ Authorized Agent

Wetland/Waters Present? ☒ Yes ☐ No Study Area size: 37.20 acres Total Wetland Acreage: 2.4400

Check Applicable Boxes Below

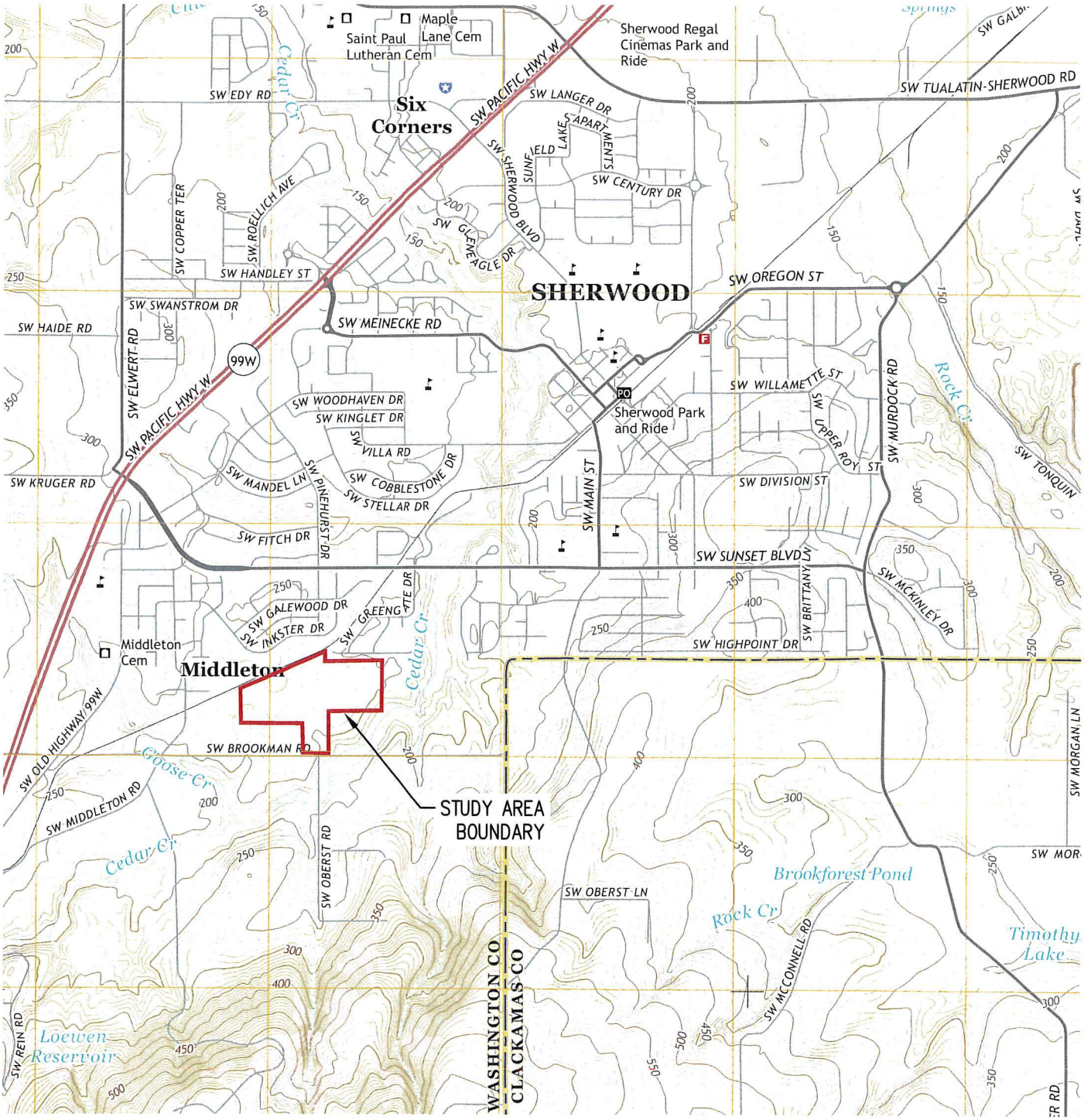
☐ R-F permit application submitted
☐ Mitigation bank site
☐ Industrial Land Certification Program Site
☐ Wetland restoration/enhancement project (not mitigation)
☐ Previous delineation/application on parcel
If known, previous DSL # ____

☒ Fee payment submitted $ 437
☐ Fee ($100) for resubmittal of rejected report
☐ Request for Reissuance. See eligibility criteria. (no fee)
DSL # ____ Expiration date ____
☐ LWI shows wetlands or waters on parcel
Wetland ID code ____

For Office Use Only

DSL Reviewer: PR Fee Paid Date: 5 / 8 / 18 DSL WD # 2018-0275

Date Delineation Received: 5 / 8 / 18 Scanned: ☐ Electronic: ☐ DSL App.# ____



N

USGS 7.5' TOPOGRAPHIC SERIES
QUADRANGLE: SHERWOOD, OR (2014)

WD2018-0275

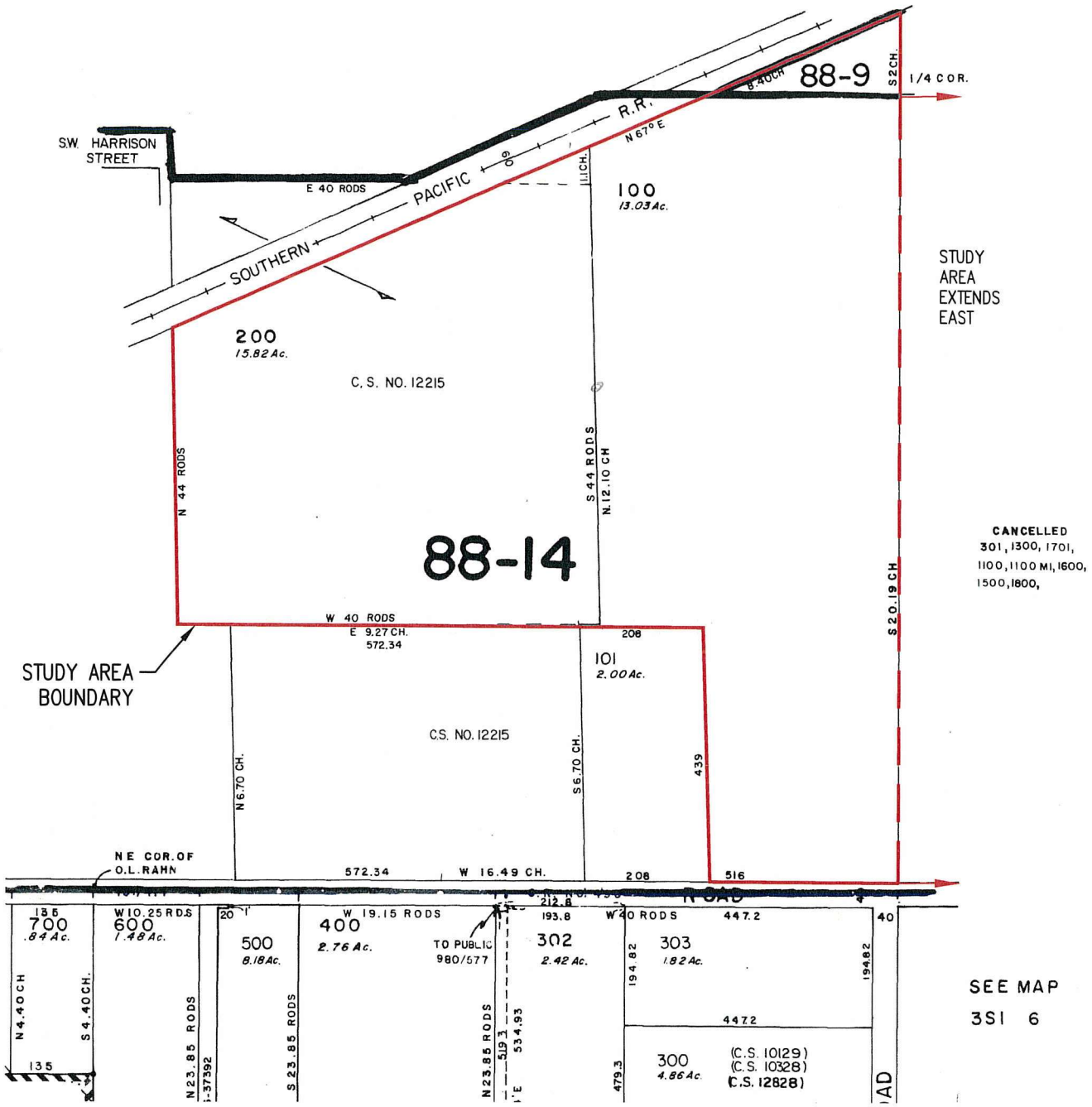
DATE: 04/27/2018

SCALE: 1"= 2000 FEET

2000 0 800 1200 1600 2000

USGS VICINITY MAP BROOKMAN RESIDENTIAL SUBDIVISION WETLAND & WATERS DELINEATION REPORT	FIGURE 1
AKS ENGINEERING & FORESTRY, LLC 12965 SW HERMAN RD SUITE 100 TUALATIN, OR 97062 www.aks-eng.com PHONE: 503.563.6151 FAX: 503.563.6152	DRWN: KMK CHKD: SAR AKS JOB: 3591

DWG: 3591 WDR FIGURES | FIGURE 1



WASHINGTON COUNTY
TAX LOT 100 AND A PORTION OF 200
TAX MAP 3S 1 6B

WD2018-0273

N

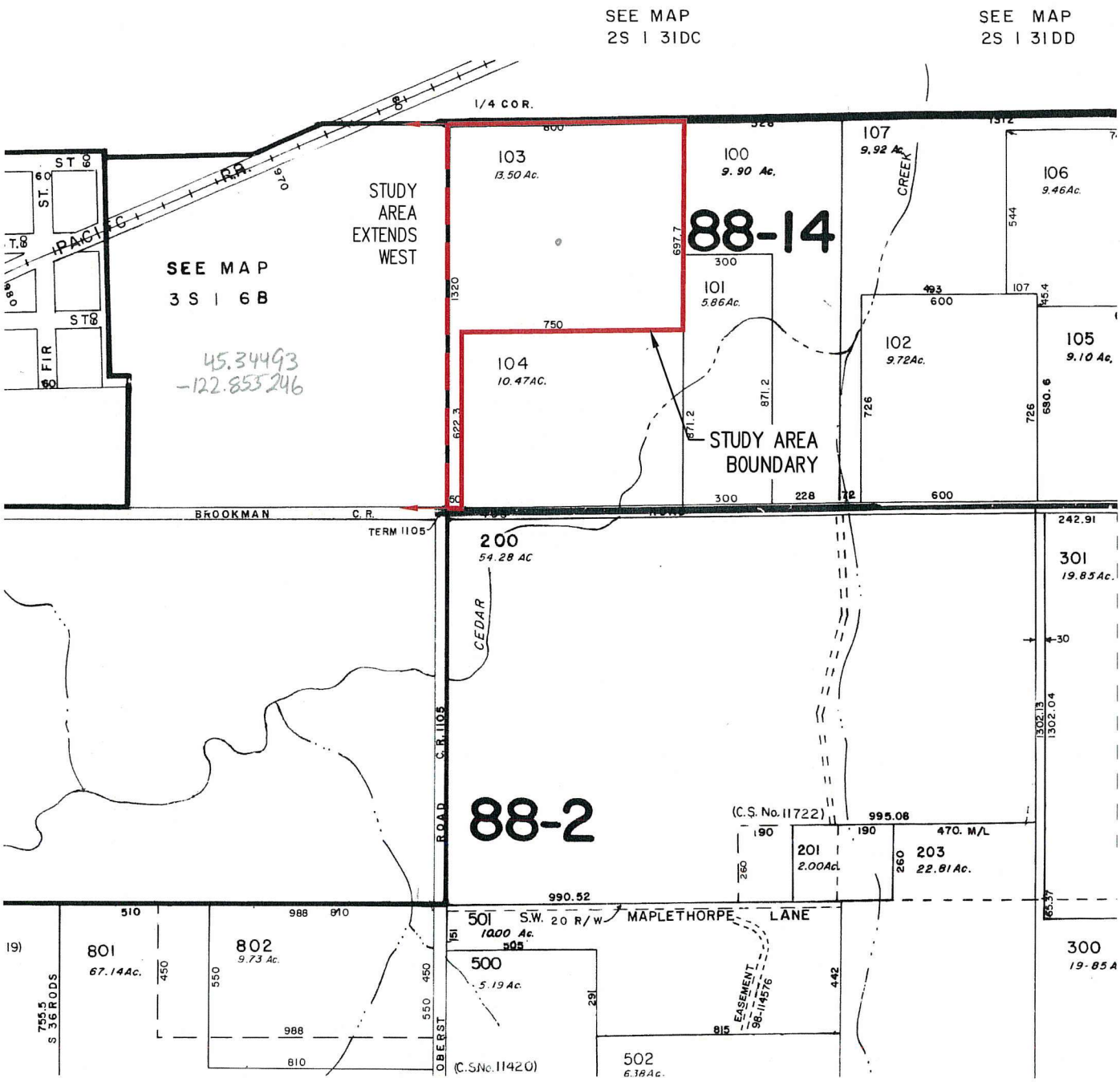
SCALE: 1"= 250 FEET

250 0 100 150 200 250

DATE: 04/27/2018

TAX MAP (MAP 3S 1 6B) BROOKMAN RESIDENTIAL SUBDIVISION WETLAND & WATERS DELINEATION REPORT	FIGURE 2A
AKS ENGINEERING & FORESTRY, LLC 12965 SW HERMAN RD SUITE 100 TUALATIN, OR 97062 www.aks-eng.com PHONE: 503.563.6151 FAX: 503.563.6152	DRWN: KMK CHKD: SAR AKS JOB: 3591

DWG: 3591 WDR FIGURES | FIGURE 2A



WASHINGTON COUNTY
TAX LOT 103
TAX MAP 3S 1 6

WD2018-0275

DATE: 04/27/2018

TAX MAP (MAP 3S 1 6) BROOKMAN RESIDENTIAL SUBDIVISION WETLAND & WATERS DELINEATION REPORT	FIGURE 2B
AKS ENGINEERING & FORESTRY, LLC 12965 SW HERMAN RD SUITE 100 TUALATIN, OR 97062 www.aks-eng.com PHONE: 503.563.6151 FAX: 503.563.6152	DRWN: KMK CHKD: SAR AKS JOB: 3591

DWG: 3591 WDR FIGURES | FIGURE 2B

N

SCALE: 1"= 200 FEET

200 0 80 120 160 200

SCALE 11 X 17"

LEGEND:

ON-SITE WETLANDS TOTAL: 106,315 SF± (2.44 ACRES±)

WETLAND A: 32,182 SF± (0.74 ACRES±)
WETLAND B: 8,843 SF± (0.20 ACRES±)
WETLAND C: 6,879 SF± (0.16 ACRES±)
WETLAND D: 58,411 SF± (1.34 ACRES±)

ON-SITE PORTION OF EPHEMERAL DRAINAGE: 170 SF ± (170 LINEAR FT±)

WETLAND AND WATER BOUNDARIES SHOWN WERE DELINEATED BY AKS ENGINEERING & FORESTRY, LLC ON MARCH 29-31, 2017 AND FEBRUARY 14, 2018 AND WERE PROFESSIONALLY LAND SURVEYED BY AKS ON APRIL 7-13, 2017 AND FEBRUARY 20, 2018.

PLOTS 1-2 AND 26-46 ARE NOT INCLUDED IN THE STUDY AREA.

1-FOOT INTERVAL GROUND CONTOURS DERIVED FROM LAND SURVEY.

DSL WD # 2018-0275

Approval Issued 6/27/18

Approval Expires 6/27/23

DATE: 04/30/2018

WETLAND AND WATERS DELINEATION MAP	FIGURE
BROOKMAN RESIDENTIAL SUBDIVISION	5

AKS ENGINEERING & FORESTRY, LLC
12965 SW HERMAN RD, STE 100
TUALATIN, OR 97062
P: 503.563.6151 F: 503.563.6152 aks-eng.com

DRWN: KMK
CHKD: SAR
AKS JOB: 3591

DWG: 3591 WDR EXCOND | FIGURE 5

TAX LOT 1100
TAX MAP 3S 1 06BB

TAX LOT 200
TAX MAP 3S 1 06B

WOVEN-WIRE FENCE

WOVEN-WIRE FENCE

220

225

220

215

215

210

210

205

205

PLOT 3

PLOT 17

PLOT 18

PLOT 4

PLOT 7

PLOT 5

PLOT 6

WETLAND 'A'
AREA: 32,182 SF±

NHD Waterway offsite

TAX LOT 2590
TAX MAP 3S 1 06BB

WETLAND EXTENDS
OFF-SITE

TAX LOT 200
TAX MAP 3S 1 06B

N

SCALE: 1"= 60 FEET

60 0 24 36 48 60

SCALE 11 X 17"

LEGEND:

ON-SITE WETLANDS TOTAL: 106,315 SF± (2.44 ACRES±)

WETLAND A: 32,182 SF± (0.74 ACRES±)
WETLAND B: 8,843 SF± (0.20 ACRES±)
WETLAND C: 6,879 SF± (0.16 ACRES±)
WETLAND D: 58,411 SF± (1.34 ACRES±)

ON-SITE PORTION OF EPHEMERAL DRAINAGE:
170 SF ± (170 LINEAR FT±)

WETLAND AND WATER BOUNDARIES SHOWN WERE DELINEATED BY AKS ENGINEERING & FORESTRY, LLC ON MARCH 29-31, 2017 AND FEBRUARY 14, 2018 AND WERE PROFESSIONALLY LAND SURVEYED BY AKS ON APRIL 7-13, 2017 AND FEBRUARY 20, 2018.

PLOTS 1-2 AND 26-46 ARE NOT INCLUDED IN THE STUDY AREA.

1-FOOT INTERVAL GROUND CONTOURS DERIVED FROM LAND SURVEY.

DSL WD # 2018-0275
Approval Issued 6/27/18
Approval Expires 6/27/23

DATE: 04/30/2018

WETLAND AND WATERS DELINEATION MAP

BROOKMAN RESIDENTIAL SUBDIVISION

FIGURE 5A

AKS ENGINEERING & FORESTRY, LLC
12965 SW HERMAN RD, STE 100
TUALATIN, OR 97062
P: 503.563.6151 F: 503.563.6152 aks-eng.com

DRWN: KMK
CHKD: SAR
AKS JOB: 3591

WETLAND 'B'
AREA: 8,843 SF±

TAX LOT 100
TAX MAP 3S 1 06B

TAX LOT 101
TAX MAP 3S 1 06B

TAX LOT 103
TAX MAP 3S 1 06

TAX LOT 104
TAX MAP 3S 1 06

WETLAND 'C'
AREA: 6,879 SF±

WOVEN WIRE FENCE

WOVEN WIRE AND ELECTRIC FENCE

EXPOSED AGRICULTURAL DRAIN TILE

T-POSTS

EDGE OF MOWED GRASS FROM ADJOINER

GATE

GRAVEL DRIVEWAY

PLOT 8
PLOT 9
PLOT 10
PLOT 11
PLOT 12
PLOT 13
PLOT 14
PLOT 15
PLOT 16
PLOT 47

215
210
205
200
195

EX 12" CONC CULVERT
IE: 191.27 (NW)
IE: 188.88 (SE)

DSL WD # 2018-0275
Approval Issued 6/22/18
Approval Expires 6/22/23

N

SCALE: 1"=60 FEET

60 0 24 36 48 60

SCALE 11 X 17"

INSERT: VIEW OF EASTERN PORTION OF SITE

LEGEND:

ON-SITE WETLANDS TOTAL: 106,315 SF± (2.44 ACRES±)

WETLAND A: 32,182 SF± (0.74 ACRES±)
WETLAND B: 8,843 SF± (0.20 ACRES±)
WETLAND C: 6,879 SF± (0.16 ACRES±)
WETLAND D: 58,411 SF± (1.34 ACRES±)

ON-SITE PORTION OF EPHEMERAL DRAINAGE:
170 SF ± (170 LINEAR FT±)

WETLAND AND WATER BOUNDARIES SHOWN WERE DELINEATED BY AKS ENGINEERING & FORESTRY, LLC ON MARCH 29-31, 2017 AND FEBRUARY 14, 2018 AND WERE PROFESSIONALLY LAND SURVEYED BY AKS ON APRIL 7-13, 2017 AND FEBRUARY 20, 2018.

PLOTS 1-2 AND 26-46 ARE NOT INCLUDED IN THE STUDY AREA.

1-FOOT INTERVAL GROUND CONTOURS DERIVED FROM LAND SURVEY.

DATE: 04/30/2018

WETLAND AND WATERS DELINEATION MAP

BROOKMAN RESIDENTIAL SUBDIVISION

FIGURE 5B

AKS ENGINEERING & FORESTRY, LLC
12965 SW HERMAN RD, STE 100
TUALATIN, OR 97062
P: 503.563.6151 F: 503.563.6152 aks-eng.com

DRWN: KMK
CHKD: SAR
AKS JOB: 3591

DWG: 3591 WDR EXCOND | FIGURE 5B

EX STM CO
RIM: 218.96
IE BEND: 212±

EX 1.5' WIDE X 1.0'± DEEP
BOX CULVERT
IE: 212.76

EX 1.5' WIDE X 1.0'± DEEP
BOX CULVERT
IE: 212.84

DITCH EXTENDS
OFF-SITE

EPHEMERAL DRIANAGE:
170 LINEAR FT±

WETLAND EXTENDS
SLIGHTLY OFF-SITE

WOVEN WIRE FENCE

SW COBBLE COURT

TAX LOT 10600	TAX LOT 10500	TAX LOT 10400	TAX LOT 10300	TAX LOT 10200	TAX LOT 10100	TAX LOT 10000	TAX LOT 9900	TAX LOT 9800
TAX MAP 2S 1 31D	TAX MAP 2S 1 31D	TAX MAP 2S 1 31D	TAX MAP 2S 1 31D	TAX MAP 2S 1 31D	TAX MAP 2S 1 31D	TAX MAP 2S 1 31D	TAX MAP 2S 1 31D	TAX MAP 2S 1 31D

WETLAND 'D'
AREA: 58,411 SF±

PLOT 25
PLOT 24
PLOT 23
PLOT 22
PLOT 21
PLOT 20
PLOT 19

TAX LOT 100
TAX MAP 3S 1 06B

TAX LOT 103
TAX MAP 3S 1 06

200
205
210
215

SAN
STM
COM
PWR
FOM

N

SCALE: 1"=60 FEET

60 0 24 36 48 60

SCALE 11 X 17"

LEGEND:

ON-SITE WETLANDS TOTAL: 106,315 SF± (2.44 ACRES±)

WETLAND A: 32,182 SF± (0.74 ACRES±)
WETLAND B: 8,843 SF± (0.20 ACRES±)
WETLAND C: 6,879 SF± (0.16 ACRES±)
WETLAND D: 58,411 SF± (1.34 ACRES±)

ON-SITE PORTION OF EPHEMERAL DRAINAGE:
170 SF ± (170 LINEAR FT±)

WETLAND AND WATER BOUNDARIES SHOWN WERE DELINEATED BY AKS ENGINEERING & FORESTRY, LLC ON MARCH 29-31, 2017 AND FEBRUARY 14, 2018 AND WERE PROFESSIONALLY LAND SURVEYED BY AKS ON APRIL 7-13, 2017 AND FEBRUARY 20, 2018.

PLOTS 1-2 AND 26-46 ARE NOT INCLUDED IN THE STUDY AREA.

1-FOOT INTERVAL GROUND CONTOURS DERIVED FROM LAND SURVEY.

DSL WD # 2018-0275
Approval Issued 6/27/18
Approval Expires 6/27/23

DATE: 04/30/2018

WETLAND AND WATERS DELINEATION MAP

FIGURE 5C

BROOKMAN RESIDENTIAL SUBDIVISION

AKS ENGINEERING & FORESTRY, LLC
12965 SW HERMAN RD, STE 100
TUALATIN, OR 97062
P: 503.563.6151 F: 503.563.6152 aks-eng.com

DRWN: KMK
CHKD: SAR
AKS JOB: 3591

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: Brookman Road Residential Development City/County: Sherwood/ Washington Sampling Date: 3/22/2017

Applicant/Owner: The Holt Group State: OR Sampling Point: 3

Investigator(s): Kayla Katkin and Stacey Reed Section, Township, Range: Sec. 6, T.3S., R.1.W.

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 3

Subregion (LRR): A, Northwest Forests and Coast Lat: Long: Datum:

Soil Map Unit Name: (Unit 1) Aloha silt loam NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks)

Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No
Hydric Soil Present?	Yes	No X
Wetland Hydrology Present?	Yes X	No

Is the Sampled Area within a Wetland? Yes No X

Precipitation: According to the NWS Hillsboro station, trace amounts of rainfall was received on the day of the site visit and 4.13 inches within the two weeks prior. Above average rainfall was preceeded by the site visit.

Remarks:

VEGETATION

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0%	= Total Cover	

Sapling/Shrub Stratum (Plot size: 10 ft r)			
1.			
2.			
3.			
4.			
5.			
	0%	= Total Cover	

Herb Stratum (Plot size: 5 ft r)			
1. *Schedonorus arundinaceus*	60%	Yes	FAC
2. *Agrostis capillaris*	20%	Yes	FAC
3. *Taraxacum officinale*	20%	Yes	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100%	= Total Cover	

Woody Vine Stratum (Plot size: 10 ft r)			
1.			
2.			
	0%	= Total Cover	

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 67% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species 0	x 1 =	0
FACW species 0	x 2 =	0
FAC species 80	x 3 =	240
FACU species 20	x 4 =	80
UPL species 0	x 5 =	0
Column Totals: 100 (A)		320 (B)

Prevalence Index = B/A = 3.20

Hydrophytic Vegetation Indicators:

- 1 - Rapid Test for Hydrophytic Vegetation
- 2 - Dominance Test is >50%
- 3 - Prevalence Index is ≤3.0[1]
- 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- 5 - Wetland Non-Vascular Plants[1]
- Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No

Remarks: The vegeation was recently graded.

SOIL

Sampling Point: **3**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	□	Color (moist)	□	Type[1]	Loc[2]	Texture	Remarks
0-10	10□R 3/2	100					SiL	
10-18	10□R 4/3	85	7.5□R 4/4	15	C	M	SiL	

[1]Type: C□Concentration, D□Depletion, RM□Reduced Matrix CS□Covered or Coated Sand □rains. [2]Location: PL□Pore Lining, M□Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy □leyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy □leyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ □ery Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ___ **No** X

Remarks: 0-10 inches contained many fine roots and no oxidi□ed rhi□ospheres.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one re□uired□check all that apply)

- ___ Surface Water (A1)
- □ High Water Table (A2)
- □ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation □isible on Aerial Imagery (B7)
- ___ Sparsely □egetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ A□uatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidi□ed Rhi□ospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more re□uired)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation □isible on Aerial Imagery (C9)
- ___ □eomorphic Position (D2)
- ___ Shallow A□uitard (D3)
- ___ FAC-□eutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present□	□es _____	□o □	Depth (inches):	
Water Table Present□	□es □	□o _____	Depth (inches):	12"
Saturation Present□ (includes capillary fringe)	□es □	□o _____	Depth (inches):	9"

Wetland Hydrology Present? Yes X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Site visit was preceeded by heavy rainfall in the two weeks prior.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: Brookman Road Residential Development City/County: Sherwood/ Washington Sampling Date: 3/22/2017

Applicant/Owner: The Holt Group State: OR Sampling Point: 4

Investigator(s): Kayla Katkin and Stacey Reed Section, Township, Range: Sec. 6, T.3S., R.1.W.

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Concave Slope (%): 3

Subregion (LRR): A, Northwest Forests and Coast Lat: Long: Datum:

Soil Map Unit Name: (Unit 1) Aloha silt loam NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks)

Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No
Hydric Soil Present?	Yes X	No
Wetland Hydrology Present?	Yes X	No

Is the Sampled Area within a Wetland? Yes X No

Precipitation: According to the NWS Hillsboro station, trace amounts of rainfall was received on the day of the site visit and 4.13 inches within the two weeks prior. Above average rainfall was preceeded by the site visit.

Remarks: Wetland A.

VEGETATION

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0%	= Total Cover	

Sapling/Shrub Stratum (Plot size: 10 ft r)			
1.			
2.			
3.			
4.			
5.			
	0%	= Total Cover	

Herb Stratum (Plot size: 5 ft r)			
1. *Alopecurus pratensis*	60%	Yes	FAC
2. *Schedonorus arundinaceus*	10%	No	FAC
3. *Taraxacum officinale*	10%	No	FACU
4. *Trifolium repens*	5%	No	FAC
5. *Juncus tenuis*	2%	No	FAC
6.			
7.			
8.			
9.			
10.			
11.			
	87%	= Total Cover	

Woody Vine Stratum (Plot size: 10 ft r)			
1.			
2.			
	0%	= Total Cover	

% Bare Ground in Herb Stratum 13%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	77	x 3 =	231
FACU species	10	x 4 =	40
UPL species	0	x 5 =	0
Column Totals:	87 (A)		271 (B)
Prevalence Index = B/A =			3.11

Hydrophytic Vegetation Indicators:

- 1 - Rapid Test for Hydrophytic Vegetation
- 2 - Dominance Test is >50%
- 3 - Prevalence Index is ≤3.0[1]
- 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- 5 - Wetland Non-Vascular Plants[1]
- Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No

Remarks:

SOIL

Sampling Point: **4**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	□	Color (moist)	□	Type[1]	Loc[2]	Texture	Remarks
0-5	10□R 3/2	100					SiL	
5-7	10□R 4/2	95	7.5□R 4/4	5	C	M	SiL	
7-14	10□R 4/2	80	7.5□R 4/6	20	C	M	SiL	

[1]Type: C□Concentration, D□Depletion, RM□Reduced Matrix CS□Covered or Coated Sand □rains. [2]Location: PL□Pore Lining, M□Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy □leyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy □leyed Matrix (F2)
- ___ □ Depleted Matrix (F3)
- ___ □ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ □ery Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X **No** _____

Remarks: Many fine roots present within the top 5 inches layer.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one re□uired□check all that apply)

- ___ Surface Water (A1)
- ___ □ High Water Table (A2)
- ___ □ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation □isible on Aerial Imagery (B7)
- ___ Sparsely □egetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ A□uatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidi□ed Rhi□ospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more re□uired)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation □isible on Aerial Imagery (C9)
- ___ □eomorphic Position (D2)
- ___ Shallow A□uitard (D3)
- ___ FAC-□eutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present□	□es _____	□o □	Depth (inches):	
Water Table Present□	□es □	□o _____	Depth (inches):	5"
Saturation Present□ (includes capillary fringe)	□es □	□o _____	Depth (inches):	Surface

Wetland Hydrology Present? Yes X **No** _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Ponded surface water is present approximately 2 feet away, downslope from sample plot.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: Brookman Road Residential Development City/County: Sherwood/ Washington Sampling Date: 3/22/2017

Applicant/Owner: The Holt Group State: OR Sampling Point: 5

Investigator(s): Kayla Katkin and Haley Smith Section, Township, Range: Sec. 6, T.3S., R.1.W.

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Convex Slope (%): 3

Subregion (LRR): A, Northwest Forests and Coast Lat: Long: Datum:

Soil Map Unit Name: (Unit 1) Aloha silt loam NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks)

Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No
Hydric Soil Present?	Yes	No X
Wetland Hydrology Present?	Yes	No X

Is the Sampled Area within a Wetland? Yes No X

Precipitation: According to the NWS Hillsboro station, trace amounts of rainfall was received on the day of the site visit and 4.13 inches within the two weeks prior. Above average rainfall was preceeded by the site visit.

Remarks:

VEGETATION

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Crataegus monogyna*	30%	Yes	FAC
2. *Fraxinus latifolia*	10%	Yes	FACW
3.			
4.			
	40%	= Total Cover	
Sapling/Shrub Stratum (Plot size: 10 ft r)			
1. *Ilex aquifolium*	5%	Yes	FAC
2. *Crataegus monogyna*	2%	No	FAC
3.			
4.			
5.			
	7%	= Total Cover	
Herb Stratum (Plot size: 5 ft r)			
1. *Holcus lanatus*	40%	Yes	FAC
2. *Geranium molle*	30%	Yes	NOL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	70%	= Total Cover	
Woody Vine Stratum (Plot size: 10 ft r)			
1.			
2.			
	0%	= Total Cover	

% Bare Ground in Herb Stratum 30%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 60% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species 0	x 1 =	0
FACW species 10	x 2 =	20
FAC species 72	x 3 =	216
FACU species 5	x 4 =	20
UPL species 30	x 5 =	150
Column Totals: 117 (A)		406 (B)
Prevalence Index = B/A =		3.47

Hydrophytic Vegetation Indicators:

- 1 - Rapid Test for Hydrophytic Vegetation
- 2 - Dominance Test is >50%
- 3 - Prevalence Index is ≤3.0[1]
- 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- 5 - Wetland Non-Vascular Plants[1]
- Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No

Remarks: Pseudotsuga menziesii is rooted approximately 5 feet downslope from sample plot.

SOIL

Sampling Point: **5**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	□	Color (moist)	□	Type[1]	Loc[2]	Texture	Remarks
0-10	10□R 3/2	100					SiL	
10-15	10□R 3/3	100					SiL	

[1]Type: C□Concentration, D□Depletion, RM□Reduced Matrix CS□Covered or Coated Sand □rains. [2]Location: PL□Pore Lining, M□Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy □leyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy □leyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ □ery Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ___ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one re□uired□check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation □isible on Aerial Imagery (B7)
- ___ Sparsely □egetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ A□uatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidi□ed Rhi□ospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more re□uired)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation □isible on Aerial Imagery (C9)
- ___ □eomorphic Position (D2)
- ___ Shallow A□uitard (D3)
- ___ FAC-□eutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present□ □es _____ □o □ Depth (inches): _____

Water Table Present□ □es _____ □o □ Depth (inches): □15"

Saturation Present□ (includes capillary fringe) □es _____ □o □ Depth (inches): □15"

Wetland Hydrology Present?

Yes ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: Brookman Road Residential Development City/County: Sherwood/ Washington Sampling Date: 3/22/2017

Applicant/Owner: The Holt Group State: OR Sampling Point: 6

Investigator(s): Kayla Katkin and Haley Smith Section, Township, Range: Sec. 6, T.3S., R.1.W.

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Convex Slope (%): 3

Subregion (LRR): A, Northwest Forests and Coast Lat: Long: Datum:

Soil Map Unit Name: (Unit 1) Aloha silt loam NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks)

Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	No	X
Hydric Soil Present?	Yes	No	X
Wetland Hydrology Present?	Yes	No	X

Is the Sampled Area within a Wetland? Yes No X

Precipitation: According to the NWS Hillsboro station, trace amounts of rainfall was received on the day of the site visit and 4.13 inches within the two weeks prior. Above average rainfall was preceeded by the site visit.

Remarks:

VEGETATION

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Pseudotsuga menziesii*	60%	Yes	FAC
2. *Alnus rubra*	40%	Yes	FAC
3.			
4.			
	100%	= Total Cover	
Sapling/Shrub Stratum (Plot size: 10 ft r)			
1. *Crataegus monogyna*	5%	Yes	FAC
2. *Ilex aquifolium*	5%	Yes	FAC
3.			
4.			
5.			
	10%	= Total Cover	
Herb Stratum (Plot size: 5 ft r)			
1. *Geranium molle*	40%	Yes	NOL
2. *Holcus lanatus*	30%	Yes	FAC
3. *Taraxacum officinale*	5%	No	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	75%	= Total Cover	
Woody Vine Stratum (Plot size: 10 ft r)			
1.			
2.			
	0%	= Total Cover	

% Bare Ground in Herb Stratum 25%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species 0	x 1 =	0
FACW species 0	x 2 =	0
FAC species 75	x 3 =	225
FACU species 10	x 4 =	40
UPL species 40	x 5 =	200
Column Totals: 125 (A)		465 (B)

Prevalence Index = B/A = 3.72

Hydrophytic Vegetation Indicators:

- 1 - Rapid Test for Hydrophytic Vegetation
- 2 - Dominance Test is >50%
- 3 - Prevalence Index is ≤3.0[1]
- 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- 5 - Wetland Non-Vascular Plants[1]
- Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes No X

Remarks:

SOIL

Sampling Point: **6**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	□	Color (moist)	□	Type[1]	Loc[2]	Texture	Remarks
0-10	10□R 3/2	100					SiL	
10-14□	10□R 3/3	100					SiL	

[1]Type: C□Concentration, D□Depletion, RM□Reduced Matrix CS□Covered or Coated Sand □rains. [2]Location: PL□Pore Lining, M□Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy □leyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy □leyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ □ery Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ___ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one re□uired□check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation □isible on Aerial Imagery (B7)
- ___ Sparsely □egetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ A□uatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidi□ed Rhi□ospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more re□uired)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation □isible on Aerial Imagery (C9)
- ___ □eomorphic Position (D2)
- ___ Shallow A□uitard (D3)
- ___ FAC-□eutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present□ □es _____ □o □ Depth (inches): _____

Water Table Present□ □es _____ □o □ Depth (inches): □14"

Saturation Present□ (includes capillary fringe) □es _____ □o □ Depth (inches): □14"

Wetland Hydrology Present?

Yes ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: Brookman Road Residential Development City/County: Sherwood/ Washington Sampling Date: 3/22/2017

Applicant/Owner: The Holt Group State: OR Sampling Point: 7

Investigator(s): Kayla Katkin and Haley Smith Section, Township, Range: Sec. 6, T.3S., R.1.W.

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Concave Slope (%): 3

Subregion (LRR): A, Northwest Forests and Coast Lat: Long: Datum:

Soil Map Unit Name: (Unit 1) Aloha silt loam NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks)

Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No	**Is the Sampled Area within a Wetland?** Yes X No
Hydric Soil Present?	Yes X	No	
Wetland Hydrology Present?	Yes X	No	

Precipitation: According to the NWS Hillsboro station, trace amounts of rainfall was received on the day of the site visit and 4.13 inches within the two weeks prior. Above average rainfall was preceeded by the site visit.

Remarks: Wetland A.

VEGETATION

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fraxinus latifolia*	70%	Yes	FACW
2.			
3.			
4.			
	70%	= Total Cover	
Sapling/Shrub Stratum (Plot size: 10 ft r)			
1. *Rubus armeniacus*	25%	Yes	FAC
2. *Ilex aquifolium*	10%	Yes	FAC
3. *Crataegus monogyna*	10%	Yes	FAC
4.			
5.			
	45%	= Total Cover	
Herb Stratum (Plot size: 5 ft r)			
1. *Holcus lanatus*	35%	Yes	FAC
2. *Geranium molle*	20%	Yes	NOL
3. *Taraxacum officinale*	10%	No	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	65%	= Total Cover	
Woody Vine Stratum (Plot size: 10 ft r)			
1.			
2.			
	0%	= Total Cover	

% Bare Ground in Herb Stratum 35%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 67% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species 0	x 1 =	0
FACW species 70	x 2 =	140
FAC species 70	x 3 =	210
FACU species 20	x 4 =	80
UPL species 20	x 5 =	100
Column Totals: 180 (A)		530 (B)

Prevalence Index = B/A = 2.94

Hydrophytic Vegetation Indicators:

- 1 - Rapid Test for Hydrophytic Vegetation
- 2 - Dominance Test is >50%
- 3 - Prevalence Index is ≤3.0[1]
- 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- 5 - Wetland Non-Vascular Plants[1]
- Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No

Remarks:

SOIL

Sampling Point: 7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	□	Color (moist)	□	Type[1]	Loc[2]	Texture	Remarks
0-5	10□R 3/1	100					SiL	
5-14	10□R 4/1	95	7.5□R 4/3	5	C	M	SiL	
14-16□	10□R 4/1	90	7.5□R 3/3	10	C	M	SiL	

[1]Type: C□Concentration, D□Depletion, RM□Reduced Matrix CS□Covered or Coated Sand □rains. [2]Location: PL□Pore Lining, M□Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy □leyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy □leyed Matrix (F2)
- ___ □ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ □ery Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one re□uired□check all that apply)

- ___ Surface Water (A1)
- ___ □ High Water Table (A2)
- ___ □ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation □isible on Aerial Imagery (B7)
- ___ Sparsely □egetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ A□uatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidi□ed Rhi□ospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more re□uired)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation □isible on Aerial Imagery (C9)
- ___ □eomorphic Position (D2)
- ___ Shallow A□uitard (D3)
- ___ FAC-□eutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present□	□es _____	□o □	Depth (inches):	
Water Table Present□	□es □	□o _____	Depth (inches):	9"
Saturation Present□ (includes capillary fringe)	□es □	□o _____	Depth (inches):	7"

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: Brookman Road Residential Development City/County: Sherwood/ Washington Sampling Date: 3/22/2017

Applicant/Owner: The Holt Group State: OR Sampling Point: 8

Investigator(s): Kayla Katkin and Haley Smith Section, Township, Range: Sec. 6, T.3S., R.1.W.

Landform (hillslope, terrace, etc.): Shoulder Local relief (concave, convex, none): Convex Slope (%): 3

Subregion (LRR): A, Northwest Forests and Coast Lat: Long: Datum:

Soil Map Unit Name: (Unit 1) Aloha silt loam NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks)

Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No
Hydric Soil Present?	Yes	No X
Wetland Hydrology Present?	Yes X	No

Is the Sampled Area within a Wetland? Yes No X

Precipitation: According to the NWS Hillsboro station, trace amounts of rainfall was received on the day of the site visit and 4.13 inches within the two weeks prior. Above average rainfall was preceeded by the site visit.

Remarks:

VEGETATION

Tree Stratum (Plot size: 30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Pseudotsuga menziesii*	30%	Yes	FAC
2. *Crataegus monogyna*	15%	Yes	FAC
3.			
4.			
	45%	= Total Cover	
Sapling/Shrub Stratum (Plot size: 10 ft radius)			
1. *Rubus armeniacus*	20%	Yes	FAC
2.			
3.			
4.			
5.			
	20%	= Total Cover	
Herb Stratum (Plot size: 5 ft radius)			
1. *Schedonorus arundinaceus*	90%	Yes	FAC
2. *Cirsium arvense*	10%	No	FAC
3. *Galium aparine*	5%	No	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	105%	= Total Cover	
Woody Vine Stratum (Plot size: 10 ft radius)			
1.			
2.			
	0%	= Total Cover	

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species 0	x 1 =	0
FACW species 0	x 2 =	0
FAC species 135	x 3 =	405
FACU species 5	x 4 =	20
UPL species 0	x 5 =	0
Column Totals: 140 (A)		425 (B)

Prevalence Index = B/A = 3.04

Hydrophytic Vegetation Indicators:

- 1 - Rapid Test for Hydrophytic Vegetation
- 2 - Dominance Test is >50%
- 3 - Prevalence Index is ≤3.0[1]
- 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- 5 - Wetland Non-Vascular Plants[1]
- Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No

Remarks:

SOIL

Sampling Point: **8**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	□	Color (moist)	□	Type[1]	Loc[2]	Texture	Remarks
0-13	10□R 3/2	100					SiL	
13-16□	10□R 4/2	90	7.5□R 4/6	10	C	M	SiL	

[1]Type: C□Concentration, D□Depletion, RM□Reduced Matrix CS□Covered or Coated Sand □rains. [2]Location: PL□Pore Lining, M□Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy □leyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy □leyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ □ery Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ___ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one re□uired□check all that apply)

- ___ Surface Water (A1)
- □ High Water Table (A2)
- □ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation □isible on Aerial Imagery (B7)
- ___ Sparsely □egetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ A□uatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidi□ed Rhi□ospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more re□uired)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation □isible on Aerial Imagery (C9)
- ___ □eomorphic Position (D2)
- ___ Shallow A□uitard (D3)
- ___ FAC-□eutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present□	□es _____	□o □	Depth (inches):	
Water Table Present□	□es □	□o _____	Depth (inches):	11"
Saturation Present□ (includes capillary fringe)	□es □	□o _____	Depth (inches):	9"

Wetland Hydrology Present?

Yes X **No** _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: Brookman Road Residential Development City/County: Sherwood/ Washington Sampling Date: 3/22/2017

Applicant/Owner: The Holt Group State: OR Sampling Point: 9

Investigator(s): Kayla Katkin and Haley Smith Section, Township, Range: Sec. 6, T.3S., R.1.W.

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Concave Slope (%): 3

Subregion (LRR): A, Northwest Forests and Coast Lat: Long: Datum:

Soil Map Unit Name: (Unit 1) Aloha silt loam NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks)

Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No
Hydric Soil Present?	Yes X	No
Wetland Hydrology Present?	Yes X	No

Is the Sampled Area within a Wetland? Yes X No

Precipitation: According to the NWS Hillsboro station, trace amounts of rainfall was received on the day of the site visit and 4.13 inches within the two weeks prior. Above average rainfall was preceeded by the site visit.

Remarks: Wetland B.

VEGETATION

Tree Stratum (Plot size: 30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0%	= Total Cover	

Sapling/Shrub Stratum (Plot size: 10 ft radius)			
1.			
2.			
3.			
4.			
5.			
	0%	= Total Cover	

Herb Stratum (Plot size: 5 ft radius)			
1. *Schedonorus arundinaceus*	85%	Yes	FAC
2. *Cirsium arvense*	5%	No	FAC
3. *Holcus lanatus*	5%	No	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	95%	= Total Cover	

Woody Vine Stratum (Plot size: 10 ft radius)			
1.			
2.			
	0%	= Total Cover	

% Bare Ground in Herb Stratum 5%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species 0	x 1 =	0
FACW species 0	x 2 =	0
FAC species 95	x 3 =	285
FACU species 0	x 4 =	0
UPL species 0	x 5 =	0
Column Totals: 95 (A)		285 (B)

Prevalence Index = B/A = 3.00

Hydrophytic Vegetation Indicators:

- 1 - Rapid Test for Hydrophytic Vegetation
- 2 - Dominance Test is >50%
- 3 - Prevalence Index is ≤3.0[1]
- 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- 5 - Wetland Non-Vascular Plants[1]
- Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No

Remarks:

SOIL

Sampling Point: **9**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	□	Color (moist)	□	Type[1]	Loc[2]	Texture	Remarks
0-4	10□R 3/1	100					SiL	
4-8	10□R 3/1	95	7.5□R 4/6	5	C	M	SiL	
8-15	10□R 4/1	85	7.5□R 4/6	15	C	M	SiL	

[1]Type: C□Concentration, D□Depletion, RM□Reduced Matrix CS□Covered or Coated Sand □rains. [2]Location: PL□Pore Lining, M□Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy □leyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy □leyed Matrix (F2)
- ___ □ Depleted Matrix (F3)
- ___ □ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ □ery Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one re□uired□check all that apply)

- ___ Surface Water (A1)
- ___ □ High Water Table (A2)
- ___ □ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation □isible on Aerial Imagery (B7)
- ___ Sparsely □egetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ A□uatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidi□ed Rhi□ospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more re□uired)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation □isible on Aerial Imagery (C9)
- ___ □ □eomorphic Position (D2)
- ___ Shallow A□uitard (D3)
- ___ FAC-□eutral Test (D5)
- ___ □ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present□	□es _____	□o □	Depth (inches):	
Water Table Present□	□es □	□o _____	Depth (inches):	10"
Saturation Present□ (includes capillary fringe)	□es □	□o _____	Depth (inches):	9"

Wetland Hydrology Present? Yes X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Raised ant mounds were present throughout wetland.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: Brookman Road Residential Development City/County: Sherwood/ Washington Sampling Date: 3/23/2017

Applicant/Owner: The Holt Group State: OR Sampling Point: **10**

Investigator(s): Kayla Katkin and Stacey Reed Section, Township, Range: Sec. 6, T.3S., R1.W.

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Convex Slope (%): 3

Subregion (LRR): A, Northwest Forests and Coast Lat: Long: Datum:

Soil Map Unit Name: (Unit 1) Aloha silt loam NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks)

Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No
Hydric Soil Present?	Yes	No X
Wetland Hydrology Present?	Yes	No X

Is the Sampled Area within a Wetland? Yes No X

Precipitation: According to the NWS Hillsboro station, 0.44 inches of rainfall was received on the day of the site visit and 3.96 inches within the two weeks prior. Above average rainfall conditions are present.

Remarks:

VEGETATION

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Pseudotsuga menziesii*	30	Yes	FAC
2.			
3.			
4.			
	30	= Total Cover	
Sapling/Shrub Stratum (Plot size: 10 ft r)			
1. *Crataegus monogyna*	5	Yes	FAC
2.			
3.			
4.			
5.			
	5	= Total Cover	
Herb Stratum (Plot size: 5 ft r)			
1. *Schedonorus arundinaceus*	80	Yes	FAC
2. *Dipsacus fullonum*	10	No	FAC
3. *Polystichum munitum*	5	No	FAC
4. *Cirsium arvense*	5	No	FAC
5. *Galium aparine*	2	No	FAC
6.			
7.			
8.			
9.			
10.			
11.			
	102	= Total Cover	
Woody Vine Stratum (Plot size: 10 ft r)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 67 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species 0	x 1 =	0
FACW species 0	x 2 =	0
FAC species 100	x 3 =	300
FACU species 7	x 4 =	28
UPL species 0	x 5 =	0
Column Totals: 107 (A)		328 (B)

Prevalence Index = B/A = 3.07

Hydrophytic Vegetation Indicators:

- 1 - Rapid Test for Hydrophytic Vegetation
- 2 - Dominance Test is >50%
- 3 - Prevalence Index is ≤3.0[1]
- 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- 5 - Wetland Non-Vascular Plants[1]
- Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No

Remarks:

SOIL

Sampling Point: **10**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	□	Color (moist)	□	Type[1]	Loc[2]	Texture	Remarks
0-15	10□R 3/2	100					SiL	

[1]Type: C□Concentration, D□Depletion, RM□Reduced Matrix CS□Covered or Coated Sand □rains. [2]Location: PL□Pore Lining, M□Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy □leyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy □leyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ □ery Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ___ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one re□uired□check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation □isible on Aerial Imagery (B7)
- ___ Sparsely □egetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ A□uatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidi□ed Rhi□ospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more re□uired)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation □isible on Aerial Imagery (C9)
- ___ □eomorphic Position (D2)
- ___ Shallow A□uitard (D3)
- ___ FAC-□eutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present□ □es _____ □o □ Depth (inches): _____

Water Table Present□ □es _____ □o □ Depth (inches): □15"

Saturation Present□ (includes capillary fringe) □es _____ □o □ Depth (inches): □15"

Wetland Hydrology Present?

Yes ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: Brookman Road Residential Development City/County: Sherwood/ Washington Sampling Date: 3/23/2017

Applicant/Owner: The Holt Group State: OR Sampling Point: **11**

Investigator(s): Kayla Katkin and Stacey Reed Section, Township, Range: Sec. 6, T.3S., R1.W.

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 3

Subregion (LRR): A, Northwest Forests and Coast Lat: Long: Datum:

Soil Map Unit Name: (Unit 1) Aloha silt loam NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks)

Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No	
Hydric Soil Present?	Yes	No X	**Is the Sampled Area within a Wetland?** Yes	No X
Wetland Hydrology Present?	Yes	No X	

Precipitation: According to the NWS Hillsboro station, 0.44 inches of rainfall was received on the day of the site visit and 3.96 inches within the two weeks prior. Above average rainfall conditions are present.

Remarks:

VEGETATION

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Pseudotsuga menziesii*	15%	Yes	FAC
2.			
3.			
4.			
	15%	= Total Cover	
Sapling/Shrub Stratum (Plot size: 10 ft r)			
1.			
2.			
3.			
4.			
5.			
	0%	= Total Cover	
Herb Stratum (Plot size: 5 ft r)			
1. *Poa species*	25%	Yes	FAC
2. *Dactylis glomerata*	25%	Yes	FAC
3. *Agrostis capillaris*	25%	Yes	FAC
4. *Schedonorus arundinaceus*	20%	Yes	FAC
5. *Galium aparine*	5%	No	FAC
6.			
7.			
8.			
9.			
10.			
11.			
	100%	= Total Cover	
Woody Vine Stratum (Plot size: 10 ft r)			
1.			
2.			
	0%	= Total Cover	

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 60% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species 0	x 1 =	0
FACW species 0	x 2 =	0
FAC species 70	x 3 =	210
FACU species 30	x 4 =	120
UPL species 0	x 5 =	0
Column Totals: 100 (A)		330 (B)

Prevalence Index = B/A = 3.30

Hydrophytic Vegetation Indicators:

- 1 - Rapid Test for Hydrophytic Vegetation
- 2 - Dominance Test is >50%
- 3 - Prevalence Index is ≤3.0[1]
- 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- 5 - Wetland Non-Vascular Plants[1]
- Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No

Remarks:

SOIL

Sampling Point: **11**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 3/2	100					SiL	
8-10	10YR 4/2	95	7.5YR 4/4	5	C	M	SiCL	
10-16+	10YR 3/2	100					SiL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ___ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ___ No ___ Depth (inches): ___

Water Table Present? Yes ___ No ___ Depth (inches): >16"

Saturation Present? (includes capillary fringe) Yes ___ No ___ Depth (inches): >16"

Wetland Hydrology Present?

Yes ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Pro□ect/Site: Brookman Road Residential Development City/County: Sherwood/ Washington Sampling Date: 3/23/2017

Applicant/Owner: The Holt □roup State: OR Sampling Point: **12**

Investigator(s): □ayla □atkin and Stacey Reed Section, Township, Range: Sec. 6, T.3S., R1.W.

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Sl. Convex Slope (□): 3-5□

Subregion (LRR): A, □orthwest Forests and Coast Lat: Long: Datum:

Soil Map □nit □ame: (□nit 1) Aloha silt loam □WI classification:

Are climatic / hydrologic conditions on the site typical for this time of year□ □es □o □ (If no, explain in Remarks)

Are □egetation ,Soil , or Hydrology significantly disturbed□ Are □□ormal Circumstances□present□ □es □ □o

Are □egetation ,Soil , or Hydrology naturally problematic□ (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic □egetation Present□	□es	X	□o	
Hydric Soil Present□	□es		□o	X
Wetland Hydrology Present□	□es		□o	X

Is the Sampled Area within a Wetland? **Yes** **No** X

Precipitation: According to the □WS Hillsboro station, 0.44 inches of rainfall was received on the day of the site visit and 3.96 inches within the two weeks prior. Above average rainfall conditions are present.

Remarks:

VEGETATION

	Absolute □ Cover	Dominant Species□	Indicator Status
Tree Stratum (Plot si□e: □□30□r□□)			
1. *Pseudotsuga menziesii*	10□	□es	FAC□
2.			
3.			
4.			
	10□	□ Total Cover	
Sapling/Shrub Stratum (Plot si□e: □□10□r□□)			
1. *Crataegus monogyna*	10□	□es	FAC
2. *Fraxinus latifolia*	2□	□o	FACW
3.			
4.			
5.			
	12□	□ Total Cover	
Herb Stratum (Plot si□e: □□5□r□□)			
1. *Schedonorus arundinaceus*	55□	□es	FAC
2. *Cirsium arvense*	20□	□es	FAC
3. *Poa species*	10□	□o	FAC □
4. *Galium aparine*	5□	□o	FAC□
5. *Geranium molle*	5□	□o	□OL
6.			
7.			
8.			
9.			
10.			
11.			
	95□	□ Total Cover	
Woody □ine Stratum (Plot si□e: □□10□r□□)			
1.			
2.			
	0□	□ Total Cover	

□ Bare □round in Herb Stratum 5□

Dominance Test worksheet:

□umber of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total □umber of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75□ (A/B)

Prevalence Index worksheet:

Total □ Cover of:	Multiply by:	
OBL species 0	x 1 □	0
FACW species 2	x 2 □	4
FAC species 95	x 3 □	285
FAC□ species 5	x 4 □	20
□PL species 5	x 5 □	25
Column Totals: 107 (A)		334 (B)
Prevalence Index □B/A □		3.12

Hydrophytic Vegetation Indicators:

- 1 - Rapid Test for Hydrophytic □egetation
- □ 2 - Dominance Test is □50□
- 3 - Prevalence Index is ≤3.0[1]
- 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- 5 - Wetland □on-□ascular Plants[1]
- Problematic Hydrophytic □egetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes** X **No**

Remarks:

SOIL

Sampling Point: **12**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	□	Color (moist)	□	Type[1]	Loc[2]	Texture	Remarks
0-16□	10□R 2/2	100					SiL	

[1]Type: C□Concentration, D□Depletion, RM□Reduced Matrix CS□Covered or Coated Sand □rains. [2]Location: PL□Pore Lining, M□Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy □leyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy □leyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ □ery Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ___ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one re□uired□check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation □isible on Aerial Imagery (B7)
- ___ Sparsely □egetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ A□uatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidi□ed Rhi□ospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more re□uired)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation □isible on Aerial Imagery (C9)
- ___ □eomorphic Position (D2)
- ___ Shallow A□uitard (D3)
- ___ FAC-□eutral Test (D5)
- ___ □ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present□ □es _____ □o □ Depth (inches): _____

Water Table Present□ □es _____ □o □ Depth (inches): □16"

Saturation Present□ (includes capillary fringe) □es _____ □o □ Depth (inches): □16"

Wetland Hydrology Present? Yes ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Test pit was left open for 10-15 minutes. Soils moist throughout, but no sidewall seeps present.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: Brookman Road Residential Development City/County: Sherwood/ Washington Sampling Date: 3/23/2017

Applicant/Owner: The Holt Group State: OR Sampling Point: **13**

Investigator(s): Kayla Katkin and Stacey Reed Section, Township, Range: Sec. 6, T.3S., R1.W.

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Concave Slope (%): 3%

Subregion (LRR): A, Northwest Forests and Coast Lat: Long: Datum:

Soil Map Unit Name: (Unit 42) Verboort silty clay loam NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks)

Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	X	No	
Hydric Soil Present?	Yes	X	No	
Wetland Hydrology Present?	Yes	X	No	

Is the Sampled Area within a Wetland? Yes X No

Precipitation: According to the NWS Hillsboro station, 0.44 inches of rainfall was received on the day of the site visit and 3.96 inches within the two weeks prior. Above average rainfall conditions are present.

Remarks: Wetland C.

VEGETATION

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0%	= Total Cover	
Sapling/Shrub Stratum (Plot size: 10 ft r)			
1.			
2.			
3.			
4.			
5.			
	0%	= Total Cover	
Herb Stratum (Plot size: 5 ft r)			
1. *Schedonorus arundinaceus*	30%	Yes	FAC
2. *Agrostis capillaris*	30%	Yes	FAC
3. *Poa annua*	30%	Yes	FAC
4. *Taraxacum officinale*	5%	No	FACU
5. *Geranium molle*	5%	No	NOL
6.			
7.			
8.			
9.			
10.			
11.			
	100%	= Total Cover	
Woody Vine Stratum (Plot size: 10 ft r)			
1.			
2.			
	0%	= Total Cover	

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	90	x 3 =	270
FACU species	5	x 4 =	20
UPL species	5	x 5 =	25
Column Totals:	100 (A)		315 (B)
Prevalence Index = B/A =			3.15

Hydrophytic Vegetation Indicators:

- 1 - Rapid Test for Hydrophytic Vegetation
- 2 - Dominance Test is >50%
- 3 - Prevalence Index is ≤3.0[1]
- 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- 5 - Wetland Non-Vascular Plants[1]
- Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No

Remarks:

SOIL

Sampling Point: **13**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	□	Color (moist)	□	Type[1]	Loc[2]	Texture	Remarks
0-4	10□R 3/2	100					SiL	
4-12	10□R 3/2	95	7.5□R 4/4	5	C	M	SiL	
12-16□	10□R 4/1	90	7.5□R 4/6	10	C	M	SiL	

[1]Type: C□Concentration, D□Depletion, RM□Reduced Matrix CS□Covered or Coated Sand □rains. [2]Location: PL□Pore Lining, M□Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy □leyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy □leyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ □ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ □ery Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one re□uired□check all that apply)

- ___ Surface Water (A1)
- ___ □ High Water Table (A2)
- ___ □ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation □isible on Aerial Imagery (B7)
- ___ Sparsely □egetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ A□uatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidi□ed Rhi□ospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more re□uired)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation □isible on Aerial Imagery (C9)
- ___ □eomorphic Position (D2)
- ___ Shallow A□uitard (D3)
- ___ FAC-□eutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present□	□es _____	□o □	Depth (inches):	
Water Table Present□	□es □	□o _____	Depth (inches):	9"
Saturation Present□ (includes capillary fringe)	□es □	□o _____	Depth (inches):	Surface

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Test pit was left open for 10-15 minutes. A sidewall seep is present at 9 inches.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: Brookman Road Residential Development City/County: Sherwood/ Washington Sampling Date: 3/23/2017

Applicant/Owner: The Holt Group State: OR Sampling Point: **14**

Investigator(s): Kayla Katkin and Stacey Reed Section, Township, Range: Sec. 6, T.3S., R1.W.

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Concave Slope (%): 3%

Subregion (LRR): A, Northwest Forests and Coast Lat: Long: Datum:

Soil Map Unit Name: (Unit 1) Aloha silt loam NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks)

Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No	**Is the Sampled Area within a Wetland?** Yes X No
Hydric Soil Present?	Yes X	No	
Wetland Hydrology Present?	Yes X	No	

Precipitation: According to the NWS Hillsboro station, 0.44 inches of rainfall was received on the day of the site visit and 3.96 inches within the two weeks prior. Above average rainfall conditions are present.

Remarks: Wetland C.

VEGETATION

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0%	= Total Cover	
Sapling/Shrub Stratum (Plot size: 10 ft r)			
1.			
2.			
3.			
4.			
5.			
	0%	= Total Cover	
Herb Stratum (Plot size: 5 ft r)			
1. *Schedonorus arundinaceus*	30%	Yes	FAC
2. *Agrostis capillaris*	30%	Yes	FAC
3. *Leucanthemum vulgare*	15%	No	FACU
4. *Parentucellia viscosa*	15%	No	FAC
5. *Poa species*	10%	No	FAC
6. *Geranium molle*	5%	No	NOL
7.			
8.			
9.			
10.			
11.			
	105%	= Total Cover	
Woody Vine Stratum (Plot size: 10 ft r)			
1.			
2.			
	0%	= Total Cover	

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species 0	x 1 =	0
FACW species 0	x 2 =	0
FAC species 85	x 3 =	255
FACU species 15	x 4 =	60
UPL species 5	x 5 =	25
Column Totals: 105 (A)		340 (B)
Prevalence Index = B/A =		3.24

Hydrophytic Vegetation Indicators:

- 1 - Rapid Test for Hydrophytic Vegetation
- 2 - Dominance Test is >50%
- 3 - Prevalence Index is ≤3.0[1]
- 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- 5 - Wetland Non-Vascular Plants[1]
- Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No

Remarks:

SOIL

Sampling Point: **14**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features				Texture	Remarks
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		
0-8	10YR 3/2	95	7.5YR 3/4	5	C	M, PL	SiL	
8-16+	10YR 4/1	90	7.5YR 4/4	10	C	M	SiCL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ___ No ___ Depth (inches): ___

Water Table Present? Yes ___ No ___ Depth (inches): 10"

Saturation Present? (includes capillary fringe) Yes ___ No ___ Depth (inches): 5"

Wetland Hydrology Present? Yes X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Sidewalll seeps are present at 10 inches.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: Brookman Road Residential Development City/County: Sherwood/ Washington Sampling Date: 3/23/2017

Applicant/Owner: The Holt Group State: OR Sampling Point: **15**

Investigator(s): Kayla Katkin and Stacey Reed Section, Township, Range: Sec. 6, T.3S., R1.W.

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 3%

Subregion (LRR): A, Northwest Forests and Coast Lat: Long: Datum:

Soil Map Unit Name: (Unit 1) Aloha silt loam NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks)

Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No
Hydric Soil Present?	Yes	No X
Wetland Hydrology Present?	Yes X	No

Is the Sampled Area within a Wetland? Yes No X

Precipitation: According to the NWS Hillsboro station, 0.44 inches of rainfall was received on the day of the site visit and 3.96 inches within the two weeks prior. Above average rainfall conditions are present.

Remarks:

VEGETATION

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0%	= Total Cover	

Sapling/Shrub Stratum (Plot size: 10 ft r)			
1.			
2.			
3.			
4.			
5.			
	0%	= Total Cover	

Herb Stratum (Plot size: 5 ft r)			
1. *Agrostis capillaris*	30%	Yes	FAC
2. *Schedonorus arundinaceus*	30%	Yes	FAC
3. *Leucanthemum vulgare*	10%	No	FACU
4. *Prunella vulgaris*	10%	No	FACU
5. *Taraxacum officinale*	5%	No	FACU
6.			
7.			
8.			
9.			
10.			
11.			
	85%	= Total Cover	

Woody Vine Stratum (Plot size: 10 ft r)			
1.			
2.			
	0%	= Total Cover	

% Bare Ground in Herb Stratum 15%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species 0	x 1 =	0
FACW species 0	x 2 =	0
FAC species 60	x 3 =	180
FACU species 25	x 4 =	100
UPL species 0	x 5 =	0
Column Totals: 85 (A)		280 (B)

Prevalence Index = B/A = 3.29

Hydrophytic Vegetation Indicators:

- 1 - Rapid Test for Hydrophytic Vegetation
- 2 - Dominance Test is >50%
- 3 - Prevalence Index is ≤3.0[1]
- 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- 5 - Wetland Non-Vascular Plants[1]
- Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No

Remarks:

SOIL

Sampling Point: **15**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	□	Color (moist)	□	Type[1]	Loc[2]	Texture	Remarks
0-13	10□R 3/2	100					SiL	
13-16□	10□R 4/2	95	7.5□R 4/6	5	C	M	SiL	

[1]Type: C□Concentration, D□Depletion, RM□Reduced Matrix CS□Covered or Coated Sand □rains. [2]Location: PL□Pore Lining, M□Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy □leyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy □leyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ □ery Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ___ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one re□uired□check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- □ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation □isible on Aerial Imagery (B7)
- ___ Sparsely □egetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ A□uatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidi□ed Rhi□ospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more re□uired)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation □isible on Aerial Imagery (C9)
- ___ □eomorphic Position (D2)
- ___ Shallow A□uitard (D3)
- ___ FAC-□eutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present□	□es ___	□o □	Depth (inches):	
Water Table Present□	□es □	□o ___	Depth (inches):	13"
Saturation Present□ (includes capillary fringe)	□es □	□o ___	Depth (inches):	11"

Wetland Hydrology Present?

Yes X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: Brookman Road Residential Development City/County: Sherwood/ Washington Sampling Date: 3/23/2017

Applicant/Owner: The Holt Group State: OR Sampling Point: **16**

Investigator(s): Kayla Katkin and Stacey Reed Section, Township, Range: Sec. 6, T.3S., R1.W.

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 3%

Subregion (LRR): A, Northwest Forests and Coast Lat: Long: Datum:

Soil Map Unit Name: (Unit 1) Aloha silt loam NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks)

Are Vegetation ,Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No

Are Vegetation ,Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No
Hydric Soil Present?	Yes	No X
Wetland Hydrology Present?	Yes X	No

Is the Sampled Area within a Wetland? Yes No X

Precipitation: According to the NWS Hillsboro station, 0.44 inches of rainfall was received on the day of the site visit and 3.96 inches within the two weeks prior. Above average rainfall conditions are present.

Remarks:

VEGETATION

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0%	= Total Cover	

Sapling/Shrub Stratum (Plot size: 10 ft r)			
1.			
2.			
3.			
4.			
5.			
	0%	= Total Cover	

Herb Stratum (Plot size: 5 ft r)			
1. *Agrostis capillaris*	35%	Yes	FAC
2. *Echinochloa crus-galli*	35%	Yes	FAC
3. *Schedonorus arundinaceus*	30%	Yes	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100%	= Total Cover	

Woody Vine Stratum (Plot size: 10 ft r)			
1.			
2.			
	0%	= Total Cover	

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species 0	x 1 =	0
FACW species 0	x 2 =	0
FAC species 65	x 3 =	195
FACU species 0	x 4 =	0
UPL species 0	x 5 =	0
Column Totals: 65 (A)		195 (B)

Prevalence Index = B/A = 3.00

Hydrophytic Vegetation Indicators:

- 1 - Rapid Test for Hydrophytic Vegetation
- 2 - Dominance Test is >50%
- 3 - Prevalence Index is ≤3.0[1]
- 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- 5 - Wetland Non-Vascular Plants[1]
- Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No

Remarks:

SOIL

Sampling Point: **16**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	□	Color (moist)	□	Type[1]	Loc[2]	Texture	Remarks
0-13	10□R 3/2	95	10□R 3/3	5	C	M	SiL	
13-16	10□R 4/1	95	7.5□R 4/4	5	C	M	SiL	

[1]Type: C□Concentration, D□Depletion, RM□Reduced Matrix CS□Covered or Coated Sand □rains. [2]Location: PL□Pore Lining, M□Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy □leyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy □leyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ □ery Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ___ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one re□uired□check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- □ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation □isible on Aerial Imagery (B7)
- ___ Sparsely □egetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ A□uatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidi□ed Rhi□ospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more re□uired)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation □isible on Aerial Imagery (C9)
- ___ □eomorphic Position (D2)
- ___ Shallow A□uitard (D3)
- ___ FAC-□eutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present□ □es _____ □o □ Depth (inches): _____

Water Table Present□ □es □ □o _____ Depth (inches): 14"

Saturation Present□ (includes capillary fringe) □es □ □o _____ Depth (inches): 11"

Wetland Hydrology Present?

Yes X **No** _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: Brookman Road Residential Development City/County: Sherwood/ Washington Sampling Date: 3/23/2017

Applicant/Owner: The Holt Group State: OR Sampling Point: 17

Investigator(s): Kayla Katkin and Stacey Reed Section, Township, Range: Sec. 6, T.3S., R1.W.

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 3

Subregion (LRR): A, Northwest Forests and Coast Lat: Long: Datum:

Soil Map Unit Name: (Unit 1) Aloha silt loam NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks)

Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No
Hydric Soil Present?	Yes	No X
Wetland Hydrology Present?	Yes X	No

Is the Sampled Area within a Wetland? Yes No X

Precipitation: According to the NWS Hillsboro station, 0.44 inches of rainfall was received on the day of the site visit and 3.96 inches within the two weeks prior. Above average rainfall conditions are present.

Remarks:

VEGETATION

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Pseudotsuga menziesii*	25%	Yes	FAC
2. *Pinus ponderosa*	10%	Yes	FAC
3.			
4.			
	35%	= Total Cover	
Sapling/Shrub Stratum (Plot size: 10 ft r)			
1. *Rubus armeniacus*	10%	Yes	FAC
2.			
3.			
4.			
5.			
	10%	= Total Cover	
Herb Stratum (Plot size: 5 ft r)			
1. *Poa species*	30%	Yes	FAC
2. *Schedonorus arundinaceus*	30%	Yes	FAC
3. *Taraxacum officinale*	10%	No	FACU
4. *Plantago lanceolata*	5%	No	FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	75%	= Total Cover	
Woody Vine Stratum (Plot size: 10 ft r)			
1.			
2.			
	0%	= Total Cover	

% Bare Ground in Herb Stratum 25%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 60% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species 0	x 1 =	0
FACW species 0	x 2 =	0
FAC species 70	x 3 =	210
FACU species 25	x 4 =	100
UPL species 0	x 5 =	0
Column Totals: 95 (A)		310 (B)

Prevalence Index = B/A = 3.26

Hydrophytic Vegetation Indicators:

- 1 - Rapid Test for Hydrophytic Vegetation
- 2 - Dominance Test is >50%
- 3 - Prevalence Index is ≤3.0[1]
- 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- 5 - Wetland Non-Vascular Plants[1]
- Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No

Remarks: *Pinus ponderosa* is possibly panted.

SOIL

Sampling Point: **17**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	□	Color (moist)	□	Type[1]	Loc[2]	Texture	Remarks
0-8	10□R 3/2	100					SiL	
8-15	10□R 4/3	90	7.5□R 4/6	10	C	M	SiL	

[1]Type: C□Concentration, D□Depletion, RM□Reduced Matrix CS□Covered or Coated Sand □rains. [2]Location: PL□Pore Lining, M□Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy □leyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy □leyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ □ery Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ___ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one re□uired□check all that apply)

- ___ Surface Water (A1)
- □ High Water Table (A2)
- □ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation □isible on Aerial Imagery (B7)
- ___ Sparsely □egetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ A□uatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidi□ed Rhi□ospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more re□uired)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation □isible on Aerial Imagery (C9)
- ___ □eomorphic Position (D2)
- ___ Shallow A□uitard (D3)
- ___ FAC-□eutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present□	□es ___	□o □	Depth (inches):	
Water Table Present□	□es □	□o ___	Depth (inches):	12"
Saturation Present□ (includes capillary fringe)	□es □	□o ___	Depth (inches):	11"

Wetland Hydrology Present?

Yes X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Pro□ect/Site: Brookman Road Residential Development City/County: Sherwood/ Washington Sampling Date: 3/23/2017

Applicant/Owner: The Holt □roup State: OR Sampling Point: **18**

Investigator(s): □ayla □atkin and Stacey Reed Section, Township, Range: Sec. 6, T.3S., R1.W.

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Concave Slope (□): □3□

Subregion (LRR): A, □orthwest Forests and Coast Lat: Long: Datum:

Soil Map □nit □ame: (□nit 1) Aloha silt loam □WI classification:

Are climatic / hydrologic conditions on the site typical for this time of year□ □es □o □ (If no, explain in Remarks)

Are □egetation ,Soil , or Hydrology significantly disturbed□ Are □□ormal Circumstances□present□ □es □ □o

Are □egetation ,Soil , or Hydrology naturally problematic□ (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic □egetation Present□	□es	X	□o	
Hydric Soil Present□	□es	X	□o	
Wetland Hydrology Present□	□es	X	□o	

Is the Sampled Area within a Wetland? **Yes** X **No**

Precipitation: According to the □WS Hillsboro station, 0.44 inches of rainfall was received on the day of the site visit and 3.96 inches within the two weeks prior. Above average rainfall conditions are present.

Remarks: Wetland A.

VEGETATION

Tree Stratum (Plot si□e: □□30□r□□)	Absolute □ Cover	Dominant Species□	Indicator Status
1.			
2.			
3.			
4.			
	0□	□ Total Cover	
Sapling/Shrub Stratum (Plot si□e: □□10□r□□)			
1.			
2.			
3.			
4.			
5.			
	0□	□ Total Cover	
Herb Stratum (Plot si□e: □□5□r□□)			
1. *Alopecurus pratensis*	80□	□es	FAC
2. *Poa species*	20□	□es	FAC □
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100□	□ Total Cover	
Woody □ine Stratum (Plot si□e: □□10□r□□)			
1.			
2.			
	0□	□ Total Cover	

□ Bare □round in Herb Stratum 0□

Dominance Test worksheet:

□umber of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total □umber of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100□ (A/B)

Prevalence Index worksheet:

Total □ Cover of:	Multiply by:	
OBL species 0	x 1 □	0
FACW species 0	x 2 □	0
FAC species 100	x 3 □	300
FAC□ species 0	x 4 □	0
□PL species 0	x 5 □	0
Column Totals: 100 (A)		300 (B)
Prevalence Index □B/A □		3.00

Hydrophytic Vegetation Indicators:

- 1 - Rapid Test for Hydrophytic □egetation
- x 2 - Dominance Test is □50□
- □ 3 - Prevalence Index is ≤3.0[1]
- 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- 5 - Wetland □on-□ascular Plants[1]
- Problematic Hydrophytic □egetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes** X **No**

Remarks: □egetation has been gra□ed.

SOIL

Sampling Point: **18**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-11	10YR 3/2	95	7.5YR 4/4	5	C	M	SiL	
11-16+	10YR 4/2	90	7.5YR 3/4	10	C	M	SiCL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ___	No ___	Depth (inches):	
Water Table Present?	Yes ___	No ___	Depth (inches):	6"
Saturation Present? (includes capillary fringe)	Yes ___	No ___	Depth (inches):	Surface

Wetland Hydrology Present? Yes X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: Brookman Road Residential Development City/County: Sherwood/ Washington Sampling Date: 3/23/2017

Applicant/Owner: The Holt Group State: OR Sampling Point: **19**

Investigator(s): Kayla Katkin and Stacey Reed Section, Township, Range: Sec. 6, T.3S., R1.W.

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Concave Slope (%): 3

Subregion (LRR): A, Northwest Forests and Coast Lat: Long: Datum:

Soil Map Unit Name: (Unit 22) Huberly silt loam NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks)

Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	X	No	
Hydric Soil Present?	Yes	X	No	
Wetland Hydrology Present?	Yes	X	No	

Is the Sampled Area within a Wetland? Yes X No

Precipitation: According to the NWS Hillsboro station, 0.44 inches of rainfall was received on the day of the site visit and 3.96 inches within the two weeks prior. Above average rainfall conditions are present.

Remarks: Wetland D.

VEGETATION

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0%	= Total Cover	
Sapling/Shrub Stratum (Plot size: 10 ft r)			
1. *Rosa pisocarpa*	20%	Yes	FAC
2.			
3.			
4.			
5.			
	20%	= Total Cover	
Herb Stratum (Plot size: 5 ft r)			
1. *Agrostis capillaris*	30%	Yes	FAC
2. *Poa species*	20%	Yes	FAC*
3. *Schedonorus arundinaceus*	20%	Yes	FAC
4. *Epilobium ciliatum*	10%	Yes	FAC
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	80%	= Total Cover	
Woody Vine Stratum (Plot size: 10 ft r)			
1.			
2.			
	0%	= Total Cover	

% Bare Ground in Herb Stratum 20%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 80% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species 0	x 1 =	0
FACW species 0	x 2 =	0
FAC species 80	x 3 =	240
FACU species 0	x 4 =	0
UPL species 0	x 5 =	0
Column Totals: 80 (A)		240 (B)

Prevalence Index = B/A = 3.00

Hydrophytic Vegetation Indicators:

- 1 - Rapid Test for Hydrophytic Vegetation
- 2 - Dominance Test is >50%
- 3 - Prevalence Index is ≤3.0[1]
- 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- 5 - Wetland Non-Vascular Plants[1]
- Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No

Remarks:

SOIL

Sampling Point: **19**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	□	Color (moist)	□	Type[1]	Loc[2]	Texture	Remarks
0-11	10□R 3/2	95	10□R 3/4	5	C	M	SiL	
11-16□	10□R 3/2	90	7.5□R 4/4	10	C	M	SiCL	

[1]Type: C□Concentration, D□Depletion, RM□Reduced Matrix CS□Covered or Coated Sand □rains. [2]Location: PL□Pore Lining, M□Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy □leyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy □leyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ □ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ □ery Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one re□uired□check all that apply)

- ___ Surface Water (A1)
- □ High Water Table (A2)
- □ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation □isible on Aerial Imagery (B7)
- ___ Sparsely □egetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ A□uatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidi□ed Rhi□ospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more re□uired)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation □isible on Aerial Imagery (C9)
- ___ □eomorphic Position (D2)
- ___ Shallow A□uitard (D3)
- ___ FAC-□eutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present□	□es _____	□o □	Depth (inches):	
Water Table Present□	□es □	□o _____	Depth (inches):	5"
Saturation Present□ (includes capillary fringe)	□es □	□o _____	Depth (inches):	2"

Wetland Hydrology Present? Yes X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: Brookman Road Residential Development City/County: Sherwood/ Washington Sampling Date: 3/23/2017

Applicant/Owner: The Holt Group State: OR Sampling Point: **20**

Investigator(s): Kayla Katkin and Stacey Reed Section, Township, Range: Sec. 6, T.3S., R1.W.

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 3-5%

Subregion (LRR): A, Northwest Forests and Coast Lat: Long: Datum:

Soil Map Unit Name: (Unit 1) Aloha silt loam NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks)

Are Vegetation ,Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No

Are Vegetation ,Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No
Hydric Soil Present?	Yes	No X
Wetland Hydrology Present?	Yes X	No

Is the Sampled Area within a Wetland? Yes No X

Precipitation: According to the NWS Hillsboro station, 0.44 inches of rainfall was received on the day of the site visit and 3.96 inches within the two weeks prior. Above average rainfall conditions are present.

Remarks:

VEGETATION

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Pseudotsuga menziesii*	5%	Yes	FAC
2.			
3.			
4.			
	5%	= Total Cover	
Sapling/Shrub Stratum (Plot size: 10 ft r)			
1. *Rubus armeniacus*	25%	Yes	FAC
2. *Prunus species*	10%	Yes	FAC
3. *Viola sororia*	2%	No	FAC
4.			
5.			
	37%	= Total Cover	
Herb Stratum (Plot size: 5 ft r)			
1. *Schedonorus arundinaceus*	50%	Yes	FAC
2. *Agrostis capillaris*	20%	Yes	FAC
3. *Poa species*	10%	No	FAC
4. *Conium maculatum*	10%	No	FAC
5. *Dipsacus fullonum*	5%	No	FAC
6.			
7.			
8.			
9.			
10.			
11.			
	95%	= Total Cover	
Woody Vine Stratum (Plot size: 10 ft r)			
1. *Rubus ursinus*	5%	Yes	FAC
2.			
	5%	= Total Cover	

% Bare Ground in Herb Stratum 5%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 60% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species 0	x 1 =	0
FACW species 0	x 2 =	0
FAC species 122	x 3 =	366
FACU species 15	x 4 =	60
UPL species 0	x 5 =	0
Column Totals: 137 (A)		426 (B)

Prevalence Index = B/A = 3.11

Hydrophytic Vegetation Indicators:

- 1 - Rapid Test for Hydrophytic Vegetation
- 2 - Dominance Test is >50%
- 3 - Prevalence Index is ≤3.0[1]
- 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- 5 - Wetland Non-Vascular Plants[1]
- Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No

Remarks:

SOIL

Sampling Point: **20**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-13	10YR 3/2	100					SiL	
13-16+	10YR 4/2	95	7.5YR 4/4	5	C	M	SiCL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** **X**

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ___ No ___ Depth (inches): ___

Water Table Present? Yes ___ No ___ Depth (inches): 10"

Saturation Present? (includes capillary fringe) Yes ___ No ___ Depth (inches): 7"

Wetland Hydrology Present? **Yes** **X** **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: Brookman Road Residential Development City/County: Sherwood/ Washington Sampling Date: 3/23/2017

Applicant/Owner: The Holt Group State: OR Sampling Point: **21**

Investigator(s): Kayla Katkin and Stacey Reed Section, Township, Range: Sec. 6, T.3S., R1.W.

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Concave Slope (%): 3%

Subregion (LRR): A, Northwest Forests and Coast Lat: Long: Datum:

Soil Map Unit Name: (Unit 22) Huberly silt loam NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks)

Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	X	No	
Hydric Soil Present?	Yes	X	No	
Wetland Hydrology Present?	Yes	X	No	

Is the Sampled Area within a Wetland? Yes X No

Precipitation: According to the NWS Hillsboro station, 0.44 inches of rainfall was received on the day of the site visit and 3.96 inches within the two weeks prior. Above average rainfall conditions are present.

Remarks: Wetland D.

VEGETATION

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0%	= Total Cover	
Sapling/Shrub Stratum (Plot size: 10 ft r)			
1. *Crataegus monogyna*	5%	Yes	FAC
2.			
3.			
4.			
5.			
	5%	= Total Cover	
Herb Stratum (Plot size: 5 ft r)			
1. *Agrostis capillaris*	30%	Yes	FAC
2. *Poa species*	20%	Yes	FAC
3. *Schedonorus arundinaceus*	15%	Yes	FAC
4. *Juncus tenuis*	5%	No	FAC
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	70%	= Total Cover	
Woody Vine Stratum (Plot size: 10 ft r)			
1.			
2.			
	0%	= Total Cover	

% Bare Ground in Herb Stratum 30%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species 0	x 1 =	0
FACW species 0	x 2 =	0
FAC species 75	x 3 =	225
FACU species 0	x 4 =	0
UPL species 0	x 5 =	0
Column Totals: 75 (A)		225 (B)

Prevalence Index = B/A = 3.00

Hydrophytic Vegetation Indicators:

- 1 - Rapid Test for Hydrophytic Vegetation
- 2 - Dominance Test is >50%
- 3 - Prevalence Index is ≤3.0[1]
- 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- 5 - Wetland Non-Vascular Plants[1]
- Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No

Remarks:

SOIL

Sampling Point: **21**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 3/2	98	7.5YR 3/4	2	C	M	SiL	
10-16+	10YR 4/1	95	7.5YR 4/4	5	C	M	SiCL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** _____

Remarks: Hummocks present, and shallow scattered ponding near sample plot.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes _____ No _____ Depth (inches): _____

Water Table Present? Yes _____ No _____ Depth (inches): 9"

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): Surface

Wetland Hydrology Present? **Yes** X **No** _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Test pit was left open for 15 minutes.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: Brookman Road Residential Development City/County: Sherwood/ Washington Sampling Date: 3/23/2017

Applicant/Owner: The Holt Group State: OR Sampling Point: **22**

Investigator(s): Kayla Katkin and Stacey Reed Section, Township, Range: Sec. 6, T.3S., R1.W.

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 3%

Subregion (LRR): A, Northwest Forests and Coast Lat: Long: Datum:

Soil Map Unit Name: (Unit 22) Huberly silt loam NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks)

Are Vegetation ,Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No

Are Vegetation ,Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No
Hydric Soil Present?	Yes	No X
Wetland Hydrology Present?	Yes X	No

Is the Sampled Area within a Wetland? Yes No X

Precipitation: According to the NWS Hillsboro station, 0.44 inches of rainfall was received on the day of the site visit and 3.96 inches within the two weeks prior. Above average rainfall conditions are present.

Remarks: Sample plot is approximately 1 foot higher than Plot 21.

VEGETATION

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0%	= Total Cover	

Sapling/Shrub Stratum (Plot size: 10 ft r)			
1. *Crataegus monogyna*	20%	Yes	FAC
2. *Cytisus scoparius*	15%	Yes	UPL
3. *Rosa pisocarpa*	10%	Yes	FAC
4. *Rubus armeniacus*	5%	No	FAC
5.			
	50%	= Total Cover	

Herb Stratum (Plot size: 5 ft r)			
1. *Schedonorus arundinaceus*	30%	Yes	FAC
2. *Poa species*	30%	Yes	FAC
3. *Agrostis capillaris*	25%	Yes	FAC
4. *Hypochaeris radicata*	10%	No	FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	95%	= Total Cover	

Woody Vine Stratum (Plot size: 10 ft r)			
1.			
2.			
	0%	= Total Cover	

% Bare Ground in Herb Stratum 5%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 83% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species 0	x 1 =	0
FACW species 0	x 2 =	0
FAC species 120	x 3 =	360
FACU species 10	x 4 =	40
UPL species 15	x 5 =	75
Column Totals: 145 (A)		475 (B)

Prevalence Index = B/A = 3.28

Hydrophytic Vegetation Indicators:

- 1 - Rapid Test for Hydrophytic Vegetation
- 2 - Dominance Test is >50%
- 3 - Prevalence Index is ≤3.0[1]
- 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- 5 - Wetland Non-Vascular Plants[1]
- Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No

Remarks:

SOIL

Sampling Point: **22**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 3/2	100					SiL	
8-13	10YR 3/2	98	10YR 3/4	2	C	M	SiL	
13-16+	10YR 3/2	95	7.5YR 3/4	5	C	M	SiCL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ___ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ___ No ___ Depth (inches): ___

Water Table Present? Yes ___ No ___ Depth (inches): 11"

Saturation Present? (includes capillary fringe) Yes ___ No ___ Depth (inches): 7"

Wetland Hydrology Present?

Yes X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Pro□ect/Site: Brookman Road Residential Development City/County: Sherwood/ Washington Sampling Date: 3/23/2017

Applicant/Owner: The Holt □roup State: OR Sampling Point: **23**

Investigator(s): □ayla □atkin and Stacey Reed Section, Township, Range: Sec. 6, T.3S., R1.W.

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (□): □3□

Subregion (LRR): A, □orthwest Forests and Coast Lat: Long: Datum:

Soil Map □nit □ame: (□nit 1) Aloha silt loam □WI classification:

Are climatic / hydrologic conditions on the site typical for this time of year□ □es □o □ (If no, explain in Remarks)

Are □egetation ,Soil , or Hydrology significantly disturbed□ Are □□ormal Circumstances□present□ □es □ □o

Are □egetation ,Soil , or Hydrology naturally problematic□ (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic □egetation Present□	□es	X	□o	
Hydric Soil Present□	□es		□o	X
Wetland Hydrology Present□	□es		□o	X

Is the Sampled Area within a Wetland? **Yes** **No** X

Precipitation: According to the □WS Hillsboro station, 0.44 inches of rainfall was received on the day of the site visit and 3.96 inches within the two weeks prior. Above average rainfall conditions are present.

Remarks:

VEGETATION

Tree Stratum (Plot si□e: □□30□r□□)	Absolute □ Cover	Dominant Species□	Indicator Status
1.			
2.			
3.			
4.			
	0□	□ Total Cover	
Sapling/Shrub Stratum (Plot si□e: □□10□r□□)			
1.			
2.			
3.			
4.			
5.			
	0□	□ Total Cover	
Herb Stratum (Plot si□e: □□5□r□□)			
1. *Agrostis capillaris*	80□	□es	FAC
2. *Prunella vulgaris*	10□	□o	FAC□
3. *Schedonorus arundinaceus*	10□	□o	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100□	□ Total Cover	
Woody □ine Stratum (Plot si□e: □□10□r□□)			
1.			
2.			
	0□	□ Total Cover	

□ Bare □round in Herb Stratum 0□

Dominance Test worksheet:

□umber of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total □umber of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100□ (A/B)

Prevalence Index worksheet:

Total □ Cover of:	Multiply by:	
OBL species 0	x 1 □	0
FACW species 0	x 2 □	0
FAC species 90	x 3 □	270
FAC□ species 10	x 4 □	40
□PL species 0	x 5 □	0
Column Totals: 100 (A)		310 (B)
Prevalence Index □B/A □		3.10

Hydrophytic Vegetation Indicators:

- 1 - Rapid Test for Hydrophytic □egetation
- □ 2 - Dominance Test is □50□
- 3 - Prevalence Index is ≤3.0[1]
- 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- 5 - Wetland □on-□ascular Plants[1]
- Problematic Hydrophytic □egetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes** X **No**

Remarks: The vegetation is actively gra□ed by horses.

SOIL

Sampling Point: **23**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 3/2	98	7.5YR 4/4	2	C	M	SiL	
12-14	10YR 3/2	98	7.5YR 4/6	2	C	M	SiL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ___ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ___ No ___ Depth (inches): ___

Water Table Present? Yes ___ No ___ Depth (inches): >14"

Saturation Present? (includes capillary fringe) Yes ___ No ___ Depth (inches): >14"

Wetland Hydrology Present?

Yes ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Pro□ect/Site: Brookman Road Residential Development City/County: Sherwood/ Washington Sampling Date: 3/23/2017

Applicant/Owner: The Holt □roup State: OR Sampling Point: **24**

Investigator(s): □ayla □atkin and Stacey Reed Section, Township, Range: Sec. 6, T.3S., R1.W.

