CITY OF West Linn

Planning & Development • 22500 Salamo Rd #1000 • West Linn, Oregon 97068
Telephone 503.656.4211 • Fax 503.656.4106 • westlinnoregon.gov

# DEVELOPMENT REVIEW APPLICATION

| For Office Use Only | | |
|---|---|---|
| STAFF CONTACT PETER SPIR | PROJECT No(s). SU-13-04 / VA-13-05 / 13-06 / 13-07 / 13-08 / 13-09 | |
| NON-REFUNDABLE FEE(S) 8700 | REFUNDABLE DEPOSIT(S) 6900 | TOTAL 15100.00 |

**Type of Review** (Please check all that apply):

- ☐ Annexation (ANX)
- ☐ Appeal and Review (AP) *
- ☐ Conditional Use (CUP)
- ☐ Design Review (DR)
- ☐ Easement Vacation
- ☐ Extraterritorial Ext. of Utilities
- ☐ Final Plat or Plan (FP)
- ☐ Flood Management Area
- ☐ Hillside Protection & Erosion Control
- ☐ Historic Review
- ☐ Legislative Plan or Change
- ☐ Lot Line Adjustment (LLA) */**
- ☐ Minor Partition (MIP) (Preliminary Plat or Plan)
- ☐ Non-Conforming Lots, Uses & Structures
- ☐ Planned Unit Development (PUD)
- ☐ Pre-Application Conference (PA) */**
- ☐ Street Vacation
- ☒ Subdivision (SUB) 6900
- ☐ Temporary Uses *
- ☐ Time Extension *
- ☒ Variance (VAR) - 8700
- ☐ Water Resource Area Protection/Single Lot (WAP)
- ☐ Water Resource Area Protection/Wetland (WAP)
- ☐ Willamette & Tualatin River Greenway (WRG)
- ☐ Zone Change

Home Occupation, Pre-Application, Sidewalk Use, Sign Review Permit, and Temporary Sign Permit applications require different or additional application forms, available on the City website or at City Hall.

| **Site Location/Address:** | Assessor's Map No.: **21E35A** |
|---|---|
| **23150 BLAND CIRCLE, WEST LINN** | Tax Lot(s): **01300** |
| | Total Land Area: **2.8 Acres** |

**Brief Description of Proposal:** **APPLICANT PROPOSES AN 11 LOT SUBDIVISION**

| | | |
|---|---|---|
| **Applicant Name:** (please print) | **JT SMITH COMPANIES** | Phone: **503-209-7555** |
| Address: | **5285 MEADOWS ROAD, SUITE 171** | Email: **jwyland@jtsmithco.com** |
| City State Zip: | **LAKE OSWEGO, OR 97035** | |
| **Owner Name** (required): (please print) | **JOHN AND RACHEL OMLOR** | Phone: |
| Address: | **23150 BLAND CIRCLE** | Email: |
| City State Zip: | **WEST LINN** | |
| **Consultant Name:** (please print) | **ANDREW TULL, 3J CONSULTING, INC.** | Phone: **503-545-1907** |
| Address: | **10445 SW CANYON ROAD, SUITE 245** | Email: **andrew.tull@3j-consulting.com** |
| City State Zip: | **BEAVERTON, OR 97005** | |

1. All application fees are non-refundable (excluding deposit). **Any overruns to deposit will result in additional billing.**
2. The owner/applicant or their representative should be present at all public hearings.
3. A denial or approval may be reversed on appeal. No permit will be in effect until the appeal period has expired.
4. **Three (3) complete hard-copy sets (single sided) of application materials must be submitted with this application. One (1) complete set of digital application materials must also be submitted on CD in PDF format. If large sets of plans are required in application please submit only two sets.**

* No CD required / ** Only one hard-copy set needed

RECEIVED
JUN 21 2013
PLANNING & BUILDING
CITY OF WEST LINN

The undersigned property owner(s) hereby authorizes the filing of this application, and authorizes on site review by authorized staff. I hereby agree to comply with all code requirements applicable to my application. Acceptance of this application does not infer a complete submittal. All amendments to the Community Development Code and to other regulations adopted after the application is approved shall be enforced where applicable. Approved applications and subsequent development is not vested under the provisions in place at the time of the initial application.

Applicant's signature — 6/18/13 Date

DocuSigned by: John Omlor — Owner's signature *(required)* — 6/18/2013 | 11:26 Date

DocuSigned by: Rachel Omlor — C982F0CDFDB6438... — 6/18/2013 | 16:53

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## GENERAL INFORMATION

| | |
|---|---|
| Property Owner and Applicant: | JT Smith Companies<br>Attn: John Wyland<br>5285 Meadows Road, Suite #171<br>Lake Oswego, OR 97035 |
| Applicant's Representative | **3J Consulting, Inc**<br>10445 SW Canyon Road<br>Beaverton, OR 97005<br>Contact: Andrew Tull<br>Phone: 503-545-1907<br>Email: andrew.tull@3j-consulting.com |
| Contributing Consultant Contact Details: | **Land Use Planning and Civil Engineering**<br>3J Consulting, Inc.<br>10445 SW Canyon Road Suite 245<br>Beaverton, OR 97005<br>Contact: Andrew Tull or Brian Feeney, PE<br>Phone: 503-946-9365<br>Email: andrew.tull@3j-consulting.com or brian.feeney@3j-consulting.com |

## SITE INFORMATION

| | |
|---|---|
| Tax Lot Number: | 2S1E35A01300 |
| Address: | 23150 Bland Circle |
| Size: | 2.80 Acres |
| Zoning Designation: | R-7 (City of West Linn) |
| Neighborhood: | Savanna Oaks |
| Comprehensive Plan: | Low Density Residential |
| Existing Use: | There is one single-family home on the site (residential) |
| Street Functional Classifications: | The site currently takes access from Bland Circle, a Collector. As proposed, the lots would take access from the extensions of Crestview Drive and Sunbreak Lane, local streets. |
| Surrounding Zoning: | North and Southwest – FU-10<br>East, South and Northwest – R-7 |

## INTRODUCTION

### APPLICANT'S REQUEST

The Applicant seeks approval of an application for Subdivision Preliminary Plat for the development of 11 residential lots. The proposal includes a lot depth variance for lots 3, 4, 7, 10 and 11 with a depth greater than two-and-one-half times the lot width. This narrative describes the proposed subdivision of the site and lot depth variance and documents compliance with the relevant sections of the City of West Linn's Community Development Code ("CDC").