Landform (hillslope, terrace, etc.): Toeslope Local relief (concave, convex, none): Concave Slope (□): □3□

Subregion (LRR): A, □orthwest Forests and Coast Lat: Long: Datum:

Soil Map □nit □ame: (□nit 1) Aloha silt loam □WI classification:

Are climatic / hydrologic conditions on the site typical for this time of year□ □es □o □ (If no, explain in Remarks)

Are □egetation ,Soil , or Hydrology significantly disturbed□ Are □□ormal Circumstances□present□ □es □ □o

Are □egetation ,Soil , or Hydrology naturally problematic□ (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic □egetation Present□	□es	X	□o	
Hydric Soil Present□	□es	X	□o	
Wetland Hydrology Present□	□es		□o	X

Is the Sampled Area within a Wetland? **Yes** **No** X

Precipitation: According to the □WS Hillsboro station, 0.44 inches of rainfall was received on the day of the site visit and 3.96 inches within the two weeks prior. Above average rainfall conditions are present.

Remarks:

VEGETATION

Tree Stratum (Plot si□e: □□30□r□□)	Absolute □ Cover	Dominant Species□	Indicator Status
1.			
2.			
3.			
4.			
	0□	□ Total Cover	
Sapling/Shrub Stratum (Plot si□e: □□10□r□□)			
1.			
2.			
3.			
4.			
5.			
	0□	□ Total Cover	
Herb Stratum (Plot si□e: □□5□r□□)			
1. *Agrostis capillaris*	80□	□es	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	80□	□ Total Cover	
Woody □ine Stratum (Plot si□e: □□10□r□□)			
1.			
2.			
	0□	□ Total Cover	

□ Bare □round in Herb Stratum 20□

Dominance Test worksheet:

□umber of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total □umber of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100□ (A/B)

Prevalence Index worksheet:

Total □ Cover of:	Multiply by:	
OBL species 0	x 1 □	0
FACW species 0	x 2 □	0
FAC species 80	x 3 □	240
FAC□ species 0	x 4 □	0
□PL species 0	x 5 □	0
Column Totals: 80 (A)		240 (B)
Prevalence Index □ B/A □		3.00

Hydrophytic Vegetation Indicators:

- 1 - Rapid Test for Hydrophytic □egetation
- □ 2 - Dominance Test is □50□
- □ 3 - Prevalence Index is ≤3.0[1]
- 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- 5 - Wetland □on-□ascular Plants[1]
- Problematic Hydrophytic □egetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes** X **No**

Remarks: □egetation has been gra□ed.

SOIL

Sampling Point: **24**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	□	Color (moist)	□	Type[1]	Loc[2]	Texture	Remarks
0-14□	10□R 3/1	90	7.5□R 4/6	10	C	M	SiCL	

[1]Type: C□Concentration, D□Depletion, RM□Reduced Matrix CS□Covered or Coated Sand □rains. [2]Location: PL□Pore Lining, M□Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy □leyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy □leyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ □ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ □ery Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X **No** _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one re□uired□check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation □isible on Aerial Imagery (B7)
- ___ Sparsely □egetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ A□uatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidi□ed Rhi□ospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more re□uired)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation □isible on Aerial Imagery (C9)
- ___ □eomorphic Position (D2)
- ___ Shallow A□uitard (D3)
- ___ FAC-□eutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present□ □es _____ □o □ Depth (inches): _____

Water Table Present□ □es _____ □o □ Depth (inches): □14□

Saturation Present□ (includes capillary fringe) □es _____ □o □ Depth (inches): □14"

Wetland Hydrology Present? Yes _____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Test pit was left open for 15□ minutes without signs of hydrology. □o seeps or saturation was present.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: Brookman Road Residential Development City/County: Sherwood/ Washington Sampling Date: 3/23/2017

Applicant/Owner: The Holt Group State: OR Sampling Point: **25**

Investigator(s): Kayla Katkin and Stacey Reed Section, Township, Range: Sec. 6, T.3S., R1.W.

Landform (hillslope, terrace, etc.): Toeslope Local relief (concave, convex, none): Concave Slope (%): 3

Subregion (LRR): A, Northwest Forests and Coast Lat: Long: Datum:

Soil Map Unit Name: (Unit 22) Huberly silt loam NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks)

Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No	**Is the Sampled Area within a Wetland?** Yes X No
Hydric Soil Present?	Yes X	No	
Wetland Hydrology Present?	Yes X	No	

Precipitation: According to the NWS Hillsboro station, 0.44 inches of rainfall was received on the day of the site visit and 3.96 inches within the two weeks prior. Above average rainfall conditions are present.

Remarks: Wetland D.

VEGETATION

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0%	= Total Cover	
Sapling/Shrub Stratum (Plot size: 10 ft r)			
1.			
2.			
3.			
4.			
5.			
	0%	= Total Cover	
Herb Stratum (Plot size: 5 ft r)			
1. *Agrostis capillaris*	40%	Yes	FAC
2. *Juncus effusus*	15%	Yes	FACW
3. *Ranunculus repens*	10%	No	FAC
4. *Taraxacum officinale*	1%	No	FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	66%	= Total Cover	
Woody Vine Stratum (Plot size: 10 ft r)			
1.			
2.			
	0%	= Total Cover	

% Bare Ground in Herb Stratum 34%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	15	x 2 =	30
FAC species	50	x 3 =	150
FACU species	1	x 4 =	4
UPL species	0	x 5 =	0
Column Totals:	66 (A)		184 (B)

Prevalence Index = B/A = 2.79

Hydrophytic Vegetation Indicators:

- 1 - Rapid Test for Hydrophytic Vegetation
- 2 - Dominance Test is >50%
- 3 - Prevalence Index is ≤3.0[1]
- 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- 5 - Wetland Non-Vascular Plants[1]
- Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No

Remarks: Agrostis species has been grazed.

SOIL

Sampling Point: **25**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 3/1	90	7.5YR 4/4	10	C	M	SiL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ___ No ___ Depth (inches): ___

Water Table Present? Yes ___ No ___ Depth (inches): 10"

Saturation Present? (includes capillary fringe) Yes ___ No ___ Depth (inches): Surface

Wetland Hydrology Present? Yes X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Small amounts of ponding were observed at the surface nearby.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Pro□ect/Site: Brookman Road Residential Development City/County: Sherwood/ Washington Sampling Date: 2/14/2018

Applicant/Owner: The Holt □roup State: OR Sampling Point: **47**

Investigator(s): □ayla □atkin and Haley Smith Section, Township, Range: Sec. 6, T.3S., R.1W.

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Concave Slope (□): □3□

Subregion (LRR): A, □orthwest Forests and Coast Lat: Long: Datum:

Soil Map □nit □ame: (□nit 45B) Woodburn silt loam, 3□ to 7□ slopes □WI classification:

Are climatic / hydrologic conditions on the site typical for this time of year□ □es □ □o (If no, explain in Remarks)

Are □egetation ,Soil , or Hydrology significantly disturbed□ Are □□ormal Circumstances□present□ □es □ □o

Are □egetation ,Soil , or Hydrology naturally problematic□ (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic □egetation Present□	□es	□o X
Hydric Soil Present□	□es	□o X
Wetland Hydrology Present□	□es	□o X

Is the Sampled Area within a Wetland? Yes No X

Precipitation: According to the □WS Portland station, 0.28 inches of rainfall was received on the day of the site visit and 0.12 inches within the two weeks prior.

Remarks: Sample plot located in a low spot on a break on a hillslope.

VEGETATION

Tree Stratum (Plot si□e:□□30□r□□)	Absolute □ Cover	Dominant Species□	Indicator Status
1. *Pseudotsuga menziesii*	70□	□es	FAC□
2.			
3.			
4.			
	0□	□ Total Cover	
Sapling/Shrub Stratum (Plot si□e:□□10□r□□)			
1. *Alnus rubra*	10□	□es	FAC
2. *Ilex aquifolium*	5□	□es	FAC□
3. *Rubus armeniacus*	5□	□es	FAC
4. *Oemleria cerasiformis*	1□	□o	FAC□
5.			
	21□	□ Total Cover	
Herb Stratum (Plot si□e:□□5□r□□)			
1. *Geranium molle*	70□	□es	□OL
2. *Elymus repens*	25□	□es	FAC
3. *Galium aparine*	2□	□o	FAC□
4. *Orthocarpus luteus*	2□	□o	FAC□
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	99□	□ Total Cover	
Woody □ine Stratum (Plot si□e:□□10□r□□)			
1.			
2.			
	0□	□ Total Cover	

□ Bare □round in Herb Stratum 1□

Dominance Test worksheet:

□umber of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total □umber of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50□ (A/B)

Prevalence Index worksheet:

Total □ Cover of:	Multiply by:	
OBL species 0	x 1 □	0
FACW species 0	x 2 □	0
FAC species 40	x 3 □	120
FAC□ species 10	x 4 □	40
□PL species 70	x 5 □	350
Column Totals: 120 (A)		510 (B)
Prevalence Index □ B/A □		4.25

Hydrophytic Vegetation Indicators:

- 1 - Rapid Test for Hydrophytic □egetation
- 2 - Dominance Test is □50□
- 3 - Prevalence Index is ≤3.0[1]
- 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- 5 - Wetland □on-□ascular Plants[1]
- Problematic Hydrophytic □egetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes No X

Remarks:

SOIL

Sampling Point: **47**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	□	Color (moist)	□	Type[1]	Loc[2]	Texture	Remarks
0-4	10□R 3/2	100					SiL	
4-14	10□R 3/3	100					SiL	

[1]Type: C□Concentration, D□Depletion, RM□Reduced Matrix CS□Covered or Coated Sand □rains. [2]Location: PL□Pore Lining, M□Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy □leyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy □leyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ □ery Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ___ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one re□uired□check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation □isible on Aerial Imagery (B7)
- ___ Sparsely □egetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ A□uatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidi□ed Rhi□ospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more re□uired)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation □isible on Aerial Imagery (C9)
- ___ □eomorphic Position (D2)
- ___ Shallow A□uitard (D3)
- ___ FAC-□eutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present□ □es _____ □o □ Depth (inches): _____

Water Table Present□ □es _____ □o □ Depth (inches): □14"

Saturation Present□ (includes capillary fringe) □es _____ □o □ Depth (inches): □14"

Wetland Hydrology Present? Yes ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Appendix B: VECO Data Sheets (VECO Plots A-G)

Site:	Brookman Residential Subdivision
Job Number:	3591
Investigators:	Haley Smith and □ayla □atkin
Date:	March 22, 2017
Community:	Douglas-Fir and Oregon Ash Forest
Location:	West of Wetland A
Plot ID:	□ECO Plot A

Tree species, □ Cover, □ative, Invasive - 30 foot radius, □5□ cover:			60□
□*Pseudotsuga menziesii*	Douglas-fir	*native*	40□
□*Fraxinus latifolia*	Oregon ash	*native*	20□
Shrub species, □ Cover, □ative, Invasive - 30 foot radius, □5□ cover:			15□
□*Corylus cornuta*	beaked ha□elnut	*native*	10□
□*Crataegus monogyna*	English hawthorn	*non-native*	5□
Herb Species, □ Cover, □ative, Invasive - 10 foot radius, □5□ cover:			85□
□*Schedonorus arundinaceus*	tall false rye grass	*non-native*	75□
Holcus lanatus	common velvet grass	*non-native*	10□

□Dominant

Total Cover 160□

	Absolute areal cover
% Tree canopy:	**60%**
□ Cover by natives:	70□
□ Invasive:	0□
□ □on-native:	90□
	160□

Corridor Condition: Marginal

Site: Brookman Residential Subdivision
Job Number: 3591
Investigators: Haley Smith and □ayla □atkin
Date: March 22, 2017

Community: Open □rass Pasture
Location: East of Wetland A
Plot ID: □ECO Plot B

Tree species, □ Cover, □ative, Invasive - 30 foot radius, □5□ cover: 0□

Shrub species, □ Cover, □ative, Invasive - 30 foot radius, □5□ cover: 0□

Herb Species, □ Cover, □ative, Invasive - 10 foot radius, □5□ cover: 100□

□*Schedonorus arundinaceus*	tall false rye grass	*non-native*	60□
□*Agrostis capillaris*	colonial bent	*non-native*	20□
□*Taraxacum officinale*	common dandelion	*non-native*	20□

□Dominant

Total Cover 100□

	Absolute areal cover
% Tree canopy:	**0%**
□ Cover by natives:	0□
□ Invasive:	0□
□ □on-native:	100□
	100□

Corridor Condition: Degraded

Site:	Brookman Residential Subdivision
Job Number:	3591
Investigators:	Haley Smith and □ayla □atkin
Date:	March 22, 2017
Community:	Open Mixed □rass and Shrub Pasture
Location:	West of Wetland D
Plot ID:	□ECO Plot C

Tree species, □ Cover, □ative, Invasive - 30 foot radius, □5□ cover:			15□
□*Pseudotsuga menziesii*	Douglas-fir	*native*	15□
Shrub species, □ Cover, □ative, Invasive - 30 foot radius, □5□ cover:			**55□**
□*Crataegus monogyna*	English hawthorn	*non-native*	20□
□*Cytisus scoparius*	Scot□s broom	*invasive*	15□
Rosa pisocarpa	clustered rose	*native*	10□
Rubus armeniacus	Himalayan blackberry	*invasive*	10□
Herb Species, □ Cover, □ative, Invasive - 10 foot radius, □5□ cover:			**95□**
□*Schedonorus arundinaceus*	tall false rye grass	*non-native*	30□
□*Agrostis capillaris*	colonial bent	*non-native*	30□
□*Poa species*	bluegrass	*non-native*	25□
Hypochaeris radicata	hairy cat□s-ear	*non-native*	10□

□Dominant

Total Cover 165□

	Absolute areal cover
% Tree canopy:	**15%**
□ Cover by natives:	25□
□ Invasive:	25□
□ □on-native:	115□
	165□

Corridor Condition: Degraded

Site:	Brookman Residential Subdivision
Job Number:	3591
Investigators:	Haley Smith and □ayla □atkin
Date:	March 22, 2017
Community:	Heavily □ra□ed Colonial Bent Pasture
Location:	East of Wetland D
Plot ID:	□ECO Plot D

Tree species, □ Cover, □ative, Invasive - 30 foot radius, □5□ cover: 0□

Shrub species, □ Cover, □ative, Invasive - 30 foot radius, □5□ cover: 0□

Herb Species, □ Cover, □ative, Invasive - 10 foot radius, □5□ cover: 100□

□*Agrostis capillaris*	colonial bent	*non-native*	80□
Prunella vulgaris	common selfheal	*non-native*	10□
Schedonorus arundinaceus	tall false rye grass	*non-native*	10□

□Dominant

Total Cover 100□

	Absolute areal cover
% Tree canopy:	**0%**
□ Cover by natives:	0□
□ Invasive:	0□
□ □on-native:	100□
	100□

Corridor Condition: Degraded

Site:	Brookman Residential Subdivision
Job Number:	3591
Investigators:	Haley Smith and □ayla □atkin
Date:	March 22, 2017
Community:	Planted Douglas-fir Forest
Location:	West of Wetland B
Plot ID:	□ECO Plot E

Tree species, □ Cover, □ative, Invasive - 30 foot radius, □5□ cover:			50□
□*Pseudotsuga menziesii*	Douglas-fir	*native*	35□
□*Crataegus monogyna*	English hawthorn	*non-native*	15□

Shrub species, □ Cover, □ative, Invasive - 30 foot radius, □5□ cover:			35□
□*Rubus armeniacus*	Himalayan blackberry	*invasive*	20□
□*Rosa pisocarpa*	clustered rose	*native*	15□

Herb Species, □ Cover, □ative, Invasive - 10 foot radius, □5□ cover:			95□
□*Schedonorus arundinaceus*	tall false rye grass	*non-native*	80□
Cirsium arvense	Canadian thistle	*invasive*	10□
Galium aparine	sticky-willy	*native*	5□

□Dominant

Total Cover 180□

	Absolute areal cover
% Tree canopy:	**50%**
□ Cover by natives:	55□
□ Invasive:	30□
□ □on-native:	95□
	180□

Corridor Condition: Marginal

Site:	Brookman Residential Subdivision
Job Number:	3591
Investigators:	Haley Smith and □ayla □atkin
Date:	March 22, 2017
Community:	Open Mixed □rass Pasture
Location:	□orth of Wetland C
Plot ID:	□ECO Plot F

Tree species, □ Cover, □ative, Invasive - 30 foot radius, □5□ cover: 0□

Shrub species, □ Cover, □ative, Invasive - 30 foot radius, □5□ cover: 0□

Herb Species, □ Cover, □ative, Invasive - 10 foot radius, □5□ cover: 90□

□*Agrostis capillaris*	colonial bent	*non-native*	30□
□*Schedonorus arundinaceus*	tall false rye grass	*non-native*	30□
□*Echinochloa crus-galli*	large barnyard grass	*non-native*	30□

□Dominant

Total Cover 90□

	Absolute areal cover
% Tree canopy:	**0%**
□ Cover by natives:	0□
□ Invasive:	0□
□ □on-native:	90□
	90□

Corridor Condition: Degraded

Site:	Brookman Residential Subdivision
Job Number:	3591
Investigators:	Haley Smith and □ayla □atkin
Date:	March 22, 2017
Community:	Douglas-Fir Forest
Location:	South of Wetlnad □
Plot ID:	□ECO Plot □

Tree species, □ Cover, □ative, Invasive - 30 foot radius, □5□ cover:			60□
□*Pseudotsuga menziesii*	Douglas-fir	*native*	60□

Shrub species, □ Cover, □ative, Invasive - 30 foot radius, □5□ cover:			0□

Herb Species, □ Cover, □ative, Invasive - 10 foot radius, □5□ cover:			15□
□*Schedonorus arundinaceus*	tall false rye grass	*non-native*	10□
□*Polystichum munitum*	pineland sword fern	*native*	5□

□Dominant

Total Cover 75□

	Absolute areal cover
% Tree canopy:	**60%**
□ Cover by natives:	65□
□ Invasive:	0□
□ □on-native:	0□
	65□

Corridor Condition: Marginal

Appendix C: Representative Site Photographs

Photo A. View facing east toward VECO Plot A. Tree canopy is marginal throughout this portion of the vegetated corridor.

Photo B. View facing south toward VECO Plot B. The area lacks a tree and shrub layer and is dominated by non-native grasses.

Photo C. View facing north of VECO Plot C. The area is dominated by invasive shrubs and grasses and lacks a dense tree canopy.

Photo D. View facing east from VECO Plot D. The area is heavily grazed by horses and lacks any shrub or canopy cover.

Photos taken by Kayla Katkin, March 2017 and February 2018

Photo E. View facing east from Wetland B. This picture represents VECO Plot E. Marginal canopy cover with dominant non-native and invasive species throughout.

Photo F. View facing west from VECO Plot F. The area lacks a tree and shrub canopy and is dominated by non-native grasses.

Photo G. View facing west towards VECO Plot G. The forested area is a majority of the *marginal* condition vegetated corridor.

Photo H. View facing south towards VECO Plot G. The forested area lacks a shrub layer and a diverse herbaceous layer.

Photos taken by Kayla Katkin, March 2017 and February 2018

Appendix D: Brookman Residential Subdivision Vegetated Corridor Mitigation and Enhancement Planting Specification Table

Brookman Residential Subdivision
Vegetated Corridor Mitigation and Enhancement Planting Specifications

Planting specifications for the enhancement of remaining *marginal* and *degraded* condition vegetated corridor, temporarily impacted vegetated corridor, replacement mitigation area and public benefit mitigation area to be planted to *good* condition.

Table 1. Vegetated Corridor Enhancement for Temporary Impact Area per CWS Standards 3.05.5.b

Total vegetated corridor enhancement planting area = 745 square feet

Scientific Name	Common Name	Size*	Spacing/Seeding Rate	Quantity
Shrubs (total 37)				
Holodiscus discolor	creambush (Oceanspray)	2 gallon	4-5 feet on center	8
Ribes sanguineum	red flowering currant	1 gallon	4-5 feet on center	8
Mahonia aquifolium	tall Oregon grape	1 gallon	4-5 feet on center	7
Almelanchier alnifolia	serviceberry	2 gallon	4-5 feet on center	7
Symphoricarpus albus	snowberry	1 gallon	4-5 feet on center	7
Seed Mix				
Agrostis exarata	spike bentgrass	seed	1 lb pls/acre	As needed for bare soil areas >25 square feet
Elymus glaucus	blue wild rye	seed	2 lb pls/acre	

Table 2. Vegetated Corridor Replacement Mitigation Area

Total vegetated corridor enhancement planting area = 5,900 square feet

Scientific Name	Common Name	Size*	Spacing/Seeding Rate	Quantity
Trees (total 59)				
Acer macrophyllum	bigleaf maple	2 gallon	10 feet on center	15
Alnus rubra	red alder	1 gallon	10 feet on center	15
Rhamnus purshiana	Cascara	2 gallon	10 feet on center	15
Prunus emarginata	Bitter cherry	1 gallon	10 feet on center	14
Shrubs (total 295)				
Holodiscus discolor	creambush (Oceanspray)	2 gallon	4-5 feet on center	50
Ribes sanguineum	red flowering currant	1 gallon	4-5 feet on center	49
Mahonia aquifolium	tall Oregon grape	1 gallon	4-5 feet on center	49
Rosa gymnocarpa	baldhip rose	1 gallon	4-5 feet on center	49
Almelanchier alnifolia	serviceberry	2 gallon	4-5 feet on center	49
Symphoricarpus albus	snowberry	1 gallon	4-5 feet on center	49
Seed Mix				
Agrostis exarata	spike bentgrass	seed	1 lb pls/acre	As needed for bare soil areas >25 square feet
Elymus glaucus	blue wild rye	seed	2 lb pls/acre	

Table 3. Vegetated Corridor Enhancement Area

Total vegetated corridor enhancement planting area = 102,839 square feet

Scientific Name	Common Name	Size*	Spacing/Seeding Rate	Quantity
Trees (total 761) – Number of trees has been reduced due to existing canopy				
Acer macrophyllum	bigleaf maple	2 gallon	10 feet on center	191
Alnus rubra	red alder	1 gallon	10 feet on center	190
Rhamnus purshiana	Cascara	2 gallon	10 feet on center	190

Prunus emarginata	Bitter cherry	1 gallon	10 feet on center	190
Shrubs (total 5,142)				
Holodiscus discolor	creambush (Oceanspray)	2 gallon	4-5 feet on center	857
Ribes sanguineum	red flowering currant	1 gallon	4-5 feet on center	857
Mahonia aquifolium	tall Oregon grape	1 gallon	4-5 feet on center	857
Rosa gymnocarpa	baldhip rose	1 gallon	4-5 feet on center	857
Almelanchier alnifolia	serviceberry	2 gallon	4-5 feet on center	857
Symphoricarpus albus	snowberry	1 gallon	4-5 feet on center	857
Seed Mix				
Agrostis exarata	spike bentgrass	seed	1 lb pls/acre	As needed for bare soil areas >25 square feet
Elymus glaucus	blue wild rye	seed	2 lb pls/acre	

Number of trees has been reduced based on the existing canopy cover in marginal condition vegetated corridor as seen on Figure 6A. Tree plantings should be located outside of marginal condition vegetated corridor.

Table 4. Public Benefit Mitigation Area

Total public benefit mitigation planting area = 7,571 square feet

Scientific Name	Common Name	Size*	Spacing/Seeding Rate	Quantity
Trees (total 33) – Number of trees has been reduced due to existing canopy				
Acer macrophyllum	bigleaf maple	2 gallon	10 feet on center	9
Alnus rubra	red alder	1 gallon	10 feet on center	8
Rhamnus purshiana	Cascara	2 gallon	10 feet on center	8
Prunus emarginata	Bitter cherry	1 gallon	10 feet on center	8
Shrubs (total 379)				
Holodiscus discolor	creambush (Oceanspray)	2 gallon	4-5 feet on center	64
Ribes sanguineum	red flowering currant	1 gallon	4-5 feet on center	63
63Mahonia aquifolium	tall Oregon grape	1 gallon	4-5 feet on center	63
Rosa gymnocarpa	baldhip rose	1 gallon	4-5 feet on center	63
Almelanchier alnifolia	serviceberry	2 gallon	4-5 feet on center	63
Symphoricarpus albus	snowberry	1 gallon	4-5 feet on center	63
Seed Mix				
Agrostis exarata	spike bentgrass	seed	1 lb pls/acre	As needed for bare soil areas >25 square feet
Elymus glaucus	blue wild rye	seed	2 lb pls/acre	

Number of trees has been reduced based on the existing canopy cover north of Tract E as seen on Figure 7C.

**Bare root plants may be substituted for container plants based on availability. If bare root plants are used, they must be planted during the late winter/early spring dormancy period.*

Planting Notes (per CWS Design & Construction Standards, Appendix A Planting Requirements, April 2017):

1) Plantings should preferably be installed between February 1 and May 1 and October 1 and November 15 for containerized stock. Bare root stock should be installed from December 15 through April 15. Plants may be installed at other times of the year; however, additional measures may be necessary to ensure plant survival during the two-year maintenance period. Bare root plants must be installed during the late winter/early spring dormancy period.

2) All non-native invasive vegetation shall be removed from planting areas prior to installing native enhancement plantings. Invasive species control shall be consistent with Clean Water Services' *Integrated Vegetation and Animal Management Guide*.

3) Irrigation may be necessary for the survival of the vegetated corridor enhancement plantings. Irrigation or other water practices (i.e. polymer, plus watering) is recommended during the two-year maintenance period. Watering shall be provided at a rate of at least one inch per week between June 15 and October 15.

4) Plantings shall be mulched a minimum of three inches in depth and 18 inches in diameter to retain moisture and discourage weed growth around newly installed plant material.

5) Tree and shrub plantings shall be protected from wildlife damage (e.g., beaver, nutria) by installing tree-protector tubes or wire mesh cylinders around newly installed plantings.

Maintenance Plan

1) Clean Water Services requires a two-year maintenance period for vegetated corridor mitigation. The enhanced vegetated corridor is to be inspected annually and a minimum of two times during the growing season, by June 1 and September 30.

2) Plant Survival: Clean Water Services' success criterion for vegetated corridor enhancement is 80% survival of tree and shrub plantings during the two years following planting. If any mortality is noted on the site, the factor likely to have caused mortality of the plantings is to be determined and corrected if possible. If survival falls below 80% at any time during the two-year maintenance period, the plantings shall be replaced and other corrective measures, such as mulching or irrigation, may need to be implemented. If replanting is necessary, the maintenance period will be extended for two years from the date of replanting.

3) Invasive species control is to be conducted as needed based on the site inspections. Invasive species include Himalayan blackberry (*Rubus armeniacus*), reed canarygrass (*Phalaris arundinacea*), teasel (*Dipsacus fullonum*), Canada and bull thistle (*Cirsium arvense* and *C. vulgare*), Scotch broom (*Cytisus scoparius*), purple loosestrife (*Lythrum salicaria*), Japanese knotweed (*Polygonium cuspidatum*), morning glory (*Convolvulus* species), giant hogweed (*Heracleum mantegazzianum*), English ivy (*Hedera helix*), nightshade (*Solanum* species), and clematis (*Clematis ligusticifolia* and *C. vitalba*).

Appendix E: Streamflow Duration Assessment Method for the Pacific Northwest

Streamflow Duration Field Assessment Form

Project # / Name	3591/Brookman Rd Residential Development	Assessor	Kayla Katkin
Address	SW Brookman Road Sherwood, OR	Date	03/23/2017
Waterway Name	Ephemeral Drainage	Coordinates at downstream end (ddd.mm.ss)	Lat. 45.346119 N
Reach Boundaries			Long. -122.857297 W
Precipitation w/in 48 hours (cm)	1.68 cm 0.66 in	Channel Width (m)	0.30 m 1.0 ft
☐ Disturbed Site / Difficult Situation (Describe in "Notes")			

Observed Hydrology

% of reach w/observed surface flow 95%

% of reach w/any flow (surface or hyporheic) 95%

# of pools observed 0

Observations

Observed Wetland Plants (and indicator status):

None. No Wetland plants located within the channel or within one-half of the channel width.

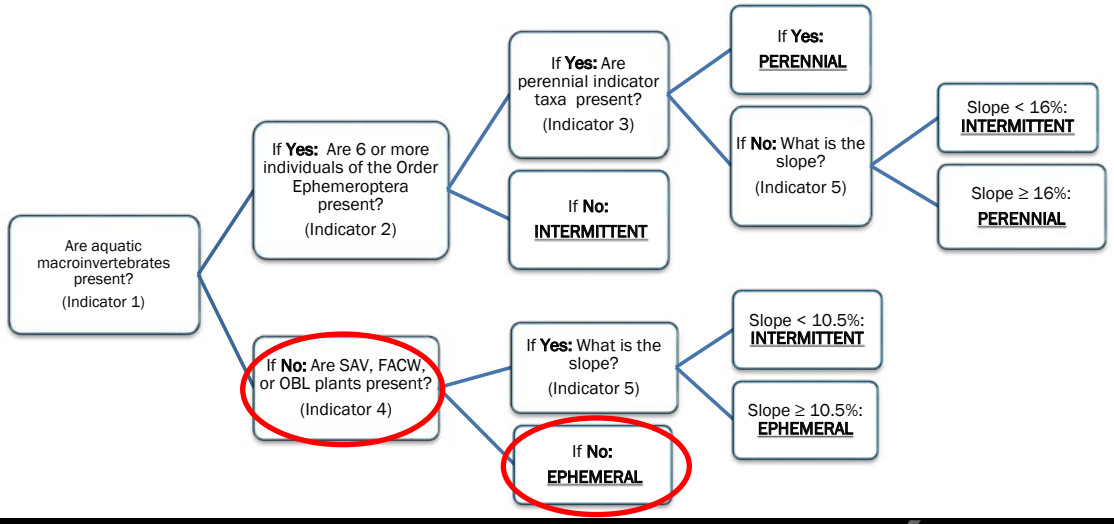
Observed Macroinvertebrates: NONE

Taxon	Indicator Status	Ephemer-optera?	# of Individuals

Indicators

1. Are aquatic macroinvertebrates present?	☐ Yes	☑ No
2. Are 6 or more individuals of the Order Ephemeroptera present?	☐ Yes	☑ No
3. Are perennial indicator taxa present? (refer to Table 1)	☐ Yes	☑ No
4. Are FACW, OBL, or SAV plants present? (Within ½ channel width)	☐ Yes	☑ No
5. What is the slope? (In percent, measured for the valley, not the stream)	<10 %	

Conclusions



Single Indicators: NONE

☐ Fish

☐ Amphibians

Finding:

☑ Ephemeral

☐ Intermittent

☐ Perennial

Notes: (explanation of any single indicator conclusions, description of disturbances or modifications that may interfere with indicators, etc.) N/A

Difficult Situation: N/A

Describe situation. For disturbed streams, note extent, type, and history of disturbance.

☐ Prolonged Abnormal Rainfall / Snowpack

☐ Below Average

☐ Above Average

☐ Natural or Anthropogenic Disturbance

☐ Other: _____

Additional Notes: (sketch of site, description of photos, comments on hydrological observations, etc.) Attach additional sheets as necessary.

Photo A. Drainage contains flow after a period of heavy rainfall. FAC and FACU vegetation is located adjacent to channel.

Ancillary Information:

☐ Riparian Corridor

☐ Erosion and Deposition

☐ Floodplain Connectivity

Observed Amphibians, Snake, and Fish: NONE

Taxa	Life History Stage	Location Observed	Number of Individuals Observed

Exhibit H: Clean Water Services-Service Provider Letter

Clean Water Services
Our commitment is clear.

Service Provider Letter

CWS File Number: 18-001504

This form and the attached conditions will serve as your Service Provider Letter in accordance with Clean Water Services Design and Construction Standards (R&O 17-5).

Jurisdiction:	City of Sherwood	**Review Type:**	Tier 2 Analysis
Site Address / Location:	17601 SW Brookman Road Sherwood, OR 97140	**SPL Issue Date:** **SPL Expiration Date:**	June 27, 2018 June 27, 2020

Applicant Information:		**Owner Information:**	
Name		Name	
Company	BROOKMAN DEVELOPMENT, LLC	Company	BROOKMAN DEVELOPMENT, LLC
Address	P.O. BOX 61426 VANCOUVER, WA 98666	Address	P.O. BOX 61426 VANCOUVER, WA 98666
Phone/Fax		Phone/Fax	
E-mail:		E-mail:	

Tax lot ID	**Development Activity**
3S1060000100, 103, & 200	Brookwood Residential Subdivision

Pre-Development Site Conditions:		**Post Development Site Conditions:**	
Sensitive Area Present:	[X] On-Site [X] Off-Site	Sensitive Area Present:	[X] On-Site [X] Off-Site
Vegetated Corridor Width:	50	Vegetated Corridor Width:	Variable
Vegetated Corridor Condition:	Marginal/Degraded		

Enhancement of Remaining Vegetated Corridor Required: [X]

Square Footage to be enhanced: 102,839

Encroachments into Pre-Development Vegetated Corridor:

Type and location of Encroachment:	Square Footage:
Lots, roads, and trail (Permanent encroachment; Mitigation required [beyond 3' width for trail])	7,571
Lots and roads (Permanent encroachment associated with wetland fill; Mitigation required)	51,681
Utility installation (Temporary encroachment; Restoration and planting in-place required)	745

Mitigation Requirements:

Type/Location	Sq. Ft./Ratio/Cost
On-site Replacement Mitigation	5,900/1:1
On-site Replacement Mitigation for Public Benefit	7,571
Payment to Provide; per R&O 13-12, fee is waived. Wetland mitigation by purchase of bank credits	51,681

[X] Conditions Attached [X] Development Figures Attached (5) [ ] Planting Plan Attached [ ] Geotech Report Required

This Service Provider Letter does NOT eliminate the need to evaluate and protect water quality sensitive areas if they are subsequently discovered on your property.

In order to comply with Clean Water Services water quality protection requirements the project must comply with the following conditions:

1. No structures, development, construction activities, gardens, lawns, application of chemicals, uncontained areas of hazardous materials as defined by Oregon Department of Environmental Quality, pet wastes, dumping of materials of any kind, or other activities shall be permitted within the sensitive area or Vegetated Corridor which may negatively impact water quality, except those allowed in R&O 17-5, Chapter 3.
2. Prior to any site clearing, grading or construction the Vegetated Corridor and water quality sensitive areas shall be surveyed, staked, and temporarily fenced per approved plan. During construction the Vegetated Corridor shall remain fenced and undisturbed except as allowed by R&O 17-5, Section 3.06.1 and per approved plans.
3. **Prior to any activity within the sensitive area, the applicant shall gain authorization for the project from the Oregon Department of State Lands (DSL) and US Army Corps of Engineers (USACE). The applicant shall provide Clean Water Services or its designee (appropriate city) with copies of all DSL and USACE project authorization permits.**
4. An approved Oregon Department of Forestry Notification is required for one or more trees harvested for sale, trade, or barter, on any non-federal lands within the State of Oregon.
5. **Prior to ground disturbing activities, an erosion control permit is required. Appropriate Best Management Practices (BMP's) for Erosion Control, in accordance with Clean Water Services' Erosion Prevention and Sediment Control Planning and Design Manual, shall be used prior to, during, and following earth disturbing activities.**
6. Prior to construction, a Stormwater Connection Permit from Clean Water Services or its designee is required pursuant to Ordinance 27, Section 4.B.
7. Activities located within the 100-year floodplain shall comply with R&O 17-5, Section 5.10.
8. Removal of native, woody vegetation shall be limited to the greatest extent practicable.
9. The water quality swale and detention pond shall be planted with Clean Water Services approved native species, and designed to blend into the natural surroundings.
10. **Should final development plans differ significantly from those submitted for review by Clean Water Services, the applicant shall provide updated drawings, and if necessary, obtain a revised Service Provider Letter.**
11. The Vegetated Corridor width for sensitive areas within the project site shall be a minimum of 50 feet wide, as measured horizontally from the delineated boundary of the sensitive area.
12. **For Vegetated Corridors up to 50 feet wide, the applicant shall enhance the entire Vegetated Corridor to meet or exceed good corridor condition as defined in R&O 17-5, Section 3.14.2, Table 3-3.**
13. Removal of invasive non-native species by hand is required in all Vegetated Corridors rated ""good."" Replanting is required in any cleared areas larger than 25 square feet using low impact methods. The applicant shall calculate all cleared areas larger than 25 square feet prior to the preparation of the required Vegetated Corridor enhancement/restoration plan.
14. Prior to any site clearing, grading or construction, the applicant shall provide Clean Water Services with a Vegetated Corridor enhancement/restoration plan. Enhancement/restoration of the Vegetated Corridor shall be provided in accordance with R&O 17-5, Appendix A, and shall include planting specifications for all Vegetated Corridor, including any cleared areas larger than 25 square feet in Vegetated Corridor rated ""good.""
15. Prior to installation of plant materials, all invasive vegetation within the Vegetated Corridor shall be removed per methods described in Clean Water Services' Integrated Vegetation and Animal Management Guidance, 2003. During removal of invasive vegetation care shall be taken to minimize impacts to existing native tree and shrub species.

16. **Clean Water Services shall be notified 72 hours prior to the start and completion of enhancement/restoration activities. Enhancement/restoration activities shall comply with the guidelines provided in Planting Requirements (R&0 17-5, Appendix A).**
17. **Maintenance and monitoring requirements shall comply with R&O 17-5, Section 2.12.2. If at any time during the warranty period the landscaping falls below the 80% survival level, the owner shall reinstall all deficient planting at the next appropriate planting opportunity and the two year maintenance period shall begin again from the date of replanting.**
18. **Performance assurances for the Vegetated Corridor shall comply with R&O 17-5, Section 2.07.2, Table 2-1 and Section 2.11, Table 2-2.**
19. **For any developments which create multiple parcels or lots intended for separate ownership, Clean Water Services shall require that the water quality sensitive area and Vegetated Corridor be contained in a separate tract and subject to a ""STORM SEWER, SURFACE WATER, DRAINAGE AND DETENTION EASEMENT OVER ITS ENTIRETY"" to be granted to the City or Clean Water Services.**

FINAL PLANS

20. **Final construction plans shall include landscape plans.** In the details section of the plans, a description of the methods for removal and control of exotic species, location, distribution, condition and size of plantings, existing plants and trees to be preserved, and installation methods for plant materials is required. Plantings shall be tagged for dormant season identification and shall remain on plant material after planting for monitoring purposes.
21. **A Maintenance Plan shall be included on final plans** including methods, responsible party contact information, and dates (minimum two times per year, by June 1 and September 30).
22. **Final construction plans shall clearly depict the location and dimensions of the sensitive area and the Vegetated Corridor** (indicating good, marginal, or degraded condition). Sensitive area boundaries shall be marked in the field.
23. Protection of the Vegetated Corridors and associated sensitive areas shall be provided by the installation of permanent fencing and signage between the development and the outer limits of the Vegetated Corridors. **Fencing and signage details to be included on final construction plans.**

This Service Provider Letter is not valid unless CWS-approved site plan is attached.

Please call (503) 681-3653 with any questions.

Lindsey Obermiller
Environmental Plan Review

Attachments (5)

N

SCALE: 1"= 200 FEET

200 0 80 120 160 200

SCALE 11 X 17"

LEGEND:

ON-SITE WETLANDS TOTAL: 167,365 SF± (3.19 ACRES±)

WETLAND A: 32,182 SF± (0.74 ACRES±)
WETLAND B: 8,843 SF± (0.20 ACRES±)
WETLAND C: 6,879 SF± (0.16 ACRES±)
WETLAND D: 58,411 SF± (1.34 ACRES±)
WETLAND E: 32,456 SF± (0.75 ACRES±)

ON-SITE PORTION OF EPHEMERAL DRAINAGE: 170 SF± (170 LINEAR FT±)

TOTAL ON-SITE VEGETATED CORRIDOR: 162,836 SF± (3.74 ACRES±)

MARGINAL CONDITION VEGETATED CORRIDOR TOTAL: 59,720 SF± (1.37 ACRES±)

DEGRADED CONDITION VEGETATED CORRIDOR TOTAL: 103,116 SF± (2.37 ACRES±)

WETLAND AND WATER BOUNDARIES SHOWN WERE DELINEATED BY AKS ENGINEERING & FORESTRY, LLC ON MARCH 29-31, 2017 AND FEBRUARY 14, 2018 AND WERE PROFESSIONALLY LAND SURVEYED BY AKS ON APRIL 7-13, 2017 AND FEBRUARY 20, 2018.

1-FOOT INTERVAL GROUND CONTOURS DERIVED FROM LAND SURVEY.

COLOR COPY
CWS File No. 18-001504
Approved
Clean Water Services
FOR ENVIRONMENTAL REVIEW
By LO. Date 6/27/2018
SPL Attachment 1 of 5

DATE: 05/01/2018

PROPERTY LINE ADJUSTMENT	FIGURE
BROOKMAN RESIDENTIAL SUBDIVISION NATURAL RESOURCE ASSESSMENT	5

AKS ENGINEERING & FORESTRY, LLC
12965 SW HERMAN RD, STE 100
TUALATIN, OR 97062
P: 503.563.6151 F: 503.563.6152 aks-eng.com

DRWN: KMK
CHKD: SAR
AKS JOB: 3591

SW COBBLE COURT
(SEE FIGURE 7C)

TRACT H
OPEN SPACE

TRACT D
NATURAL RESOURCE

PORTLAND AND WESTERN RAILROAD (PRIVATE)

TRACT E
NATURAL RESOURCE

ROAD D

ROAD A

ROAD C

A STREET

B STREET

C STREET

TRACT B
OPEN SPACE

TRACT G
OPEN SPACE

TRACT C
NATURAL RESOURCE

ROAD B

TAX LOT 200
TAX MAP 3S 1E 6B

(SEE FIGURE 7A)

APPROXIMATE WETLAND BOUNDARY AND 50' VEGETATED CORRIDOR BUFFER

(SEE FIGURE 7B)

TRACT A
STORMWATER FACILITY

TRACT F
OPEN SPACE

GAS

COLOR COPY
CWS File No. 18-001504
Approved
Clean Water Services
FOR ENVIRONMENTAL REVIEW
By KLD. Date 6/1/2018

SPL Attachment 2 of 5

N

SCALE: 1"=150 FEET

150 0 60 90 120 150

COLOR COPY
11 X 17

LEGEND:

WETLAND – EXISTING AREA TO REMAIN: 123,049 SF± (2.82 ACRES±)

WETLAND A: 32,182 SF± (0.74 ACRES±)
WETLAND D: 58,411 SF± (1.34 ACRES±)
WETLAND E: 32,456 SF± (0.75 ACRES±)

EPHEMERAL DRAINAGE – EXISTING AREA TO REMAIN: 170 LINEAR FT±

WETLAND PERMANENT IMPACTS: 15,722 SF± (0.36 ACRES±)

WETLAND B: 8,843 SF± (0.20 ACRES±)
WETLAND C: 6,879 SF± (0.16 ACRES±)

VEGETATED CORRIDOR TEMPORARY IMPACT AREA (TO BE ENHANCED TO GOOD CONDITION): 745 SF±

VEGETATED CORRIDOR PERMANENT IMPACT AREA: 7,571 SF± (0.17 ACRES±) (5,900 SF± JFT BEYOND PATH REQUIRING MITIGATION)

VEGETATED CORRIDOR ENHANCEMENT AREA (TO BE PLANTED TO GOOD CONDITION): 102,839 SF± (2.36 ACRES±)

VEGETATED CORRIDOR PERMANENT IMPACT AREA TO BE MITIGATED THROUGH WETLAND BANK CREDIT PURCHASE: 51,681 SF± (1.19 ACRES±)

VEGETATED CORRIDOR REPLACEMENT MITIGATION AREA: 5,900 SF± (0.14 ACRES±)

VEGETATED CORRIDOR PUBLIC BENEFIT MITIGATION AREA (TO BE PLANTED TO GOOD CONDITION): 7,571 SF± (0.17 ACRES±)

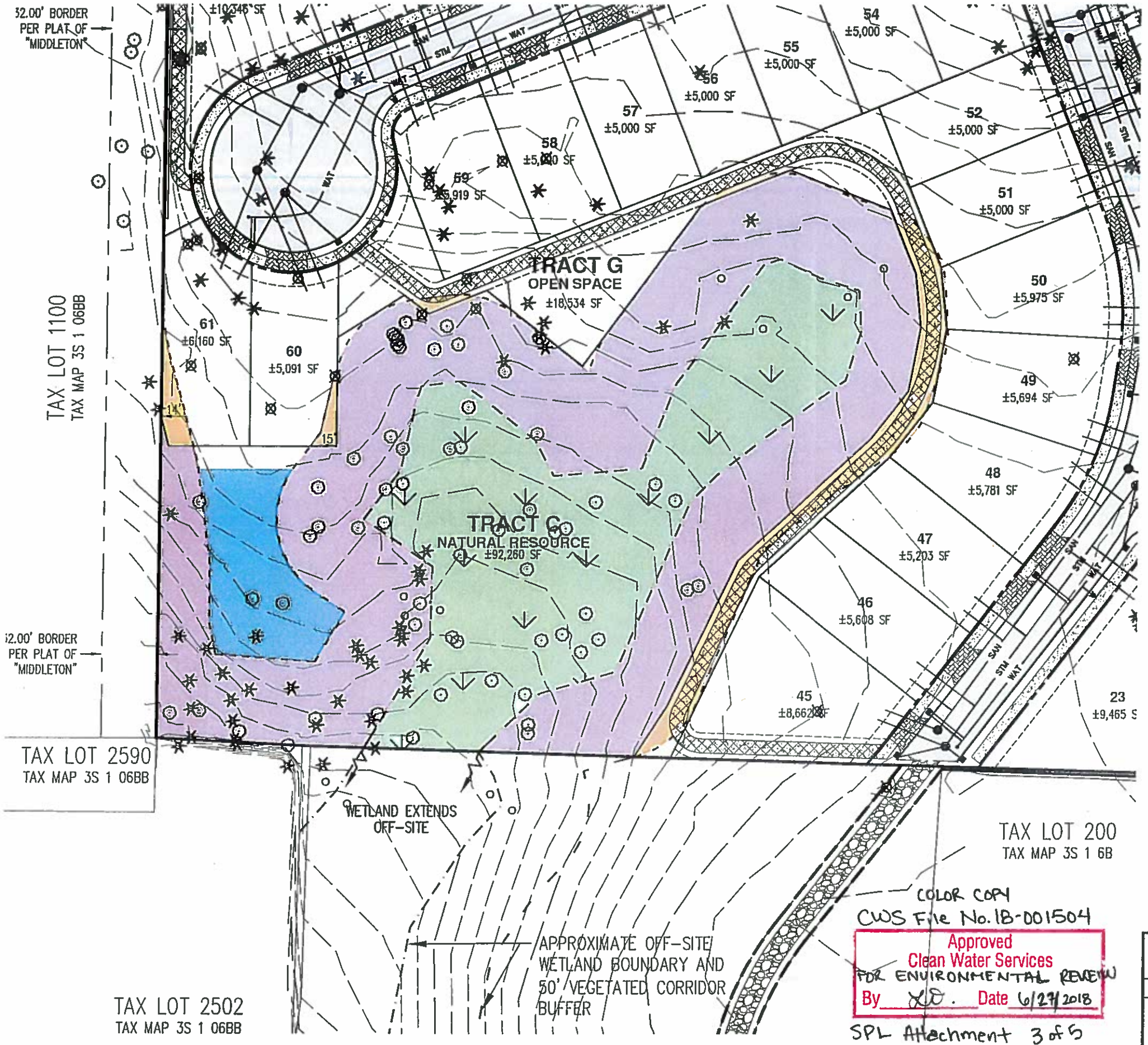
WETLAND AND WATER BOUNDARIES SHOWN WERE DELINEATED BY AKS ENGINEERING & FORESTRY, LLC ON MARCH 29–31, 2017 AND WERE PROFESSIONALLY LAND SURVEYED BY AKS ON APRIL 7–13, 2017.

1-FOOT INTERVAL GROUND CONTOURS DERIVED FROM LAND SURVEY.

DATE: 05/24/2018

SITE PLAN	FIGURE 7
BROOKMAN RESIDENTIAL SUBDIVISION	
AKS ENGINEERING & FORESTRY, LLC 12965 SW HERMAN RD, STE 100 TUALATIN, OR 97062 P: 503.563.6151 F: 503.563.6152 aks-eng.com	DRWN: KMK CHKD: SAR AKS JOB: 3591

DWG: 3591 SITE PLAN_NRA | FIGURE 7



LEGEND:

WETLAND – EXISTING AREA TO REMIAN: 123,049 SF± (2.83 ACRES±)

WETLAND A: 32,182 SF± (0.74 ACRES±)
WETLAND D: 58,411 SF± (1.34 ACRES±)
WETLAND E: 32,456 SF± (0.75 ACRES±)

EPHEMERAL DRAINAGE – EXISTING AREA TO REMIAN: 170 LINEAR FT±

WETLAND PERMANENT IMPACTS: 15,722 SF± (0.36 ACRES±)

WETLAND B: 8,843 SF± (0.20 ACRES±)
WETLAND C: 6,879 SF± (0.16 ACRES±)

VEGETATED CORRIDOR TEMPORARY IMPACT AREA (TO BE ENHANCED TO GOOD CONDITION): 745 SF±

VEGETATED CORRIDOR PERMANENT IMPACT AREA: 7,571 SF± (0.17 ACRES±) (5,900 SF± 3FT BEYOND PATH REQUIRING MITIGATION)

VEGETATED CORRIDOR ENHANCEMENT AREA (TO BE PLANTED TO GOOD CONDITION): 102,839 SF± (2.36 ACRES±)

VEGETATED CORRIDOR PERMANENT IMPACT AREA TO BE MITIGATED THROUGH WETLAND BANK CREDIT PURCHASE: 51,681 SF± (1.19 ACRES±)

VEGETATED CORRIDOR REPLACEMENT MITIGATION AREA: 5,900 SF± (0.14 ACRES±)

VEGETATED CORRIDOR PUBLIC BENEFIT MITIGATION AREA (TO BE PLANTED TO GOOD CONDITION): 7,571 SF± (0.17 ACRES±)

WETLAND AND WATER BOUNDARIES SHOWN WERE DELINEATED BY AKS ENGINEERING & FORESTRY, LLC ON MARCH 29–31, 2017 AND WERE PROFESSIONALLY LAND SURVEYED BY AKS ON APRIL 7–13, 2017.

1–FOOT INTERVAL GROUND CONTOURS DERIVED FROM LAND SURVEY.

SCALE: 1"= 60 FEET

60 0 24 36 48 60

COLOR COPY
11 X 17

N

DATE: 05/24/2018

COLOR COPY
CWS File No. 18-001504

Approved
Clean Water Services
FOR ENVIRONMENTAL REVIEW
By XD Date 6/27/2018

SPL Attachment 3 of 5

SITE PLAN	FIGURE 7A
BROOKMAN RESIDENTIAL SUBDIVISION	

AKS ENGINEERING & FORESTRY, LLC
12965 SW HERMAN RD, STE 100
TUALATIN, OR 97062
P: 503.563.6151 F: 503.563.6152 aks-eng.com

DRWN: KMK
CHKD: SAR
AKS JOB: 3591

DWG: 3591 SITE PLAN_NRA | FIGURE 7A

LEGEND:

WETLAND – EXISTING AREA TO REMIAN: 123,049 SF± (2.83 ACRES±)

WETLAND A: 32,182 SF± (0.74 ACRES±)
WETLAND D: 58,411 SF± (1.34 ACRES±)
WETLAND E: 32,456 SF± (0.75 ACRES±)

EPHEMERAL DRAINAGE – EXISTING AREA TO REMIAN: 170 LINEAR FT±

WETLAND PERMANENT IMPACTS: 15,722 SF± (0.36 ACRES±)

WETLAND B: 8,843 SF± (0.20 ACRES±)
WETLAND C: 6,879 SF± (0.16 ACRES±)

VEGETATED CORRIDOR TEMPORARY IMPACT AREA (TO BE ENHANCED TO GOOD CONDITION): 745 SF±

VEGETATED CORRIDOR PERMANENT IMPACT AREA: 7,571 SF± (0.17 ACRES±) (5,900 SF± 3FT BEYOND PATH REQUIRING MITIGATION)

VEGETATED CORRIDOR ENHANCEMENT AREA (TO BE PLANTED TO GOOD CONDITION): 102,839 SF± (2.36 ACRES±)

VEGETATED CORRIDOR PERMANENT IMPACT AREA TO BE MITIGATED THROUGH WETLAND BANK CREDIT PURCHASE: 51,681 SF± (1.19 ACRES±)

VEGETATED CORRIDOR REPLACEMENT MITIGATION AREA: 5,900 SF± (0.14 ACRES±)

VEGETATED CORRIDOR PUBLIC BENEFIT MITIGATION AREA (TO BE PLANTED TO GOOD CONDITION): 7,571 SF± (0.17 ACRES±)

WETLAND AND WATER BOUNDARIES SHOWN WERE DELINEATED BY AKS ENGINEERING & FORESTRY, LLC ON MARCH 29–31, 2017 AND WERE PROFESSIONALLY LAND SURVEYED BY AKS ON APRIL 7–13, 2017.

1-FOOT INTERVAL GROUND CONTOURS DERIVED FROM LAND SURVEY.

N

SCALE: 1"=60 FEET

60 0 24 36 48 60

COLOR COPY
11 X 17

COLOR COPY
CWS File No. 18-001504
Approved
Clean Water Services
FOR ENVIRONMENTAL REVIEW
By DO Date 6/27/2018
SPL Attachment 4 of 5

DATE: 05/24/2018

SITE PLAN	FIGURE 7B
BROOKMAN RESIDENTIAL SUBDIVISION	

AKS ENGINEERING & FORESTRY, LLC
12965 SW HERMAN RD, STE 100
TUALATIN, OR 97062
P: 503.563.6151 F: 503.563.6152 aks-eng.com

AKS

DRWN: KMK
CHKD: SAR
AKS JOB: 3591

DWG: 3591 SITE PLAN_NRA | FIGURE 7B

OWNER: CITY OF SHERWOOD

SUBJECT TO A PUBLIC STORM DRAINAGE AND PUBLIC SANITARY SEWER EASEMENTS OVER IT'S ENTIRETY

EX 1.5' WIDE X 1.0'± DEEP BOX CULVERT IE: 212.76

1.5' BOX CULVERT

E X 1.0'± DEEP BOX CULVERT IE: 212.84

30'

STM

SAN

SW COBBLE COURT

TRACT H
OPEN SPACE
±19,258 SF

TAX LOT 10600 TAX MAP 2S 1 31DC

TAX LOT 10500 TAX MAP 2S 1 31DC

TAX LOT 10400 TAX MAP 2S 1 31DC

TAX LOT 10300 TAX MAP 2S 1 31DC

TAX LOT 10200 TAX MAP 2S 1 31DC

TAX LOT 10100 TAX MAP 2S 1 31DC

TAX LOT 10000 TAX MAP 2S 1 31DC

WETLAND EXTENDS SLIGHTLY OFF-SITE

TRACT E
NATURAL RESOURCE
±118,050 SF

81 ±7,367 SF

82 ±6,615 SF

83 ±5,948 SF

84 ±5,327 SF

85 ±5,025 SF

86 ±6,229 SF

87 ±7,748 SF

88 ±7,590 SF

89 ±5,107 SF

90 ±5,000 SF

91 ±6,093 SF

110 ±6,879 SF

111 ±5,450

694 SF

A STREET

SAN STM WAT PWR

LEGEND:

WETLAND – EXISTING AREA TO REMAIN: 123,049 SF± (2.83 ACRES±)

WETLAND A: 32,182 SF± (0.74 ACRES±)
WETLAND D: 58,411 SF± (1.34 ACRES±)
WETLAND E: 32,456 SF± (0.75 ACRES±)

EPHEMERAL DRAINAGE – EXISTING AREA TO REMAIN: 170 LINEAR FT±

WETLAND PERMANENT IMPACTS: 15,722 SF± (0.36 ACRES±)

WETLAND B: 8,843 SF± (0.20 ACRES±)
WETLAND C: 6,879 SF± (0.16 ACRES±)

VEGETATED CORRIDOR TEMPORARY IMPACT AREA (TO BE ENHANCED TO GOOD CONDITION): 745 SF±

VEGETATED CORRIDOR PERMANENT IMPACT AREA: 7,571 SF± (0.17 ACRES±) (5,900 SF± 3FT BEYOND PATH REQUIRING MITIGATION)

VEGETATED CORRIDOR ENHANCEMENT AREA (TO BE PLANTED TO GOOD CONDITION): 102,839 SF± (2.36 ACRES±)

VEGETATED CORRIDOR PERMANENT IMPACT AREA TO BE MITIGATED THROUGH WETLAND BANK CREDIT PURCHASE: 51,881 SF± (1.19 ACRES±)

VEGETATED CORRIDOR REPLACEMENT MITIGATION AREA: 5,900 SF± (0.14 ACRES±)

VEGETATED CORRIDOR PUBLIC BENEFIT MITIGATION AREA (TO BE PLANTED TO GOOD CONDITION): 7,571 SF± (0.17 ACRES±)

WETLAND AND WATER BOUNDARIES SHOWN WERE DELINEATED BY AKS ENGINEERING & FORESTRY, LLC ON MARCH 29-31, 2017 AND WERE PROFESSIONALLY LAND SURVEYED BY AKS ON APRIL 7-13, 2017.

N

SCALE: 1"=60 FEET

60 0 24 36 48 60

COLOR COPY
11 X 17

COLOR COPY
CWS File No. 18-001504

Approved
Clean Water Services
FOR ENVIRONMENTAL REVIEW
By KD. Date 6/27/2018

SPL Attachment 5 of 5

DATE: 05/24/2018

SITE PLAN	FIGURE
BROOKMAN RESIDENTIAL SUBDIVISION	7C

AKS ENGINEERING & FORESTRY, LLC
12965 SW HERMAN RD, STE 100
TUALATIN, OR 97062
P: 503.563.6151 F: 503.563.6152 aks-eng.com

AKS

DRWN: KMK
CHKD: SAR
AKS JOB: 3591

Exhibit I: Department of State Lands Wetland Delineation Concurrence Letter

Oregon
Kate Brown, Governor

Department of State Lands
775 Summer Street NE, Suite 100
Salem, OR 97301-1279
(503) 986-5200
FAX (503) 378-4844
www.oregon.gov/dsl

June 27, 2018

Brookman Development, LLC
Attn: Joe Schiewe
P.O. Box 61426
Vancouver, WA 98666

Re: WD # 2018-0275 Wetland Delineation Report for the Proposed Brookman Park Subdivision, Washington County;
T 3S R 1W S TL 103; S 6B TL 100 and (200) portion;

Dear Mr. Schiewe:

The Department of State Lands has reviewed the wetland delineation report prepared by AKS Engineering & Forestry LLC for the site referenced above. Please note that the study area includes only a portion of the tax lots described above (see the attached map). Based upon the information presented in the report, and additional information submitted upon request, we concur with the wetland and waterway boundaries as mapped in Figure 5 and 5A – 5C of the report. Within the study area, four wetlands (Wetland A-D, totaling approximately 2.44 acres) and one waterway (Ephemeral Drainage) were identified.

The wetlands are subject to the permit requirements of the state Removal-Fill Law. However, the waterway is exempt per OAR 141-085-0515 (3); therefore, it is not subject to these state permit requirements. Under current regulations, a state permit is required for cumulative fill or annual excavation of 50 cubic yards or more in wetlands or below the ordinary high-water line (OHWL) of the waterway (or the 2-year recurrence interval flood elevation if OHWL cannot be determined).

This concurrence is for purposes of the state Removal-Fill Law only. Federal or local permit requirements may apply as well. The Army Corps of Engineers will determine jurisdiction for purposes of the Clean Water Act. We recommend that you attach a copy of this concurrence letter to both copies of any subsequent joint permit application to speed application review.

Please be advised that state law establishes a preference for avoidance of wetland impacts. Because measures to avoid and minimize wetland impacts may include reconfiguring parcel layout and size or development design, we recommend that you work with Department staff on appropriate site design before completing the city or county land use approval process.

This concurrence is based on information provided to the agency. The jurisdictional determination is valid for five years from the date of this letter unless new information necessitates a revision. Circumstances under which the Department may change a determination are found in OAR 141-090-0045 (available on our web site or upon request). In addition, laws enacted by the legislature and/or rules adopted by the Department may result in a change in jurisdiction; individuals and applicants are subject to the regulations that are in effect at the time of the removal-fill activity or complete permit application. The applicant, landowner, or agent may submit a request for reconsideration of this determination in writing within six months of the date of this letter.

Thank you for having the site evaluated. Please phone me at 503-986-5232 if you have any questions.

Sincerely,

Peter Ryan, PWS
Jurisdiction Coordinator

Approved by

Kathy Verble, CPSS
Aquatic Resource Specialist

Enclosures

ec: Kayla Katkin, AWB, AKS Engineering & Forestry, LLC
City of Sherwood Planning Department (Maps enclosed for updating LWI)
Kinsey Friesen, Corps of Engineers
Lindsey Obermiller, Clean Water Services
Anita Huffman, DSL

WETLAND DELINEATION / DETERMINATION REPORT COVER FORM

Fully completed and signed report cover forms and applicable fees are required before report review timelines are initiated by the Department of State Lands. Make checks payable to the Oregon Department of State Lands. To pay fees by credit card, go online at: https://apps.oregon.gov/DSL/EPS/program?key=4.

Attach this completed and signed form to the front of an unbound report or include a hard copy with a digital version (single PDF file of the report cover form and report, minimum 300 dpi resolution) and submit to: **Oregon Department of State Lands, 775 Summer Street NE, Suite 100, Salem, OR 97301-1279.** A single PDF of the completed cover from and report may be e-mailed to: **Wetland_Delineation@dsl.state.or.us**. For submittal of PDF files larger than 10 MB, e-mail DSL instructions on how to access the file from your ftp or other file sharing website.

Contact and Authorization Information

☒ Applicant ☐ Owner Name, Firm and Address:
Brookman Development, LLC
Joe Schiewe
P.O. Box 61426
Vancouver, WA 98666

RECEIVED
MAY 08 2018
RECEIVED $ 437.00
DEPARTMENT OF STATE LANDS
✓#29017

Business phone # (360) 892-0514
Mobile phone # (optional)
E-mail: joe@holthomes.com

☒ Authorized Legal Agent, Name and Address (if different):
Same as Applicant

Business phone #
Mobile phone # (optional)
E-mail:

I either own the property described below or I have legal authority to allow access to the property. I authorize the Department to access the property for the purpose of confirming the information in the report, after prior notification to the primary contact.

Typed/Printed Name: Joe Schiewe **Signature:** Joe Schiewe
Date: 4/9/18 Special instructions regarding site access: ____

Project and Site Information

Project Name: Brookman Residential Subdivision

Latitude: 45.344845 Longitude: -122.857888
decimal degree - centroid of site or start & end points of linear project

Proposed Use:
Residential Development

Tax Map # 3S 1 6B
Tax Lot(s) Tax Lot 100 and a Portion of Tax 200

Tax Map # 3S 1 6
Tax Lot(s) Tax Lot 103

Project Street Address (or other descriptive location):
North of the SW Brookman Road and SW Oberst Road

Township 3S Range 1W Section 6 QQ B
Use separate sheet for additional tax and location information

City: Sherwood County: Washington

Waterway: N/A River Mile: N/A

Wetland Delineation Information

Wetland Consultant Name, Firm and Address:
Kayla Katkin, AWB
AKS Engineering & Forestry, LLC
12965 SW Herman Road, Suite 100
Tualatin, OR 97062

Phone # (503) 563-6151
Mobile phone # (if applicable)
E-mail: katkink@aks-eng.com

The information and conclusions on this form and in the attached report are true and correct to the best of my knowledge.
Consultant Signature: K Katkin Date: 04/03/2018

Primary Contact for report review and site access is ☒ Consultant ☐ Applicant/Owner ☐ Authorized Agent

Wetland/Waters Present? ☒ Yes ☐ No Study Area size: 37.20 acres Total Wetland Acreage: 2.4400

Check Applicable Boxes Below

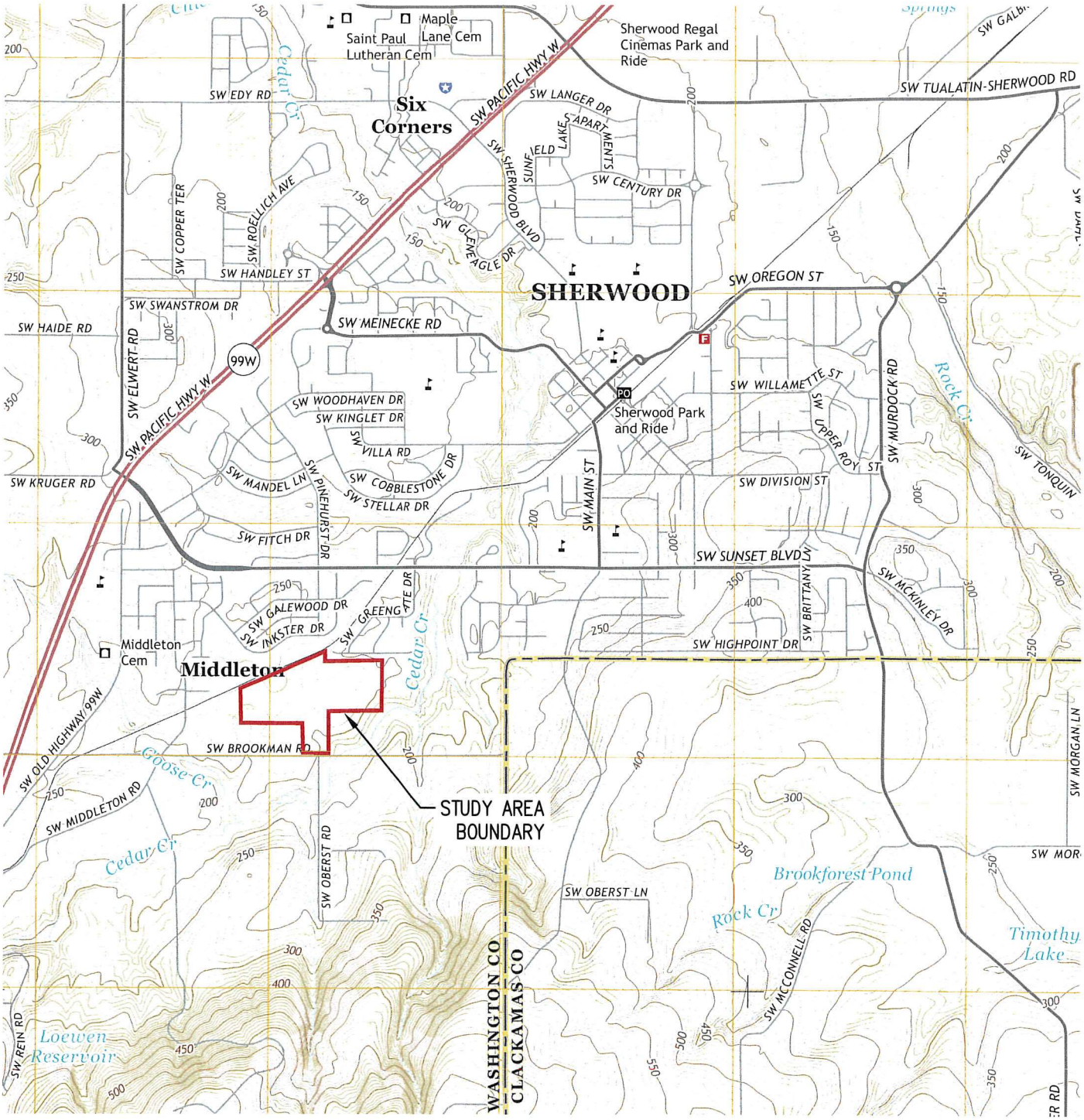
☐ R-F permit application submitted
☐ Mitigation bank site
☐ Industrial Land Certification Program Site
☐ Wetland restoration/enhancement project (not mitigation)
☐ Previous delineation/application on parcel
If known, previous DSL # ____

☒ Fee payment submitted $ 437
☐ Fee ($100) for resubmittal of rejected report
☐ Request for Reissuance. See eligibility criteria. (no fee)
DSL # ____ Expiration date ____
☐ LWI shows wetlands or waters on parcel
Wetland ID code ____

For Office Use Only

DSL Reviewer: PR Fee Paid Date: 5 / 8 / 18 DSL WD # 2018-0275

Date Delineation Received: 5 / 8 / 18 Scanned: ☐ Electronic: ☐ DSL App.# ____



N

USGS 7.5' TOPOGRAPHIC SERIES
QUADRANGLE: SHERWOOD, OR (2014)

WD2018-0275

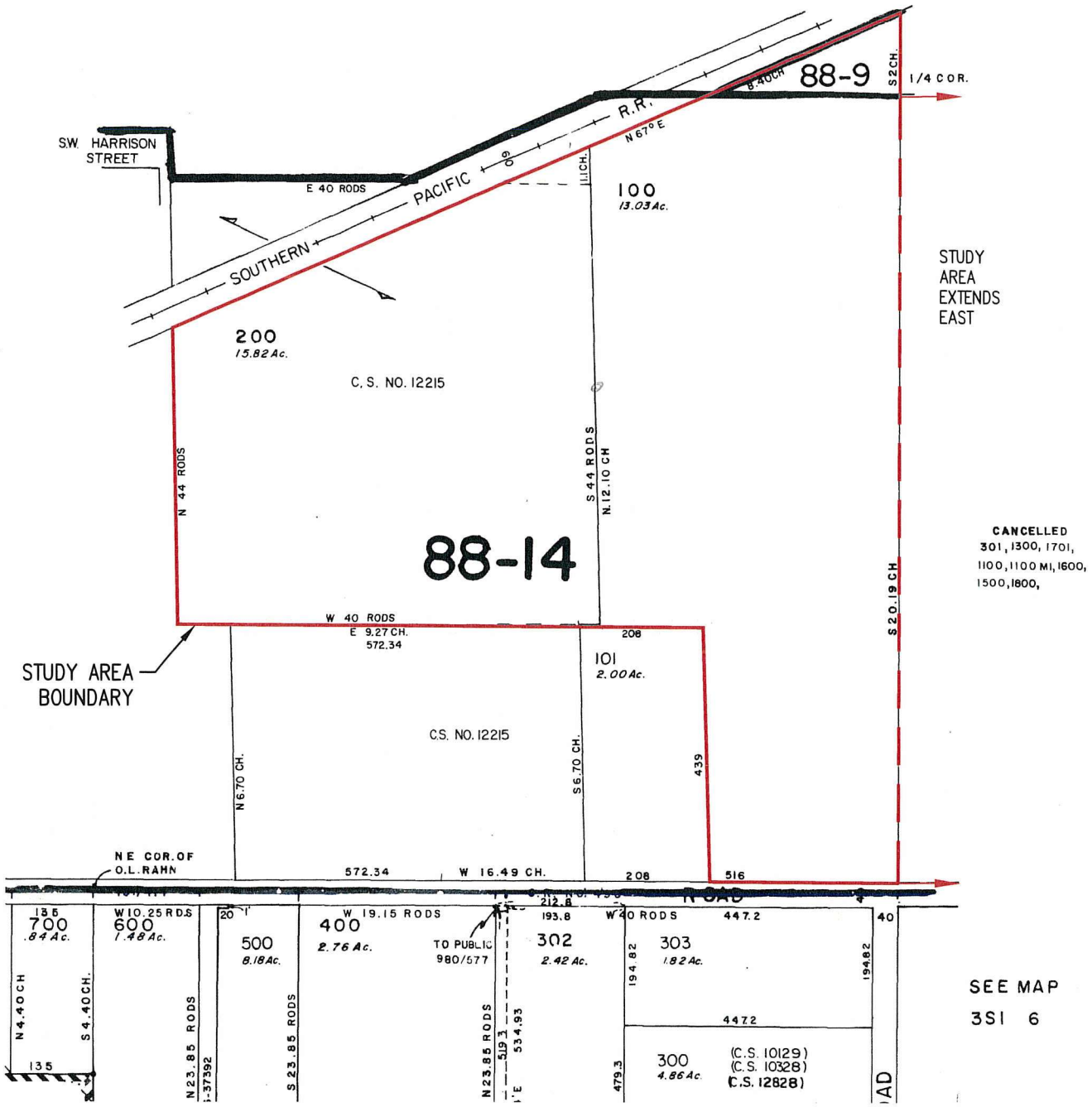
DATE: 04/27/2018

SCALE: 1"= 2000 FEET

2000 0 800 1200 1600 2000

USGS VICINITY MAP BROOKMAN RESIDENTIAL SUBDIVISION WETLAND & WATERS DELINEATION REPORT	FIGURE 1
AKS ENGINEERING & FORESTRY, LLC 12965 SW HERMAN RD SUITE 100 TUALATIN, OR 97062 www.aks-eng.com PHONE: 503.563.6151 FAX: 503.563.6152	DRWN: KMK CHKD: SAR AKS JOB: 3591

DWG: 3591 WDR FIGURES | FIGURE 1



WASHINGTON COUNTY
TAX LOT 100 AND A PORTION OF 200
TAX MAP 3S 1 6B

WD2018-0273

N

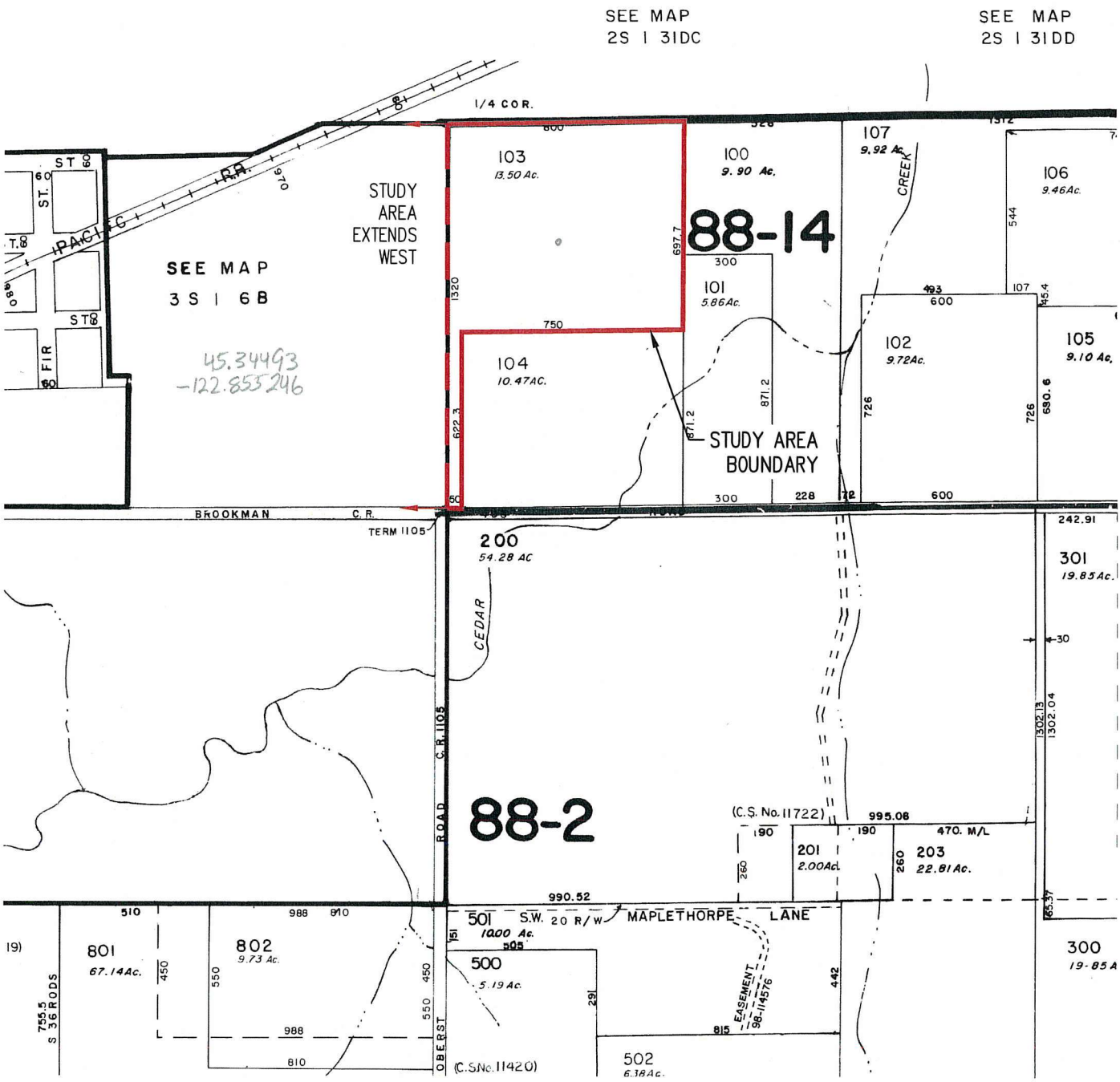
SCALE: 1"= 250 FEET

250 0 100 150 200 250

DATE: 04/27/2018

TAX MAP (MAP 3S 1 6B) BROOKMAN RESIDENTIAL SUBDIVISION WETLAND & WATERS DELINEATION REPORT	FIGURE 2A
AKS ENGINEERING & FORESTRY, LLC 12965 SW HERMAN RD SUITE 100 TUALATIN, OR 97062 www.aks-eng.com PHONE: 503.563.6151 FAX: 503.563.6152	DRWN: KMK CHKD: SAR AKS JOB: 3591

DWG: 3591 WDR FIGURES | FIGURE 2A



WASHINGTON COUNTY
TAX LOT 103
TAX MAP 3S 1 6

WD2018-0275

DATE: 04/27/2018

TAX MAP (MAP 3S 1 6) BROOKMAN RESIDENTIAL SUBDIVISION WETLAND & WATERS DELINEATION REPORT	FIGURE 2B
AKS ENGINEERING & FORESTRY, LLC 12965 SW HERMAN RD SUITE 100 TUALATIN, OR 97062 www.aks-eng.com PHONE: 503.563.6151 FAX: 503.563.6152	DRWN: KMK CHKD: SAR AKS JOB: 3591

DWG: 3591 WDR FIGURES | FIGURE 2B

N

SCALE: 1"= 200 FEET

200 0 80 120 160 200

SCALE 11 X 17"

LEGEND:

ON-SITE WETLANDS TOTAL: 106,315 SF± (2.44 ACRES±)

WETLAND A: 32,182 SF± (0.74 ACRES±)
WETLAND B: 8,843 SF± (0.20 ACRES±)
WETLAND C: 6,879 SF± (0.16 ACRES±)
WETLAND D: 58,411 SF± (1.34 ACRES±)

ON-SITE PORTION OF EPHEMERAL DRAINAGE: 170 SF ± (170 LINEAR FT±)

WETLAND AND WATER BOUNDARIES SHOWN WERE DELINEATED BY AKS ENGINEERING & FORESTRY, LLC ON MARCH 29-31, 2017 AND FEBRUARY 14, 2018 AND WERE PROFESSIONALLY LAND SURVEYED BY AKS ON APRIL 7-13, 2017 AND FEBRUARY 20, 2018.

PLOTS 1-2 AND 26-46 ARE NOT INCLUDED IN THE STUDY AREA.

1-FOOT INTERVAL GROUND CONTOURS DERIVED FROM LAND SURVEY.

DSL WD # 2018-0275

Approval Issued 6/27/18

Approval Expires 6/27/23

DATE: 04/30/2018

WETLAND AND WATERS DELINEATION MAP	FIGURE
BROOKMAN RESIDENTIAL SUBDIVISION	5

AKS ENGINEERING & FORESTRY, LLC
12965 SW HERMAN RD, STE 100
TUALATIN, OR 97062
P: 503.563.6151 F: 503.563.6152 aks-eng.com

DRWN: KMK
CHKD: SAR
AKS JOB: 3591

DWG: 3591 WDR EXCOND | FIGURE 5

TAX LOT 1100
TAX MAP 3S 1 06BB

TAX LOT 200
TAX MAP 3S 1 06B

WOVEN-WIRE FENCE

WOVEN-WIRE FENCE

220

225

220

215

215

210

210

205

205

PLOT 3

PLOT 17

PLOT 18

PLOT 4

PLOT 7

PLOT 5

PLOT 6

WETLAND 'A'
AREA: 32,182 SF±

NHD Waterway offsite

TAX LOT 2590
TAX MAP 3S 1 06BB

WETLAND EXTENDS
OFF-SITE

TAX LOT 200
TAX MAP 3S 1 06B

N

SCALE: 1"= 60 FEET

60 0 24 36 48 60

SCALE 11 X 17"

LEGEND:

ON-SITE WETLANDS TOTAL: 106,315 SF± (2.44 ACRES±)

WETLAND A: 32,182 SF± (0.74 ACRES±)
WETLAND B: 8,843 SF± (0.20 ACRES±)
WETLAND C: 6,879 SF± (0.16 ACRES±)
WETLAND D: 58,411 SF± (1.34 ACRES±)

ON-SITE PORTION OF EPHEMERAL DRAINAGE:
170 SF ± (170 LINEAR FT±)

WETLAND AND WATER BOUNDARIES SHOWN WERE DELINEATED BY AKS ENGINEERING & FORESTRY, LLC ON MARCH 29-31, 2017 AND FEBRUARY 14, 2018 AND WERE PROFESSIONALLY LAND SURVEYED BY AKS ON APRIL 7-13, 2017 AND FEBRUARY 20, 2018.

PLOTS 1-2 AND 26-46 ARE NOT INCLUDED IN THE STUDY AREA.

1-FOOT INTERVAL GROUND CONTOURS DERIVED FROM LAND SURVEY.

DSL WD # 2018-0275
Approval Issued 6/27/18
Approval Expires 6/27/23

DATE: 04/30/2018

WETLAND AND WATERS DELINEATION MAP

BROOKMAN RESIDENTIAL SUBDIVISION

FIGURE 5A

AKS ENGINEERING & FORESTRY, LLC
12965 SW HERMAN RD, STE 100
TUALATIN, OR 97062
P: 503.563.6151 F: 503.563.6152 aks-eng.com

DRWN: KMK
CHKD: SAR
AKS JOB: 3591

WETLAND 'B'
AREA: 8,843 SF±

TAX LOT 100
TAX MAP 3S 1 06B

TAX LOT 101
TAX MAP 3S 1 06B

TAX LOT 103
TAX MAP 3S 1 06

TAX LOT 104
TAX MAP 3S 1 06

WETLAND 'C'
AREA: 6,879 SF±

WOVEN WIRE FENCE

WOVEN WIRE AND ELECTRIC FENCE

EXPOSED AGRICULTURAL DRAIN TILE

T-POSTS

EDGE OF MOWED GRASS FROM ADJOINER

GATE

GRAVEL DRIVEWAY

PLOT 8
PLOT 9
PLOT 10
PLOT 11
PLOT 12
PLOT 13
PLOT 14
PLOT 15
PLOT 16
PLOT 47

215
210
205
200
195

EX 12" CONC CULVERT
IE: 191.27 (NW)
IE: 188.88 (SE)

DSL WD # 2018-0275
Approval Issued 6/22/18
Approval Expires 6/22/23

N

SCALE: 1"=60 FEET

60 0 24 36 48 60

SCALE 11 X 17"

INSERT: VIEW OF EASTERN PORTION OF SITE

LEGEND:

ON-SITE WETLANDS TOTAL: 106,315 SF± (2.44 ACRES±)

WETLAND A: 32,182 SF± (0.74 ACRES±)
WETLAND B: 8,843 SF± (0.20 ACRES±)
WETLAND C: 6,879 SF± (0.16 ACRES±)
WETLAND D: 58,411 SF± (1.34 ACRES±)

ON-SITE PORTION OF EPHEMERAL DRAINAGE:
170 SF ± (170 LINEAR FT±)

WETLAND AND WATER BOUNDARIES SHOWN WERE DELINEATED BY AKS ENGINEERING & FORESTRY, LLC ON MARCH 29-31, 2017 AND FEBRUARY 14, 2018 AND WERE PROFESSIONALLY LAND SURVEYED BY AKS ON APRIL 7-13, 2017 AND FEBRUARY 20, 2018.

PLOTS 1-2 AND 26-46 ARE NOT INCLUDED IN THE STUDY AREA.

1-FOOT INTERVAL GROUND CONTOURS DERIVED FROM LAND SURVEY.

DATE: 04/30/2018

WETLAND AND WATERS DELINEATION MAP

BROOKMAN RESIDENTIAL SUBDIVISION

FIGURE 5B

AKS ENGINEERING & FORESTRY, LLC
12965 SW HERMAN RD, STE 100
TUALATIN, OR 97062
P: 503.563.6151 F: 503.563.6152 aks-eng.com

DRWN: KMK
CHKD: SAR
AKS JOB: 3591

DWG: 3591 WDR EXCOND | FIGURE 5B

EX STM CO
RIM: 218.96
IE BEND: 212±

EX 1.5' WIDE X 1.0'± DEEP
BOX CULVERT
IE: 212.76

EX 1.5' WIDE X 1.0'± DEEP
BOX CULVERT
IE: 212.84

DITCH EXTENDS
OFF-SITE

EPHEMERAL DRIANAGE:
170 LINEAR FT±

WETLAND EXTENDS
SLIGHTLY OFF-SITE

WOVEN WIRE FENCE

SW COBBLE COURT

TAX LOT 10600	TAX LOT 10500	TAX LOT 10400	TAX LOT 10300	TAX LOT 10200	TAX LOT 10100	TAX LOT 10000	TAX LOT 9900	TAX LOT 9800
TAX MAP 2S 1 31D	TAX MAP 2S 1 31D	TAX MAP 2S 1 31D	TAX MAP 2S 1 31D	TAX MAP 2S 1 31D	TAX MAP 2S 1 31D	TAX MAP 2S 1 31D	TAX MAP 2S 1 31D	TAX MAP 2S 1 31D

WETLAND 'D'
AREA: 58,411 SF±

PLOT 25
PLOT 24
PLOT 23
PLOT 22
PLOT 21
PLOT 20
PLOT 19

TAX LOT 100
TAX MAP 3S 1 06B

TAX LOT 103
TAX MAP 3S 1 06

200
205
210
215

SAN
STM
COM
PWR
FOM

N

SCALE: 1"=60 FEET

60 0 24 36 48 60

SCALE 11 X 17"

LEGEND:

ON-SITE WETLANDS TOTAL: 106,315 SF± (2.44 ACRES±)

WETLAND A: 32,182 SF± (0.74 ACRES±)
WETLAND B: 8,843 SF± (0.20 ACRES±)
WETLAND C: 6,879 SF± (0.16 ACRES±)
WETLAND D: 58,411 SF± (1.34 ACRES±)

ON-SITE PORTION OF EPHEMERAL DRAINAGE:
170 SF ± (170 LINEAR FT±)

WETLAND AND WATER BOUNDARIES SHOWN WERE DELINEATED BY AKS ENGINEERING & FORESTRY, LLC ON MARCH 29-31, 2017 AND FEBRUARY 14, 2018 AND WERE PROFESSIONALLY LAND SURVEYED BY AKS ON APRIL 7-13, 2017 AND FEBRUARY 20, 2018.

PLOTS 1-2 AND 26-46 ARE NOT INCLUDED IN THE STUDY AREA.

1-FOOT INTERVAL GROUND CONTOURS DERIVED FROM LAND SURVEY.

DSL WD # 2018-0275
Approval Issued 6/27/18
Approval Expires 6/27/23

DATE: 04/30/2018

WETLAND AND WATERS DELINEATION MAP

FIGURE 5C

BROOKMAN RESIDENTIAL SUBDIVISION

AKS ENGINEERING & FORESTRY, LLC
12965 SW HERMAN RD, STE 100
TUALATIN, OR 97062
P: 503.563.6151 F: 503.563.6152 aks-eng.com

DRWN: KMK
CHKD: SAR
AKS JOB: 3591

Exhibit J: Transportation Impact Analysis

KITTELSON & ASSOCIATES
851 SW 6th AVENUE, SUITE 600
PORTLAND, OR 97204
P 503.228.5230 F 503.273.8169

April 2018 Project #: 21399

City of Sherwood Planner
City of Sherwood
22560 SW Pine Street
Sherwood, OR 97140

RE: Brookman Residential Subdivision Transportation Impact Analysis – Sherwood, Oregon

This letter presents the transportation impact analysis prepared for the Brookman Residential Subdivision project. This study concludes that the proposed residential uses can be developed in accordance with traffic operations requirements of the City of Sherwood Municipal Code as well as applicable Washington County and Oregon Department of Transportation (ODOT) standards assuming provision of recommended transportation improvements. The study recommendations include:

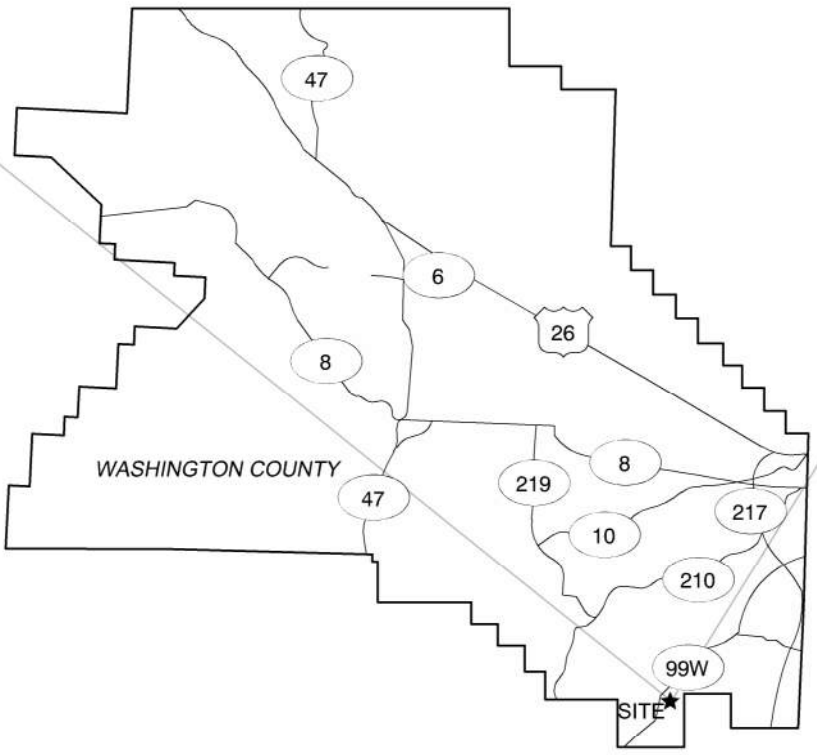
- Provide a westbound right-turn lane with 200 feet of storage on SW Brookman Road at the Highway 99W/SW Brookman Road-SW Chapman Road intersection with site development.
- The new public street connection to SW Brookman Road as well as internal site roadways should be designed to ensure that intersection sight distance is maintained in accordance with Washington County and City of Sherwood standards.

Additional details of the study methodology, findings, and recommendations are provided herein.