### PROPOSED SITE IMPROVEMENTS

The project site consists of a total of 2.80 acres. The property is located on Bland Circle at the northern end of Tannler Drive. There is one single-family detached home and one garage at the north end of the property that will be demolished as part of this project.

The intent of this subdivision is to provide eleven buildable lots, each a minimum of 7,000 square feet in size, for development with single-family homes, a use permitted outright in the R-7 zone.

### TRAFFIC AND PARKING

The preliminary plat shows that access to the eleven parcels will come from driveways on newly constructed sections of Crestview Drive and Sunbreak Lane, local streets. No additional access to Bland Circle is proposed. Additionally, each lot will have adequate off-street parking available.

**APPLICABLE CRITERIA**

The following sections of the CDC have been extracted as they have been deemed to be applicable to the proposal. Following each applicable criteria or design standard, the Applicant has provided a series of draft findings. The intent of providing code and detailed responses and findings is to document that the proposed development has satisfied the approval criteria for Subdivision Preliminary Plat and Class II Variance Approval.

**DIVISION 8. LAND DIVISION**

**CHAPTER 85. GENERAL PROVISIONS**

**85.200 APPROVAL CRITERIA**

**No tentative subdivision or partition plan shall be approved unless adequate public facilities will be available to provide service to the partition or subdivision area prior to final plat approval and the Planning Commission or Planning Director, as applicable, finds that the following standards have been satisfied, or can be satisfied by condition of approval.**

**A. Streets.**

**1. General. The location, width and grade of streets shall be considered in their relation to existing and planned streets, to the generalized or reasonable layout of streets on adjacent undeveloped parcels, to topographical conditions, to public convenience and safety, to accommodate various types of transportation (automobile, bus, pedestrian, bicycle), and to the proposed use of land to be served by the streets. The functional class of a street aids in defining the primary function and associated design standards for the facility. The hierarchy of the facilities within the network in regard to the type of traffic served (through or local trips), balance of function (providing access and/or capacity), and the level of use (generally measured in vehicles per day) are generally dictated by the functional class. The street system shall assure an adequate traffic or circulation system with intersection angles, grades, tangents, and curves appropriate for the traffic to be carried. Streets should provide for the continuation, or the appropriate projection, of existing principal streets in surrounding areas and should not impede or adversely affect development of adjoining lands or access thereto.**

**To accomplish this, the emphasis should be upon a connected continuous pattern of local, collector, and arterial streets rather than discontinuous curvilinear streets and cul-de-sacs. Deviation from this pattern of connected streets should only be permitted in cases of extreme topographical challenges including excessive slopes (35 percent-plus), hazard areas, steep drainageways, wetlands, etc. In such cases, deviations may be allowed but the connected continuous pattern must be reestablished once the topographic challenge is passed. Streets should be oriented with consideration of the sun, as site conditions allow, so that over 50 percent of the front building lines of homes are oriented within 30 degrees of an east-west axis.**

**Internal streets are the responsibility of the developer. All streets bordering the development site are to be developed by the developer with, typically, half-street improvements or to City standards prescribed by the City Engineer. Additional travel lanes may be required to be**

**consistent with adjacent road widths or to be consistent with the adopted Transportation System Plan and any adopted updated plans.**

**An applicant may submit a written request for a waiver of abutting street improvements if the Transportation System Plan prohibits the street improvement for which the waiver is requested. Those areas with numerous (particularly contiguous) under-developed or undeveloped tracts will be required to install street improvements. When an applicant requests a waiver of street improvements and the waiver is granted, the applicant shall propose a fee amount that will be reviewed by the City Manager or the Manager's designee. The City Manager or the Manager's designee will revise the proposed fee as necessary and establish the amount to be paid on a case-by-case basis. The applicant shall pay an in-lieu fee for improvements to the nearest street identified by the City Manager or Manager's designee as necessary and appropriate. The amount of the in-lieu fee shall be roughly proportional to the impact of the development on the street system as determined in subsection (A)(22) of this section.**

**Streets shall also be laid out to avoid and protect tree clusters and significant trees, but not to the extent that it would compromise connectivity requirements per this subsection (A)(1), or bring the density below 70 percent of the maximum density for the developable net area. The developable net area is calculated by taking the total site acreage and deducting Type I and II lands; then up to 20 percent of the remaining land may be excluded as necessary for the purpose of protecting significant tree clusters or stands as defined in CDC 55.100(B)(2).**

**Applicant's Finding:**

This section requires the continuation of principal streets. The term principal street is not defined in the CDC but it must denote a street that has some importance. Since Sunbreak, Crestview and Tannler are all local streets, they are not principal streets, otherwise the CDC would require the extension of every street since none would have any particular level of importance. The use of the phrase principal street means that not every street will be extended and those that are must have some importance, like a collector or an arterial street.

The 11 lots will take access from Crestview Drive and Sunbreak Lane, existing Local Streets. The layouts of Crestview Drive and Sunbreak Lane from the east were determined with development of the Florendo's Hideaway subdivision and neither is a cul-de-sac. The layout of Crestview Drive from the west was determined with the development of Ridgeview Estates Phase II subdivision.

A 24-foot wide right-of-way dedication (one-half of a 48-foot right-of-way) is proposed along the western property line connecting Sunbreak Lane to Bland Circle. Installation of a 6-foot sidewalk along this dedicated area is proposed, with a fee-in-lieu proposed for the remaining roadway improvements (to be used by the City when the property to the west develops). The Applicant contacted the property owner to the west to see if the owner would be interested in dedicating land for the road or applying for development of the property concurrently. The property owner to the west was not interested in either scenario.

The Applicant then reviewed the existing easement on the neighboring property for

access to the City's water reservoir to determine if it provides for a public street and concluded that it does not. If the easement is insufficient, that is a pre-existing condition which Sunbreak Subdivision does not create or make worse. In other words, there is no "nexus" between the requirement to dedicate right-of-way and the need for the dedication that is caused by the application. The City may not require the dedication of real property without a nexus. Page 9 of the pre-application notes describes the connectivity analysis contained in the Florendo's Hideaway Subdivision, but this plan is neither binding on the proposed subdivision. Additionally, the applicant submitted a drawing to the City Engineering Department showing that proper alignment with Tannler Drive to the south is not possible from this property and must be completed on the adjacent property to the west. For all of these reasons, the applicant proposes a half-street right-of-way dedication and a fee-in-lieu for future construction when the property to the west develops.

The requirements of this section have been satisfied.