INTRODUCTION

The Applicant, Brookman Development, LLC, is proposing to develop up to 145 detached single-family homes within a residential subdivision on land located along the north side of SW Brookman Road that was previously annexed into the City of Sherwood. The site is situated north of SW Brookman Road with access proposed at a new public street aligned with SW Oberst Road on SW Brookman Road. The site vicinity is shown in Figure 1 and a conceptual site plan is provided in Figure 2.

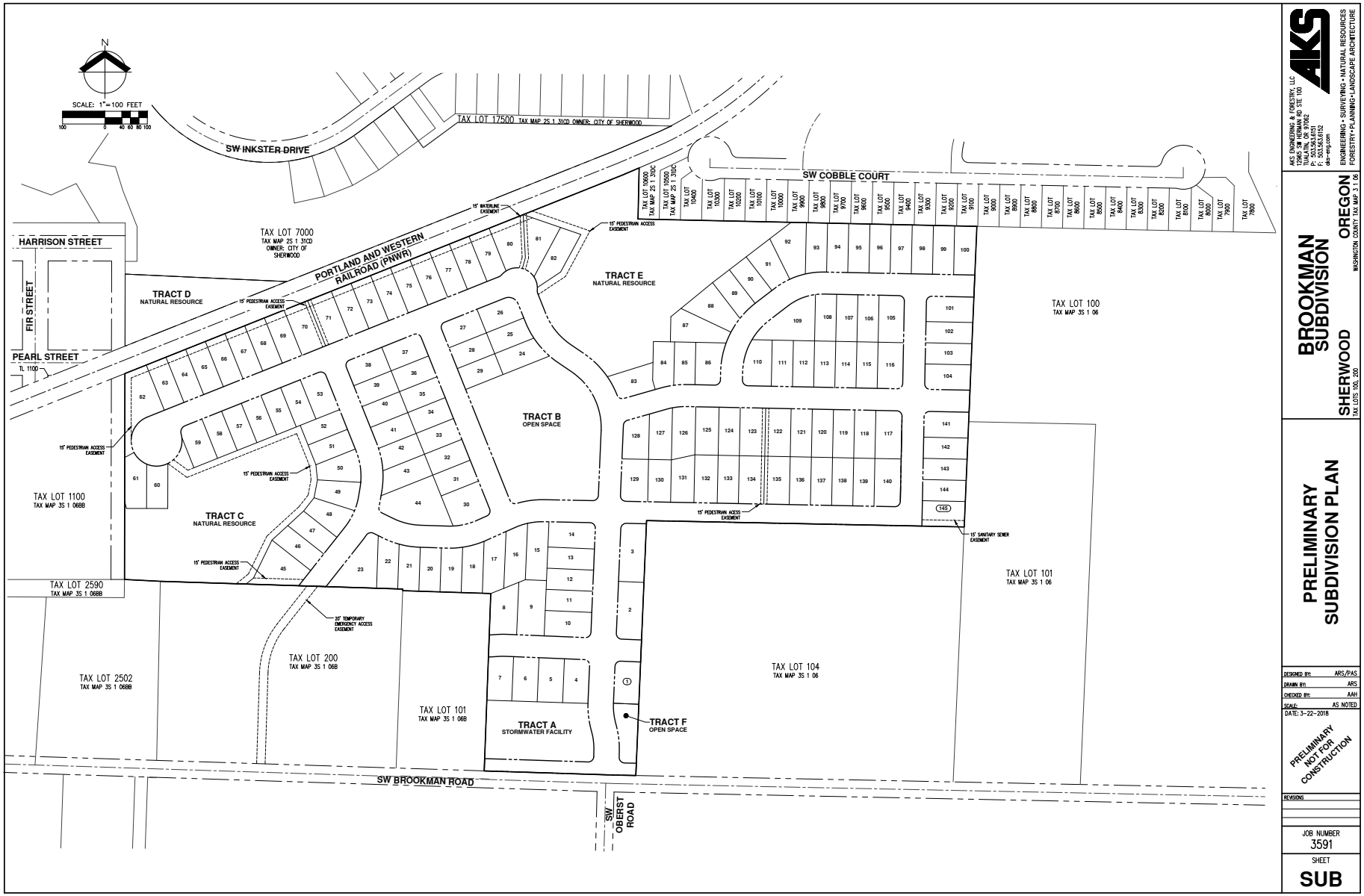
Today, the site has two private driveway connections to SW Brookman Road. With redevelopment, both existing private driveway accesses to the site would be vacated and access to the site would be provided by a single new public roadway connection to SW Brookman Road, aligned with the existing intersection at SW Oberst Road. As shown in Figure 2, some of the new public roads through the site will be stubbed for future extension off-site to surrounding properties in conjunction with other future development activities by others. No roadway connections to existing homes off-site to the north are proposed. Construction is expected to begin in 2019 with buildout and occupancy anticipated by 2020.



(#) - Study Intersections

Site Vicinity Map
Sherwood, Oregon

Figure
1



Site plan provided by AKS Engineering, April 5, 2018

Conceptual Site Plan
Sherwood, Oregon

Figure
2

STUDY METHODOLOGY

The Traffic Impact Analysis (TIA) addresses the requirements of City of Sherwood Municipal Code Section 16.106.080 as well as applicable Washington County and ODOT review requirements. The study methodology, assumptions and scope were determined based on a review of existing travel patterns, the City of Sherwood's Development Code, direction provided by DKS Associates (the City's traffic engineer), as well as discussions with Washington County and ODOT staff. A scoping memo was provided for review and confirmation of the study scope and methodology prior to preparation of this study. A copy of the scoping memo is provided for reference in *Appendix A*, along with comments received from the City and ODOT. Note that the proposed development area and residential unit count has been reduced by approximately 60 percent since the scoping memo was prepared and approved.

Analysis Scenarios

In accordance with review agency requirements, weekday AM and PM peak hour traffic conditions were assessed for the following analysis scenarios:

- Existing conditions
- Year 2020 background conditions (without the proposed development)
- Year 2020 total conditions (with buildout of the proposed development)

Study Intersections

City of Sherwood Development Code Section 16.106.080 requires analysis of all intersections where the analysis shows that fifty (50) or more peak hour vehicle trips can be expected to result from the development. The intersections included in this study were identified based on the City Code requirements as well as review agency feedback during the study scoping process. Some of the study intersections do not experience 50 or more peak hour vehicle trips and are provided for illustrative purposes based on the initial City scoping direction when the project unit count was over twice as large as the number of homes currently proposed.

The study intersections are listed below, including a numerical ID corresponding with report figures:

1. Highway 99W/SW Elwert Road-SW Sunset Boulevard
2. SW Woodhaven Drive/SW Sunset Boulevard
3. SW Timbrel Lane/SW Sunset Boulevard
4. SW Ladd Hill Road-SW Main Street/SW Sunset Boulevard
5. SW Baker Road-SW Murdock Road/SW Sunset Boulevard
6. Highway 99W/SW Brookman Road-SW Chapman Road
7. Old Highway 99 W/SW Brookman Road
8. SW Middleton Road/SW Brookman Road
9. SW Oberst Road-Future Site Access/SW Brookman Road

10. SW Ladd Hill Road/SW Brookman Road

All level-of-service analyses described in this report were performed in accordance with the procedures stated in the *2000 Highway Capacity Manual* (HCM, Reference 1)[1].

Performance Measures & Operating Standards

The volume-to-capacity (V/C) ratio is the principle performance measure documented in this report. V/C operating standards adopted by Washington County, ODOT and the City are summarized below.

Washington County Operating Standards

Washington County has jurisdiction over SW Brookman Road. The County has defined operating standards for signalized and stop controlled intersections assuming a peak hour (60-minute analysis) period as follows:

- **Signalized intersections:** the maximum peak hour intersection V/C ratio shall be no greater than 0.99.
- **Unsignalized intersections:** no movement shall experience a V/C ratio greater than 0.99.

ODOT Operating Standards

ODOT operates and maintains OR 99W (Pacific Highway West). ODOT's operating standard for signalized intersections along Highway OR 99W in the study area is an intersection V/C ratio no greater than 0.99 during the peak 15-minutes as identified in Table 7 of the *Oregon Highway Plan* (Reference 2). For unsignalized intersections, ODOT requires the state highway approaches to operate at a V/C ratio no greater than 0.99 during the peak 15-minutes. Non-state highway approaches are expected to operate at a V/C ratio no greater than identified in Table 6 of the *Oregon Highway Plan* for district/local interest roads (Reference 2). The standard for the Brookman Road and Chapman Road approaches to Highway 99W is a V/C ratio no greater than 0.95.

Sherwood Operating Standards

The City defers to ODOT and Washington County standards for facilities under their jurisdiction. For intersections in the City but on the Metro-designated Arterial and Throughway Network, standards require a V/C ratio less than or equal to 0.99 in both the highest hour and the second hour during the PM peak period. Roadways on the Arterial and Throughway Network include Sunset Boulevard, Murdock Road, Elwert Road, Main Street, and Ladd Hill Road (*City of Sherwood Transportation System Plan,* Reference 3). Table 1 summarizes the minimum operating thresholds by study intersection.

[1] All of the study intersection operational analyses presented in this report were prepared using the Synchro 9 software, which implements the *Highway Capacity Manual* methodology.

Table 1. Study Intersection Performance Standard

	Intersection	Traffic Control	Responsible Agency	Performance Standard
1	Highway 99W/SW Elwert Road-SW Sunset Boulevard	Signal	ODOT	Intersection V/C ≤ 0.99
2	SW Woodhaven Drive/ SW Sunset Boulevard	TWSC	City	Movement V/C ≤ 0.99[1]
3	SW Timbrel Lane/SW Sunset Boulevard	TWSC	City	Movement V/C ≤ 0.99[1]
4	SW Ladd Hill Road-SW Main Street/ SW Sunset Boulevard	AWSC	City	Movement V/C ≤ 0.99[1]
5	SW Baker Road-SW Murdock Road/ SW Sunset Boulevard	AWSC	City	Movement V/C ≤ 0.99[1]
6	Highway 99W/SW Brookman Road-SW Chapman Road	TWSC	ODOT	Movement V/C ≤ 0.99 for Highway 99W approaches, movement V/C ≤ 0.95 for SW Brookman Road and SW Chapman Road
7	Old Highway 99 W/SW Brookman Road	TWSC	County	Movement V/C ≤ 0.99
8	SW Middleton Road/SW Brookman Road	TWSC	County	Movement V/C ≤ 0.99
9	SW Oberst Road-Future Site Access/ SW Brookman Road	TWSC	County	Movement V/C ≤ 0.99
10	SW Ladd Hill Road/SW Brookman Road	TWSC	County	Movement V/C ≤ 0.99[1]

[1]These roadways are located on the Arterial and Throughway Network (Metro Designation, Reference 3)
TWSC = Two-way stop-control, AWSC = All-way stop-control

Turn Lane Warrants

Left-turn lane needs along SW Brookman Road were assessed using turn lane warrants contained in the *ODOT Analysis Procedures Manual* (*APM*, Reference 4) and Harmelink left-turn warrant thresholds (Reference 5). Washington County policy's is to require a right-turn deceleration lane on roadways with a daily traffic volume greater than 10,000 and with a posted speed of 35 miles per hour (mph) or more in situations where the inbound right-turn movement exceeds 40 vehicles during the AM or PM peak hour.

REPORT FORMAT

This report addresses the following transportation issues:

- Existing land use and transportation system conditions within the site vicinity;
- Planned developments and transportation improvements in the study area;
- Forecast year 2020 background traffic conditions (prior to site development) during the weekday AM and PM peak hours;
- Weekday AM and PM peak hour trip generation and trip distribution estimates for site development;
- Forecast year 2020 total traffic conditions (with site development) during the weekday AM and PM peak hours;
- Turn lane and vehicle queuing needs at key study area intersections;
- Site access compliance with Washington County access management requirements; and
- Conclusions and recommendations.

EXISTING CONDITIONS

The existing conditions analysis identifies site conditions and the current operational and geometric characteristics of roadways within the study area. The purpose of this section is to set the stage for a basis of comparison to future conditions.

Site Conditions and Adjacent Land Uses

Today, the parcels comprising the site include a combination of properties occupied by two single-family homes with private driveway access to SW Brookman Road as well as undeveloped lots.

The site is bordered to the south by SW Brookman Road and single family homes across the roadway, to the west by private properties (generally single family homes) and the Portland & Western Railroad corridor, to the north by existing residential subdivisions, and to the east by additional single family homes.

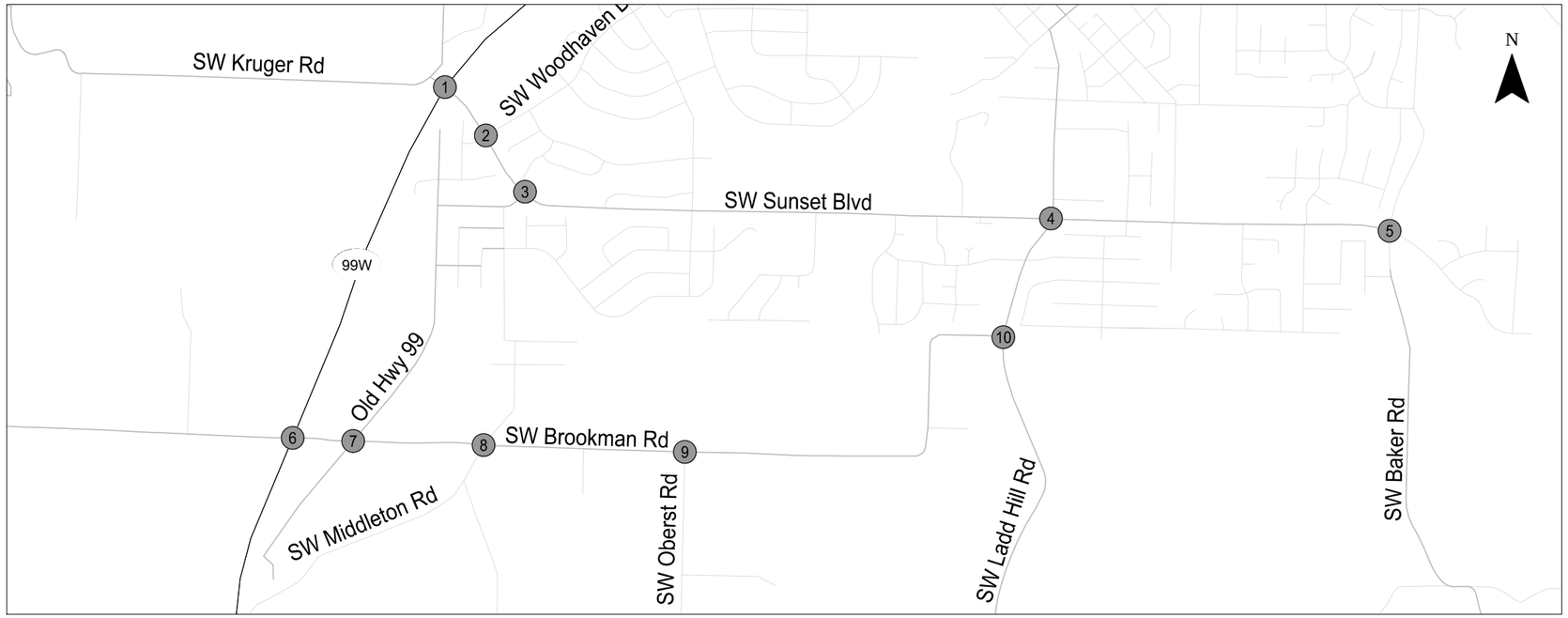
Transportation Facilities

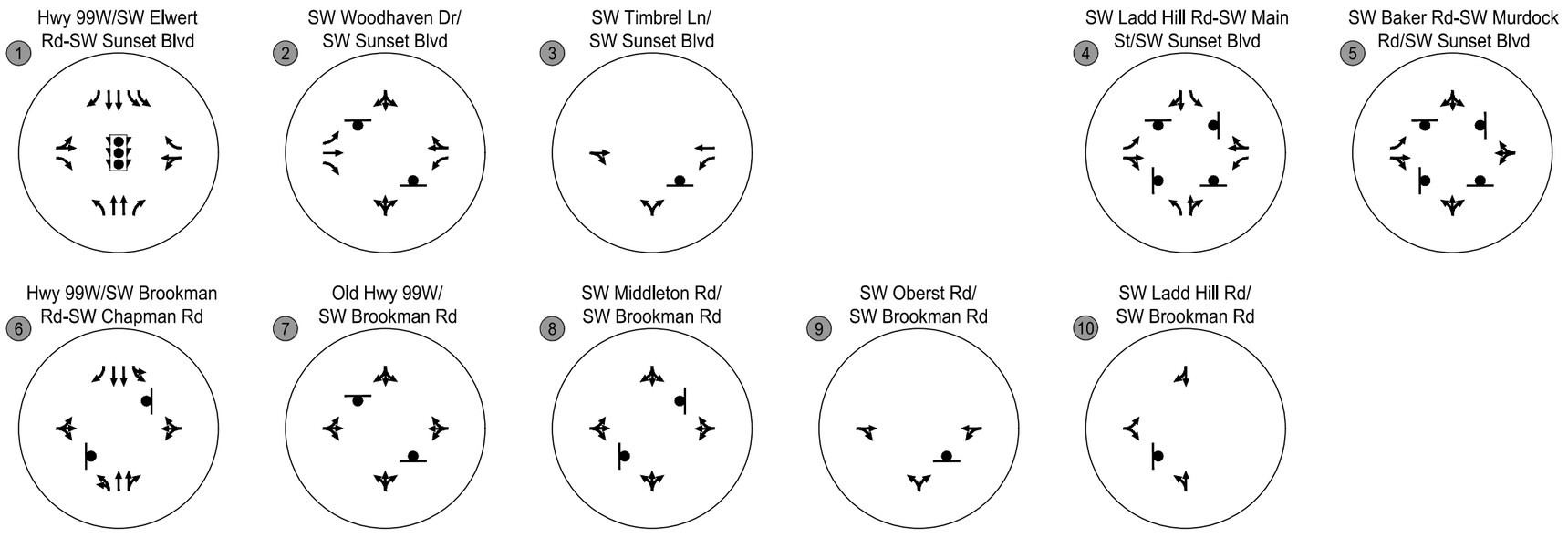
Table 2 provides a summary of transportation facilities (including pedestrian and bicycle facilities) in the site vicinity while Figure 3 illustrates the existing lane configurations and traffic control devices at the identified study intersections.

Table 2. Existing Transportation Facilities

Roadway	Classification[1]	Jurisdiction	Vehicle Lanes	Posted Speed	Sidewalks Present?	Bike Lanes Present?	On-Street Parking Allowed?
SW Pacific Highway 99W	Principal Arterial	ODOT	4 lanes	45-55 mph[2]	No	Yes	No
SW Sunset Boulevard	Arterial	City	2 lanes	35 mph	Yes	Yes	No
SW Woodhaven Drive	Neighborhood[3]	City	2 lanes	25 mph	Partial[4]	No	Yes
SW Timbrel Lane	Collector	City	2 lanes	Unposted	Yes	No	No
SW Main Street	Arterial	City	2 lanes	20 mph	Yes	No	No
SW Ladd Hill Road	Arterial	City	2 lanes	25 mph	Yes	Partial[5]	No
SW Murdock Road	Arterial	City	2 lanes	35 mph	Partial[6]	No	No
SW Baker Road	Arterial	City	2 lanes	35 mph	Partial[7]	No	No
SW Brookman Road	Arterial	County	2 lanes	35 mph	No	No	No
Old Highway 99W	Collector	City	2 lanes	35 mph	No	No	No
SW Middleton Road	Neighborhood[8]	City	2 lanes	Unposted	No	No	No
SW Oberst Road	Local	City	2 lanes	Unposted	No	No	No

[1] Source: *City of Sherwood Transportation System Plan,* Reference 3.
[2]The speed limit on SW Pacific Highway 99W changes between SW Sunset Boulevard and SW Brookman Road. The posted speed is 45 miles per hour at the intersection of Sunset Boulevard and 55 miles per hour at the intersection of SW Brookman Road.
[3]SW Woodhaven Drive is classified as a neighborhood roadway north of SW Sunset Boulevard. It is designated a local street to the south.
[4]There is a gap in sidewalk on the north side of SW Woodhaven Drive between SW Sunset Boulevard and SW Fitch Drive.
[5]There are bike lanes on SW Ladd Hill Road between SW Willow Drive and SW Sunset Boulevard.
[6]There are sidewalks on the west side of SW Murdock Road.
[7]There are sidewalks on the west side of SW Baker Road.
[8]SW Middleton Road is classified as a neighborhood roadway north of SW Brookman Road. It is designated a local street to the south.





- STOP SIGN
- TRAFFIC SIGNAL

Existing Lane Configurations and Traffic Control Devices
Sherwood, Oregon

Figure 3

Pedestrian and Bicycle Facilities

Table 1 highlights pedestrian and bicycle facilities available in the larger area surrounding the site. There are no sidewalks or bicycle lanes provided along SW Brookman Road serving the site.

Transit Facilities

Transit service in Sherwood is currently provided by TriMet; however, there is no scheduled fixed route service along SW Brookman Road or Highway 99W near the site. The closest fixed route transit service is currently available at the Sherwood Park and Ride located in the downtown area north of SW Sunset Boulevard (Reference 6).

TRAFFIC SAFETY

Crash history was reviewed for the study intersections in an effort to identify potential intersection safety issues. Crash data for the study intersections were obtained from ODOT for the five-year period from January 1, 2010 through December 31, 2014. Table 3 illustrates the crashes reported at the study intersections. *Appendix B* contains the ODOT crash data.

Table 3. Intersection Crash History (January 1, 2010 through December 31, 2014)

Location		Collision Type						Severity		Total
		Rear-end	Turning	Angle	Backing	Bicyclist	Fixed Object	PDO[1]	Injury	
1	Highway 99W/SW Elwert Road-SW Sunset Boulevard	19	5	0	0	1	0	13	12	25
2	SW Woodhaven Drive/ SW Sunset Boulevard	0	1	0	0	1	0	1	1	2
3	SW Timbrel Lane/ SW Sunset Boulevard	1	1	0	0	0	0	1	1	2
4	SW Ladd Hill Rd.-SW Main St./ SW Sunset Boulevard	1	1	1	0	0	1	1	3	4
5	SW Baker Road-SW Murdock Road/SW Sunset Boulevard	0	0	0	0	0	0	0	0	0
6	Highway 99W/SW Brookman Road-SW Chapman Road	1	2	5	0	0	0	4	4	8
7	Old Highway 99 W/ SW Brookman Road	0	1	0	0	0	0	1	0	1
8	SW Middleton Road/ SW Brookman Road	0	0	0	0	0	0	0	0	0
9	SW Oberst Road-Future Site Access/SW Brookman Road	1	0	0	1	0	0	0	2	2
10	SW Ladd Hill Road/ SW Brookman Road	0	0	0	0	0	0	0	0	0

[1]PDO – Property damage only

Critical crash rates were calculated for each of the study intersections following the analysis methodology presented in ODOT's *SPR 667 Assessment of Statewide Intersection Safety Performance* (Reference 7). SPR 667 provided average crash rates at a variety of intersection configurations in Oregon based on number of approaches and traffic control types. The average crash rate represents the approximate number of crashes that are "expected" at a study intersection. Additionally, this average crash rate was used to calculate the critical crash rate for each study intersection, based on

the *Highway Safety Manual* methodology (Reference 8). The critical crash rate is calculated for each intersection based on the average crash rate for each facility and serves as a threshold for further analysis.

Table 4 summarizes the critical crash rate for each intersection and compares those values to the observed crash rate. Per ODOT, if the observed crash rate at the study location exceeds the critical rate, it is a possible indication that the location is exceeding average crash rates.

Table 4. Intersection Crash Rate Assessment

Location		Total Crashes	Critical Crash Rate by Intersection	Critical Crash Rate by Volume	Observed Crash Rate at Intersection	Observed Crash Rate>Critical Crash Rate?
1	Highway 99W/SW Elwert Road-SW Sunset Boulevard	25	0.62	0.53	0.34	No
2	SW Woodhaven Drive/ SW Sunset Boulevard	2	0.40	0.40	0.11	No
3	SW Timbrel Lane/ SW Sunset Boulevard	2	0.31	0.42	0.12	No
4	SW Ladd Hill Rd.-SW Main St./ SW Sunset Boulevard	4	0.38	0.39	0.18	No
5	SW Baker Road-SW Murdock Road/SW Sunset Boulevard	0	0.38	0.39	0.00	No
6	Highway 99W/SW Brookman Road-SW Chapman Road	8	0.30	0.54	0.12	No
7	Old Highway 99 W/ SW Brookman Road	1	0.88	0.75	0.42	No
8	SW Middleton Road/ SW Brookman Road	0	0.80	0.67	0.00	No
9	SW Oberst Road-Future Site Access/SW Brookman Road	2	0.92	0.79	0.91	**Yes**
10	SW Ladd Hill Road/ SW Brookman Road	0	0.49	0.51	0.00	No

As shown in Table 4, the observed crash rate exceeds the critical crash rate at one of the study intersections, SW Oberst Road/SW Brookman Road.

Two crashes were reported at the SW Oberst Road/SW Brookman Road intersection crash data during the reported period. One of the crashes involved a northbound vehicle on SW Oberst Road improperly backing into a following northbound vehicle. The other event involved a rear-end crash between an eastbound vehicle turning south on SW Oberst Road and a second eastbound through vehicle that was following too closely and unable to stop. While the two reported crashes appear to be unrelated and not necessarily evident of a safety issue, field observation of the intersection noted that sight distance is currently limited at the intersection due to the horizontal curvature of the roadway (crest vertical curve on SW Brookman Road west of the intersection).

The SW Oberst Road/SW Brookman Road intersection will be reconstructed in conjunction with the proposed site development, improving intersection sight lines and modifying the intersection to add a northern approach. With this site-development related improvement planned, no safety-based mitigations are recommended based on review of the crash data alone.

ODOT SPIS List

ODOT provides an annual list of safety priority index system (SPIS) locations which are based on reported crash data. The intent of the SPIS list is to identify roadway segments exhibiting an unusually high occurrence of crashes. It is used to select locations for investigation. The segment on Highway 99W in the vicinity of SW Elwert Road-SW Sunset Boulevard is in the top 5% SPIS sites and the segment of Highway 99W in the vicinity of SW Brookman Road-SW Chapman Road is in the top 10% SPIS sites. The majority of reported crashes at Highway 99W/SW Elwert Road-SW Sunset Boulevard were rear-end crashes. At Highway 99W/SW Brookman Road-SW Chapman Road, the majority of crashes were angle or turning crashes. The City of Sherwood TSP (Reference 3) includes a medium-term project to realign SW Brookman Road to intersect with Highway 99W approximately ¼ mile north of its current location and signalize the intersection. The realignment project is not currently funded.

Washington County SPIS List

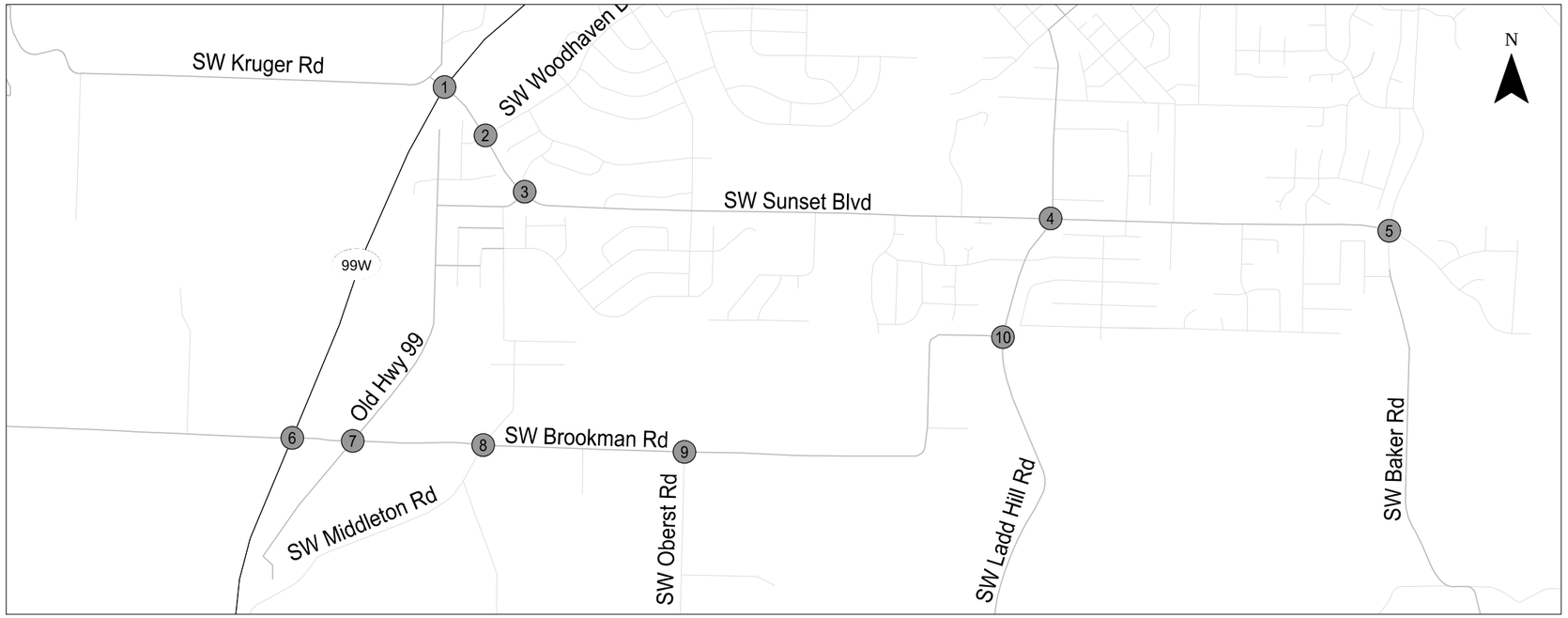
Washington County also maintains a SPIS list to identify existing hazardous intersections for potential safety improvements. Intersections are included in the County SPIS list if they have three or more crashes or if they have one or more severe injury or fatal crashes within three consecutive years. The intersection of Highway 99W/SW Brookman Road-SW Chapman Road appears on the most recent Washington County SPIS list (2012-2014). As noted above, the City of Sherwood TSP includes an unfunded project to realign SW Brookman Road to intersect with Highway 99W approximately ¼ mile north of its current location and signalize the intersection.

TRAFFIC VOLUMES AND PEAK HOUR OPERATIONS

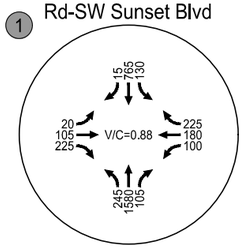
Traffic counts were obtained at the study intersections on a typical mid-week day 2017[2]. These counts were conducted during the morning (7:00 – 9:00 AM) and evening (4:00 - 6:00 PM) hours. *Appendix C* contains the traffic count sheets used in this study.

Figures 4 and 5 present the existing traffic conditions for the weekday AM and PM peak hours, respectively. Each of the study intersections operate in compliance with the respective mobility standards today, though the Highway 99W/SW Elwert Road-SW Sunset Boulevard intersection is approaching capacity during the weekday PM peak hour. *Appendix D* includes the existing conditions level-of-service worksheets.

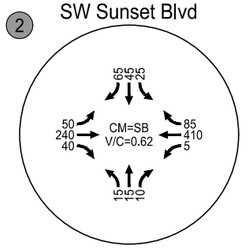
[2] Refer to the traffic count summaries in Appendix D for specific count dates which occurred in May, September, October and November of 2017.



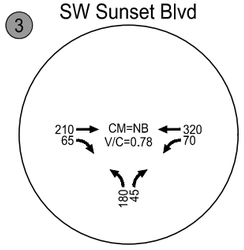
1 Hwy 99W/SW Elwert Rd-SW Sunset Blvd



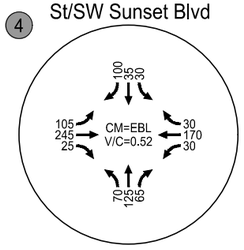
2 SW Woodhaven Dr/ SW Sunset Blvd



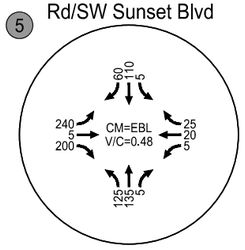
3 SW Timbrel Ln/ SW Sunset Blvd



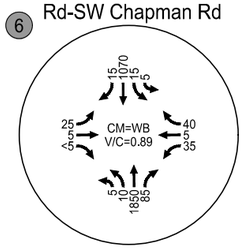
4 SW Ladd Hill Rd-SW Main St/SW Sunset Blvd



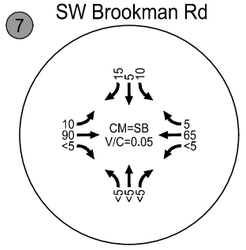
5 SW Baker Rd-SW Murdock Rd/SW Sunset Blvd



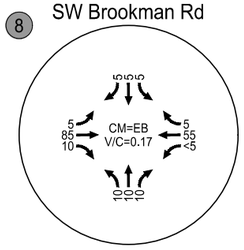
6 Hwy 99W/SW Brookman Rd-SW Chapman Rd



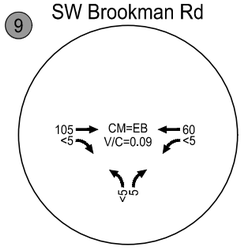
7 Old Hwy 99W/ SW Brookman Rd



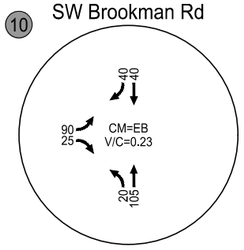
8 SW Middleton Rd/ SW Brookman Rd



9 SW Oberst Rd/ SW Brookman Rd



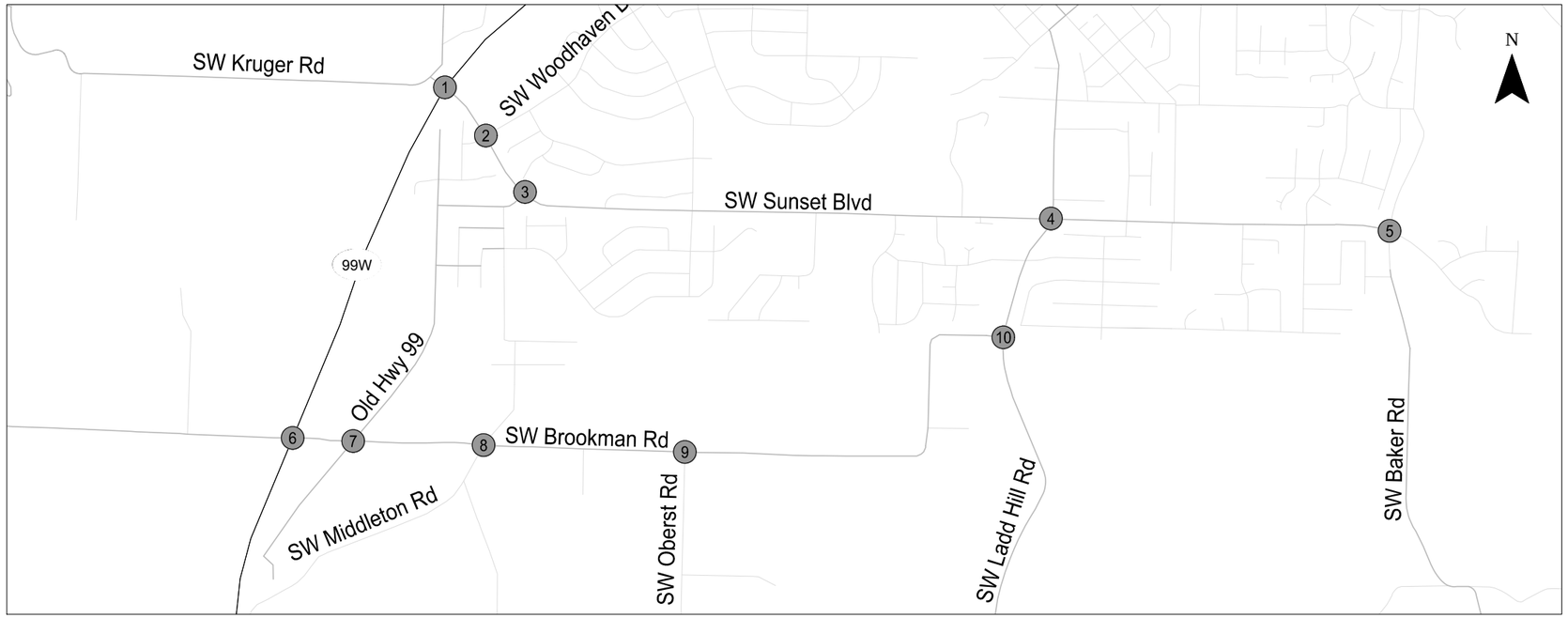
10 SW Ladd Hill Rd/ SW Brookman Rd

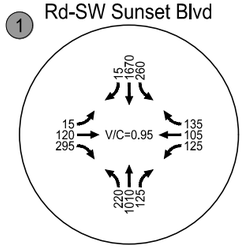


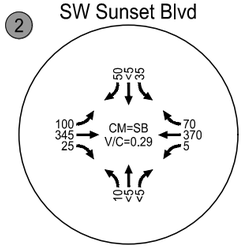
CM = CRITICAL MOVEMENT (TWSC & AWSC)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO
TWSC = TWO-WAY STOP CONTROL
AWSC = ALL-WAY STOP CONTROL

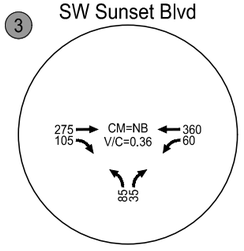
Existing Intersection Operations
Weekday AM Peak Hour
Sherwood, Oregon

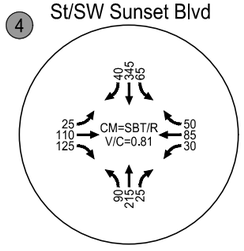
Figure 4

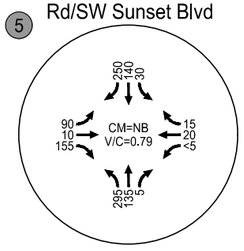


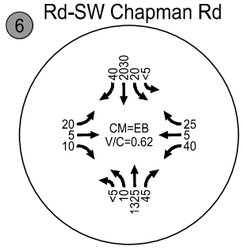
1 Hwy 99W/SW Elwert Rd-SW Sunset Blvd


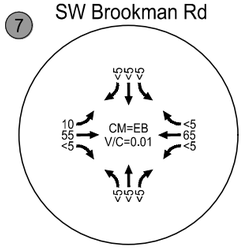
2 SW Woodhaven Dr/ SW Sunset Blvd


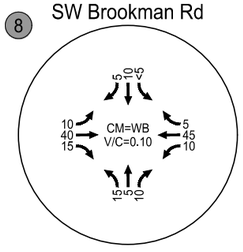
3 SW Timbrel Ln/ SW Sunset Blvd


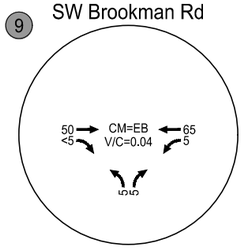
4 SW Ladd Hill Rd-SW Main St/SW Sunset Blvd


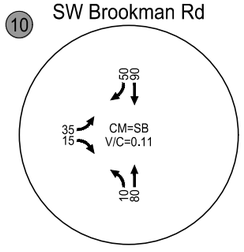
5 SW Baker Rd-SW Murdock Rd/SW Sunset Blvd


6 Hwy 99W/SW Brookman Rd-SW Chapman Rd


7 Old Hwy 99W/ SW Brookman Rd


8 SW Middleton Rd/ SW Brookman Rd


9 SW Oberst Rd/ SW Brookman Rd


10 SW Ladd Hill Rd/ SW Brookman Rd


CM = CRITICAL MOVEMENT (TWSC & AWSC)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO
TWSC = TWO-WAY STOP CONTROL
AWSC = ALL-WAY STOP CONTROL

Existing Intersection Operations
Weekday PM Peak Hour
Sherwood, Oregon

Figure 5

YEAR 2020 BACKGROUND TRAFFIC CONDITIONS

The background traffic analysis identifies how the study area's transportation system will operate in 2020, the year the proposed development will be built out. This analysis includes traffic growth due to development within the study area but does not include traffic from the proposed subdivision.

Planned Developments and Transportation Improvements

Through the scoping process, the review agencies identified one in-process development, the Sherwood Hotel located on SW Meinecke Road at Highway 99W.

No funded planned improvements were identified at the study intersections for implementation by 2020.

Background Traffic Volumes and Conditions

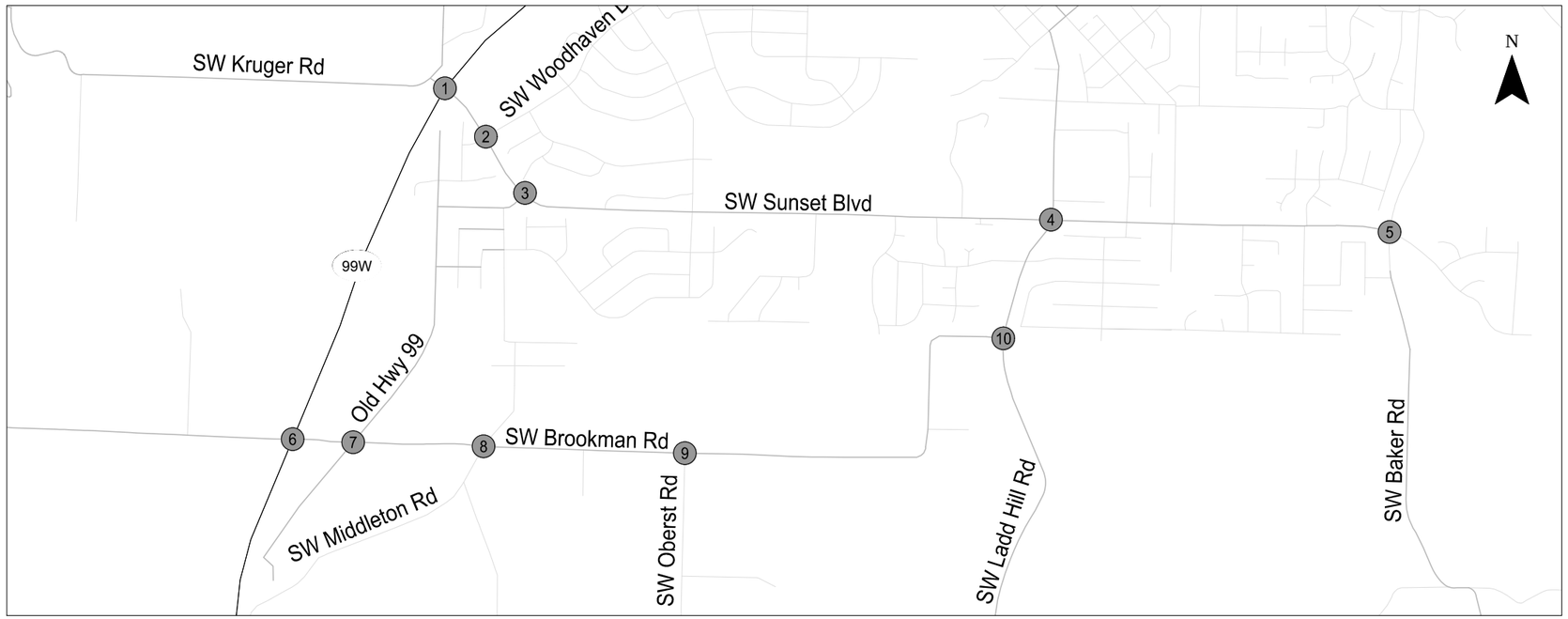
Year 2020 background traffic volumes were developed by increasing existing study intersection traffic volumes by 1% annually along Highway 99 and 2% annually on all other approaches as per City direction during the scoping process. Traffic volumes from the in-process hotel development were then added.

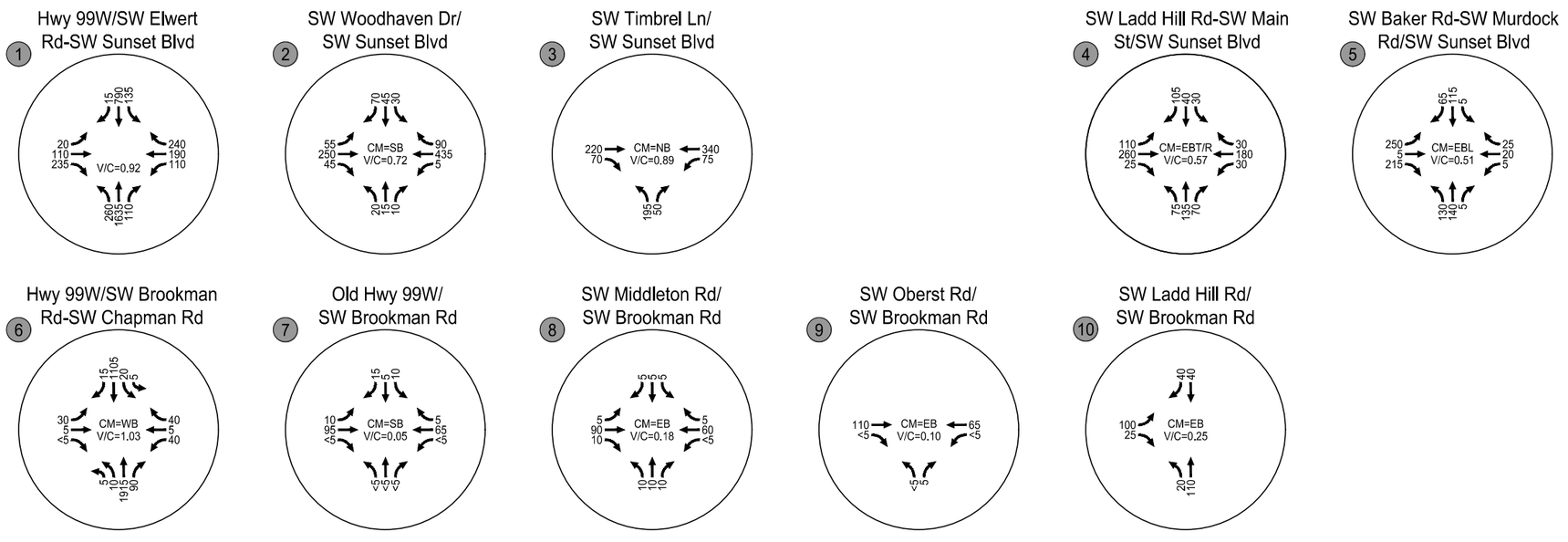
Figures 6 and 7 report the 2020 background traffic volumes and operating conditions at the study intersections during the weekday AM and PM peak hours, respectively. As seen in the figure, all intersections are projected to operate within standards except for the intersections of Highway 99W/SW Elwert Road-SW Sunset Boulevard and Highway 99W/SW Brookman Road-SW Chapman Road.

The signalized Highway 99W/SE Elwert Road-SW Sunset Road intersection is projected to operate with a V/C ratio of 1.00 during the weekday PM peak hour, exceeding the ODOT standard requiring a V/C ratio less than or equal to 0.99.

In addition, the westbound SW Brookman Road approach to the unsignalized Highway 99W/SW Brookman Road-SW Chapman Road intersection is projected to operate with a V/C ratio of 1.03 during the weekday AM peak hour. Potential future mitigations are further discussed under total traffic conditions.

Appendix E includes the year 2020 background conditions level-of-service worksheets.

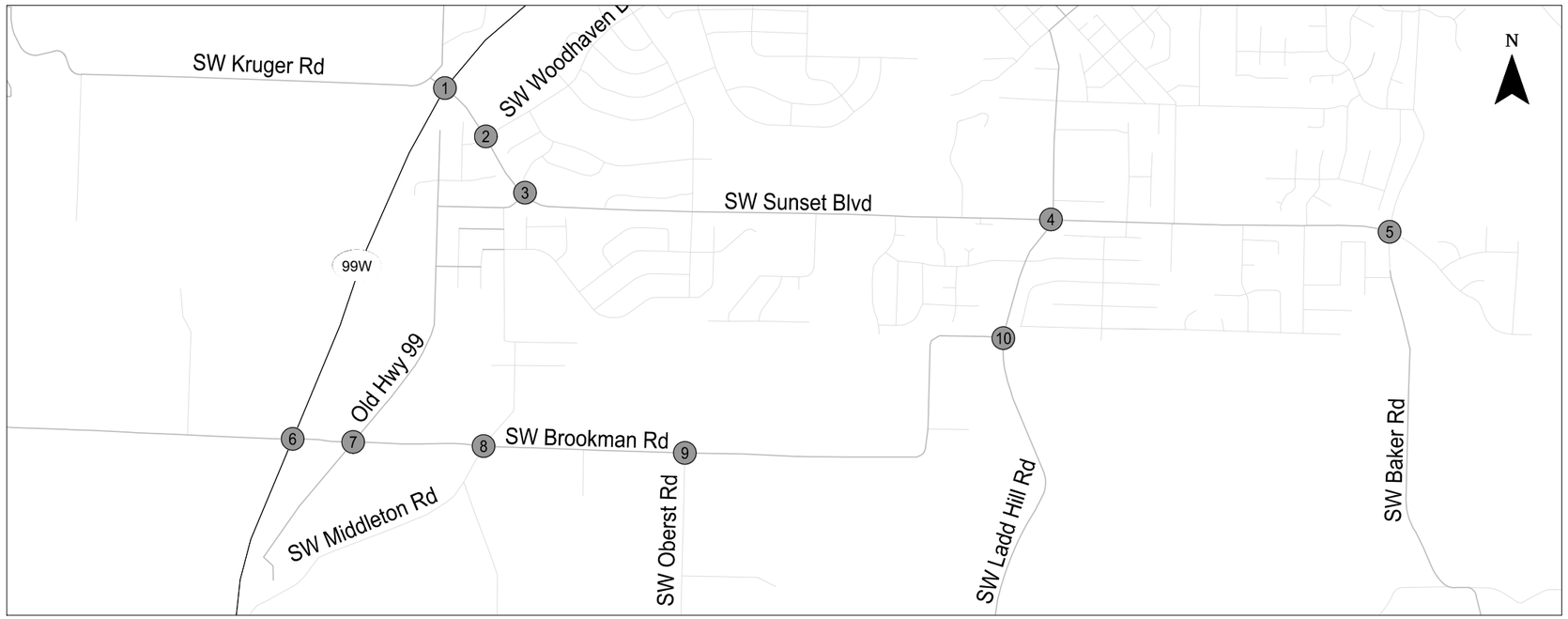




CM = CRITICAL MOVEMENT (TWSC & AWSC)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO
TWSC = TWO-WAY STOP CONTROL
AWSC = ALL-WAY STOP CONTROL

Year 2020 Background Intersection Operations
Weekday AM Peak Hour
Sherwood, Oregon

Figure 6



1 Hwy 99W/SW Elwert Rd-SW Sunset Blvd
15 17 25 275 / 15 130 310 / V/C=1.00 / 145 110 135 / 230 105 135

2 SW Woodhaven Dr/ SW Sunset Blvd
55 <5 35 / 105 365 25 / CM=SB V/C=0.33 / 70 390 5 / 10 <5 <5

3 SW Timbrel Ln/ SW Sunset Blvd
295 110 / CM=NB V/C=0.42 / 380 65 / 90 35

4 SW Ladd Hill Rd-SW Main St/SW Sunset Blvd
40 370 70 / 25 120 130 / CM=SBT/R V/C=0.88 / 50 90 35 / 95 225 30

5 SW Baker Rd-SW Murdock Rd/SW Sunset Blvd
265 150 30 / 100 15 165 / CM=NB V/C=0.86 / 15 20 <5 / 310 145 5

6 Hwy 99W/SW Brookman Rd-SW Chapman Rd
40 2100 25 <5 / 20 5 10 / CM=EB V/C=0.72 / 30 55 40 / <5 10 1370 45

7 Old Hwy 99W/ SW Brookman Rd
<5 <5 <5 / 10 60 <5 / CM=EB V/C=0.01 / <5 70 <5 / <5 <5 <5

8 SW Middleton Rd/ SW Brookman Rd
5 10 <5 / 10 40 15 / CM=WB V/C=0.11 / 5 50 10 / 15 10

9 SW Oberst Rd/ SW Brookman Rd
50 <5 / CM=EB V/C=0.04 / 65 5 / 5

10 SW Ladd Hill Rd/ SW Brookman Rd
55 95 / 35 15 / CM=SB V/C=0.11 / 10 85

CM = CRITICAL MOVEMENT (TWSC & AWSC)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO
TWSC = TWO-WAY STOP CONTROL
AWSC = ALL-WAY STOP CONTROL

Year 2020 Background Intersection Operations
Weekday PM Peak Hour
Sherwood, Oregon

Figure 7

PROPOSED DEVELOPMENT PLAN

The development as proposed consists of 145 detached single-family homes. A network of on-site roadways is proposed to provide access to individual homes with one public street connection on SW Brookman Road, aligning with the existing intersection at SW Oberst Road. The lane configurations and traffic control devices assumed for the year 2020 total traffic conditions are shown in Figure 8. The two existing single-family homes on site will be removed and the existing accesses to SW Brookman Road vacated. Site development is expected to be complete by 2020.

Trip Generation Estimate

Trip generation estimates for the proposed development were prepared based on information presented in the *Trip Generation Manual* (Reference 9) and are shown in Table 5.

Table 5. Trip Generation Estimate

Land Use	ITE Code	Size	Daily Trips	Weekday AM Peak Hour			Weekday PM Peak Hour		
				Total	In	Out	Total	In	Out
Single-Family Detached	210	143 units[1]	1,362	110	28	82	145	91	54

Note: Per direction from ODOT and the City, the average rate was used for the daily trip generation and the fitted curve equation for the weekday AM and PM peak hour trip generation.
[1]There are two single-family detached homes on-site currently, so the trip generation is based on 143 units (145 proposed units minus 2 existing units).

As shown in Table 5, the proposed development is estimated to generate an additional 1,362 daily trips, including 110 trips during the weekday AM peak hour and 145 trips during the weekday PM peak.

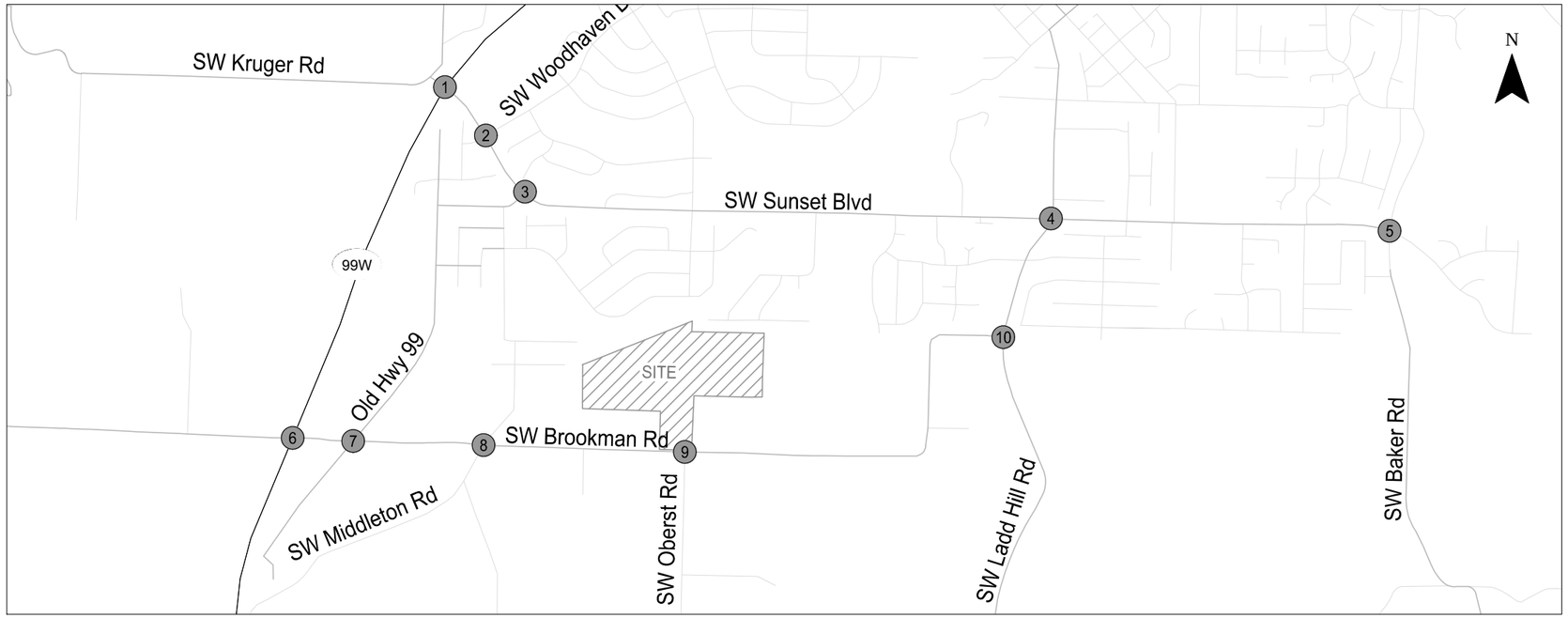
Trip Distribution & Assignment

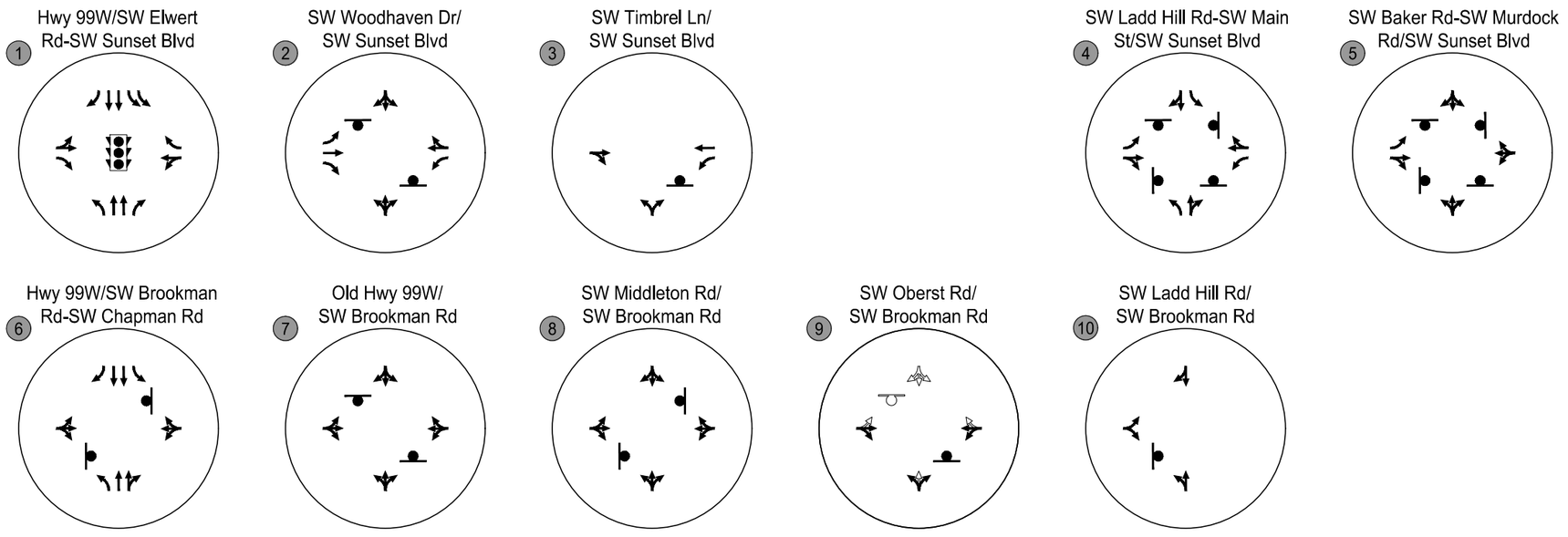
The trip distribution pattern for the site was developed considering existing traffic patterns and roadway connectivity. The trip distribution pattern was approved by the review agencies during project scoping and was used to assign the weekday AM and PM peak hour site trips to the study intersections as shown in Figures 9 and 10.

YEAR 2020 TOTAL TRAFFIC CONDITIONS

The 2020 total traffic conditions analysis forecasts how the study area's transportation system will operate with the inclusion of traffic from the proposed development and identifies traffic mitigation measures required to support the site. Future traffic conditions were estimated by adding site-generated traffic to the 2020 background traffic volumes for the weekday AM and PM peak hours to arrive at the 2020 total traffic volumes.

Figures 11 and 12 report the 2020 total traffic volumes and operating conditions for the weekday AM and PM peak hours with site development. As seen in the figures, as under background conditions, all intersections are projected to operate within standards except for the intersections of Highway 99W/SW Elwert Road-SW Sunset Boulevard and Highway 99W/SW Brookman Road-SW Chapman Road. Operations of both intersections are discussed further below. *Appendix F* includes the year 2020 total traffic conditions level-of-service worksheets.

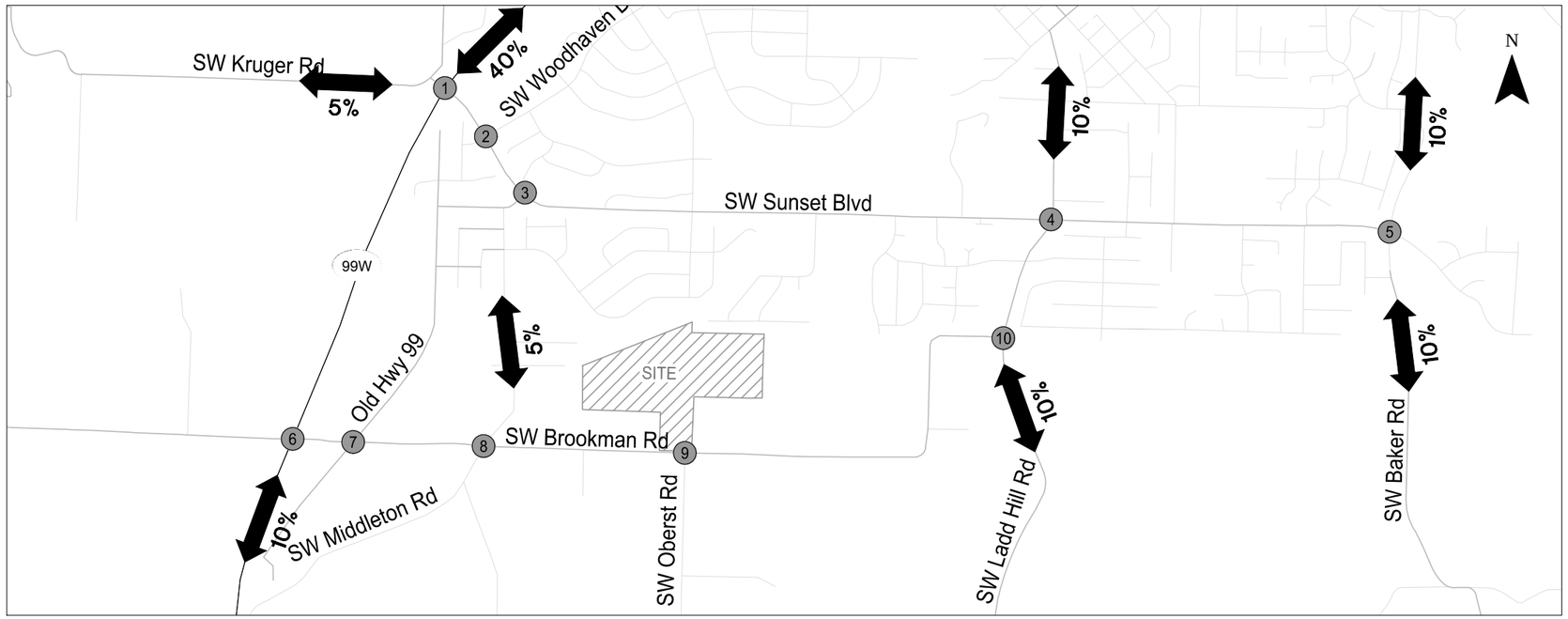


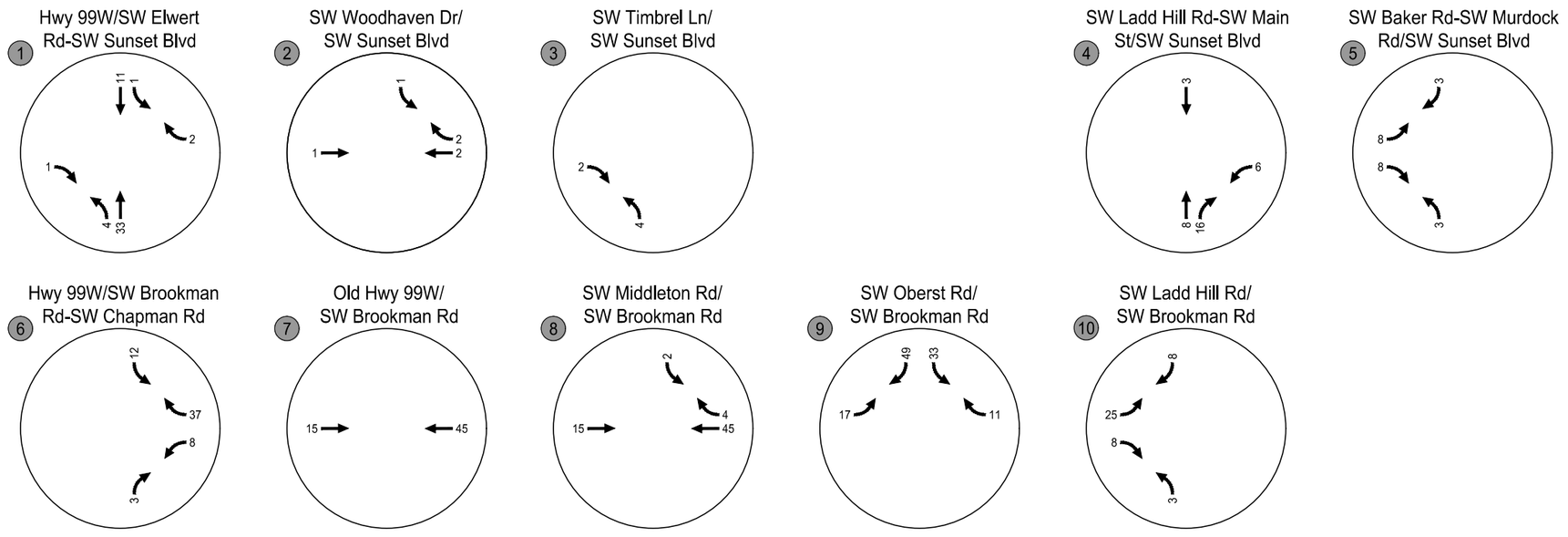


- STOP SIGN
- TRAFFIC SIGNAL
- MOVEMENT ADDED WITH DEVELOPMENT

Year 2020 Total Traffic Assumed Lane Configurations and Traffic Control Devices
Sherwood, Oregon

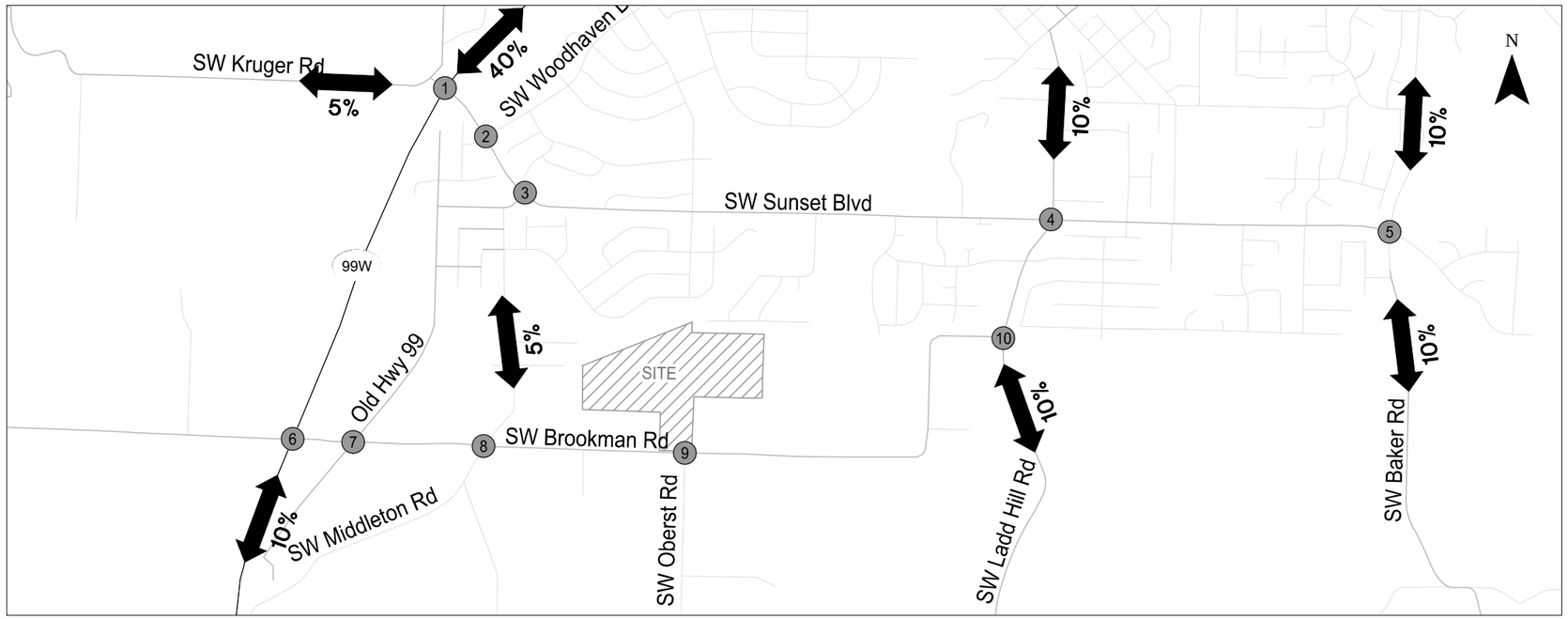
Figure 8

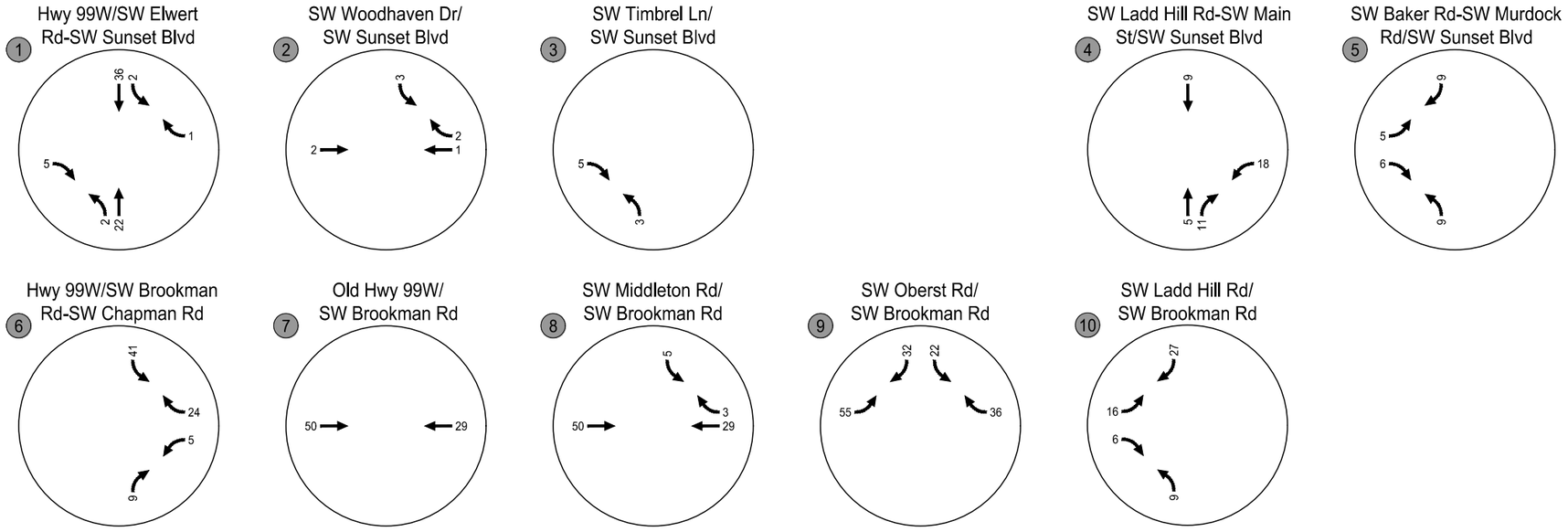




Assumed Trip Distribution and Assignment
Weekday AM Peak Hour
Sherwood, Oregon

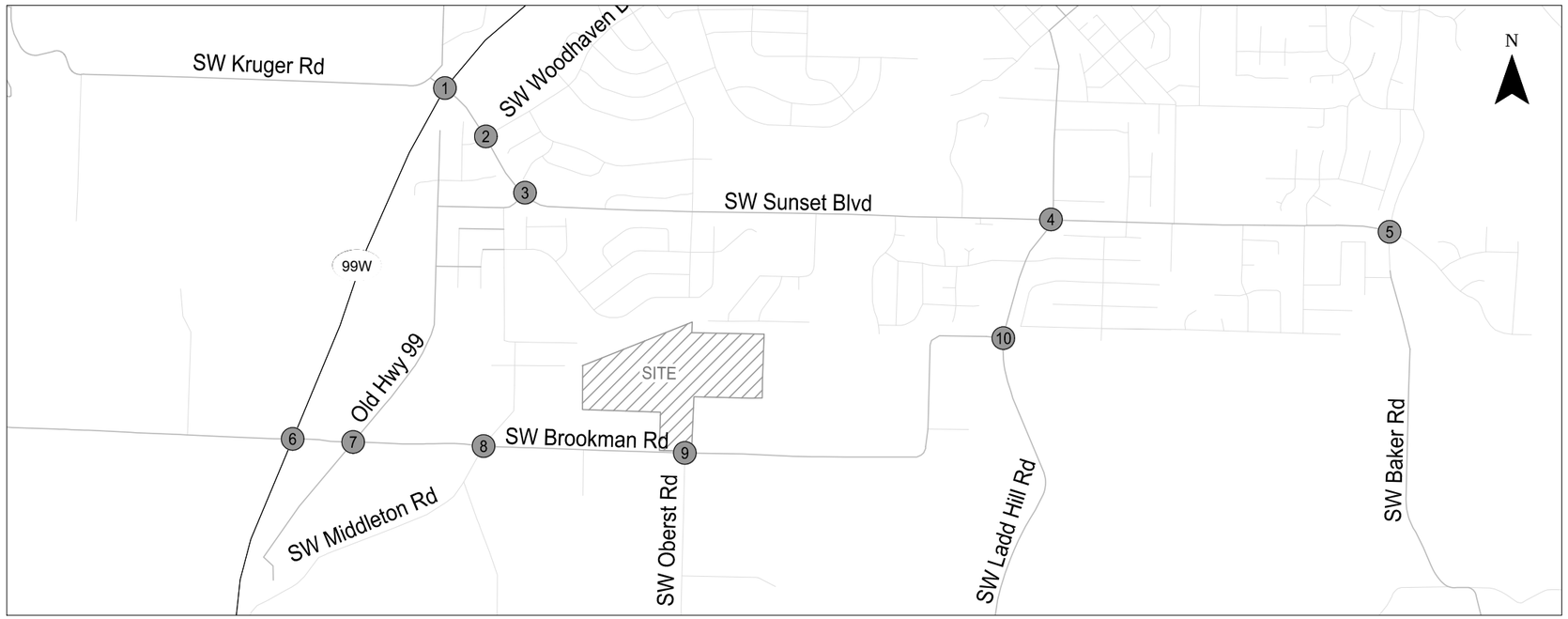
Figure
9

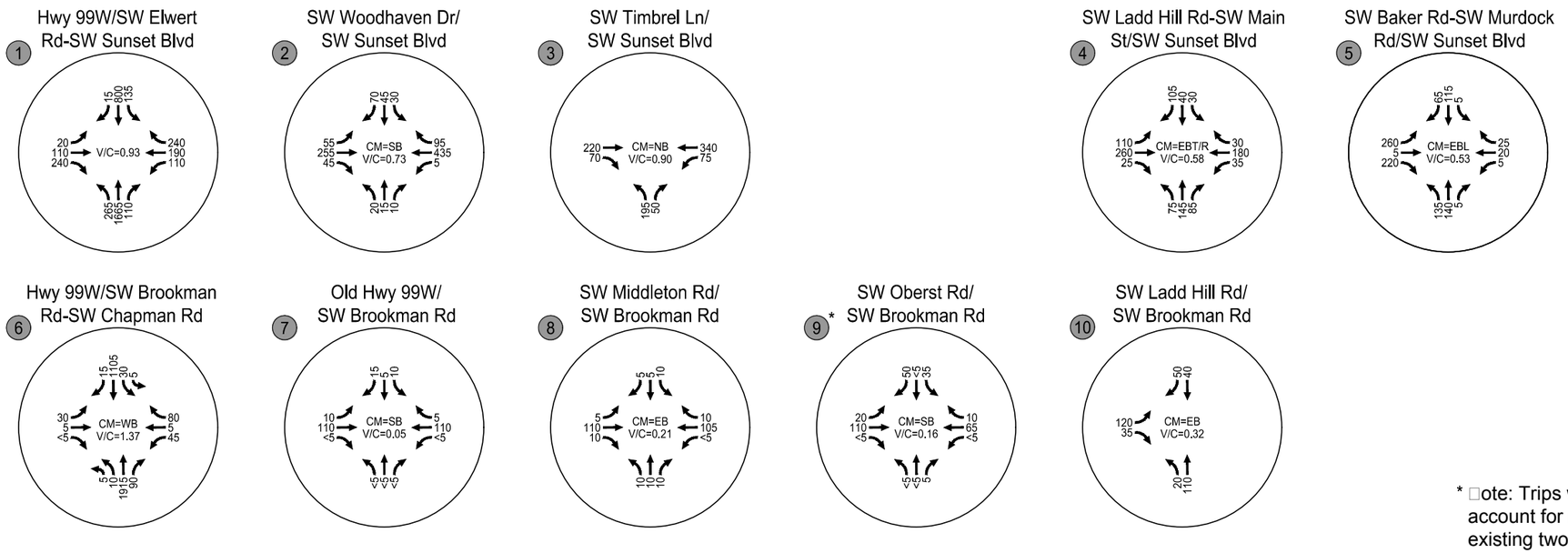




Assumed Trip Distribution and Assignment
Weekday PM Peak Hour
Sherwood, Oregon

Figure
10



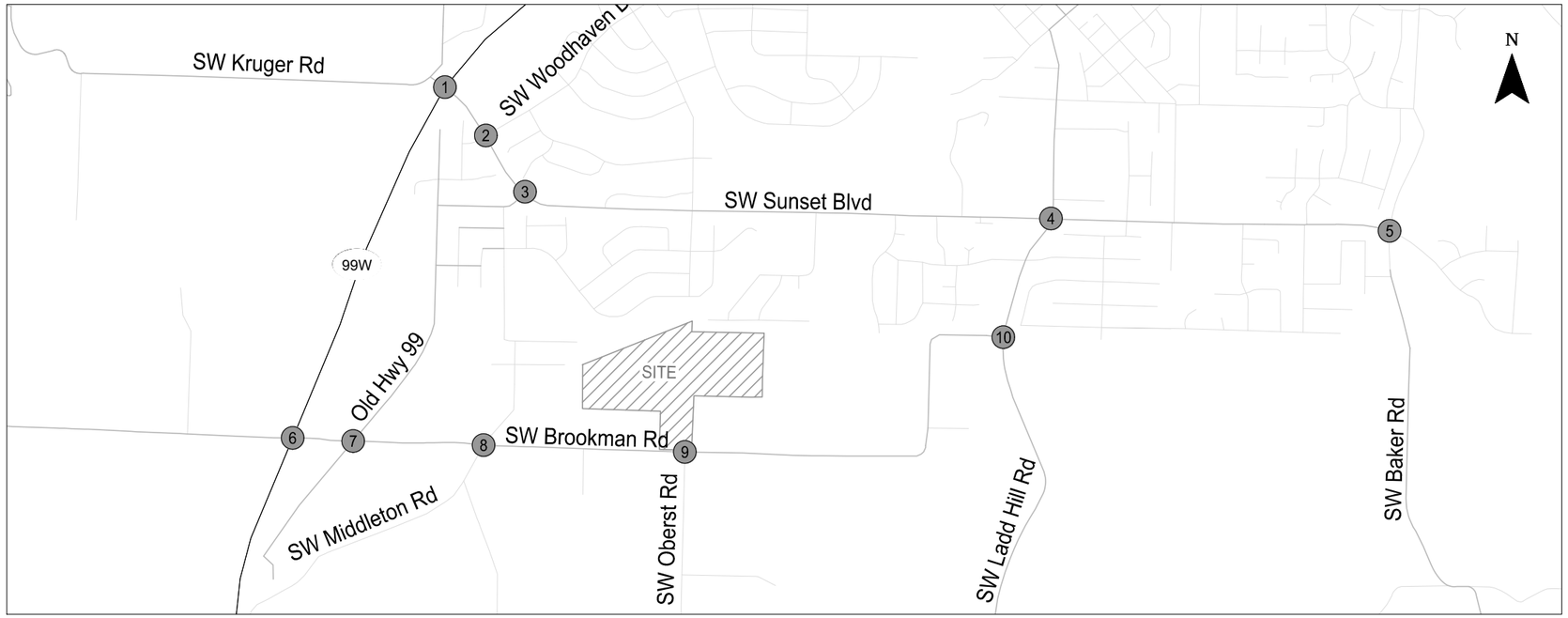


* Note: Trips were added to intersection 9 to account for rerouted trips associated with the existing two homes on site.

CM = CRITICAL MOVEMENT (TWSC & AWSC)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO
TWSC = TWO-WAY STOP CONTROL
AWSC = ALL-WAY STOP CONTROL

Year 2020 Total Traffic Intersection Operations
Weekday AM Peak Hour
Sherwood, Oregon

Figure 11



1 Hwy 99W/SW Elwert Rd-SW Sunset Blvd
15 1760 275 / 15 130 315 / V/C=1.01 / 145 110 135 / 235 1085 135

2 SW Woodhaven Dr/ SW Sunset Blvd
55 <5 40 / 105 365 25 / CM=SB V/C=0.35 / 75 395 5 / 10 <5 <5

3 SW Timbrel Ln/ SW Sunset Blvd
295 115 / CM=NB V/C=0.43 / 380 65 / 90 35

4 SW Ladd Hill Rd-SW Main St/SW Sunset Blvd
40 375 70 / 25 120 130 / CM=SBT/R V/C=0.92 / 50 90 50 / 95 230 40

5 SW Baker Rd-SW Murdock Rd/SW Sunset Blvd
275 150 30 / 105 15 170 / CM=NB V/C=0.89 / 15 20 <5 / 320 145 5

6 Hwy 99W/SW Brookman Rd-SW Chapman Rd
40 2100 65 <5 / 20 5 10 / CM=EB V/C=0.89 / 55 5 45 / <5 10 1370 55

7 Old Hwy 99W/ SW Brookman Rd
<5 <5 <5 / 10 110 <5 / CM=EB V/C=0.01 / <5 100 <5 / <5 <5 <5

8 SW Middleton Rd/ SW Brookman Rd
5 10 5 / 10 90 15 / CM=EB V/C=0.20 / 5 80 10 / 15 5 10

9* SW Oberst Rd/ SW Brookman Rd
30 <5 25 / 55 50 <5 / CM=SB V/C=0.11 / 35 65 5 / 5 <5 <5

10 SW Ladd Hill Rd/ SW Brookman Rd
80 95 / 50 20 / CM=EB V/C=0.13 / 20 85

* Note: Trips were added to intersection 9 to account for rerouted trips associated with the existing two homes on site.

CM = CRITICAL MOVEMENT (TWSC & AWSC)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO
TWSC = TWO-WAY STOP CONTROL
AWSC = ALL-WAY STOP CONTROL

Year 2020 Total Traffic Intersection Operations
Weekday PM Peak Hour
Sherwood, Oregon

Figure 12

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING/PLANNING

Highway 99W/SE Elwert Road-SW Sunset Road

The Highway 99W/SE Elwert Road-SW Sunset Road signalized intersection is projected to continue to exceed ODOT's 0.99 V/C mobility standard during weekday PM peak hour conditions under total traffic assuming the existing signal timing is retained. The proposed development results in a V/C ratio change from 1.00 under background conditions to 1.01 under total traffic conditions. Given that the already over-capacity V/C ratio change is 0.01 assuming no signal timing change, site development impacts do not require mitigation per ODOT Policy Statement findings relative to the change in V/C ratio[3].

Highway 99W/SW Brookman Road-SW Chapman Road

The SW Brookman Road westbound approach to the Highway 99W/SW Brookman Road-SW Chapman Road intersection is projected to operate with a V/C ratio of 1.37 during the weekday AM peak hour, compared to a V/C ratio of 1.03 under background conditions. ODOT's standards require a V/C ratio equal to or less than 0.95 for the Brookman Road and SW Chapman Road approaches to the intersection.

Site-impact mitigation is recommended through provision of an exclusive right-turn lane on the SW Brookman Road approach in conjunction with site development. The right-turn lane should provide 200 feet of storage. The right-turn lane mitigation will enable right-turning vehicles to bypass queued left-turning or through vehicles and will reduce projected queueing on the westbound approach to the intersection, as shown in Table 6. *Appendix G* includes the year 2020 total traffic conditions level-of-service worksheets for the mitigated scenario.

Table 6. Projected Operations at Highway 99W/SW Brookman Road-SW Chapman Road

Scenario	Weekday AM Peak Hour			Weekday PM Peak Hour		
	Critical Movement	V/C Ratio	95th %ile Queue	Critical Movement	V/C Ratio	95th %ile Queue
Year 2020 Background Conditions	WB	1.03	150 feet	EB	0.72	100 feet
Year 2020 Total Traffic Conditions	WB	1.37	250 feet	EB	0.89	100 feet
Year 2020 Total Traffic Conditions - Mitigated	WB	0.97	175 feet	EB	0.89	100 feet

Shading indicates ODOT standard not met

Given the recommended right-turn lane mitigates the site impact to V/C ratio (background traffic westbound approach V/C of 1.03 reduced to 0.97 under mitigated total traffic), no additional capacity improvements are recommended at the Highway 99W/SW Brookman Road-SW Chapman Road

[3] A May 25, 2011 Oregon Highway Plan Policy intent statement issued by ODOT indicates that "In applying OHP mobility standards to analyze mitigation, ODOT recognizes that there are many variables and levels of uncertainty in calculating volume-to-capacity rations, particularly over the planning horizon. In applying the standards after negotiating reasonable levels of mitigation for actions required under OAR 660-012-0060, ODOT considers calculated values for volume-to-capacity ratios that are within 0.03 of the adopted standard in the OHP to be considered in compliance with the standard."

intersection in conjunction with site development recognizing that the existing intersection is likely to be relocated and signalized in the future as per the City TSP. The timing and location of the future realignment and signalization is not currently programmed.

Site Access-SW Oberst Road/SW Brookman Road Intersection Turn Lane Considerations

The public street providing SW Brookman Road access to the new residential subdivision will be aligned with SW Oberst Road in conjunction with site development. Site development and frontage improvements will include reconstruction of the existing SW Oberst Road/SW Brookman Road intersection to provide intersection sight distance in accordance with Washington County standards.

The need for an eastbound left-turn lane on SW Brookman Road into the site access was assessed using ODOT APM volume-based criterion for left-turn lanes as well as Harmelink left-turn warrants. Considering the two volume-based warrants, the intersection does not warrant provision of a separate left-turn lane with site development. In the future, SW Brookman Road is expected to be widened to a three- or five-lane arterial at which point a left-turn lane will be provided. The proposed development will provide half-street right-of-way dedication to Washington County consistent with a future five-lane arterial.

The projected total traffic volumes at the Site Access-SW Oberst Road/SW Brookman Road intersection also do not warrant an eastbound right-turn deceleration lane at the site access per Washington County criteria.

The turn lane warrant analysis worksheets are provided in *Appendix H.*

Site Access-SW Oberst Road/SW Brookman Road Intersection Vehicle Queuing Analysis

Vehicle queuing conditions were assessed at the proposed site access on SW Brookwood Road. Synchro 9 and the *2000 Highway Capacity Manual* (Reference 1) procedures were used to project 95th percentile queues, shown in Table 7. *Appendix I* contains the queue analysis worksheets generated by the Synchro software.

Table 7. Projected 95th Percentile Vehicle Queues for 2020 Total Traffic Conditions

Intersection		Movement	Assumed Storage Length	Weekday AM Peak Queue	Weekday PM Peak Queue	Storage Adequate? (Yes/No)
9	SW Oberst Road-Future Site Access/ SW Brookman Road	Southbound	250[1] feet	25 feet	<25 feet	Yes
		Eastbound	100[2] feet	<25 feet	<25 feet	Yes
		Westbound	100[2] feet	<25 feet	<25 feet	Yes

Queues rounded up to the nearest 25 feet
[1]Approximate distance to first internal intersection
[2]Approximate distance to adjacent access

The queuing results indicate there will be adequate storage at the site access upon site development.

SW BROOKMAN ROAD ACCESS MANAGEMENT

Washington County *Community Development Code* (Reference 10) Section 501 provides standards for access spacing along arterial roads. Per the code, when allowed, accesses to arterial facilities such as SW Brookman Road should be spaced at least six hundred feet apart.

Figure 13 is an influence area map that shows existing site driveways, the proposed site access as well as other existing accesses in the vicinity within 600 feet of the site frontage. The existing site driveways serving single family homes will each be closed as noted.