**2. Right-of-way and roadway widths. In order to accommodate larger tree-lined boulevards and sidewalks, particularly in residential areas, the standard right-of-way widths for the different street classifications shall be within the range listed below. But instead of filling in the right-of-way with pavement, they shall accommodate the amenities (e.g., boulevards, street trees, sidewalks). The exact width of the right-of-way shall be determined by the City Engineer or the approval authority. The following ranges will apply:**

| Street Classification | Right-of-Way |
|---|---|
| **Collector** | **60 – 80** |
| **Local street** | **40 – 60** |

**Additional rights-of-way for slopes may be required. Sidewalks shall not be located outside of the right-of-way unless to accommodate significant natural features or trees.**

**Applicant's Finding:** The proposed right-of-way width for Crestview Drive, a local street, is 56 feet and the width for Sunbreak Lane, a local street, is 52 feet (both within the 40-60 foot window). The proposed dedication along the north-south connection of between Sunbreak Lane and Bland Circle is 24 feet, one-half of a 48-foot right-of-way. The existing width of Bland Circle, a collector, is 50 feet. The applicant proposes dedication of an additional 8 feet of right-of-way along Bland Circle, a collector. The proposed dedication along Bland Circle will result in a right-of-way width of 58 feet, not within the 60-80 foot window. However, this width was indicated in the Engineering Notes section of the pre-application notes dated March 21, 2013 and is noted in the City's Transportation System Plan, Figure 8-3 Collector Street Cross Sections.

The requirements of this section have been satisfied.

**3. Street widths. Street widths shall depend upon which classification of street is proposed. The classifications and required cross sections are established in Chapter 8 of the adopted TSP.**

**Applicant's Finding:** The applicant's proposal includes construction of Crestview Drive and Sunbreak Lane to local street standards and improvements to Bland Circle consistent with collector street standards. The proposed dedication of right-of-way for the new north-south local street connecting Sunbreak Lane and Bland Circle is 24 feet, half the width of a 48-foot local street right-of-way.

The requirements of this section have been satisfied.

**4. The decision-making body shall consider the City Engineer's recommendations on the desired right-of-way width, pavement width and street geometry of the various street types within the subdivision after consideration by the City Engineer of the following criteria:**

**a. The type of road as set forth in the Transportation Master Plan.**
**b. The anticipated traffic generation.**
**c. On-street parking requirements.**
**d. Sidewalk and bikeway requirements.**
**e. Requirements for placement of utilities.**
**f. Street lighting.**
**g. Drainage and slope impacts.**
**h. Street trees.**
**i. Planting and landscape areas.**
**j. Existing and future driveway grades.**
**k. Street geometry.**
**l. Street furniture needs, hydrants.**

**Applicant's Finding:** The City Engineer has reviewed the proposal and made recommendations to the applicant, which are incorporated into the proposed configuration.

The requirements of this section have been satisfied.

**5. Additionally, when determining appropriate street width, the decision-making body shall consider the following criteria:**

**a. When a local street is the only street serving a residential area and is expected to carry more than the normal local street traffic load, the designs with two travel and one parking lane are appropriate.**
**b. Streets intended to serve as signed but unstriped bike routes should have the travel lane widened by two feet.**
**c. Collectors should have two travel lanes and may accommodate some parking. Bike routes are appropriate.**
**d. Arterials should have two travel lanes. On-street parking is not allowed unless part of a Street Master Plan. Bike lanes are required as directed by the Parks Master Plan and Transportation Master Plan.**

**Applicant's** The proposed street extensions will serve the proposed lots and adjacent residential

**Finding:** development, no more than a normal Local Street traffic load. The dedication of right-of-way and street improvements will result in two travel lanes on Bland Circle. No arterials are adjacent to this proposal.

The requirements of this section have been satisfied.

**6. <u>Reserve strips</u>. Reserve strips or street plugs controlling the access to streets are not permitted unless owned by the City.**

**Applicant's Finding:** The applicant does not propose reserve strips or street plugs with this application.

The requirements of this section have been satisfied.

**7. <u>Alignment</u>. All streets other than local streets or cul-de-sacs, as far as practical, shall be in alignment with existing streets by continuations of the centerlines thereof. The staggering of street alignments resulting in "T" intersections shall, wherever practical, leave a minimum distance of 200 feet between the centerlines of streets having approximately the same direction and otherwise shall not be less than 100 feet.**

**Applicant's Finding:** All proposed street alignments will include continuations of centerline.

The requirements of this section have been satisfied.

**8. <u>Future extension of streets</u>. Where necessary to give access to or permit a satisfactory future subdivision of adjoining land, streets shall be extended to the boundary of the subdivision and the resulting dead-end streets may be approved without turnarounds. (Temporary turnarounds built to Fire Department standards are required when the dead-end street is over 100 feet long.)**

**Applicant's Finding:** Development of the properties to the east and west of this site resulted in extension of Crestview Drive and Sunbreak Lane to the boundary of this property. Development of this property will include completion of these public street sections. Crestview Drive connects both east and west of this property and will not result in a dead-end street. Sunbreak Lane connects only to the east but could be further extended to the west when the adjacent property develops. An unimproved half-street (24 feet) right-of-way dedication is proposed connecting Sunbreak Lane to Bland Circle. As part of the application, the applicant will install a sidewalk but will pay a fee in lieu rather than installing a curb or street section.

The requirements of this section have been satisfied.

**9. <u>Intersection angles</u>. Streets shall be laid out to intersect angles as near to right angles as practical, except where topography requires lesser angles, but in no case less than 60 degrees unless a special intersection design is approved. Intersections which are not at right angles shall have minimum corner radii of 15 feet along right-of-way lines which form acute angles.**

**Right-of-way lines at intersections with arterial streets shall have minimum curb radii of not less than 35 feet. Other street intersections shall have curb radii of not less than 25 feet. All radii shall maintain a uniform width between the roadway and the right-of-way lines. The intersection of more than two streets at any one point will not be allowed unless no alternative design exists.**

**Applicant's Finding:** No street intersections are proposed.

The requirements of this section have been satisfied.

**10. Additional right-of-way for existing streets. Wherever existing street rights-of-way adjacent to or within a tract are of inadequate widths based upon the standards of this chapter, additional right-of-way shall be provided at the time of subdivision or partition.**

**Applicant's Finding:** In addition to the extensions of Crestview Drive and Sunbreak Lane, the applicant proposes right-of-way dedication along Bland Circle to the Collector Street standard.

The requirements of this section have been satisfied.

**11. Cul-de-sacs. Cul-de-sacs are not allowed except as required by topography, slope, site limitations, and lot shapes. Cul-de-sacs shall have maximum lengths of 400 feet and serve no more than 12 dwelling units, unless by variance per Chapter 75 CDC. All cul-de-sacs shall terminate with a turnaround built to one of the following specifications (measurements are for the traveled way and do not include planter strips or sidewalks).*****

**Applicant's Finding:** No cul-de-sacs are proposed with this subdivision.

The requirements of this section have been satisfied.

**12. Street names. No street names shall be used which will duplicate or be confused with the names of existing streets within the City. Street names that involve difficult or unusual spellings are discouraged. Street names shall be subject to the approval of the Planning Commission or Planning Director, as applicable. Continuations of existing streets shall have the name of the existing street. Streets, drives, avenues, ways, boulevards, and lanes shall describe through streets. Place and court shall describe cul-de-sacs. Crescent, terrace, and circle shall describe loop or arcing roads.**

**Applicant's Finding:** All streets are extensions of existing local streets and names will be maintained.

The requirements of this section have been satisfied.

**13. Grades and curves. Grades shall not exceed 8 percent on major or secondary arterials, 10 percent on collector streets, or 15 percent on any other street unless by variance. Willamette Drive/Highway 43 shall be designed to a minimum horizontal and vertical design**

**speed of 45 miles per hour, subject to Oregon Department of Transportation (ODOT) approval. Arterials shall be designed to a minimum horizontal and vertical design speed of 35 miles per hour. Collectors shall be designed to a minimum horizontal and vertical design speed of 30 miles per hour. All other streets shall be designed to have a minimum centerline radii of 50 feet. Super elevations (i.e., banking) shall not exceed four percent. The centerline profiles of all streets may be provided where terrain constraints (e.g., over 20 percent slopes) may result in considerable deviation from the originally proposed alignment.**

**Applicant's Finding:** The grades and curves of the extension of the local public streets will not exceed 15 percent, per this standard.

The requirements of this section have been satisfied.

**14. Access to local streets. Intersection of a local residential street with an arterial street may be prohibited by the decision-making authority if suitable alternatives exist for providing interconnection of proposed local residential streets with other local streets. Where a subdivision or partition abuts or contains an existing or proposed major arterial street, the decision-making authority may require marginal access streets, reverse-frontage lots with suitable depth, visual barriers, noise barriers, berms, no-access reservations along side and rear property lines, and/or other measures necessary for adequate protection of residential properties from incompatible land uses, and to ensure separation of through traffic and local traffic.**

**Applicant's Finding:** The subject property does not abut nor contain an existing or proposed Major Arterial Street, nor is an intersection of a Local Residential Street with an Arterial Street proposed.

The requirements of this section have been satisfied.

**15. Alleys. Alleys shall be provided in commercial and industrial districts unless other permanent provisions for access to off-street parking and loading facilities are made as approved by the decision-making authority. While alley intersections and sharp changes in alignment should be avoided, the corners of necessary alley intersections shall have radii of not less than 10 feet. Alleys may be provided in residential subdivisions or multi-family projects. The decision to locate alleys shall consider the relationship and impact of the alley to adjacent land uses. *****

**Applicant's Finding:** No alleys are proposed with this subdivision.

The requirements of this section have been satisfied.

**16. Sidewalks. Sidewalks shall be installed per CDC 92.010(H), Sidewalks. The residential sidewalk width is six feet plus planter strip as specified below. Sidewalks in commercial zones shall be constructed per subsection (A)(3) of this section. See also subsection C of this section.**

**Sidewalk width may be reduced with City Engineer approval to the minimum amount (e.g., four feet wide) necessary to respond to site constraints such as grades, mature trees, rock outcroppings, etc., or to match existing sidewalks or right-of-way limitations.**

**Applicant's Finding:** The applicant proposes to install a 6-foot sidewalk plus planter strip along the frontages of this property, per this standard.

The requirements of this section have been satisfied.

**17. Planter strip. The planter strip is between the curb and sidewalk providing space for a grassed or landscaped area and street trees. The planter strip shall be at least 6 feet wide to accommodate a fully matured tree without the boughs interfering with pedestrians on the sidewalk or vehicles along the curbline. Planter strip width may be reduced or eliminated, with City Engineer approval, when it cannot be corrected by site plan, to the minimum amount necessary to respond to site constraints such as grades, mature trees, rock outcroppings, etc., or in response to right-of-way limitations.**

**Applicant's Finding:** The applicant proposes to install a 6-foot planter strip between all proposed sidewalks and paved streets.

The requirements of this section have been satisfied.

**18. Streets and roads shall be dedicated without any reservations or restrictions.**

**Applicant's Finding:** No reservations or restrictions are proposed with the street dedication.

The requirements of this section have been satisfied.

**19. All lots in a subdivision shall have access to a public street. Lots created by partition may have access to a public street via an access easement pursuant to the standards and limitations set forth for such accessways in Chapter 48 CDC.**

**Applicant's Finding:** All 11 lots will have access to a public street.

The requirements of this section have been satisfied.

**20. Gated streets. Gated streets are prohibited in all residential areas on both public and private streets. A driveway to an individual home may be gated.**

**Applicant's Finding:** Gated streets are not proposed.

The requirements of this section have been satisfied.

**21. Entryway treatments and street isle design. When the applicant desires to construct certain walls, planters, and other architectural entryway treatments within a subdivision, the following standards shall apply:**

**a. All entryway treatments except islands shall be located on private property and not in the public right-of-way.**

**b. Planter islands may be allowed provided there is no structure (i.e., brick, signs, etc.) above the curbline, except for landscaping. Landscaped islands shall be set back a minimum of 24 feet from the curbline of the street to which they are perpendicular.**

**c. All islands shall be in public ownership. The minimum aisle width between the curb and center island curbs shall be 14 feet. Additional width may be required as determined by the City Engineer.**

**d. Brick or special material treatments are acceptable at intersections with the understanding that the City will not maintain these sections except with asphalt overlay, and that they must meet the Americans with Disabilities Act (ADA) standards. They shall be laid out to tie into existing sidewalks at intersections.**

**e. Maintenance for any common areas and entryway treatments (including islands) shall be guaranteed through homeowners association agreements, CC&Rs, etc.**

**f. Under Chapter 52 CDC, subdivision monument signs shall not exceed 32 square feet in area.**

**Applicant's Finding:** The applicant does not propose to construct entryway treatments to the subdivision at this time.

The requirements of this section have been satisfied.