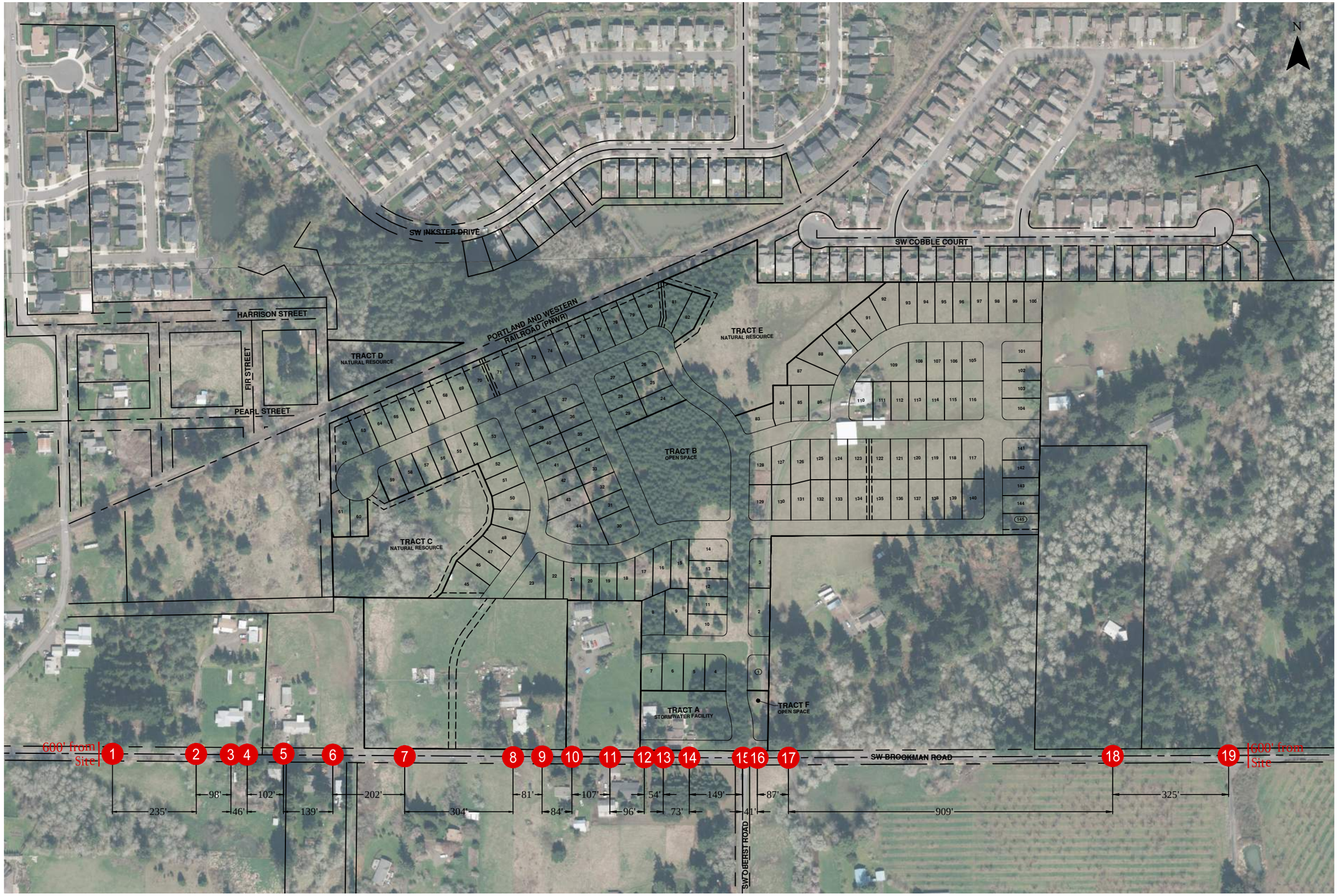
The proposed new connection to SW Brookman Road is aligned with SW Oberst Road and will necessitate regrading of SW Brookman and the existing intersection of SW Oberst Road. Reconstruction of the existing intersection will allow for provision of adequate intersection sight distance at the intersection, an improvement relative to conditions today. As proposed, the public street location aligned with SW Oberst Road satisfies Washington County's minimum 600-foot spacing standard along SW Brookman Road and thus complies with the *Community Development Code* spacing requirements.

Referring to Figure 2, the proposed site plan provides for future connectivity to the east and west along SW Brookman Road, allowing for future public roadway connections to SW Brookman Road to meet or exceed the County's 600-foot minimum spacing standard east and west of the proposed Site Access-SW Oberst Road.

Local Street Exception

Washington County will need to process an exception to allow the proposed local street connection to SW Brookman Road per CDC Section 501-8.5 which requires that direct access to arterials be from collector and other streets. Per the CDC 501-8.5, exceptions for local streets may be allowed through a Type II process when collector access is found to be unavailable and impracticable by the Director.

Support for granting the proposed local street connection is provided by multiple adopted documents guiding local area transportation needs. First, the City of Sherwood's adopted *Brookman Addition Concept Plan* (Reference 11) identifies only local street connections to SW Brookman Road in the area of the site. Further, the City's *Transportation System Plan* as well as the recently adopted minor amendments to the Transportation System Plan (Ordinance 2018-03) each show local street connections to SW Brookman Road along the site frontage as well as to the east and west. No planned north-south collector or arterial through the proposed site area is identified in any of the City's guiding documents. Considering the adopted planning documents, the Washington County Director should make a determination that collector access is both unavailable and impracticable and that local access can be allowed as proposed in accordance with CDC 501-8.5. As noted above, the proposed local access will satisfy County access spacing standards for SW Brookman Road.



1. Existing Access - Private
2. Existing Access - Private
3. Existing Access - Private
4. Existing Access - Private
5. Existing Access - Private
6. Existing Access - Private
7. Existing Access - Private
8. Existing Access - Private
9. Existing Access - Private
10. Existing Access - Private
11. Existing Access - Private
12. Existing Access - Private (To Be Closed)
13. Existing Access - Private (To Be Closed)
14. Existing Access - Private (To Be Closed)
15. SW Oberst Road-Future Site Access/SW Brookman Road
16. Existing Access - Private (To Be Closed)
17. Existing Access - Private
18. Existing Access - Private
19. Existing Access - Private

Influence Area Map
Sherwood, Oregon

Figure
13

KITTELSON & ASSOCIATES

FINDINGS AND RECOMMENDATIONS

Based on the results of the transportation impact analysis, the proposed site can be developed while maintaining acceptable operations at the study intersections. The analysis developed the following findings and recommendations.

Findings

- All study intersection operations currently satisfy City, County, and ODOT standards.
- Under background and total traffic conditions, two of the study intersections were found to not operate in accordance with the standards during the weekday AM and/or PM peak hours.
    - During the weekday PM peak hour, the Highway 99W/SE Elwert Road-SW Sunset Road signalized intersection is projected to operate with a V/C ratio of 1.00 under background conditions and with a V/C ratio of 1.01 under total traffic conditions.
        - No mitigation is required with the proposed site development given the over-capacity background condition and that the V/C ratio changes by less than 0.03 as a result of site development.
    - During the weekday AM peak hour, the westbound approach to the Highway 99W/SW Brookman Road-SW Chapman Road intersection is projected to operate with a V/C ratio of 1.03 under background conditions and with a V/C ratio of 1.36 under total traffic conditions.
        - Provision of a westbound right-turn lane with 200 feet of queue storage would mitigate the proposed development's impact to the intersection.
        - Future relocation and signalization of the intersection is identified as a long-term need in the City's Transportation System Plan but is not currently programmed or funded.
- The proposed residential development is estimated to generate approximately 1,362 daily trips, including 110 trips during the weekday AM peak hour and 145 weekday PM peak trips after accounting for the two existing detached single family homes on the site.
- The proposed site access on SW Brookman Parkway aligns with SW Oberst Road and complies with the Washington County *Community Development Code* minimum access spacing requirements.

Recommendations

Recommended transportation improvements to be implemented with site development include:

- Provide a westbound right-turn lane with 200 feet of storage on SW Brookman Road at the Highway 99W/SW Brookman Road-SW Chapman Road intersection with site development.

- The new public street connection to SW Brookman Road as well as internal site roadways should be designed to ensure that intersection sight distance is maintained in accordance with Washington County and City of Sherwood standards.

We trust that this letter adequately documents the transportation impacts associated with the proposed development. Please contact us if you have any questions or comments regarding the contents of this letter or the analyses performed.

Sincerely,
KITTELSON & ASSOCIATES, INC.

Chris Brehmer, PE
Senior Principal Engineer

Kelly Laustsen, PE
Senior Engineer

signed 4/16/2018

REFERENCES

1. Transportation Research Board. *Highway Capacity Manual*. 2000.
2. Oregon Department of Transportation. *Oregon Highway Plan.* Amended May 2015.
3. City of Sherwood. *Sherwood Transportation System Plan.* Adopted June 17, 2014.
4. Oregon Department of Transportation. *Analysis Procedures Manual.* 2017.
5. M.D. Harmelink. *Volume Warrants for Left-turn Storage Lanes at Unsignalized Intersections* from *Aspects of Traffic Control Devices*. Transportation Research Board Highway Research Record 211. 1990.
6. Tri Met. *Available on-line at http://trimet.org/ Accessed July 2017.*
7. Oregon Department of Transportation Research Section. *SPR 667 Assessment of Statewide Intersection Safety Performance*. June 2011.
8. American Association of State Highway and Transportation Officials. *Highway Safety Manual*. 2010.
9. Institute of Transportation Engineers. *Trip Generation, 9th Edition.* 2012.
10. Washington County. *Community Development Code.*
11. City of Sherwood. *Brookman Addition Concept Plan.* 2009.

Appendix A
Scoping Memo

KITTELSON & ASSOCIATES
610 SW ALDER STREET, SUITE 700
PORTLAND, OR 97205
P 503.228.5230 F 503.273.8169

MEMORANDUM

Date: August 23, 2017

Project #: 21399

To: Bob Galati, PE, City of Sherwood
Jinde Zhu, Washington County
Avi Tayar, PE and Marah Danielson, ODOT Region 1

From: Kelly Laustsen, PE and Chris Brehmer, PE

Project: Brookman Area Residential Development

Subject: Transportation Study Scope of Work

The Holt Group is proposing to develop residentially zone land situated north of Brookman Road in Sherwood, Oregon as a multi-phase residential development. This memorandum identifies the anticipated trip generation associated with the development and outlines a proposed study scope for the transportation impact study. The Traffic Impact Analysis (TIA) will be prepared to address the requirements of City of Sherwood Development Code Section 16.106.080 as well as applicable Washington County and Oregon Department of Transportation (ODOT) review requirements.

Project Background

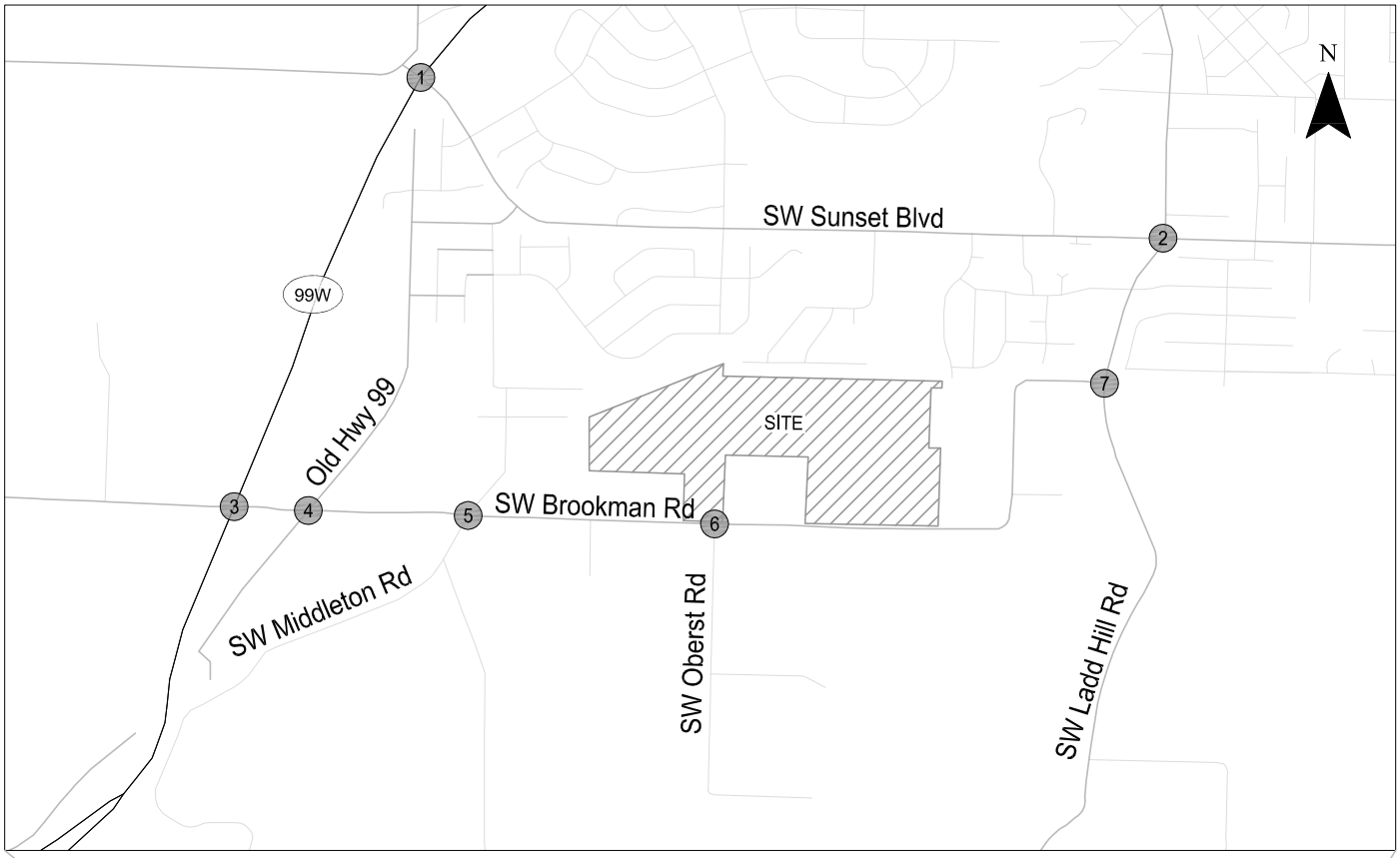
The site is located north of Brookman Road with access proposed at multiple locations along Brookman Road. The site vicinity is shown in Figure 1 and a conceptual site plan is provided in Figure 2.

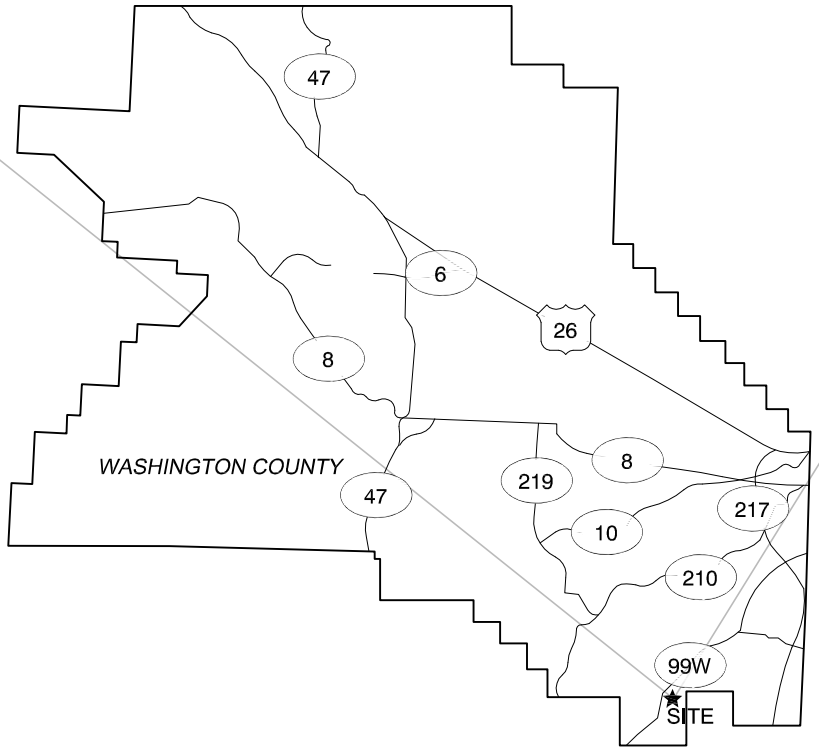
As shown in Figure 2, seven phases of development are proposed, with internal connections between phases 1 through 5. The full site is anticipated to be built out by 2023, with development starting in 2018 with buildout of Phase 1.

Analysis Periods

The TIS will evaluate traffic operations for the following periods:

- 2017 Existing conditions
- Year 2018 background conditions (without the proposed development)
- Year 2018 total traffic conditions (with phase 1 of the proposed development)
- Year 2019 background conditions (with phase 1 of the proposed development)
- Year 2019 total traffic conditions (with phases 1-2 of the proposed development)

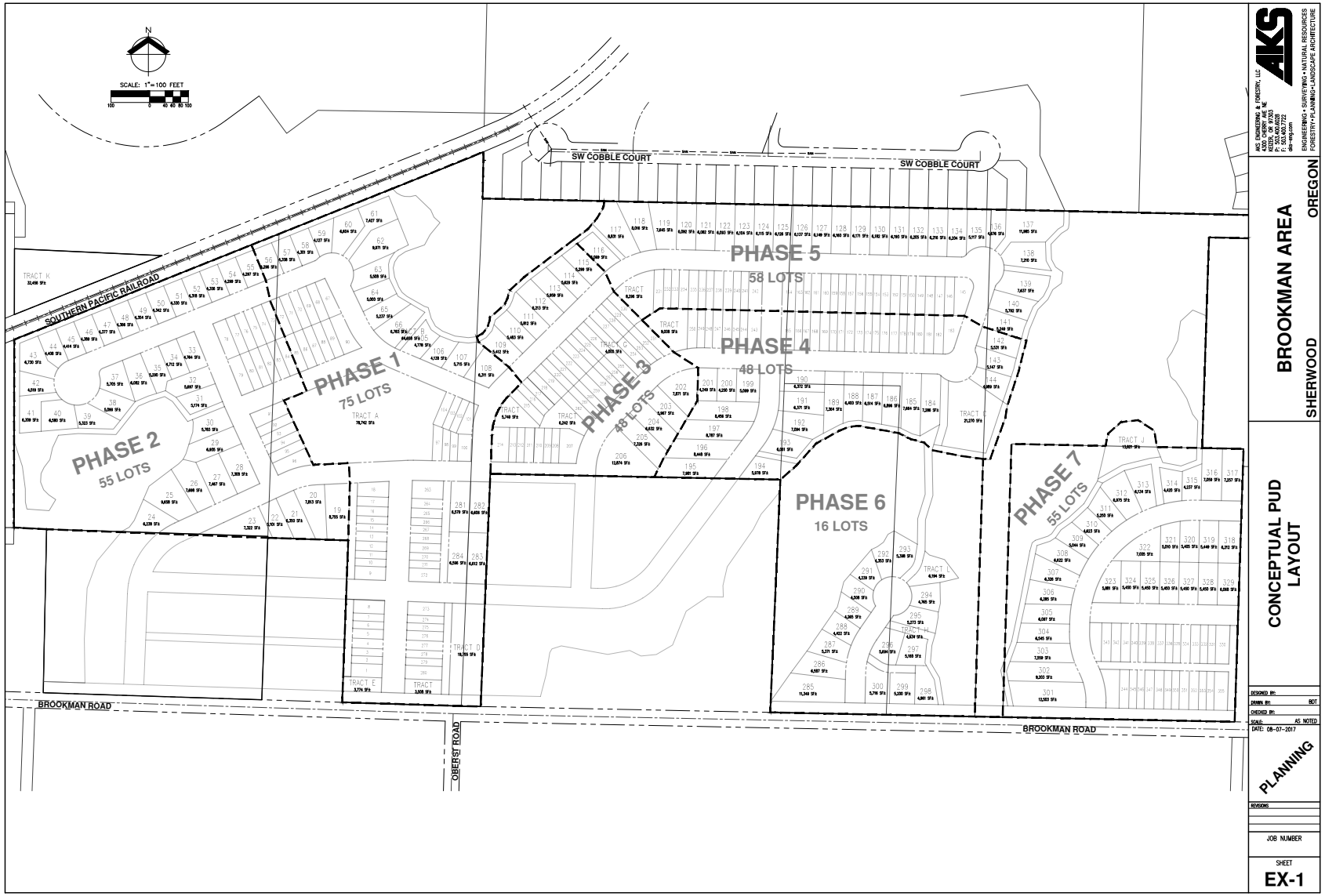




- Study Intersections

Site Vicinity Map
Sherwood, Oregon

Figure
1



Site plan received from AKS Engineering on August 7, 2017

Conceptual Site Plan
Sherwood, Oregon

Figure
2

- Year 2020 background conditions (with phases 1-2 of the proposed development)
- Year 2020 total traffic conditions (with phases 1-3 of the proposed development)
- Year 2021 background conditions (with phases 1-3 of the proposed development)
- Year 2021 total traffic conditions (with phases 1-4 of the proposed development)
- Year 2022 background conditions (with phases 1-4 of the proposed development)
- Year 2022 total traffic conditions (with phases 1-5 of the proposed development)
- Year 2023 background conditions (with phases 1-5 of the proposed development)
- Year 2023 total traffic conditions (with phases 1-7 of the proposed development)

The traffic analysis will evaluate intersection operations during the weekday AM and PM peak hours.

Trip Generation

Preliminary trip generation estimates for the proposed development were prepared based on information presented in the *Trip Generation Manual* (Reference 1). The estimated trip generation is shown in Table 1.

Table 1. Trip Generation Estimate

Phase	Land Use	ITE Code	Size	Daily Trips	Weekday AM Peak Hour			Weekday PM Peak Hour		
					Total	In	Out	Total	In	Out
1	Single-Family Detached	210	19 units	181	14	4	11	19	12	7
	Res. Condo/Townhouse	230	56 units	325	25	4	20	29	19	10
	Net New Phase 1 Trips			**506**	**39**	**8**	**31**	**48**	**31**	**17**
2	Single-Family Detached	210	37 units	352	28	7	21	37	23	14
	Res. Condo/Townhouse	230	18 units	105	8	1	7	9	6	3
	Net New Phase 2 Trips			**457**	**36**	**8**	**28**	**46**	**29**	**17**
3	Single-Family Detached	210	12 units	114	9	2	7	12	8	4
	Res. Condo/Townhouse	230	36 units	209	16	3	13	19	13	6
	Net New Phase 3 Trips			**323**	**25**	**5**	**20**	**31**	**21**	**10**
4	Single-Family Detached	210	21 units	200	16	4	12	21	13	8
	Res. Condo/Townhouse	230	27 units	157	12	2	10	14	9	5
	Net New Phase 4 Trips			**357**	**28**	**6**	**22**	**35**	**22**	**13**
5	Single-Family Detached	210	26 units	248	20	5	15	26	16	10
	Res. Condo/Townhouse	230	32 units	186	14	2	12	17	11	6
	Net New Phase 5 Trips			**434**	**34**	**7**	**27**	**43**	**27**	**16**
6	Single-Family Detached	210	16 units	152	12	3	9	16	10	6
	Net New Phase 6 Trips			**152**	**12**	**3**	**9**	**16**	**10**	**6**
7	Single-Family Detached	210	29 units	276	22	6	16	29	18	11
	Res. Condo/Townhouse	230	26 units	151	11	2	9	14	9	5
	Net New Phase 7 Trips			**427**	**33**	**8**	**25**	**43**	**27**	**16**
	Net New Phases 1-7 Trips			***2,656***	***207***	***45***	***162***	***262***	***167***	***95***

As shown in Table 1, the proposed development is estimated to generate 2,656 daily trips, including 207 trips during the weekday AM peak hour and 262 trips during the weekday PM peak.

Study Intersections

City of Sherwood Development Code Section 16.106.080 requires analysis of all intersections of where the analysis shows that fifty (50) or more peak hour vehicle trips can be expected to result from the development. Based on these requirements, anticipated trip generation, and initial discussions with City, County, and ODOT staff, we propose to study the following intersections:

1. Highway 99W/SW Sunset Boulevard
2. SW Ladd Hill Road/SW Sunset Boulevard
3. Highway 99W/SW Brookman Road
4. Old Highway 99 W/SW Brookman Road
5. SW Middleton Road/SW Brookman Road
6. SW Oberst Road/SW Brookman Road
7. SW Ladd Hill Road/SW Brookman Road

- All proposed site accesses on SW Brookman Road

These intersections are also shown on Figure 1. We will analyze operations and request the most recent five years of crash data from ODOT at the study area intersections.

Trip Distribution

Existing traffic count data, surrounding land uses, and the *Brookman Addition Concept Plan* (Reference 2) were used to generate a trip distribution pattern, shown in Figure 3. This distribution pattern will be used for the assignment of weekday AM and PM peak hour site trips.

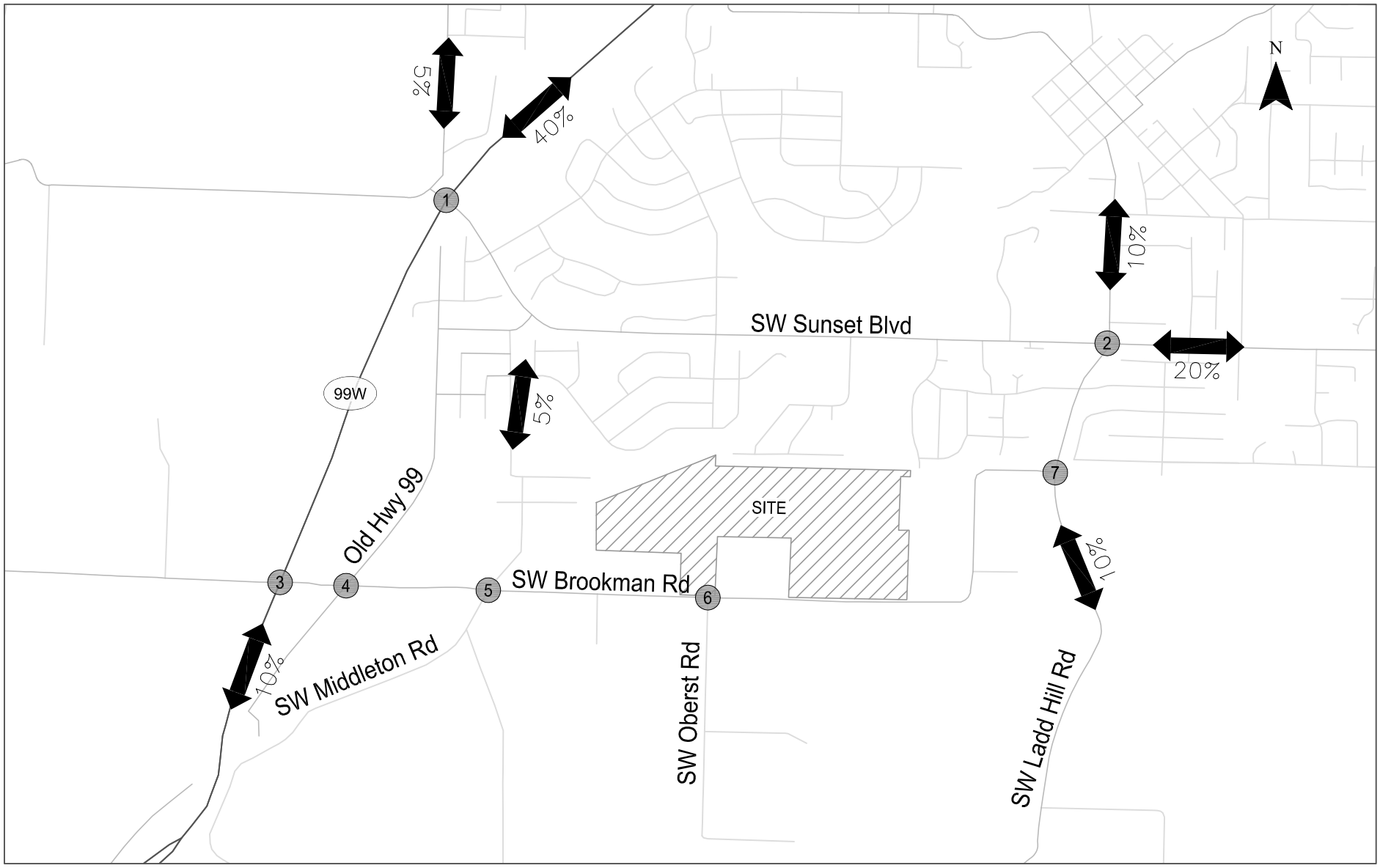
Existing and Forecast Traffic Volumes

Existing traffic volumes will be determined from manual turn movement counts at the study intersections on a typical weekday during the morning peak period (7:00 – 9:00 AM) and evening peak period (4:00 – 6:00 PM).

Forecast traffic volumes will be developed based on regional traffic growth within the study area as well as growth related to City-identified approved in-process developments. ***Would you please provide the preferred annual growth rate, any approved developments that should be assumed as "in-process," as well as any planned improvements in the study area that should be accounted for?***

Analysis Methodology

All intersections will be analyzed using Synchro 9 and the 2000 *Highway Capacity Manual (HCM)*.



Trip Distribution
Sherwood, Oregon

Figure
3

KITTELSON & ASSOCIATES

Performance Measures & Operating Standards

Intersection performance measures used will include level of service (LOS), volume-to-capacity ratio (V/C), and delay. Intersection operating standards adopted by Washington County, ODOT and the City are summarized below.

Washington County Operating Standards

Washington County has jurisdiction over Brookman Road. The County has defined operating standards for signalized and stop controlled intersections assuming a peak hour (60-minute analysis) period as follows:

- **Signalized intersections:** the maximum peak hour intersection volume-to-capacity ratio shall be no greater than 0.99.
- **Unsignalized intersections:** no movement shall experience a volume-to-capacity ratio greater than 0.99.

ODOT Operating Standards

ODOT operates and maintains OR 99W (Pacific Highway West). ODOT's operating standard for signalized intersections along Highway OR 99W in the study area is an intersection V/C ratio no greater than 0.99 during the peak 15-minutes as identified in Table 7 of the *Oregon Highway Plan* (Reference 3).

Sherwood Operating Standards

The City defers to ODOT and Washington County standards for facilities under the jurisdiction of ODOT or Washington County. For other intersections, the following local city targets apply:

- **Signalized intersections:** level of service D or a volume to capacity ratio equal to or less than 0.85.
- **Unsignalized two-way stop-control (TWSC) intersections:** level of service E or a volume to capacity ratio equal to or less than 0.90.

For all intersections, level of service performance should first be assessed and if it is not met the v/c target is considered.

Next Steps

We look forward to working with you on this project. Please let us know if you have any questions, comments, or additional direction related to the scoping information presented in this memorandum.

Thank you in advance for your assistance.

References

1. Institute of Transportation Engineers. *Trip Generation, 9th Edition.* 2012.

2. DKS Associates. *Brookman Addition Concept Plan: Committee Recommended Plan – Transportation Analysis.* April 22, 2008.

3. Oregon Department of Transportation. *1999 Oregon Highway Plan.* Amended May 2015.

Kelly Laustsen

From: Garth Appanaitis <gaa@dksassociates.com>
Sent: Wednesday, October 18, 2017 4:31 PM
To: Kelly Laustsen
Cc: Chris Brehmer; GalatiB@SherwoodOregon.gov
Subject: Re: Brookman Scope

Hi Kelly,

Here are the comments on the scoping memo:

- Trip Generation - Using the average trip rate rather than the equation for those residential uses is sufficient. For this size of overall use, the difference is nominal and would add unnecessary complexity and confusion with the TDT.
- Study intersections - In addition to the intersections shown, the following intersections should be included:
    - Intersections requested by ODOT on OR99W. Based on the initial trip generation and distribution, I would anticipate that they may ask for other intersections to the north. However, this is ODOT discretion.
    - Sunset/Timbrel
    - Sunset/Woodhaven
    - Sunset/Baker/Murdock
- In Process Development - The hotel site on Meinecke should be included and the traffic study can be found here: https://www.sherwoodoregon.gov/planning/project/sherwood-hotel If ODOT requests additional study intersections on OR 99W to the north, you should also include trips from the Cedar Creek Plaza. Links to other traffic studies are included here: https://www.sherwoodoregon.gov/projects?tid=All&field_project_status_value=All&field_project_type_tid=93&keys=&=Apply
- Future background traffic growth - Based on Sherwood's TSP and travel model, use 1% per year growth on ODOT highway approaches and 2% for all other approaches.
- Trip Distribution - The 5% internal distribution should be clarified and may not be appropriate given the existing mix of uses in the area (residential) and the proposed uses (residential). In order to assume 5% internal distribution, please clarify the intended origin/destination from these proposed households, or shift the 5% to other external gateways.
- Scope of traffic study - The Aug 23 memo describes some of the methods and assumptions for the TIA, but does not comprehensively indicate what other items will be included in the study - such as safety analysis, description of ped/bike/transit network, assessment of pedestrian crossing safety, etc. Providing a full list of these items that are planned to include in the TIA will facilitate the completeness review.

Bob - Do you have anything else to add?

Thanks,
Garth

On Tue, Oct 17, 2017 at 3:38 PM, Kelly Laustsen <klaustsen@kittelson.com> wrote:

> Hi Garth,
>
> I wanted to follow-up on our call from the week before last. I believe you were going to send a summary of comments on the scope, preferred growth rate, and list of in-process developments to include. Can you please send this information at your earliest convenience?

Kelly Laustsen

From: TAYAR Abraham * Avi <Abraham.TAYAR@odot.state.or.us>
Sent: Thursday, September 14, 2017 4:15 PM
To: 'Joe Schiewe'; GalatiB@SherwoodOregon.gov; Jinde_Zhu@co.washington.or.us
Cc: Alex Hurley; Chris Goodell; Chris Brehmer; Robinson, Michael C. (Perkins Coie); Brandt Thissell; Rian Tuttle; DANIELSON Marah B; Kelly Laustsen
Subject: RE: Scoping Memo: Brookman Area Residential Development

I have responded to KIA directly as indicated below; ODOT accept the proposed methodology as listed below:

- We could assess the AM and PM peak hour trip generation for the single family homes and townhomes using the equation for buildout of the site. Using the peak hour equations results in a net increase of 4 AM peak hour trips and 3 PM peak hour trips, as shown in the table below.

Thanks,

Avi Tayar. P.E. | Oregon Department of Transportation | Region 1 | Planning & Research Program | Development Review Engineering Team Lead
123 NW Flanders St | Portland, OR 97209 | ☎: 503-731-8221 | 🖷: 503-731-8259 | ✉: Abraham.tayar@ODOT.state.or.us

Work Schedule: M-TH 7:30 AM through 6:00

From: Joe Schiewe [mailto:Joe@holtgroupinc.com]
Sent: Thursday, September 14, 2017 3:33 PM
To: GalatiB@SherwoodOregon.gov; Jinde_Zhu@co.washington.or.us; TAYAR Abraham * Avi
Cc: Alex Hurley; Chris Goodell; Chris Brehmer; Robinson, Michael C. (Perkins Coie); Brandt Thissell; Rian Tuttle; DANIELSON Marah B; Kelly Laustsen
Subject: RE: Scoping Memo: Brookman Area Residential Development

Bob, Jinde and Avi: Please provide your review of the scoping memo for our phased development. We would like to get Kittelson started on this study as soon as we can. Thank you for your assistance.

From: Kelly Laustsen [mailto:klaustsen@kittelson.com]
Sent: Thursday, September 7, 2017 11:52 AM
To: GalatiB@SherwoodOregon.gov; Jinde_Zhu@co.washington.or.us
Cc: Alex Hurley <alex@aks-eng.com>; Joe Schiewe <Joe@holtgroupinc.com>; Chris Goodell <chrisg@aks-eng.com>; Chris Brehmer <CBREHMER@kittelson.com>; Robinson, Michael C. (Perkins Coie) <MRobinson@perkinscoie.com>; Brandt Thissell <brandtt@aks-eng.com>; Rian Tuttle <rian@holtgroupinc.com>; Monty Hurley <monty@aks-eng.com>; TAYAR Abraham * Avi <Abraham.TAYAR@odot.state.or.us>; DANIELSON Marah B <Marah.B.DANIELSON@odot.state.or.us>
Subject: RE: Scoping Memo: Brookman Area Residential Development

Hi Bob and Jinde,

I'd like to follow-up your review of the scoping memo we prepared (attached) for the proposed residential development north of Brookman Road. Please provide any comments as soon as possible so we can move forward with the study. We appreciate your assistance.

Best,

Kelly M Laustsen, PE
Senior Engineer

Kittelson & Associates, Inc.
Transportation Engineering / Planning
503.535.7439 (direct)
214.886.5338 (cell)

From: Kelly Laustsen
Sent: Wednesday, August 30, 2017 5:32 PM
To: 'TAYAR Abraham * Avi'; DANIELSON Marah B; GalatiB@SherwoodOregon.gov; Jinde_Zhu@co.washington.or.us
Cc: Alex Hurley; Joe Schiewe; Chris Goodell; Chris Brehmer; Robinson, Michael C. (Perkins Coie); Brandt Thissell; Rian Tuttle; Monty Hurley
Subject: RE: Scoping Memo: Brookman Area Residential Development

Avi, thank you for your review and prompt reply. We appreciate understanding your stated preference regarding use of the average rate for estimating trips associated with single family homes and townhomes. We would appreciate confirmation from the City as to their preferences as well given the other studies we have seen in the area have used the average rates.

A few observations:

- We agree the correlation coefficient is high for the fitted equations.
- Our suggestion is to continue to use the average rate for daily trip generation to maintain consistency with the County/City Transportation Development Tax which was developed based on average daily trip rates.
- We could assess the AM and PM peak hour trip generation for the single family homes and townhomes using the equation for buildout of the site. Using the peak hour equations results in a net increase of 4 AM peak hour trips and 3 PM peak hour trips, as shown in the table below.

Trip Generation with Site Buildout

Land Use	ITE Code	Size (units)	Weekday AM Peak Hour			Weekday PM Peak Hour		
			Total	In	Out	Total	In	Out
Average Rate								
Single-Family Detached Housing (AVG)	210	160	120	30	90	160	101	59
Residential Condominium/Townhouse (Average)	230	195	86	15	71	101	68	33
Net New Trips (using average rate)			**206**	**45**	**161**	**261**	**169**	**92**
Fitted Curve Equation								
Single-Family Detached Housing (AVG)	210	160	122	30	92	160	101	59
Residential Condominium/Townhouse (Average)	230	195	88	15	73	104	70	34
Net New Trips (using fitted curve equation)			**210**	**45**	**165**	**264**	**171**	**93**
Difference in Net New Trips (fitted curve - average)			***+4***	***0***	***+4***	***+3***	***+2***	***+1***

- We suggest proportionating the total trips in the table above by phase based on the ratio of homes. We don't think applying the equation by individual phases make sense – By way of example, applying the AM peak hour single family equation to a project phase with zero single family homes results in 10 trips which is clearly inappropriate (Trips = 0.70 x 0 homes + 9.74 = 9.74 trips).

Please let us know if you would like to further discuss.

Kelly M Laustsen, PE
Senior Engineer

Kittelson & Associates, Inc.
Transportation Engineering / Planning
503.535.7439 (direct)
214.886.5338 (cell)

From: TAYAR Abraham * Avi [mailto:Abraham.TAYAR@odot.state.or.us]
Sent: Friday, August 25, 2017 5:07 PM
To: Kelly Laustsen; DANIELSON Marah B; GalatiB@SherwoodOregon.gov; Jinde_Zhu@co.washington.or.us
Cc: Alex Hurley; Joe Schiewe; Chris Goodell; Chris Brehmer; Robinson, Michael C. (Perkins Coie); Brandt Thissell; Rian Tuttle; Monty Hurley
Subject: RE: Scoping Memo: Brookman Area Residential Development

Hi Kelly,

I have reviewed your proposed Scoping Memo for the Phased Brookman Area Development and have the following comment:

Table 1. Trip Generation Estimate – The table proposes to use the "Average Rate" of the Trip Generation Manual to determine the trip generation per dwelling unit for a Single-Family Detached land use and for a Residential Condominium/Townhouse land use. In both land use cases, the Manual guides/provides a fitted Curve Equation with a very core for deviation factor that strongly support using the equations especially when multi-phased (total of 7) development over a period of 5-6 years. ODOT strongly suggest that he Fitted Curve Equations be used in both land use cases to determine Trip Generation in Table 1.

Otherwise, ODOT accept the proposed Scoping Memo once Table 1 Trip Generation Estimate is revised.

Thanks,

Avi Tayar. P.E. | Oregon Department of Transportation | Region 1 | Planning & Research Program | Development Review Engineering Team Lead
123 NW Flanders St | Portland, OR 97209 | ☎: 503-731-8221 | 🖷: 503-731-8259 | ✉: Abraham.tayar@ODOT.state.or.us

Work Schedule: M-TH 7:30 AM through 6:00

From: Kelly Laustsen [mailto:klaustsen@kittelson.com]
Sent: Wednesday, August 23, 2017 5:37 PM
To: DANIELSON Marah B; GalatiB@SherwoodOregon.gov; TAYAR Abraham * Avi; Jinde_Zhu@co.washington.or.us
Cc: Alex Hurley; Joe Schiewe; Chris Goodell; Chris Brehmer; Robinson, Michael C. (Perkins Coie); Brandt Thissell; Rian Tuttle; Monty Hurley
Subject: Scoping Memo: Brookman Area Residential Development

Dear Bob, Jinde, Avi and Marah,

We've developed the attached scoping memo for the proposed residential development north of Brookman Road. Please review and provide any questions, comments or additional direction. We'd appreciate your response by the end of the month.

Best,

Kelly M Laustsen, PE
Senior Engineer

Kittelson & Associates, Inc.
Transportation Engineering / Planning
610 SW Alder St, Suite 700
Portland, Oregon 97205
503.228.5230
503.535.7439 (direct)
214.886.5338 (cell)

Appendix B
ODOT Crash Data

091 PACIFIC HIGHWAY WEST

99W (Hwy 091) & SW Sunset Blvd
January 1, 2011 through December 31, 2015

SER# / INVEST / UNLOC?	SPEC DRUG ALC SCH WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MILEPNT / LRS	FC / MLG / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL TRAF-CNTL	OFFRD RNDBT / WTHR SURF DRVWY / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
07197	N N N N N	10/23/2014	WASHINGTON	1 14		INTER	CROSS	N	N RAIN	S-1STOP	01	NONE 0	STRGHT											27,29
CITY		Thu 4P	SHERWOOD	MN 0	SW PACIFIC HY 99W	NE		TRF SIGNAL	N WET	REAR		PRVTE	NE SW										000		00
			PORTLAND UA	16.66	SW SUNSET BLVD	06	0		N DAY	PDO		PSNGR CAR		01	DRVR	NONE	33	F	SUSP		016,026	038		27,29
No	*45 21 11.85 -122 52 4.18*			009100100S00	1														OR<25					
											02	NONE 0	STOP											
												PRVTE	NE SW									011		00
												PSNGR CAR		01	DRVR	NONE	43	F	OR-Y		000	000		00
																			OR<25					
02885	N N N	05/22/2014	WASHINGTON	2 14		INTER	CROSS	N	N CLR	S-1STOP	01	NONE 0	STRGHT											07
NONE		Thu 7A		MN 0		S		TRF SIGNAL	N DRY	REAR		PRVTE	S N										000		00
			PORTLAND UA	16.66		06	0		N DAY	PDO		PSNGR CAR		01	DRVR	NONE	42	M	OR-Y		026	000		07
No	*45 21 11.45 -122 52 3.31*			009100200S00															OR<25					
											02	NONE 0	STOP											
												PRVTE	S N									011		00
												PSNGR CAR		01	DRVR	NONE	43	M	OR-Y		000	000		00
																			OR<25					
04595	N N N N N	08/11/2014	WASHINGTON	2 14		INTER	CROSS	N	N CLR	S-1STOP	01	NONE 0	STRGHT											07
CITY		Mon 8A		MN 0		S		TRF SIGNAL	N DRY	REAR		PRVTE	S N										000		00
			PORTLAND UA	16.66		06	0		N DAY	INJ		PSNGR CAR		01	DRVR	INJC	25	F	OR-Y		026	000		07
No	*45 21 11.45 -122 52 3.31*			009100200S00															OR<25					
											02	NONE 0	STOP											
												PRVTE	S N									011		00
												PSNGR CAR		01	DRVR	INJC	17	F	OR-Y		000	000		00
																			OR<25					
06747	N N N	11/29/2011	WASHINGTON	2 14		INTER	CROSS	N	N CLR	S-1STOP	01	NONE 0	STRGHT											10
NONE		Tue 2P	SHERWOOD	MN 0	SW PACIFIC HY 99W	SW		TRF SIGNAL	N DRY	REAR		PRVTE	SW NE										000		00
			PORTLAND UA	16.66	SW SUNSET BLVD	06	0		N DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	M	UNK		014,026	088		10
No	*45 21 11.45 -122 52 3.31*			009100200S00	1														OR<25					
											02	NONE 0	STOP											
												PRVTE	SW NE									011		00
												PSNGR CAR		01	DRVR	NONE	58	M	OTH-Y		000	000		00
																			N-RES					
03377	N N N N N	07/02/2012	WASHINGTON	2 14		INTER	CROSS	N	N CLD	S-1STOP	01	NONE 0	STRGHT											07
CITY		Mon 4P	SHERWOOD	MN 0	SW PACIFIC HY 99W	SW		TRF SIGNAL	N DRY	REAR		PRVTE	SW NE										000		00
			PORTLAND UA	16.66	SW SUNSET BLVD	06	0		N DAY	INJ		PSNGR CAR		01	DRVR	NONE	18	M	OR-Y		043,026	000		07
No	*45 21 11.45 -122 52 3.31*			009100200S00	1														OR>25					
											02	NONE 0	STOP											
												PRVTE	SW NE									011		00
												PSNGR CAR		01	DRVR	INJC	63	M	OR-Y		000	000		00
																			OR<25					

091 PACIFIC HIGHWAY WEST

99W (Hwy 091) & SW Sunset Blvd
January 1, 2011 through December 31, 2015

SER# / INVEST / UNLOC?	SPEED	ALCOHOL	DRUGS	SCHOOL BUS	WORK ZONE	DATE / DAY/TIME / LAT/LONG	COUNTY / CITY / URBAN AREA	RD# CMPT/MILEPNT LRS	FC / MLG / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL TRAF-CNTL	OFFRD RNDBT DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE TRLR OWNER VEH TYPE	MOVE FROM TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
03115	N	N	N			06/12/2013	WASHINGTON	2 14		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											07
NONE						Wed 9A	SHERWOOD	MN 0	LEG TO ELWERT	SW		TRF SIGNAL	N	DRY	REAR		PRVTE	SW NE									000		00
							PORTLAND UA	16.66	SW PACIFIC HY 99W	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	F	UNK		043	000		07
No						*45 21 11.45 -122 52 3.31*		009100200S00	1															UNK					
																02	NONE 0	STOP											
																	PRVTE	SW NE									011		00
																	PSNGR CAR		01	DRVR	NONE	50	F	OR-Y		000	000		00
																								OR<25					
05133	N	N	N	N	N	09/13/2013	WASHINGTON	2 14		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											27,07
CITY						Fri 9P	SHERWOOD	MN 0	SW PACIFIC HY 99W	SW		TRF SIGNAL	N	DRY	REAR		PRVTE	SW NE									000		00
							PORTLAND UA	16.66	SW SUNSET BLVD	06	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	22	M	OR-Y		016,043,026	038		27,07
No						*45 21 11.45 -122 52 3.31*		009100200S00	1															OR<25					
																02	NONE 0	STOP											
																	PRVTE	SW NE									011		00
																	PSNGR CAR		01	DRVR	INJC	79	M	OR-Y		000	000		00
																								OR<25					
																			02	PSNG	INJC	60	F			000	000		00
																			03	PSNG	INJC	77	F			000	000		00
07058	N	N	N	N	N	12/04/2013	WASHINGTON	2 14		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										013	27,07
CITY						Wed 8A	SHERWOOD	MN 0	SW PACIFIC HY 99W	SW		TRF SIGNAL	N	DRY	REAR		PRVTE	SW NE									000		00
							PORTLAND UA	16.66	SW SUNSET BLVD	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	61	M	OR-Y		016,043,026	038		27,07
No						*45 21 11.45 -122 52 3.31*		009100200S00	1															OR<25					
																02	NONE 0	STOP											
																	PRVTE	SW NE									011	013	00
																	PSNGR CAR		01	DRVR	INJC	64	F	OR-Y		000	000		00
																								OR<25					
																03	NONE 0	STOP											
																	PRVTE	SW NE									022	013	00
																	PSNGR CAR		01	DRVR	NONE	20	F	OR-Y		000	000		00
																								OR<25					
																04	NONE 0	STOP											
																	PRVTE	SW NE									022		00
																	PSNGR CAR		01	DRVR	INJC	49	F	OR-Y		000	000		00
																								OR<25					
01988	N	N	N	N	N	03/05/2014	WASHINGTON	2 14		INTER	CROSS	N	N	CLD	S-1STOP	01	NONE 0	STRGHT											29
CITY						Wed 3P	SHERWOOD	MN 0	SW PACIFIC HY 99W	SW		TRF SIGNAL	N	WET	REAR		PRVTE	SW NE									000		00
							PORTLAND UA	16.66	SW SUNSET BLVD	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	51	M	SUSP		026	000		29
No						*45 21 11.45 -122 52 3.31*		009100200S00	1															OR<25					
																02	NONE 0	STOP											
																	PRVTE	SW NE									011		00
																	PSNGR CAR		01	DRVR	NONE	42	F	EXP		000	000		00
																								OR<25					

091 PACIFIC HIGHWAY WEST

99W (Hwy 091) & SW Sunset Blvd
January 1, 2011 through December 31, 2015

SER# / INVEST / UNLOC?	SP	ED	RL	SH	WR	CO	AK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# CMPT/MLG MILEPNT LRS	FC	CONN # FIRST STREET / SECOND STREET / INTERSECTION	SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
06054	N	N	N					10/15/2014	WASHINGTON	2 14				INTER	CROSS	N	N	RAIN	S-1STOP	01	NONE 0	STRGHT										29
NO RPT								Wed 7A	SHERWOOD	MN 0		SW PACIFIC HY 99W		SW		TRF SIGNAL	N	WET	REAR		PRVTE	SW NE								000	00
									PORTLAND UA	16.66		SW SUNSET BLVD		06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	00	M	OR-Y			000	29
No								*45 21 11.45 -122 52 3.31*		009100200S00			1																OR<25				
																				02	NONE 0	STOP										
																					PRVTE	SW NE									011	00
																					PSNGR CAR		01	DRVR	INJC	39	M	OR-Y		000	000	00
																												OR<25				
04990	N	N	N	N	N			07/21/2015	WASHINGTON	2 14				INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										07
CITY								Tue 4P	SHERWOOD	MN 0		SW ELWERT RD		SW		TRF SIGNAL	N	DRY	REAR		PRVTE	SW NE								000	00
									PORTLAND UA	16.66		SW PACIFIC HY 99W		06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	29	F	SUSP		043	000	07
No								*45 21 11.45 -122 52 3.31*		009100200S00			1																OR<25				
																				02	NONE 0	STOP										
																					PRVTE	SW NE									011	00
																					PSNGR CAR		01	DRVR	NONE	61	M	OR-Y		000	000	00
																												OR<25				
05463	N	N	N					09/04/2015	WASHINGTON	2 14				INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										29
NONE								Fri 11A	SHERWOOD	MN 0		SW PACIFIC HY 99W		SW		TRF SIGNAL	N	DRY	REAR		PRVTE	SW NE								000	00
									PORTLAND UA	16.66		SW SUNSET BLVD		06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	18	M	OR-Y		026	000	29
No								*45 21 11.45 -122 52 3.31*		009100200S00			1																OR<25				
																				02	NONE 0	STOP										
																					PRVTE	SW NE									011	00
																					PSNGR CAR		01	DRVR	NONE	00	M	OR-Y		000	000	00
																												OR<25				
07352	N	N	N	N	N			12/21/2012	WASHINGTON	2 14				INTER	CROSS	N	N	RAIN	O-1 L-TURN	01	NONE 0	TURN-L										02
CITY								Fri 7A	SHERWOOD	MN 0		SW PACIFIC HY 99W		CN		TRF SIGNAL	N	WET	TURN		PRVTE	NW NE								000	00
									PORTLAND UA	16.66		SW SUNSET BLVD		02	0		N	DAWN	INJ		PSNGR CAR		01	DRVR	INJC	18	F	OR-Y		004,028	000	02
No								*45 21 11.45 -122 52 3.31*		009100200S00			1																OR<25				
																				02	NONE 0	STRGHT										
																					PRVTE	SE NW									000	00
																					PSNGR CAR		01	DRVR	INJB	50	F	OR-Y		000	000	00
																												OR<25				
04827	N	N	N	N	N			08/24/2015	WASHINGTON	2 14				INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT										04
CITY								Mon 1P	SHERWOOD	MN 0		SW PACIFIC HY 99W		CN		TRF SIGNAL	N	DRY	TURN		PRVTE	SW NE								000	00
									PORTLAND UA	16.66		SW SUNSET BLVD		02	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJB	93	F	OR-Y		020	000	04
No								*45 21 11.45 -122 52 3.31*		009100200S00			1																OR<25				
																				02	NONE 0	TURN-L										
																					PRVTE	SE SW									000	00
																					PSNGR CAR		01	DRVR	INJB	35	F	OR-Y		000	000	00
																												OR<25				
																							02	PSNG	INJC	05	M			000	000	00

091 PACIFIC HIGHWAY WEST

99W (Hwy 091) & SW Sunset Blvd
January 1, 2011 through December 31, 2015

SER# / INVEST / UNLOC?	SPEED	ALCOHOL	DRUGS	SCHOOL BUS	WORK ZONE	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# CMPT/MLG MILEPNT LRS	FC	CONN # FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
03522	N	N	N			07/10/2012	WASHINGTON	2 14			INTER	CROSS	N	N	CLR	O-1 L-TURN	01	NONE 0	TURN-L											02
CITY						Tue 11P	SHERWOOD	MN 0		SW PACIFIC HY 99W	CN		L-GRN-SIG	N	DRY	TURN		PRVTE	NE SE									016	00
							PORTLAND UA	16.66		SW SUNSET BLVD	04	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	INJC	18	F	OR-Y		003,004	088		14
No						*45 21 11.45 -122 52 3.31*		009100200S00		1															OR<25					
																				02	PSNG	INJC	18	M			000	000		00
																	02	NONE 0	STRGHT											
																		PRVTE	SW NE									000		00
																		PSNGR CAR		01	DRVR	INJB	19	F	OR-Y		000	000		00
																									OR<25					
00574	N	N	N	N	N	01/31/2014	WASHINGTON	2 14			INTER	CROSS	N	N	CLD	O-1 L-TURN	01	NONE 0	STRGHT											04
CITY						Fri 2P	SHERWOOD	MN 0		SW PACIFIC HY 99W	CN		L-GRN-SIG	N	WET	TURN		PRVTE	SW NE									000		00
							PORTLAND UA	16.66		SW SUNSET BLVD	04	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	16	F	OR-Y		020	000		04
No						*45 21 11.45 -122 52 3.31*		009100200S00		1															OR<25					
																	02	NONE 0	TURN-L											
																		PRVTE	NE SE									000		00
																		PSNGR CAR		01	DRVR	NONE	37	F	OR-Y		000	000		00
																									OR<25					
02108	N	N	N			04/25/2011	WASHINGTON	1 14			INTER	CROSS	N	N	RAIN	S-1STOP	01	NONE 0	STRGHT											07
NONE						Mon 8A		MN 0			UN		TRF SIGNAL	N	WET	REAR		PRVTE	N S									000		00
							PORTLAND UA	16.67			06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	24	F	OR-Y		026	000		07
No						*45 21 11.85 -122 52 4.18*		009100100S00																	OR<25					
																				02	PSNG	NO<5	04	M			000	000		00
																	02	NONE 0	STOP											
																		PRVTE	N S									011		00
																		PSNGR CAR		01	DRVR	INJC	27	M	OR-Y		000	000		00
																									OR<25					
																				02	PSNG	INJC	26	F			000	000		00
02648	N	N	N	N	N	05/21/2011	WASHINGTON	1 14			INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											07
CITY						Sat 12P		MN 0			UN		TRF SIGNAL	N	DRY	REAR		PRVTE	NE SW									001		00
							PORTLAND UA	16.67			06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	17	F	OR-Y		026	000		07
No						*45 21 11.85 -122 52 4.18*		009100100S00																	OR>25					
																	02	NONE 0	STOP											
																		PRVTE	NE SW									011		00
																		PSNGR CAR		01	DRVR	INJC	21	F	OR-Y		000	000		00
																									OR<25					
																				02	PSNG	NO<5	01	M			000	000		00
03423	N	N	N			06/30/2011	WASHINGTON	1 14			INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 1	STRGHT											07
NONE						Thu 2P		MN 0			UN		TRF SIGNAL	N	DRY	REAR		PRVTE	NE SW									000		00
							PORTLAND UA	16.67			06	0		N	DAY	PDO		SEMI TOW		01	DRVR	NONE	00	M	OR-Y		026	000		07
No						*45 21 11.85 -122 52 4.18*		009100100S00																	OR>25					

091 PACIFIC HIGHWAY WEST — 99W (Hwy 091) & SW Sunset Blvd
January 1, 2011 through December 31, 2015

SER# / INVEST / UNLOC?	SPED	ALCOHOL	DRUGS	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# CMPT/MLG MILEPNT LRS	FC / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
																02	NONE 0 / PRVTE	STOP / NE SW									011		00
																	PSNGR CAR		01	DRVR	NONE	57	F	OR-Y / OR<25		000	000		00
04703	N	N	N			09/01/2011	WASHINGTON	1 14		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT												07
NONE						Thu 8A		MN 0		UN		TRF SIGNAL	N	DRY	REAR		PRVTE	NE SW									000		00
							PORTLAND UA	16.67		06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	43	F	OR-Y / OR>25		026	000		07
No						*45 21 11.85 -122 52 4.18*		009100100S00																						
																02	NONE 0 / PRVTE	STOP / NE SW									011		00
																	PSNGR CAR		01	DRVR	INJC	24	F	OTH-Y / N-RES		000	000		00
05620	N	N	N			10/11/2011	WASHINGTON	1 14		INTER	CROSS	N	N	RAIN	S-1STOP	01	NONE 0	STRGHT												07
NO RPT						Tue 5P		MN 0		UN		TRF SIGNAL	N	WET	REAR		PRVTE	NE SW									001		00
							PORTLAND UA	16.67		06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	20	M	OR-Y / OR>25		026	000		07
No						*45 21 11.85 -122 52 4.18*		009100100S00																						
																02	NONE 0 / PRVTE	STOP / NE SW									011		00
																	PSNGR CAR		01	DRVR	NONE	64	F	OR-Y / OR<25		000	000		00
00744	Y	N	N	N	N	02/11/2012	WASHINGTON	1 14		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											013	32,01
CITY						Sat 7P		MN 0		UN		TRF SIGNAL	N	DRY	REAR		PRVTE	NE SW									000		00
							PORTLAND UA	16.67		06	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	INJB	47	F	OR-Y / OR<25		052,047,026	000		32,01
No						*45 21 11.85 -122 52 4.18*		009100100S00																						
																02	NONE 0 / PRVTE	STOP / NE SW									011	013	00
																	PSNGR CAR		01	DRVR	NONE	42	M	OR-Y / OR<25		000	000		00
																03	NONE 0 / PRVTE	STOP / NE SW									022		00
																	PSNGR CAR		01	DRVR	NONE	65	M	OTH-Y / N-RES		000	000		00
																			02	PSNG	INJC	67	F			000	000		00
02509	N	N	N			05/15/2012	WASHINGTON	1 14		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT												32
CITY						Tue 11A		MN 0		NE		TRF SIGNAL	N	DRY	REAR		PRVTE	NE SW									000		00
							PORTLAND UA	16.67		06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJB	68	M	OR-Y / OR>25		052,026	000		32
No						*45 21 11.85 -122 52 4.18*		009100100S00																						
																02	NONE 0 / PRVTE	STOP / NE SW									011		00
																	PSNGR CAR		01	DRVR	INJC	66	M	OR-Y / OR>25		000	000		00

091 PACIFIC HIGHWAY WEST — 99W (Hwy 091) & SW Sunset Blvd
January 1, 2011 through December 31, 2015

SER# / INVEST / UNLOC?	SPEED	ALCOHOL	DRUGS	SCHL ZONE	WORK ZONE	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# CMPT/MLG MILEPNT LRS	FC	CONN # FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) LEGS (#LANES)	INT-REL TRAF-CNTL	OFFRD RNDBT DRVWY	WTHR SURF LIGHT	CRASH TYP COLL TYP SVRTY	V#	SPCL USE TRLR QTY OWNER VEH TYPE	MOVE FROM TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
06134	N	N	N	N	N	10/21/2013	WASHINGTON	1	14		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										002	27,07
CITY						Mon 4P		MN 0			NE		TRF SIGNAL	N	DRY	REAR		PRVTE	NE SW									000		00
							PORTLAND UA	16.67			06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	23	F	OR-Y		016,043,026	038	002	27,07
No						*45 21 11.85 -122 52 4.18*		009100100S00																	OR<25					
																				02	PSNG	NO<5	03	M			000	010		00
																	02	NONE 0	STOP											
																		PRVTE	NE SW									011		00
																		PSNGR CAR		01	DRVR	NONE	64	F	OR-Y		000	000		00
																									OR<25					
03548	N	N	N	N	N	06/25/2014	WASHINGTON	1	14		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 1	STRGHT											07
CITY						Wed 9A		MN 0			NE		TRF SIGNAL	N	DRY	REAR		PRVTE	NE SW									000		00
							PORTLAND UA	16.67			06	0		N	DAY	PDO		SEMI TOW		01	DRVR	NONE	63	M	OTH-Y		043,026	000		07
No						*45 21 11.85 -122 52 4.18*		009100100S00																	N-RES					
																	02	NONE 0	STOP											
																		PRVTE	NE SW									011		00
																		PSNGR CAR		01	DRVR	NONE	39	F	OR-Y		000	000		00
																									OR<25					
04877	N	N	N			09/09/2011	WASHINGTON	1	14		INTER	CROSS	N	N	CLR	O-OTHER	01	NONE 0	TURN-R											02
CITY						Fri 8P		MN 0			CN		TRF SIGNAL	N	DRY	TURN		PRVTE	NE NW									016		00
							PORTLAND UA	16.67			01	0		N	DARK	PDO		PSNGR CAR		01	DRVR	NONE	41	M	OTH-Y		028	000		02
No						*45 21 11.85 -122 52 4.18*		009100100S00																	N-RES					
																	02	NONE 0	TURN-L											
																		PRVTE	SW NW									000		00
																		PSNGR CAR		01	DRVR	NONE	35	M	NONE		000	000		00
																									OR<25					
00404	N	N	N	N	N	01/23/2015	WASHINGTON	1	14		INTER	CROSS	N	N	CLR	O-1 L-TURN	01	NONE 0	STRGHT											04
COUNTY						Fri 6A		MN 0			CN		TRF SIGNAL	N	DRY	TURN		PRVTE	N S									000		00
							PORTLAND UA	16.67			01	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	INJC	26	M	OR-Y		020	000		04
No						*45 21 11.85 -122 52 4.18*		009100100S00																	OR<25					
																	02	NONE 0	TURN-L											
																		PRVTE	S W									000		00
																		PSNGR CAR		01	DRVR	INJC	29	M	OR-Y		000	000		00
																									OR>25					
02406	N	N	N	N	N	05/10/2012	WASHINGTON	1	14		INTER	CROSS	N	N	CLR	O-1 L-TURN	01	NONE 0	STRGHT											02
CITY						Thu 8P		MN 0			CN		TRF SIGNAL	N	DRY	TURN		PRVTE	NW SE									000		00
							PORTLAND UA	16.67			03	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	51	F	OR-Y		000	000		00
No						*45 21 11.85 -122 52 4.18*		009100100S00																	OR<25					
																	02	UNKN 0	TURN-L											
																		UNKN	SE SW									000		00
																		UNKNOWN		01	DRVR	NONE	00	U	UNK		004,028	000		02
																									UNK					

091 PACIFIC HIGHWAY WEST

99W (Hwy 091) & SW Sunset Blvd
January 1, 2011 through December 31, 2015

SER# / INVEST / UNLOC?	SPEED	ALCOHOL	DRUGS	SCHL BUS	WORK ZONE	DATE / DAY/TIME / LAT/LONG	COUNTY / CITY / URBAN AREA	RD# CMPT/MLG MILEPNT LRS	FC / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD RNDBT / WTHR / DRVWY	SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
03825	N	N	N			07/08/2015	WASHINGTON	1 14		INTER	CROSS	N	N	CLR	BIKE	01	NONE 0	TURN-L										02
NONE						Wed 7P		MN 0		CN		TRF SIGNAL	N	DRY	TURN		PRVTE	SE SW									000	00
							PORTLAND UA	16.67		03	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	25	F	OTH-Y	027		000	02
No						*45 21 11.85 -122 52 4.18*		009100100S00																OR<25				
																		STRGHT	01	BIKE	INJB	23	M		02	000	035	00
																		NW SE										

CITY OF SHERWOOD, WASHINGTON COUNTY — 99W (Hwy 091) & SW Sunset Blvd

January 1, 2011 through December 31, 2015

SER# / INVEST / UNLOC?	SPEED	ALC	DRUGS	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	FC / DISTNC	CITY STREET / FIRST STREET / SECOND STREET / INTERSECTION SEQ #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
02740	N	N	N			05/20/2015	17	SW PACIFIC HY 99W	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											29
NONE						Wed 1P	0	SW SUNSET BLVD	SE		TRF SIGNAL	N	DRY	REAR		PRVTE	SE NW									000		00
No						*45 21 11.45*	*-122 52 3.31*	1	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	M	UNK	026		000		29
																							UNK					
															02	NONE 0	STOP											
																PRVTE	SE NW									011		00
																PSNGR CAR		01	DRVR	NONE	23	F	OR-Y	000		000		00
																							OR>25					

CITY OF SHERWOOD, WASHINGTON COUNTY

SW Sunset Blvd & SW Woodhaven Dr

January 1, 2011 through December 31, 2015

SER# / INVEST / UNLOC?	SPEED	ALC	DRUGS	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	FC / DISTNC	CITY STREET / FIRST STREET / SECOND STREET / INTERSECTION SEQ #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
00110	N	N	N	N	N	01/07/2012	16	SW SUNSET BLVD	INTER	CROSS	N	N	CLD	BIKE	01	NONE 0	TURN-L						OR-Y		052,004,027		001	32,02
CITY						Sat 10A	0	SW WOODHAVEN DR	CN		STOP SIGN	N	WET	TURN		PRVTE	N E						OR<25			000		00
No						*45 21 6.37 -122 51 57.09*		1	04	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJB	86	M				000		32,02
																	STRGHT S N	01	BIKE	INJB	41	M		02	000	000		00
05401	N	N	N			10/10/2012	16	SW SUNSET BLVD	INTER	CROSS	N	N	CLR	S-1TURN	01	NONE 0	STRGHT										004	10
NONE						Wed 2P	0	SW WOODHAVEN DR	CN		STOP SIGN	N	DRY	TURN		PRVTE	S N									000		00
No						*45 21 6.37 -122 51 57.09*		1	04	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	38	F	OR-Y OR<25		014,026	000		10
															02	NONE 0	TURN-R											
																PRVTE	S E									013	004	00
																PSNGR CAR		01	DRVR	NONE	41	F	OR-Y OR<25		000	000		00

CITY OF SHERWOOD, WASHINGTON COUNTY — SW Sunset Blvd & SW Timbrel Ln

January 1, 2011 through December 31, 2015

SER# / INVEST / UNLOC?	SPEED	ALC	DRUGS	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	FC / DISTNC	CITY STREET / FIRST STREET / SECOND STREET / INTERSECTION SEQ #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
03525	N	N	N	N	N	07/06/2011	16	SW SUNSET BLVD	INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										003	32,07
CITY						Wed 5P	0	SW TIMBREL LN	SE		STOP SIGN	N	DRY	REAR		PRVTE	SE NW									000		00
No						*45 21 0.37*	*-122 51 50.94*	1	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	44	M	OR-Y OR<25		052,043,026	088	003	32,07
															02	NONE 0	STOP									011		00
																PRVTE	SE NW									000		00
																PSNGR CAR		01	DRVR	NONE	32	F	OR-Y OR<25		000			
																		02	PSNG	NO<5	01	M			000			
07042	Y	N	N			12/12/2011	16	SW SUNSET BLVD	INTER	3-LEG	N	N	CLR	ANGL-OTH	01	NONE 0	TURN-L											03,01
NONE						Mon 7A	0	SW TIMBREL LN	CN		STOP SIGN	N	DRY	TURN		PRVTE	SW NW									001		00
No						*45 21 0.36*	*-122 51 50.92*	1	03	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	58	F	OR-Y OR<25		021,047	088		03,01
															02	NONE 0	TURN-L									000		00
																PRVTE	SE SW									000		00
																PSNGR CAR		01	DRVR	NONE	56	F	OR-Y OR<25		000			

CITY OF SHERWOOD, WASHINGTON COUNTY

SW Sunset Blvd & SW Ladd Hill Rd / SW Main St

January 1, 2011 through December 31, 2015

SER# / INVEST / UNLOC?	SPEED	ALC	DRUGS	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	FC / DISTNC	CITY STREET / FIRST STREET / SECOND STREET / INTERSECTION SEQ #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
06745	N	N	N			04/20/2013	16	SW LADD HILL RD	INTER	CROSS	N	Y	CLR	FIX OBJ	01	NONE 0	TURN-L										079	08
NO RPT						Sat 9P	0	SW SUNSET BLVD	S		STOP SIGN	N	DRY	FIX		PRVTE	E S									000	079	00
No	*45 20 59.00*					*-122 50 29.11*		1	05	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	INJB	18	M	OR-Y OR<25		001	000		08
01656	N	N	N	N	N	03/30/2015	16	SW MAIN ST	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											29
CITY						Mon 7P	0	SW SUNSET BLVD	E		STOP SIGN	N	DRY	REAR		PRVTE	E W									000		00
No	*45 20 59.00*					*-122 50 29.11*		1	06	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	22	F	OR-Y OR<25		026	000		29
															02	NONE 0	STOP											
																PRVTE	E W									011		00
																PSNGR CAR		01	DRVR	INJC	37	F	OR-Y OR<25		000	000		00
04602	N	N	N			08/29/2011	16	SW MAIN ST	INTER	CROSS	N	N	CLD	ANGL-OTH	01	NONE 0	STRGHT											32,02
CITY						Mon 7P	0	SW SUNSET BLVD	CN		STOP SIGN	N	DRY	ANGL		PRVTE	E W									015		00
No	*45 20 59.03*					*-122 50 29.11*		1	02	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	40	F	OR-Y OR<25		052,028	000		32,02
															02	NONE 0	STRGHT											
																PRVTE	S N									015		00
																PSNGR CAR		01	DRVR	INJC	23	M	OR-Y OR<25		000	000		00
03798	N	N	N	N	N	07/07/2015	16	SW MAIN ST	INTER	CROSS	N	N	CLR	O-1 L-TURN	01	NONE 0	STRGHT											02
CITY						Tue 5P	0	SW SUNSET BLVD	CN		STOP SIGN	N	DRY	TURN		PRVTE	W E									015		00
No	*45 20 59.00*					*-122 50 29.11*		1	03	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	50	F	OR-Y OR<25		000	000		00
															02	NONE 0	TURN-L											
																PRVTE	E S									015		00
																PSNGR CAR		01	DRVR	NONE	61	F	OR-Y OR<25		004,028	000		02

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

SW Sunset Blvd / SW Baker Rd/ SW Murdock Rd
January 1, 2011 through December 31, 2015

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR:														
TOTAL														
FINAL TOTAL														

Disclaimer: A higher number of crashes may be reported as of 2011 compared to prior years. This does not reflect an increase in annual crashes. The higher numbers result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics.

091 PACIFIC HIGHWAY WEST

Pacific Hwy 99W (091) & Brookman Rd / Chapman Rd
January 1, 2010 through December 31, 2014

SER# / INVEST / UNLOC?	SPEC DRK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# FC CMPT/MLG MILEPNT LRS	CONN # FIRST STREET SECOND STREET INTERSECTION SEQ#	RD CHAR DIRECT LOCTN	INT-TYP (MEDIAN) LEGS (#LANES)	INT-REL TRAF-CNTL	OFFRD RNDBT DRVWY	WTHR SURF LIGHT	CRASH TYP COLL TYP SVRTY	V#	SPCL USE TRLR QTY OWNER VEH TYPE	MOVE FROM TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
04896	N N N	09/15/2012	WASHINGTON	2 14		INTER	CROSS	N	N	CLR	PRKD MV	01	NONE 0	TURN-R											08
NO RPT		Sat 11A		MN 0		N		STOP SIGN	N	DRY	REAR		PRVTE	W S										015		00
			PORTLAND UA	17.46		05	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	63	M	OR-Y		002,080,081	000		08
No		*45 20 32.90 -122 52 24.87*		009100200S00																OR<25					
												02	NONE 0	PRKD-P											
													PRVTE	N S									008		00
													PSNGR CAR												
07009	N N N	12/08/2012	WASHINGTON	2 14		INTER	CROSS	N	N	CLR	S-1TURN	01	NONE 0	TURN-L											08
NONE		Sat 1P		MN 0		CN		ONE-WAY	N	DRY	TURN		UNKN	S W									000		00
			PORTLAND UA	17.46		01	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	F	OTH-Y		006	000		08
No		*45 20 32.90 -122 52 24.87*		009100200S00																UNK					
												02	NONE 0	STRGHT											
													PRVTE	S N									000		00
													PSNGR CAR		01	DRVR	NONE	55	F	OR-Y		000	000		00
																				OR<25					
05349	N N N	09/22/2013	WASHINGTON	2 14		INTER	CROSS	N	N	RAIN	ANGL-OTH	01	NONE 0	STRGHT											02
NONE		Sun 11A		MN 0		CN		STOP SIGN	N	WET	ANGL		PRVTE	E W									000		00
			PORTLAND UA	17.46		02	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	F	OR-Y		028	000		02
No		*45 20 32.90 -122 52 24.87*		009100200S00																OR>25					
												02	NONE 0	STRGHT											
													PRVTE	S N									000		00
													PSNGR CAR		01	DRVR	NONE	73	F	OR-Y		000	000		00
																				OR<25					
															02	PSNG	NO<5	03	F			000	000		00
03099	N N N	06/03/2014	WASHINGTON	2 14		INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 0	TURN-L											08
NO RPT		Tue 5P		MN 0		CN		STOP SIGN	N	DRY	TURN		PRVTE	W N									000		00
			PORTLAND UA	17.46		02	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	F	UNK		001	000		08
No		*45 20 32.90 -122 52 24.87*		009100200S00																OR<25					
												02	NONE 0	STRGHT											
													PRVTE	S N									000		00
													PSNGR CAR		01	DRVR	NONE	32	F	OTH-Y		000	000		00
																				N-RES					
05143	N N N	09/30/2010	WASHINGTON	1 14		INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT										010,079	02
COUNTY		Thu 5P		MN 0		CN		STOP SIGN	N	DRY	ANGL		PRVTE	N S									000	010,079	00
			PORTLAND UA	17.47		01	0		N	DAY	INJ		SEMI TOW		01	DRVR	INJA	52	M	OR-Y		000	000		00
No		*45 20 32.89 -122 52 26.13*		009100100S00																OR<25					
												02	NONE 0	STRGHT											
													PRVTE	E W									015		00
													PSNGR CAR		01	DRVR	INJB	19	F	OR-Y		028	000		02
																				OR<25					

091 PACIFIC HIGHWAY WEST

Pacific Hwy 99W (091) & Brookman Rd / Chapman Rd
January 1, 2010 through December 31, 2014

SER# / INVEST / UNLOC?	SPEED	ALCOHOL	DRUGS	SCHL ZONE	WORK ZONE	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# CMPT/MILEPNT LRS	FC / MLG / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
07267	N	N	N	N	N	12/17/2012	WASHINGTON	1 14		INTER	CROSS	N	N	RAIN	ANGL-OTH	01	NONE 0	STRGHT											02
COUNTY						Mon 4P		MN 0		CN		STOP SIGN	N	WET	ANGL		PRVTE	N S									000		00
							PORTLAND UA	17.47		01	0		N	DUSK	INJ		PSNGR CAR		01	DRVR	INJC	32	F	OR-Y		000	000		00
No						*45 20 32.89 -122 52 26.13*		009100100S00																	OR<25					
																02	NONE 0	STRGHT											
																	PRVTE	E W									015	013	00
																	PSNGR CAR		01	DRVR	INJB	20	F	OR-Y		028	000		02
																								OR<25					
																			02	PSNG	INJB	19	F			000	000		00
																03	NONE 0	STOP											
																	PRVTE	W E									022		00
																	PSNGR CAR		01	DRVR	NONE	32	F	OR-Y		000	000		00
																								OR>25					
07202	N	N	N	N	N	12/01/2014	WASHINGTON	1 14		INTER	CROSS	N	N	CLD	ANGL-OTH	01	NONE 0	STRGHT											02
COUNTY						Mon 10A		MN 0		CN		STOP SIGN	N	DRY	ANGL		PRVTE	W E									015		00
							PORTLAND UA	17.47		03	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJA	56	F	OR-Y		028	000		02
No						*45 20 32.89 -122 52 26.13*		009100100S00																	OR>25					
																02	NONE 0	STRGHT											
																	PRVTE	N S									000		00
																	PSNGR CAR		01	DRVR	NONE	29	F	OR-Y		000	000		00
																								OR<25					
																			02	PSNG	INJC	00	F			000	000		00
00180	N	N	N	N	N	01/11/2014	WASHINGTON	1 14		INTER	CROSS	N	N	RAIN	ANGL-OTH	01	NONE 0	STRGHT											02
COUNTY						Sat 11P		MN 0		CN		STOP SIGN	N	WET	ANGL		PRVTE	S N									000		00
							PORTLAND UA	17.47		04	0		N	DARK	INJ		PSNGR CAR		01	DRVR	INJC	30	F	OR-Y		000	000		00
No						*45 20 32.89 -122 52 26.13*		009100100S00																	OR<25					
																02	NONE 0	STRGHT											
																	PRVTE	W E									015		00
																	PSNGR CAR		01	DRVR	NONE	16	M	OR-Y		028	000		02
																								OR<25					

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
COUNTY ROAD CRASH LISTING

WASHINGTON COUNTY

Old Pacific Hwy 99W & Brookman Rd
January 1, 2010 through December 31, 2014

SER# / INVEST / UNLOC?	SPED	ALCS	DRUG	SWHK	DATE / DAY/TIME / *LAT/LONG*	MILEPNT / DIST FROM / INTERSECT	COUNTY ROADS FIRST STREET / SECOND STREET / INTERSECTION SEQ #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
06795	N	N	N	N N	12/1/2011		SW BROOKMAN RD	INTER	CROSS	N	N	CLR	O-1 L-TURN	01	NONE 0	TURN-L											02
COUNTY					Thu 6A	0	SW OLD PACIFIC HY 99W	CN		STOP SIGN	N	DRY	TURN		PRVTE	W NE									000		00
No	*45 20 32.75*				*-122 52 16.07*		1	02	0		N	DARK	PDO		PSNGR CAR		01	DRVR	NONE	41	M	OR-Y		004,028	000		02
																						OR<25					
														02	NONE 0	STRGHT											
															PRVTE	E W									000		00
															PSNGR CAR		01	DRVR	NONE	44	M	OR-Y		000	000		00
																						OR<25					

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

Middleton Rd & Brookman Rd
January 1, 2010 through December 31, 2014

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR:														
TOTAL														
FINAL TOTAL														

Disclaimer: A higher number of crashes may be reported as of 2011 compared to prior years. This does not reflect an increase in annual crashes. The higher numbers result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics.

WASHINGTON COUNTY

Oberst Rd & Brookman Rd

January 1, 2010 through December 31, 2014

SER# / INVEST / UNLOC?	SPEED	ALCHL	DRUGS	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	MILEPNT / DIST FROM / INTERSECT	COUNTY ROADS FIRST STREET / SECOND STREET / INTERSECTION SEQ #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
04075	N	N	N			8/3/2011		SW BROOKMAN RD	INTER	3-LEG	N	N	CLR	O-OTHER	01	NONE 0	BACK										079,001	10
NO RPT						Wed 2P	0	SW OBERST RD	S		STOP SIGN	N	UNK	BACK		PRVTE	N S									000		00
No						*45 20 32.60 -122 51 24.80*		1	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	66	M	OR-Y OR<25		011	000		10
															02	NONE 0	STRGHT											
																PRVTE	S N									000	079	00
																MTRCYCLE		01	DRVR	INJC	36	M	OR-Y OR<25		000	000	001	00
06367	N	N	N			11/17/2010		SW BROOKMAN RD	INTER	3-LEG	N	N	CLR	S-STRGHT	01	NONE 0	STRGHT										079,010	32,07
CITY						Wed 7A	0	SW OBERST RD	W		UNKNOWN	N	DRY	REAR		PRVTE	W E									000		00
No						*45 20 32.60 -122 51 24.81*		1	06	0		N	DAWN	INJ		PSNGR CAR		01	DRVR	NONE	16	F	OR-Y OR<25		052,042	000		32,07
															02	NONE 0	TURN-R											
																PRVTE	W S									000	079,010	00
																PSNGR CAR		01	DRVR	INJC	55	F	OR-Y OR<25		000	000		00

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

Ladd Hill Rd & Brookman Rd
January 1, 2010 through December 31, 2014

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR:														
TOTAL														
FINAL TOTAL														

Disclaimer: A higher number of crashes may be reported as of 2011 compared to prior years. This does not reflect an increase in annual crashes. The higher numbers result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics.