**22. Based upon the determination of the City Manager or the Manager's designee, the applicant shall construct or cause to be constructed, or contribute a proportionate share of the costs, for all necessary off-site improvements identified by the transportation analysis commissioned to address CDC 85.170(B)(2) that are required to mitigate impacts from the proposed subdivision. The proportionate share of the costs shall be determined by the City Manager or Manager's designee, who shall assume that the proposed subdivision provides improvements in rough proportion to identified impacts of the subdivision. Off-site transportation improvements will include bicycle and pedestrian improvements as identified in the adopted City of West Linn TSP.**

**Applicant's Finding:** Right-of-way dedication and street improvements are proposed with this application proportionate to the construction of eleven new lots. Off-site improvements are not necessary or proportionate to mitigate impacts from this 11-lot subdivision.

The requirements of this section have been satisfied.

**B. Blocks and lots.**

**1. General. The length, width, and shape of blocks shall be designed with due regard for the provision of adequate building sites for the use contemplated; consideration of the need for**

**traffic safety, convenience, access, circulation, and control; and recognition of limitations and opportunities of topography and solar access.**

**Applicant's Finding:** The block pattern adjacent to this site is established. However, extension of Crestview Drive and Sunbreak Lane through the site will provide adequate building sites and considers the need for traffic safety, convenience, access, circulation and control.

The requirements of this section have been satisfied.

**2. Sizes. The recommended block size is 400 feet in length to encourage greater connectivity within the subdivision. Blocks shall not exceed 800 feet in length between street lines, except for blocks adjacent to arterial streets or unless topographical conditions or the layout of adjacent streets justifies a variation. Designs of proposed intersections shall demonstrate adequate sight distances to the City Engineer's specifications. Block sizes and proposed accesses must be consistent with the adopted TSP.**

**Applicant's Finding:** The extension of Crestview Drive through the property will result in a block length of approximately 600 feet. The extension of Sunbreak Lane through the property will result in a block length of approximately 500 feet. No blocks are proposed exceeding 800 feet in length.

The requirements of this section have been satisfied.

**3. Lot size and shape. Lot size, width, shape, and orientation shall be appropriate for the location of the subdivision, for the type of use contemplated, for potential utilization of solar access, and for the protection of drainageways, trees, and other natural features. No lot shall be dimensioned to contain part of an existing or proposed street. All lots shall be buildable, and the buildable depth should not exceed two and one-half times the average width. "Buildable" describes lots that are free of constraints such as wetlands, drainageways, etc., that would make home construction impossible. Lot sizes shall not be less than the size required by the zoning code unless as allowed by planned unit development (PUD).**
**Depth and width of properties reserved or laid out for commercial and industrial purposes shall be adequate to provide for the off-street parking and service facilities required by the type of use proposed.**

**Chapter 12- Single-Family Residential Detached and Attached, R-7 standards are as follows:**

| | |
|---|---|
| **Lot Size (Detached Dwelling Units)** | **7,000 square feet** |
| **Lot Size (Attached Dwelling Units)** | **5,500 square feet** |
| **Front Lot Line Length/Minimum Lot Width at Front Lot Line** | **35 feet** |
| **Average Minimum Lot Width** | **50 feet** |
| **Lot Depth** | **Less than 2.5x Width and greater than Average Depth of 90 feet** |

**Applicant's Finding:** All proposed lots are a minimum of 7,000 square feet in size to accommodate single-family detached dwelling units. All 11 proposed lots exceed the minimum requirements for front lot line length, lot width and lot depth. Lots 3, 4, 7, 10 and 11 exceed the lot depth maximum of 2.5x width and are discussed further in Chapter 75 as a Class II Variance request.

The requirements of this section have been satisfied.

**4. Access. Access to subdivisions, partitions, and lots shall conform to the provisions of Chapter 48 CDC, Access, Egress and Circulation.**

**Applicant's Finding:** The proposed access to the subdivision conforms to the provisions of CDC Chapter 48 because all parcels will take access from a Local Street that will then access the adjacent Collector. No shared access is proposed.

The requirements of this section have been satisfied.

**5. Through lots and parcels. Through lots have frontage on a street at the front and rear of the lot. They are also called double-frontage lots. Through lots and parcels shall be avoided except where they are essential to provide separation of residential development from arterial streets or adjacent non-residential activities, or to overcome specific disadvantages of topography and orientation. A planting screen or impact mitigation easement at least 10 feet wide, and across which there shall be no right of access, may be required along the line of building sites abutting such a traffic artery or other incompatible use.**

**Applicant's Finding:** No through lots are proposed with this application.

The requirements of this section have been satisfied.

**6. Lot and parcel side lines. The lines of lots and parcels, as far as is practicable, should run at right angles to the street upon which they face, except that on curved streets they should be radial to the curve.**

**Applicant's Finding:** All side lot lines run at right angles to the streets upon which they face as far as practicable. Due to the challenging geometry of the site and the surrounding neighborhood, some lot lines have been proposed at less than 90 degrees with no detrimental effects upon the proposed lots or neighboring properties.

The requirements of this section have been satisfied.

**7. Flag lots. Flag lots can be created where it can be shown that no other reasonable street access is possible to achieve the requested land division. A single flag lot shall have a minimum street frontage of 15 feet for its accessway. Where two to four flag lots share a common accessway, the minimum street frontage and accessway shall be eight feet in width**

**per lot. Common accessways shall have mutual maintenance agreements and reciprocal access and utility easements. *****

**a. Setbacks applicable to the underlying zone shall apply to the flag lot.**

**b. Front yard setbacks may be based on the rear property line of the parcel which substantially separates the flag lot from the street from which the flag lot gains access. Alternately, the house and its front yard may be oriented in other directions so long as some measure of privacy is ensured, or it is part of a pattern of development, or it better fits the topography of the site.**

**c. The lot size shall be calculated exclusive of the accessway; the access strip may not be counted towards the area requirements.**

**d. The lot depth requirement contained elsewhere in this code shall be measured from the rear property line of the parcel which substantially separates the flag lot from the street from which the flag lot gains access.**

**e. As per CDC 48.030, the accessway shall have a minimum paved width of 12 feet.**

**f. If the use of a flag lot stem to access a lot is infeasible because of a lack of adequate existing road frontage, or location of existing structures, the proposed lot(s) may be accessed from the public street by an access easement of a minimum 15-foot width across intervening property.**

**Applicant's Finding:** No flag lots are proposed with this subdivision application.

The requirements of this section have been satisfied.

**8. Large lots. In dividing tracts into large lots or parcels which, at some future time, are likely to be redivided, the approval authority may require that the blocks be of such size and shape, and be so divided into building sites, and contain such easements and site restrictions as will provide for extension and opening of streets at intervals which will permit a subsequent division of any tract into lots or parcels of smaller size. Alternately, in order to prevent further partition of oversized lots, restrictions may be imposed on the subdivision or partition plat.**

**Applicant's Finding:** The lots of the proposed subdivision, ranging in size from 7,000 square feet to 11,566 square feet, are not large enough for future division in the R-7 zone.

The requirements of this section have been satisfied.

**C. Pedestrian and bicycle trails.**

**1. Trails or multi-use pathways shall be installed, consistent and compatible with federal ADA requirements and with the Oregon Transportation Planning Rule, between subdivisions, cul-de-sacs, and streets that would otherwise not be connected by streets due to excessive grades, significant tree(s), and other constraints natural or manmade. Trails shall also accommodate bicycle or pedestrian traffic between neighborhoods and activity areas such as schools, libraries, parks, or commercial districts. Trails shall also be required where designated by the Parks Master Plan.**

**2. The all-weather surface (asphalt, etc.) trail should be eight feet wide at minimum for bicycle use and six feet wide at minimum for pedestrian use. Trails within 10 feet of a wetland or natural drainageway shall not have an all-weather surface, but shall have a soft surface as approved by the Parks Director. These trails shall be contained within a corridor dedicated to the City that is wide enough to provide trail users with a sense of defensible space. Corridors that are too narrow, confined, or with vegetative cover may be threatening and discourage use. Consequently, the minimum corridor width shall be 20 feet. Sharp curves, twists, and blind corners on the trail are to be avoided as much as possible to enhance defensible space. Deviations from the corridor and trail width are permitted only where topographic and ownership constraints require it.**

**3. Defensible space shall also be enhanced by the provision of a three- to four-foot-high matte black chain link fence or acceptable alternative along the edge of the corridor. The fence shall help delineate the public and private spaces.**

**4. The bicycle or pedestrian trails that traverse multi-family and commercial sites should follow the same defensible space standards but do not need to be defined by a fence unless required by the decision-making authority.**

**5. Except for trails within 10 feet of a wetland or natural drainageway, soft surface or gravel trails may only be used in place of a paved, all-weather surface where it can be shown to the Planning Director that the principal users of the path will be recreational, non-destination-oriented foot traffic, and that alternate paved routes are nearby and accessible.**

**6. The trail grade shall not exceed 12 percent except in areas of unavoidable topography, where the trail may be up to a 15 percent grade for short sections no longer than 50 feet. In any location where topography requires steeper trail grades than permitted by this section, the trail shall incorporate a short stair section to traverse the area of steep grades.**

**Applicant's Finding:** The applicant is proposing a 10 foot pedestrian access easement with asphalt path between lots 3 and 4 and lots 7 and 8 connecting Sunbreak to Crestview and between lots 9 and 10 connecting Crestview to the rear (north) of the property.

The requirements of this section have been satisfied.

**D. <u>Transit facilities</u>.**

**1. The applicant shall consult with Tri-Met and the City Engineer to determine the appropriate location of transit stops, bus pullouts, future bus routes, etc., contiguous to or within the development site. If transit service is planned to be provided within the next two years, then facilities such as pullouts shall be constructed per Tri-Met standards at the time of development. More elaborate facilities, like shelters, need only be built when service is existing or imminent. Additional rights-of-way may be required of developers to accommodate buses.**

**2. The applicant shall make all transit-related improvements in the right-of-way or in easements abutting the development site as deemed appropriate by the City Engineer.**

**3. Transit stops shall be served by striped and signed pedestrian crossings of the street within 150 feet of the transit stop where feasible. Illumination of the transit stop and crossing is required to enhance defensible space and safety. ODOT approval may be required.**

**4. Transit stops should include a shelter structure bench plus eight feet of sidewalk to accommodate transit users, non-transit-related pedestrian use, and wheelchair users. Tri-Met must approve the final configuration.**

**Applicant's Finding:** Transit facilities have not been identified by Tri-Met or the City Engineer adjacent to this property.

The requirements of this section have been satisfied.

**E. Lot grading. Grading of building sites shall conform to the following standards unless physical conditions demonstrate the propriety of other standards:**

**1. All cuts and fills shall comply with the excavation and grading provisions of the Uniform Building Code and the following:**

**a. Cut slopes shall not exceed one and one-half feet horizontally to one foot vertically (i.e., 67 percent grade).**

**b. Fill slopes shall not exceed two feet horizontally to one foot vertically (i.e., 50 percent grade). Please see the following illustration.*****

**2. The character of soil for fill and the characteristics of lot and parcels made usable by fill shall be suitable for the purpose intended.**

**3. If areas are to be graded (more than any four-foot cut or fill), compliance with CDC 85.170(C) is required.**

**4. The proposed grading shall be the minimum grading necessary to meet roadway standards, and to create appropriate building sites, considering maximum allowed driveway grades.**

**5. Where landslides have actually occurred, where the area is identified as a hazard site in the West Linn Comprehensive Plan Report, or where field investigation by the City Engineer confirms the existence of a severe landslide hazard, development shall be prohibited unless satisfactory evidence is additionally submitted by a registered geotechnical engineer which certifies that methods of rendering a known hazard site safe for construction are feasible for a given site. The City Engineer's field investigation shall include, but need not be limited to, the following elements:**

**a. Occurrences of geotropism.**

**b. Visible indicators of slump areas.**

**c. Existence of known and verified hazards.**

**d. Existence of unusually erosive soils.**

**e. Occurrences of unseasonably saturated soils.**

**The City Engineer shall determine whether the proposed methods or designs are adequate to prevent landslide or slope failure. The City Engineer may impose conditions consistent with the purpose of these ordinances and with standard engineering practices including limits on type and intensity of land use, which have been determined necessary to assure landslide or slope failure does not occur.**

**6. All cuts and fills shall conform to the Uniform Building Code.**

**7. On land with slopes in excess of 12 percent, cuts and fills shall be regulated as follows:**

**a. Toes of cuts and fills shall be set back from the boundaries of separate private ownerships at least three feet, plus one-fifth of the vertical height of the cut or fill. Where an exception is required from that requirement, slope easements shall be provided.**

**b. Cuts shall not remove the toe of any slope where a severe landslide or erosion hazard exists (as described in subsection (G)(5) of this section).**

**c. Any structural fill shall be designed by a registered engineer in a manner consistent with the intent of this code and standard engineering practices, and certified by that engineer that the fill was constructed as designed.**

**d. Retaining walls shall be constructed pursuant to Section 2308(b) of the Oregon State Structural Specialty Code.**

**e. Roads shall be the minimum width necessary to provide safe vehicle access, minimize cut and fill, and provide positive drainage control.**

**8. Land over 50 percent slope shall be developed only where density transfer is not feasible. The development will provide that:**

**a. At least 70 percent of the site will remain free of structures or impervious surfaces.**

**b. Emergency access can be provided.**

**c. Design and construction of the project will not cause erosion or land slippage.**

**d. Grading, stripping of vegetation, and changes in terrain are the minimum necessary to construct the development in accordance with subsection J of this section.**

**Applicant's Finding:** All grading on site will be done in conformance with these standards.

The requirements of this section have been satisfied.