ACTION CODE TRANSLATION LIST

ACTION CODE	SHORT DESCRIPTION	LONG DESCRIPTION
000	NONE	NO ACTION OR NON-WARRANTED
001	SKIDDED	SKIDDED
002	ON/OFF V	GETTING ON OR OFF STOPPED OR PARKED VEHICLE
003	LOAD OVR	OVERHANGING LOAD STRUCK ANOTHER VEHICLE, ETC.
006	SLOW DN	SLOWED DOWN
007	AVOIDING	AVOIDING MANEUVER
008	PAR PARK	PARALLEL PARKING
009	ANG PARK	ANGLE PARKING
010	INTERFERE	PASSENGER INTERFERING WITH DRIVER
011	STOPPED	STOPPED IN TRAFFIC NOT WAITING TO MAKE A LEFT TURN
012	STP/L TRN	STOPPED BECAUSE OF LEFT TURN SIGNAL OR WAITING, ETC.
013	STP TURN	STOPPED WHILE EXECUTING A TURN
014	EMR V PKD	EMERGENCY VEHICLE LEGALLY PARKED IN THE ROADWAY
015	GO A/STOP	PROCEED AFTER STOPPING FOR A STOP SIGN/FLASHING RED.
016	TRN A/RED	TURNED ON RED AFTER STOPPING
017	LOSTCTRL	LOST CONTROL OF VEHICLE
018	EXIT DWY	ENTERING STREET OR HIGHWAY FROM ALLEY OR DRIVEWAY
019	ENTR DWY	ENTERING ALLEY OR DRIVEWAY FROM STREET OR HIGHWAY
020	STR ENTR	BEFORE ENTERING ROADWAY, STRUCK PEDESTRIAN, ETC. ON SIDEWALK OR SHOULDER
021	NO DRVR	CAR RAN AWAY - NO DRIVER
022	PREV COL	STRUCK, OR WAS STRUCK BY, VEHICLE OR PEDESTRIAN IN PRIOR COLLISION BEFORE ACC. STABILIZED
023	STALLED	VEHICLE STALLED OR DISABLED
024	DRVR DEAD	DEAD BY UNASSOCIATED CAUSE
025	FATIGUE	FATIGUED, SLEEPY, ASLEEP
026	SUN	DRIVER BLINDED BY SUN
027	HDLGHTS	DRIVER BLINDED BY HEADLIGHTS
028	ILLNESS	PHYSICALLY ILL
029	THRU MED	VEHICLE CROSSED, PLUNGED OVER, OR THROUGH MEDIAN BARRIER
030	PURSUIT	PURSUING OR ATTEMPTING TO STOP A VEHICLE
031	PASSING	PASSING SITUATION
032	PRKOFFRD	VEHICLE PARKED BEYOND CURB OR SHOULDER
033	CROS MED	VEHICLE CROSSED EARTH OR GRASS MEDIAN
034	X N/SGNL	CROSSING AT INTERSECTION - NO TRAFFIC SIGNAL PRESENT
035	X W/ SGNL	CROSSING AT INTERSECTION - TRAFFIC SIGNAL PRESENT
036	DIAGONAL	CROSSING AT INTERSECTION - DIAGONALLY
037	BTWN INT	CROSSING BETWEEN INTERSECTIONS
038	DISTRACT	DRIVER'S ATTENTION DISTRACTED
039	W/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER WITH TRAFFIC
040	A/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER FACING TRAFFIC
041	W/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT WITH TRAFFIC
042	A/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT FACING TRAFFIC
043	PLAYINRD	PLAYING IN STREET OR ROAD
044	PUSH MV	PUSHING OR WORKING ON VEHICLE IN ROAD OR ON SHOULDER
045	WORK ON	WORKING IN ROADWAY OR ALONG SHOULDER
046	W/ TRAFIC	NON-MOTORIST WALKING, RUNNING, RIDING, ETC. WITH TRAFFIC
047	A/ TRAFIC	NON-MOTORIST WALKING, RUNNING, RIDING, ETC. FACING TRAFFIC
050	LAY ON RD	STANDING OR LYING IN ROADWAY
051	ENT OFFRD	ENTERING / STARTING IN TRAFFIC LANE FROM OFF ROAD
052	MERGING	MERGING
055	SPRAY	BLINDED BY WATER SPRAY

ACTION CODE TRANSLATION LIST

ACTION CODE	SHORT DESCRIPTION	LONG DESCRIPTION
088	OTHER	OTHER ACTION
099	UNK	UNKNOWN ACTION

CAUSE CODE TRANSLATION LIST

CAUSE CODE	SHORT DESCRIPTION	LONG DESCRIPTION
00	NO CODE	NO CAUSE ASSOCIATED AT THIS LEVEL
01	TOO-FAST	TOO FAST FOR CONDITIONS (NOT EXCEED POSTED SPEED
02	NO-YIELD	DID NOT YIELD RIGHT-OF-WAY
03	PAS-STOP	PASSED STOP SIGN OR RED FLASHER
04	DIS SIG	DISREGARDED TRAFFIC SIGNAL
05	LEFT-CTR	DROVE LEFT OF CENTER ON TWO-WAY ROAD; STRADDLING
06	IMP-OVER	IMPROPER OVERTAKING
07	TOO-CLOS	FOLLOWED TOO CLOSELY
08	IMP-TURN	MADE IMPROPER TURN
09	DRINKING	ALCOHOL OR DRUG INVOLVED
10	OTHR-IMP	OTHER IMPROPER DRIVING
11	MECH-DEF	MECHANICAL DEFECT
12	OTHER	OTHER (NOT IMPROPER DRIVING)
13	IMP LN C	IMPROPER CHANGE OF TRAFFIC LANES
14	DIS TCD	DISREGARDED OTHER TRAFFIC CONTROL DEVICE
15	WRNG WAY	WRONG WAY ON ONE-WAY ROAD; WRONG SIDE DIVIDED RO
16	FATIGUE	DRIVER DROWSY/FATIGUED/SLEEPY
17	ILLNESS	PHYSICAL ILLNESS
18	IN RDWY	NON-MOTORIST ILLEGALLY IN ROADWAY
19	NT VISBL	NON-MOTORIST NOT VISIBLE; NON-REFLECTIVE CLOTHIN
20	IMP PKNG	VEHICLE IMPROPERLY PARKED
21	DEF STER	DEFECTIVE STEERING MECHANISM
22	DEF BRKE	INADEQUATE OR NO BRAKES
24	LOADSHFT	VEHICLE LOST LOAD OR LOAD SHIFTED
25	TIREFAIL	TIRE FAILURE
26	PHANTOM	PHANTOM / NON-CONTACT VEHICLE
27	INATTENT	INATTENTION
28	NM INATT	NON-MOTORIST INATTENTION
29	F AVOID	FAILED TO AVOID VEHICLE AHEAD
30	SPEED	DRIVING IN EXCESS OF POSTED SPEED
31	RACING	SPEED RACING (PER PAR)
32	CARELESS	CARELESS DRIVING (PER PAR)
33	RECKLESS	RECKLESS DRIVING (PER PAR)
34	AGGRESV	AGGRESSIVE DRIVING (PER PAR)
35	RD RAGE	ROAD RAGE (PER PAR)
40	VIEW OBS	VIEW OBSCURED
50	USED MDN	IMPROPER USE OF MEDIAN OR SHOULDER
51	FAIL LN	FAILED TO MAINTAIN LANE
52	OFF RD	RAN OFF ROAD

COLLISION TYPE CODE TRANSLATION LIST

COLL CODE	SHORT DESCRIPTION	LONG DESCRIPTION
&	OTH	MISCELLANEOUS
-	BACK	BACKING
0	PED	PEDESTRIAN
1	ANGL	ANGLE
2	HEAD	HEAD-ON
3	REAR	REAR-END
4	SS-M	SIDESWIPE - MEETING
5	SS-O	SIDESWIPE - OVERTAKING
6	TURN	TURNING MOVEMENT
7	PARK	PARKING MANEUVER
8	NCOL	NON-COLLISION
9	FIX	FIXED OBJECT OR OTHER OBJECT

CRASH TYPE CODE TRANSLATION LIST

CRASH TYPE	SHORT DESCRIPTION	LONG DESCRIPTION
&	OVERTURN	OVERTURNED
0	NON-COLL	OTHER NON-COLLISION
1	OTH RDWY	MOTOR VEHICLE ON OTHER ROADWAY
2	PRKD MV	PARKED MOTOR VEHICLE
3	PED	PEDESTRIAN
4	TRAIN	RAILWAY TRAIN
6	BIKE	PEDALCYCLIST
7	ANIMAL	ANIMAL
8	FIX OBJ	FIXED OBJECT
9	OTH OBJ	OTHER OBJECT
A	ANGL-STP	ENTERING AT ANGLE - ONE VEHICLE STOPPED
B	ANGL-OTH	ENTERING AT ANGLE - ALL OTHERS
C	S-STRGHT	FROM SAME DIRECTION - BOTH GOING STRAIGHT
D	S-1TURN	FROM SAME DIRECTION - ONE TURN, ONE STRAIGHT
E	S-1STOP	FROM SAME DIRECTION - ONE STOPPED
F	S-OTHER	FROM SAME DIRECTION-ALL OTHERS, INCLUDING PARKING
G	O-STRGHT	FROM OPPOSITE DIRECTION - BOTH GOING STRAIGHT
H	O-1 L-TURN	FROM OPPOSITE DIRECTION-ONE LEFT TURN,ONE STRAIGHT
I	O-1STOP	FROM OPPOSITE DIRECTION - ONE STOPPED
J	O-OTHER	FROM OPPOSITE DIRECTION-ALL OTHERS INCL. PARKING

DRIVER LICENSE CODE TRANSLATION LIST

LIC CODE	SHORT DESC	LONG DESCRIPTION
0	NONE	NOT LICENSED (HAD NEVER BEEN LICENSED)
1	OR-Y	VALID OREGON LICENSE
2	OTH-Y	VALID LICENSE, OTHER STATE OR COUNTRY
3	SUSP	SUSPENDED/REVOKED

DRIVER RESIDENCE CODE TRANSLATION LIST

RES CODE	SHORT DESC	LONG DESCRIPTION
1	OR<25	OREGON RESIDENT WITHIN 25 MILE OF HOME
2	OR>25	OREGON RESIDENT 25 OR MORE MILES FROM HOME
3	OR-?	OREGON RESIDENT - UNKNOWN DISTANCE FROM HOME
4	N-RES	NON-RESIDENT
9	UNK	UNKNOWN IF OREGON RESIDENT

ERROR CODE TRANSLATION LIST

ERROR CODE	SHORT DESCRIPTION	FULL DESCRIPTION
000	NONE	NO ERROR
001	WIDE TRN	WIDE TURN
002	CUT CORN	CUT CORNER ON TURN
003	FAIL TRN	FAILED TO OBEY MANDATORY TRAFFIC TURN SIGNAL, SIGN OR LANE MARKINGS
004	L IN TRF	LEFT TURN IN FRONT OF ONCOMING TRAFFIC
005	L PROHIB	LEFT TURN WHERE PROHIBITED
006	FRM WRNG	TURNED FROM WRONG LANE
007	TO WRONG	TURNED INTO WRONG LANE
008	ILLEG U	U-TURNED ILLEGALLY
009	IMP STOP	IMPROPERLY STOPPED IN TRAFFIC LANE
010	IMP SIG	IMPROPER SIGNAL OR FAILURE TO SIGNAL
011	IMP BACK	BACKING IMPROPERLY (NOT PARKING)
012	IMP PARK	IMPROPERLY PARKED
013	UNPARK	IMPROPER START LEAVING PARKED POSITION
014	IMP STRT	IMPROPER START FROM STOPPED POSITION
015	IMP LGHT	IMPROPER OR NO LIGHTS (VEHICLE IN TRAFFIC)
016	INATTENT	INATTENTION (FAILURE TO DIM LIGHTS PRIOR TO 4/1/97)
017	UNSF VEH	DRIVING UNSAFE VEHICLE (NO OTHER ERROR APPARENT)
018	OTH PARK	ENTERING/EXITING PARKED POSITION W/ INSUFFICIENT CLEARANCE; OTHER IMPROPER PARKING MANEUVER
019	DIS DRIV	DISREGARDED OTHER DRIVER'S SIGNAL
020	DIS SGNL	DISREGARDED TRAFFIC SIGNAL
021	RAN STOP	DISREGARDED STOP SIGN OR FLASHING RED
022	DIS SIGN	DISREGARDED WARNING SIGN, FLARES OR FLASHING AMBER
023	DIS OFCR	DISREGARDED POLICE OFFICER OR FLAGMAN
024	DIS EMER	DISREGARDED SIREN OR WARNING OF EMERGENCY VEHICLE
025	DIS RR	DISREGARDED RR SIGNAL, RR SIGN, OR RR FLAGMAN
026	REAR-END	FAILED TO AVOID STOPPED OR PARKED VEHICLE AHEAD OTHER THAN SCHOOL BUS
027	BIKE ROW	DID NOT HAVE RIGHT-OF-WAY OVER PEDALCYCLIST
028	NO ROW	DID NOT HAVE RIGHT-OF-WAY
029	PED ROW	FAILED TO YIELD RIGHT-OF-WAY TO PEDESTRIAN
030	PAS CURV	PASSING ON A CURVE
031	PAS WRNG	PASSING ON THE WRONG SIDE
032	PAS TANG	PASSING ON STRAIGHT ROAD UNDER UNSAFE CONDITIONS
033	PAS X-WK	PASSED VEHICLE STOPPED AT CROSSWALK FOR PEDESTRIAN
034	PAS INTR	PASSING AT INTERSECTION
035	PAS HILL	PASSING ON CREST OF HILL
036	N/PAS ZN	PASSING IN "NO PASSING" ZONE
037	PAS TRAF	PASSING IN FRONT OF ONCOMING TRAFFIC
038	CUT-IN	CUTTING IN (TWO LANES - TWO WAY ONLY)
039	WRNGSIDE	DRIVING ON WRONG SIDE OF THE ROAD (2-WAY UNDIVIDED ROADWAYS)
040	THRU MED	DRIVING THROUGH SAFETY ZONE OR OVER ISLAND
041	F/ST BUS	FAILED TO STOP FOR SCHOOL BUS

ERROR CODE TRANSLATION LIST

ERROR CODE	SHORT DESCRIPTION	FULL DESCRIPTION
042	F/SLO MV	FAILED TO DECREASE SPEED FOR SLOWER MOVING VEHICLE
043	TOO CLOSE	FOLLOWING TOO CLOSELY (MUST BE ON OFFICER'S REPORT)
044	STRDL LN	STRADDLING OR DRIVING ON WRONG LANES
045	IMP CHG	IMPROPER CHANGE OF TRAFFIC LANES
046	WRNG WAY	WRONG WAY ON ONE-WAY ROADWAY; WRONG SIDE DIVIDED ROAD
047	BASCRULE	DRIVING TOO FAST FOR CONDITIONS (NOT EXCEEDING POSTED SPEED)
048	OPN DOOR	OPENED DOOR INTO ADJACENT TRAFFIC LANE
049	IMPEDING	IMPEDING TRAFFIC
050	SPEED	DRIVING IN EXCESS OF POSTED SPEED
051	RECKLESS	RECKLESS DRIVING (PER PAR)
052	CARELESS	CARELESS DRIVING (PER PAR)
053	RACING	SPEED RACING (PER PAR)
054	X N/SGNL	CROSSING AT INTERSECTION, NO TRAFFIC SIGNAL PRESENT
055	X W/SGNL	CROSSING AT INTERSECTION, TRAFFIC SIGNAL PRESENT
056	DIAGONAL	CROSSING AT INTERSECTION - DIAGONALLY
057	BTWN INT	CROSSING BETWEEN INTERSECTIONS
059	W/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER WITH TRAFFIC
060	A/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER FACING TRAFFIC
061	W/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT WITH TRAFFIC
062	A/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT FACING TRAFFIC
063	PLAYINRD	PLAYING IN STREET OR ROAD
064	PUSH MV	PUSHING OR WORKING ON VEHICLE IN ROAD OR ON SHOULDER
065	WORK IN RD	WORKING IN ROADWAY OR ALONG SHOULDER
070	LAY ON RD	STANDING OR LYING IN ROADWAY
071	NM IMP USE	IMPROPER USE OF TRAFFIC LANE BY NON-MOTORIST
073	ELUDING	ELUDING / ATTEMPT TO ELUDE
079	F NEG CURV	FAILED TO NEGOTIATE A CURVE
080	FAIL LN	FAILED TO MAINTAIN LANE
081	OFF RD	RAN OFF ROAD
082	NO CLEAR	DRIVER MISJUDGED CLEARANCE
083	OVRSTEER	OVER-CORRECTING
084	NOT USED	CODE NOT IN USE
085	OVRLOAD	OVERLOADING OR IMPROPER LOADING OF VEHICLE WITH CARGO OR PASSENGERS
097	UNA DIS TC	UNABLE TO DETERMINE WHICH DRIVER DISREGARDED TRAFFIC CONTROL DEVICE

EVENT CODE TRANSLATION LIST

EVENT CODE	SHORT DESCRIPTION	LONG DESCRIPTION
001	FEL/JUMP	OCCUPANT FELL, JUMPED OR WAS EJECTED FROM MOVING VEHICLE
002	INTERFER	PASSENGER INTERFERED WITH DRIVER
003	BUG INTF	ANIMAL OR INSECT IN VEHICLE INTERFERED WITH DRIVER
004	INDRCT PED	PEDESTRIAN INDIRECTLY INVOLVED (NOT STRUCK)
005	SUB-PED	"SUB-PED": PEDESTRIAN INJURED SUBSEQUENT TO COLLISION, ETC.
006	INDRCT BIK	PEDALCYCLIST INDIRECTLY INVOLVED (NOT STRUCK)
007	HITCHIKR	HITCHHIKER (SOLICITING A RIDE)
008	PSNGR TOW	PASSENGER OR NON-MOTORIST BEING TOWED OR PUSHED ON CONVEYANCE
009	ON/OFF V	GETTING ON/OFF STOPPED/PARKED VEHICLE (OCCUPANTS ONLY; MUST HAVE PHYSICAL CONTACT W/ VEHI(
010	SUB OTRN	OVERTURNED AFTER FIRST HARMFUL EVENT
011	MV PUSHD	VEHICLE BEING PUSHED
012	MV TOWED	VEHICLE TOWED OR HAD BEEN TOWING ANOTHER VEHICLE
013	FORCED	VEHICLE FORCED BY IMPACT INTO ANOTHER VEHICLE, PEDALCYCLIST OR PEDESTRIAN
014	SET MOTN	VEHICLE SET IN MOTION BY NON-DRIVER (CHILD RELEASED BRAKES, ETC.)
015	RR ROW	AT OR ON RAILROAD RIGHT-OF-WAY (NOT LIGHT RAIL)
016	LT RL ROW	AT OR ON LIGHT-RAIL RIGHT-OF-WAY
017	RR HIT V	TRAIN STRUCK VEHICLE
018	V HIT RR	VEHICLE STRUCK TRAIN
019	HIT RR CAR	VEHICLE STRUCK RAILROAD CAR ON ROADWAY
020	JACKNIFE	JACKKNIFE; TRAILER OR TOWED VEHICLE STRUCK TOWING VEHICLE
021	TRL OTRN	TRAILER OR TOWED VEHICLE OVERTURNED
022	CN BROKE	TRAILER CONNECTION BROKE
023	DETACH TRL	DETACHED TRAILING OBJECT STRUCK OTHER VEHICLE, NON-MOTORIST, OR OBJECT
024	V DOOR OPN	VEHICLE DOOR OPENED INTO ADJACENT TRAFFIC LANE
025	WHEELOFF	WHEEL CAME OFF
026	HOOD UP	HOOD FLEW UP
028	LOAD SHIFT	LOST LOAD, LOAD MOVED OR SHIFTED
029	TIREFAIL	TIRE FAILURE
030	PET	PET: CAT, DOG AND SIMILAR
031	LVSTOCK	STOCK: COW, CALF, BULL, STEER, SHEEP, ETC.
032	HORSE	HORSE, MULE, OR DONKEY
033	HRSE&RID	HORSE AND RIDER
034	GAME	WILD ANIMAL, GAME (INCLUDES BIRDS; NOT DEER OR ELK)
035	DEER ELK	DEER OR ELK, WAPITI
036	ANML VEH	ANIMAL-DRAWN VEHICLE
037	CULVERT	CULVERT, OPEN LOW OR HIGH MANHOLE
038	ATENUATN	IMPACT ATTENUATOR
039	PK METER	PARKING METER
040	CURB	CURB (ALSO NARROW SIDEWALKS ON BRIDGES)
041	JIGGLE	JIGGLE BAR OR TRAFFIC SNAKE FOR CHANNELIZATION
042	GDRL END	LEADING EDGE OF GUARDRAIL
043	GARDRAIL	GUARD RAIL (NOT METAL MEDIAN BARRIER)
044	BARRIER	MEDIAN BARRIER (RAISED OR METAL)
045	WALL	RETAINING WALL OR TUNNEL WALL
046	BR RAIL	BRIDGE RAILING OR PARAPET (ON BRIDGE OR APPROACH)
047	BR ABUTMNT	BRIDGE ABUTMENT (INCLUDED "APPROACH END" THRU 2013)
048	BR COLMN	BRIDGE PILLAR OR COLUMN
049	BR GIRDR	BRIDGE GIRDER (HORIZONTAL BRIDGE STRUCTURE OVERHEAD)
050	ISLAND	TRAFFIC RAISED ISLAND
051	GORE	GORE
052	POLE UNK	POLE - TYPE UNKNOWN
053	POLE UTL	POLE - POWER OR TELEPHONE
054	ST LIGHT	POLE - STREET LIGHT ONLY
055	TRF SGNL	POLE - TRAFFIC SIGNAL AND PED SIGNAL ONLY
056	SGN BRDG	POLE - SIGN BRIDGE
057	STOPSIGN	STOP OR YIELD SIGN
058	OTH SIGN	OTHER SIGN, INCLUDING STREET SIGNS
059	HYDRANT	HYDRANT

EVENT CODE TRANSLATION LIST

EVENT CODE	SHORT DESCRIPTION	LONG DESCRIPTION
060	MARKER	DELINEATOR OR MARKER (REFLECTOR POSTS)
061	MAILBOX	MAILBOX
062	TREE	TREE, STUMP OR SHRUBS
063	VEG OHED	TREE BRANCH OR OTHER VEGETATION OVERHEAD, ETC.
064	WIRE/CBL	WIRE OR CABLE ACROSS OR OVER THE ROAD
065	TEMP SGN	TEMPORARY SIGN OR BARRICADE IN ROAD, ETC.
066	PERM SGN	PERMANENT SIGN OR BARRICADE IN/OFF ROAD
067	SLIDE	SLIDES, FALLEN OR FALLING ROCKS
068	FRGN OBJ	FOREIGN OBSTRUCTION/DEBRIS IN ROAD (NOT GRAVEL)
069	EQP WORK	EQUIPMENT WORKING IN/OFF ROAD
070	OTH EQP	OTHER EQUIPMENT IN OR OFF ROAD (INCLUDES PARKED TRAILER, BOAT)
071	MAIN EQP	WRECKER, STREET SWEEPER, SNOW PLOW OR SANDING EQUIPMENT
072	OTHER WALL	ROCK, BRICK OR OTHER SOLID WALL
073	IRRGL PVMT	OTHER BUMP (NOT SPEED BUMP), POTHOLE OR PAVEMENT IRREGULARITY (PER PAR)
074	OVERHD OBJ	OTHER OVERHEAD OBJECT (HIGHWAY SIGN, SIGNAL HEAD, ETC.); NOT BRIDGE
075	CAVE IN	BRIDGE OR ROAD CAVE IN
076	HI WATER	HIGH WATER
077	SNO BANK	SNOW BANK
078	LO-HI EDGE	LOW OR HIGH SHOULDER AT PAVEMENT EDGE
079	DITCH	CUT SLOPE OR DITCH EMBANKMENT
080	OBJ FRM MV	STRUCK BY ROCK OR OTHER OBJECT SET IN MOTION BY OTHER VEHICLE (INCL. LOST LOADS)
081	FLY-OBJ	STRUCK BY ROCK OR OTHER MOVING OR FLYING OBJECT (NOT SET IN MOTION BY VEHICLE)
082	VEH HID	VEHICLE OBSCURED VIEW
083	VEG HID	VEGETATION OBSCURED VIEW
084	BLDG HID	VIEW OBSCURED BY FENCE, SIGN, PHONE BOOTH, ETC.
085	WIND GUST	WIND GUST
086	IMMERSED	VEHICLE IMMERSED IN BODY OF WATER
087	FIRE/EXP	FIRE OR EXPLOSION
088	FENC/BLD	FENCE OR BUILDING, ETC.
089	OTHR CRASH	CRASH RELATED TO ANOTHER SEPARATE CRASH
090	TO 1 SIDE	TWO-WAY TRAFFIC ON DIVIDED ROADWAY ALL ROUTED TO ONE SIDE
091	BUILDING	BUILDING OR OTHER STRUCTURE
092	PHANTOM	OTHER (PHANTOM) NON-CONTACT VEHICLE
093	CELL PHONE	CELL PHONE (ON PAR OR DRIVER IN USE)
094	VIOL GDL	TEENAGE DRIVER IN VIOLATION OF GRADUATED LICENSE PGM
095	GUY WIRE	GUY WIRE
096	BERM	BERM (EARTHEN OR GRAVEL MOUND)
097	GRAVEL	GRAVEL IN ROADWAY
098	ABR EDGE	ABRUPT EDGE
099	CELL WTNSD	CELL PHONE USE WITNESSED BY OTHER PARTICIPANT
100	UNK FIXD	FIXED OBJECT, UNKNOWN TYPE.
101	OTHER OBJ	NON-FIXED OBJECT, OTHER OR UNKNOWN TYPE
102	TEXTING	TEXTING
103	WZ WORKER	WORK ZONE WORKER
104	ON VEHICLE	PASSENGER RIDING ON VEHICLE EXTERIOR
105	PEDAL PSGR	PASSENGER RIDING ON PEDALCYCLE
106	MAN WHLCHR	PEDESTRIAN IN NON-MOTORIZED WHEELCHAIR
107	MTR WHLCHR	PEDESTRIAN IN MOTORIZED WHEELCHAIR
108	OFFICER	LAW ENFORCEMENT / POLICE OFFICER
109	SUB-BIKE	"SUB-BIKE": PEDALCYCLIST INJURED SUBSEQUENT TO COLLISION, ETC.
110	N-MTR	NON-MOTORIST STRUCK VEHICLE
111	S CAR VS V	STREET CAR/TROLLEY (ON RAILS OR OVERHEAD WIRE SYSTEM) STRUCK VEHICLE
112	V VS S CAR	VEHICLE STRUCK STREET CAR/TROLLEY (ON RAILS OR OVERHEAD WIRE SYSTEM)
113	S CAR ROW	AT OR ON STREET CAR OR TROLLEY RIGHT-OF-WAY
114	RR EQUIP	VEHICLE STRUCK RAILROAD EQUIPMENT (NOT TRAIN) ON TRACKS
115	DSTRCT GPS	DISTRACTED BY NAVIGATION SYSTEM OR GPS DEVICE
116	DSTRCT OTH	DISTRACTED BY OTHER ELECTRONIC DEVICE
117	RR GATE	RAIL CROSSING DROP-ARM GATE

EVENT CODE TRANSLATION LIST

EVENT CODE	SHORT DESCRIPTION	LONG DESCRIPTION
118	EXPNSN JNT	EXPANSION JOINT
119	JERSEY BAR	JERSEY BARRIER
120	WIRE BAR	WIRE OR CABLE MEDIAN BARRIER
121	FENCE	FENCE
123	OBJ IN VEH	LOOSE OBJECT IN VEHICLE STRUCK OCCUPANT
124	SLIPPERY	SLIDING OR SWERVING DUE TO WET, ICY, SLIPPERY OR LOOSE SURFACE (NOT GRAVEL)
125	SHLDR	SHOULDER GAVE WAY
126	BOULDER	ROCK(S), BOULDER (NOT GRAVEL; NOT ROCK SLIDE)
127	LAND SLIDE	ROCK SLIDE OR LAND SLIDE
128	CURVE INV	CURVE PRESENT AT CRASH LOCATION
129	HILL INV	VERTICAL GRADE / HILL PRESENT AT CRASH LOCATION
130	CURVE HID	VIEW OBSCURED BY CURVE
131	HILL HID	VIEW OBSCURED BY VERTICAL GRADE / HILL
132	WINDOW HID	VIEW OBSCURED BY VEHICLE WINDOW CONDITIONS
133	SPRAY HID	VIEW OBSCURED BY WATER SPRAY

FUNCTIONAL CLASSIFICATION TRANSLATION LIST

FUNC CLASS	DESCRIPTION
01	RURAL PRINCIPAL ARTERIAL - INTERSTATE
02	RURAL PRINCIPAL ARTERIAL - OTHER
06	RURAL MINOR ARTERIAL
07	RURAL MAJOR COLLECTOR
08	RURAL MINOR COLLECTOR
09	RURAL LOCAL
11	URBAN PRINCIPAL ARTERIAL - INTERSTATE
12	URBAN PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXP
14	URBAN PRINCIPAL ARTERIAL - OTHER
16	URBAN MINOR ARTERIAL
17	URBAN MAJOR COLLECTOR
18	URBAN MINOR COLLECTOR
19	URBAN LOCAL
78	UNKNOWN RURAL SYSTEM
79	UNKNOWN RURAL NON-SYSTEM
98	UNKNOWN URBAN SYSTEM
99	UNKNOWN URBAN NON-SYSTEM

HIGHWAY COMPONENT TRANSLATION LIST

CODE	DESCRIPTION
0	MAINLINE STATE HIGHWAY
1	COUPLET
3	FRONTAGE ROAD
6	CONNECTION
8	HIGHWAY - OTHER

INJURY SEVERITY CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
1	KILL	FATAL INJURY
2	INJA	INCAPACITATING INJURY - BLEEDING, BROKEN BONES
3	INJB	NON-INCAPACITATING INJURY
4	INJC	POSSIBLE INJURY - COMPLAINT OF PAIN
5	PRI	DIED PRIOR TO CRASH
7	NO<5	NO INJURY - 0 TO 4 YEARS OF AGE

LIGHT CONDITION CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	DAY	DAYLIGHT
2	DLIT	DARKNESS - WITH STREET LIGHTS
3	DARK	DARKNESS - NO STREET LIGHTS
4	DAWN	DAWN (TWILIGHT)
5	DUSK	DUSK (TWILIGHT)

MEDIAN TYPE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	NONE	NO MEDIAN
1	RSDMD	SOLID MEDIAN BARRIER
2	DIVMD	EARTH, GRASS OR PAVED MEDIAN

MILEAGE TYPE CODE TRANSLATION LIST

CODE	LONG DESCRIPTION
0	REGULAR MILEAGE
T	TEMPORARY
Y	SPUR
Z	OVERLAPPING

MOVEMENT TYPE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	STRGHT	STRAIGHT AHEAD
2	TURN-R	TURNING RIGHT
3	TURN-L	TURNING LEFT
4	U-TURN	MAKING A U-TURN
5	BACK	BACKING
6	STOP	STOPPED IN TRAFFIC
7	PRKD-P	PARKED - PROPERLY
8	PRKD-I	PARKED - IMPROPERLY

PEDESTRIAN LOCATION CODE TRANSLATION LIST

CODE	LONG DESCRIPTION
00	AT INTERSECTION - NOT IN ROADWAY
01	AT INTERSECTION - INSIDE CROSSWALK
02	AT INTERSECTION - IN ROADWAY, OUTSIDE CROSSWALK
03	AT INTERSECTION - IN ROADWAY, XWALK AVAIL UNKNWN
04	NOT AT INTERSECTION - IN ROADWAY
05	NOT AT INTERSECTION - ON SHOULDER
06	NOT AT INTERSECTION - ON MEDIAN
07	NOT AT INTERSECTION - WITHIN TRAFFIC RIGHT-OF-WAY
08	NOT AT INTERSECTION - IN BIKE PATH OR PARKING LANE
09	NOT-AT INTERSECTION - ON SIDEWALK
10	OUTSIDE TRAFFICWAY BOUNDARIES
13	AT INTERSECTION - IN BIKE LANE
14	NOT AT INTERSECTION - IN BIKE LANE
15	NOT AT INTERSECTION - INSIDE MID-BLOCK CROSSWALK
16	NOT AT INTERSECTION - IN PARKING LANE

ROAD CHARACTER CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	INTER	INTERSECTION
2	ALLEY	DRIVEWAY OR ALLEY
3	STRGHT	STRAIGHT ROADWAY
4	TRANS	TRANSITION
5	CURVE	CURVE (HORIZONTAL CURVE)
6	OPENAC	OPEN ACCESS OR TURNOUT
7	GRADE	GRADE (VERTICAL CURVE)
8	BRIDGE	BRIDGE STRUCTURE
9	TUNNEL	TUNNEL

PARTICIPANT TYPE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	OCC	UNKNOWN OCCUPANT TYPE
1	DRVR	DRIVER
2	PSNG	PASSENGER
3	PED	PEDESTRIAN
4	CONV	PEDESTRIAN USING A PEDESTRIAN CONVEYA
5	PTOW	PEDESTRIAN TOWING OR TRAILERING AN OB
6	BIKE	PEDALCYCLIST
7	BTOW	PEDALCYCLIST TOWING OR TRAILERING AN
8	PRKD	OCCUPANT OF A PARKED MOTOR VEHICLE
9	UNK	UNKNOWN TYPE OF NON-MOTORIST

TRAFFIC CONTROL DEVICE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
000	NONE	NO CONTROL
001	TRF SIGNAL	TRAFFIC SIGNALS
002	FLASHBCN-R	FLASHING BEACON - RED (STOP)
003	FLASHBCN-A	FLASHING BEACON - AMBER (SLOW)
004	STOP SIGN	STOP SIGN
005	SLOW SIGN	SLOW SIGN
006	REG-SIGN	REGULATORY SIGN
007	YIELD	YIELD SIGN
008	WARNING	WARNING SIGN
009	CURVE	CURVE SIGN
010	SCHL X-ING	SCHOOL CROSSING SIGN OR SPECIAL SIGNAL
011	OFCR/FLAG	POLICE OFFICER, FLAGMAN - SCHOOL PATROL
012	BRDG-GATE	BRIDGE GATE - BARRIER
013	TEMP-BARR	TEMPORARY BARRIER
014	NO-PASS-ZN	NO PASSING ZONE
015	ONE-WAY	ONE-WAY STREET
016	CHANNEL	CHANNELIZATION
017	MEDIAN BAR	MEDIAN BARRIER
018	PILOT CAR	PILOT CAR
019	SP PED SIG	SPECIAL PEDESTRIAN SIGNAL
020	X-BUCK	CROSSBUCK
021	THR-GN-SIG	THROUGH GREEN ARROW OR SIGNAL
022	L-GRN-SIG	LEFT TURN GREEN ARROW, LANE MARKINGS, OR SIGNAL
023	R-GRN-SIG	RIGHT TURN GREEN ARROW, LANE MARKINGS, OR SIGNAL
024	WIGWAG	WIGWAG OR FLASHING LIGHTS W/O DROP-ARM GATE
025	X-BUCK WRN	CROSSBUCK AND ADVANCE WARNING
026	WW W/ GATE	FLASHING LIGHTS WITH DROP-ARM GATES
027	OVRHD SGNL	SUPPLEMENTAL OVERHEAD SIGNAL (RR XING ONLY)
028	SP RR STOP	SPECIAL RR STOP SIGN
029	ILUM GRD X	ILLUMINATED GRADE CROSSING
037	RAMP METER	METERED RAMPS
038	RUMBLE STR	RUMBLE STRIP
090	L-TURN REF	LEFT TURN REFUGE (WHEN REFUGE IS INVOLVED)
091	R-TURN ALL	RIGHT TURN AT ALL TIMES SIGN, ETC.
092	EMR SGN/FL	EMERGENCY SIGNS OR FLARES
093	ACCEL LANE	ACCELERATION OR DECELERATION LANES
094	R-TURN PRO	RIGHT TURN PROHIBITED ON RED AFTER STOPPING

095	BUS STPSGN	BUS STOP SIGN AND RED LIGHTS
099	UNKNOWN	UNKNOWN OR NOT DEFINITE

VEHICLE TYPE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
00	PDO	NOT COLLECTED FOR PDO CRASHES
01	PSNGR CAR	PASSENGER CAR, PICKUP, LIGHT DELIVERY, ETC.
02	BOBTAIL	TRUCK TRACTOR WITH NO TRAILERS (BOBTAIL)
03	FARM TRCTR	FARM TRACTOR OR SELF-PROPELLED FARM EQUIPMENT
04	SEMI TOW	TRUCK TRACTOR WITH TRAILER/MOBILE HOME IN TOW
05	TRUCK	TRUCK WITH NON-DETACHABLE BED, PANEL, ETC.
06	MOPED	MOPED, MINIBIKE, SEATED MOTOR SCOOTER, MOTOR BIKE
07	SCHL BUS	SCHOOL BUS (INCLUDES VAN)
08	OTH BUS	OTHER BUS
09	MTRCYCLE	MOTORCYCLE, DIRT BIKE
10	OTHER	OTHER: FORKLIFT, BACKHOE, ETC.
11	MOTRHOME	MOTORHOME
12	TROLLEY	MOTORIZED STREET CAR/TROLLEY (NO RAILS/WIRES)
13	ATV	ATV
14	MTRSCTR	MOTORIZED SCOOTER (STANDING)
15	SNOWMOBILE	SNOWMOBILE
99	UNKNOWN	UNKNOWN VEHICLE TYPE

WEATHER CONDITION CODE TRANSLATION LIST

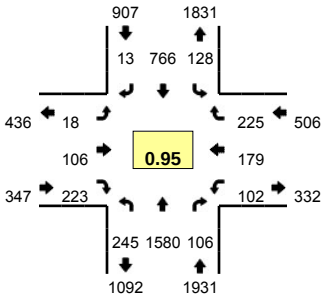
CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	CLR	CLEAR
2	CLD	CLOUDY
3	RAIN	RAIN
4	SLT	SLEET
5	FOG	FOG
6	SNOW	SNOW
7	DUST	DUST
8	SMOK	SMOKE
9	ASH	ASH

Appendix C
Traffic Counts

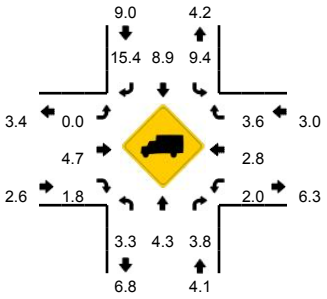
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering □olume

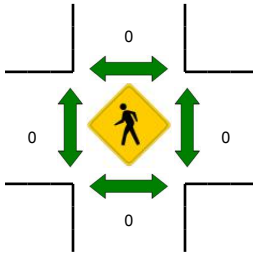
LOCATION: SW Pacific Hwy -- SW Elwert Rd/SW Sunset Blvd | **QC JOB #:** 14401717

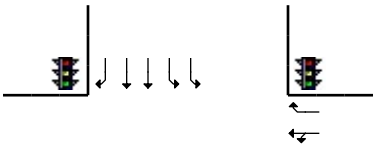
CITY/STATE: Sherwood, OR | **DATE:** Thu, May 11 2017

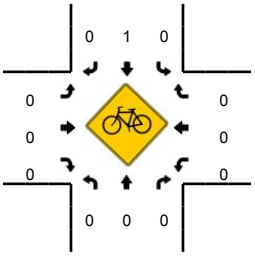


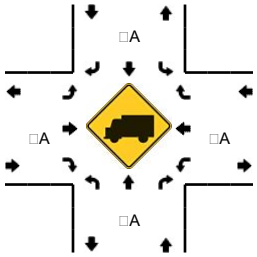
Peak-Hour: 7:05 AM -- 8:05 AM
Peak 15-Min: 7:40 AM -- 7:55 AM

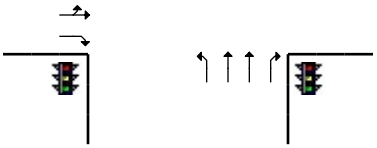


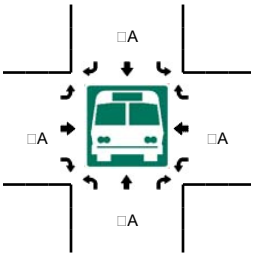












5-Min Count Period Beginning At	SW Pacific Hwy (Northbound)				SW Pacific Hwy (Southbound)				SW Elwert Rd/SW Sunset Blvd (Eastbound)				SW Elwert Rd/SW Sunset Blvd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	22	126	6	0	2	43	0	1	0	5	15	0	11	13	12	0	256	
7:05 AM	10	136	9	0	3	71	2	0	3	5	19	0	8	8	17	0	291	
7:10 AM	20	118	8	0	8	54	1	1	1	7	25	0	14	19	12	0	288	
7:15 AM	34	127	9	0	6	44	1	1	1	9	17	0	9	15	19	0	292	
7:20 AM	23	140	8	0	5	60	0	0	3	5	16	0	16	8	16	0	300	
7:25 AM	22	154	14	0	7	76	1	0	0	5	14	0	3	15	16	0	327	
7:30 AM	19	119	7	0	11	50	1	1	4	14	20	0	4	21	17	0	288	
7:35 AM	22	123	5	0	12	52	1	1	1	9	14	0	13	25	16	0	294	
7:40 AM	20	139	9	0	13	64	0	1	1	9	14	0	7	19	19	0	315	
7:45 AM	23	122	7	0	20	69	2	2	2	9	21	0	7	15	23	0	322	
7:50 AM	14	121	8	0	11	100	2	0	0	13	24	0	8	14	23	0	338	
7:55 AM	26	115	10	0	17	59	1	1	2	10	20	0	7	11	29	0	308	3619
8:00 AM	11	166	12	1	7	67	1	0	0	11	19	0	6	9	18	0	328	3691
8:05 AM	8	79	9	0	8	63	0	1	1	5	26	0	10	5	15	0	230	3630
8:10 AM	16	81	4	0	6	48	0	3	2	2	11	0	7	14	12	0	206	3548
8:15 AM	12	133	6	0	6	83	0	1	1	4	12	0	5	7	12	0	282	3538
8:20 AM	23	98	8	0	6	40	0	4	0	6	16	0	7	8	7	0	223	3461
8:25 AM	11	110	9	0	6	55	0	2	2	2	19	0	7	8	9	0	240	3374
8:30 AM	16	76	5	0	13	51	0	3	0	3	10	0	7	6	14	0	204	3290
8:35 AM	17	128	7	0	7	66	2	1	1	8	13	0	5	9	11	0	275	3271
8:40 AM	9	112	11	0	9	62	1	1	1	3	10	0	3	4	3	0	229	3185
8:45 AM	8	93	8	0	7	60	0	0	1	4	10	0	11	8	17	0	227	3090
8:50 AM	9	96	11	0	3	59	0	1	1	7	23	0	7	6	12	0	235	2987
8:55 AM	9	86	6	0	8	74	1	3	1	8	8	0	5	3	11	0	223	2902

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All □ehicles	228	1528	96	0	176	932	16	12	12	124	236	0	88	192	260	0	3900
Heavy Trucks	12	68	4		12	60	4		0	4	0		0	4	16		184
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

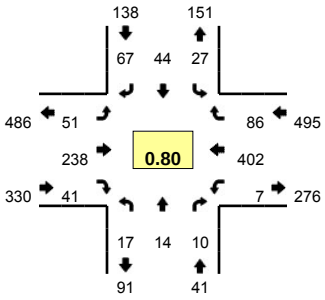
Report generated on 5/19/2017 4:01 PM

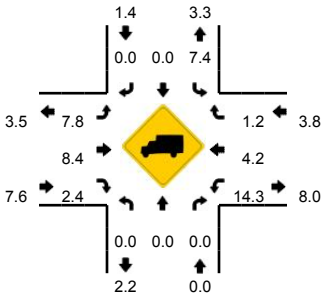
SO□RCE: □uality Counts, LLC (http://www.□ualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering □olume

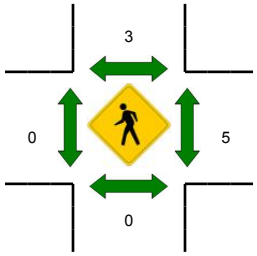
LOCATION: SW Woodhaven Dr -- SW Sunset Blvd | **QC JOB #:** 14538801
CITY/STATE: Sherwood, OR | **DATE:** Thu, Oct 12 2017

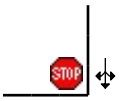
Peak-Hour: 7:10 AM -- 8:10 AM
Peak 15-Min: 7:45 AM -- 8:00 AM

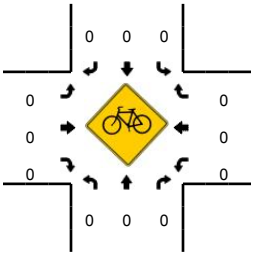


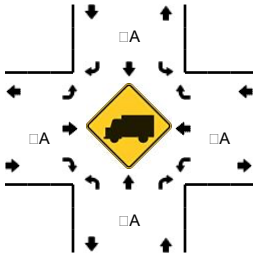


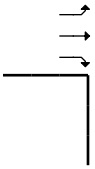
Quality Counts
TRANSPORTATION DATA COLLECTION SERVICES

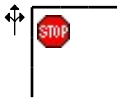


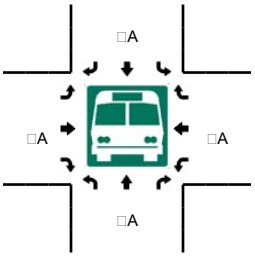












5-Min Count Period Beginning At	SW Woodhaven Dr (Northbound)				SW Woodhaven Dr (Southbound)				SW Sunset Blvd (Eastbound)				SW Sunset Blvd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	1	0	0	1	4	0	4	7	1	0	0	32	3	0	53	
7:05 AM	6	1	1	0	0	0	3	0	2	17	0	0	0	27	2	0	59	
7:10 AM	1	0	0	0	4	0	7	0	1	13	1	0	0	32	0	1	60	
7:15 AM	0	0	0	0	1	0	6	0	0	19	2	0	0	31	2	0	61	
7:20 AM	0	0	0	0	0	0	3	0	3	15	3	0	0	36	5	0	65	
7:25 AM	2	1	0	0	2	4	9	0	1	20	0	0	1	29	7	0	76	
7:30 AM	1	1	1	0	2	6	5	0	3	14	3	0	0	38	9	0	83	
7:35 AM	4	0	1	0	3	6	5	0	2	25	10	0	0	32	11	0	99	
7:40 AM	1	1	0	0	2	11	5	0	2	27	10	0	2	31	5	0	97	
7:45 AM	2	2	0	0	1	13	10	0	5	26	7	0	1	39	9	0	115	
7:50 AM	1	3	2	0	7	2	3	0	7	21	1	0	1	31	12	0	91	
7:55 AM	3	3	4	0	1	0	7	0	11	26	3	0	1	36	13	0	108	967
8:00 AM	2	3	2	0	2	0	3	0	10	18	0	0	0	42	7	0	89	1003
8:05 AM	0	0	0	0	2	2	4	0	6	14	1	0	0	25	6	0	60	1004
8:10 AM	3	0	0	0	2	0	4	0	3	13	1	0	1	21	0	0	48	992
8:15 AM	1	1	0	0	1	0	2	0	3	16	1	0	0	17	1	0	43	974
8:20 AM	0	0	0	0	1	0	5	0	2	15	0	0	1	17	1	0	42	951
8:25 AM	1	0	0	0	0	1	2	0	7	10	0	0	0	24	1	0	46	921
8:30 AM	2	0	0	0	1	0	4	0	4	17	0	0	0	18	3	0	49	887
8:35 AM	1	1	0	0	0	0	3	0	7	11	0	0	0	21	3	0	47	835
8:40 AM	0	1	0	0	0	0	2	0	9	15	0	0	1	18	4	0	50	788
8:45 AM	2	0	1	0	0	1	5	0	2	7	0	0	0	27	6	0	51	724
8:50 AM	0	2	0	0	1	0	7	0	7	9	1	1	1	21	2	0	52	685
8:55 AM	1	0	0	0	3	0	4	0	11	9	0	0	0	13	3	0	44	621

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All □ehicles	24	32	24	0	36	60	80	0	92	292	44	0	12	424	136	0	1256
Heavy Trucks	0	0	0		4	0	0		4	28	0		0	24	4		64
Pedestrians		0				4				0				4			8
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 10/31/2017 8:48 AM | SO□RCE: □uality Counts, LLC (http://www.□ualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering □olume

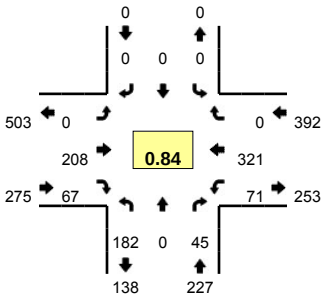
LOCATION: SW Timbrel Ln -- SW Sunset Blvd

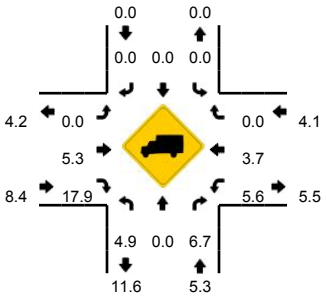
CITY/STATE: Sherwood, OR

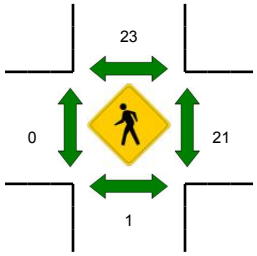
QC JOB #: 14538803

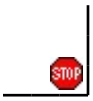
DATE: Thu, Oct 12 2017

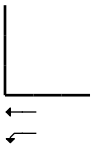
Peak-Hour: 7:10 AM -- 8:10 AM
Peak 15-Min: 7:40 AM -- 7:55 AM

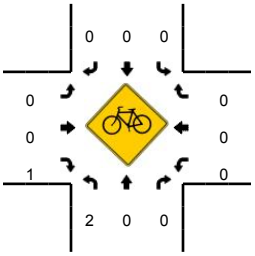


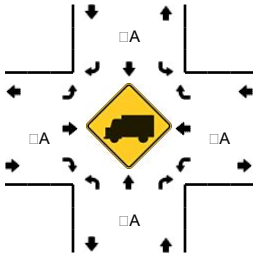


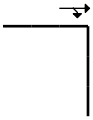


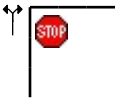


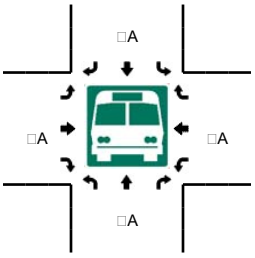












5-Min Count Period Beginning At	SW Timbrel Ln (Northbound)				SW Timbrel Ln (Southbound)				SW Sunset Blvd (Eastbound)				SW Sunset Blvd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	9	0	1	0	0	0	0	0	0	9	0	0	0	25	0	0	44	
7:05 AM	8	0	3	0	0	0	0	0	0	16	2	0	1	20	0	0	50	
7:10 AM	11	0	2	0	0	0	0	0	0	12	4	0	3	25	0	0	57	
7:15 AM	8	0	1	0	0	0	0	0	0	20	2	0	2	23	0	0	56	
7:20 AM	11	0	4	0	0	0	0	0	0	13	1	0	5	31	0	0	65	
7:25 AM	15	0	3	0	0	0	0	0	0	15	8	0	7	22	0	0	70	
7:30 AM	24	0	4	0	0	0	0	0	0	15	2	0	8	25	0	0	78	
7:35 AM	14	0	4	0	0	0	0	0	0	21	7	0	13	24	0	0	83	
7:40 AM	18	0	5	0	0	0	0	0	0	21	8	0	13	32	0	0	97	
7:45 AM	19	0	3	0	0	0	0	0	0	17	7	0	11	27	0	0	84	
7:50 AM	25	0	4	0	0	0	0	0	0	19	10	0	7	19	0	0	84	
7:55 AM	20	0	12	0	0	0	0	0	0	22	9	0	1	29	0	0	93	861
8:00 AM	8	0	3	0	0	0	0	0	0	18	5	0	1	40	0	0	75	892
8:05 AM	9	0	0	0	0	0	0	0	0	15	4	0	0	24	0	0	52	894
8:10 AM	7	0	3	0	0	0	0	0	0	11	3	0	2	11	0	0	37	874
8:15 AM	5	0	0	0	0	0	0	0	0	16	0	0	1	14	0	0	36	854
8:20 AM	4	0	0	0	0	0	0	0	0	13	2	0	1	14	0	0	34	823
8:25 AM	8	0	3	0	0	0	0	0	0	11	2	0	1	17	0	0	42	795
8:30 AM	6	0	1	0	0	0	0	0	0	17	1	0	1	16	0	0	42	759
8:35 AM	6	0	0	0	0	0	0	0	0	9	1	0	3	18	0	0	37	713
8:40 AM	4	0	2	0	0	0	0	0	0	13	0	0	3	20	0	0	42	658
8:45 AM	4	0	2	0	0	0	0	0	0	9	1	0	2	25	0	0	43	617
8:50 AM	8	0	0	0	0	0	0	0	0	7	3	0	1	17	0	0	36	569
8:55 AM	5	0	3	0	0	0	0	0	0	7	5	0	0	10	0	0	30	506

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All □ehicles	248	0	48	0	0	0	0	0	0	228	100	0	124	312	0	0	1060
Heavy Trucks	16	0	8		0	0	0		0	8	20		8	16	0		76
Pedestrians		0				64				0				64			128
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 10/31/2017 8:48 AM

SO□RCE: □uality Counts, LLC (http://www.□ualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering □olume

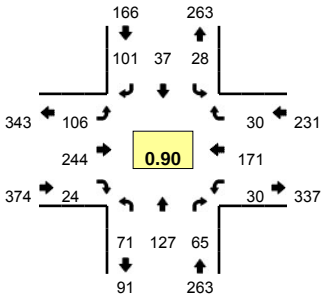
LOCATION: SW Main St/SW Ladd Hill Rd -- SW Sunset Blvd

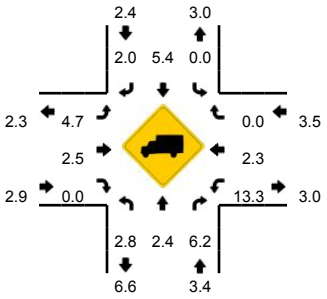
QC JOB #: 14487601

CITY/STATE: Sherwood, OR

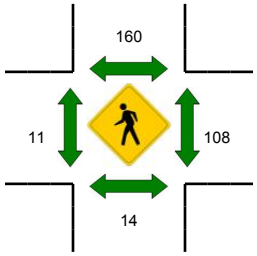
DATE: Tue, Sep 12 2017

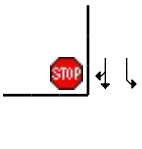
Peak-Hour: 7:05 AM -- 8:05 AM
Peak 15-Min: 7:30 AM -- 7:45 AM

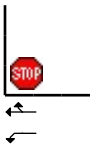


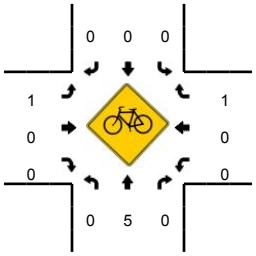


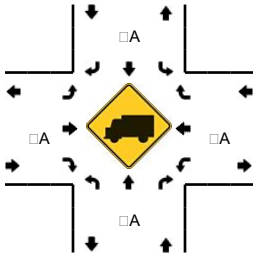
Quality Counts
TRANSPORTATION DATA COLLECTION SERVICES

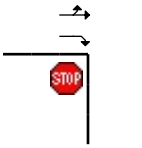


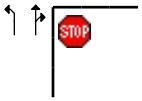


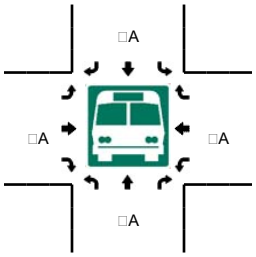












5-Min Count Period Beginning At	SW Main St/SW Ladd Hill Rd (Northbound)				SW Main St/SW Ladd Hill Rd (Southbound)				SW Sunset Blvd (Eastbound)				SW Sunset Blvd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	3	8	2	0	0	2	2	0	7	16	1	0	1	8	2	0	52	
7:05 AM	4	6	7	0	0	2	2	0	4	19	1	0	1	12	2	0	60	
7:10 AM	4	11	3	0	1	3	5	0	5	19	1	0	1	14	4	0	71	
7:15 AM	1	12	6	0	1	3	8	0	6	21	1	0	1	11	3	0	74	
7:20 AM	8	12	6	0	0	1	10	0	9	17	4	0	2	24	2	0	95	
7:25 AM	9	11	6	0	0	2	7	0	9	23	1	0	2	17	4	0	91	
7:30 AM	5	13	8	0	4	1	11	0	11	22	2	0	5	14	2	0	98	
7:35 AM	8	10	4	0	4	2	13	0	13	21	0	0	1	13	4	0	93	
7:40 AM	17	11	1	0	3	2	14	0	12	14	1	0	6	14	2	0	97	
7:45 AM	8	12	2	0	5	5	9	0	15	15	1	0	2	15	0	0	89	
7:50 AM	3	14	8	0	2	2	8	0	14	23	4	0	1	12	4	0	95	
7:55 AM	1	8	8	0	3	9	7	0	3	23	3	0	4	11	0	0	80	995
8:00 AM	3	7	6	0	5	5	7	0	5	27	5	0	4	14	3	0	91	1034
8:05 AM	4	2	7	0	0	4	4	0	5	14	2	0	3	12	1	0	58	1032
8:10 AM	3	3	3	0	1	3	3	0	4	13	2	0	0	6	1	0	42	1003
8:15 AM	2	4	3	0	1	3	4	0	5	14	1	0	1	10	2	0	50	979
8:20 AM	2	6	1	0	1	2	3	0	5	14	5	0	2	9	1	0	51	935
8:25 AM	2	6	5	0	0	0	3	0	2	16	0	0	2	9	0	0	45	889
8:30 AM	2	1	4	0	0	2	2	0	1	8	0	0	2	6	1	0	29	820
8:35 AM	5	0	6	0	0	2	1	0	2	9	2	0	1	11	2	0	41	768
8:40 AM	3	4	5	0	0	1	3	0	2	11	0	0	3	8	2	0	42	713
8:45 AM	4	6	2	0	0	3	4	0	3	10	1	0	1	8	0	0	42	666
8:50 AM	5	5	2	0	1	3	3	0	4	10	3	0	3	12	3	0	54	625
8:55 AM	1	9	5	0	1	3	0	0	9	20	1	0	0	0	0	0	49	594

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All □ehicles	120	136	52	0	44	20	152	0	144	228	12	0	48	164	32	0	1152
Heavy Trucks	8	8	4		0	0	4		12	8	0		4	8	0		56
Pedestrians		24				360				4				236			624
Bicycles	0	0	0		0	0	0		1	0	0		0	0	0		1
Railroad																	
Stopped Buses																	

Comments:

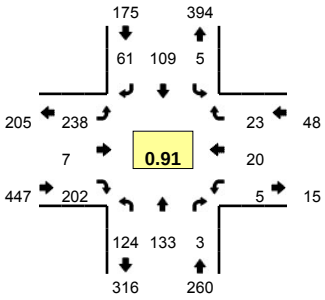
Report generated on 9/20/2017 8:46 AM

SO□RCE: □uality Counts, LLC (http://www.□ualitycounts.net) 1-877-580-2212

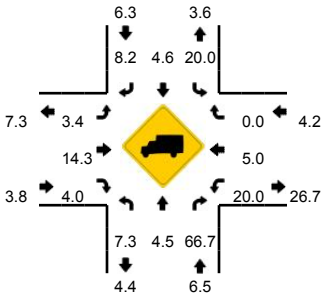
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering □olume

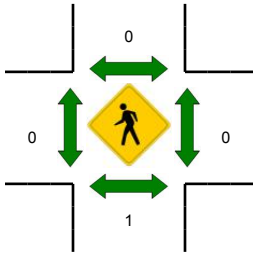
LOCATION: SW Murdock Rd/SW Baker Rd -- SW Sunset Blvd/Mc□inley Dr | **QC JOB #:** 14548501

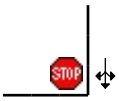
CITY/STATE: Sherwood, OR | **DATE:** Wed, Oct 25 2017

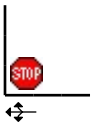


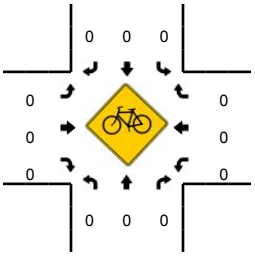
Peak-Hour: 7:15 AM -- 8:15 AM
Peak 15-Min: 7:35 AM -- 7:50 AM

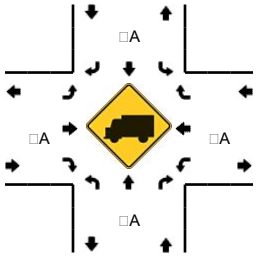


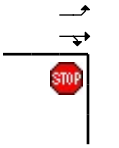


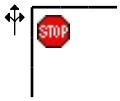


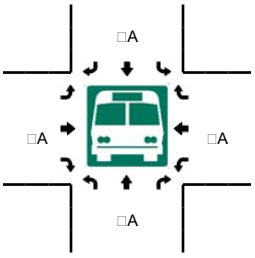












5-Min Count Period Beginning At	SW Murdock Rd/SW Baker Rd (Northbound)				SW Murdock Rd/SW Baker Rd (Southbound)				SW Sunset Blvd/McKinley Dr (Eastbound)				SW Sunset Blvd/McKinley Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	14	5	0	0	0	8	6	0	22	0	8	0	0	0	1	0	64	
7:05 AM	10	9	0	0	0	5	3	0	18	0	9	0	0	0	4	0	58	
7:10 AM	11	6	0	0	1	6	3	0	17	0	11	0	0	0	2	0	57	
7:15 AM	12	8	0	0	0	6	5	0	15	1	16	0	0	1	3	0	67	
7:20 AM	20	10	1	0	0	6	6	0	22	0	20	0	0	2	1	0	88	
7:25 AM	8	12	2	0	0	5	5	0	17	0	18	0	1	4	4	0	76	
7:30 AM	12	7	0	0	1	9	2	0	23	1	16	0	2	0	1	0	74	
7:35 AM	11	14	0	0	0	11	7	0	24	1	22	0	0	6	2	0	98	
7:40 AM	13	8	0	0	0	12	1	0	20	0	17	0	1	2	1	0	75	
7:45 AM	13	14	0	0	0	13	7	0	17	0	13	0	0	3	3	0	83	
7:50 AM	10	19	0	0	0	10	8	0	19	1	10	0	1	0	5	0	83	
7:55 AM	5	12	0	0	2	7	7	0	17	0	18	0	0	0	2	0	70	893
8:00 AM	2	6	0	0	1	11	4	0	25	1	20	0	0	1	0	0	71	900
8:05 AM	11	11	0	0	0	7	7	0	24	1	20	0	0	1	0	0	82	924
8:10 AM	7	12	0	0	1	12	2	0	15	1	12	0	0	0	1	0	63	930
8:15 AM	8	11	0	0	0	8	3	0	11	2	14	0	0	1	3	0	61	924
8:20 AM	9	9	0	0	0	7	6	0	9	0	16	0	0	1	2	0	59	895
8:25 AM	5	7	0	0	0	5	9	0	13	1	7	0	0	1	1	0	49	868
8:30 AM	3	10	0	0	2	5	3	0	17	0	13	0	0	0	0	0	53	847
8:35 AM	1	5	0	0	1	4	4	0	12	0	9	0	0	0	1	0	37	786
8:40 AM	4	7	0	0	0	6	6	0	21	0	13	0	0	1	2	0	60	771
8:45 AM	8	8	0	0	1	10	3	0	13	0	8	0	0	2	2	0	55	743
8:50 AM	6	12	0	0	1	7	6	0	17	0	15	0	0	0	0	0	64	724
8:55 AM	6	6	0	0	0	5	3	0	12	1	8	0	0	1	0	0	42	696

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All □ehicles	148	144	0	0	0	144	60	0	244	4	208	0	4	44	24	0	1024
Heavy Trucks	4	4	0		0	4	4		4	0	0		0	0	0		20
Pedestrians		4				0				0				0			4
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

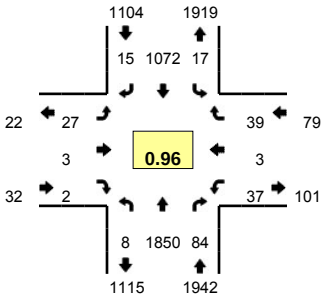
Report generated on 10/31/2017 3:00 PM

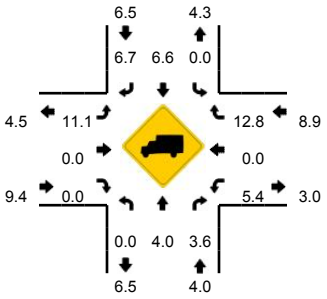
SO□RCE: □uality Counts, LLC (http://www.□ualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering □olume

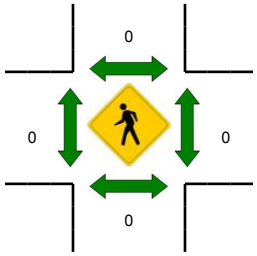
LOCATION: SW Pacific Hwy -- SW Chapman Rd | **QC JOB #:** 14401706
CITY/STATE: Sherwood, OR | **DATE:** Thu, May 11 2017

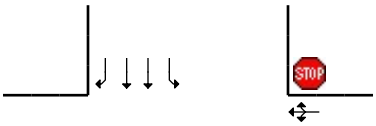
Peak-Hour: 7:05 AM -- 8:05 AM
Peak 15-Min: 7:30 AM -- 7:45 AM

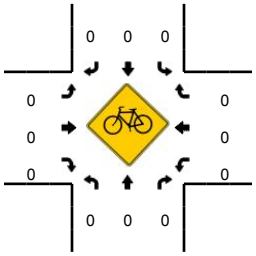


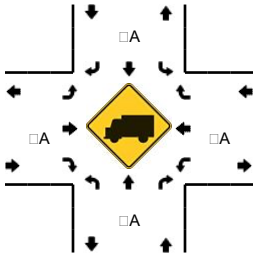


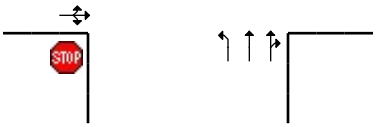
Quality Counts
TRANSPORTATION DATA COLLECTION SERVICES

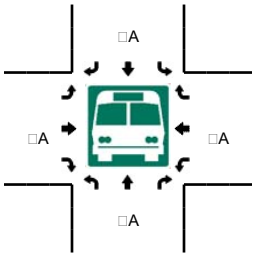












5-Min Count Period Beginning At	SW Pacific Hwy (Northbound)				SW Pacific Hwy (Southbound)				SW Chapman Rd (Eastbound)				SW Chapman Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	133	2	0	0	74	0	0	1	0	0	0	4	0	3	0	217	
7:05 AM	0	169	5	1	0	81	4	0	0	0	0	0	2	0	0	0	262	
7:10 AM	0	159	6	0	0	99	1	1	1	0	0	0	1	0	1	0	269	
7:15 AM	1	165	11	0	1	75	0	0	0	1	0	0	2	0	2	0	258	
7:20 AM	0	174	7	0	0	100	0	1	1	1	0	0	3	0	1	0	288	
7:25 AM	0	141	8	1	1	78	1	0	3	0	0	0	4	0	2	0	239	
7:30 AM	0	177	8	0	1	84	0	0	4	0	1	0	0	1	4	0	280	
7:35 AM	0	177	8	0	0	85	1	0	0	0	0	0	4	0	3	0	278	
7:40 AM	1	147	14	1	1	85	1	0	4	0	0	0	3	1	5	0	263	
7:45 AM	1	142	9	0	4	99	2	0	3	0	0	0	2	0	4	0	266	
7:50 AM	0	147	6	0	1	125	1	1	2	0	0	0	4	1	3	0	291	
7:55 AM	1	133	1	0	3	82	2	0	1	1	1	0	8	0	6	0	239	3150
8:00 AM	0	119	1	1	2	79	2	0	8	0	0	0	4	0	8	0	224	3157
8:05 AM	0	98	4	0	2	85	4	0	5	0	0	0	2	1	1	0	202	3097
8:10 AM	0	127	2	0	1	82	1	0	0	1	0	0	3	0	1	0	218	3046
8:15 AM	0	130	3	0	2	72	2	0	3	0	1	0	2	0	2	0	217	3005
8:20 AM	1	135	6	0	1	89	1	1	0	1	0	0	3	0	2	0	240	2957
8:25 AM	0	115	5	0	3	63	0	0	0	0	0	0	0	0	1	0	187	2905
8:30 AM	0	127	3	0	1	71	0	0	1	0	0	0	3	1	3	0	210	2835
8:35 AM	0	118	3	0	1	83	2	0	2	0	0	0	0	1	1	0	211	2768
8:40 AM	1	143	0	1	1	68	2	1	1	0	0	0	3	0	0	0	221	2726
8:45 AM	0	108	1	0	1	87	4	1	0	1	0	0	3	0	2	0	208	2668
8:50 AM	1	127	3	0	0	88	1	0	0	1	1	0	1	0	1	0	224	2601
8:55 AM	0	93	4	0	1	89	3	0	2	1	1	0	3	1	1	0	199	2561

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All □ehicles	4	2004	120	4	8	1016	8	0	32	0	4	0	28	8	48	0	3284
Heavy Trucks	0	64	4		0	100	0		0	0	0		4	0	4		176
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

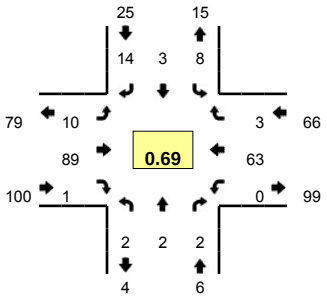
Report generated on 5/19/2017 4:01 PM

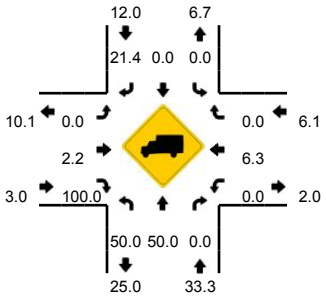
SO□RCE: □uality Counts, LLC (http://www.□ualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering □olume

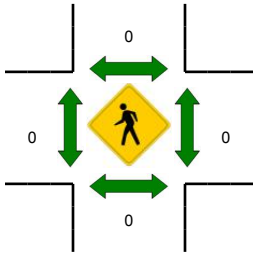
LOCATION: SW Old Hwy 99W -- SW Brookman Rd | **QC JOB #:** 14401709
CITY/STATE: Sherwood, OR | **DATE:** Thu, May 11 2017

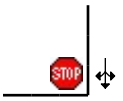
Peak-Hour: 7:10 AM -- 8:10 AM
Peak 15-Min: 7:40 AM -- 7:55 AM

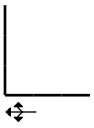


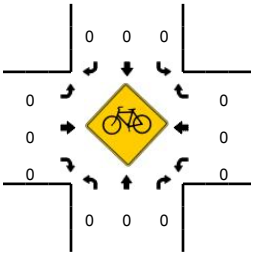


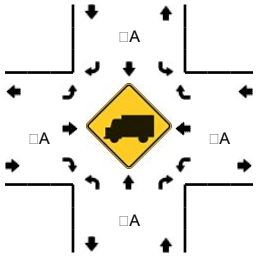
Quality Counts
TRANSPORTATION DATA COLLECTION SERVICES

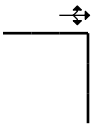


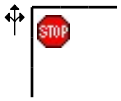


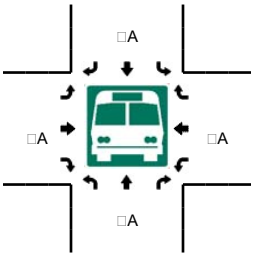












5-Min Count Period Beginning At	SW Old Hwy 99W (Northbound)				SW Old Hwy 99W (Southbound)				SW Brookman Rd (Eastbound)				SW Brookman Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	1	0	0	0	0	0	0	0	1	1	0	0	4	0	0	7	
7:05 AM	0	0	0	0	0	0	1	0	0	2	0	0	0	1	0	0	4	
7:10 AM	0	0	0	0	0	0	0	0	1	6	0	0	0	1	0	0	8	
7:15 AM	1	1	0	0	0	0	1	0	2	11	0	0	0	2	0	0	18	
7:20 AM	0	0	1	0	0	0	0	0	1	5	0	0	0	6	0	0	13	
7:25 AM	0	0	0	0	0	0	0	0	0	11	0	0	0	5	0	0	16	
7:30 AM	0	0	0	0	0	0	0	0	0	9	0	0	0	3	0	0	12	
7:35 AM	0	0	0	0	1	0	1	0	1	7	0	0	0	8	0	0	18	
7:40 AM	0	0	0	0	2	1	2	0	1	11	1	0	0	4	2	0	24	
7:45 AM	1	0	0	0	2	0	3	0	2	11	0	0	0	3	0	0	22	
7:50 AM	0	0	1	0	2	0	5	0	0	7	0	0	0	10	0	0	25	
7:55 AM	0	0	0	0	0	1	0	0	2	4	0	0	0	10	1	0	18	185
8:00 AM	0	1	0	0	0	0	1	0	0	1	0	0	0	8	0	0	11	189
8:05 AM	0	0	0	0	1	1	1	0	0	6	0	0	0	3	0	0	12	197
8:10 AM	0	0	0	0	0	0	1	0	0	5	0	0	0	2	0	0	8	197
8:15 AM	0	0	0	0	0	0	2	0	0	4	0	0	0	2	0	0	8	187
8:20 AM	0	0	0	0	0	0	0	0	0	7	0	0	0	5	0	0	12	186
8:25 AM	0	2	0	0	0	0	0	0	0	6	0	0	0	0	0	0	8	178
8:30 AM	0	0	0	0	0	0	1	0	1	3	0	0	0	4	0	0	9	175
8:35 AM	0	0	0	0	0	0	0	0	1	3	0	0	0	2	0	0	6	163
8:40 AM	0	2	0	0	0	1	0	0	0	0	0	0	0	3	0	0	6	145
8:45 AM	0	0	0	0	0	0	0	0	0	3	0	0	0	5	0	0	8	131
8:50 AM	0	0	0	0	0	1	1	0	0	2	0	0	0	4	0	0	8	114
8:55 AM	0	0	0	0	0	0	1	0	0	6	0	0	0	2	0	0	9	105

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All □ehicles	4	0	4	0	24	4	40	0	12	116	4	0	0	68	8	0	284
Heavy Trucks	4	0	0		0	0	12		0	0	4		0	4	0		24
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

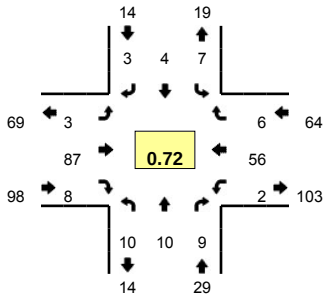
Report generated on 5/19/2017 4:01 PM | SO□RCE: □uality Counts, LLC (http://www.□ualitycounts.net) 1-877-580-2212

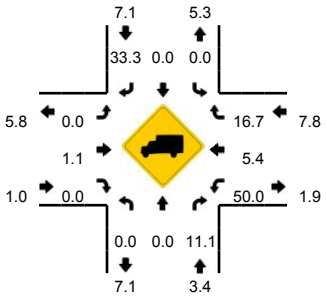
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering □olume

LOCATION: SW Middleton Rd -- SW Brookman Rd
CITY/STATE: Sherwood, OR

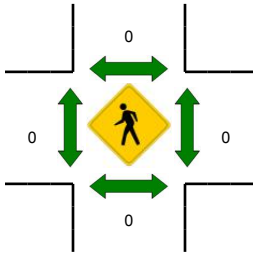
QC JOB #: 14401711
DATE: Thu, May 11 2017

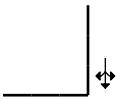
Peak-Hour: 7:15 AM -- 8:15 AM
Peak 15-Min: 7:40 AM -- 7:55 AM

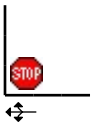


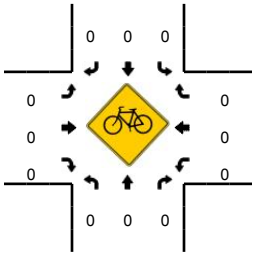


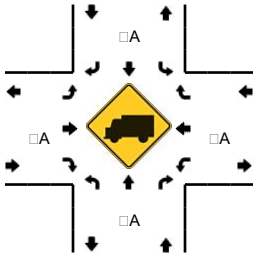
Quality Counts
TRANSPORTATION DATA COLLECTION SERVICES

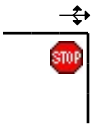


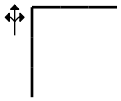


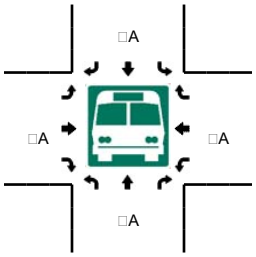












5-Min Count Period Beginning At	SW Middleton Rd (Northbound)				SW Middleton Rd (Southbound)				SW Brookman Rd (Eastbound)				SW Brookman Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	1	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	3	
7:05 AM	0	0	0	0	1	0	0	0	0	2	1	0	0	1	0	0	5	
7:10 AM	0	1	0	0	0	0	0	0	0	5	0	0	0	1	0	0	7	
7:15 AM	0	0	0	0	1	0	0	0	1	10	0	0	0	4	0	0	16	
7:20 AM	1	2	1	0	0	0	0	0	0	8	0	0	1	3	0	0	16	
7:25 AM	1	0	0	0	0	0	0	0	0	9	1	0	0	5	0	0	16	
7:30 AM	1	2	1	0	2	1	0	0	0	9	0	0	0	4	0	0	20	
7:35 AM	0	0	1	0	0	0	0	0	1	8	0	0	0	8	0	0	18	
7:40 AM	1	5	1	0	2	0	1	0	0	10	0	0	0	4	2	0	26	
7:45 AM	0	0	2	0	1	1	0	0	1	12	2	0	1	5	1	0	26	
7:50 AM	2	0	0	0	1	0	0	0	0	10	1	0	0	5	0	0	19	
7:55 AM	0	0	1	0	0	2	1	0	0	3	1	0	0	8	1	0	17	189
8:00 AM	3	1	1	0	0	0	1	0	0	0	2	0	0	5	1	0	14	200
8:05 AM	1	0	0	0	0	0	0	0	0	5	1	0	0	2	0	0	9	204
8:10 AM	0	0	1	0	0	0	0	0	0	3	0	0	0	3	1	0	8	205
8:15 AM	1	0	0	0	0	0	0	0	0	5	1	0	0	1	0	0	8	197
8:20 AM	3	0	0	0	0	0	0	0	0	4	0	0	1	1	0	0	9	190
8:25 AM	0	0	1	0	0	0	0	0	2	6	1	0	0	0	0	0	10	184
8:30 AM	1	0	0	0	0	0	0	0	0	2	1	0	0	3	0	0	7	171
8:35 AM	0	0	0	0	1	0	0	0	0	3	0	0	0	2	0	0	6	159
8:40 AM	2	1	0	0	1	0	0	0	0	0	0	0	0	4	0	0	8	141
8:45 AM	1	0	0	0	0	0	0	0	0	2	0	0	1	2	1	0	7	122
8:50 AM	0	0	0	0	0	0	0	0	0	2	1	0	0	3	0	0	6	109
8:55 AM	0	0	0	0	0	0	1	0	0	6	0	0	0	1	0	0	8	100

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All □ehicles	12	20	12	0	16	4	4	0	4	128	12	0	4	56	12	0	284
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	4	4		8
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/19/2017 4:01 PM

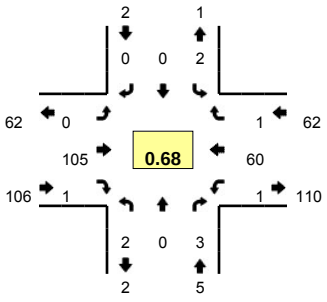
SO□RCE: □uality Counts, LLC (http://www.□ualitycounts.net) 1-877-580-2212

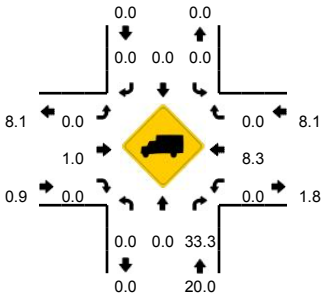
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering □olume

LOCATION: SW Oberst Rd -- SW Brookman Rd
CITY/STATE: Sherwood, OR

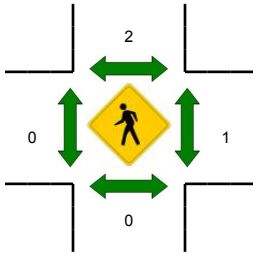
QC JOB #: 14401713
DATE: Thu, May 11 2017

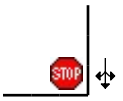
Peak-Hour: 7:10 AM -- 8:10 AM
Peak 15-Min: 7:40 AM -- 7:55 AM

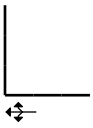


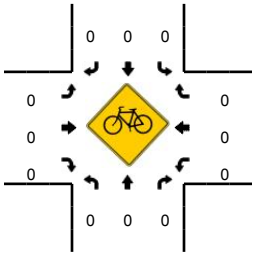


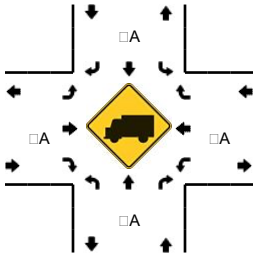
Quality Counts
TRANSPORTATION DATA COLLECTION SERVICES

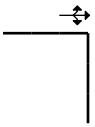


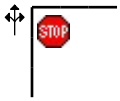


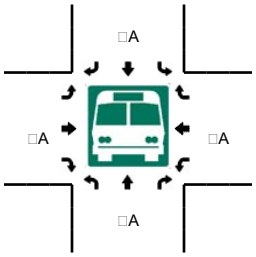












5-Min Count Period Beginning At	SW Oberst Rd (Northbound)				SW Oberst Rd (Southbound)				SW Brookman Rd (Eastbound)				SW Brookman Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2	
7:05 AM	0	0	1	0	0	0	0	0	0	3	0	0	0	1	0	0	5	
7:10 AM	0	0	0	0	0	0	0	0	0	6	0	0	0	1	1	0	8	
7:15 AM	0	0	0	0	1	0	0	0	0	9	0	0	0	5	0	0	15	
7:20 AM	0	0	0	0	0	0	0	0	0	9	0	0	0	3	0	0	12	
7:25 AM	0	0	1	0	0	0	0	0	0	11	1	0	0	5	0	0	18	
7:30 AM	0	0	1	0	0	0	0	0	0	10	0	0	1	5	0	0	17	
7:35 AM	1	0	1	0	0	0	0	0	0	8	0	0	0	5	0	0	15	
7:40 AM	0	0	0	0	0	0	0	0	0	16	0	0	0	7	0	0	23	
7:45 AM	0	0	0	0	0	0	0	0	0	16	0	0	0	7	0	0	23	
7:50 AM	1	0	0	0	0	0	0	0	0	10	0	0	0	7	0	0	18	
7:55 AM	0	0	0	0	0	0	0	0	0	4	0	0	0	6	0	0	10	166
8:00 AM	0	0	0	0	0	0	0	0	0	2	0	0	0	6	0	0	8	172
8:05 AM	0	0	0	0	1	0	0	0	0	4	0	0	0	3	0	0	8	175
8:10 AM	1	0	0	0	0	0	0	0	0	4	0	0	0	2	0	0	7	174
8:15 AM	0	0	0	0	0	0	0	0	0	5	0	0	0	1	0	0	6	165
8:20 AM	0	0	1	0	0	0	0	0	0	2	0	0	0	2	0	0	5	158
8:25 AM	0	0	0	0	0	0	0	0	0	7	0	0	0	1	0	0	8	148
8:30 AM	0	0	0	0	0	0	0	0	0	4	0	0	0	2	0	0	6	137
8:35 AM	0	0	0	0	0	0	0	0	0	5	0	0	0	1	0	0	6	128
8:40 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	5	0	0	6	111
8:45 AM	0	0	0	0	0	0	0	0	0	1	0	0	1	3	0	0	5	93
8:50 AM	0	0	0	0	1	0	0	0	0	3	0	0	0	2	0	0	6	81
8:55 AM	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	5	76

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All □ehicles	4	0	0	0	0	0	0	0	0	168	0	0	0	84	0	0	256
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	8	0		8
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

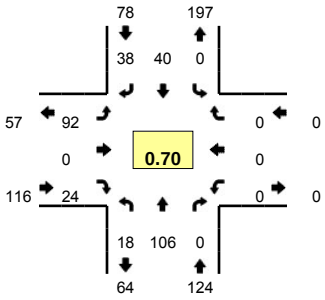
Report generated on 5/23/2017 9:22 AM

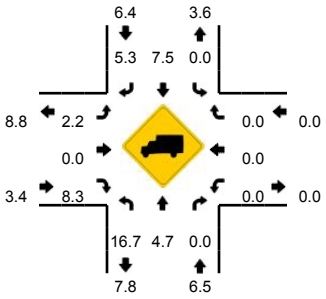
SO□RCE: □uality Counts, LLC (http://www.□ualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering □olume

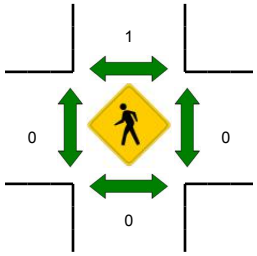
LOCATION: SW Ladd Hill Rd -- SW Brookman Rd | **QC JOB #:** 14401715
CITY/STATE: Sherwood, OR | **DATE:** Thu, May 11 2017

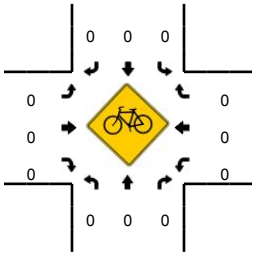
Peak-Hour: 7:10 AM -- 8:10 AM
Peak 15-Min: 7:40 AM -- 7:55 AM

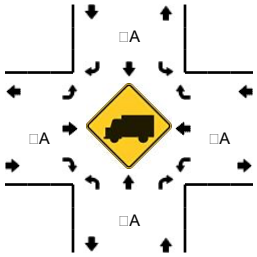


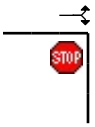


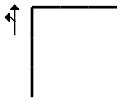
Quality Counts
TRANSPORTATION DATA COLLECTION SERVICES

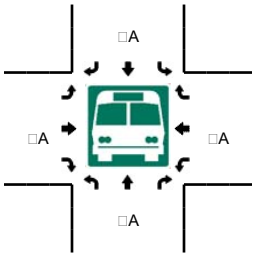












5-Min Count Period Beginning At	SW Ladd Hill Rd (Northbound)				SW Ladd Hill Rd (Southbound)				SW Brookman Rd (Eastbound)				SW Brookman Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	2	0	0	0	0	0	0	2	0	1	0	0	0	0	0	5	
7:05 AM	0	5	0	0	0	0	0	0	1	0	0	0	0	0	0	0	6	
7:10 AM	1	7	0	0	0	3	2	0	7	0	2	0	0	0	0	0	22	
7:15 AM	0	5	0	0	0	3	3	0	5	0	3	0	0	0	0	0	19	
7:20 AM	2	8	0	0	0	1	1	0	4	0	3	0	0	0	0	0	19	
7:25 AM	1	4	0	0	0	2	4	0	4	0	1	0	0	0	0	0	16	
7:30 AM	3	12	0	0	0	5	2	0	13	0	3	0	0	0	0	0	38	
7:35 AM	3	8	0	0	0	0	2	0	10	0	2	0	0	0	0	0	25	
7:40 AM	0	17	0	0	0	5	5	0	10	0	3	1	0	0	0	0	41	
7:45 AM	2	12	0	0	0	2	5	0	13	0	2	0	0	0	0	0	36	
7:50 AM	5	9	0	0	0	4	4	0	13	0	1	0	0	0	0	0	36	
7:55 AM	1	11	0	0	0	6	3	0	5	0	4	0	0	0	0	0	30	293
8:00 AM	0	5	0	0	0	6	2	0	2	0	0	0	0	0	0	0	15	303
8:05 AM	0	8	0	0	0	3	5	0	5	0	0	0	0	0	0	0	21	318
8:10 AM	0	7	0	0	0	5	0	0	4	0	1	0	0	0	0	0	17	313
8:15 AM	0	7	0	0	0	1	1	0	3	0	1	0	0	0	0	0	13	307
8:20 AM	1	3	0	0	0	3	0	0	2	0	2	0	0	0	0	0	11	299
8:25 AM	0	5	0	0	0	3	3	0	6	0	1	0	0	0	0	0	18	301
8:30 AM	0	2	0	0	0	4	0	0	4	0	0	0	0	0	0	0	10	273
8:35 AM	0	5	0	0	0	6	3	0	1	0	0	0	0	0	0	0	15	263
8:40 AM	2	3	0	0	0	5	2	0	3	0	2	0	0	0	0	0	17	239
8:45 AM	0	4	0	0	0	5	3	0	0	0	1	0	0	0	0	0	13	216
8:50 AM	1	4	0	0	0	4	1	0	1	0	1	0	0	0	0	0	12	192
8:55 AM	1	7	0	0	0	6	0	0	5	0	0	0	0	0	0	0	19	181

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All □ehicles	28	152	0	0	0	44	56	0	144	0	24	4	0	0	0	0	452
Heavy Trucks	0	0	0		0	0	8		0	0	4		0	0	0		12
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

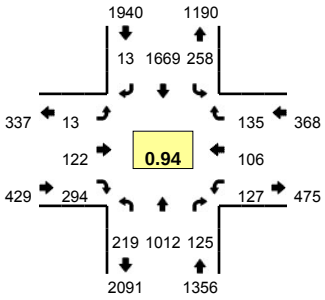
Comments:

Report generated on 5/19/2017 4:01 PM

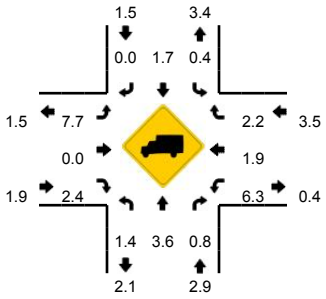
SO□RCE: □uality Counts, LLC (http://www.□ualitycounts.net) 1-877-580-2212

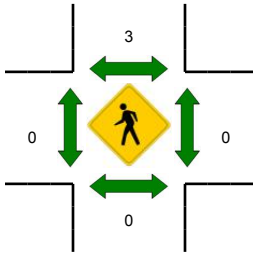
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering □olume

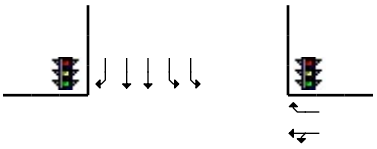
LOCATION: SW Pacific Hwy -- SW Elwert Rd/SW Sunset Blvd | **QC JOB #:** 14401718
CITY/STATE: Sherwood, OR | **DATE:** Thu, May 11 2017

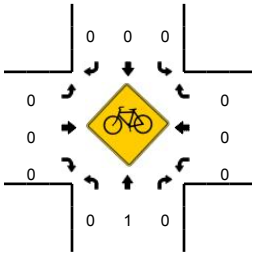


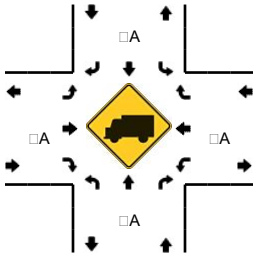
Peak-Hour: 4:40 PM -- 5:40 PM
Peak 15-Min: 5:10 PM -- 5:25 PM

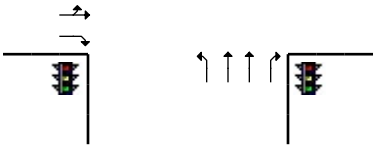


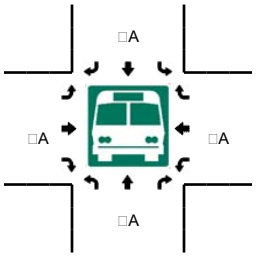












5-Min Count Period Beginning At	SW Pacific Hwy (Northbound)				SW Pacific Hwy (Southbound)				SW Elwert Rd/SW Sunset Blvd (Eastbound)				SW Elwert Rd/SW Sunset Blvd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	15	71	6	1	11	141	3	4	3	11	27	0	10	6	6	0	315	
4:05 PM	4	62	14	0	14	154	0	1	0	12	26	0	7	5	11	0	310	
4:10 PM	12	76	3	0	11	132	0	2	0	10	27	0	9	8	10	0	300	
4:15 PM	13	96	13	1	10	111	3	3	1	7	25	0	11	8	15	0	317	
4:20 PM	16	91	13	1	13	149	0	5	0	12	18	0	13	7	11	0	349	
4:25 PM	13	82	5	0	12	140	2	3	1	9	21	0	12	10	16	0	326	
4:30 PM	22	73	10	0	12	110	3	2	0	11	28	0	6	7	11	0	295	
4:35 PM	16	82	8	0	19	121	2	6	0	11	26	0	10	8	11	0	320	
4:40 PM	24	100	17	1	13	129	1	2	0	7	29	0	12	8	9	0	352	
4:45 PM	23	79	9	0	19	136	0	3	1	7	22	0	11	19	15	0	344	
4:50 PM	22	87	11	0	22	124	1	3	2	12	27	0	11	10	12	0	344	
4:55 PM	14	78	16	0	25	136	1	1	2	6	28	0	12	8	18	0	345	3917
5:00 PM	19	77	8	0	10	117	0	5	2	11	29	0	9	11	10	0	308	3910
5:05 PM	13	63	8	0	16	153	2	2	0	12	22	0	17	6	16	0	330	3930
5:10 PM	16	80	9	0	22	158	0	0	1	13	23	0	13	4	10	0	349	3979
5:15 PM	15	95	17	0	14	157	2	2	5	7	22	0	11	10	8	0	365	4027
5:20 PM	14	108	4	0	25	154	1	4	0	12	22	0	12	9	12	0	377	4055
5:25 PM	22	75	7	0	16	142	1	5	0	13	24	0	6	8	7	0	326	4055
5:30 PM	21	93	11	0	25	110	2	1	0	9	27	0	7	6	11	0	323	4083
5:35 PM	15	77	8	0	21	153	2	2	0	13	19	0	6	7	7	0	330	4093
5:40 PM	17	89	9	0	21	131	0	7	0	10	25	0	4	8	8	0	329	4070
5:45 PM	17	88	13	0	8	136	3	1	1	5	26	0	7	8	11	0	324	4050
5:50 PM	19	87	15	0	22	134	0	3	1	11	25	0	10	5	11	0	343	4049
5:55 PM	17	64	8	0	31	134	4	2	0	12	15	0	11	6	11	0	315	4019

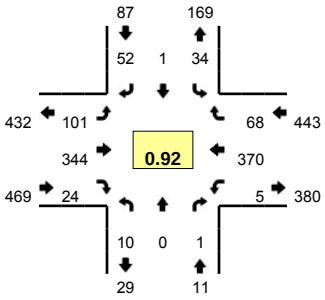
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All □ehicles	180	1132	120	0	244	1876	12	24	24	128	268	0	144	92	120	0	4364
Heavy Trucks	8	40	4		0	20	0		4	0	8		8	0	0		92
Pedestrians		0				8				0				0			8
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

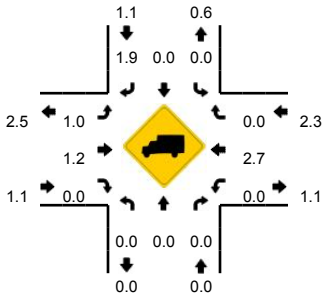
Report generated on 5/19/2017 4:01 PM

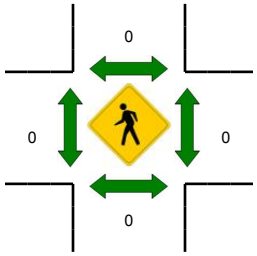
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering □olume

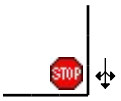
LOCATION: SW Woodhaven Dr -- SW Sunset Blvd | **QC JOB #:** 14538802
CITY/STATE: Sherwood, OR | **DATE:** Thu, Oct 12 2017

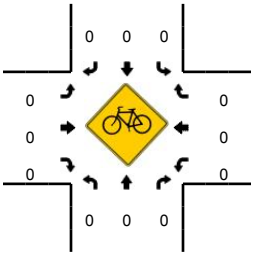


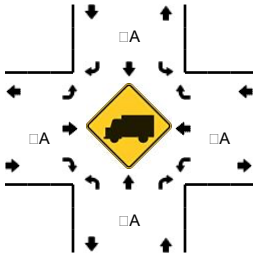
Peak-Hour: 4:45 PM -- 5:45 PM
Peak 15-Min: 5:15 PM -- 5:30 PM

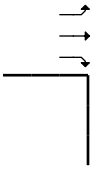


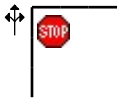


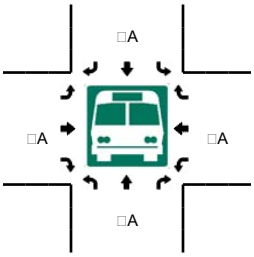












5-Min Count Period Beginning At	SW Woodhaven Dr (Northbound)				SW Woodhaven Dr (Southbound)				SW Sunset Blvd (Eastbound)				SW Sunset Blvd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	0	0	2	0	3	0	8	20	1	0	0	20	2	0	56	
4:05 PM	0	2	1	0	4	0	3	0	7	19	1	0	0	21	3	0	61	
4:10 PM	0	0	0	0	1	0	6	0	3	19	1	0	0	19	3	0	52	
4:15 PM	0	0	0	0	3	0	2	0	6	20	1	0	2	33	5	0	72	
4:20 PM	0	0	0	0	2	0	2	0	3	18	1	0	0	25	3	0	54	
4:25 PM	1	0	0	0	4	0	3	0	7	15	0	0	0	22	6	0	58	
4:30 PM	0	0	0	0	3	0	3	0	6	20	2	0	0	26	0	0	60	
4:35 PM	0	0	1	0	2	0	2	0	9	30	0	0	1	22	1	0	68	
4:40 PM	1	0	0	0	4	0	5	0	5	24	2	1	1	27	3	0	73	
4:45 PM	1	0	0	0	5	0	2	0	8	24	3	0	1	31	5	0	80	
4:50 PM	3	0	0	0	3	0	6	0	10	21	1	0	0	28	4	1	77	
4:55 PM	1	0	1	0	1	0	1	0	5	28	1	0	1	28	10	0	77	788
5:00 PM	1	0	0	0	1	0	6	0	11	35	2	0	1	26	4	0	87	819
5:05 PM	0	0	0	0	2	0	5	0	10	34	3	0	1	30	5	0	90	848
5:10 PM	0	0	0	0	4	0	5	0	3	21	1	0	0	29	7	0	70	866
5:15 PM	1	0	0	0	2	0	4	0	8	26	4	0	0	42	3	0	90	884
5:20 PM	0	0	0	0	2	0	2	0	9	40	1	0	0	35	9	0	98	928
5:25 PM	1	0	0	0	7	1	9	0	8	25	3	0	0	27	4	0	85	955
5:30 PM	2	0	0	0	1	0	2	0	10	31	2	0	0	30	6	0	84	979
5:35 PM	0	0	0	0	4	0	4	0	8	28	2	0	0	35	3	0	84	995
5:40 PM	0	0	0	0	2	0	6	0	11	31	1	0	0	29	8	0	88	1010
5:45 PM	0	0	0	0	3	0	6	0	9	17	2	0	0	21	9	0	67	997
5:50 PM	2	0	0	0	0	0	7	0	9	17	2	0	0	28	6	0	71	991
5:55 PM	0	0	0	0	3	0	4	0	9	32	2	0	0	16	3	0	69	983

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All □ehicles	8	0	0	0	44	4	60	0	100	364	32	0	0	416	64	0	1092
Heavy Trucks	0	0	0		0	0	4		0	0	0		0	20	0		24
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

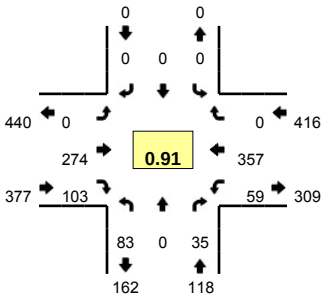
Comments:

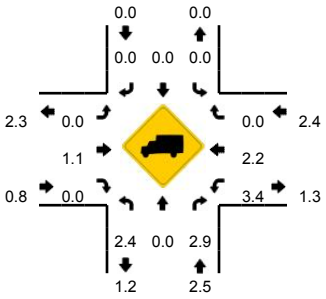
Report generated on 10/31/2017 8:48 AM | SO□RCE: □uality Counts, LLC (http://www.□ualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering □olume