**F. <u>Water</u>.**

**1. A plan for domestic water supply lines or related water service facilities shall be prepared consistent with the adopted Comprehensive Water System Plan, plan update, March 1987, and subsequent superseding revisions or updates.**

**2. Adequate location and sizing of the water lines.**

**3. Adequate looping system of water lines to enhance water quality.**

**4. For all non-single-family developments, there shall be a demonstration of adequate fire flow to serve the site.**

**5. A written statement, signed by the City Engineer, that water service can be made available to the site by the construction of on-site and off-site improvements and that such water service has sufficient volume and pressure to serve the proposed development's domestic, commercial, industrial, and fire flows.**

**Applicant's Finding:** The subject property is located in the Horton water pressure zone. The City Engineering Department's comments in the pre-application notes dated March 21, 2013 indicate that there is a surplus in supply capacity during normal conditions and that there is no storage volume deficit during normal conditions in the Horton pressure zone. The applicant will connect all lots to public water per the submitted public improvement plans. This plan is consistent with the adopted Comprehensive Water System Plan.

The requirements of this section have been satisfied.

**G. Sewer.**

**1. A plan prepared by a licensed engineer shall show how the proposal is consistent with the Sanitary Sewer Master Plan (July 1989). Agreement with that plan must demonstrate how the sanitary sewer proposal will be accomplished and how it is gravity-efficient. The sewer system must be in the correct basin and should allow for full gravity service.**

**2. Sanitary sewer information will include plan view of the sanitary sewer lines, including manhole locations and depth or invert elevations.**

**3. Sanitary sewer lines shall be located in the public right-of-way, particularly the street, unless the applicant can demonstrate why the alternative location is necessary and meets accepted engineering standards.**

**4. Sanitary sewer line should be at a depth that can facilitate connection with down-system properties in an efficient manner.**

**5. The sanitary sewer line should be designed to minimize the amount of lineal feet in the system.**

**6. The sanitary sewer line shall avoid disturbance of wetland and drainageways. In those cases where that is unavoidable, disturbance shall be mitigated pursuant to Chapter 32 CDC, Water Resource Area Protection, all trees replaced, and proper permits obtained. Dual sewer lines may be required so the drainageway is not disturbed.**

**7. Sanitary sewer shall be extended or stubbed out to the next developable subdivision or a point in the street that allows for reasonable connection with adjacent or nearby properties.**

**8. The sanitary sewer system shall be built pursuant to DEQ, City, and Tri-City Service District sewer standards. The design of the sewer system should be prepared by a licensed engineer, and the applicant must be able to demonstrate the ability to satisfy these submittal requirements or standards at the pre-construction phase.**

**9. A written statement, signed by the City Engineer, that sanitary sewers with sufficient capacity to serve the proposed development and that adequate sewage treatment plant capacity is available to the City to serve the proposed development.**

**Applicant's Finding:** The applicant will connect all lots to public sanitary sewer per the submitted public improvement plans. The proposed sanitary sewer system is consistent with the Sanitary Sewer Master Plan, is in the correct basin and allows for full gravity service.

The requirements of this section have been satisfied.

**H. Storm**

**1. A stormwater quality and detention plan shall be submitted which complies with the submittal criteria and approval standards contained within Chapter 33 CDC. It shall include profiles of proposed drainageways with reference to the adopted Storm Drainage Master Plan.**

**2. Storm treatment and detention facilities shall be sized to accommodate a 25-year storm incident. A registered civil engineer shall prepare a plan and statement which shall be**

**supported by factual data that clearly shows that there will be no adverse off-site impacts from increased intensity of runoff downstream or constriction causing ponding upstream. The plan and statement shall identify all on- or off-site impacts and measures to mitigate those impacts. The plan and statement shall, at a minimum, determine the off-site impacts from a 25-year storm.**

**3. Plans shall demonstrate how storm drainage will be collected from all impervious surfaces including roof drains. Storm drainage connections shall be provided to each dwelling unit/lot. The location, size, and type of material selected for the system shall correlate with the 25-year storm incident.**

**4. Treatment of storm runoff shall meet municipal code standards.**

**Applicant's Finding:** The proposed stormwater treatment and detention is designed to meet city standards, as detailed in the submitted stormwater report.

The requirements of this section have been satisfied.

**I. Utility easements. Subdivisions and partitions shall establish utility easements to accommodate the required service providers as determined by the City Engineer. The developer of the subdivision shall make accommodation for cable television wire in all utility trenches and easements so that cable can fully serve the subdivision.**

**Applicant's Finding:** The applicant will establish utility easements as determined by the City Engineer and shown on the preliminary plat.

The requirements of this section have been satisfied.

**J. Supplemental provisions.**

**1. Wetland and natural drainageways. Wetlands and natural drainageways shall be protected as required by Chapter 32 CDC, Water Resource Area Protection. Utilities may be routed through the protected corridor as a last resort, but impact mitigation is required.**

**Applicant's Finding:** The proposed subdivision does not impact any wetlands or natural drainageways.

The requirements of this section have been satisfied.

**2. Willamette and Tualatin Greenways. The approval authority may require the dedication to the City or setting aside of greenways which will be open or accessible to the public. Except for trails or paths, such greenways will usually be left in a natural condition without improvements. Refer to Chapter 28 CDC for further information on the Willamette and Tualatin River Greenways.**

**Applicant's Finding:** No greenways have been identified for dedication on this property. This property is not adjacent to the Willamette or Tualatin River and, therefore, a river greenway is not feasible on this site.

The requirements of this section have been satisfied.

**3. Street trees. Street trees are required as identified in the appropriate section of the municipal code and Chapter 54 CDC.**

**Applicant's Finding:** Street trees will be installed as part of the public improvements with the development of this subdivision.

The requirements of this section have been satisfied.

**4. Lighting. To reduce ambient light and glare, high or low pressure sodium light bulbs shall be required for all subdivision street or alley lights. The light shall be shielded so that the light is directed downwards rather than omni-directional.**

**Applicant's Finding:** Any street light installation with the subdivision will utilize high or low pressure sodium light bulbs.