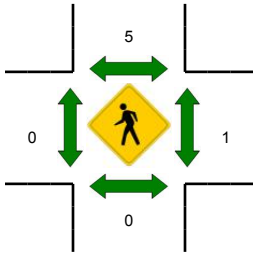
LOCATION: SW Timbrel Ln -- SW Sunset Blvd | **QC JOB #:** 14538804
CITY/STATE: Sherwood, OR | **DATE:** Thu, Oct 12 2017

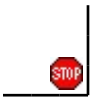
Peak-Hour: 4:45 PM -- 5:45 PM
Peak 15-Min: 5:15 PM -- 5:30 PM

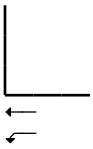


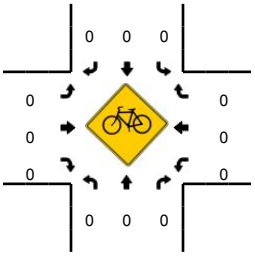


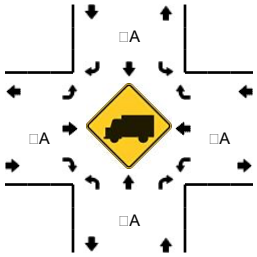
Quality Counts
TRANSPORTATION DATA COLLECTION SERVICES

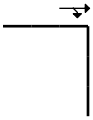


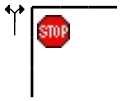


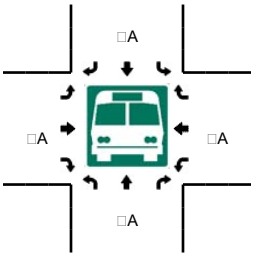












5-Min Count Period Beginning At	SW Timbrel Ln (Northbound)				SW Timbrel Ln (Southbound)				SW Sunset Blvd (Eastbound)				SW Sunset Blvd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	5	0	2	0	0	0	0	0	0	15	5	0	1	17	0	0	45	
4:05 PM	6	0	0	0	0	0	0	0	0	21	5	0	0	16	0	0	48	
4:10 PM	1	0	1	0	0	0	0	0	0	13	9	0	5	24	0	0	53	
4:15 PM	10	0	1	0	0	0	0	0	0	21	3	0	4	26	0	0	65	
4:20 PM	12	0	7	0	0	0	0	0	0	18	3	0	2	18	0	0	60	
4:25 PM	9	0	4	0	0	0	0	0	0	15	5	0	4	21	0	0	58	
4:30 PM	5	0	4	0	0	0	0	0	0	16	6	0	4	21	0	0	56	
4:35 PM	4	0	2	0	0	0	0	0	0	25	8	0	4	22	0	0	65	
4:40 PM	3	0	4	0	0	0	0	0	0	20	10	0	3	29	0	0	69	
4:45 PM	14	0	1	0	0	0	0	0	0	17	12	0	4	21	0	0	69	
4:50 PM	7	0	2	0	0	0	0	0	0	17	8	0	5	25	0	0	64	
4:55 PM	10	0	2	0	0	0	0	0	0	27	2	0	4	34	0	0	79	731
5:00 PM	3	0	5	0	0	0	0	0	0	24	12	0	6	25	0	0	75	761
5:05 PM	4	0	2	0	0	0	0	0	0	33	3	0	8	32	0	0	82	795
5:10 PM	8	0	1	0	0	0	0	0	0	15	11	0	4	29	0	0	68	810
5:15 PM	6	0	3	0	0	0	0	0	0	18	10	0	8	37	0	0	82	827
5:20 PM	8	0	6	0	0	0	0	0	0	31	7	0	4	38	0	0	94	861
5:25 PM	4	0	5	0	0	0	0	0	0	22	13	0	3	26	0	0	73	876
5:30 PM	7	0	2	0	0	0	0	0	0	25	7	0	7	27	0	0	75	895
5:35 PM	7	0	4	0	0	0	0	0	0	24	5	0	3	32	0	0	75	905
5:40 PM	5	0	2	0	0	0	0	0	0	21	13	0	3	31	0	0	75	911
5:45 PM	6	0	1	0	0	0	0	0	0	14	4	0	4	23	0	0	52	894
5:50 PM	9	0	1	0	0	0	0	0	0	13	7	0	6	26	0	0	62	892
5:55 PM	3	0	1	0	0	0	0	0	0	22	7	0	3	15	0	0	51	864

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All □ehicles	72	0	56	0	0	0	0	0	0	284	120	0	60	404	0	0	996
Heavy Trucks	4	0	4		0	0	0		0	0	0		0	16	0		24
Pedestrians		0				4				0				4			8
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 10/31/2017 8:48 AM | SO□RCE: □uality Counts, LLC (http://www.□ualitycounts.net) 1-877-580-2212

Type of peak hour being reported: □ser-Defined

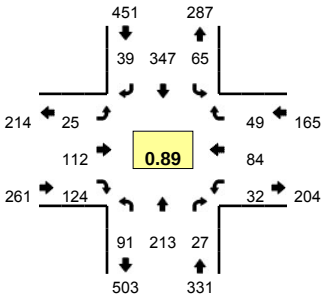
Method for determining peak hour: Total Entering □olume

LOCATION: SW Main St/SW Ladd Hill Rd -- SW Sunset Blvd

CITY/STATE: Sherwood, OR

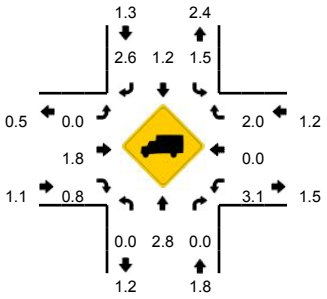
QC JOB #: 14487602

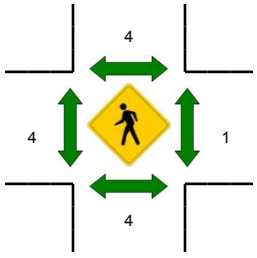
DATE: Tue, Sep 12 2017

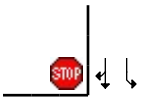


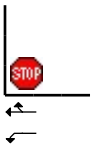
Peak-Hour: 4:40 PM -- 5:40 PM

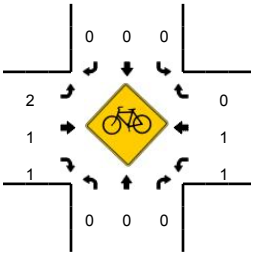
Peak 15-Min: 5:15 PM -- 5:30 PM

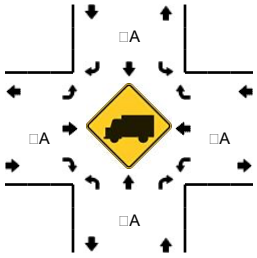


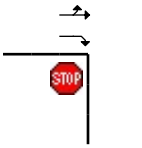


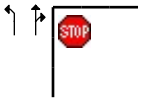


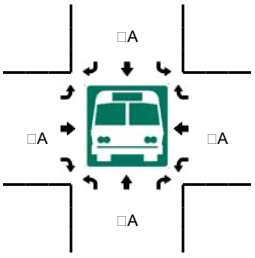












5-Min Count Period Beginning At	SW Main St/SW Ladd Hill Rd (Northbound)				SW Main St/SW Ladd Hill Rd (Southbound)				SW Sunset Blvd (Eastbound)				SW Sunset Blvd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	2	12	3	0	5	22	2	0	1	5	8	0	3	3	2	0	68	
4:05 PM	5	10	2	0	7	18	1	0	3	5	14	0	4	4	3	0	76	
4:10 PM	6	10	2	0	1	25	2	0	3	7	9	0	3	5	3	0	76	
4:15 PM	1	8	3	0	6	19	2	0	3	6	8	0	2	3	1	0	62	
4:20 PM	7	14	3	0	6	21	2	0	1	3	8	0	2	3	2	1	73	
4:25 PM	6	13	1	0	5	20	3	0	4	4	7	0	3	5	4	0	75	
4:30 PM	10	14	2	0	9	31	4	0	0	5	5	0	2	4	3	0	89	
4:35 PM	2	15	3	0	5	24	3	0	1	7	12	0	2	3	4	0	81	
4:40 PM	3	14	1	0	3	35	6	0	2	10	8	0	4	5	3	0	94	
4:45 PM	2	26	2	0	6	27	4	0	4	10	9	0	2	8	4	0	104	
4:50 PM	10	15	3	0	3	36	2	0	1	6	13	0	1	4	6	0	100	
4:55 PM	3	17	2	0	5	34	4	0	0	10	8	0	3	7	3	0	96	994
5:00 PM	6	17	4	0	6	26	3	0	2	7	10	0	3	12	3	0	99	1025
5:05 PM	6	13	2	0	5	28	7	0	2	10	14	0	2	5	9	0	103	1052
5:10 PM	5	22	2	0	6	23	0	0	1	11	12	0	2	3	4	0	91	1067
5:15 PM	13	18	4	0	5	26	3	0	1	9	10	0	5	9	2	0	105	1110
5:20 PM	13	27	0	0	9	34	2	0	4	12	12	0	3	8	1	0	125	1162
5:25 PM	17	14	1	0	8	29	1	0	5	8	13	0	1	11	1	0	109	1196
5:30 PM	7	17	5	0	2	27	2	0	2	8	11	0	1	6	6	0	94	1201
5:35 PM	6	13	1	0	7	22	5	0	1	11	4	0	5	6	7	0	88	1208
5:40 PM	12	20	2	0	3	19	2	0	1	10	7	0	1	3	2	0	82	1196
5:45 PM	6	22	1	0	2	20	4	0	3	5	9	0	5	5	5	0	87	1179
5:50 PM	6	11	1	0	2	30	2	0	2	10	10	0	4	7	1	0	86	1165
5:55 PM	9	22	0	0	4	23	4	0	2	10	13	0	5	4	3	0	99	1168

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All □ehicles	172	236	20	0	88	356	24	0	40	116	140	0	36	112	16	0	1356
Heavy Trucks	0	12	0		0	0	0		0	4	0		4	0	0		20
Pedestrians		0				12				0				0			12
Bicycles	0	0	0		0	0	0		0	0	0		0	1	0		1
Railroad Stopped Buses																	

Comments:

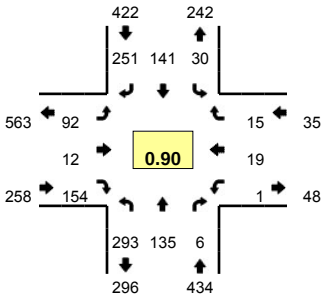
Report generated on 2/23/2018 2:12 PM

SO□RCE: □uality Counts, LLC (http://www.□ualitycounts.net) 1-877-580-2212

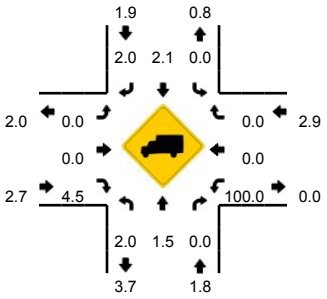
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering □olume

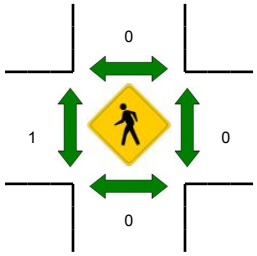
LOCATION: SW Murdock Rd/SW Baker Rd -- SW Sunset Blvd/Mc□inley Dr | **QC JOB #:** 14548502

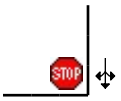
CITY/STATE: Sherwood, OR | **DATE:** Wed, Oct 25 2017

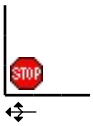


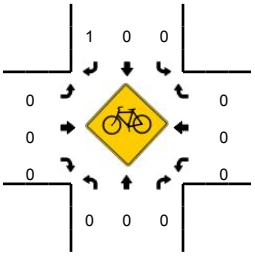
Peak-Hour: 4:45 PM -- 5:45 PM
Peak 15-Min: 5:05 PM -- 5:20 PM

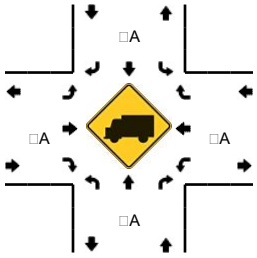


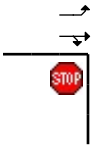


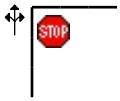


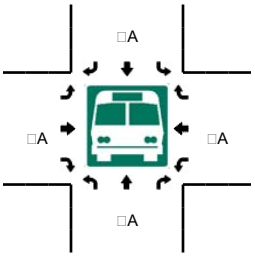












5-Min Count Period Beginning At	SW Murdock Rd/SW Baker Rd (Northbound)				SW Murdock Rd/SW Baker Rd (Southbound)				SW Sunset Blvd/McKinley Dr (Eastbound)				SW Sunset Blvd/McKinley Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	16	9	0	0	1	8	14	0	10	0	10	0	0	2	1	0	71	
4:05 PM	13	11	0	0	2	10	17	0	8	2	12	0	0	0	0	0	75	
4:10 PM	16	11	0	0	4	11	18	0	4	3	9	0	0	0	0	0	76	
4:15 PM	21	6	0	0	3	8	16	0	9	0	7	0	0	1	0	0	71	
4:20 PM	14	7	1	0	1	15	23	0	8	0	9	0	0	0	1	0	79	
4:25 PM	24	6	1	0	1	5	12	0	7	1	2	0	0	0	0	0	59	
4:30 PM	19	12	0	0	1	13	10	0	6	0	16	0	0	1	0	0	78	
4:35 PM	14	8	0	0	1	14	18	0	7	0	13	0	0	0	0	0	75	
4:40 PM	24	11	1	0	1	11	16	0	2	0	10	0	0	0	0	0	76	
4:45 PM	25	13	0	0	0	17	28	0	12	0	9	0	0	2	1	0	107	
4:50 PM	26	12	0	0	2	11	27	0	6	1	17	0	0	2	3	0	107	
4:55 PM	25	14	1	0	3	8	26	0	11	1	10	0	0	1	2	0	102	976
5:00 PM	14	9	1	0	1	12	14	0	5	0	11	0	0	1	3	0	71	976
5:05 PM	25	13	0	0	5	11	19	0	9	1	17	0	0	2	0	0	102	1003
5:10 PM	34	14	1	0	5	14	15	0	6	2	16	0	1	4	0	0	112	1039
5:15 PM	19	14	0	0	5	14	22	0	9	0	16	0	0	2	3	0	104	1072
5:20 PM	29	4	1	0	0	6	20	0	4	3	10	0	0	1	1	0	79	1072
5:25 PM	27	6	0	0	5	14	17	0	10	2	14	0	0	0	0	0	95	1108
5:30 PM	20	12	1	0	2	12	21	0	9	0	16	0	0	1	2	0	96	1126
5:35 PM	23	10	1	0	1	9	20	0	5	1	7	0	0	1	0	0	78	1129
5:40 PM	26	14	0	0	1	13	22	0	6	1	11	0	0	2	0	0	96	1149
5:45 PM	21	11	0	0	0	15	16	0	6	0	10	0	0	0	2	0	81	1123
5:50 PM	20	7	0	0	3	8	16	0	9	2	10	0	0	0	0	0	75	1091
5:55 PM	15	9	0	0	2	9	20	0	6	1	8	0	0	0	2	0	72	1061

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All □ehicles	312	164	4	0	60	156	224	0	96	12	196	0	4	32	12	0	1272
Heavy Trucks	8	0	0		0	8	0		0	0	8		4	0	0		28
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	1		0	0	0		0	0	0		1
Railroad Stopped Buses																	

Comments:

Report generated on 10/31/2017 3:00 PM

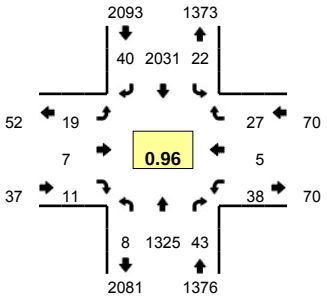
SO□RCE: □uality Counts, LLC (http://www.□ualitycounts.net) 1-877-580-2212

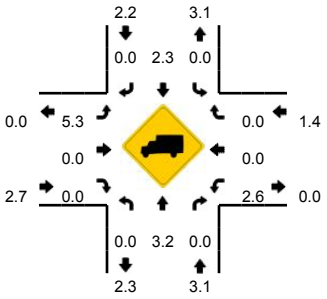
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering □olume

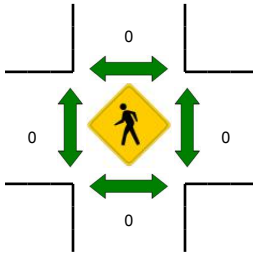
LOCATION: SW Pacific Hwy -- SW Chapman Rd | **QC JOB #:** 14401707

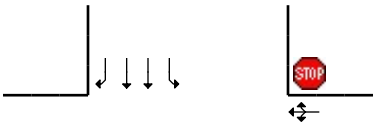
CITY/STATE: Sherwood, OR | **DATE:** Thu, May 11 2017

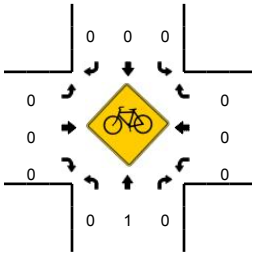
Peak-Hour: 4:35 PM -- 5:35 PM
Peak 15-Min: 5:10 PM -- 5:25 PM

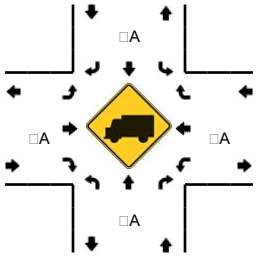


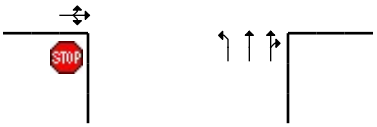


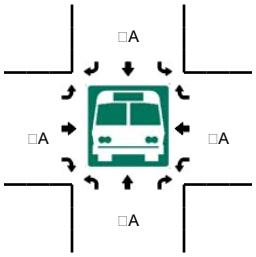












5-Min Count Period Beginning At	SW Pacific Hwy (Northbound)				SW Pacific Hwy (Southbound)				SW Chapman Rd (Eastbound)				SW Chapman Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	89	1	0	1	184	2	0	1	1	0	0	2	0	0	0	281	
4:05 PM	0	72	6	1	0	166	3	0	0	0	1	0	5	0	0	0	254	
4:10 PM	1	103	2	1	1	160	1	0	1	0	1	0	3	0	1	0	275	
4:15 PM	0	126	4	0	1	163	4	0	4	0	0	0	4	0	2	0	308	
4:20 PM	0	124	1	0	1	153	1	0	1	0	0	0	4	0	0	0	285	
4:25 PM	1	92	5	0	1	172	4	0	1	0	0	0	4	0	2	0	282	
4:30 PM	1	102	2	0	3	149	0	0	0	0	0	0	4	0	2	0	263	
4:35 PM	2	114	0	0	1	153	3	0	2	2	0	0	1	0	4	0	282	
4:40 PM	0	117	2	0	3	149	4	0	5	1	3	0	6	0	4	0	294	
4:45 PM	0	108	2	0	0	176	3	0	3	1	1	0	3	0	5	0	302	
4:50 PM	0	117	5	0	2	177	4	0	0	1	1	0	4	1	1	0	313	
4:55 PM	2	121	3	0	1	173	5	0	0	0	1	0	1	0	3	0	310	3449
5:00 PM	0	102	6	0	4	159	1	1	0	0	2	0	3	0	1	0	279	3447
5:05 PM	0	91	2	0	2	183	3	0	1	0	1	0	0	1	0	0	284	3477
5:10 PM	0	110	6	0	4	187	2	1	4	0	0	0	5	0	1	0	320	3522
5:15 PM	2	119	3	0	1	189	5	0	0	1	1	0	2	1	1	0	325	3539
5:20 PM	1	107	1	1	0	161	3	0	2	0	0	0	6	0	5	0	287	3541
5:25 PM	0	114	6	0	2	177	5	0	1	0	1	0	4	0	0	0	310	3569
5:30 PM	0	105	7	0	0	147	2	0	1	1	0	0	3	2	2	0	270	3576
5:35 PM	0	100	0	0	1	164	2	1	1	0	1	0	4	1	2	0	277	3571
5:40 PM	0	132	4	0	0	156	2	0	1	0	1	0	0	0	1	0	297	3574
5:45 PM	0	114	4	0	0	149	1	0	4	0	0	0	5	0	2	0	279	3551
5:50 PM	0	93	3	0	3	158	1	0	0	4	0	0	5	1	1	0	269	3507
5:55 PM	0	82	3	0	2	151	0	0	1	2	0	0	5	0	1	0	247	3444

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All □ehicles	12	1344	40	4	20	2148	40	4	24	4	4	0	52	4	28	0	3728
Heavy Trucks	0	44	0		0	40	0		0	0	0		0	0	0		84
Pedestrians		0				0				0				0			0
Bicycles	0	1	0		0	0	0		0	0	0		0	0	0		1
Railroad																	
Stopped Buses																	

Comments:

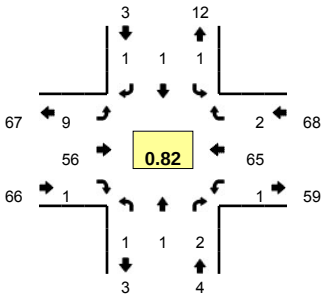
Report generated on 5/19/2017 4:01 PM

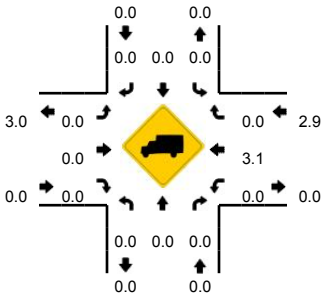
SO□RCE: □uality Counts, LLC (http://www.□ualitycounts.net) 1-877-580-2212

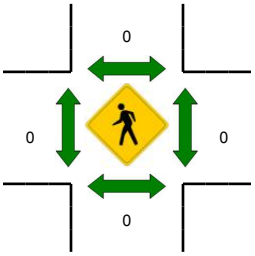
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering □olume

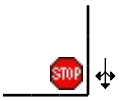
LOCATION: SW Old Hwy 99W -- SW Brookman Rd | **QC JOB #:** 14401710
CITY/STATE: Sherwood, OR | **DATE:** Thu, May 11 2017

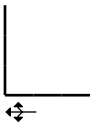
Peak-Hour: 4:35 PM -- 5:35 PM
Peak 15-Min: 5:05 PM -- 5:20 PM

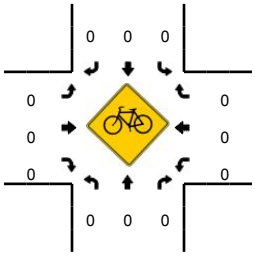


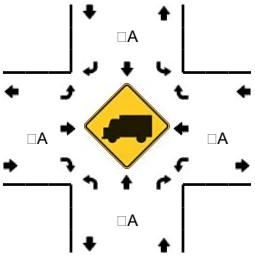


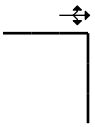


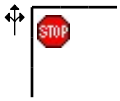


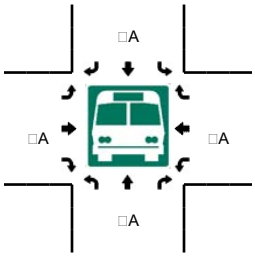












5-Min Count Period Beginning At	SW Old Hwy 99W (Northbound)				SW Old Hwy 99W (Southbound)				SW Brookman Rd (Eastbound)				SW Brookman Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	0	0	0	0	0	0	2	1	0	0	0	1	0	0	4	
4:05 PM	0	0	1	0	0	0	0	0	0	6	0	0	1	5	0	0	13	
4:10 PM	0	0	0	0	1	0	0	0	0	3	0	0	0	4	0	0	8	
4:15 PM	0	0	0	0	1	0	2	0	2	4	0	0	0	3	0	0	12	
4:20 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	4	0	0	5	
4:25 PM	0	0	0	0	0	0	0	0	1	2	0	0	0	5	0	0	8	
4:30 PM	0	0	0	0	0	0	1	0	1	4	0	0	0	3	0	0	9	
4:35 PM	0	0	0	0	0	0	0	0	0	1	0	0	1	3	1	0	6	
4:40 PM	0	0	0	0	0	0	1	0	1	3	0	0	0	9	0	0	14	
4:45 PM	0	0	0	0	0	0	0	0	0	4	0	0	0	5	0	0	9	
4:50 PM	0	0	0	0	1	0	0	0	1	5	0	0	0	5	0	0	12	
4:55 PM	0	0	0	0	0	0	0	0	0	5	0	0	0	6	0	0	11	111
5:00 PM	0	0	0	0	0	1	0	0	4	4	1	0	0	5	0	0	15	122
5:05 PM	0	0	2	0	0	0	0	0	0	6	0	0	0	2	0	0	10	119
5:10 PM	0	1	0	0	0	0	0	0	0	8	0	0	0	4	1	0	14	125
5:15 PM	0	0	0	0	0	0	0	0	2	5	0	0	0	12	0	0	19	132
5:20 PM	0	0	0	0	0	0	0	0	1	1	0	0	0	6	0	0	8	135
5:25 PM	1	0	0	0	0	0	0	0	0	7	0	0	0	2	0	0	10	137
5:30 PM	0	0	0	0	0	0	0	0	0	7	0	0	0	6	0	0	13	141
5:35 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	4	0	0	5	140
5:40 PM	0	0	0	0	0	0	0	0	0	4	0	0	1	1	0	0	6	132
5:45 PM	0	0	0	0	0	0	0	0	1	4	0	0	0	7	0	0	12	135
5:50 PM	0	0	0	0	0	0	0	0	1	7	0	0	0	6	0	0	14	137
5:55 PM	0	0	0	0	0	0	0	0	1	5	0	0	0	5	0	0	11	137

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All □ehicles	0	4	8	0	0	0	0	0	8	76	0	0	0	72	4	0	172
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	0	0		0
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

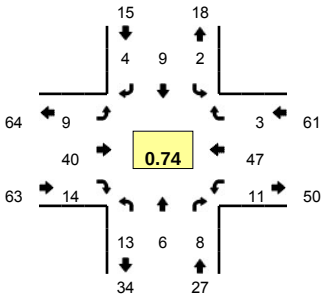
Report generated on 5/19/2017 4:01 PM

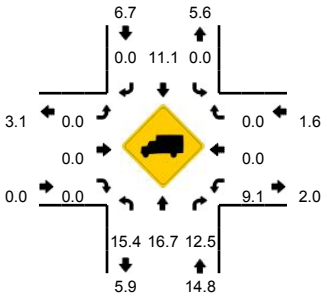
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering □olume

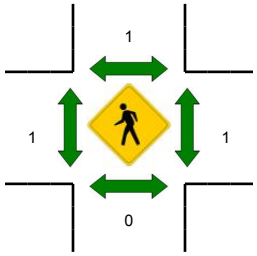
LOCATION: SW Middleton Rd -- SW Brookman Rd | **QC JOB #:** 14401712

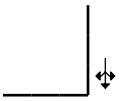
CITY/STATE: Sherwood, OR | **DATE:** Thu, May 11 2017

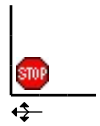
Peak-Hour: 5:00 PM -- 6:00 PM
Peak 15-Min: 5:05 PM -- 5:20 PM

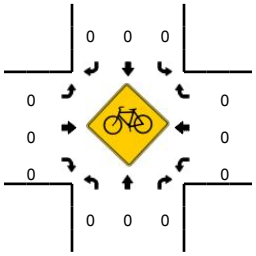


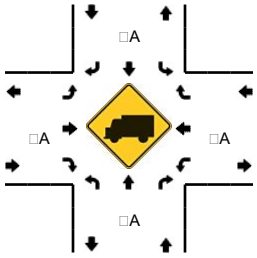


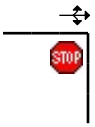


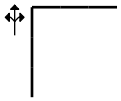


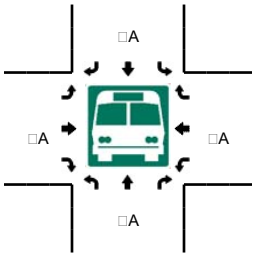












5-Min Count Period Beginning At	SW Middleton Rd (Northbound)				SW Middleton Rd (Southbound)				SW Brookman Rd (Eastbound)				SW Brookman Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	0	0	1	0	0	0	0	1	0	0	0	2	0	0	4	
4:05 PM	0	0	0	0	0	2	1	0	0	7	0	0	0	4	0	0	14	
4:10 PM	1	0	1	0	0	0	0	0	1	3	0	0	0	3	0	0	9	
4:15 PM	3	0	0	0	0	0	0	0	1	3	1	0	0	1	0	0	9	
4:20 PM	0	0	1	0	0	0	0	0	0	1	0	0	0	4	0	0	6	
4:25 PM	0	0	0	0	0	0	0	0	0	2	0	0	1	5	0	0	8	
4:30 PM	0	0	0	0	0	0	0	0	0	1	2	0	0	2	0	0	5	
4:35 PM	0	0	1	0	1	0	0	0	0	2	0	0	0	4	1	0	9	
4:40 PM	3	0	0	0	0	0	0	0	0	2	0	0	0	7	0	0	12	
4:45 PM	1	0	0	0	2	0	2	0	1	2	1	0	1	4	0	0	14	
4:50 PM	2	0	0	0	0	1	1	0	0	6	1	0	1	2	1	0	15	
4:55 PM	0	0	0	0	0	0	0	0	0	5	0	0	1	3	0	0	9	114
5:00 PM	2	0	1	0	0	0	1	0	0	4	0	0	0	2	0	0	10	120
5:05 PM	0	0	1	0	0	1	0	0	0	7	1	0	1	3	0	0	14	120
5:10 PM	1	1	1	0	1	3	0	0	0	4	1	0	0	5	0	0	17	128
5:15 PM	2	2	0	0	0	1	0	0	1	4	3	0	2	10	0	0	25	144
5:20 PM	2	0	1	0	0	0	0	0	0	0	0	0	3	3	1	0	10	148
5:25 PM	0	0	1	0	0	0	0	0	2	5	1	0	0	3	0	0	12	152
5:30 PM	1	1	0	0	0	0	1	0	3	3	1	0	0	5	0	0	15	162
5:35 PM	1	0	1	0	0	1	0	0	0	1	1	0	1	2	0	0	8	161
5:40 PM	2	1	1	0	0	2	0	0	1	1	0	0	2	1	1	0	12	161
5:45 PM	1	1	1	0	0	0	2	0	2	3	1	0	1	3	1	0	16	163
5:50 PM	0	0	0	0	1	0	0	0	0	4	3	0	1	7	0	0	16	164
5:55 PM	1	0	0	0	0	1	0	0	0	4	2	0	0	3	0	0	11	166

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All □ehicles	12	12	8	0	4	20	0	0	4	60	20	0	12	72	0	0	224
Heavy Trucks	0	0	4		0	0	0		0	0	0		0	0	0		4
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/19/2017 4:01 PM

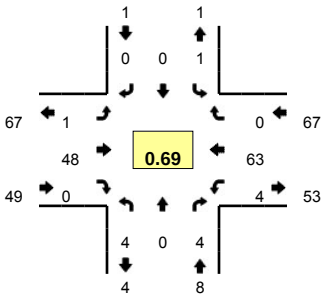
SO□RCE: □uality Counts, LLC (http://www.□ualitycounts.net) 1-877-580-2212

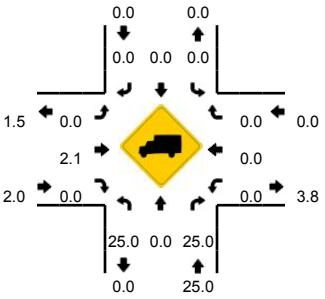
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering □olume

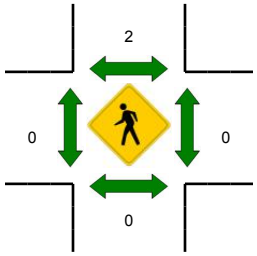
LOCATION: SW Oberst Rd -- SW Brookman Rd
CITY/STATE: Sherwood, OR

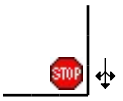
QC JOB #: 14401714
DATE: Thu, May 11 2017

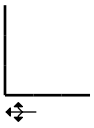
Peak-Hour: 4:55 PM -- 5:55 PM
Peak 15-Min: 5:05 PM -- 5:20 PM

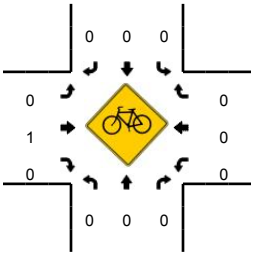


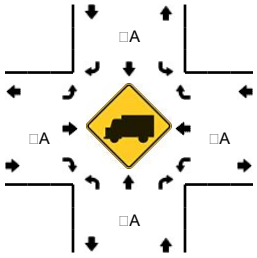


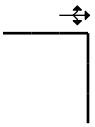


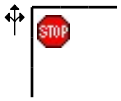


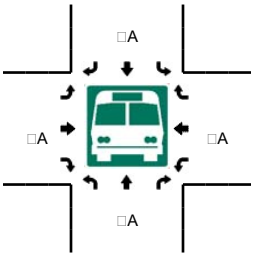












5-Min Count Period Beginning At	SW Oberst Rd (Northbound)				SW Oberst Rd (Southbound)				SW Brookman Rd (Eastbound)				SW Brookman Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	0	0	0	0	0	0	0	3	0	0	0	1	0	0	4	
4:05 PM	0	0	0	0	0	0	0	0	0	6	0	0	0	6	0	0	12	
4:10 PM	0	0	0	0	0	0	0	0	0	3	1	0	0	2	0	0	6	
4:15 PM	0	0	0	0	0	0	0	0	0	3	0	0	0	1	0	0	4	
4:20 PM	0	0	0	0	0	0	0	0	0	3	0	0	0	5	0	0	8	
4:25 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	5	1	0	8	
4:30 PM	0	0	0	0	0	0	1	0	0	0	1	0	0	4	0	0	6	
4:35 PM	0	0	0	0	0	0	0	0	0	3	0	0	0	5	0	0	8	
4:40 PM	0	0	0	0	0	0	0	0	0	2	1	0	0	6	0	0	9	
4:45 PM	1	0	0	0	0	0	0	0	0	1	1	0	0	6	0	0	9	
4:50 PM	0	0	0	0	0	0	0	0	0	7	1	0	1	2	0	0	11	
4:55 PM	0	0	0	0	0	0	0	0	0	4	0	0	0	5	0	0	9	94
5:00 PM	1	0	1	0	0	0	0	0	0	3	0	0	0	3	0	0	8	98
5:05 PM	0	0	0	0	0	0	0	0	1	7	0	0	0	4	0	0	12	98
5:10 PM	0	0	0	0	0	0	0	0	0	7	0	0	3	4	0	0	14	106
5:15 PM	0	0	0	0	0	0	0	0	0	5	0	0	1	13	0	0	19	121
5:20 PM	2	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	6	119
5:25 PM	0	0	1	0	0	0	0	0	0	5	0	0	0	3	0	0	9	120
5:30 PM	0	0	0	0	1	0	0	0	0	3	0	0	0	5	0	0	9	123
5:35 PM	0	0	0	0	0	0	0	0	0	3	0	0	0	5	0	0	8	123
5:40 PM	0	0	0	0	0	0	0	0	0	3	0	0	0	3	0	0	6	120
5:45 PM	0	0	1	0	0	0	0	0	0	3	0	0	0	5	0	0	9	120
5:50 PM	1	0	1	0	0	0	0	0	0	5	0	0	0	9	0	0	16	125
5:55 PM	0	0	0	0	0	0	0	0	0	4	0	0	1	2	0	0	7	123

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All □ehicles	0	0	0	0	0	0	0	0	4	76	0	0	16	84	0	0	180
Heavy Trucks	0	0	0		0	0	0		0	4	0		0	0	0		4
Pedestrians		0				4				0				0			4
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/23/2017 9:22 AM

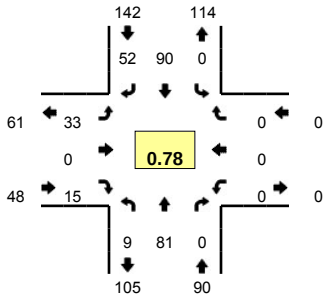
SO□RCE: □uality Counts, LLC (http://www.□ualitycounts.net) 1-877-580-2212

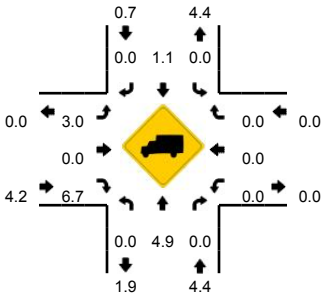
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering □olume

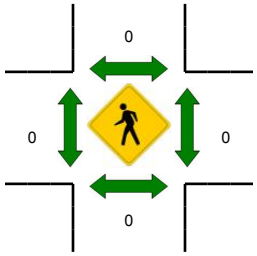
LOCATION: SW Ladd Hill Rd -- SW Brookman Rd
CITY/STATE: Sherwood, OR

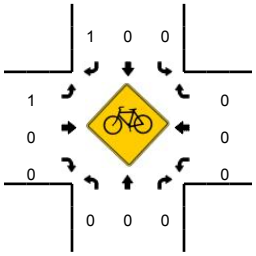
QC JOB #: 14401716
DATE: Thu, May 11 2017

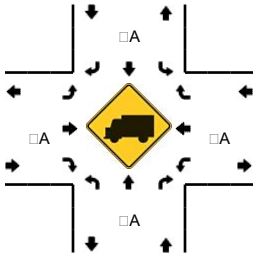
Peak-Hour: 4:45 PM -- 5:45 PM
Peak 15-Min: 5:05 PM -- 5:20 PM

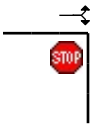


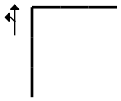


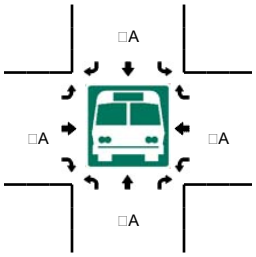












5-Min Count Period Beginning At	SW Ladd Hill Rd (Northbound)				SW Ladd Hill Rd (Southbound)				SW Brookman Rd (Eastbound)				SW Brookman Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	7	0	0	0	6	3	0	1	0	1	0	0	0	0	0	18	
4:05 PM	2	4	0	0	0	3	4	0	2	0	2	0	0	0	0	0	17	
4:10 PM	1	6	0	0	0	4	0	0	4	0	1	0	0	0	0	0	16	
4:15 PM	1	5	0	0	0	10	0	0	2	0	1	0	0	0	0	0	19	
4:20 PM	2	7	0	0	0	3	5	0	2	0	1	0	0	0	0	0	20	
4:25 PM	1	10	0	0	0	4	6	0	0	0	0	0	0	0	0	0	21	
4:30 PM	2	4	0	0	0	5	1	0	1	0	1	0	0	0	0	0	14	
4:35 PM	1	7	0	0	0	5	2	0	2	0	0	0	0	0	0	0	17	
4:40 PM	2	4	0	0	0	5	4	0	2	0	0	0	0	0	0	0	17	
4:45 PM	2	9	0	0	0	8	3	0	1	0	2	0	0	0	0	0	25	
4:50 PM	1	1	0	0	0	7	4	0	2	0	1	0	0	0	0	0	16	
4:55 PM	0	8	0	0	0	6	5	0	4	0	1	0	0	0	0	0	24	224
5:00 PM	0	7	0	0	0	2	1	0	5	0	0	0	0	0	0	0	15	221
5:05 PM	1	10	0	0	0	11	7	0	2	0	1	0	0	0	0	0	32	236
5:10 PM	2	5	0	0	0	8	7	0	6	0	2	0	0	0	0	0	30	250
5:15 PM	2	9	0	0	0	5	6	0	3	0	3	0	0	0	0	0	28	259
5:20 PM	0	7	0	0	0	10	5	0	0	0	0	0	0	0	0	0	22	261
5:25 PM	1	5	0	0	0	14	4	0	3	0	1	0	0	0	0	0	28	268
5:30 PM	0	6	0	0	0	5	2	0	3	0	2	0	0	0	0	0	18	272
5:35 PM	0	5	0	0	0	5	4	0	2	0	1	0	0	0	0	0	17	272
5:40 PM	0	9	0	0	0	9	4	0	2	0	1	0	0	0	0	0	25	280
5:45 PM	1	3	0	0	0	5	9	0	3	0	1	0	0	0	0	0	22	277
5:50 PM	1	4	0	0	0	2	5	0	4	0	0	0	0	0	0	0	16	277
5:55 PM	0	4	0	0	0	9	2	0	5	0	2	0	0	0	0	0	22	275

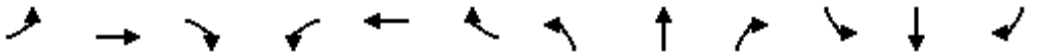
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All □ehicles	20	96	0	0	0	96	80	0	44	0	24	0	0	0	0	0	360
Heavy Trucks	0	4	0		0	4	0		4	0	4		0	0	0		16
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	1		0	0	0		0	0	0		1
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/19/2017 4:01 PM

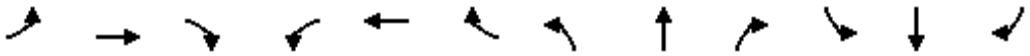
SO□RCE: □uality Counts, LLC (http://www.□ualitycounts.net) 1-877-580-2212

Appendix D Existing Conditions Level of Service Worksheets



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	106	223	102	179	225	245	1580	106	128	766	13
Future Volume (vph)	18	106	223	102	179	225	245	1580	106	128	766	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			-1%			2%	
Total Lost time (s)		6.0	6.0		6.0	6.0	5.0	6.0	6.0	5.0	6.0	6.0
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.98
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.99	1.00		0.98	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1809	1583		1818	1553	1761	3489	1561	3180	3279	1361
Flt Permitted		0.91	1.00		0.79	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1667	1583		1471	1553	1761	3489	1561	3180	3279	1361
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	19	112	235	107	188	237	258	1663	112	135	806	14
RTOR Reduction (vph)	0	0	171	0	0	109	0	0	27	0	0	8
Lane Group Flow (vph)	0	131	64	0	295	128	258	1663	85	135	806	6
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	0%	5%	2%	2%	3%	4%	3%	4%	4%	9%	9%	15%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8			2			6
Actuated Green, G (s)		35.0	35.0		35.0	35.0	23.8	65.1	65.1	11.2	52.5	52.5
Effective Green, g (s)		35.0	35.0		35.0	35.0	23.8	65.1	65.1	11.2	52.5	52.5
Actuated g/C Ratio		0.27	0.27		0.27	0.27	0.19	0.51	0.51	0.09	0.41	0.41
Clearance Time (s)		6.0	6.0		6.0	6.0	5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	5.4	5.4	3.5	5.4	5.4
Lane Grp Cap (vph)		454	431		401	423	326	1770	792	277	1341	556
v/s Ratio Prot							c0.15	c0.48		0.04	0.25	
v/s Ratio Perm		0.08	0.04		c0.20	0.08			0.05			0.00
v/c Ratio		0.29	0.15		0.74	0.30	0.79	0.94	0.11	0.49	0.60	0.01
Uniform Delay, d1		36.8	35.4		42.4	37.0	49.9	29.7	16.5	55.8	29.7	22.5
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		0.4	0.2		6.9	0.4	12.3	10.7	0.1	1.6	1.2	0.0
Delay (s)		37.2	35.5		49.3	37.4	62.2	40.4	16.6	57.4	30.9	22.5
Level of Service		D	D		D	D	E	D	B	E	C	C
Approach Delay (s)		36.1			44.0			41.9			34.5	
Approach LOS		D			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	39.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	128.3	Sum of lost time (s)	17.0
Intersection Capacity Utilization	83.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	51	238	41	7	410	86	17	14	10	27	44	67
Future Volume (Veh/h)	51	238	41	7	410	86	17	14	10	27	44	67
Sign Control		Free			Free			Stop			Stop	
Grade		-1%			1%			-2%			0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	64	298	51	9	513	108	21	18	13	34	55	84
Pedestrians					5						3	
Lane Width (ft)					12.0						12.0	
Walking Speed (ft/s)					3.5						3.5	
Percent Blockage					0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		648										
pX, platoon unblocked												
vC, conflicting volume	624			349			1068	1068	303	1041	1065	570
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	624			349			1068	1068	303	1041	1065	570
tC, single (s)	4.2			4.2			7.1	6.5	6.2	7.2	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.5	4.0	3.3	3.6	4.0	3.3
p0 queue free %	93			99			83	91	98	80	73	84
cM capacity (veh/h)	926			1146			127	206	738	174	207	523

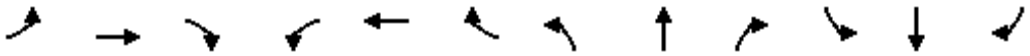
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	SB 1
Volume Total	64	298	51	9	621	52	173
Volume Left	64	0	0	9	0	21	34
Volume Right	0	0	51	0	108	13	84
cSH	926	1700	1700	1146	1700	192	278
Volume to Capacity	0.07	0.18	0.03	0.01	0.37	0.27	0.62
Queue Length 95th (ft)	6	0	0	1	0	26	96
Control Delay (s)	9.2	0.0	0.0	8.2	0.0	30.6	37.1
Lane LOS	A			A		D	E
Approach Delay (s)	1.4			0.1		30.6	37.1
Approach LOS						D	E

Intersection Summary				
Average Delay	6.8			
Intersection Capacity Utilization	48.8%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	208	67	71	321	182	45
Future Volume (Veh/h)	208	67	71	321	182	45
Sign Control	Free			Free	Stop	
Grade	-1%			1%	0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	248	80	85	382	217	54
Pedestrians				21	1	
Lane Width (ft)				12.0	12.0	
Walking Speed (ft/s)				3.5	3.5	
Percent Blockage				2	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	1264					
pX, platoon unblocked						
vC, conflicting volume			329		841	310
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			329		841	310
tC, single (s)			4.2		6.4	6.3
tC, 2 stage (s)						
tF (s)			2.3		3.5	3.4
p0 queue free %			93		29	92
cM capacity (veh/h)			1207		307	704

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	328	85	382	271
Volume Left	0	85	0	217
Volume Right	80	0	0	54
cSH	1700	1207	1700	346
Volume to Capacity	0.19	0.07	0.22	0.78
Queue Length 95th (ft)	0	6	0	161
Control Delay (s)	0.0	8.2	0.0	44.3
Lane LOS		A		E
Approach Delay (s)	0.0	1.5		44.3
Approach LOS				E

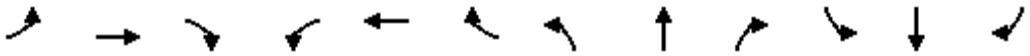
Intersection Summary			
Average Delay	11.9		
Intersection Capacity Utilization	42.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	106	244	24	30	171	30	71	127	65	28	37	101
Future Volume (vph)	106	244	24	30	171	30	71	127	65	28	37	101
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	118	271	27	33	190	33	79	141	72	31	41	112

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	118	298	33	223	79	213	31	153
Volume Left (vph)	118	0	33	0	79	0	31	0
Volume Right (vph)	0	27	0	33	0	72	0	112
Hadj (s)	0.58	-0.03	0.72	-0.07	0.55	-0.18	0.50	-0.46
Departure Headway (s)	6.9	6.3	7.3	6.5	7.2	6.5	7.4	6.4
Degree Utilization, x	0.23	0.52	0.07	0.40	0.16	0.39	0.06	0.27
Capacity (veh/h)	495	550	465	527	469	522	451	520
Control Delay (s)	10.7	14.8	9.6	12.6	10.4	12.3	9.7	10.6
Approach Delay (s)	13.6		12.2		11.8		10.5	
Approach LOS	B		B		B		B	

Intersection Summary				
Delay	12.3			
Level of Service	B			
Intersection Capacity Utilization	49.2%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	238	7	202	5	20	23	124	133	3	5	109	61
Future Volume (vph)	238	7	202	5	20	23	124	133	3	5	109	61
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	262	8	222	5	22	25	136	146	3	5	120	67

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1
Volume Total (vph)	262	230	52	285	192
Volume Left (vph)	262	0	5	136	5
Volume Right (vph)	0	222	25	3	67
Hadj (s)	0.55	-0.60	-0.20	0.20	-0.09
Departure Headway (s)	6.5	5.4	6.0	5.8	5.7
Degree Utilization, x	0.48	0.34	0.09	0.46	0.31
Capacity (veh/h)	528	642	520	580	585
Control Delay (s)	14.2	10.0	9.6	13.7	11.2
Approach Delay (s)	12.2		9.6	13.7	11.2
Approach LOS	B		A	B	B

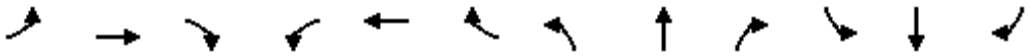
Intersection Summary				
Delay	12.3			
Level of Service	B			
Intersection Capacity Utilization	53.6%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Traffic Volume (veh/h)	27	3	2	37	3	39	4	8	1850	84	3	17
Future Volume (Veh/h)	27	3	2	37	3	39	4	8	1850	84	3	17
Sign Control		Stop			Stop				Free			
Grade		0%			0%				0%			
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	28	3	2	39	3	41	0	8	1927	88	0	18
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type									Raised			
Median storage veh)									2			
Upstream signal (ft)												
pX, platoon unblocked							0.00				0.00	
vC, conflicting volume	2175	3184	558	2585	3156	1008	0	1133			0	2015
vC1, stage 1 conf vol	1153	1153		1987	1987							
vC2, stage 2 conf vol	1022	2031		598	1169							
vCu, unblocked vol	2175	3184	558	2585	3156	1008	0	1133			0	2015
tC, single (s)	7.7	6.5	6.9	7.6	6.5	7.2	0.0	4.1			0.0	4.1
tC, 2 stage (s)	6.7	5.5		6.6	5.5							
tF (s)	3.6	4.0	3.3	3.5	4.0	3.4	0.0	2.2			0.0	2.2
p0 queue free %	76	96	100	32	97	81	0	99			0	94
cM capacity (veh/h)	119	76	478	58	93	220	0	624			0	287

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SB 4
Volume Total	33	83	8	1285	730	18	558	558	16
Volume Left	28	39	8	0	0	18	0	0	0
Volume Right	2	41	0	0	88	0	0	0	16
cSH	118	93	624	1700	1700	287	1700	1700	1700
Volume to Capacity	0.28	0.89	0.01	0.76	0.43	0.06	0.33	0.33	0.01
Queue Length 95th (ft)	26	125	1	0	0	5	0	0	0
Control Delay (s)	46.7	147.1	10.8	0.0	0.0	18.4	0.0	0.0	0.0
Lane LOS	E	F	B			C			
Approach Delay (s)	46.7	147.1	0.0			0.3			
Approach LOS	E	F							

Intersection Summary				
Average Delay	4.3			
Intersection Capacity Utilization	64.9%	ICU Level of Service		C
Analysis Period (min)	15			

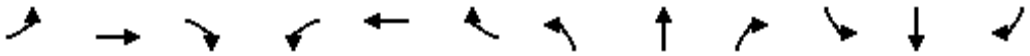
Movement	SBT	SBR
Lane Configurations		
Traffic Volume (veh/h)	1072	15
Future Volume (Veh/h)	1072	15
Sign Control	Free	
Grade	0%	
Peak Hour Factor	0.96	0.96
Hourly flow rate (vph)	1117	16
Pedestrians		
Lane Width (ft)		
Walking Speed (ft/s)		
Percent Blockage		
Right turn flare (veh)		
Median type	Raised	
Median storage veh)	2	
Upstream signal (ft)		
pX, platoon unblocked		
vC, conflicting volume		
vC1, stage 1 conf vol		
vC2, stage 2 conf vol		
vCu, unblocked vol		
tC, single (s)		
tC, 2 stage (s)		
tF (s)		
p0 queue free %		
cM capacity (veh/h)		
Direction, Lane #		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	89	1	0	63	3	2	2	2	8	3	14
Future Volume (Veh/h)	10	89	1	0	63	3	2	2	2	8	3	14
Sign Control		Free			Free			Stop			Stop	
Grade		0%			2%			2%			-2%	
Peak Hour Factor	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
Hourly flow rate (vph)	14	129	1	0	91	4	3	3	3	12	4	20
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	95			130			272	252	130	255	251	93
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	95			130			272	252	130	255	251	93
tC, single (s)	4.1			4.1			7.6	7.0	6.2	7.1	6.5	6.4
tC, 2 stage (s)												
tF (s)	2.2			2.2			4.0	4.5	3.3	3.5	4.0	3.5
p0 queue free %	99			100			99	99	100	98	99	98
cM capacity (veh/h)	1512			1468			573	571	926	693	650	914

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	144	95	9	36
Volume Left	14	0	3	12
Volume Right	1	4	3	20
cSH	1512	1468	656	794
Volume to Capacity	0.01	0.00	0.01	0.05
Queue Length 95th (ft)	1	0	1	4
Control Delay (s)	0.8	0.0	10.6	9.8
Lane LOS	A		B	A
Approach Delay (s)	0.8	0.0	10.6	9.8
Approach LOS			B	A

Intersection Summary				
Average Delay	2.0			
Intersection Capacity Utilization	22.0%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	87	8	2	56	6	10	10	9	7	4	3
Future Volume (Veh/h)	3	87	8	2	56	6	10	10	9	7	4	3
Sign Control		Stop			Stop			Free			Free	
Grade		-1%			1%			-2%			0%	
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72
Hourly flow rate (vph)	4	121	11	3	78	8	14	14	13	10	6	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	124	83	8	148	78	20	10			27		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	124	83	8	148	78	20	10			27		
tC, single (s)	7.1	6.5	6.2	7.6	6.6	6.4	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	4.0	4.0	3.5	2.2			2.2		
p0 queue free %	99	85	99	100	90	99	99			99		
cM capacity (veh/h)	776	797	1080	625	794	1015	1623			1600		

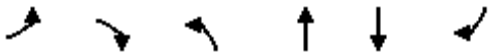
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	136	89	41	20
Volume Left	4	3	14	10
Volume Right	11	8	13	4
cSH	814	802	1623	1600
Volume to Capacity	0.17	0.11	0.01	0.01
Queue Length 95th (ft)	15	9	1	0
Control Delay (s)	10.3	10.0	2.5	3.7
Lane LOS	B	B	A	A
Approach Delay (s)	10.3	10.0	2.5	3.7
Approach LOS	B	B		

Intersection Summary				
Average Delay	8.6			
Intersection Capacity Utilization	16.3%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	105	1	1	60	2	3
Future Volume (Veh/h)	105	1	1	60	2	3
Sign Control	Free			Free	Stop	
Grade	-3%			2%	1%	
Peak Hour Factor	0.68	0.68	0.68	0.68	0.68	0.68
Hourly flow rate (vph)	154	1	1	88	3	4
Pedestrians				1		
Lane Width (ft)				12.0		
Walking Speed (ft/s)				3.5		
Percent Blockage				0		
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			155		244	156
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			155		244	156
tC, single (s)			4.1		6.4	6.5
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.6
p0 queue free %			100		100	100
cM capacity (veh/h)			1438		748	814

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	155	89	7
Volume Left	0	1	3
Volume Right	1	0	4
cSH	1700	1438	784
Volume to Capacity	0.09	0.00	0.01
Queue Length 95th (ft)	0	0	1
Control Delay (s)	0.0	0.1	9.6
Lane LOS		A	A
Approach Delay (s)	0.0	0.1	9.6
Approach LOS			A

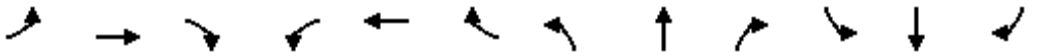
Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	15.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	92	24	18	106	40	38
Future Volume (Veh/h)	92	24	18	106	40	38
Sign Control	Stop			Free	Free	
Grade	2%			-1%	0%	
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Hourly flow rate (vph)	131	34	26	151	57	54
Pedestrians					1	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					3.5	
Percent Blockage					0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	288	84	111			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	288	84	111			
tC, single (s)	6.4	6.3	4.3			
tC, 2 stage (s)						
tF (s)	3.5	3.4	2.4			
p0 queue free %	81	96	98			
cM capacity (veh/h)	688	959	1390			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	165	177	111
Volume Left	131	26	0
Volume Right	34	0	54
cSH	731	1390	1700
Volume to Capacity	0.23	0.02	0.07
Queue Length 95th (ft)	22	1	0
Control Delay (s)	11.4	1.3	0.0
Lane LOS	B	A	
Approach Delay (s)	11.4	1.3	0.0
Approach LOS	B		

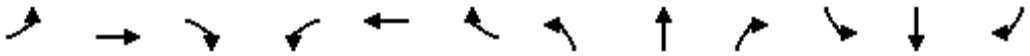
Intersection Summary			
Average Delay	4.6		
Intersection Capacity Utilization	26.5%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	122	294	127	106	135	219	1012	125	258	1669	13
Future Volume (vph)	13	122	294	127	106	135	219	1012	125	258	1669	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			-1%			2%	
Total Lost time (s)		6.0	6.0		6.0	6.0	5.0	6.0	6.0	5.0	6.0	6.0
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes		1.00	1.00		1.00	0.98	1.00	1.00	0.99	1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		1.00	1.00		0.97	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1876	1583		1775	1558	1796	3489	1587	3467	3504	1599
Flt Permitted		0.94	1.00		0.66	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1765	1583		1195	1558	1796	3489	1587	3467	3504	1599
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	14	130	313	135	113	144	233	1077	133	274	1776	14
RTOR Reduction (vph)	0	0	235	0	0	85	0	0	32	0	0	7
Lane Group Flow (vph)	0	144	78	0	248	59	233	1077	101	274	1776	7
Confl. Peds. (#/hr)	3					3						
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	8%	0%	2%	6%	2%	2%	1%	4%	1%	0%	2%	0%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8			2			6
Actuated Green, G (s)		35.2	35.2		35.2	35.2	24.6	86.5	86.5	18.2	80.1	80.1
Effective Green, g (s)		35.2	35.2		35.2	35.2	24.6	86.5	86.5	18.2	80.1	80.1
Actuated g/C Ratio		0.22	0.22		0.22	0.22	0.16	0.55	0.55	0.12	0.51	0.51
Clearance Time (s)		6.0	6.0		6.0	6.0	5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	5.4	5.4	3.5	5.4	5.4
Lane Grp Cap (vph)		395	355		268	349	281	1923	874	402	1788	816
v/s Ratio Prot							c0.13	0.31		0.08	c0.51	
v/s Ratio Perm		0.08	0.05		c0.21	0.04			0.06			0.00
v/c Ratio		0.36	0.22		0.93	0.17	0.83	0.56	0.12	0.68	0.99	0.01
Uniform Delay, d1		51.4	49.6		59.6	49.1	64.1	22.8	16.9	66.6	38.1	18.9
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		0.6	0.3		35.4	0.2	17.9	0.7	0.1	4.9	19.7	0.0
Delay (s)		52.0	50.0		94.9	49.3	82.1	23.5	17.0	71.5	57.8	18.9
Level of Service		D	D		F	D	F	C	B	E	E	B
Approach Delay (s)		50.6			78.2			32.4			59.4	
Approach LOS		D			E			C			E	

Intersection Summary			
HCM 2000 Control Delay	51.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	156.9	Sum of lost time (s)	17.0
Intersection Capacity Utilization	98.9%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	101	344	24	5	370	68	10	0	1	34	1	52
Future Volume (Veh/h)	101	344	24	5	370	68	10	0	1	34	1	52
Sign Control		Free			Free			Stop			Stop	
Grade		-1%			1%			-2%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	110	374	26	5	402	74	11	0	1	37	1	57
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		648										
pX, platoon unblocked				0.98			0.98	0.98	0.98	0.98	0.98	
vC, conflicting volume	476			400			1064	1080	374	1044	1069	439
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	476			380			1056	1072	354	1036	1061	439
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	90			100			93	100	100	81	99	91
cM capacity (veh/h)	1091			1168			168	196	682	191	198	618

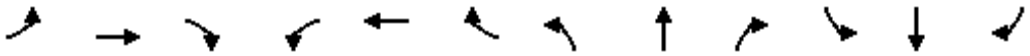
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	SB 1
Volume Total	110	374	26	5	476	12	95
Volume Left	110	0	0	5	0	11	37
Volume Right	0	0	26	0	74	1	57
cSH	1091	1700	1700	1168	1700	179	326
Volume to Capacity	0.10	0.22	0.02	0.00	0.28	0.07	0.29
Queue Length 95th (ft)	8	0	0	0	0	5	30
Control Delay (s)	8.7	0.0	0.0	8.1	0.0	26.5	20.5
Lane LOS	A			A		D	C
Approach Delay (s)	1.9			0.1		26.5	20.5
Approach LOS						D	C

Intersection Summary				
Average Delay	3.0			
Intersection Capacity Utilization	43.9%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	276	103	59	360	83	35
Future Volume (Veh/h)	276	103	59	360	83	35
Sign Control	Free			Free	Stop	
Grade	-1%			1%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	303	113	65	396	91	38
Pedestrians				1		
Lane Width (ft)				12.0		
Walking Speed (ft/s)				3.5		
Percent Blockage				0		
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	1264					
pX, platoon unblocked						
vC, conflicting volume			416		886	360
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			416		886	360
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			94		69	94
cM capacity (veh/h)			1138		297	681

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	416	65	396	129
Volume Left	0	65	0	91
Volume Right	113	0	0	38
cSH	1700	1138	1700	356
Volume to Capacity	0.24	0.06	0.23	0.36
Queue Length 95th (ft)	0	5	0	40
Control Delay (s)	0.0	8.4	0.0	20.7
Lane LOS		A		C
Approach Delay (s)	0.0	1.2		20.7
Approach LOS				C

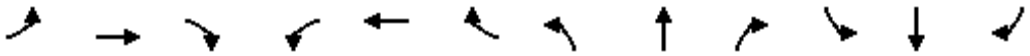
Intersection Summary			
Average Delay	3.2		
Intersection Capacity Utilization	41.1%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	25	112	124	32	84	49	91	213	27	65	347	39
Future Volume (vph)	25	112	124	32	84	49	91	213	27	65	347	39
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	28	126	139	36	94	55	102	239	30	73	390	44

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	28	265	36	149	102	269	73	434
Volume Left (vph)	28	0	36	0	102	0	73	0
Volume Right (vph)	0	139	0	55	0	30	0	44
Hadj (s)	0.50	-0.34	0.55	-0.25	0.50	-0.03	0.53	-0.05
Departure Headway (s)	7.9	7.0	8.2	7.4	7.5	6.9	7.3	6.7
Degree Utilization, x	0.06	0.52	0.08	0.31	0.21	0.52	0.15	0.81
Capacity (veh/h)	429	478	405	449	460	489	475	524
Control Delay (s)	10.2	16.2	10.7	12.4	11.3	16.0	10.3	30.8
Approach Delay (s)	15.6		12.1		14.7		27.9	
Approach LOS	C		B		B		D	

Intersection Summary				
Delay	19.5			
Level of Service	C			
Intersection Capacity Utilization	56.1%	ICU Level of Service	B	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	92	12	154	1	19	15	293	135	6	30	141	251
Future Volume (vph)	92	12	154	1	19	15	293	135	6	30	141	251
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	102	13	171	1	21	17	326	150	7	33	157	279

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1
Volume Total (vph)	102	184	39	483	469
Volume Left (vph)	102	0	1	326	33
Volume Right (vph)	0	171	17	7	279
Hadj (s)	0.50	-0.57	-0.21	0.15	-0.31
Departure Headway (s)	7.7	6.6	7.3	5.9	5.5
Degree Utilization, x	0.22	0.34	0.08	0.79	0.72
Capacity (veh/h)	430	488	422	597	629
Control Delay (s)	11.6	11.7	10.9	27.4	21.1
Approach Delay (s)	11.7		10.9	27.4	21.1
Approach LOS	B		B	D	C

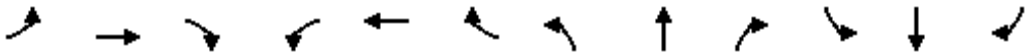
Intersection Summary				
Delay	21.1			
Level of Service	C			
Intersection Capacity Utilization	70.0%	ICU Level of Service	C	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Traffic Volume (veh/h)	19	7	11	38	5	27	1	8	1325	43	2	22
Future Volume (Veh/h)	19	7	11	38	5	27	1	8	1325	43	2	22
Sign Control		Stop			Stop				Free			
Grade		0%			0%				0%			
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	20	7	11	40	5	28	0	8	1380	45	0	23
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type									Raised			
Median storage veh)									2			
Upstream signal (ft)												
pX, platoon unblocked							0.00				0.00	
vC, conflicting volume	2898	3603	1058	2537	3622	712	0	2158			0	1425
vC1, stage 1 conf vol	2162	2162		1418	1418							
vC2, stage 2 conf vol	736	1441		1118	2204							
vCu, unblocked vol	2898	3603	1058	2537	3622	712	0	2158			0	1425
tC, single (s)	7.6	6.5	6.9	7.6	6.5	6.9	0.0	4.1			0.0	4.1
tC, 2 stage (s)	6.6	5.5		6.6	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	0.0	2.2			0.0	2.2
p0 queue free %	53	90	95	61	92	93	0	97			0	95
cM capacity (veh/h)	43	71	224	103	64	379	0	252			0	484

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SB 4
Volume Total	38	73	8	920	505	23	1058	1058	42
Volume Left	20	40	8	0	0	23	0	0	0
Volume Right	11	28	0	0	45	0	0	0	42
cSH	62	135	252	1700	1700	484	1700	1700	1700
Volume to Capacity	0.62	0.54	0.03	0.54	0.30	0.05	0.62	0.62	0.02
Queue Length 95th (ft)	64	66	2	0	0	4	0	0	0
Control Delay (s)	130.4	59.2	19.7	0.0	0.0	12.8	0.0	0.0	0.0
Lane LOS	F	F	C			B			
Approach Delay (s)	130.4	59.2	0.1			0.1			
Approach LOS	F	F							

Intersection Summary				
Average Delay	2.6			
Intersection Capacity Utilization	67.9%	ICU Level of Service	C	
Analysis Period (min)	15			

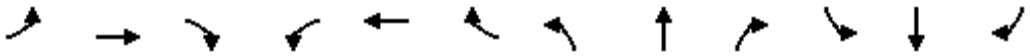
Movement	SBT	SBR
Lane Configurations		
Traffic Volume (veh/h)	2031	40
Future Volume (Veh/h)	2031	40
Sign Control	Free	
Grade	0%	
Peak Hour Factor	0.96	0.96
Hourly flow rate (vph)	2116	42
Pedestrians		
Lane Width (ft)		
Walking Speed (ft/s)		
Percent Blockage		
Right turn flare (veh)		
Median type	Raised	
Median storage veh)	2	
Upstream signal (ft)		
pX, platoon unblocked		
vC, conflicting volume		
vC1, stage 1 conf vol		
vC2, stage 2 conf vol		
vCu, unblocked vol		
tC, single (s)		
tC, 2 stage (s)		
tF (s)		
p0 queue free %		
cM capacity (veh/h)		
Direction, Lane #		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	56	1	1	65	2	1	1	2	1	1	1
Future Volume (Veh/h)	9	56	1	1	65	2	1	1	2	1	1	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			2%			2%			-2%	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	11	68	1	1	79	2	1	1	2	1	1	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	81			69			174	174	68	175	173	80
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	81			69			174	174	68	175	173	80
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			100	100	100	100	100	100
cM capacity (veh/h)	1529			1545			787	718	1000	785	718	986

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	80	82	4	3
Volume Left	11	1	1	1
Volume Right	1	2	2	1
cSH	1529	1545	858	815
Volume to Capacity	0.01	0.00	0.00	0.00
Queue Length 95th (ft)	1	0	0	0
Control Delay (s)	1.1	0.1	9.2	9.4
Lane LOS	A	A	A	A
Approach Delay (s)	1.1	0.1	9.2	9.4
Approach LOS			A	A

Intersection Summary				
Average Delay	0.9			
Intersection Capacity Utilization	18.5%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	40	14	11	47	3	13	6	8	2	9	4
Future Volume (Veh/h)	9	40	14	11	47	3	13	6	8	2	9	4
Sign Control		Stop			Stop			Free			Free	
Grade		-1%			1%			-2%			0%	
Peak Hour Factor	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
Hourly flow rate (vph)	12	54	19	15	64	4	18	8	11	3	12	5
Pedestrians		1			1						1	
Lane Width (ft)		12.0			12.0						12.0	
Walking Speed (ft/s)		3.5			3.5						3.5	
Percent Blockage		0			0						0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	108	78	16	117	74	16	18			20		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	108	78	16	117	74	16	18			20		
tC, single (s)	7.1	6.5	6.2	7.2	6.5	6.2	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.0	3.3	2.3			2.2		
p0 queue free %	99	93	98	98	92	100	99			100		
cM capacity (veh/h)	808	804	1069	775	807	1068	1517			1608		

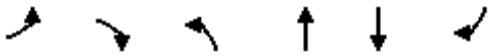
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	85	83	37	20
Volume Left	12	15	18	3
Volume Right	19	4	11	5
cSH	852	811	1517	1608
Volume to Capacity	0.10	0.10	0.01	0.00
Queue Length 95th (ft)	8	9	1	0
Control Delay (s)	9.7	9.9	3.6	1.1
Lane LOS	A	A	A	A
Approach Delay (s)	9.7	9.9	3.6	1.1
Approach LOS	A	A		

Intersection Summary				
Average Delay	8.0			
Intersection Capacity Utilization	16.1%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	48	0	4	63	4	4
Future Volume (Veh/h)	48	0	4	63	4	4
Sign Control	Free			Free	Stop	
Grade	-3%			2%	1%	
Peak Hour Factor	0.69	0.69	0.69	0.69	0.69	0.69
Hourly flow rate (vph)	70	0	6	91	6	6
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			70		173	70
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			70		173	70
tC, single (s)			4.1		6.7	6.5
tC, 2 stage (s)						
tF (s)			2.2		3.7	3.5
p0 queue free %			100		99	99
cM capacity (veh/h)			1544		764	932

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	70	97	12
Volume Left	0	6	6
Volume Right	0	0	6
cSH	1700	1544	840
Volume to Capacity	0.04	0.00	0.01
Queue Length 95th (ft)	0	0	1
Control Delay (s)	0.0	0.5	9.4
Lane LOS		A	A
Approach Delay (s)	0.0	0.5	9.4
Approach LOS			A

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	16.6%	ICU Level of Service	A
Analysis Period (min)	15		

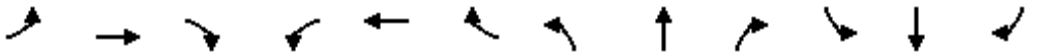


Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	33	15	9	81	90	52
Future Volume (Veh/h)	33	15	9	81	90	52
Sign Control	Stop			Free	Free	
Grade	2%			-1%	0%	
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78
Hourly flow rate (vph)	42	19	12	104	115	67
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	276	148	182			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	276	148	182			
tC, single (s)	6.4	6.3	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.4	2.2			
p0 queue free %	94	98	99			
cM capacity (veh/h)	705	885	1405			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	61	116	182
Volume Left	42	12	0
Volume Right	19	0	67
cSH	753	1405	1700
Volume to Capacity	0.08	0.01	0.11
Queue Length 95th (ft)	7	1	0
Control Delay (s)	10.2	0.8	0.0
Lane LOS	B	A	
Approach Delay (s)	10.2	0.8	0.0
Approach LOS	B		

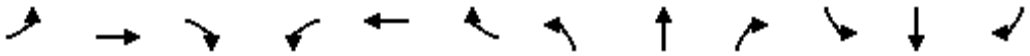
Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	21.8%	ICU Level of Service	A
Analysis Period (min)	15		

Appendix E Background Conditions Level of Service Worksheets



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	112	236	108	190	239	260	1634	112	136	791	14
Future Volume (vph)	19	112	236	108	190	239	260	1634	112	136	791	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			-1%			2%	
Total Lost time (s)		6.0	6.0		6.0	6.0	5.0	6.0	6.0	5.0	6.0	6.0
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.98
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.99	1.00		0.98	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1809	1583		1818	1553	1761	3489	1561	3180	3279	1361
Flt Permitted		0.86	1.00		0.78	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1572	1583		1446	1553	1761	3489	1561	3180	3279	1361
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	20	118	248	114	200	252	274	1720	118	143	833	15
RTOR Reduction (vph)	0	0	181	0	0	109	0	0	27	0	0	9
Lane Group Flow (vph)	0	138	67	0	314	143	274	1720	91	143	833	6
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	0%	5%	2%	2%	3%	4%	3%	4%	4%	9%	9%	15%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8			2			6
Actuated Green, G (s)		35.0	35.0		35.0	35.0	25.1	65.0	65.0	11.6	51.5	51.5
Effective Green, g (s)		35.0	35.0		35.0	35.0	25.1	65.0	65.0	11.6	51.5	51.5
Actuated g/C Ratio		0.27	0.27		0.27	0.27	0.20	0.51	0.51	0.09	0.40	0.40
Clearance Time (s)		6.0	6.0		6.0	6.0	5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	5.4	5.4	3.5	5.4	5.4
Lane Grp Cap (vph)		427	430		393	422	343	1763	788	286	1313	545
v/s Ratio Prot							c0.16	c0.49		0.04	0.25	
v/s Ratio Perm		0.09	0.04		c0.22	0.09			0.06			0.00
v/c Ratio		0.32	0.16		0.80	0.34	0.80	0.98	0.12	0.50	0.63	0.01
Uniform Delay, d1		37.3	35.6		43.5	37.5	49.3	31.0	16.7	55.7	31.0	23.2
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		0.4	0.2		10.8	0.5	12.2	16.1	0.2	1.6	1.5	0.0
Delay (s)		37.8	35.8		54.4	38.0	61.6	47.2	16.9	57.4	32.5	23.2
Level of Service		D	D		D	D	E	D	B	E	C	C
Approach Delay (s)		36.5			47.1			47.3			35.9	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	43.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	128.6	Sum of lost time (s)	17.0
Intersection Capacity Utilization	85.9%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	54	252	43	7	435	91	18	15	11	29	47	71
Future Volume (Veh/h)	54	252	43	7	435	91	18	15	11	29	47	71
Sign Control		Free			Free			Stop			Stop	
Grade		-1%			1%			-2%			0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	68	315	54	9	544	114	23	19	14	36	59	89
Pedestrians					5						3	
Lane Width (ft)					12.0						12.0	
Walking Speed (ft/s)					3.5						3.5	
Percent Blockage					0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		648										
pX, platoon unblocked												
vC, conflicting volume	661			369			1132	1130	320	1102	1127	604
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	661			369			1132	1130	320	1102	1127	604
tC, single (s)	4.2			4.2			7.1	6.5	6.2	7.2	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.5	4.0	3.3	3.6	4.0	3.3
p0 queue free %	92			99			78	90	98	77	69	82
cM capacity (veh/h)	897			1126			107	188	722	155	189	501

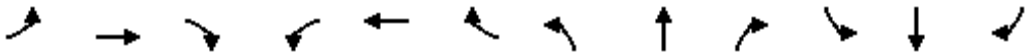
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	SB 1
Volume Total	68	315	54	9	658	56	184
Volume Left	68	0	0	9	0	23	36
Volume Right	0	0	54	0	114	14	89
cSH	897	1700	1700	1126	1700	167	255
Volume to Capacity	0.08	0.19	0.03	0.01	0.39	0.34	0.72
Queue Length 95th (ft)	6	0	0	1	0	35	125
Control Delay (s)	9.3	0.0	0.0	8.2	0.0	37.2	48.8
Lane LOS	A			A		E	E
Approach Delay (s)	1.5			0.1		37.2	48.8
Approach LOS						E	E

Intersection Summary				
Average Delay	8.8			
Intersection Capacity Utilization	51.0%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	220	71	75	340	193	48
Future Volume (Veh/h)	220	71	75	340	193	48
Sign Control	Free			Free	Stop	
Grade	-1%			1%	0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	262	85	89	405	230	57
Pedestrians				21	1	
Lane Width (ft)				12.0	12.0	
Walking Speed (ft/s)				3.5	3.5	
Percent Blockage				2	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	1264					
pX, platoon unblocked						
vC, conflicting volume			348		888	326
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			348		888	326
tC, single (s)			4.2		6.4	6.3
tC, 2 stage (s)						
tF (s)			2.3		3.5	3.4
p0 queue free %			93		20	92
cM capacity (veh/h)			1188		287	689

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	347	89	405	287
Volume Left	0	89	0	230
Volume Right	85	0	0	57
cSH	1700	1188	1700	324
Volume to Capacity	0.20	0.07	0.24	0.89
Queue Length 95th (ft)	0	6	0	208
Control Delay (s)	0.0	8.3	0.0	61.6
Lane LOS		A		F
Approach Delay (s)	0.0	1.5		61.6
Approach LOS				F

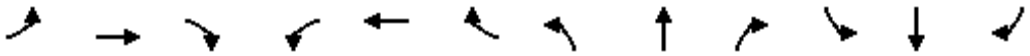
Intersection Summary			
Average Delay	16.3		
Intersection Capacity Utilization	44.1%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	112	259	25	32	181	32	75	135	69	30	39	107
Future Volume (vph)	112	259	25	32	181	32	75	135	69	30	39	107
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	124	288	28	36	201	36	83	150	77	33	43	119

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	124	316	36	237	83	227	33	162
Volume Left (vph)	124	0	36	0	83	0	33	0
Volume Right (vph)	0	28	0	36	0	77	0	119
Hadj (s)	0.58	-0.03	0.72	-0.08	0.55	-0.18	0.50	-0.47
Departure Headway (s)	7.1	6.5	7.5	6.7	7.4	6.7	7.6	6.6
Degree Utilization, x	0.24	0.57	0.07	0.44	0.17	0.42	0.07	0.30
Capacity (veh/h)	484	528	454	514	459	510	440	506
Control Delay (s)	11.1	16.4	9.9	13.5	10.7	13.2	9.9	11.2
Approach Delay (s)	14.9		13.1		12.6		11.0	
Approach LOS	B		B		B		B	

Intersection Summary				
Delay	13.3			
Level of Service	B			
Intersection Capacity Utilization	49.6%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	252	7	214	5	21	24	131	141	3	5	116	65
Future Volume (vph)	252	7	214	5	21	24	131	141	3	5	116	65
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	277	8	235	5	23	26	144	155	3	5	127	71

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1
Volume Total (vph)	277	243	54	302	203
Volume Left (vph)	277	0	5	144	5
Volume Right (vph)	0	235	26	3	71
Hadj (s)	0.55	-0.60	-0.20	0.20	-0.10
Departure Headway (s)	6.7	5.5	6.2	5.9	5.9
Degree Utilization, x	0.51	0.37	0.09	0.50	0.33
Capacity (veh/h)	520	629	501	571	572
Control Delay (s)	15.2	10.5	9.9	14.7	11.7
Approach Delay (s)	13.0		9.9	14.7	11.7
Approach LOS	B		A	B	B

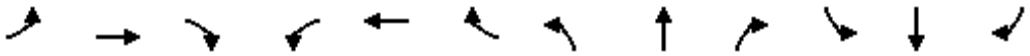
Intersection Summary				
Delay	13.1			
Level of Service	B			
Intersection Capacity Utilization	55.8%	ICU Level of Service	B	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Traffic Volume (veh/h)	29	3	2	39	3	41	4	8	1913	89	3	18
Future Volume (Veh/h)	29	3	2	39	3	41	4	8	1913	89	3	18
Sign Control		Stop			Stop				Free			
Grade		0%			0%				0%			
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	30	3	2	41	3	43	0	8	1993	93	0	19
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type									Raised			
Median storage veh)									2			
Upstream signal (ft)												
pX, platoon unblocked							0.00				0.00	
vC, conflicting volume	2247	3292	576	2673	3262	1043	0	1169			0	2086
vC1, stage 1 conf vol	1190	1190		2056	2056							
vC2, stage 2 conf vol	1057	2102		618	1207							
vCu, unblocked vol	2247	3292	576	2673	3262	1043	0	1169			0	2086
tC, single (s)	7.7	6.5	6.9	7.6	6.5	7.2	0.0	4.1			0.0	4.1
tC, 2 stage (s)	6.7	5.5		6.6	5.5							
tF (s)	3.6	4.0	3.3	3.5	4.0	3.4	0.0	2.2			0.0	2.2
p0 queue free %	73	96	100	21	97	79	0	99			0	93
cM capacity (veh/h)	110	68	466	52	87	208	0	605			0	269

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SB 4
Volume Total	35	87	8	1329	757	19	576	576	17
Volume Left	30	41	8	0	0	19	0	0	0
Volume Right	2	43	0	0	93	0	0	0	17
cSH	109	85	605	1700	1700	269	1700	1700	1700
Volume to Capacity	0.32	1.03	0.01	0.78	0.45	0.07	0.34	0.34	0.01
Queue Length 95th (ft)	31	147	1	0	0	6	0	0	0
Control Delay (s)	53.2	194.2	11.0	0.0	0.0	19.4	0.0	0.0	0.0
Lane LOS	F	F	B			C			
Approach Delay (s)	53.2	194.2	0.0			0.3			
Approach LOS	F	F							

Intersection Summary				
Average Delay	5.6			
Intersection Capacity Utilization	67.0%	ICU Level of Service		C
Analysis Period (min)	15			

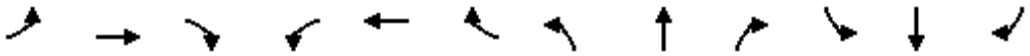
Movement	SBT	SBR
Lane Configurations		
Traffic Volume (veh/h)	1106	16
Future Volume (Veh/h)	1106	16
Sign Control	Free	
Grade	0%	
Peak Hour Factor	0.96	0.96
Hourly flow rate (vph)	1152	17
Pedestrians		
Lane Width (ft)		
Walking Speed (ft/s)		
Percent Blockage		
Right turn flare (veh)		
Median type	Raised	
Median storage veh)	2	
Upstream signal (ft)		
pX, platoon unblocked		
vC, conflicting volume		
vC1, stage 1 conf vol		
vC2, stage 2 conf vol		
vCu, unblocked vol		
tC, single (s)		
tC, 2 stage (s)		
tF (s)		
p0 queue free %		
cM capacity (veh/h)		
Direction, Lane #		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	94	1	0	67	3	2	2	2	8	3	15
Future Volume (Veh/h)	11	94	1	0	67	3	2	2	2	8	3	15
Sign Control		Free			Free			Stop			Stop	
Grade		0%			2%			2%			-2%	
Peak Hour Factor	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
Hourly flow rate (vph)	16	136	1	0	97	4	3	3	3	12	4	22
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	101			137			292	270	136	272	268	99
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	101			137			292	270	136	272	268	99
tC, single (s)	4.1			4.1			7.6	7.0	6.2	7.1	6.5	6.4
tC, 2 stage (s)												
tF (s)	2.2			2.2			4.0	4.5	3.3	3.5	4.0	3.5
p0 queue free %	99			100			99	99	100	98	99	98
cM capacity (veh/h)	1504			1459			554	557	917	674	635	907

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	153	101	9	38
Volume Left	16	0	3	12
Volume Right	1	4	3	22
cSH	1504	1459	640	786
Volume to Capacity	0.01	0.00	0.01	0.05
Queue Length 95th (ft)	1	0	1	4
Control Delay (s)	0.9	0.0	10.7	9.8
Lane LOS	A		B	A
Approach Delay (s)	0.9	0.0	10.7	9.8
Approach LOS			B	A

Intersection Summary				
Average Delay	2.0			
Intersection Capacity Utilization	22.3%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	92	8	2	59	6	11	11	10	7	4	3
Future Volume (Veh/h)	3	92	8	2	59	6	11	11	10	7	4	3
Sign Control		Stop			Stop			Free			Free	
Grade		-1%			1%			-2%			0%	
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72
Hourly flow rate (vph)	4	128	11	3	82	8	15	15	14	10	6	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	129	87	8	155	82	22	10			29		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	129	87	8	155	82	22	10			29		
tC, single (s)	7.1	6.5	6.2	7.6	6.6	6.4	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	4.0	4.0	3.5	2.2			2.2		
p0 queue free %	99	84	99	100	90	99	99			99		
cM capacity (veh/h)	766	793	1080	612	790	1013	1623			1597		

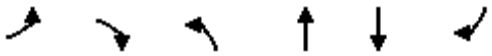
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	143	93	44	20
Volume Left	4	3	15	10
Volume Right	11	8	14	4
cSH	808	798	1623	1597
Volume to Capacity	0.18	0.12	0.01	0.01
Queue Length 95th (ft)	16	10	1	0
Control Delay (s)	10.4	10.1	2.5	3.7
Lane LOS	B	B	A	A
Approach Delay (s)	10.4	10.1	2.5	3.7
Approach LOS	B	B		

Intersection Summary				
Average Delay	8.7			
Intersection Capacity Utilization	16.6%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	111	1	1	64	2	3
Future Volume (Veh/h)	111	1	1	64	2	3
Sign Control	Free			Free	Stop	
Grade	-3%			2%	1%	
Peak Hour Factor	0.68	0.68	0.68	0.68	0.68	0.68
Hourly flow rate (vph)	163	1	1	94	3	4
Pedestrians				1		
Lane Width (ft)				12.0		
Walking Speed (ft/s)				3.5		
Percent Blockage				0		
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			164		260	164
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			164		260	164
tC, single (s)			4.1		6.4	6.5
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.6
p0 queue free %			100		100	100
cM capacity (veh/h)			1427		733	805

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	164	95	7
Volume Left	0	1	3
Volume Right	1	0	4
cSH	1700	1427	772
Volume to Capacity	0.10	0.00	0.01
Queue Length 95th (ft)	0	0	1
Control Delay (s)	0.0	0.1	9.7
Lane LOS		A	A
Approach Delay (s)	0.0	0.1	9.7
Approach LOS			A

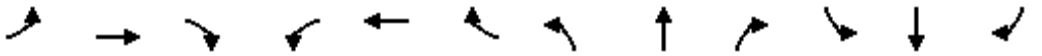
Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	16.2%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	98	25	19	112	42	40
Future Volume (Veh/h)	98	25	19	112	42	40
Sign Control	Stop			Free	Free	
Grade	2%			-1%	0%	
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Hourly flow rate (vph)	140	36	27	160	60	57
Pedestrians					1	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					3.5	
Percent Blockage					0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	304	88	117			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	304	88	117			
tC, single (s)	6.4	6.3	4.3			
tC, 2 stage (s)						
tF (s)	3.5	3.4	2.4			
p0 queue free %	79	96	98			
cM capacity (veh/h)	674	953	1383			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	176	187	117
Volume Left	140	27	0
Volume Right	36	0	57
cSH	717	1383	1700
Volume to Capacity	0.25	0.02	0.07
Queue Length 95th (ft)	24	1	0
Control Delay (s)	11.6	1.2	0.0
Lane LOS	B	A	
Approach Delay (s)	11.6	1.2	0.0
Approach LOS	B		

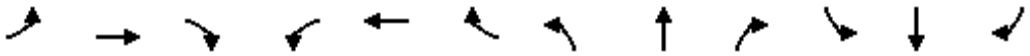
Intersection Summary			
Average Delay	4.8		
Intersection Capacity Utilization	27.2%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	129	312	135	112	143	232	1045	133	273	1725	14
Future Volume (vph)	14	129	312	135	112	143	232	1045	133	273	1725	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			-1%			2%	
Total Lost time (s)		6.0	6.0		6.0	6.0	5.0	6.0	6.0	5.0	6.0	6.0
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes		1.00	1.00		1.00	0.98	1.00	1.00	0.99	1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		1.00	1.00		0.97	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1875	1583		1775	1558	1796	3489	1587	3467	3504	1599
Flt Permitted		0.88	1.00		0.64	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1659	1583		1159	1558	1796	3489	1587	3467	3504	1599
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	15	137	332	144	119	152	247	1112	141	290	1835	15
RTOR Reduction (vph)	0	0	234	0	0	84	0	0	33	0	0	7
Lane Group Flow (vph)	0	152	98	0	263	68	247	1112	108	290	1835	8
Confl. Peds. (#/hr)	3					3						
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	8%	0%	2%	6%	2%	2%	1%	4%	1%	0%	2%	0%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8			2			6
Actuated Green, G (s)		35.4	35.4		35.4	35.4	25.6	86.7	86.7	19.0	80.1	80.1
Effective Green, g (s)		35.4	35.4		35.4	35.4	25.6	86.7	86.7	19.0	80.1	80.1
Actuated g/C Ratio		0.22	0.22		0.22	0.22	0.16	0.55	0.55	0.12	0.51	0.51
Clearance Time (s)		6.0	6.0		6.0	6.0	5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	5.4	5.4	3.5	5.4	5.4
Lane Grp Cap (vph)		371	354		259	348	290	1913	870	416	1775	810
v/s Ratio Prot							c0.14	0.32		0.08	c0.52	
v/s Ratio Perm		0.09	0.06		c0.23	0.04			0.07			0.00
v/c Ratio		0.41	0.28		1.02	0.20	0.85	0.58	0.12	0.70	1.03	0.01
Uniform Delay, d1		52.4	50.7		61.3	49.8	64.4	23.7	17.3	66.8	39.0	19.3
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		0.7	0.4		59.9	0.3	20.7	0.8	0.2	5.2	30.6	0.0
Delay (s)		53.2	51.2		121.3	50.1	85.1	24.4	17.4	72.0	69.6	19.3
Level of Service		D	D		F	D	F	C	B	E	E	B
Approach Delay (s)		51.8			95.2			33.8			69.6	
Approach LOS		D			F			C			E	

Intersection Summary			
HCM 2000 Control Delay	58.2	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	158.1	Sum of lost time (s)	17.0
Intersection Capacity Utilization	102.3%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	107	365	25	5	392	72	11	0	1	36	1	55
Future Volume (Veh/h)	107	365	25	5	392	72	11	0	1	36	1	55
Sign Control		Free			Free			Stop			Stop	
Grade		-1%			1%			-2%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	116	397	27	5	426	78	12	0	1	39	1	60
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		648										
pX, platoon unblocked				0.98			0.98	0.98	0.98	0.98	0.98	
vC, conflicting volume	504			424			1126	1143	397	1105	1131	465
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	504			399			1117	1135	371	1096	1122	465
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	89			100			92	100	100	77	99	90
cM capacity (veh/h)	1066			1144			149	177	664	172	180	597

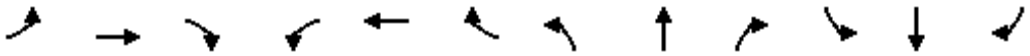
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	SB 1
Volume Total	116	397	27	5	504	13	100
Volume Left	116	0	0	5	0	12	39
Volume Right	0	0	27	0	78	1	60
cSH	1066	1700	1700	1144	1700	159	300
Volume to Capacity	0.11	0.23	0.02	0.00	0.30	0.08	0.33
Queue Length 95th (ft)	9	0	0	0	0	7	35
Control Delay (s)	8.8	0.0	0.0	8.2	0.0	29.7	22.9
Lane LOS	A			A		D	C
Approach Delay (s)	1.9			0.1		29.7	22.9
Approach LOS						D	C

Intersection Summary				
Average Delay	3.2			
Intersection Capacity Utilization	45.9%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	293	109	63	382	88	37
Future Volume (Veh/h)	293	109	63	382	88	37
Sign Control	Free			Free	Stop	
Grade	-1%			1%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	322	120	69	420	97	41
Pedestrians				1		
Lane Width (ft)				12.0		
Walking Speed (ft/s)				3.5		
Percent Blockage				0		
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	1264					
pX, platoon unblocked						
vC, conflicting volume			442		940	383
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			442		940	383
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			94		65	94
cM capacity (veh/h)			1113		274	662

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	442	69	420	138
Volume Left	0	69	0	97
Volume Right	120	0	0	41
cSH	1700	1113	1700	332
Volume to Capacity	0.26	0.06	0.25	0.42
Queue Length 95th (ft)	0	5	0	49
Control Delay (s)	0.0	8.4	0.0	23.3
Lane LOS		A		C
Approach Delay (s)	0.0	1.2		23.3
Approach LOS				C

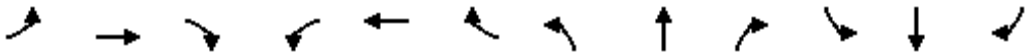
Intersection Summary			
Average Delay	3.6		
Intersection Capacity Utilization	42.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	27	119	131	34	89	52	96	226	29	69	368	41
Future Volume (vph)	27	119	131	34	89	52	96	226	29	69	368	41
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	30	134	147	38	100	58	108	254	33	78	413	46

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	30	281	38	158	108	287	78	459
Volume Left (vph)	30	0	38	0	108	0	78	0
Volume Right (vph)	0	147	0	58	0	33	0	46
Hadj (s)	0.50	-0.34	0.55	-0.24	0.50	-0.04	0.53	-0.05
Departure Headway (s)	8.1	7.3	8.4	7.7	7.7	7.2	7.5	6.9
Degree Utilization, x	0.07	0.57	0.09	0.34	0.23	0.57	0.16	0.88
Capacity (veh/h)	422	465	402	443	446	476	463	512
Control Delay (s)	10.5	18.2	11.1	13.3	11.8	18.2	10.7	40.8
Approach Delay (s)	17.4		12.8		16.4		36.4	
Approach LOS	C		B		C		E	

Intersection Summary				
Delay	23.6			
Level of Service	C			
Intersection Capacity Utilization	58.4%	ICU Level of Service	B	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	98	13	163	1	20	16	311	143	6	32	149	266
Future Volume (vph)	98	13	163	1	20	16	311	143	6	32	149	266
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	109	14	181	1	22	18	346	159	7	36	166	296

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1
Volume Total (vph)	109	195	41	512	498
Volume Left (vph)	109	0	1	346	36
Volume Right (vph)	0	181	18	7	296
Hadj (s)	0.50	-0.57	-0.22	0.16	-0.31
Departure Headway (s)	7.9	6.8	7.7	6.1	5.7
Degree Utilization, x	0.24	0.37	0.09	0.86	0.79
Capacity (veh/h)	433	499	418	584	614
Control Delay (s)	12.2	12.6	11.4	35.8	26.4
Approach Delay (s)	12.4		11.4	35.8	26.4
Approach LOS	B		B	E	D

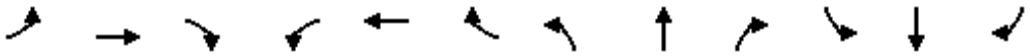
Intersection Summary				
Delay	26.3			
Level of Service	D			
Intersection Capacity Utilization	73.2%	ICU Level of Service	D	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Traffic Volume (veh/h)	20	7	12	40	5	29	1	8	1368	46	2	23
Future Volume (Veh/h)	20	7	12	40	5	29	1	8	1368	46	2	23
Sign Control		Stop			Stop				Free			
Grade		0%			0%				0%			
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	21	7	13	42	5	30	0	8	1425	48	0	24
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type									Raised			
Median storage veh)									2			
Upstream signal (ft)												
pX, platoon unblocked							0.00				0.00	
vC, conflicting volume	2994	3722	1092	2622	3742	736	0	2229			0	1473
vC1, stage 1 conf vol	2233	2233		1465	1465							
vC2, stage 2 conf vol	761	1489		1157	2277							
vCu, unblocked vol	2994	3722	1092	2622	3742	736	0	2229			0	1473
tC, single (s)	7.6	6.5	6.9	7.6	6.5	6.9	0.0	4.1			0.0	4.1
tC, 2 stage (s)	6.6	5.5		6.6	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	0.0	2.2			0.0	2.2
p0 queue free %	45	89	94	56	91	92	0	97			0	95
cM capacity (veh/h)	38	65	213	95	58	366	0	237			0	464

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SB 4
Volume Total	41	77	8	950	523	24	1092	1092	44
Volume Left	21	42	8	0	0	24	0	0	0
Volume Right	13	30	0	0	48	0	0	0	44
cSH	57	127	237	1700	1700	464	1700	1700	1700
Volume to Capacity	0.72	0.61	0.03	0.56	0.31	0.05	0.64	0.64	0.03
Queue Length 95th (ft)	76	78	3	0	0	4	0	0	0
Control Delay (s)	160.3	70.1	20.7	0.0	0.0	13.2	0.0	0.0	0.0
Lane LOS	F	F	C			B			
Approach Delay (s)	160.3	70.1	0.1			0.1			
Approach LOS	F	F							

Intersection Summary				
Average Delay	3.2			
Intersection Capacity Utilization	70.1%	ICU Level of Service		C
Analysis Period (min)	15			

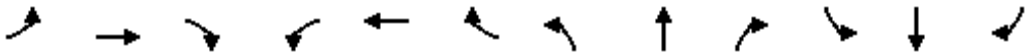
Movement	SBT	SBR
Lane Configurations		
Traffic Volume (veh/h)	2098	42
Future Volume (Veh/h)	2098	42
Sign Control	Free	
Grade	0%	
Peak Hour Factor	0.96	0.96
Hourly flow rate (vph)	2185	44
Pedestrians		
Lane Width (ft)		
Walking Speed (ft/s)		
Percent Blockage		
Right turn flare (veh)		
Median type	Raised	
Median storage veh)	2	
Upstream signal (ft)		
pX, platoon unblocked		
vC, conflicting volume		
vC1, stage 1 conf vol		
vC2, stage 2 conf vol		
vCu, unblocked vol		
tC, single (s)		
tC, 2 stage (s)		
tF (s)		
p0 queue free %		
cM capacity (veh/h)		
Direction, Lane #		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	59	1	1	69	2	1	1	2	1	1	1
Future Volume (Veh/h)	10	59	1	1	69	2	1	1	2	1	1	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			2%			2%			-2%	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	12	72	1	1	84	2	1	1	2	1	1	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	86			73			185	184	72	186	184	85
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	86			73			185	184	72	186	184	85
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			100	100	100	100	100	100
cM capacity (veh/h)	1523			1540			773	707	995	772	708	980

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	85	87	4	3
Volume Left	12	1	1	1
Volume Right	1	2	2	1
cSH	1523	1540	848	804
Volume to Capacity	0.01	0.00	0.00	0.00
Queue Length 95th (ft)	1	0	0	0
Control Delay (s)	1.1	0.1	9.3	9.5
Lane LOS	A	A	A	A
Approach Delay (s)	1.1	0.1	9.3	9.5
Approach LOS			A	A

Intersection Summary				
Average Delay	0.9			
Intersection Capacity Utilization	19.4%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	42	15	12	50	3	14	6	8	2	10	4
Future Volume (Veh/h)	10	42	15	12	50	3	14	6	8	2	10	4
Sign Control		Stop			Stop			Free			Free	
Grade		-1%			1%			-2%			0%	
Peak Hour Factor	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
Hourly flow rate (vph)	14	57	20	16	68	4	19	8	11	3	14	5
Pedestrians		1			1						1	
Lane Width (ft)		12.0			12.0						12.0	
Walking Speed (ft/s)		3.5			3.5						3.5	
Percent Blockage		0			0						0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	114	82	18	124	78	16	20			20		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	114	82	18	124	78	16	20			20		
tC, single (s)	7.1	6.5	6.2	7.2	6.5	6.2	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.0	3.3	2.3			2.2		
p0 queue free %	98	93	98	98	92	100	99			100		
cM capacity (veh/h)	797	799	1066	764	802	1068	1514			1608		

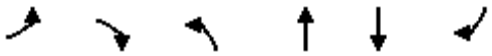
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	91	88	38	22
Volume Left	14	16	19	3
Volume Right	20	4	11	5
cSH	845	804	1514	1608
Volume to Capacity	0.11	0.11	0.01	0.00
Queue Length 95th (ft)	9	9	1	0
Control Delay (s)	9.8	10.0	3.8	1.0
Lane LOS	A	B	A	A
Approach Delay (s)	9.8	10.0	3.8	1.0
Approach LOS	A	B		

Intersection Summary				
Average Delay	8.1			
Intersection Capacity Utilization	16.8%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	51	0	4	67	4	4
Future Volume (Veh/h)	51	0	4	67	4	4
Sign Control	Free			Free	Stop	
Grade	-3%			2%	1%	
Peak Hour Factor	0.69	0.69	0.69	0.69	0.69	0.69
Hourly flow rate (vph)	74	0	6	97	6	6
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			74		183	74
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			74		183	74
tC, single (s)			4.1		6.7	6.5
tC, 2 stage (s)						
tF (s)			2.2		3.7	3.5
p0 queue free %			100		99	99
cM capacity (veh/h)			1538		754	927

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	74	103	12
Volume Left	0	6	6
Volume Right	0	0	6
cSH	1700	1538	831
Volume to Capacity	0.04	0.00	0.01
Queue Length 95th (ft)	0	0	1
Control Delay (s)	0.0	0.5	9.4
Lane LOS		A	A
Approach Delay (s)	0.0	0.5	9.4
Approach LOS			A

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	16.8%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	35	16	10	86	95	55
Future Volume (Veh/h)	35	16	10	86	95	55
Sign Control	Stop			Free	Free	
Grade	2%			-1%	0%	
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78
Hourly flow rate (vph)	45	21	13	110	122	71
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	294	158	193			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	294	158	193			
tC, single (s)	6.4	6.3	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.4	2.2			
p0 queue free %	93	98	99			
cM capacity (veh/h)	689	875	1392			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	66	123	193
Volume Left	45	13	0
Volume Right	21	0	71
cSH	739	1392	1700
Volume to Capacity	0.09	0.01	0.11
Queue Length 95th (ft)	7	1	0
Control Delay (s)	10.4	0.9	0.0
Lane LOS	B	A	
Approach Delay (s)	10.4	0.9	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	2.1		
Intersection Capacity Utilization	22.9%	ICU Level of Service	A
Analysis Period (min)	15		

Appendix F Total Traffic Conditions Level of Service Worksheets

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	112	238	108	190	241	264	1667	112	136	802	14
Future Volume (vph)	19	112	238	108	190	241	264	1667	112	136	802	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			-1%			2%	
Total Lost time (s)		6.0	6.0		6.0	6.0	5.0	6.0	6.0	5.0	6.0	6.0
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.98
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.99	1.00		0.98	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1809	1583		1818	1553	1761	3489	1561	3180	3279	1361
Flt Permitted		0.86	1.00		0.78	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1571	1583		1446	1553	1761	3489	1561	3180	3279	1361
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	20	118	251	114	200	254	278	1755	118	143	844	15
RTOR Reduction (vph)	0	0	183	0	0	110	0	0	27	0	0	9
Lane Group Flow (vph)	0	138	68	0	314	144	278	1755	91	143	844	6
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	0%	5%	2%	2%	3%	4%	3%	4%	4%	9%	9%	15%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8			2			6
Actuated Green, G (s)		35.0	35.0		35.0	35.0	25.5	65.1	65.1	11.6	51.2	51.2
Effective Green, g (s)		35.0	35.0		35.0	35.0	25.5	65.1	65.1	11.6	51.2	51.2
Actuated g/C Ratio		0.27	0.27		0.27	0.27	0.20	0.51	0.51	0.09	0.40	0.40
Clearance Time (s)		6.0	6.0		6.0	6.0	5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	5.4	5.4	3.5	5.4	5.4
Lane Grp Cap (vph)		427	430		393	422	348	1764	789	286	1304	541
v/s Ratio Prot							c0.16	c0.50		0.04	0.26	
v/s Ratio Perm		0.09	0.04		c0.22	0.09			0.06			0.00
v/c Ratio		0.32	0.16		0.80	0.34	0.80	0.99	0.12	0.50	0.65	0.01
Uniform Delay, d1		37.4	35.6		43.6	37.6	49.2	31.6	16.7	55.8	31.4	23.4
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		0.4	0.2		10.8	0.5	12.1	20.2	0.2	1.6	1.6	0.0
Delay (s)		37.8	35.8		54.4	38.1	61.2	51.8	16.8	57.4	33.1	23.5
Level of Service		D	D		D	D	E	D	B	E	C	C
Approach Delay (s)		36.5			47.1			51.1			36.4	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	45.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	128.7	Sum of lost time (s)	17.0
Intersection Capacity Utilization	86.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	54	253	43	7	437	93	18	15	11	29	47	71
Future Volume (Veh/h)	54	253	43	7	437	93	18	15	11	29	47	71
Sign Control		Free			Free			Stop			Stop	
Grade		-1%			1%			-2%			0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	68	316	54	9	546	116	23	19	14	36	59	89
Pedestrians					5						3	
Lane Width (ft)					12.0						12.0	
Walking Speed (ft/s)					3.5						3.5	
Percent Blockage					0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		648										
pX, platoon unblocked												
vC, conflicting volume	665			370			1134	1135	321	1106	1131	607
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	665			370			1134	1135	321	1106	1131	607
tC, single (s)	4.2			4.2			7.1	6.5	6.2	7.2	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.5	4.0	3.3	3.6	4.0	3.3
p0 queue free %	92			99			78	90	98	77	69	82
cM capacity (veh/h)	894			1125			106	187	721	154	187	499

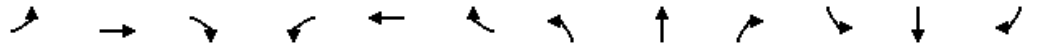
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	SB 1
Volume Total	68	316	54	9	662	56	184
Volume Left	68	0	0	9	0	23	36
Volume Right	0	0	54	0	116	14	89
cSH	894	1700	1700	1125	1700	165	253
Volume to Capacity	0.08	0.19	0.03	0.01	0.39	0.34	0.73
Queue Length 95th (ft)	6	0	0	1	0	35	126
Control Delay (s)	9.4	0.0	0.0	8.2	0.0	37.5	49.5
Lane LOS	A			A		E	E
Approach Delay (s)	1.5			0.1		37.5	49.5
Approach LOS						E	E

Intersection Summary				
Average Delay	8.8			
Intersection Capacity Utilization	51.2%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	220	72	75	340	197	48
Future Volume (Veh/h)	220	72	75	340	197	48
Sign Control	Free			Free	Stop	
Grade	-1%			1%	0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	262	86	89	405	235	57
Pedestrians				21	1	
Lane Width (ft)				12.0	12.0	
Walking Speed (ft/s)				3.5	3.5	
Percent Blockage				2	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	1264					
pX, platoon unblocked						
vC, conflicting volume			349		889	327
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			349		889	327
tC, single (s)			4.2		6.4	6.3
tC, 2 stage (s)						
tF (s)			2.3		3.5	3.4
p0 queue free %			93		18	92
cM capacity (veh/h)			1187		286	688

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	348	89	405	292
Volume Left	0	89	0	235
Volume Right	86	0	0	57
cSH	1700	1187	1700	323
Volume to Capacity	0.20	0.07	0.24	0.90
Queue Length 95th (ft)	0	6	0	217
Control Delay (s)	0.0	8.3	0.0	65.1
Lane LOS		A		F
Approach Delay (s)	0.0	1.5		65.1
Approach LOS				F

Intersection Summary			
Average Delay	17.4		
Intersection Capacity Utilization	44.4%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	112	259	25	37	181	32	75	143	85	30	42	107
Future Volume (vph)	112	259	25	37	181	32	75	143	85	30	42	107
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	124	288	28	41	201	36	83	159	94	33	47	119

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	124	316	41	237	83	253	33	166
Volume Left (vph)	124	0	41	0	83	0	33	0
Volume Right (vph)	0	28	0	36	0	94	0	119
Hadj (s)	0.58	-0.03	0.72	-0.08	0.55	-0.20	0.50	-0.45
Departure Headway (s)	7.2	6.6	7.6	6.8	7.5	6.7	7.7	6.7
Degree Utilization, x	0.25	0.58	0.09	0.45	0.17	0.47	0.07	0.31
Capacity (veh/h)	476	519	447	505	456	510	435	498
Control Delay (s)	11.3	17.0	10.1	13.9	10.8	14.3	10.0	11.5
Approach Delay (s)	15.4		13.3		13.5		11.3	
Approach LOS	C		B		B		B	

Intersection Summary				
Delay	13.8			
Level of Service	B			
Intersection Capacity Utilization	51.2%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	260	7	222	5	21	24	134	141	3	5	116	67
Future Volume (vph)	260	7	222	5	21	24	134	141	3	5	116	67
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	286	8	244	5	23	26	147	155	3	5	127	74

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1
Volume Total (vph)	286	252	54	305	206
Volume Left (vph)	286	0	5	147	5
Volume Right (vph)	0	244	26	3	74
Hadj (s)	0.55	-0.60	-0.20	0.20	-0.10
Departure Headway (s)	6.7	5.5	6.3	6.0	5.9
Degree Utilization, x	0.53	0.39	0.09	0.51	0.34
Capacity (veh/h)	519	627	485	566	568
Control Delay (s)	15.8	10.7	9.9	15.0	11.9
Approach Delay (s)	13.4		9.9	15.0	11.9
Approach LOS	B		A	C	B

Intersection Summary				
Delay	13.4			
Level of Service	B			
Intersection Capacity Utilization	56.6%	ICU Level of Service		B
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Traffic Volume (veh/h)	29	3	2	47	3	78	4	8	1913	92	3	31
Future Volume (Veh/h)	29	3	2	47	3	78	4	8	1913	92	3	31
Sign Control		Stop			Stop				Free			
Grade		0%			0%				0%			
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	30	3	2	49	3	81	0	8	1993	96	0	32
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type									Raised			
Median storage veh)									2			
Upstream signal (ft)												
pX, platoon unblocked							0.00				0.00	
vC, conflicting volume	2311	3321	576	2700	3290	1044	0	1169			0	2089
vC1, stage 1 conf vol	1216	1216		2057	2057							
vC2, stage 2 conf vol	1095	2105		644	1233							
vCu, unblocked vol	2311	3321	576	2700	3290	1044	0	1169			0	2089
tC, single (s)	7.7	6.5	6.9	7.6	6.5	7.2	0.0	4.1			0.0	4.1
tC, 2 stage (s)	6.7	5.5		6.6	5.5							
tF (s)	3.6	4.0	3.3	3.5	4.0	3.4	0.0	2.2			0.0	2.2
p0 queue free %	61	95	100	6	96	61	0	99			0	88
cM capacity (veh/h)	76	56	466	52	85	208	0	605			0	268

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SB 4
Volume Total	35	133	8	1329	760	32	576	576	17
Volume Left	30	49	8	0	0	32	0	0	0
Volume Right	2	81	0	0	96	0	0	0	17
cSH	78	97	605	1700	1700	268	1700	1700	1700
Volume to Capacity	0.45	1.37	0.01	0.78	0.45	0.12	0.34	0.34	0.01
Queue Length 95th (ft)	46	241	1	0	0	10	0	0	0
Control Delay (s)	84.6	298.0	11.0	0.0	0.0	20.2	0.0	0.0	0.0
Lane LOS	F	F	B			C			
Approach Delay (s)	84.6	298.0	0.0			0.5			
Approach LOS	F	F							

Intersection Summary				
Average Delay	12.5			
Intersection Capacity Utilization	69.6%	ICU Level of Service	C	
Analysis Period (min)	15			

Movement	SBT	SBR
Lane Configurations	↑↑	↱
Traffic Volume (veh/h)	1106	16
Future Volume (Veh/h)	1106	16
Sign Control	Free	
Grade	0%	
Peak Hour Factor	0.96	0.96
Hourly flow rate (vph)	1152	17
Pedestrians		
Lane Width (ft)		
Walking Speed (ft/s)		
Percent Blockage		
Right turn flare (veh)		
Median type	Raised	
Median storage veh)	2	
Upstream signal (ft)		
pX, platoon unblocked		
vC, conflicting volume		
vC1, stage 1 conf vol		
vC2, stage 2 conf vol		
vCu, unblocked vol		
tC, single (s)		
tC, 2 stage (s)		
tF (s)		
p0 queue free %		
cM capacity (veh/h)		

Direction, Lane #

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	110	1	0	112	3	2	2	2	8	3	15
Future Volume (Veh/h)	11	110	1	0	112	3	2	2	2	8	3	15
Sign Control		Free			Free			Stop			Stop	
Grade		0%			2%			2%			-2%	
Peak Hour Factor	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
Hourly flow rate (vph)	16	159	1	0	162	4	3	3	3	12	4	22
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	166			160			380	358	160	360	356	164
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	166			160			380	358	160	360	356	164
tC, single (s)	4.1			4.1			7.6	7.0	6.2	7.1	6.5	6.4
tC, 2 stage (s)												
tF (s)	2.2			2.2			4.0	4.5	3.3	3.5	4.0	3.5
p0 queue free %	99			100			99	99	100	98	99	97
cM capacity (veh/h)	1424			1432			480	494	891	590	567	833

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	176	166	9	38
Volume Left	16	0	3	12
Volume Right	1	4	3	22
cSH	1424	1432	573	706
Volume to Capacity	0.01	0.00	0.02	0.05
Queue Length 95th (ft)	1	0	1	4
Control Delay (s)	0.8	0.0	11.4	10.4
Lane LOS	A		B	B
Approach Delay (s)	0.8	0.0	11.4	10.4
Approach LOS			B	B

Intersection Summary				
Average Delay	1.6			
Intersection Capacity Utilization	23.1%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	108	8	2	104	10	11	11	10	9	4	3
Future Volume (Veh/h)	3	108	8	2	104	10	11	11	10	9	4	3
Sign Control		Stop			Stop			Free			Free	
Grade		-1%			1%			-2%			0%	
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72
Hourly flow rate (vph)	4	150	11	3	144	14	15	15	14	13	6	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	172	93	8	172	88	22	10			29		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	172	93	8	172	88	22	10			29		
tC, single (s)	7.1	6.5	6.2	7.6	6.6	6.4	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	4.0	4.0	3.5	2.2			2.2		
p0 queue free %	99	81	99	99	82	99	99			99		
cM capacity (veh/h)	665	785	1080	580	783	1013	1623			1597		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	165	161	44	23
Volume Left	4	3	15	13
Volume Right	11	14	14	4
cSH	796	793	1623	1597
Volume to Capacity	0.21	0.20	0.01	0.01
Queue Length 95th (ft)	19	19	1	1
Control Delay (s)	10.7	10.7	2.5	4.1
Lane LOS	B	B	A	A
Approach Delay (s)	10.7	10.7	2.5	4.1
Approach LOS	B	B		

Intersection Summary				
Average Delay	9.4			
Intersection Capacity Utilization	17.8%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	111	1	1	64	12	2	0	3	35	0	50
Future Volume (Veh/h)	18	111	1	1	64	12	2	0	3	35	0	50
Sign Control		Free			Free			Stop			Stop	
Grade		-3%			2%			1%			0%	
Peak Hour Factor	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68
Hourly flow rate (vph)	26	163	1	1	94	18	3	0	4	51	0	74
Pedestrians					1						2	
Lane Width (ft)					12.0						12.0	
Walking Speed (ft/s)					3.5						3.5	
Percent Blockage					0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	114			164			394	332	164	328	323	105
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	114			164			394	332	164	328	323	105
tC, single (s)	4.1			4.1			7.1	6.5	6.5	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.6	3.5	4.0	3.3
p0 queue free %	98			100			99	100	100	92	100	92
cM capacity (veh/h)	1485			1427			516	579	805	615	586	953

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	190	113	7	125
Volume Left	26	1	3	51
Volume Right	1	18	4	74
cSH	1485	1427	649	779
Volume to Capacity	0.02	0.00	0.01	0.16
Queue Length 95th (ft)	1	0	1	14
Control Delay (s)	1.1	0.1	10.6	10.5
Lane LOS	A	A	B	B
Approach Delay (s)	1.1	0.1	10.6	10.5
Approach LOS			B	B

Intersection Summary				
Average Delay	3.7			
Intersection Capacity Utilization	26.8%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	122	34	22	112	42	49
Future Volume (Veh/h)	122	34	22	112	42	49
Sign Control	Stop			Free	Free	
Grade	2%			-1%	0%	
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Hourly flow rate (vph)	174	49	31	160	60	70
Pedestrians					1	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					3.5	
Percent Blockage					0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	318	95	130			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	318	95	130			
tC, single (s)	6.4	6.3	4.3			
tC, 2 stage (s)						
tF (s)	3.5	3.4	2.4			
p0 queue free %	74	95	98			
cM capacity (veh/h)	659	945	1368			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	223	191	130
Volume Left	174	31	0
Volume Right	49	0	70
cSH	706	1368	1700
Volume to Capacity	0.32	0.02	0.08
Queue Length 95th (ft)	34	2	0
Control Delay (s)	12.4	1.4	0.0
Lane LOS	B	A	
Approach Delay (s)	12.4	1.4	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	5.6		
Intersection Capacity Utilization	29.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	129	316	135	112	144	235	1067	133	276	1761	14
Future Volume (vph)	14	129	316	135	112	144	235	1067	133	276	1761	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			0%			-1%			2%	
Total Lost time (s)		6.0	6.0		6.0	6.0	5.0	6.0	6.0	5.0	6.0	6.0
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes		1.00	1.00		1.00	0.98	1.00	1.00	0.99	1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		1.00	1.00		0.97	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1875	1583		1775	1558	1796	3489	1587	3467	3504	1599
Flt Permitted		0.88	1.00		0.64	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1657	1583		1158	1558	1796	3489	1587	3467	3504	1599
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	15	137	336	144	119	153	250	1135	141	294	1873	15
RTOR Reduction (vph)	0	0	234	0	0	85	0	0	33	0	0	7
Lane Group Flow (vph)	0	152	102	0	263	68	250	1135	108	294	1873	8
Confl. Peds. (#/hr)	3					3						
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	8%	0%	2%	6%	2%	2%	1%	4%	1%	0%	2%	0%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8			2			6
Actuated Green, G (s)		35.4	35.4		35.4	35.4	25.8	86.7	86.7	19.2	80.1	80.1
Effective Green, g (s)		35.4	35.4		35.4	35.4	25.8	86.7	86.7	19.2	80.1	80.1
Actuated g/C Ratio		0.22	0.22		0.22	0.22	0.16	0.55	0.55	0.12	0.51	0.51
Clearance Time (s)		6.0	6.0		6.0	6.0	5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	5.4	5.4	3.5	5.4	5.4
Lane Grp Cap (vph)		370	354		258	348	292	1910	869	420	1773	809
v/s Ratio Prot							c0.14	0.33		0.08	c0.53	
v/s Ratio Perm		0.09	0.06		c0.23	0.04			0.07			0.00
v/c Ratio		0.41	0.29		1.02	0.20	0.86	0.59	0.12	0.70	1.06	0.01
Uniform Delay, d1		52.5	51.0		61.5	49.9	64.4	24.0	17.4	66.8	39.1	19.4
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		0.7	0.4		61.1	0.3	21.0	0.8	0.2	5.2	38.1	0.0
Delay (s)		53.3	51.4		122.6	50.2	85.5	24.8	17.5	72.0	77.2	19.4
Level of Service		D	D		F	D	F	C	B	E	E	B
Approach Delay (s)		52.0			95.9			34.1			76.1	
Approach LOS		D			F			C			E	

Intersection Summary			
HCM 2000 Control Delay	61.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	158.3	Sum of lost time (s)	17.0
Intersection Capacity Utilization	103.5%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	107	367	25	5	394	73	11	0	1	38	1	55
Future Volume (Veh/h)	107	367	25	5	394	73	11	0	1	38	1	55
Sign Control		Free			Free			Stop			Stop	
Grade		-1%			1%			-2%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	116	399	27	5	428	79	12	0	1	41	1	60
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		648										
pX, platoon unblocked				0.98			0.98	0.98	0.98	0.98	0.98	
vC, conflicting volume	507			426			1130	1148	399	1110	1136	468
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	507			401			1121	1140	374	1100	1127	468
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	89			100			92	100	100	76	99	90
cM capacity (veh/h)	1063			1142			148	176	662	170	179	595

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	SB 1
Volume Total	116	399	27	5	507	13	102
Volume Left	116	0	0	5	0	12	41
Volume Right	0	0	27	0	79	1	60
cSH	1063	1700	1700	1142	1700	158	294
Volume to Capacity	0.11	0.23	0.02	0.00	0.30	0.08	0.35
Queue Length 95th (ft)	9	0	0	0	0	7	37
Control Delay (s)	8.8	0.0	0.0	8.2	0.0	29.9	23.6
Lane LOS	A			A		D	C
Approach Delay (s)	1.9			0.1		29.9	23.6
Approach LOS						D	C

Intersection Summary				
Average Delay	3.3			
Intersection Capacity Utilization	46.2%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	293	114	63	382	91	37
Future Volume (Veh/h)	293	114	63	382	91	37
Sign Control	Free			Free	Stop	
Grade	-1%			1%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	322	125	69	420	100	41
Pedestrians				1		
Lane Width (ft)				12.0		
Walking Speed (ft/s)				3.5		
Percent Blockage				0		
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	1264					
pX, platoon unblocked						
vC, conflicting volume			447		942	386
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			447		942	386
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			94		63	94
cM capacity (veh/h)			1108		273	659

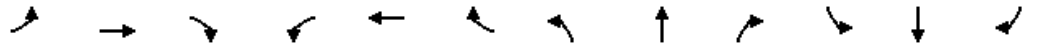
Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	447	69	420	141
Volume Left	0	69	0	100
Volume Right	125	0	0	41
cSH	1700	1108	1700	330
Volume to Capacity	0.26	0.06	0.25	0.43
Queue Length 95th (ft)	0	5	0	52
Control Delay (s)	0.0	8.5	0.0	23.9
Lane LOS		A		C
Approach Delay (s)	0.0	1.2		23.9
Approach LOS				C

Intersection Summary			
Average Delay	3.7		
Intersection Capacity Utilization	43.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	27	119	131	52	89	52	96	231	39	69	377	41
Future Volume (vph)	27	119	131	52	89	52	96	231	39	69	377	41
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	30	134	147	58	100	58	108	260	44	78	424	46

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	30	281	58	158	108	304	78	470
Volume Left (vph)	30	0	58	0	108	0	78	0
Volume Right (vph)	0	147	0	58	0	44	0	46
Hadj (s)	0.50	-0.34	0.55	-0.24	0.50	-0.06	0.53	-0.05
Departure Headway (s)	8.3	7.4	8.6	7.8	7.9	7.3	7.6	7.1
Degree Utilization, x	0.07	0.58	0.14	0.34	0.24	0.62	0.17	0.92
Capacity (veh/h)	418	459	400	440	439	471	455	505
Control Delay (s)	10.7	19.0	11.7	13.6	12.1	20.1	10.9	47.9
Approach Delay (s)	18.2		13.1		18.0		42.6	
Approach LOS	C		B		C		E	

Intersection Summary				
Delay	26.4			
Level of Service	D			
Intersection Capacity Utilization	58.9%	ICU Level of Service		B
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	103	13	169	1	20	16	320	143	6	32	149	275
Future Volume (vph)	103	13	169	1	20	16	320	143	6	32	149	275
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	114	14	188	1	22	18	356	159	7	36	166	306

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1
Volume Total (vph)	114	202	41	522	508
Volume Left (vph)	114	0	1	356	36
Volume Right (vph)	0	188	18	7	306
Hadj (s)	0.50	-0.57	-0.22	0.16	-0.32
Departure Headway (s)	8.0	6.9	7.8	6.2	5.8
Degree Utilization, x	0.25	0.39	0.09	0.89	0.81
Capacity (veh/h)	431	497	415	569	607
Control Delay (s)	12.5	13.0	11.6	40.3	29.1
Approach Delay (s)	12.8		11.6	40.3	29.1
Approach LOS	B		B	E	D

Intersection Summary				
Delay	29.1			
Level of Service	D			
Intersection Capacity Utilization	74.5%	ICU Level of Service		D
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Traffic Volume (veh/h)	20	7	12	46	5	53	1	8	1368	55	2	64
Future Volume (Veh/h)	20	7	12	46	5	53	1	8	1368	55	2	64
Sign Control		Stop			Stop				Free			
Grade		0%			0%				0%			
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	21	7	13	48	5	55	0	8	1425	57	0	67
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type									Raised			
Median storage veh)									2			
Upstream signal (ft)												
pX, platoon unblocked							0.00				0.00	
vC, conflicting volume	3105	3817	1092	2712	3832	741	0	2229			0	1482
vC1, stage 1 conf vol	2319	2319		1470	1470							
vC2, stage 2 conf vol	786	1498		1243	2363							
vCu, unblocked vol	3105	3817	1092	2712	3832	741	0	2229			0	1482
tC, single (s)	7.6	6.5	6.9	7.6	6.5	6.9	0.0	4.1			0.0	4.1
tC, 2 stage (s)	6.6	5.5		6.6	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	0.0	2.2			0.0	2.2
p0 queue free %	30	86	94	43	89	85	0	97			0	85
cM capacity (veh/h)	30	52	213	84	47	363	0	237			0	460

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SB 4
Volume Total	41	108	8	950	532	67	1092	1092	44
Volume Left	21	48	8	0	0	67	0	0	0
Volume Right	13	55	0	0	57	0	0	0	44
cSH	46	130	237	1700	1700	460	1700	1700	1700
Volume to Capacity	0.89	0.83	0.03	0.56	0.31	0.15	0.64	0.64	0.03
Queue Length 95th (ft)	91	128	3	0	0	13	0	0	0
Control Delay (s)	237.9	103.2	20.7	0.0	0.0	14.2	0.0	0.0	0.0
Lane LOS	F	F	C			B			
Approach Delay (s)	237.9	103.2	0.1			0.4			
Approach LOS	F	F							

Intersection Summary				
Average Delay	5.6			
Intersection Capacity Utilization	71.8%	ICU Level of Service		C
Analysis Period (min)	15			

Movement	SBT	SBR
Lane Configurations	↑↑	↱
Traffic Volume (veh/h)	2098	42
Future Volume (Veh/h)	2098	42
Sign Control	Free	
Grade	0%	
Peak Hour Factor	0.96	0.96
Hourly flow rate (vph)	2185	44
Pedestrians		
Lane Width (ft)		
Walking Speed (ft/s)		
Percent Blockage		
Right turn flare (veh)		
Median type	Raised	
Median storage veh)	2	
Upstream signal (ft)		
pX, platoon unblocked		
vC, conflicting volume		
vC1, stage 1 conf vol		
vC2, stage 2 conf vol		
vCu, unblocked vol		
tC, single (s)		
tC, 2 stage (s)		
tF (s)		
p0 queue free %		
cM capacity (veh/h)		

Direction, Lane #

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	109	1	1	99	2	1	1	2	1	1	1
Future Volume (Veh/h)	10	109	1	1	99	2	1	1	2	1	1	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			2%			2%			-2%	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	12	133	1	1	121	2	1	1	2	1	1	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	123			134			283	282	134	284	282	122
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	123			134			283	282	134	284	282	122
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			100	100	100	100	100	100
cM capacity (veh/h)	1477			1463			667	624	921	666	625	935

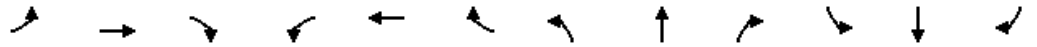
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	146	124	4	3
Volume Left	12	1	1	1
Volume Right	1	2	2	1
cSH	1477	1463	758	719
Volume to Capacity	0.01	0.00	0.01	0.00
Queue Length 95th (ft)	1	0	0	0
Control Delay (s)	0.7	0.1	9.8	10.0
Lane LOS	A	A	A	B
Approach Delay (s)	0.7	0.1	9.8	10.0
Approach LOS			A	B

Intersection Summary				
Average Delay	0.6			
Intersection Capacity Utilization	22.3%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	92	15	12	80	6	14	6	8	7	10	4
Future Volume (Veh/h)	10	92	15	12	80	6	14	6	8	7	10	4
Sign Control		Stop			Stop			Free			Free	
Grade		-1%			1%			-2%			0%	
Peak Hour Factor	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
Hourly flow rate (vph)	14	124	20	16	108	8	19	8	11	9	14	5
Pedestrians		1			1						1	
Lane Width (ft)		12.0			12.0						12.0	
Walking Speed (ft/s)		3.5			3.5						3.5	
Percent Blockage		0			0						0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	150	94	18	169	90	16	20			20		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	150	94	18	169	90	16	20			20		
tC, single (s)	7.1	6.5	6.2	7.2	6.5	6.2	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.0	3.3	2.3			2.2		
p0 queue free %	98	84	98	98	86	99	99			99		
cM capacity (veh/h)	718	784	1066	661	787	1068	1514			1608		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	158	132	38	28
Volume Left	14	16	19	9
Volume Right	20	8	11	5
cSH	805	782	1514	1608
Volume to Capacity	0.20	0.17	0.01	0.01
Queue Length 95th (ft)	18	15	1	0
Control Delay (s)	10.6	10.5	3.8	2.4
Lane LOS	B	B	A	A
Approach Delay (s)	10.6	10.5	3.8	2.4
Approach LOS	B	B		

Intersection Summary				
Average Delay	9.2			
Intersection Capacity Utilization	18.2%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	57	51	0	4	67	36	4	0	4	23	0	32
Future Volume (Veh/h)	57	51	0	4	67	36	4	0	4	23	0	32
Sign Control		Free			Free			Stop			Stop	
Grade		-3%			2%			1%			0%	
Peak Hour Factor	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
Hourly flow rate (vph)	83	74	0	6	97	52	6	0	6	33	0	46
Pedestrians											2	
Lane Width (ft)											12.0	
Walking Speed (ft/s)											3.5	
Percent Blockage											0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	151			74			421	403	74	383	377	125
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	151			74			421	403	74	383	377	125
tC, single (s)	4.1			4.1			7.4	6.5	6.5	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.7	4.0	3.5	3.5	4.0	3.3
p0 queue free %	94			100			99	100	99	94	100	95
cM capacity (veh/h)	1440			1538			456	505	927	546	523	929

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	157	155	12	79
Volume Left	83	6	6	33
Volume Right	0	52	6	46
cSH	1440	1538	612	719
Volume to Capacity	0.06	0.00	0.02	0.11
Queue Length 95th (ft)	5	0	1	9
Control Delay (s)	4.3	0.3	11.0	10.6
Lane LOS	A	A	B	B
Approach Delay (s)	4.3	0.3	11.0	10.6
Approach LOS			B	B

Intersection Summary				
Average Delay	4.2			
Intersection Capacity Utilization	23.0%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	51	21	19	86	95	82
Future Volume (Veh/h)	51	21	19	86	95	82
Sign Control	Stop			Free	Free	
Grade	2%			-1%	0%	
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78
Hourly flow rate (vph)	65	27	24	110	122	105
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	332	174	227			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	332	174	227			
tC, single (s)	6.4	6.3	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.4	2.2			
p0 queue free %	90	97	98			
cM capacity (veh/h)	648	856	1353			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	92	134	227
Volume Left	65	24	0
Volume Right	27	0	105
cSH	698	1353	1700
Volume to Capacity	0.13	0.02	0.13
Queue Length 95th (ft)	11	1	0
Control Delay (s)	10.9	1.5	0.0
Lane LOS	B	A	
Approach Delay (s)	10.9	1.5	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	2.7		
Intersection Capacity Utilization	29.7%	ICU Level of Service	A
Analysis Period (min)	15		

Appendix G Mitigated Total Traffic Conditions Level of Service Worksheets

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Traffic Volume (veh/h)	29	3	2	47	3	78	4	8	1913	92	3	31
Future Volume (Veh/h)	29	3	2	47	3	78	4	8	1913	92	3	31
Sign Control		Stop			Stop				Free			
Grade		0%			0%				0%			
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	30	3	2	49	3	81	0	8	1993	96	0	32
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)						8						
Median type									Raised			
Median storage veh)									2			
Upstream signal (ft)												
pX, platoon unblocked							0.00				0.00	
vC, conflicting volume	2270	3321	576	2700	3290	1044	0	1169			0	2089
vC1, stage 1 conf vol	1216	1216		2057	2057							
vC2, stage 2 conf vol	1054	2105		644	1233							
vCu, unblocked vol	2270	3321	576	2700	3290	1044	0	1169			0	2089
tC, single (s)	7.7	6.5	6.9	7.6	6.5	7.2	0.0	4.1			0.0	4.1
tC, 2 stage (s)	6.7	5.5		6.6	5.5							
tF (s)	3.6	4.0	3.3	3.5	4.0	3.4	0.0	2.2			0.0	2.2
p0 queue free %	63	95	100	6	96	61	0	99			0	88
cM capacity (veh/h)	81	56	466	52	85	208	0	605			0	268

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SB 4
Volume Total	35	133	8	1329	760	32	576	576	17
Volume Left	30	49	8	0	0	32	0	0	0
Volume Right	2	81	0	0	96	0	0	0	17
cSH	82	138	605	1700	1700	268	1700	1700	1700
Volume to Capacity	0.43	0.97	0.01	0.78	0.45	0.12	0.34	0.34	0.01
Queue Length 95th (ft)	43	170	1	0	0	10	0	0	0
Control Delay (s)	78.6	112.1	11.0	0.0	0.0	20.2	0.0	0.0	0.0
Lane LOS	F	F	B			C			
Approach Delay (s)	78.6	112.1	0.0			0.5			
Approach LOS	F	F							

Intersection Summary				
Average Delay	5.3			
Intersection Capacity Utilization	74.0%	ICU Level of Service	D	
Analysis Period (min)	15			

Movement	SBT	SBR
Lane Configurations	↑↑	↱
Traffic Volume (veh/h)	1106	16
Future Volume (Veh/h)	1106	16
Sign Control	Free	
Grade	0%	
Peak Hour Factor	0.96	0.96
Hourly flow rate (vph)	1152	17
Pedestrians		
Lane Width (ft)		
Walking Speed (ft/s)		
Percent Blockage		
Right turn flare (veh)		
Median type	Raised	
Median storage veh)	2	
Upstream signal (ft)		
pX, platoon unblocked		
vC, conflicting volume		
vC1, stage 1 conf vol		
vC2, stage 2 conf vol		
vCu, unblocked vol		
tC, single (s)		
tC, 2 stage (s)		
tF (s)		
p0 queue free %		
cM capacity (veh/h)		

Direction, Lane #

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Traffic Volume (veh/h)	20	7	12	46	5	53	1	8	1368	55	2	64
Future Volume (Veh/h)	20	7	12	46	5	53	1	8	1368	55	2	64
Sign Control		Stop			Stop				Free			
Grade		0%			0%				0%			
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	21	7	13	48	5	55	0	8	1425	57	0	67
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)						8						
Median type									Raised			
Median storage veh)									2			
Upstream signal (ft)												
pX, platoon unblocked							0.00				0.00	
vC, conflicting volume	3078	3817	1092	2712	3832	741	0	2229			0	1482
vC1, stage 1 conf vol	2319	2319		1470	1470							
vC2, stage 2 conf vol	758	1498		1243	2363							
vCu, unblocked vol	3078	3817	1092	2712	3832	741	0	2229			0	1482
tC, single (s)	7.6	6.5	6.9	7.6	6.5	6.9	0.0	4.1			0.0	4.1
tC, 2 stage (s)	6.6	5.5		6.6	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	0.0	2.2			0.0	2.2
p0 queue free %	31	86	94	43	89	85	0	97			0	85
cM capacity (veh/h)	30	52	213	84	47	363	0	237			0	460

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SB 4
Volume Total	41	108	8	950	532	67	1092	1092	44
Volume Left	21	48	8	0	0	67	0	0	0
Volume Right	13	55	0	0	57	0	0	0	44
cSH	46	164	237	1700	1700	460	1700	1700	1700
Volume to Capacity	0.89	0.66	0.03	0.56	0.31	0.15	0.64	0.64	0.03
Queue Length 95th (ft)	90	94	3	0	0	13	0	0	0
Control Delay (s)	237.4	63.4	20.7	0.0	0.0	14.2	0.0	0.0	0.0
Lane LOS	F	F	C			B			
Approach Delay (s)	237.4	63.4	0.1			0.4			
Approach LOS	F	F							

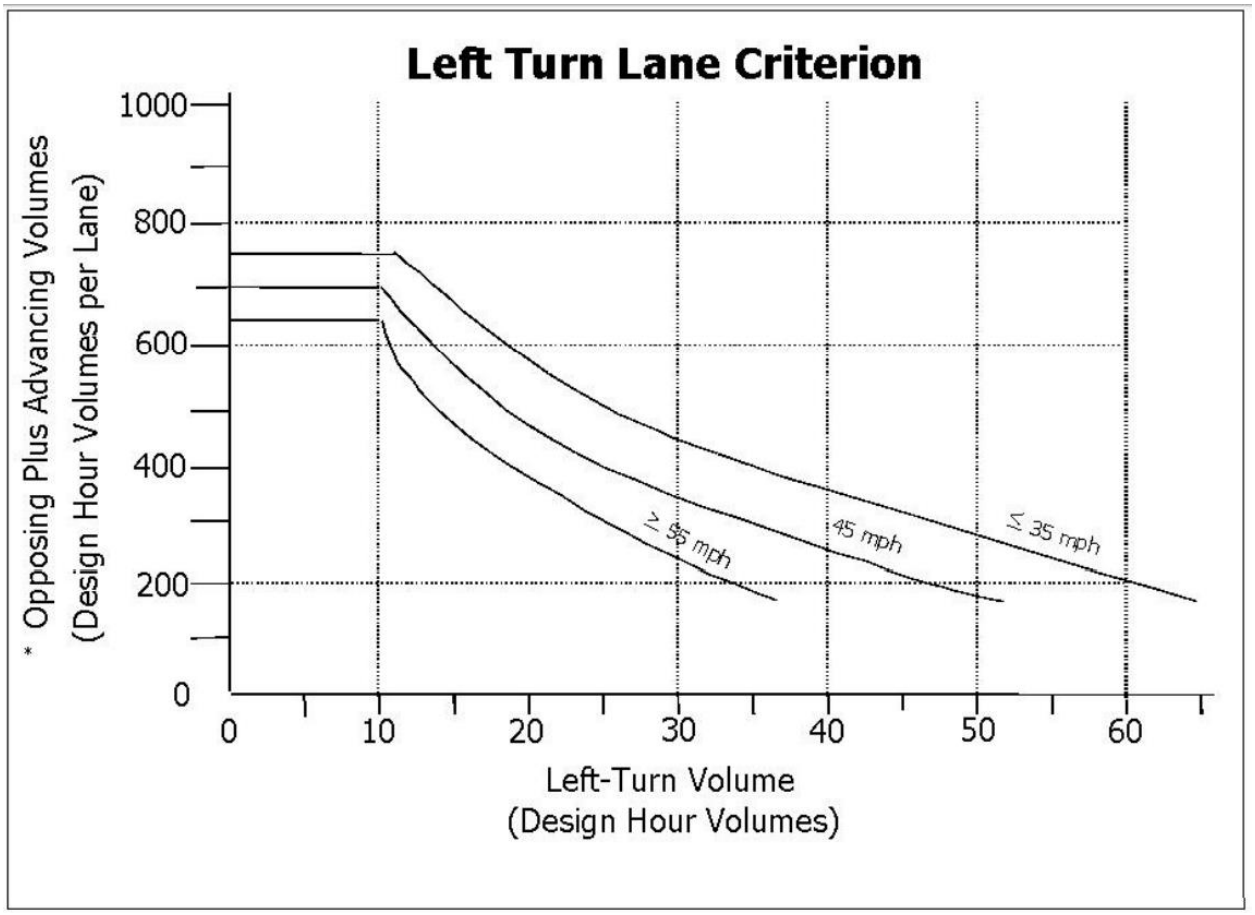
Intersection Summary				
Average Delay	4.5			
Intersection Capacity Utilization	73.5%	ICU Level of Service		D
Analysis Period (min)	15			

Movement	SBT	SBR
Lane Configurations	↑↑	↱
Traffic Volume (veh/h)	2098	42
Future Volume (Veh/h)	2098	42
Sign Control	Free	
Grade	0%	
Peak Hour Factor	0.96	0.96
Hourly flow rate (vph)	2185	44
Pedestrians		
Lane Width (ft)		
Walking Speed (ft/s)		
Percent Blockage		
Right turn flare (veh)		
Median type	Raised	
Median storage veh)	2	
Upstream signal (ft)		
pX, platoon unblocked		
vC, conflicting volume		
vC1, stage 1 conf vol		
vC2, stage 2 conf vol		
vCu, unblocked vol		
tC, single (s)		
tC, 2 stage (s)		
tF (s)		
p0 queue free %		
cM capacity (veh/h)		

Direction, Lane #

Appendix H Turn Lane Assessment

Appendix H: Turn Lane Assessment



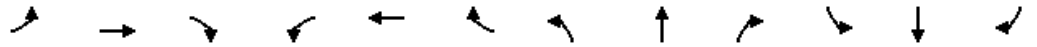
Scenario	Eastbound Left-Turn Volume	Opposing Plus Advancing Volumes	Meets Criteria?
Year 2020 Total Traffic, Weekday AM Peak Hour	18	188	No
Year 2020 Total Traffic, Weekday PM Peak Hour	57	158	No

Appendix I
Queueing Assessment

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	111	1	1	64	12	2	0	3	35	0	50
Future Volume (Veh/h)	18	111	1	1	64	12	2	0	3	35	0	50
Sign Control		Free			Free			Stop			Stop	
Grade		-3%			2%			1%			0%	
Peak Hour Factor	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68
Hourly flow rate (vph)	26	163	1	1	94	18	3	0	4	51	0	74
Pedestrians					1						2	
Lane Width (ft)					12.0						12.0	
Walking Speed (ft/s)					3.5						3.5	
Percent Blockage					0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	114			164			394	332	164	328	323	105
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	114			164			394	332	164	328	323	105
tC, single (s)	4.1			4.1			7.1	6.5	6.5	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.6	3.5	4.0	3.3
p0 queue free %	98			100			99	100	100	92	100	92
cM capacity (veh/h)	1485			1427			516	579	805	615	586	953

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	190	113	7	125
Volume Left	26	1	3	51
Volume Right	1	18	4	74
cSH	1485	1427	649	779
Volume to Capacity	0.02	0.00	0.01	0.16
Queue Length 95th (ft)	1	0	1	14
Control Delay (s)	1.1	0.1	10.6	10.5
Lane LOS	A	A	B	B
Approach Delay (s)	1.1	0.1	10.6	10.5
Approach LOS			B	B

Intersection Summary				
Average Delay	3.7			
Intersection Capacity Utilization	26.8%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	57	51	0	4	67	36	4	0	4	23	0	32
Future Volume (Veh/h)	57	51	0	4	67	36	4	0	4	23	0	32
Sign Control		Free			Free			Stop			Stop	
Grade		-3%			2%			1%			0%	
Peak Hour Factor	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
Hourly flow rate (vph)	83	74	0	6	97	52	6	0	6	33	0	46
Pedestrians											2	
Lane Width (ft)											12.0	
Walking Speed (ft/s)											3.5	
Percent Blockage											0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	151			74			421	403	74	383	377	125
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	151			74			421	403	74	383	377	125
tC, single (s)	4.1			4.1			7.4	6.5	6.5	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.7	4.0	3.5	3.5	4.0	3.3
p0 queue free %	94			100			99	100	99	94	100	95
cM capacity (veh/h)	1440			1538			456	505	927	546	523	929

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	157	155	12	79
Volume Left	83	6	6	33
Volume Right	0	52	6	46
cSH	1440	1538	612	719
Volume to Capacity	0.06	0.00	0.02	0.11
Queue Length 95th (ft)	5	0	1	9
Control Delay (s)	4.3	0.3	11.0	10.6
Lane LOS	A	A	B	B
Approach Delay (s)	4.3	0.3	11.0	10.6
Approach LOS			B	B

Intersection Summary				
Average Delay	4.2			
Intersection Capacity Utilization	23.0%	ICU Level of Service	A	
Analysis Period (min)	15			

Exhibit K: Tree Inventory Table

Detailed Tree Inventory for Middlebrook Subdivision

AKS Job No. 3591 Evaluated 4/24/2018 - 4/30/2018

Tree #	DBH (in.)	Tree Species Common Name (*Scientific name*)	Comments	Health Rating*	Structure Rating**	Preserve/ Remove
11369	13	Cottonwood (*Populus sp.*)	**OFFSITE**	1	1	Preserve
11370	7	Douglas-fir (*Pseudotsuga menziesii*)	**OFFSITE**, Sparse foliage	2	1	Preserve
11371	7	Douglas-fir (*Pseudotsuga menziesii*)	**OFFSITE**, Sparse foliage	2	1	Preserve
11380	24	Cottonwood (*Populus sp.*)	**OFFSITE**, Cavities with decay, Broken branches, Peeling or no bark on several branch	2	3	Preserve
11381	8	Douglas-fir (*Pseudotsuga menziesii*)	**OFFSITE**, Broken top, Very sparse foliage	2	3	Preserve
11382	31	Willow (*Salix sp.*)	**OFFSITE**, Decay, Broken large branches, Cavities with decay	1	3	Preserve
11383	16	Oregon Ash (*Fraxinus latifolia*)	**OFFSITE**	1	1	Preserve
11384	7	Willow (*Salix sp.*)	**OFFSITE**	1	1	Preserve
11391	6	Douglas-fir (*Pseudotsuga menziesii*)	**OFFSITE**	1	1	Preserve
11441	7	Douglas-fir (*Pseudotsuga menziesii*)	**OFFSITE**	1	1	Preserve
11453	6	Douglas-fir (*Pseudotsuga menziesii*)	**OFFSITE**	1	1	Preserve
11481	16	Willow (*Salix sp.*)	**OFFSITE**	1	1	Preserve
11521	15, 16	Redwood (*Sequoia sempervirens*)	**OFFSITE**, Codominant	1	1	Preserve
11547	11	Ash (*Fraxinus sp.*)	**OFFSITE**	1	1	Preserve
11583	6	Locust (*Robinia sp.*)	**OFFSITE**	1	1	Preserve
11651	10	Ash (*Fraxinus sp.*)	**OFFSITE**	1	1	Preserve
11652	9	Ash (*Fraxinus sp.*)	**OFFSITE**	1	1	Preserve
11653	8	Ash (*Fraxinus sp.*)	**OFFSITE**	1	1	Preserve
11823	10	Ash (*Fraxinus sp.*)	**OFFSITE**	1	1	Preserve
11824	11	Ash (*Fraxinus sp.*)	**OFFSITE**	1	1	Preserve
12237	6	Western Redcedar (*Thuja plicata*)	**OFFSITE**	1	1	Preserve
12238	6	Western Redcedar (*Thuja plicata*)	**OFFSITE**	1	1	Preserve
12239	6	Western Redcedar (*Thuja plicata*)	**OFFSITE**	1	1	Preserve
12240	24	Apple (*Malus sp.*)	**OFFSITE**, Bore holes, Dead/broken branches, Codominant, Cavities with decay	3	3	Preserve
12244	6, 8	Cherry (*Prunus sp.*)	**OFFSITE**	1	1	Preserve
12256	22, 18, 15	Western Redcedar (*Thuja plicata*)		1	1	Remove
12262	18	Spruce (*Picea sp.*)		1	1	Remove
12265	36	Jeffrey Pine (*Pinus jeffreyi*)	**OFFSITE**, Codominant	1	1	Remove
12344	16	Spruce (*Picea sp.*)	**OFFSITE**	1	1	Preserve
12345	16	Spruce (*Picea sp.*)	**OFFSITE**	1	1	Preserve
12346	14	Spruce (*Picea sp.*)	**OFFSITE**	1	1	Preserve
12347	16	Spruce (*Picea sp.*)	**OFFSITE**	1	1	Preserve
12387	16	Lodgepole Pine (*Pinus contorta*)	**OFFSITE**	1	1	Preserve
12408	14	Giant Sequoia (*Sequoiadendron giganteum*)	**OFFSITE**	1	1	Preserve
12410	15	Giant Sequoia (*Sequoiadendron giganteum*)	**OFFSITE**	1	1	Preserve
12411	15	Giant Sequoia (*Sequoiadendron giganteum*)	**OFFSITE**	1	1	Preserve
12412	15	Giant Sequoia (*Sequoiadendron giganteum*)	**OFFSITE**	1	1	Preserve
12413	15	Giant Sequoia (*Sequoiadendron giganteum*)	**OFFSITE**	1	1	Preserve
12414	15	Giant Sequoia (*Sequoiadendron giganteum*)	**OFFSITE**	1	1	Preserve
12426	10	Giant Sequoia (*Sequoiadendron giganteum*)	**OFFSITE**, Dead top	2	1	Preserve
12434	14	Giant Sequoia (*Sequoiadendron giganteum*)	**OFFSITE**	1	1	Preserve
12445	20	Douglas-fir (*Pseudotsuga menziesii*)	**OFFSITE**	1	1	Preserve
12446	42	Douglas-fir (*Pseudotsuga menziesii*)	**OFFSITE**	1	1	Preserve
12447	28	Douglas-fir (*Pseudotsuga menziesii*)	**OFFSITE**	1	1	Preserve
12448	60	Douglas-fir (*Pseudotsuga menziesii*)	**OFFSITE**, Codominant with included bark	1	2	Preserve
12450	36, 24	Douglas-fir (*Pseudotsuga menziesii*)	**OFFSITE**, Codominant	1	1	Preserve
12451	46	Douglas-fir (*Pseudotsuga menziesii*)	**OFFSITE**	1	1	Preserve
12452	10	Spruce (*Picea sp.*)		1	1	Remove
12465	20, 16	Giant Sequoia (*Sequoiadendron giganteum*)	**OFFSITE**	1	1	Preserve
12466	12	Giant Sequoia (*Sequoiadendron giganteum*)	**OFFSITE**	1	1	Preserve
12507	9	Dogwood (*Cornus sp.*)	**OFFSITE**	1	1	Preserve
12609	15	Cherry (*Prunus sp.*)	**OFFSITE**, Large scar/cavity with decay, Sparse foliage	3	1	Preserve
13056	8, 8, 7, 7	Arborvitae (*Thuja occidentalis*)	**OFFSITE**	1	1	Remove
13057	10	Arborvitae (*Thuja occidentalis*)	**OFFSITE**	1	1	Remove

Detailed Tree Inventory for Middlebrook Subdivision

AKS Job No. 3591 Evaluated 4/24/2018 - 4/30/2018

Tree #	DBH (in.)	Tree Species Common Name (*Scientific name*)	Comments	Health Rating*	Structure Rating**	Preserve/ Remove
13058	8 7	Arborvitae (*Thuja occidentalis*)	**OFFSITE**	1	1	Remove
13059	6	Arborvitae (*Thuja occidentalis*)	**OFFSITE**	1	1	Remove
13060	6	Arborvitae (*Thuja occidentalis*)	**OFFSITE**	1	1	Remove
13061	7, 7, 6	Arborvitae (*Thuja occidentalis*)	**OFFSITE**	1	1	Remove
13062	8	Arborvitae (*Thuja occidentalis*)	**OFFSITE**	1	1	Remove
13063	8	Arborvitae (*Thuja occidentalis*)	**OFFSITE**	1	1	Remove
13064	8, 7	Arborvitae (*Thuja occidentalis*)	**OFFSITE**	1	1	Remove
13065	10	Arborvitae (*Thuja occidentalis*)	**OFFSITE**	1	1	Remove
13070	18	Spruce (*Picea sp.*)	**OFFSITE**	1	1	Remove
13243	18	Spruce (*Picea sp.*)	**OFFSITE**, Topped for overhead wires	1	3	Preserve
13270	13	Western Juniper (*Juniperus occidentalis*)	**OFFSITE**	1	1	Preserve
13281	16	Douglas-fir (*Pseudotsuga menziesii*)	**OFFSITE**, Topped for overhead wires	1	3	Preserve
13436	13, 18, 13	Oregon Ash (*Fraxinus latifolia*)	**OFFSITE**	1	1	Preserve
13464	8, 7	Maple (*Acer sp.*)	**OFFSITE**	1	1	Preserve
13466	13	Oregon Ash (*Fraxinus latifolia*)	**OFFSITE**	1	1	Preserve
13467	14, 7	Oregon Ash (*Fraxinus latifolia*)	**OFFSITE**	1	1	Preserve
13468	13	Walnut (*Juglans sp.*)	**OFFSITE**	1	1	Preserve
13469	14	Walnut (*Juglans sp.*)	**OFFSITE**	1	1	Preserve
13470	14	Walnut (*Juglans sp.*)	**OFFSITE**	1	1	Preserve
13533	10	Katsuratree (*Cercidiphyllum japonicum*)	**OFFSITE**, Broken top and branches	1	2	Preserve
13539	19, 17	Oregon Ash (*Fraxinus latifolia*)	**OFFSITE**, Broken tops, Cracking, Only live growth is epicormic/base sprouting, Cavities with decay	3	3	Preserve
13874	8	Douglas-fir (*Pseudotsuga menziesii*)	Codominant with weak attachments	1	2	Remove
13876	6	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
13877	6	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
13879	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
13880	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
13882	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
13917	8, 7, 6, 6	Pacific Serviceberry (*Amelanchier alnifolia*)	Dead and broken branches, Very sparse foliage	3	1	Remove
13919	20	Willow (*Salix sp.*)	Leans (N), Bore holes, Conk, Many dead and broken branches, Cracks, Cavities	3	3	Remove
13922	15, 6	Oregon Ash (*Fraxinus latifolia*)	**OFFSITE**	1	1	Preserve
13924	7, 6, 6	Pacific Serviceberry (*Amelanchier alnifolia*)	Each stem leans over 45^{o}	1	2	Remove
13929	55	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
13936	9	Oregon Ash (*Fraxinus latifolia*)		1	1	Preserve
13940	35	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
13944	22	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
13945	8	Hawthorn (*Crataegus sp.*)		1	1	Remove
13949	23, 22	Douglas-fir (*Pseudotsuga menziesii*)	Codominant	1	1	Remove
13954	38, 8	Douglas-fir (*Pseudotsuga menziesii*)	Codominant with approximately 5 feet of included bark between two stems growing from 38 inch diameter stem, Sap flow	2	2	Remove
13955	27	Douglas-fir (*Pseudotsuga menziesii*)	Conk	3	1	Remove
13956	24	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
13957	16	Douglas-fir (*Pseudotsuga menziesii*)	Conk, Sweep, Broken top	3	3	Remove
13959	26	Douglas-fir (*Pseudotsuga menziesii*)	Codominant with approximately 4 feet of included bark at base, Broken tops	1	3	Remove
13960	36	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
13963	33	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
13965	30	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
13970	9	Oregon Ash (*Fraxinus latifolia*)	**OFFSITE**	1	1	Preserve
13974	7	Hawthorn (*Crataegus sp.*)	Many dead branches, Leans (NE), Very sparse foliage	3	2	Remove
13975	25	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
13982	13	Oregon Ash (*Fraxinus latifolia*)		1	1	Remove
13986	11	Oregon Ash (*Fraxinus latifolia*)	**OFFSITE**	1	1	Preserve
13989	7, 6	Hawthorn (*Crataegus sp.*)	Many dead branches, Very sparse foliage, Leans (S)	3	2	Remove
13992	16, 10	Douglas-fir (*Pseudotsuga menziesii*)	**OFFSITE**, Codominant	1	1	Remove
13995	41	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
13996	6	Pacific Dogwood (*Cornus nuttalli*)	**OFFSITE**	1	1	Preserve
13997	25	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
14001	22	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
14003	6	Pacific Dogwood (*Cornus nuttalli*)		1	1	Remove
14005	41, 39	Douglas-fir (*Pseudotsuga menziesii*)	Codominant	1	1	Remove

Detailed Tree Inventory for Middlebrook Subdivision

AKS Job No. 3591 Evaluated 4/24/2018 - 4/30/2018

Tree #	DBH (in.)	Tree Species Common Name (*Scientific name*)	Comments	Health Rating*	Structure Rating**	Preserve/ Remove
14011	37	Douglas-fir (*Pseudotsuga menziesii*)	Bore holes, Conk	3	3	Remove
14012	37	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
14016	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
14017	52	Douglas-fir (*Pseudotsuga menziesii*)	Codominant	1	1	Remove
14019	8	Holly (*Ilex sp.*)		1	1	Remove
14027	6	Holly (*Ilex sp.*)		1	1	Remove
14028	9, 8, 6, 6	Pacific Serviceberry (*Amelanchier alnifolia*)	Leans (N)	2	1	Remove
14124	28	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
14125	25, 19, 14	Douglas-fir (*Pseudotsuga menziesii*)	Codominant	1	1	Remove
14126	7	Douglas-fir (*Pseudotsuga menziesii*)	Dead	3	3	Remove
14127	29	Douglas-fir (*Pseudotsuga menziesii*)	**OFFSITE**	1	1	Remove
14128	9	Douglas-fir (*Pseudotsuga menziesii*)	**OFFSITE**, Dead top, Very sparse foliage	3	1	Remove
14129	11	Douglas-fir (*Pseudotsuga menziesii*)	**OFFSITE**	1	1	Remove
14134	17	Douglas-fir (*Pseudotsuga menziesii*)	**OFFSITE**	1	1	Remove
14135	8	Cherry (*Prunus sp.*)	**OFFSITE**	1	1	Preserve
14138	36	Douglas-fir (*Pseudotsuga menziesii*)	**OFFSITE**	1	1	Remove
15008	17	Spruce (*Picea sp.*)		1	1	Remove
15012	10, 9, 8, 8, 6	Maple (*Acer sp.*)		1	1	Remove
15014	6	Hawthorn (*Crataegus sp.*)		1	1	Remove
15016	16	Spruce (*Picea sp.*)	Codominant	1	1	Remove
15028	24, 22	Poplar (*Populus sp.*)	**OFFSITE**, One stem dead	2	1	Preserve
15030	26	Poplar (*Populus sp.*)	**OFFSITE**	1	1	Preserve
15031	7	Hawthorn (*Crataegus sp.*)	**OFFSITE**	1	1	Preserve
15035	18	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15036	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15037	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15038	18	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15047	18	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15051	7	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15052	22	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15054	19	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15062	26	Douglas-fir (*Pseudotsuga menziesii*)	Codominant with included bark	1	2	Remove
15063	16	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15064	18	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15065	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15066	6	Plum (*Prunus sp.*)	Codominant	1	1	Remove
15067	12, 11, 11, 8	Cherry (*Prunus sp.*)	Codominant	1	1	Remove
15068	13, 12	Cherry (*Prunus sp.*)	Codominant	1	1	Remove
15069	18	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15071	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15072	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15073	17	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15074	23	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15075	18	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15076	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15077	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15078	18	Douglas-fir (*Pseudotsuga menziesii*)	Codominant	1	1	Remove
15080	17	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15081	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15082	16	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15083	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15084	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15085	17	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15086	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15087	18	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15088	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15089	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15090	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15091	16	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15092	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15093	9	Douglas-fir (*Pseudotsuga menziesii*)	Sparse foliage	2	1	Remove
15094	6	Douglas-fir (*Pseudotsuga menziesii*)	Dead	3	3	Remove

Detailed Tree Inventory for Middlebrook Subdivision

AKS Job No. 3591 Evaluated 4/24/2018 - 4/30/2018

Tree #	DBH (in.)	Tree Species Common Name (*Scientific name*)	Comments	Health Rating*	Structure Rating**	Preserve/ Remove
15095	11	Douglas-fir (*Pseudotsuga menziesii*)	Dead	3	3	Remove
15096	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15097	16	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15098	16	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15099	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15100	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15101	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15102	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15103	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15104	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15105	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15106	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15107	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15108	16	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15152	6	Elderberry (*Sambucus sp.*)	Discolored foliage, Decay, Peeling bark	3	1	Remove
15164	8	Willow (*Salix sp.*)		1	1	Remove
15169	27	Grand Fir (*Abies grandis*)	Dead branches, Codominant, Bore holes	2	2	Remove
15229	20	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15230	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15231	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15232	19	Douglas-fir (*Pseudotsuga menziesii*)	Codominant with included bark	1	2	Remove
15233	20	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15234	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15235	16	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15236	18	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15237	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15238	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15239	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15240	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15242	13, 7	Douglas-fir (*Pseudotsuga menziesii*)	Codominant, 7 inch stem dead	2	2	Remove
15243	16	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15244	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15245	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15246	10, 9	Douglas-fir (*Pseudotsuga menziesii*)	Codominant	1	1	Remove
15247	18	Douglas-fir (*Pseudotsuga menziesii*)	Codominant	1	1	Remove
15248	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15249	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15250	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15251	8	Douglas-fir (*Pseudotsuga menziesii*)	Very sparse foliage	3	1	Remove
15252	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15253	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15254	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15255	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15256	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15257	10	Douglas-fir (*Pseudotsuga menziesii*)	Sparse foliage	2	1	Remove
15258	9	Douglas-fir (*Pseudotsuga menziesii*)	Codominant	1	1	Remove
15259	9	Douglas-fir (*Pseudotsuga menziesii*)	Dead	3	3	Remove
15260	11	Douglas-fir (*Pseudotsuga menziesii*)	Sparse foliage	2	1	Remove
15263	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15264	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15265	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15266	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15267	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15268	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15269	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15270	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15271	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15272	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15273	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15274	12	Douglas-fir (*Pseudotsuga menziesii*)	Codominant	1	1	Remove
15275	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15276	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15277	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove

Detailed Tree Inventory for Middlebrook Subdivision

AKS Job No. 3591 Evaluated 4/24/2018 - 4/30/2018

Tree #	DBH (in.)	Tree Species Common Name (*Scientific name*)	Comments	Health Rating*	Structure Rating**	Preserve/ Remove
15278	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15279	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15280	10	Douglas-fir (*Pseudotsuga menziesii*)	Codominant	1	1	Remove
15281	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15282	8	Western Redcedar (*Thuja plicata*)		1	1	Remove
15283	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15284	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15285	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15286	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15287	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15288	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15289	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15290	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15291	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15292	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15293	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15294	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15295	17	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15296	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15297	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15298	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15299	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15306	37	Douglas-fir (*Pseudotsuga menziesii*)	**OFFSITE**	1	1	Preserve
15309	13	Spruce (*Picea sp.*)		1	1	Remove
15316	12	Maple (*Acer sp.*)		1	1	Remove
15319	17	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15321	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15328	12	Spruce (*Picea sp.*)		1	1	Remove
15331	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15333	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15340	13	Spruce (*Picea sp.*)		1	1	Remove
15372	17	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15373	15	Douglas-fir (*Pseudotsuga menziesii*)	**OFFSITE**	1	1	Preserve
15374	15	Douglas-fir (*Pseudotsuga menziesii*)	**OFFSITE**	1	1	Preserve
15375	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
15376	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
15384	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15385	20	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15386	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15388	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15389	13	Douglas-fir (*Pseudotsuga menziesii*)	Broken top	1	2	Remove
15390	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15391	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15392	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15393	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15394	16	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15395	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15396	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15397	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15398	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15400	21	Douglas-fir (*Pseudotsuga menziesii*)	Codominant	1	1	Remove
15401	14	Douglas-fir (*Pseudotsuga menziesii*)	Codominant	1	1	Remove
15402	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15404	16	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15405	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15406	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15407	9	Douglas-fir (*Pseudotsuga menziesii*)	Codominant with sweep	1	2	Remove
15408	16	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15412	17	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15413	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15415	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15416	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15417	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove

Detailed Tree Inventory for Middlebrook Subdivision

AKS Job No. 3591 Evaluated 4/24/2018 - 4/30/2018

Tree #	DBH (in.)	Tree Species Common Name (*Scientific name*)	Comments	Health Rating*	Structure Rating**	Preserve/ Remove
15418	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15419	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15420	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15421	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15422	17	Douglas-fir (*Pseudotsuga menziesii*)	Codominant	1	1	Remove
15423	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15424	15	Douglas-fir (*Pseudotsuga menziesii*)	Codominant	1	1	Remove
15425	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15426	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15429	16	Douglas-fir (*Pseudotsuga menziesii*)	Codominant	1	1	Remove
15430	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15431	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15432	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15433	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15434	10, 9	Douglas-fir (*Pseudotsuga menziesii*)	Codominant	1	1	Remove
15435	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15438	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15439	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15440	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15441	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15442	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15443	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15445	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15446	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15447	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15449	12	Douglas-fir (*Pseudotsuga menziesii*)	Dead	3	3	Remove
15450	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15451	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15452	10	Douglas-fir (*Pseudotsuga menziesii*)	Sparse foliage	2	1	Remove
15453	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15454	6	Hawthorn (*Crataegus sp.*)		1	1	Remove
15455	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15457	11	Douglas-fir (*Pseudotsuga menziesii*)	Dead	3	3	Remove
15458	6	Douglas-fir (*Pseudotsuga menziesii*)	Dead	3	3	Remove
15459	8	Douglas-fir (*Pseudotsuga menziesii*)	Dead	3	3	Remove
15461	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15462	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15463	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15464	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15465	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15466	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15467	7	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15468	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15498	10, 6	Douglas-fir (*Pseudotsuga menziesii*)	Codominant	1	1	Remove
15500	12	Douglas-fir (*Pseudotsuga menziesii*)	Sweep	1	1	Remove
15501	8	Douglas-fir (*Pseudotsuga menziesii*)	Dead top	2	1	Remove
15515	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15516	16	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15517	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15519	17	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15520	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15522	11	Douglas-fir (*Pseudotsuga menziesii*)	Small and discolored foliage	1	1	Remove
15523	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15524	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15525	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15526	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15527	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15528	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15529	11	Douglas-fir (*Pseudotsuga menziesii*)	Codominant	1	1	Remove
15530	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15531	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15532	10	Douglas-fir (*Pseudotsuga menziesii*)	Dead top	2	1	Remove
15533	14	Douglas-fir (*Pseudotsuga menziesii*)	Large sweep in stem	1	2	Remove

Detailed Tree Inventory for Middlebrook Subdivision

AKS Job No. 3591 Evaluated 4/24/2018 - 4/30/2018

Tree #	DBH (in.)	Tree Species Common Name (*Scientific name*)	Comments	Health Rating*	Structure Rating**	Preserve/ Remove
15534	12	Douglas-fir (*Pseudotsuga menziesii*)	Dead	3	3	Remove
15535	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15536	10	Douglas-fir (*Pseudotsuga menziesii*)	Dead	3	3	Remove
15537	12	Douglas-fir (*Pseudotsuga menziesii*)	Sparse foliage	2	1	Remove
15538	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15539	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15540	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15541	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15542	8	Douglas-fir (*Pseudotsuga menziesii*)	Sparse foliage	2	1	Remove
15543	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15663	10, 9	Port-Orford-cedar (*Chamaecyparis lawsoniana*)	Codominant	1	1	Remove
15664	25	Lodgepole Pine (*Pinus contorta*)	Codominant with included bark	1	2	Remove
15665	13	Western White Pine (*Pinus monticola*)	Codominant with weak attachments	1	2	Remove
15666	29	Lodgepole Pine (*Pinus contorta*)		1	1	Remove
15683	12, 10	Douglas-fir (*Pseudotsuga menziesii*)	Codominant	1	1	Remove
15684	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15685	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15686	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15687	8	Ponderosa Pine (*Pinus ponderosa*)		1	1	Remove
15689	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15690	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15691	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15692	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15693	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15700	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15701	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15702	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15703	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15704	19	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15705	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15706	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15707	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15708	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15709	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15710	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15711	14	Douglas-fir (*Pseudotsuga menziesii*)	Codominant with weak attachments	1	2	Remove
15712	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15713	16	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15714	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15715	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15716	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15717	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15718	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15719	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15720	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15721	6	Douglas-fir (*Pseudotsuga menziesii*)	Dead	3	3	Remove
15722	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15723	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15724	18	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15725	9, 10	Douglas-fir (*Pseudotsuga menziesii*)	Codominant, Sparse foliage	2	1	Remove
15726	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15727	10, 10	Douglas-fir (*Pseudotsuga menziesii*)	Codominant	1	1	Remove
15728	16	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15729	8	Douglas-fir (*Pseudotsuga menziesii*)	Dead	3	3	Remove
15730	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15731	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15732	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15733	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15734	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15735	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15736	19	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15737	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove

Detailed Tree Inventory for Middlebrook Subdivision

AKS Job No. 3591 Evaluated 4/24/2018 - 4/30/2018

Tree #	DBH (in.)	Tree Species Common Name (*Scientific name*)	Comments	Health Rating*	Structure Rating**	Preserve/ Remove
15738	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15739	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15741	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15742	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15743	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15744	10	Douglas-fir (*Pseudotsuga menziesii*)	Sparse foliage	2	1	Remove
15745	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15746	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15747	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15748	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15749	10	Douglas-fir (*Pseudotsuga menziesii*)	Broken top	2	1	Remove
15750	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15751	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15752	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15753	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15754	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15755	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15756	6	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15757	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15758	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15759	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15760	7	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15761	7	Douglas-fir (*Pseudotsuga menziesii*)	Codominant, Sparse foliage	2	1	Remove
15762	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15764	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15765	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15766	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15767	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15768	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15769	6	Douglas-fir (*Pseudotsuga menziesii*)	Sparse foliage	2	1	Remove
15770	7	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15771	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15772	12	Douglas-fir (*Pseudotsuga menziesii*)	Sweep in stem with weak attachment at location of old break	1	2	Remove
15773	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15774	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15775	7	Cascara (*Frangula purshina*)		1	1	Remove
15776	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15777	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15778	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15779	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15780	9, 7	Douglas-fir (*Pseudotsuga menziesii*)	Codominant	1	1	Remove
15781	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15782	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15783	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15784	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15785	8	Douglas-fir (*Pseudotsuga menziesii*)	Broken top, Sparse foliage	2	2	Remove
15786	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15787	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15788	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15789	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15790	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15791	11, 8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15792	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15793	7	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15796	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15797	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15798	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15799	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15800	8	Douglas-fir (*Pseudotsuga menziesii*)	Codominant with weak attachments	1	2	Remove
15802	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15803	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15804	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15805	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove

Detailed Tree Inventory for Middlebrook Subdivision

AKS Job No. 3591 Evaluated 4/24/2018 - 4/30/2018

Tree #	DBH (in.)	Tree Species Common Name (*Scientific name*)	Comments	Health Rating*	Structure Rating**	Preserve/ Remove
15806	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15807	12	Douglas-fir (*Pseudotsuga menziesii*)	Codominant	1	1	Remove
15808	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15809	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15810	17	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15811	17	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15812	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15813	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15814	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15815	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15816	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15817	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15818	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15819	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15820	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15821	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
15822	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
15823	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15825	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
15826	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15827	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15828	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15829	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15830	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
15831	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
15832	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
15833	16	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
15834	7	Douglas-fir (*Pseudotsuga menziesii*)	Weak attachment of new leader	1	2	Remove
15835	11	Douglas-fir (*Pseudotsuga menziesii*)	Codominant	1	1	Remove
15836	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15837	7	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15838	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15839	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15840	9	Douglas-fir (*Pseudotsuga menziesii*)	Leans (N), Soil heaving	1	3	Remove
15841	8	Douglas-fir (*Pseudotsuga menziesii*)	Sweep	1	2	Remove
15842	10, 10	Douglas-fir (*Pseudotsuga menziesii*)	Codominant	1	1	Remove
15843	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15844	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15845	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15846	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15847	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15848	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15849	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15850	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15851	8	Douglas-fir (*Pseudotsuga menziesii*)	Sparse foliage	2	1	Remove
15852	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15853	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15854	7	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15855	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15856	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15857	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15858	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15859	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15860	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15861	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15862	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15863	6	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15864	7	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15865	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15866	6	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15867	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15868	8	Douglas-fir (*Pseudotsuga menziesii*)	Sparse foliage	2	1	Remove
15870	6	Douglas-fir (*Pseudotsuga menziesii*)	Sparse foliage	2	1	Remove

Detailed Tree Inventory for Middlebrook Subdivision

AKS Job No. 3591 Evaluated 4/24/2018 - 4/30/2018

Tree #	DBH (in.)	Tree Species Common Name (*Scientific name*)	Comments	Health Rating*	Structure Rating**	Preserve/ Remove
15871	6	Hawthorn (*Crataegus sp.*)		1	1	Remove
15872	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15873	6	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15874	11	Douglas-fir (*Pseudotsuga menziesii*)	Codominant	1	1	Remove
15875	6	Douglas-fir (*Pseudotsuga menziesii*)	Very sparse foliage	3	1	Remove
15876	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15877	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15878	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15879	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15880	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15883	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
15884	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15885	6	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15886	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15887	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15888	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
15889	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
15890	10, 6	Douglas-fir (*Pseudotsuga menziesii*)	Codominant	1	1	Remove
15891	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15892	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
15893	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
15894	6	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
15895	7	Douglas-fir (*Pseudotsuga menziesii*)	Dead	3	3	Remove
15896	6	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
15897	6	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
15898	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15899	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15900	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15901	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
15902	8	Douglas-fir (*Pseudotsuga menziesii*)	Dead	3	3	Remove
15903	9	Douglas-fir (*Pseudotsuga menziesii*)	Dead	3	3	Remove
15904	10	Douglas-fir (*Pseudotsuga menziesii*)	Sparse foliage	2	1	Preserve
15905	6	Douglas-fir (*Pseudotsuga menziesii*)	Sparse foliage	2	1	Preserve
15906	10	Douglas-fir (*Pseudotsuga menziesii*)	Sparse foliage	2	1	Preserve
15907	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
15908	8	Douglas-fir (*Pseudotsuga menziesii*)	Sparse foliage	2	1	Preserve
15909	7	Douglas-fir (*Pseudotsuga menziesii*)	Very sparse foliage	3	1	Remove
15910	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15911	6	Douglas-fir (*Pseudotsuga menziesii*)	Very sparse foliage	3	1	Remove
15914	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15915	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15916	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15917	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15918	6	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15919	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15920	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15921	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15922	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15923	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15924	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15925	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15926	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15927	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15928	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15929	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15930	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15931	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15932	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15933	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15934	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15935	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
15936	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
15937	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve

Detailed Tree Inventory for Middlebrook Subdivision

AKS Job No. 3591 Evaluated 4/24/2018 - 4/30/2018

Tree #	DBH (in.)	Tree Species Common Name (*Scientific name*)	Comments	Health Rating*	Structure Rating**	Preserve/ Remove
15938	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
15939	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
15940	7	Douglas-fir (*Pseudotsuga menziesii*)	Broken top, Sparse foliage	2	2	Preserve
15941	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
15942	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15943	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15944	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15945	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15946	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15947	21	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15948	16	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15949	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15950	17	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15951	16	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15952	18	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15953	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15954	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15955	9, 9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15956	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15957	17	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15958	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15960	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15961	17	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15962	15	Douglas-fir (*Pseudotsuga menziesii*)	Codominant	1	1	Remove
15963	18	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15964	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15965	17	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15966	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15967	10	Douglas-fir (*Pseudotsuga menziesii*)	Codominant with included bark	1	2	Remove
15968	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15969	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15970	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15971	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
15972	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15973	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15974	10	Douglas-fir (*Pseudotsuga menziesii*)	Codominant	1	1	Remove
15975	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15976	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15977	7	Douglas-fir (*Pseudotsuga menziesii*)	Dead	3	3	Remove
15978	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15979	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15980	7	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15981	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15982	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15983	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15984	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15985	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15986	6	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15987	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15988	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15989	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15990	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15991	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15992	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15993	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15994	7	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15995	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15996	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15997	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15998	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
15999	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16000	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16001	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove

Detailed Tree Inventory for Middlebrook Subdivision

AKS Job No. 3591 Evaluated 4/24/2018 - 4/30/2018

Tree #	DBH (in.)	Tree Species Common Name (*Scientific name*)	Comments	Health Rating*	Structure Rating**	Preserve/ Remove
16002	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16003	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16004	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16005	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16006	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16007	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16008	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16009	12, 11	Douglas-fir (*Pseudotsuga menziesii*)	Codominant with included bark	1	2	Remove
16010	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16011	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16012	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16013	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16014	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16015	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16016	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16017	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16018	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16019	12	Douglas-fir (*Pseudotsuga menziesii*)	Codominant	1	1	Preserve
16020	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16021	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16022	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16023	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16024	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16025	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16026	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16027	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16028	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16029	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16030	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16031	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16032	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16033	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16034	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16035	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16036	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16037	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16038	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16039	7	Douglas-fir (*Pseudotsuga menziesii*)	Dead	3	3	Remove
16040	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16041	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16042	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16043	10	Douglas-fir (*Pseudotsuga menziesii*)	Dead	3	3	Remove
16044	7	Douglas-fir (*Pseudotsuga menziesii*)	Dead	3	3	Remove
16045	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16046	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16047	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16048	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16049	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16050	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16052	6	Douglas-fir (*Pseudotsuga menziesii*)	Broken top, Very sparse foliage	3	2	Remove
16053	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16054	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16055	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16056	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16057	6	Douglas-fir (*Pseudotsuga menziesii*)	Dead	3	3	Remove
16058	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16059	7	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16060	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16061	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16062	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16063	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16064	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16065	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve

Detailed Tree Inventory for Middlebrook Subdivision

AKS Job No. 3591 Evaluated 4/24/2018 - 4/30/2018

Tree #	DBH (in.)	Tree Species Common Name (*Scientific name*)	Comments	Health Rating*	Structure Rating**	Preserve/ Remove
16066	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16067	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16068	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16069	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16070	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16071	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16072	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16073	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16074	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16075	7	Douglas-fir (*Pseudotsuga menziesii*)	Leans (NE), Soil heaving	1	3	Remove
16076	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16077	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16078	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16079	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16080	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16081	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16082	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16083	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16084	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16085	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16086	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16087	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16088	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16089	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16090	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16091	6	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16092	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16093	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16095	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16096	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16097	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16098	9, 8	Douglas-fir (*Pseudotsuga menziesii*)	Codominant	1	1	Remove
16099	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16100	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16101	12	Douglas-fir (*Pseudotsuga menziesii*)	Codominant	1	1	Preserve
16102	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16103	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16104	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16105	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16106	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16107	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16108	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16109	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16110	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16111	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16112	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16113	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16114	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16115	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16116	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16117	7	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16118	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16120	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16121	8	Douglas-fir (*Pseudotsuga menziesii*)	Sparse foliage	2	1	Remove
16122	7	Douglas-fir (*Pseudotsuga menziesii*)	Sparse foliage	2	1	Preserve
16123	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16124	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16125	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16126	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16127	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16128	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16129	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16130	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove

Detailed Tree Inventory for Middlebrook Subdivision

AKS Job No. 3591 Evaluated 4/24/2018 - 4/30/2018

Tree #	DBH (in.)	Tree Species Common Name (*Scientific name*)	Comments	Health Rating*	Structure Rating**	Preserve/ Remove
16131	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16132	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16133	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16134	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16135	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16136	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16139	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16140	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16141	15	Ponderosa Pine (*Pinus ponderosa*)	Codominant	1	1	Remove
16142	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16143	6	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16144	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16145	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16146	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16147	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16148	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16149	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16150	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16151	6	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16152	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16153	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16154	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16155	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16156	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16157	9	Douglas-fir (*Pseudotsuga menziesii*)	Sparse foliage	2	1	Remove
16158	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16159	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16160	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16161	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16162	7	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16163	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16164	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16165	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16166	7, 8	Douglas-fir (*Pseudotsuga menziesii*)	Codominant	1	1	Remove
16167	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16168	12	Douglas-fir (*Pseudotsuga menziesii*)	Codominant with included bark	1	2	Remove
16169	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16170	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16171	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16172	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16173	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16174	7	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16175	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16176	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16177	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16178	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16179	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16180	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16181	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16182	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16183	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16184	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16185	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16186	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16187	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16188	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16189	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16190	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16191	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16192	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16193	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16194	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16195	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve

Detailed Tree Inventory for Middlebrook Subdivision

AKS Job No. 3591 Evaluated 4/24/2018 - 4/30/2018

Tree #	DBH (in.)	Tree Species Common Name (*Scientific name*)	Comments	Health Rating*	Structure Rating**	Preserve/ Remove
16196	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16197	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16198	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16199	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16200	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16201	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16202	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16203	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16204	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16205	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16206	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16207	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16208	7	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16209	12, 11	Douglas-fir (*Pseudotsuga menziesii*)	Codominant	1	1	Remove
16210	16	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16211	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16212	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16213	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16214	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16215	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16216	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16217	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16218	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16219	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16220	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16221	11, 13	Douglas-fir (*Pseudotsuga menziesii*)	Codominant	1	1	Remove
16222	7	Douglas-fir (*Pseudotsuga menziesii*)	Dead	3	3	Remove
16223	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16224	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16225	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16226	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16227	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16228	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16229	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16230	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16231	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16232	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16233	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16234	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16235	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16236	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16237	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16238	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16239	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16240	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16241	8	Douglas-fir (*Pseudotsuga menziesii*)	Broken top with weak attachment of new leader	1	2	Preserve
16242	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16243	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16244	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16245	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16246	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16247	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16248	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16249	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16250	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16251	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16252	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16253	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16254	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16255	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16256	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16257	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16258	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove

Detailed Tree Inventory for Middlebrook Subdivision

AKS Job No. 3591 Evaluated 4/24/2018 - 4/30/2018

Tree #	DBH (in.)	Tree Species Common Name (*Scientific name*)	Comments	Health Rating*	Structure Rating**	Preserve/ Remove
16259	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16260	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16261	7	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16262	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16263	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16264	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16265	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16266	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16267	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16268	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16269	7	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16270	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16271	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16272	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16273	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16277	20	Walnut (*Juglans sp.*)	**OFFSITE**	1	1	Preserve
16280	15	Walnut (*Juglans sp.*)	**OFFSITE**	1	1	Remove
16367	25	Walnut (Juglans sp.)	**OFFSITE**	1	1	Remove
16479	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16480	7	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16481	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16482	9	Douglas-fir (*Pseudotsuga menziesii*)	Codominant	1	1	Remove
16483	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16484	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16485	6	Douglas-fir (*Pseudotsuga menziesii*)	Dead	3	3	Remove
16486	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16487	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16488	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16489	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16490	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16491	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16493	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16494	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16495	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16496	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16497	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16498	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16499	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16500	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16501	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16502	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16503	6	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16506	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16507	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16508	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16509	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16510	10, 8	Douglas-fir (*Pseudotsuga menziesii*)	Codominant	1	1	Remove
16511	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16512	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16513	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16514	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16515	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16516	7	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16517	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16518	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16519	9	Douglas-fir (*Pseudotsuga menziesii*)	Dead	3	3	Remove
16520	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16521	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16522	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16523	7	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16524	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16525	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16526	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove

Detailed Tree Inventory for Middlebrook Subdivision

AKS Job No. 3591 Evaluated 4/24/2018 - 4/30/2018

Tree #	DBH (in.)	Tree Species Common Name (*Scientific name*)	Comments	Health Rating*	Structure Rating**	Preserve/ Remove
16527	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16528	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16529	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16530	7	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16531	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16532	7	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16533	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16534	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16535	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16536	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16537	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16538	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16539	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16540	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16541	8	Douglas-fir (*Pseudotsuga menziesii*)	Dead	3	3	Remove
16542	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16543	7	Douglas-fir (*Pseudotsuga menziesii*)	Dead	3	3	Remove
16544	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16545	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16546	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16547	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16548	6	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16549	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16550	7	Douglas-fir (*Pseudotsuga menziesii*)	Dead	3	3	Remove
16551	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16552	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16553	8	Douglas-fir (*Pseudotsuga menziesii*)	Dead	3	3	Remove
16554	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16555	7	Douglas-fir (*Pseudotsuga menziesii*)	Dead	3	3	Remove
16556	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16557	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16558	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16559	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16560	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16561	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16562	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16563	7	Douglas-fir (*Pseudotsuga menziesii*)	Dead	3	3	Remove
16564	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16565	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16566	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16567	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16568	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16569	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16570	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16571	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16572	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16574	8	Douglas-fir (*Pseudotsuga menziesii*)	Sweep	1	2	Remove
16575	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16576	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16577	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16578	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16579	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16580	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16581	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16582	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16583	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16584	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16585	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16586	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16587	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16588	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16589	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16590	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove

Detailed Tree Inventory for Middlebrook Subdivision

AKS Job No. 3591 Evaluated 4/24/2018 - 4/30/2018

Tree #	DBH (in.)	Tree Species Common Name (*Scientific name*)	Comments	Health Rating*	Structure Rating**	Preserve/ Remove
16591	16	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16592	16	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16593	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16594	16	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16595	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16596	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16597	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16598	8, 7	Douglas-fir (*Pseudotsuga menziesii*)	Codominant, Sparse foliage	2	1	Remove
16599	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16600	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16601	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16602	14	Douglas-fir (*Pseudotsuga menziesii*)	Codominant	1	1	Remove
16603	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16604	10	Douglas-fir (*Pseudotsuga menziesii*)	Broken top	1	2	Remove
16605	7	Douglas-fir (*Pseudotsuga menziesii*)	Sparse foliage	2	1	Remove
16606	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16607	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16608	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16609	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16610	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16612	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16613	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16614	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16615	7	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16616	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16617	6	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16618	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16619	6	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16620	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16621	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16622	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16623	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16624	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16625	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16626	7	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16627	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16628	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16629	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16630	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16631	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16632	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16633	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16634	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16635	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16636	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16637	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16639	7	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16640	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16641	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16643	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16644	6	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16645	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16646	7	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16647	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16648	7	Douglas-fir (*Pseudotsuga menziesii*)	Soil heaving	1	3	Remove
16649	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16650	6	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16651	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16652	7	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16653	8	Douglas-fir (*Pseudotsuga menziesii*)	Dead	3	3	Remove
16654	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16655	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16656	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve

Detailed Tree Inventory for Middlebrook Subdivision

AKS Job No. 3591 Evaluated 4/24/2018 - 4/30/2018

Tree #	DBH (in.)	Tree Species Common Name (*Scientific name*)	Comments	Health Rating*	Structure Rating**	Preserve/ Remove
16657	7	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16658	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16659	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16660	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16661	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16662	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16663	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16664	8, 7	Douglas-fir (*Pseudotsuga menziesii*)	Codominant with included bark, Broken top, Sparse foliage	2	2	Remove
16666	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16667	7	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16668	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16669	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16670	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16671	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16674	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16675	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16676	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16677	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16679	6	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16680	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16681	10	Douglas-fir (*Pseudotsuga menziesii*)	Codominant with weak attachments of stems	1	2	Remove
16682	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16683	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16684	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16685	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16686	7	Douglas-fir (*Pseudotsuga menziesii*)	Sparse foliage	2	1	Preserve
16687	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16688	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
16689	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16690	7	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16691	9	Douglas-fir (*Pseudotsuga menziesii*)	Sparse foliage	2	1	Remove
16692	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16693	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16694	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16695	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16696	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16697	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16698	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16699	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16700	7, 7	Douglas-fir (*Pseudotsuga menziesii*)	Codominant with included bark, Sparse foliage	2	2	Remove
16701	10, 9	Douglas-fir (*Pseudotsuga menziesii*)	Codominant with included bark	1	2	Remove
16703	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16704	10	Douglas-fir (*Pseudotsuga menziesii*)	Sparse foliage	2	1	Remove
16705	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16706	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16707	9	Douglas-fir (*Pseudotsuga menziesii*)	Sparse foliage	2	1	Remove
16708	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16709	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16710	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16711	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16712	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16713	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16714	16	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16715	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16716	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16717	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16718	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16719	16	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16720	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16721	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16722	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16723	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16724	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove

Detailed Tree Inventory for Middlebrook Subdivision

AKS Job No. 3591 Evaluated 4/24/2018 - 4/30/2018

Tree #	DBH (in.)	Tree Species Common Name (*Scientific name*)	Comments	Health Rating*	Structure Rating**	Preserve/ Remove
16725	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16726	7	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16727	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16728	10	Douglas-fir (*Pseudotsuga menziesii*)	Codominant with weak attachments, Broken tops, Sweep	1	3	Remove
16729	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16730	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16731	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16732	12	Douglas-fir (*Pseudotsuga menziesii*)	Codominant	1	1	Remove
16733	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16734	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16735	14	Douglas-fir (*Pseudotsuga menziesii*)	Codominant	1	1	Remove
16736	17	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16737	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16738	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16739	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16740	9	Douglas-fir (*Pseudotsuga menziesii*)	Leans (NE), Sweep	1	2	Remove
16741	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16742	17	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16743	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16744	10	Douglas-fir (*Pseudotsuga menziesii*)	Codominant with weak attachments, Broken top, Dead and broken branches	2	3	Remove
16745	16	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16746	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16747	17	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16748	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16749	9	Douglas-fir (*Pseudotsuga menziesii*)	Broken top, Weak attachment of new growth	1	2	Remove
16750	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16751	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16752	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16753	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16754	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16755	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16756	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16757	14	Douglas-fir (*Pseudotsuga menziesii*)	Broken top	1	2	Remove
16758	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16759	14, 14	Douglas-fir (*Pseudotsuga menziesii*)	Codominant with included bark	1	2	Remove
16760	17	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16761	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16762	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16764	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16765	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16766	10	Douglas-fir (*Pseudotsuga menziesii*)	Dead	3	3	Remove
16767	13	Douglas-fir (*Pseudotsuga menziesii*)	Codominant	1	1	Remove
16768	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16769	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16770	12, 12	Douglas-fir (*Pseudotsuga menziesii*)	Codominant with included bark	1	2	Remove
16771	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16772	14	Douglas-fir (*Pseudotsuga menziesii*)	Codominant	1	1	Remove
16773	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16774	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16775	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16776	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16777	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16778	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16779	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16780	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16781	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16782	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16783	15	Douglas-fir (*Pseudotsuga menziesii*)	Codominant with included bark	1	2	Remove
16784	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16785	16	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16786	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16787	15	Douglas-fir (*Pseudotsuga menziesii*)	Codominant	1	1	Remove

Detailed Tree Inventory for Middlebrook Subdivision

AKS Job No. 3591 Evaluated 4/24/2018 - 4/30/2018

Tree #	DBH (in.)	Tree Species Common Name (*Scientific name*)	Comments	Health Rating*	Structure Rating**	Preserve/ Remove
16788	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16789	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16790	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16791	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16792	16	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16793	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16794	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16795	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16796	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16797	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16798	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16799	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16800	11	Douglas-fir (*Pseudotsuga menziesii*)	Very sparse foliage	3	1	Remove
16801	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16802	7	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16803	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16804	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16805	11	Douglas-fir (*Pseudotsuga menziesii*)	Broken top, Weak attachment of new growth	1	2	Remove
16806	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16812	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16813	12	Cottonwood (*Populus sp.*)		1	1	Remove
16814	11	Cottonwood (*Populus sp.*)		1	1	Remove
16815	10	Cottonwood (*Populus sp.*)		1	1	Remove
16816	14, 7	Cottonwood (*Populus sp.*)		1	1	Remove
16817	28	Cottonwood (*Populus sp.*)		1	1	Remove
16818	15	Cottonwood (*Populus sp.*)		1	1	Remove
16819	9, 7	Douglas-fir (*Pseudotsuga menziesii*)	Broken top, Sweep, Sparse foliage	2	2	Remove
16820	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16821	10	Douglas-fir (*Pseudotsuga menziesii*)	Dead	3	3	Remove
16822	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16823	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16824	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16825	9	Cottonwood (*Populus sp.*)		1	1	Remove
16826	7	Cottonwood (*Populus sp.*)	Leans (E)	1	2	Remove
16827	25	Cottonwood (*Populus sp.*)		1	1	Remove
16829	26	Cottonwood (*Populus sp.*)	Codominant	1	1	Remove
16830	24	Cottonwood (*Populus sp.*)		1	1	Remove
16831	39	Cottonwood (*Populus sp.*)	Broken and dead branches	2	2	Remove
16832	18	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16833	16	Cottonwood (*Populus sp.*)	Sweep, Leans (W)	1	2	Remove
16834	15	Cottonwood (*Populus sp.*)		1	1	Remove
16835	6	Cottonwood (*Populus sp.*)		1	1	Remove
16836	23	Cottonwood (*Populus sp.*)		1	1	Remove
16837	13	Cottonwood (*Populus sp.*)	Sweep, Leans (NW)	1	2	Remove
16838	20	Cottonwood (*Populus sp.*)		1	1	Remove
16839	7	Cottonwood (*Populus sp.*)		1	1	Remove
16840	7	Cottonwood (*Populus sp.*)		1	1	Remove
16841	7	Cottonwood (*Populus sp.*)		1	1	Remove
16843	11	Cottonwood (*Populus sp.*)		1	1	Remove
16844	6	Cottonwood (*Populus sp.*)	Leans (E)	1	2	Remove
16845	6	Cottonwood (*Populus sp.*)	Leans (E)	1	2	Remove
16846	6	Cottonwood (*Populus sp.*)		1	1	Remove
16847	9	Cottonwood (*Populus sp.*)		1	1	Remove
16848	6	Cottonwood (*Populus sp.*)		1	1	Remove
16850	31, 19	Cottonwood (*Populus sp.*)		1	1	Remove
16851	11, 6	Hawthorn (Crataegus sp.)	Broken branches, Sparse foliage	2	2	Remove
16852	9	Hawthorn (Crataegus sp.)		1	1	Remove
16853	16	Cottonwood (*Populus sp.*)		1	1	Remove
16854	11	Cottonwood (*Populus sp.*)		1	1	Remove
16855	7	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16856	13, 9	Cottonwood (*Populus sp.*)	Codominant	1	1	Remove
16857	8	Cottonwood (*Populus sp.*)		1	1	Remove
16858	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove

Detailed Tree Inventory for Middlebrook Subdivision

AKS Job No. 3591 Evaluated 4/24/2018 - 4/30/2018

Tree #	DBH (in.)	Tree Species Common Name (*Scientific name*)	Comments	Health Rating*	Structure Rating**	Preserve/ Remove
16859	10	Douglas-fir (*Pseudotsuga menziesii*)		1	2	Remove
16860	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16861	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16862	10	Cherry (*Prunus sp.*)	Broken branches, Sparse foliage	2	2	Remove
16863	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16864	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16865	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16866	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16867	6	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16868	11	Douglas-fir (*Pseudotsuga menziesii*)	Broken top	1	2	Remove
16869	11, 9	Douglas-fir (*Pseudotsuga menziesii*)	Codominant	1	1	Remove
16870	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16871	6	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16872	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16873	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16874	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16876	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16877	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16878	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16879	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16880	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16881	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16882	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16883	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16884	6, 8, 9, 6, 7, 7, 6, 9	Cherry (*Prunus sp.*)		1	1	Remove
16885	6, 10, 10, 9, 8, 9, 8, 7	Cherry (*Prunus sp.*)		1	1	Remove
16886	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16887	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16888	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16889	7	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16890	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16891	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16892	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16893	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16894	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16895	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16896	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16897	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16898	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16899	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16900	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16901	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16902	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16903	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16904	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16905	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16906	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16907	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16908	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16909	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16910	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16911	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16912	9	Douglas-fir (*Pseudotsuga menziesii*)	Abnormal dead branches and top, Very sparse foliage	3	1	Remove
16913	9	Douglas-fir (*Pseudotsuga menziesii*)	Abnormal dead branches and top, Very sparse foliage	3	1	Remove
16914	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16915	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16916	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16917	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16918	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16919	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16920	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove

Detailed Tree Inventory for Middlebrook Subdivision

AKS Job No. 3591 Evaluated 4/24/2018 - 4/30/2018

Tree #	DBH (in.)	Tree Species Common Name (*Scientific name*)	Comments	Health Rating*	Structure Rating**	Preserve/ Remove
16921	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16922	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16923	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16924	10, 7	Douglas-fir (*Pseudotsuga menziesii*)	Codominant	1	1	Remove
16925	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
16952	37	Ponderosa Pine (*Pinus ponderosa*)		1	1	Remove
16954	38	Ponderosa Pine (*Pinus ponderosa*)		1	1	Remove
16955	41	Ponderosa Pine (*Pinus ponderosa*)	Codominant	1	1	Remove
17006	33	Douglas-fir (*Pseudotsuga menziesii*)	Codominant	1	1	Remove
17013	9, 8, 8, 7, 6, 6	Hawthorn (*Crataegus sp.*)		1	1	Remove
17025	19	Douglas-fir (*Pseudotsuga menziesii*)	Codominant, Sweep	1	2	Preserve
17052	34	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
17053	33	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17056	32	Ponderosa Pine (*Pinus ponderosa*)		1	1	Preserve
17068	35	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17099	41	Ponderosa Pine (*Pinus ponderosa*)	Codominant	1	1	Remove
17156	10	Hawthorn (*Crataegus sp.*)		1	1	Preserve
17157	12, 10	Hawthorn (*Crataegus sp.*)		1	1	Preserve
17173	29	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17174	23	Douglas-fir (*Pseudotsuga menziesii*)	Bore holes, Top dead	2	2	Remove
17175	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17176	15	Douglas-fir (*Pseudotsuga menziesii*)	Broken top, Sweep	1	2	Remove
17177	18	Douglas-fir (*Pseudotsuga menziesii*)	Sweep	1	2	Remove
17178	15	Douglas-fir (*Pseudotsuga menziesii*)	Large cavity with decay, Broken top, Bore holes, Very sparse foliage	3	3	Remove
17179	18	Douglas-fir (*Pseudotsuga menziesii*)	Bore holes, Very sparse foliage, Dead top, Abnormal dead branches	3	3	Remove
17181	7	Hawthorn (*Crataegus sp.*)		1	1	Remove
17182	7, 7	Hawthorn (*Crataegus sp.*)		1	1	Remove
17183	7	Hawthorn (*Crataegus sp.*)		1	1	Remove
17185	8	Hawthorn (*Crataegus sp.*)		1	1	Remove
17186	7, 6	Hawthorn (*Crataegus sp.*)		1	1	Remove
17187	6	Hawthorn (*Crataegus sp.*)		1	1	Remove
17188	6	Hawthorn (*Crataegus sp.*)		1	1	Remove
17189	25	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17190	25	Douglas-fir (*Pseudotsuga menziesii*)	Conk	3	1	Remove
17191	36	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17192	25	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17194	26	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17195	30	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17196	20	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17197	27	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17198	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17199	17	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17201	19	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17202	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17203	20	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17204	19	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17206	27	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17208	29	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17209	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17210	26	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17211	34	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17212	22	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17213	20	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17214	26	Douglas-fir (*Pseudotsuga menziesii*)	Dead	3	3	Remove
17215	25	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17216	18	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17217	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17218	23	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17219	39	Ponderosa Pine (*Pinus ponderosa*)		1	1	Remove
17220	31	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17221	36	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove

Detailed Tree Inventory for Middlebrook Subdivision

AKS Job No. 3591 Evaluated 4/24/2018 - 4/30/2018

Tree #	DBH (in.)	Tree Species Common Name (*Scientific name*)	Comments	Health Rating*	Structure Rating**	Preserve/ Remove
17222	31	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17223	37	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17224	6, 6, 6	Red Alder (*Alnus rubra*)	Codominant	1	1	Remove
17225	23	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17226	37	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17227	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17228	30	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17229	22	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17230	6	Douglas-fir (*Pseudotsuga menziesii*)	Very sparse foliage	3	1	Remove
17231	7	Hawthorn (*Crataegus sp.*)		1	1	Remove
17232	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17233	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17234	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17235	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17236	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17237	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17239	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17240	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17241	7	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17242	6	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17243	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17244	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17245	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17246	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17247	9, 9	Douglas-fir (*Pseudotsuga menziesii*)	Codominant	1	1	Remove
17248	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17249	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17250	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17251	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17252	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17253	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17254	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17255	6	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17256	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17257	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17258	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17260	7	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17261	6	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17262	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17264	6	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17265	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17266	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17267	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17268	8	Hawthorn (*Crataegus sp.*)	Broken and dead branches	2	2	Remove
17269	23	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17270	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17271	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17272	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17273	6	Douglas-fir (*Pseudotsuga menziesii*)	Very sparse foliage	3	1	Remove
17274	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17275	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17276	7	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17278	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17279	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17280	7	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17281	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17283	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17284	7	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17285	6	Douglas-fir (*Pseudotsuga menziesii*)	Dead	3	3	Remove
17286	7	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17287	7	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17288	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17289	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove

Detailed Tree Inventory for Middlebrook Subdivision

AKS Job No. 3591 Evaluated 4/24/2018 - 4/30/2018

Tree #	DBH (in.)	Tree Species Common Name (*Scientific name*)	Comments	Health Rating*	Structure Rating**	Preserve/ Remove
17290	8	Douglas-fir (*Pseudotsuga menziesii*)	Broken top	1	2	Remove
17291	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17292	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17293	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17294	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17295	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17296	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17297	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17298	15	Douglas-fir (*Pseudotsuga menziesii*)	Codominant with included bark, Sweep	1	3	Remove
17299	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17300	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17301	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17302	6	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17303	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17304	6	Douglas-fir (*Pseudotsuga menziesii*)	Sparse foliage, Leans (NE), Uprooting	2	3	Remove
17305	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17306	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17307	9, 9	Douglas-fir (*Pseudotsuga menziesii*)	Codominant	1	1	Remove
17308	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17309	7	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17310	7, 8	Douglas-fir (*Pseudotsuga menziesii*)	Codominant	1	1	Remove
17311	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17312	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17313	7	Douglas-fir (*Pseudotsuga menziesii*)	Broken top	1	2	Remove
17314	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17315	32	Ponderosa Pine (*Pinus ponderosa*)		1	1	Remove
17316	7	Douglas-fir (*Pseudotsuga menziesii*)	Broken top	1	2	Remove
17317	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17318	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17319	7	Douglas-fir (*Pseudotsuga menziesii*)	Codominant	1	1	Remove
17320	42	Ponderosa Pine (*Pinus ponderosa*)	**OFFSITE**	1	1	Preserve
17321	38	Douglas-fir (*Pseudotsuga menziesii*)	**OFFSITE**	1	1	Preserve
17322	12	Cherry (*Prunus sp.*)	**OFFSITE**	1	1	Preserve
17323	6	Apple (*Malus sp.*)		1	1	Preserve
17324	19	Douglas-fir (*Pseudotsuga menziesii*)	**OFFSITE**	1	1	Preserve
17325	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
17326	25	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
17327	17	Douglas-fir (*Pseudotsuga menziesii*)	Sparse foliage	2	1	Preserve
17328	17, 18	Oregon Ash (*Fraxinus latifolia*)	**OFFSITE**	1	1	Preserve
17330	12	Oregon Ash (*Fraxinus latifolia*)		1	1	Preserve
17332	23	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
17333	9	Oregon Ash (*Fraxinus latifolia*)		1	1	Preserve
17334	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
17336	34	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
17337	38	Ponderosa Pine (*Pinus ponderosa*)	Several larges sweeps	1	2	Preserve
17340	10	Hawthorn (*Crataegus sp.*)		1	1	Preserve
17341	43	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
17342	9	Hawthorn (*Crataegus sp.*)		1	1	Preserve
17345	23	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
17346	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
17347	44	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
17348	7	Pacific Serviceberry (*Amelanchier alnifolia*)		1	1	Preserve
17349	7	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
17350	24, 8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
17351	28	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
17355	22	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
17356	28	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
17357	26	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
17359	6, 6	Pacific Serviceberry (*Amelanchier alnifolia*)		1	1	Preserve
17360	31	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
17361	19	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve

Detailed Tree Inventory for Middlebrook Subdivision

AKS Job No. 3591 Evaluated 4/24/2018 - 4/30/2018

Tree #	DBH (in.)	Tree Species Common Name (*Scientific name*)	Comments	Health Rating*	Structure Rating**	Preserve/ Remove
17362	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
17363	43	Ponderosa Pine (*Pinus ponderosa*)		1	1	Preserve
17364	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
17365	20	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
17366	6	Pacific Serviceberry (*Amelanchier alnifolia*)		1	1	Preserve
17367	16	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
17368	22	Oregon Ash (*Fraxinus latifolia*)	**OFFSITE**	1	1	Preserve
17370	32, 10	Oregon Ash (*Fraxinus latifolia*)		1	1	Preserve
17372	19	Oregon Ash (*Fraxinus latifolia*)		1	1	Preserve
17373	23	Oregon Ash (*Fraxinus latifolia*)		1	1	Preserve
17374	18	Oregon Ash (*Fraxinus latifolia*)		1	1	Preserve
17375	7	Pacific Serviceberry (*Amelanchier alnifolia*)	Leans (SE)	1	2	Preserve
17376	15, 8	Oregon Ash (*Fraxinus latifolia*)		1	1	Preserve
17377	8	Hawthorn (*Crataegus sp.*)		1	1	Preserve
17378	6	Hawthorn (*Crataegus sp.*)		1	1	Preserve
17379	7	Hawthorn (*Crataegus sp.*)		1	1	Preserve
17382	37, 18	Oregon Ash (*Fraxinus latifolia*)		1	1	Preserve
17383	19, 17, 9	Oregon Ash (*Fraxinus latifolia*)		1	1	Preserve
17385	26	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
17386	35	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
17387	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
17389	7	Cascara (*Frangula purshina*)		1	1	Preserve
17390	7, 10	Hawthorn (*Crataegus sp.*)		1	1	Preserve
17391	9	Hawthorn (*Crataegus sp.*)		1	1	Preserve
17392	6	Hawthorn (*Crataegus sp.*)		1	1	Preserve
17393	24	Oregon Ash (*Fraxinus latifolia*)		1	1	Preserve
17395	13, 9	Oregon Ash (*Fraxinus latifolia*)		1	1	Preserve
17396	30	Oregon Ash (*Fraxinus latifolia*)		1	1	Preserve
17397	15	Oregon Ash (*Fraxinus latifolia*)		1	1	Preserve
17398	20	Oregon Ash (*Fraxinus latifolia*)		1	1	Preserve
17399	14	Oregon Ash (*Fraxinus latifolia*)		1	1	Preserve
17403	14	Oregon Ash (*Fraxinus latifolia*)		1	1	Preserve
17404	24	Oregon Ash (*Fraxinus latifolia*)		1	1	Preserve
17405	27	Oregon Ash (*Fraxinus latifolia*)	Leans (N)	1	2	Preserve
17408	23	Oregon Ash (*Fraxinus latifolia*)		1	1	Preserve
17409	20	Oregon Ash (*Fraxinus latifolia*)		1	1	Preserve
17412	27	Oregon Ash (*Fraxinus latifolia*)		1	1	Preserve
17413	28	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
17415	26	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
17416	21	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
17417	20	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
17420	15	Oregon Ash (*Fraxinus latifolia*)		1	1	Preserve
17421	18	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
17423	19	Oregon Ash (*Fraxinus latifolia*)		1	1	Preserve
17424	19, 15, 10	Oregon Ash (*Fraxinus latifolia*)		1	1	Preserve
17425	8	Hawthorn (*Crataegus sp.*)	Leans (W)	1	2	Remove
17426	8, 10	Hawthorn (*Crataegus sp.*)		1	1	Remove
17428	19	Oregon Ash (*Fraxinus latifolia*)		1	1	Preserve
17430	6, 6	Hawthorn (*Crataegus sp.*)	Cracks, Leans (N)	1	3	Preserve
17431	9	Hawthorn (*Crataegus sp.*)		1	1	Remove
17432	6	Hawthorn (*Crataegus sp.*)		1	1	Preserve
17433	7	Hawthorn (*Crataegus sp.*)		1	1	Preserve
17434	7	Hawthorn (*Crataegus sp.*)		1	1	Preserve
17435	6	Hawthorn (*Crataegus sp.*)		1	1	Preserve
17436	6	Hawthorn (*Crataegus sp.*)		1	1	Preserve
17439	17	Oregon Ash (*Fraxinus latifolia*)		1	1	Preserve
17441	17	Oregon Ash (*Fraxinus latifolia*)		1	1	Preserve
17442	19	Oregon Ash (*Fraxinus latifolia*)		1	1	Preserve
17445	43	Ponderosa Pine (*Pinus ponderosa*)		1	1	Remove
17446	40	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17447	31	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove

Detailed Tree Inventory for Middlebrook Subdivision

AKS Job No. 3591 Evaluated 4/24/2018 - 4/30/2018

Tree #	DBH (in.)	Tree Species Common Name (*Scientific name*)	Comments	Health Rating*	Structure Rating**	Preserve/ Remove
17449	10	Oregon Ash (*Fraxinus latifolia*)		1	1	Remove
17450	12	Oregon Ash (*Fraxinus latifolia*)		1	1	Remove
17451	35	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17452	8, 8	Hawthorn (*Crataegus sp.*)		1	1	Remove
17455	11	Cherry (*Prunus sp.*)		1	1	Remove
17458	8	Cascara (*Frangula purshina*)		1	1	Remove
17465	12	Hawthorn (*Crataegus sp.*)		1	1	Preserve
17470	6	Hawthorn (*Crataegus sp.*)		1	1	Remove
17474	6	Hawthorn (*Crataegus sp.*)		1	1	Remove
17476	6	Hawthorn (*Crataegus sp.*)		1	1	Remove
17479	6	Hawthorn (*Crataegus sp.*)		1	1	Preserve
17480	6	Hawthorn (*Crataegus sp.*)		1	1	Preserve
17481	6	Hawthorn (*Crataegus sp.*)		1	1	Preserve
17482	6	Hawthorn (*Crataegus sp.*)		1	1	Preserve
17490	15	Oregon Ash (*Fraxinus latifolia*)	**OFFSITE**	1	1	Remove
17491	13	Oregon Ash (*Fraxinus latifolia*)		1	1	Remove
17496	15	Oregon Ash (*Fraxinus latifolia*)	**OFFSITE**	1	1	Preserve
17497	15	Oregon Ash (*Fraxinus latifolia*)	**OFFSITE**	1	1	Remove
17498	15	Oregon Ash (*Fraxinus latifolia*)		1	1	Remove
17499	12	Oregon Ash (*Fraxinus latifolia*)		1	1	Remove
17500	10	Oregon Ash (*Fraxinus latifolia*)		1	1	Remove
17501	10	Oregon Ash (*Fraxinus latifolia*)		1	1	Remove
17502	15	Oregon Ash (*Fraxinus latifolia*)	**OFFSITE**	1	1	Remove
17507	17	Oregon Ash (*Fraxinus latifolia*)	**OFFSITE**	1	1	Preserve
17508	17	Oregon Ash (*Fraxinus latifolia*)	**OFFSITE**	1	1	Preserve
17509	12	Cherry (*Prunus sp.*)		1	1	Remove
17510	12	Oregon Ash (*Fraxinus latifolia*)		1	1	Remove
17511	8	Oregon Ash (*Fraxinus latifolia*)		1	1	Remove
17513	10, 8, 7	Oregon Ash (*Fraxinus latifolia*)	**OFFSITE**	1	1	Preserve
17514	12	Oregon Ash (*Fraxinus latifolia*)	**OFFSITE**	1	1	Preserve
17515	15, 15	Oregon Ash (*Fraxinus latifolia*)	**OFFSITE**	1	1	Preserve
17516	13	Oregon Ash (*Fraxinus latifolia*)	**OFFSITE**	1	1	Preserve
17517	40	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17518	33	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17520	46	Douglas-fir (*Pseudotsuga menziesii*)	Sweep	1	2	Remove
17521	34	Douglas-fir (*Pseudotsuga menziesii*)	Bore hole, Codominant with one dead stem	2	2	Remove
17522	28	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17523	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17524	21	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17525	21	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17526	16	Cherry (*Prunus sp.*)		1	1	Remove
17527	32	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17528	28	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17529	27	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17531	32	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17532	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17533	27	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17534	32	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17535	31	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17536	37	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17537	46	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17543	8	Hawthorn (*Crataegus sp.*)	**OFFSITE**	1	1	Remove
17544	9	Apple (*Malus sp.*)	**OFFSITE**	1	1	Remove
17545	6	Apple (*Malus sp.*)		1	1	Remove
17556	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
17558	28	Douglas-fir (*Pseudotsuga menziesii*)	**OFFSITE**	1	1	Preserve
17560	27	Douglas-fir (*Pseudotsuga menziesii*)	**OFFSITE**, Codominant	1	1	Preserve
17561	8	Oregon Ash (*Fraxinus latifolia*)		1	1	Remove
17568	8	Hawthorn (*Crataegus sp.*)		1	1	Remove
17569	28	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17570	44	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17571	28	Douglas-fir (*Pseudotsuga menziesii*)		2	1	Remove
17572	9	Douglas-fir (*Pseudotsuga menziesii*)	Dead top	1	1	Remove

Detailed Tree Inventory for Middlebrook Subdivision

AKS Job No. 3591 Evaluated 4/24/2018 - 4/30/2018

Tree #	DBH (in.)	Tree Species Common Name (*Scientific name*)	Comments	Health Rating*	Structure Rating**	Preserve/ Remove
17575	7, 8	Apple (*Malus sp.*)		1	1	Remove
17576	7, 6	Hawthorn (*Crataegus sp.*)		1	1	Remove
17577	47	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17579	48	Douglas-fir (*Pseudotsuga menziesii*)	Codominant with included bark	1	2	Remove
17581	34	Douglas-fir (*Pseudotsuga menziesii*)	**OFFSITE**	1	1	Remove
17583	35	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17589	36	Ponderosa Pine (*Pinus ponderosa*)		1	1	Remove
17590	21	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17591	34	Ponderosa Pine (*Pinus ponderosa*)	Codominant	1	1	Remove
17592	41	Ponderosa Pine (*Pinus ponderosa*)		1	1	Remove
17595	18	Douglas-fir (*Pseudotsuga menziesii*)	**OFFSITE**	1	1	Remove
17600	6	Douglas-fir (*Pseudotsuga menziesii*)	**OFFSITE**	1	1	Preserve
17604	35	Ponderosa Pine (*Pinus ponderosa*)		1	1	Remove
17605	12	Ponderosa Pine (*Pinus ponderosa*)	Sparse foliage	2	1	Remove
17606	28, 25	Douglas-fir (*Pseudotsuga menziesii*)	Leans (E), Sweep, Codominant	1	3	Remove
17607	30	Ponderosa Pine (*Pinus ponderosa*)		1	1	Remove
17608	6	Hawthorn (*Crataegus sp.*)	**OFFSITE**	1	1	Remove
17616	36	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17617	26	Douglas-fir (*Pseudotsuga menziesii*)	Broken top	1	2	Remove
17618	17	Douglas-fir (*Pseudotsuga menziesii*)	**OFFSITE**	1	1	Remove
17619	38	Ponderosa Pine (*Pinus ponderosa*)		1	1	Remove
17623	29	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17624	29	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17631	24	Douglas-fir (*Pseudotsuga menziesii*)	Codominant with weak attachment	1	2	Remove
17632	33	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17634	19	Cherry (*Prunus sp.*)		1	1	Remove
17655	21	Douglas-fir (*Pseudotsuga menziesii*)	**OFFSITE**	1	1	Remove
17657	10	Douglas-fir (*Pseudotsuga menziesii*)	**OFFSITE**, Codominant with weak attachment	1	2	Remove
17658	21	Douglas-fir (*Pseudotsuga menziesii*)	**OFFSITE**	1	1	Remove
17663	25	Douglas-fir (*Pseudotsuga menziesii*)	**OFFSITE**	1	1	Remove
17664	37	Douglas-fir (*Pseudotsuga menziesii*)	Codominant, Sweep	1	2	Remove
17665	7	Hawthorn (*Crataegus sp.*)	Leans (SE), Soil heaving/uprooting	1	3	Remove
17666	35	Douglas-fir (*Pseudotsuga menziesii*)	Codominant with included bark	1	2	Remove
17667	31	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17668	43	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17684	7, 6, 6	Hawthorn (*Crataegus sp.*)		1	1	Remove
17685	46	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17686	39	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17688	44	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17690	32	Douglas-fir (*Pseudotsuga menziesii*)	Codominant with included bark	1	2	Remove
17691	16	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17692	6	Hawthorn (*Crataegus sp.*)		1	1	Remove
17693	19	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17694	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17695	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17696	19	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17697	17	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17698	30	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17699	28	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17700	37	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17701	19	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17702	19	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17703	17	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17704	13, 11	Douglas-fir (*Pseudotsuga menziesii*)	Codominant, Broken tops	1	2	Remove
17705	20	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17706	23	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17707	7	Douglas-fir (*Pseudotsuga menziesii*)	Sparse foliage	1	2	Remove
17708	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17709	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17710	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17711	32	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17712	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17713	29	Douglas-fir (*Pseudotsuga menziesii*)	Sweep, Weak attachment of new stem at old break	1	2	Remove

Detailed Tree Inventory for Middlebrook Subdivision

AKS Job No. 3591 Evaluated 4/24/2018 - 4/30/2018

Tree #	DBH (in.)	Tree Species Common Name (*Scientific name*)	Comments	Health Rating*	Structure Rating**	Preserve/ Remove
17714	21, 7	Douglas-fir (*Pseudotsuga menziesii*)	7 inch stem dead	2	2	Remove
17715	13	Douglas-fir (*Pseudotsuga menziesii*)	Codominant	1	1	Remove
17716	10	Douglas-fir (*Pseudotsuga menziesii*)	Sparse foliage	2	1	Remove
17717	32	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17718	20	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17719	26	Ponderosa Pine (*Pinus ponderosa*)		1	1	Remove
17720	26	Ponderosa Pine (*Pinus ponderosa*)	Codominant	1	1	Remove
17721	23	Douglas-fir (*Pseudotsuga menziesii*)	Sparse foliage, Broken top, Decay	2	3	Remove
17722	6	Hawthorn (*Crataegus sp.*)		1	1	Remove
17723	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17724	38	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17725	19	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17726	9	Douglas-fir (*Pseudotsuga menziesii*)	Dead	3	3	Remove
17727	6	Hawthorn (*Crataegus sp.*)		1	1	Remove
17728	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17729	26	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17730	19	Douglas-fir (*Pseudotsuga menziesii*)	Broken top	1	2	Remove
17731	28	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17734	18	Pacific Madrone (*Arbustus menziesii*)		1	1	Remove
17735	31	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17736	28	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17737	17	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17738	23	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17739	11	Douglas-fir (*Pseudotsuga menziesii*)	Dead	3	3	Remove
17740	34	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17741	19	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17742	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17743	41	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17745	20	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17746	28	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17747	27	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17748	33	Douglas-fir (*Pseudotsuga menziesii*)	Codominant with included bark	1	2	Remove
17751	37	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17752	6	Hawthorn (*Crataegus sp.*)	Sparse foliage	2	1	Remove
17753	11	Hawthorn (*Crataegus sp.*)	Many dead and broken branches, Several cavities with decay	3	3	Remove
17754	9	Hawthorn (*Crataegus sp.*)	Decay, Dead branches, Very sparse foliage, Leans (SE)	3	3	Remove
17755	33	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17756	6	Hawthorn (*Crataegus sp.*)	Dead	3	3	Remove
17757	7, 7	Hawthorn (*Crataegus sp.*)	One stem dead, Broken and dead branches	3	3	Remove
17758	16	Pacific Madrone (*Arbustus menziesii*)		1	1	Remove
17759	36	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17760	38	Ponderosa Pine (*Pinus ponderosa*)		1	1	Remove
17761	33	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17763	25	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17764	7	Hawthorn (*Crataegus sp.*)		1	1	Remove
17766	8	Hawthorn (*Crataegus sp.*)		1	1	Remove
17767	6	Hawthorn (*Crataegus sp.*)	Leans (W), Soil heaving/uprooting	1	3	Remove
17768	7	Hawthorn (*Crataegus sp.*)	Leans (W), Soil heaving	1	3	Remove
17769	7	Hawthorn (*Crataegus sp.*)		1	1	Remove
17770	10, 7, 6	Hawthorn (*Crataegus sp.*)		1	1	Remove
17771	9	Hawthorn (*Crataegus sp.*)		1	1	Remove
17774	7, 6	Hawthorn (*Crataegus sp.*)		1	1	Remove
17775	6	Hawthorn (*Crataegus sp.*)		1	1	Remove
17776	9	Hawthorn (*Crataegus sp.*)		1	1	Remove
17777	34	Douglas-fir (*Pseudotsuga menziesii*)	Codominant with weak attachments	1	2	Remove
17778	26	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17779	17	Hawthorn (*Crataegus sp.*)		1	1	Remove
17780	29	Douglas-fir (*Pseudotsuga menziesii*)	Codominant	1	1	Remove
17781	19	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17782	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17783	11	Douglas-fir (*Pseudotsuga menziesii*)	Very sparse foliage	3	1	Remove
17784	12	Douglas-fir (*Pseudotsuga menziesii*)	Dead	3	3	Remove
17785	36, 23	Douglas-fir (*Pseudotsuga menziesii*)	Codominant, Both stems codominant with weak attachments	1	3	Remove

Detailed Tree Inventory for Middlebrook Subdivision

AKS Job No. 3591 Evaluated 4/24/2018 - 4/30/2018

Tree #	DBH (in.)	Tree Species Common Name (*Scientific name*)	Comments	Health Rating*	Structure Rating**	Preserve/ Remove
17786	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17787	10	Douglas-fir (*Pseudotsuga menziesii*)	Dead	3	3	Remove
17788	24	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17789	41	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17790	31	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17791	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17792	16	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17793	41	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17794	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17795	21	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17796	29	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17797	30	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17798	9	Hawthorn (*Crataegus sp.*)	Leans over 45^{o} (NW)	1	3	Remove
17799	7	Hawthorn (*Crataegus sp.*)	Dead	3	3	Remove
17800	41	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17801	33	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17802	20	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17803	23	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17804	25	Ponderosa Pine (*Pinus ponderosa*)	Large sweep near top	1	2	Remove
17805	25	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17806	19	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17807	25	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17808	17, 17	Douglas-fir (*Pseudotsuga menziesii*)	Codominant with included bark, Broken tops	1	2	Remove
17809	9	Douglas-fir (*Pseudotsuga menziesii*)	Dead	3	3	Remove
17810	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17811	32	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17812	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17813	7	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17814	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17815	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17816	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17817	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17818	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17819	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17820	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17821	7	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17822	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17823	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17824	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17825	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17826	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17827	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17828	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17829	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17830	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17831	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17832	11, 6	Douglas-fir (*Pseudotsuga menziesii*)	Codominant	1	1	Remove
17833	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17834	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17835	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17836	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17837	8	Douglas-fir (*Pseudotsuga menziesii*)	Dead	3	3	Remove
17838	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17839	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17840	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17841	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17842	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17843	16	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17845	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17846	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17847	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17848	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17849	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove

Detailed Tree Inventory for Middlebrook Subdivision

AKS Job No. 3591 Evaluated 4/24/2018 - 4/30/2018

Tree #	DBH (in.)	Tree Species Common Name (*Scientific name*)	Comments	Health Rating*	Structure Rating**	Preserve/ Remove
17850	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17851	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17853	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17854	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17855	7, 6	Douglas-fir (*Pseudotsuga menziesii*)	Codominant	1	1	Remove
17856	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17857	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17858	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17859	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17860	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17861	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17862	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17865	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17866	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17867	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17868	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17869	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17870	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17871	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17872	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17873	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17874	6	Douglas-fir (*Pseudotsuga menziesii*)	Very sparse foliage	3	1	Remove
17875	7	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17876	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17877	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17878	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17879	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17880	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17881	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17882	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17883	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17884	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17885	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17886	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17887	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17888	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17889	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17890	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17891	7	Douglas-fir (*Pseudotsuga menziesii*)	Dead	3	3	Remove
17892	8	Douglas-fir (*Pseudotsuga menziesii*)	Dead	3	3	Remove
17893	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17894	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17895	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17896	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17897	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17898	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17899	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17900	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17901	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17902	8, 8	Douglas-fir (*Pseudotsuga menziesii*)	Codominant	1	1	Remove
17903	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17904	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17905	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17906	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17907	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17908	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17909	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17910	11, 9	Douglas-fir (*Pseudotsuga menziesii*)	Codominant with included bark	1	2	Remove
17911	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17912	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17913	10	Douglas-fir (*Pseudotsuga menziesii*)	Dead	3	3	Remove
17914	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17915	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove

Detailed Tree Inventory for Middlebrook Subdivision

AKS Job No. 3591 Evaluated 4/24/2018 - 4/30/2018

Tree #	DBH (in.)	Tree Species Common Name (*Scientific name*)	Comments	Health Rating*	Structure Rating**	Preserve/ Remove
17916	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17917	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17918	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17919	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17920	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17921	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17922	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17923	16	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17924	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17925	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17926	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17927	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17928	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17929	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17930	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17931	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17939	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17940	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17941	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17942	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17944	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17945	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17946	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17947	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17948	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17949	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17950	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17951	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17952	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17953	10	Douglas-fir (*Pseudotsuga menziesii*)	Codominant	1	1	Remove
17954	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17955	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17956	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17957	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17958	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17960	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17961	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17962	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17963	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17964	18	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17965	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17966	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17967	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17968	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17969	7	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17970	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17971	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17972	5	Douglas-fir (*Pseudotsuga menziesii*)	Dead	3	3	Remove
17973	7	Douglas-fir (*Pseudotsuga menziesii*)	Codominant	1	1	Remove
17974	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17975	7	Douglas-fir (*Pseudotsuga menziesii*)	Dead	3	3	Remove
17976	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17977	7	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17978	6	Douglas-fir (*Pseudotsuga menziesii*)	Dead	3	3	Remove
17979	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17980	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17981	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17982	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17983	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17984	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17985	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17986	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17987	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove

Detailed Tree Inventory for Middlebrook Subdivision

AKS Job No. 3591 Evaluated 4/24/2018 - 4/30/2018

Tree #	DBH (in.)	Tree Species Common Name (*Scientific name*)	Comments	Health Rating*	Structure Rating**	Preserve/ Remove
17988	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17989	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17990	6	Douglas-fir (*Pseudotsuga menziesii*)	Very sparse foliage	3	1	Remove
17991	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17992	7	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17993	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17994	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17996	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17997	8, 8	Douglas-fir (*Pseudotsuga menziesii*)	Codominant, One stem has a broken top	1	2	Remove
17998	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
17999	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18002	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18003	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18004	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18005	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18006	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18007	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18008	7	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18009	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18010	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18011	7	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18012	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18013	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18014	7	Douglas-fir (*Pseudotsuga menziesii*)	Dead	3	3	Remove
18015	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18016	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18017	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18018	16	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18019	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18020	9	Douglas-fir (*Pseudotsuga menziesii*)	Sweep near top	1	2	Remove
18021	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18022	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18023	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18024	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18025	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18026	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18027	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18028	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18029	7	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18030	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18031	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18032	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18033	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18034	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18035	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18036	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18037	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18038	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18039	6	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18040	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18041	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18042	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18043	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18044	7	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18045	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18046	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18047	11	Douglas-fir (*Pseudotsuga menziesii*)	Codominant	1	1	Remove
18048	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18049	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18050	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18051	7	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18052	11	Douglas-fir (*Pseudotsuga menziesii*)	Leans (N)	1	2	Remove
18053	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove

Detailed Tree Inventory for Middlebrook Subdivision

AKS Job No. 3591 Evaluated 4/24/2018 - 4/30/2018

Tree #	DBH (in.)	Tree Species Common Name (*Scientific name*)	Comments	Health Rating*	Structure Rating**	Preserve/ Remove
18054	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18055	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18056	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18057	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18058	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18059	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18060	7	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18061	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18062	8, 7	Douglas-fir (*Pseudotsuga menziesii*)	Codominant	1	1	Remove
18063	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18064	7	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18065	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18066	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18067	7	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18068	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18069	8, 8	Douglas-fir (*Pseudotsuga menziesii*)	Codominant	1	1	Remove
18070	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18071	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18072	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18073	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18074	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18075	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18080	7, 7	Hawthorn (*Crataegus sp.*)	Many dead branches, Very sparse foliage, Leans (N)	3	3	Remove
18081	7, 7	Hawthorn (*Crataegus sp.*)	**OFFSITE**	1	1	Remove
18084	6	Hawthorn (*Crataegus sp.*)	**OFFSITE**, Dead	3	3	Remove
18085	7	Hawthorn (*Crataegus sp.*)	**OFFSITE**, Leans (S)	1	2	Remove
18140	9	Ponderosa Pine (*Pinus ponderosa*)		1	1	Preserve
18141	10	Ponderosa Pine (*Pinus ponderosa*)		1	1	Preserve
18142	10	Western Redcedar (*Thuja plicata*)		1	1	Preserve
18143	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
18144	7	Oregon Ash (*Fraxinus latifolia*)		1	1	Preserve
18152	15	Douglas-fir (*Pseudotsuga menziesii*)	Abnormal dead branches, Discolored foliage	2	1	Remove
18153	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18154	11	Douglas-fir (*Pseudotsuga menziesii*)	Sparse foliage	2	1	Remove
18155	10	Douglas-fir (*Pseudotsuga menziesii*)	Sparse foliage	2	1	Remove
18156	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18157	10	Douglas-fir (*Pseudotsuga menziesii*)	Foliage limited to only a couple branches	3	1	Remove
18158	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18159	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18160	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18161	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18162	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18163	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18164	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18165	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18166	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
18167	8	Douglas-fir (*Pseudotsuga menziesii*)	Codominant	1	1	Remove
18168	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18169	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18170	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18171	12	Douglas-fir (*Pseudotsuga menziesii*)	Codominant with weak attachments	1	2	Remove
18172	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18173	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18174	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18175	14	Douglas-fir (*Pseudotsuga menziesii*)	Codominant	1	1	Remove
18176	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18177	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18178	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18179	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18180	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
18181	8	Hawthorn (*Crataegus sp.*)	Broken stem and branches	1	3	Preserve
18182	6, 6	Hawthorn (*Crataegus sp.*)	Leans (S)	1	2	Preserve
18183	7	Hawthorn (*Crataegus sp.*)	Leans (S)	1	2	Preserve

Detailed Tree Inventory for Middlebrook Subdivision

AKS Job No. 3591 Evaluated 4/24/2018 - 4/30/2018

Tree #	DBH (in.)	Tree Species Common Name (*Scientific name*)	Comments	Health Rating*	Structure Rating**	Preserve/ Remove
18184	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
18185	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18186	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18187	7	Douglas-fir (*Pseudotsuga menziesii*)	Dead	3	3	Remove
18188	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18189	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18190	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18191	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18192	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18193	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18194	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18195	8	Cascara (*Frangula purshina*)	**OFFSITE**	1	1	Preserve
18197	16	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18198	8, 6	Hawthorn (*Crataegus sp.*)	**OFFSITE**	1	1	Remove
18199	9	Cascara (*Frangula purshina*)		1	1	Remove
18200	16	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18201	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18202	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18203	13, 10, 9	Hawthorn (*Crataegus sp.*)		1	1	Remove
18204	6	Hawthorn (*Crataegus sp.*)		1	1	Remove
18205	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18206	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18208	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18209	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18210	16	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18211	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18212	11	Douglas-fir (*Pseudotsuga menziesii*)	Codominant	1	1	Remove
18213	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18214	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18215	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18216	11	Douglas-fir (*Pseudotsuga menziesii*)	Large kinks in stem	1	2	Remove
18219	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18220	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18221	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18222	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18223	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18224	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18225	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18226	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18227	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18228	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18229	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18230	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18231	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18232	15	Douglas-fir (*Pseudotsuga menziesii*)	Codominant with weak attachments	1	2	Remove
18233	7	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18234	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18235	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18236	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18237	7	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18238	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18239	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18240	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18241	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18242	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18243	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18244	12, 10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18245	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18246	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18247	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18248	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18249	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18250	16	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove

Detailed Tree Inventory for Middlebrook Subdivision

AKS Job No. 3591 Evaluated 4/24/2018 - 4/30/2018

Tree #	DBH (in.)	Tree Species Common Name (*Scientific name*)	Comments	Health Rating*	Structure Rating**	Preserve/ Remove
18251	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18252	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18253	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18254	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18255	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18256	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18257	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18258	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18259	9	Douglas-fir (*Pseudotsuga menziesii*)	Codominant	1	1	Remove
18260	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18261	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18262	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18263	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18264	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18265	7, 6	Douglas-fir (*Pseudotsuga menziesii*)	Codominant	1	1	Remove
18266	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18267	8	Douglas-fir (*Pseudotsuga menziesii*)	Dead	3	3	Remove
18268	7, 7	Douglas-fir (*Pseudotsuga menziesii*)	Codominant	1	1	Remove
18269	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18270	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18271	9	Douglas-fir (*Pseudotsuga menziesii*)	Dead	3	3	Remove
18272	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18274	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18275	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18276	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18277	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18278	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18279	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18280	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18281	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18282	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18283	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18284	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18285	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18286	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18287	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18288	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18289	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18290	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18291	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18292	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18293	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18294	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18295	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18296	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18297	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18298	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18299	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18300	17	Douglas-fir (*Pseudotsuga menziesii*)	Codominant	1	1	Remove
18301	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18302	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18303	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18304	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18305	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18306	13	Douglas-fir (*Pseudotsuga menziesii*)	Codominant	1	1	Remove
18307	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18308	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18309	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18310	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18311	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18312	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18313	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18314	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove

Detailed Tree Inventory for Middlebrook Subdivision

AKS Job No. 3591 Evaluated 4/24/2018 - 4/30/2018

Tree #	DBH (in.)	Tree Species Common Name (*Scientific name*)	Comments	Health Rating*	Structure Rating**	Preserve/ Remove
18315	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18316	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18317	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18318	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18319	7	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18320	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18321	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18322	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18323	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18324	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18325	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18326	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18327	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18328	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18329	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18330	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18331	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18332	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18341	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18342	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18343	13	Douglas-fir (*Pseudotsuga menziesii*)	Codominant with included bark	1	2	Remove
18344	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18345	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18346	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18347	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18348	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18349	10	Douglas-fir (*Pseudotsuga menziesii*)	Codominant with many bends and kinks	1	2	Remove
18350	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18351	14	Douglas-fir (*Pseudotsuga menziesii*)	Codominant	1	1	Remove
18352	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18353	13	Douglas-fir (*Pseudotsuga menziesii*)	Codominant	1	1	Remove
18354	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18355	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18356	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18357	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18358	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18359	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18360	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18361	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18362	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18363	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18364	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18365	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18366	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18367	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18368	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18369	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18370	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18371	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18372	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18373	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
18374	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
18375	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
18376	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
18377	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
18378	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
18380	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
18381	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
18382	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
18383	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
18384	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
18385	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
18386	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove

Detailed Tree Inventory for Middlebrook Subdivision

AKS Job No. 3591 Evaluated 4/24/2018 - 4/30/2018

Tree #	DBH (in.)	Tree Species Common Name (*Scientific name*)	Comments	Health Rating*	Structure Rating**	Preserve/ Remove
18387	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18388	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18389	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18390	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18391	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18392	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18393	13	Douglas-fir (*Pseudotsuga menziesii*)	Codominant	1	1	Remove
18394	7	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18395	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18396	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18397	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18398	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18399	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
18400	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
18401	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
18402	16	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
18404	8, 7	Hawthorn (*Crataegus sp.*)	**OFFSITE**	1	1	Preserve
18406	9, 8, 7, 6	Willow (*Salix sp.*)	**OFFSITE**	1	1	Preserve
18412	7	Apple (*Malus sp.*)	**OFFSITE**	1	1	Preserve
18417	10, 9, 8, 7, 7	Willow (*Salix sp.*)		1	1	Preserve
18419	24	Douglas-fir (*Pseudotsuga menziesii*)	Codominant with weak attachments, Broken branches	1	3	Preserve
18420	17, 7	Douglas-fir (*Pseudotsuga menziesii*)	Codominant	1	1	Preserve
18421	19	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
18422	16, 12	Douglas-fir (*Pseudotsuga menziesii*)	Codominant with weak attachments	1	2	Preserve
18423	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18424	16	Douglas-fir (*Pseudotsuga menziesii*)	Codominant	1	1	Remove
18426	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18427	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
18428	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
18429	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
18430	16	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
18431	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
18432	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
18434	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
18435	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
18436	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
18437	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18438	10	Douglas-fir (*Pseudotsuga menziesii*)	Sparse foliage	2	1	Remove
18439	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18440	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18441	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18442	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18443	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18444	6	Cascara (*Frangula purshina*)		1	1	Remove
18445	8	Western Redcedar (*Thuja plicata*)		1	1	Preserve
18446	8	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
18447	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
18448	6	Hawthorn (*Crataegus sp.*)		1	1	Preserve
18449	7	Hawthorn (*Crataegus sp.*)	**OFFSITE**	1	1	Preserve
18450	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18451	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
18452	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
18453	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
18455	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
18458	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18459	22	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18460	11	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
18461	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
18462	17	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
18463	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
18464	15	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
18465	17	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
18466	14	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve

Detailed Tree Inventory for Middlebrook Subdivision

AKS Job No. 3591 Evaluated 4/24/2018 - 4/30/2018

Tree #	DBH (in.)	Tree Species Common Name (*Scientific name*)	Comments	Health Rating*	Structure Rating**	Preserve/ Remove
18467	16, 7	Hawthorn (*Crataegus sp.*)		1	1	Preserve
18480	6	Oregon Ash (*Fraxinus latifolia*)		1	1	Preserve
18481	6	Oregon Ash (*Fraxinus latifolia*)		1	1	Preserve
18488	44	Ponderosa Pine (*Pinus ponderosa*)		1	1	Preserve
18536	7	Douglas-fir (*Pseudotsuga menziesii*)	Sparse foliage	2	1	Remove
18537	6	Douglas-fir (*Pseudotsuga menziesii*)	Sparse foliage	2	1	Preserve
18538	15	Ash (*Fraxinus sp.*)	**OFFSITE**, Topped and all branches cut, Only live foliage is epicormic/response growth	3	1	Preserve
18551	6	Cherry (*Prunus sp.*)	Cavity with decay	1	2	Preserve
18558	6	Hawthorn (*Crataegus sp.*)	Codominant, Both tops dead, Very sparse foliage only at base	3	3	Preserve
18559	6, 8	European White Birch (*Betula pendula*)		1	1	Preserve
18588	11	Bigleaf Maple (*Acer macrophyllum*)	**OFFSITE**	1	1	Preserve
18594	8	Paper Birch (*Betula papyrifera*)	**OFFSITE**	1	1	Preserve
18595	8	Pear (*Pyrus sp.*)	**OFFSITE**	1	1	Preserve
18598	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
18599	12	Maple (*Acer sp.*)	**OFFSITE**	1	1	Preserve
20002	6	Cascara (*Frangula purshina*)		1	1	Remove
20004	9, 8	Hawthorn (*Crataegus sp.*)	Many dead and broken branches, Very sparse foliage	3	3	Remove
20005	6	Hawthorn (*Crataegus sp.*)	Dead	3	3	Remove
20008	9, 6	Hazelnut (*Corylus sp.*)	**OFFSITE**, Codominant, Bore holes, Dead branches, Epicormic/response growth, Sparse foliage	3	3	Preserve
20010	7	Hazelnut (*Corylus sp.*)	Codominant	1	1	Preserve
20011	9, 8	Hazelnut (*Corylus sp.*)	**OFFSITE**, Codominant	1	1	Preserve
20013	18	Deodar Cedar (*Cedrus deodara*)		1	1	Remove
20015	19	Deodar Cedar (*Cedrus deodara*)		1	1	Remove
20016	10, 9, 9	Deodar Cedar (*Cedrus deodara*)	Codominant	1	1	Remove
20017	17, 9	Deodar Cedar (*Cedrus deodara*)	Codominant	1	1	Remove
20018	6, 6	Hawthorn (*Crataegus sp.*)	Codominant	1	1	Remove
20021	19	Deodar Cedar (*Cedrus deodara*)		1	1	Remove
20022	18	Deodar Cedar (*Cedrus deodara*)		1	1	Remove
20028	15	Deodar Cedar (*Cedrus deodara*)		1	1	Remove
20029	20	Deodar Cedar (*Cedrus deodara*)		1	1	Remove
20032	19	Deodar Cedar (*Cedrus deodara*)		1	1	Remove
20033	14	Deodar Cedar (*Cedrus deodara*)		1	1	Remove
20034	15	Deodar Cedar (*Cedrus deodara*)		1	1	Remove
20036	8, 19, 9	Deodar Cedar (*Cedrus deodara*)	Codominant	1	1	Remove
20037	22, 9, 8	Deodar Cedar (*Cedrus deodara*)	Codominant	1	1	Remove
20043	8, 8, 6, 6	Hawthorn (*Crataegus sp.*)	Codominant	1	1	Preserve
20062	14	Port-Orford-cedar (*Chamaecyparis lawsoniana*)		1	1	Remove
20065	11	Cypress (*Hesperocyparis sp.*)		1	1	Remove
20066	12	Locust (*Robinia sp.*)		1	1	Remove
20071	10	Locust (*Robinia sp.*)		1	1	Remove
20072	7, 6, 6, 7	False Arborvitae (*Thujopsis dolabrata*)	Codominant, Bore holes, Wound wood, Sapflow, Insect frass	3	2	Remove
20073	6	Vine Maple (*Acer circinatum*)	Codominant	1	1	Remove
20074	22	Lodgepole Pine (*Pinus contorta*)	Codominant	1	1	Remove
20076	7, 7	Lodgepole Pine (*Pinus contorta*)	Codominant	1	1	Remove
70001	12	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
70002	10, 8, 8, 6	Hawthorn (*Crataegus sp.*)	Codominant, Bore holes, Broken and dead branches, Leans (W), Decay, Peeling bark	3	3	Remove
70003	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
70004	7	Cottonwood (*Populus sp.*)		1	1	Remove
70005	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
70006	6, 6	Douglas-fir (*Pseudotsuga menziesii*)	Codominant, Sparse foliage	2	1	Remove
70007	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
70008	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Preserve
70009	8	Douglas-fir (*Pseudotsuga menziesii*)	Codominant, Twisted stems	1	2	Remove
70010	19	Douglas-fir (*Pseudotsuga menziesii*)	Large scaffolds with weak attachments	1	2	Remove
70011	31	Douglas-fir (*Pseudotsuga menziesii*)	Conk	3	1	Remove
70012	22	Ponderosa Pine (*Pinus ponderosa*)	Broken top	1	2	Remove
70013	8	Oregon Ash (*Fraxinus latifolia*)		1	1	Remove
70014	10	Apple (*Malus sp.*)		1	1	Remove
70015	25	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove

Detailed Tree Inventory for Middlebrook Subdivision

AKS Job No. 3591 Evaluated 4/24/2018 - 4/30/2018

Tree #	DBH (in.)	Tree Species Common Name (*Scientific name*)	Comments	Health Rating*	Structure Rating**	Preserve/ Remove
70016	14	Willow (*Salix sp.*)	Cavities with decay, Bore holes, Abnormal dead and broken branches	3	3	Preserve
70017	9	Hawthorn (*Crataegus sp.*)		1	1	Preserve
70018	9	Hawthorn (*Crataegus sp.*)		1	1	Preserve
70019	7	Hawthorn (*Crataegus sp.*)		1	1	Preserve
70020	13	Walnut (*Juglans sp.)*	**OFFSITE**	1	1	Preserve
70022	14	Cherry (*Prunus sp.*)		1	1	Remove
70023	7	Cherry (*Prunus sp.*)		1	1	Remove
70024	11	Pacific Madrone (*Arbustus menziesii*)		1	1	Remove
70025	19	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
70026	9	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
70027	10	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
70028	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
70029	8	Oregon Ash (*Fraxinus latifolia*)	Large cavity	1	2	Remove
70030	40, 18	Willow (*Salix sp.*)	Leans over 45°, Many dead and broken branches, Cavities with decay, Cracks	3	3	Remove
70031	13	Douglas-fir (*Pseudotsuga menziesii*)		1	1	Remove
70032	8	Douglas-fir (*Pseudotsuga menziesii*)	Codominant	1	1	Remove
70033	8	Western Redcedar (*Thuja plicata*)		1	1	Remove
70034	7	Bigleaf Maple (*Acer macrophyllum*)		1	1	Remove
70035	7	Western Redcedar (*Thuja plicata*)		1	1	Remove
70036	12	Douglas-fir (*Pseudotsuga menziesii*)	Codominant	1	1	Remove
70037	15	Douglas-fir (*Pseudotsuga menziesii*)	**OFFSITE**	1	1	Preserve
70038	17	Deodar Cedar (*Cedrus deodara*)	**OFFSITE**	1	1	Preserve

Total # of Existing Trees Inventoried = 2450

Total # of Existing Onsite Trees = 2310

Total # of Existing Onsite Trees to be Preserved = 328

Total # of Existing Onsite Trees to be Removed = 1982

Total # of Existing Offsite Trees = 140

Total # of Existing Offsite Trees to be Preserved = 103

Total # of Existing Offsite Trees to be Removed = 37

***Health Rating:**

1 = Good Health - A tree that exhibits typical foliage, bark, and root characteristics, for its respective species, shows no signs of infection or infestation, and has a high level of vigor and vitality.

2 = Fair Health - A tree that exhibits some abnormal health characteristics and/or shows some signs of infection or infestation, but may be reversed or abated with supplemental treatment.

3 = Poor Health - A tree that is in significant decline, to the extent that supplemental treatment would not likely result in reversing or abating its decline.

****Structure Rating:**

1 = Good Structure - A tree that exhibits typical physical form characteristics, for its respective species, shows no signs of structural defects of the canopy, trunk, and/or root system.

2 = Fair Structure - A tree that exhibits some abnormal physical form characteristics and/or some signs of structural defects, which reduce the structural integrity of the tree, but are not indicative of imminent physical failure, and may be corrected using arboricultural abatement methods.

3 = Poor Structure - A tree that exhibits extensively abnormal physical form characteristics and/or significant structural defects that substantially reduces the structural viability of the tree, cannot feasibly be abated, and are indicative of imminent physical failure.

Arborist Disclosure Statement:

Arborists are tree specialists who use their education, knowledge, training, and experience to examine trees, recommend measures to enhance the health of trees, and attempt to reduce the risk of living near trees. The Client and Jurisdiction may choose to accept or disregard the recommendations of the arborist, or seek additional advice. Arborists cannot detect every condition that could possibly lead to the structural failure of a tree. Trees are living organisms that fail in ways we do not fully understand. Conditions are often hidden within trees and below ground. Arborists cannot guarantee that a tree will be healthy or safe under all circumstances, or for a specified period of time. Likewise, remedial treatments, like medicine, cannot be guaranteed. Trees can be managed, but they cannot be controlled. To live near trees is to accept some degree of risk. The only way to eliminate all risk associated with trees is to eliminate all trees. Neither this author nor AKS Engineering & Forestry, LLC have assumed any responsibility for liability associated with the trees on or adjacent to this site.

At the completion of construction, all trees should once again be reviewed. Land clearing and removal of adjacent trees can expose previously unseen defects and otherwise healthy trees can be damaged during construction.

Exhibit L: Washington County Design Exception Information

September 4, 2018

Naomi Vogel
Washington County
Department of Land Use & Transportation
1400 SW Walnut Street, Suite 212, MS 17A
Hillsboro, OR 97123

RE: Design Exception — For direct connection of local street to arterial
Middlebrook Subdivision, Sherwood, OR

Dear Ms. Vogel,

The following design exception applies to a roadway access standard according to Section 501-8.5 B(4) of the Washington County Community Development Code (WCCDC). Per Section 503-8.5 B(4), exceptions for local streets and private accesses may be obtained when collector access is found to be unavailable and impracticable by the Director.

Describe Request
In order to provide access to a new residential subdivision within the Brookman Addition area of Sherwood, new streets need to connect to SW Brookman Road, an east-west arterial under Washington County jurisdiction. There are no existing or planned north-south collectors or arterials in the area to connect to. The result is a direct access connection of a local street (aligned with SW Oberst Road) to an arterial road (SW Brookman Road). See attached Exhibit A for additional detail regarding the location of the access.

Reason
Due to the physical barriers of the Portland & Western Railroad right-of-way and existing residential subdivisions to the north, a north-south collector or arterial is not planned in the area. Therefore, a local-arterial connection is necessary.

Comparison
The WCCDC requires that "Direct access to arterial roads shall be from collector or other arterial streets." However, a collector or arterial street is unavailable to provide a roadway access connection which meets WCCDC standards. Therefore, a local-arterial connection is necessary versus a collector-arterial connection.

Documentation
Direct access to an arterial is allowed according to Section 501-8.5 B(4)(a) when "such access is more than six hundred (600) feet from any intersection…". The planned alignment of the new local street connection with SW Oberst Road to the south satisfies the minimum 600-foot spacing standard along SW Brookman Road. The Traffic Impact Analysis (TIA) provided from Kittelson & Associates dated April 2018 discusses the SW Brookman Road Access Management for this intersection and Figure 13 of the TIA identifies the existing access points along SW Brookman Road.

Multiple adopted documents guiding local area transportation needs support the granting of this direct access exception, as well as the TIA provided in April 2018 from Kittelson & Associates. The City's adopted Brookman Addition Concept Plan identifies only local street connections to SW Brookman Road (See Exhibit B). Further, the City's Transportation System Plan shows no neighborhood or collector street connections to SW Brookman Road along the site frontage as well as to the east and west (See Exhibit C).

Public Safety

There are no anticipated impacts on public safety due to this design exception.

Performance

A design exception will be needed for intersection sight distance for the interim design of the intersection of SW Oberst and SW Brookman Road. The intersection is planned to satisfy the intersection sight distance requirements, meeting current AASHTO and Washington County standards when SW Brookman Road is fully developed. See associated design exception request for intersection sight distance discussions.

Financial Effect

No financial effect.

Other Comments/Arguments

None

Exhibits of Data, Calculations, Drawings, Etc.

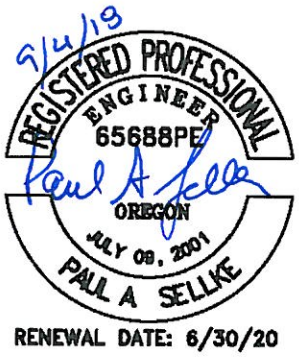
- Exhibit A, SW Brookman Road Access Spacing
- Exhibit B, Brookman Addition Concept Plan, Functional Street Classification
- Exhibit C, Sherwood TSP, Street Functional Classification

We appreciate your time and consideration of this design exception. If you have any questions regarding this letter or the Middlebrook Subdivision project in general, please do not hesitate to call or email with any questions.

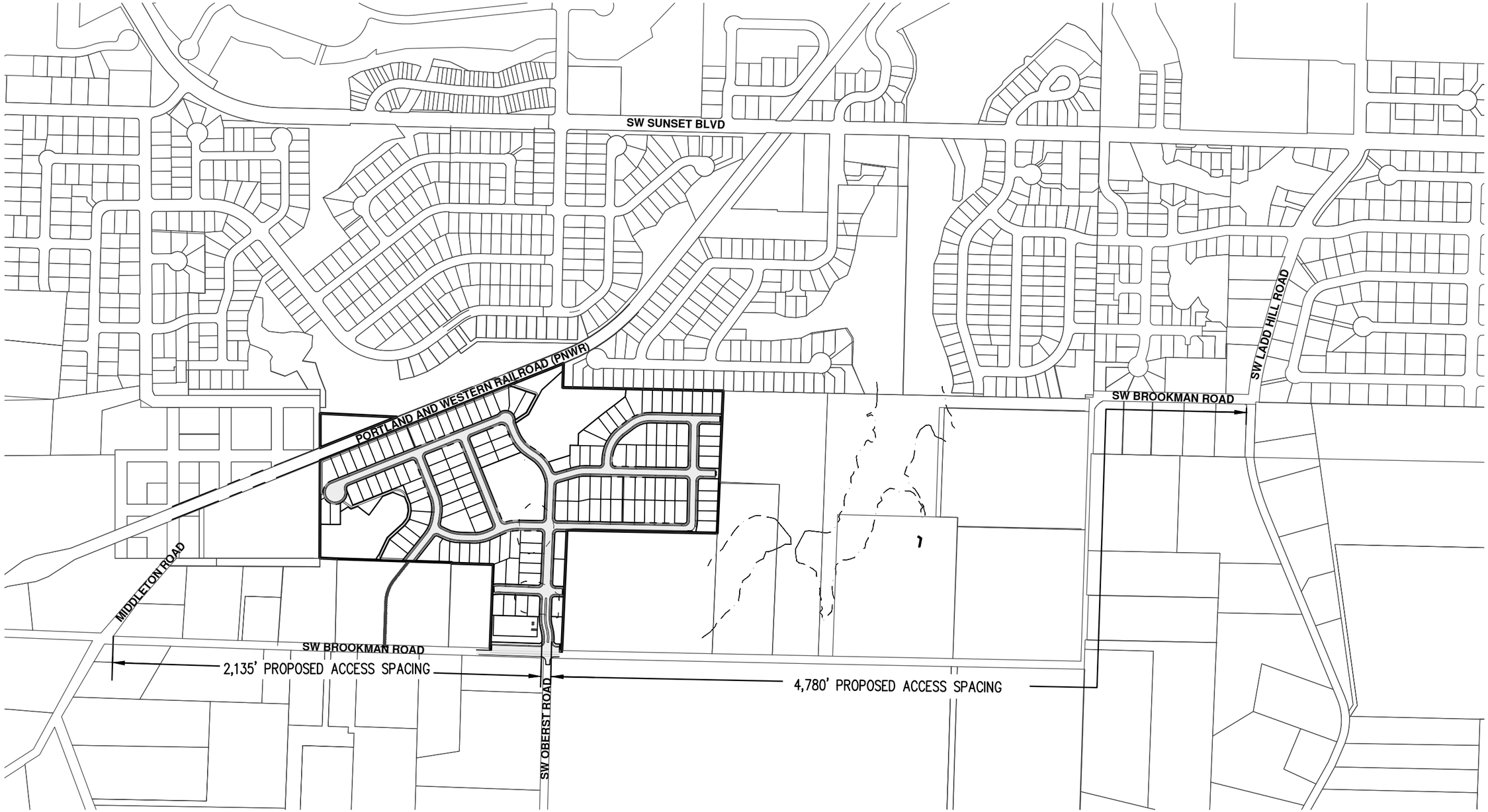
Sincerely,

AKS ENGINEERING & FORESTRY, LLC

Paul A. Sellke, PE, GE
Project Engineer
(503) 563-6151 | PaulS@aks-eng.com



Cc: Joe Younkins (Interim Washington County Engineer/Division Manager)
Chris Goodell (AKS)
Bob Galati, PE (City of Sherwood)



N

SCALE: 1"= 500 FEET

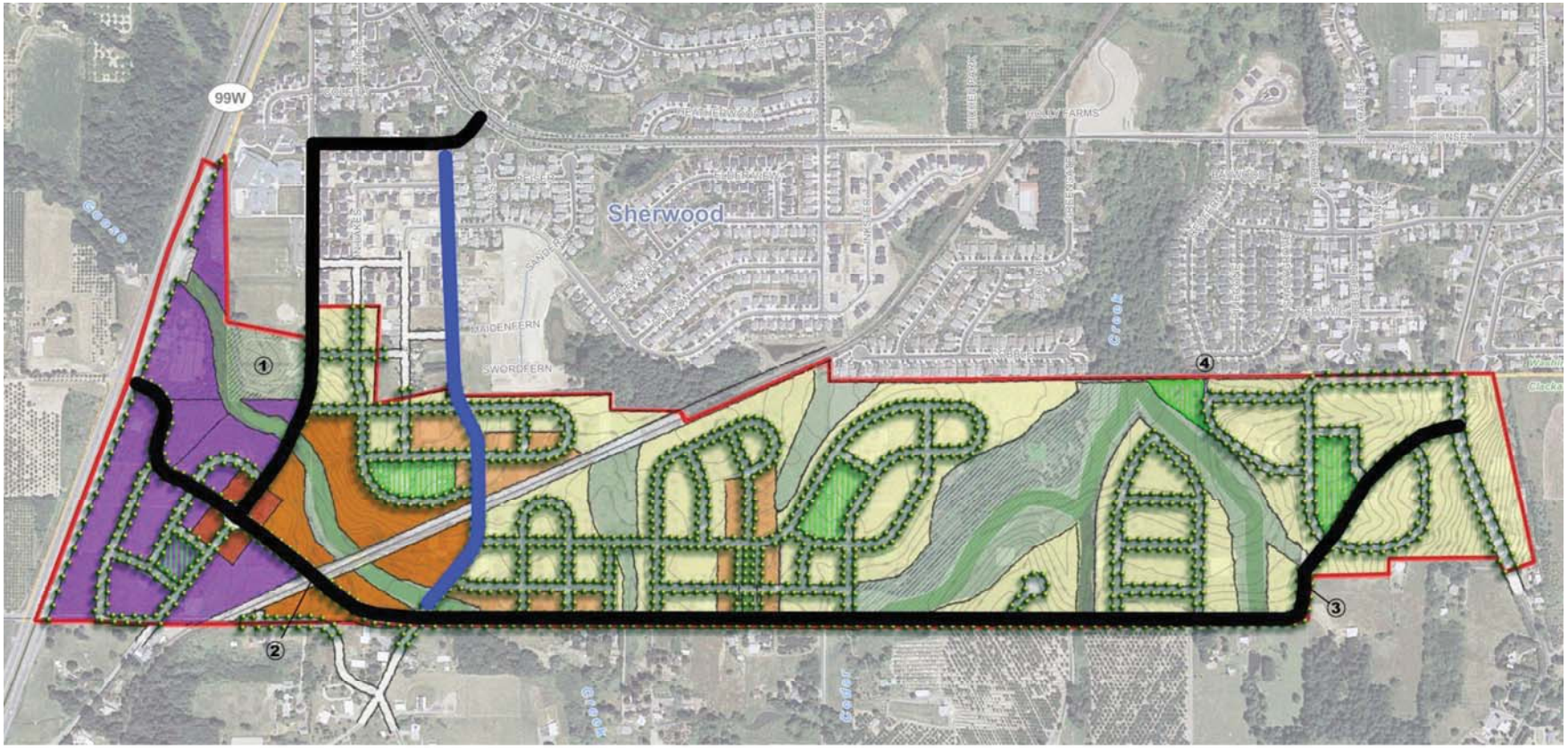
500 0 200 300 400 500

DATE: 09-04-2018

MIDDLEBROOK SUBDIVSION ACCESS SPACING	EXHIBIT **A**
MIDDLEBROOK SUBDIVISION	
AKS ENGINEERING & FORESTRY, LLC 12965 SW HERMAN RD, STE 100 TUALATIN, OR 97062 P: 503.563.6151 F: 503.563.6152 aks-eng.com	DRWN: CS CHKD: PAS AKS JOB: 3591

DWG: 3591 ACCESS SPACING EXHIBIT | LAYOUT1

Figure 5 Functional Street Classification



Brookman Addition Concept Plan

Functional Street Classification

Notes:
1. Existing Cemetery (Constrained Land)
2. Railroad Crossing (Grade Separated)
3. All street alignments are conceptual.
4. Redfern connection is pedestrian, bicycle and emergency access only.

0' 250' 500' 1000'

Final-May 2008

Legend

- High Density Residential 24 du/ac
- Medium Density Residential- High 11 du/ac
- Medium Density Residential- Low 8 du/ac
- Commercial / Mixed Use
- Employment
- Neighborhood Parks (Locations are conceptual)
- Constrained Lands (Goal 5 resource lands, subject to on-site verification)
- Constrained Lands (Vegetated corridor proxy, subject to on-site verification)
- Constrained Lands (Potential wetlands, subject to on-site verification)
- Collector
- Neighborhood Roads

Exhibit B

Figure 17

Street Functional Classification

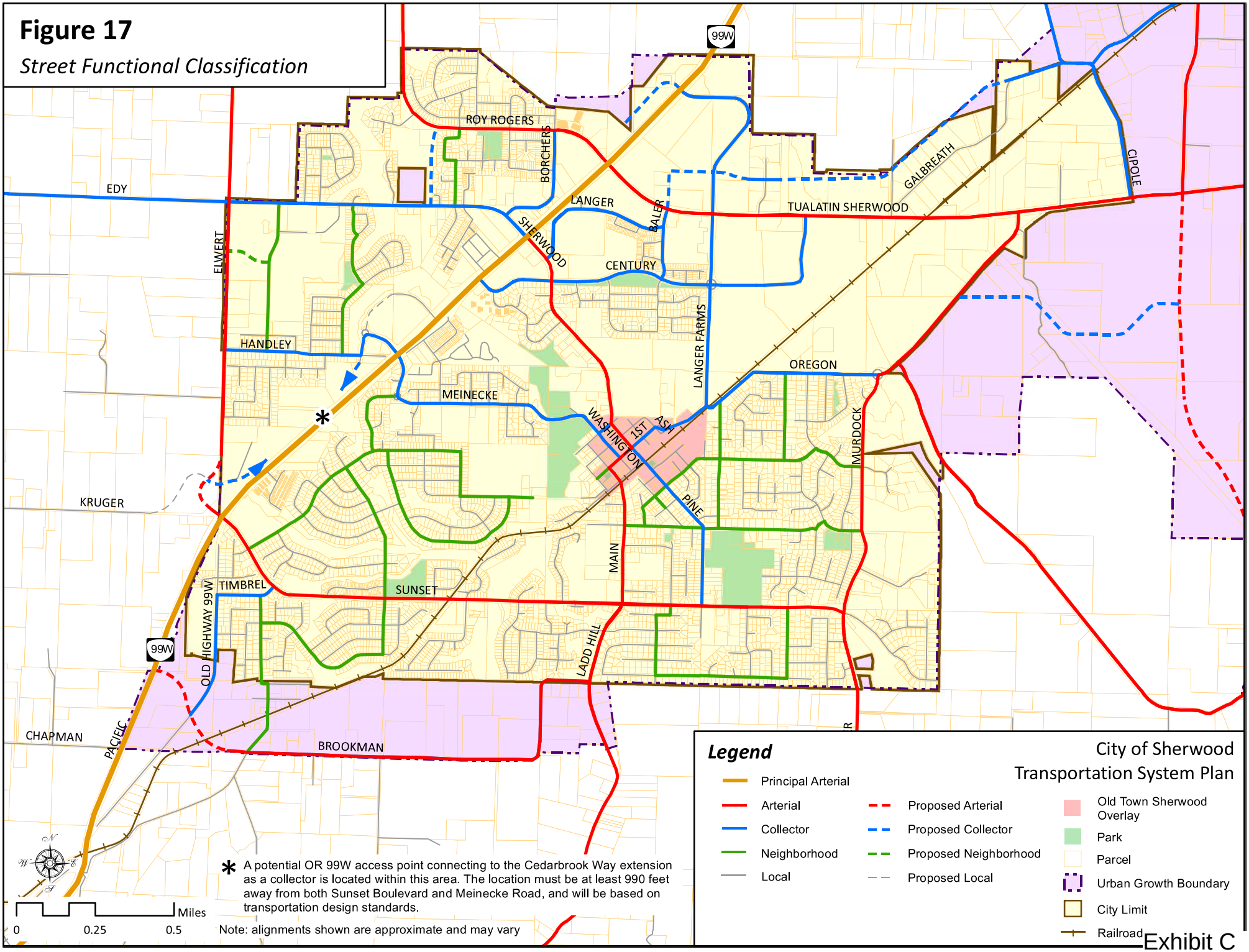


Exhibit C

September 4, 2018

Naomi Vogel
Washington County
Department of Land Use & Transportation
1400 SW Walnut Street, Suite 212, MS 17A
Hillsboro, OR 97123

RE: Design Exception – Intersection Sight Distance
Middlebrook Subdivision, Sherwood, Oregon

The following a design exception is permitted according to Article 2, 15.08.220 (Title 15, Road Design & Construction Standards) to the intersection sight distance standards outlined in Section 501-8.5.F(3)(b) of the Washington County Community Development Code (WCCDC).

Describe Exception:
Reduce the driver's eye setback from 15 feet from the edge of pavement to 10 feet from the edge of pavement to achieve the required intersection sight distance for the interim construction of a 4-way intersection between SW Brookman Road and SW Oberst Road.

Reason:
Due to the current alignment of the SW Oberst Road intersection with SW Brookman Road and existing obstructions outside of the right-of-way (ROW), the sight distance to the east cannot be met based on preliminary designs without modifying the sight distance measurements with a driver's eye setback at 10 feet instead of 15 feet. The Oberst Road-Brookman Road intersection placement is fixed (matches the existing T-intersection as required by Washington County) and obstructions are currently situated on private property to the east (Tax Lot 104).

Comparison:
The existing standard for the driver's eye setback is to "Be assumed to be fifteen (15) feet from the near edge of pavement…to the eye of the driver of a stopped vehicle" [WCCDC 501-8.5.F(3)(b)]. This design exception would allow for the interim sight distance measurements at 10 feet from the near edge of pavement to the eye of the driver of a stopped vehicle.

Documentation:
"A Policy on Geometric Design of Highways and Streets" from the American Association of State Highways and Transportation Officials (AASHTO) states that drivers typically stop with the front of their vehicle 6.5 feet or less from the edge of the major road at an intersection: "Measurements of passenger cars indicate that the distance from the front of the vehicle to the driver's eye for the current US passenger car population is nearly always 8 feet or less." The vehicle/driver's eye measurements by AASHTO confirm that a reduced setback for interim sight distance measurements would be acceptable.

Public Safety:
There are no anticipated impacts on public safety due to this design exception.

Performance:
With the reduced sight distance setback, vehicles would typically have ±2 feet of space between the near edge of the travel lane and the front bumper of their car. Therefore, the reduced setback should not impact traffic along SW Brookman Road.

Financial Effect:
No financial effect.

Other Comments/Arguments:
Please note that the reduced driver's eye setback can be considered an interim solution as the future development and widening of SW Brookman Road will require significant right-of-way improvements which allow for intersection sight distance measurements to meet Washington County design standards at a future date.

Exhibits of Data, Calculations, Drawings, Etc.

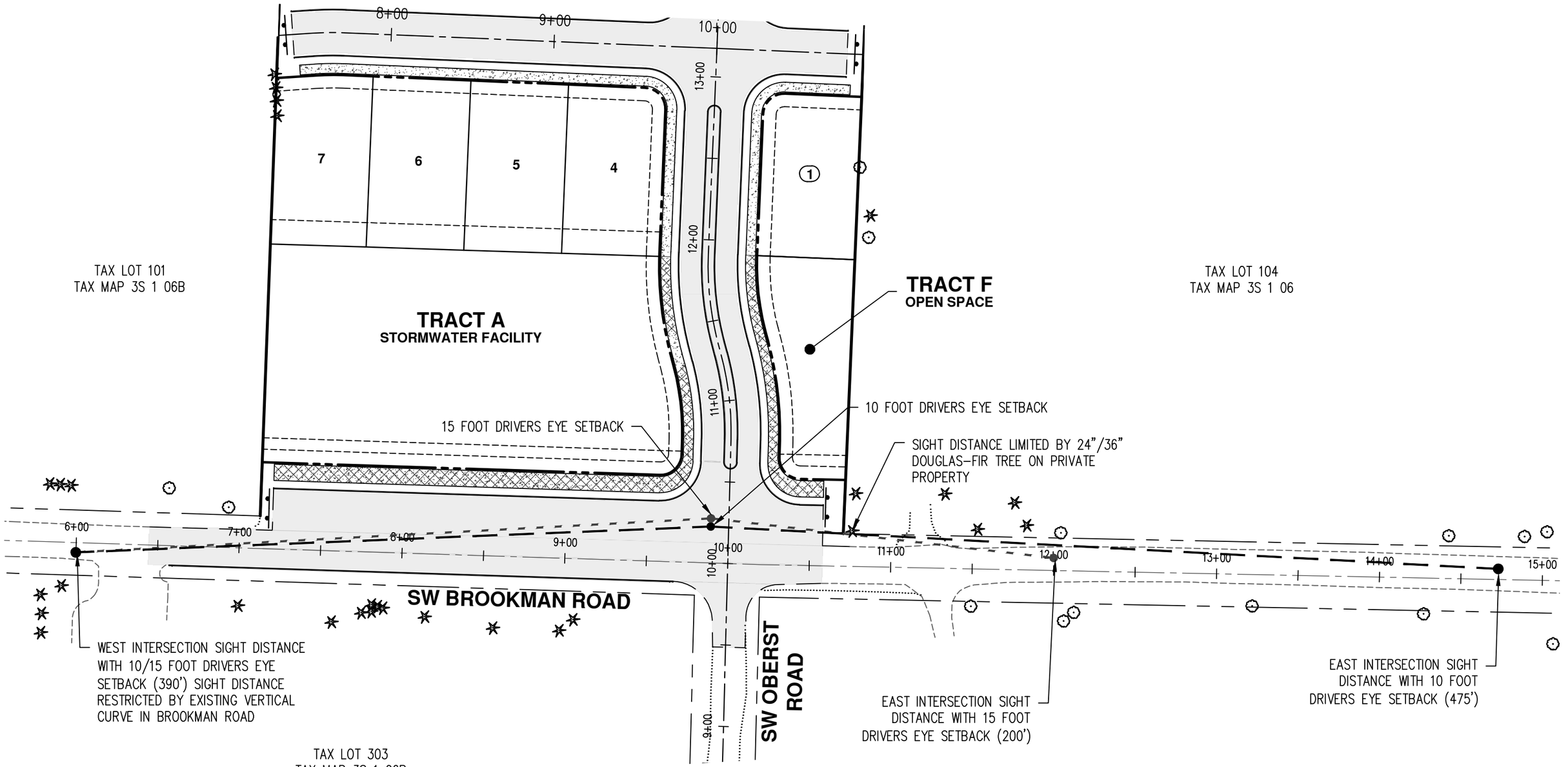
- Exhibit A, SW Brookman Road Access Preliminary Intersection Sight Distance With Exception
- Preliminary Sight Distance Certification

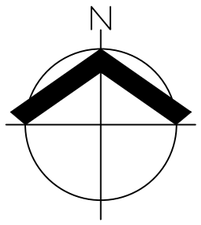
We appreciate your time and consideration of this information. If you have any questions regarding this letter or the Middlebrook Subdivision project in general, please do not hesitate to call or email.

Sincerely,
AKS ENGINEERING & FORESTRY, LLC

Paul A. Sellke, PE, GE
Project Engineer

9/4/18
REGISTERED PROFESSIONAL ENGINEER
65688PE
OREGON
JULY 09, 2001
PAUL A SELLKE
RENEWAL DATE: 6/30/20





SCALE: 1"= 60 FEET

60 0 24 36 48 60

NOTES:

1. SW BROOKMAN ROAD POSTED SPEED LIMIT = 35 MPH
2. REQUIRED 350 FOOT INTERSECTION SIGHT DISTANCE PER WASHINGTON COUNTY CDC 501-8.5F
3. ASSUMES 10' DRIVERS EYE SETBACK FROM NEAR EDGE OF PAVEMENT
4. ASSUMES VEGETATION REMOVAL, TRIMMING, AND MAINTENANCE WITHIN THE RIGHT-OF-WAY

DATE: 9/4/2018

SW BROOKMAN ROAD ACCESS PRELIMINARY INTERSECTION SIGHT DISTANCE WITH EXCEPTION

EXHIBIT **A**

MIDDLEBROOK SUBDIVISON

AKS ENGINEERING & FORESTRY, LLC
12965 SW HERMAN RD, STE 100
TUALATIN, OR 97062
P: 503.563.6151 F: 503.563.6152 aks-eng.com

DRWN: ARS
CHKD: PAS
AKS JOB: 3591

DWG: 3591 20180720 SIGHT DISTANCE | LAYOUT1

September 4, 2018

Naomi Vogel
Washington County
Department of Land Use & Transportation
1400 SW Walnut Street, Suite 212, MS 17A
Hillsboro, OR 97123

RE: Preliminary Sight Distance Certification
Middlebrook Subdivision, Sherwood, Oregon

The planned intersection with SW Brookman Road is the continuation of the intersection of SW Oberst and SW Brookman Road to the north. The posted speed limit along SW Brookman Road is 35 mph, which requires 350 feet of sight distance in both the east and west directions, in accordance with Washington County Community Development Code (WCCDC) Section 501-8.5.F(4).

As required by WCCDC Sections 501-8.5.F(3)(a) and 501-8.5.F(3)(b), the sight distance at a 15-foot driver's eye setback was measured to be approximately 400 feet in the western direction and approximately 220 feet in the eastern direction. Intersection sight distance is currently not available in the eastern direction.

These measurements are based on an eye height of 3.5 feet and an object height of 4.25 feet above the road and assumed to be 15 feet from the near edge of pavement to the front of a stopped vehicle.

When measurements are based on an eye height of 3.5 feet, object height of 4.25 feet, and driver's eye setback of 10 feet from the near edge of the pavement, the sight distance increases to approximately 390 feet in the western direction and 475 feet in the eastern direction. The above sight distance measurements are based on measurements taken at the near edge of pavement and require that fences, vegetation, and trees are removed within the right-of-way.

In conclusion, I hereby certify that preliminary measurements indicate that intersection sight distance is available at the proposed intersection location for this subdivision. The preliminary sight distance certification conforms to the requirements as set forth in the WCCDC, subject to the following elements/modifications:

- Fences, trees, and vegetation are removed to the east and west of the intersection within the right-of-way.
- Reduction in driver's eye setback (10 feet vs. 15 feet) to achieve the required sight distance triangle (See associated Design Exception).

Please feel free to contact me with any additional questions or comments.

Sincerely,
AKS ENGINEERING & FORESTRY, LLC

Paul A. Sellke, PE, GE
Project Engineer

9/4/18
REGISTERED PROFESSIONAL ENGINEER
65688PE
OREGON
JULY 09, 2001
PAUL A SELLKE
RENEWAL DATE: 6/30/20