The requirements of this section have been satisfied.

**5. Dedications and exactions. The City may require an applicant to dedicate land and/or construct a public improvement that provides a benefit to property or persons outside the property that is the subject of the application when the exaction is roughly proportional. No exaction shall be imposed unless supported by a determination that the exaction is roughly proportional to the impact of development.**

**Applicant's Finding:** The applicant is proposing right-of-way dedication and improvements that necessary to connect and complete two major gaps within the City's road network at Crestview and Sunbreak. Along the southwestern side of the property, the Applicant has proposed to dedicate a 24' section of Right-of-way. The adjacent property has development potential and their access will be limited to the alignment of the northbound extension of Tannler. This dedication is proportional to both the Applicant and the neighbor as both developments would benefit from the eventual construction of the roadway. Additional dedication and/or public improvements would exceed rough proportionality of this development.

The requirements of this section have been satisfied.

**6. Underground utilities. All utilities, such as electrical, telephone, and television cable, that may at times be above ground or overhead shall be buried underground in the case of new development. The exception would be in those cases where the area is substantially built out and adjacent properties have above-ground utilities and where the development site's frontage is under 200 feet and the site is less than one acre. High voltage transmission lines, as classified by Portland General Electric or electric service provider, would also be exempted. Where adjacent future development is expected or imminent, conduits may be required at**

**the direction of the City Engineer. All services shall be underground with the exception of standard above-grade equipment such as some meters, etc.**

**Applicant's Finding:** All utilities will be installed in compliance with this section.

The requirements of this section have been satisfied.

**7. Density requirement. Density shall occur at 70 percent or more of the maximum density allowed by the underlying zoning. These provisions would not apply when density is transferred from Type I and II lands as defined in CDC 02.030. Development of Type I or II lands are exempt from these provisions. Land divisions of three lots or less would also be exempt.**

**Applicant's Finding:** The R-7 zone permits a maximum density of 6.2 dwelling units per net acre. Net acre is defined as "The total gross acres less the public right-of-way and other acreage deductions, as applicable". The net acreage of this site after removal of dedicated right-of way is 2.26 acres. At 6.2 dwelling units per net acre, the maximum number of dwelling units on this site is 14. The proposed 11 dwelling units would be 79 percent of the maximum density, exceeding the 70 percent minimum.

The requirements of this section have been satisfied.

**8. Mix requirement. The "mix" rule means that developers shall have no more than 15 percent of the R-2.1 and R-3 development as single-family residential. The intent is that the majority of the site shall be developed as medium high density multi-family housing.**

**Applicant's Finding:** This property is zoned R-7 and, therefore, the use of the parcel as an entirely residential development is permitted.

The requirements of this section have been satisfied.

**9. Heritage trees/significant tree and tree cluster protection. All heritage trees, as defined in the Municipal Code, shall be saved. Diseased heritage trees, as determined by the City Arborist, may be removed at his/her direction. All non-heritage trees and clusters of trees (three or more trees with overlapping dripline; however, native oaks need not have an overlapping dripline) that are considered significant by virtue of their size, type, location, health, or numbers shall be saved pursuant to CDC 55.100(B)(2). Trees are defined per the municipal code as having a trunk six inches in diameter or 19 inches in circumference at a point five feet above the mean ground level at the base of the trunk.**

**Applicant's Finding:** No heritage trees have been identified on this site.

The requirements of this section have been satisfied.

**10. <u>Annexation and street lights</u>. Developer and/or homeowners association shall, as a condition of approval, pay for all expenses related to street light energy and maintenance costs until annexed into the City, and state that: "This approval is contingent on receipt of a final order by the Portland Boundary Commission, approving annexation of the subject property." This means, in effect, that any permits, public improvement agreements, final plats, and certificates of occupancy may not be issued until a final order is received. (Ord. 1377, 1995; Ord. 1382, 1995; Ord. 1401, 1997; Ord. 1403, 1997; Ord. 1408, 1998; Ord. 1425, 1998; Ord. 1442, 1999; Ord. 1463, 2000; Ord. 1526, 2005; Ord. 1544, 2007; Ord. 1584, 2008; Ord. 1590 § 1, 2009; Ord. 1604 § 64, 2011)**

**Applicant's Finding:** This property is within the City limits.

The requirements of this section have been satisfied.

**DIVISION 7. DISCRETIONARY PROVISIONS**

**CHAPTER 75. VARIANCE**

**75.020 CLASSIFICATION OF VARIANCES**

**B.2.C A Class II variance will involve a significant change from the zoning requirements and may create adverse impacts on adjacent property or occupants, and includes a variance to lot depth by more than 10 feet.**

**Applicant's Finding:** Lots 3, 4, 7, 10 and 11 all have lot depths (the average horizontal distance between the front lot line and rear lot line) that exceed 2.5x lot width (the horizontal distance between side lot lines, measured at the building line) by more than 10 feet. Approval of these lots requires a Class II variance to the lot depth standard.

The requirements of this section have been satisfied.

**75.060 APPROVAL CRITERIA**

**The appropriate approval authority shall approve a variance request if all the following criteria are met and corresponding findings of fact prepared. The approval authority may impose appropriate conditions to ensure compliance with the criteria. The approval authority shall deny the variance if any of the criteria are not met.**

**A. Exceptional or extraordinary circumstances apply to the property which do not apply generally to other properties in the same zone or vicinity, and result from lot size or shape, legally existing prior to the date of this code, topography, or other circumstances over which the applicant has no control.**

**Applicant's Finding:** This property is unusually long and thin with a depth of 787 feet and a width of 133 feet. This lot shape existed legally prior to the date of the development code. In addition, Crestview Drive and Sunbreak Lane dead-end into the subject property, limiting the options for lot layout and lot depth. These are both exceptional and extraordinary circumstances that apply to this property which do not apply generally to other properties

in the same zone or vicinity.

The requirements of this section have been satisfied.

**B. The variance is necessary for the preservation of a property right of the applicant, which is substantially the same as a right possessed by owners of other property in the same zone or vicinity.**

**Applicant's Finding:** The lot depth variance is necessary for the applicant to subdivide the property in a logical and efficient manner, a right all owners of property greater than 14,000 square feet in the R-7 zone possess.

The requirements of this section have been satisfied.

**C. The authorization of the variance will not be materially detrimental to the purposes and standards of this code, will not be inconsistent with all other regulatory requirements, and will not conflict with the goals and policies of the West Linn Comprehensive Plan.**

**Applicant's Finding:** Authorization of the variance will result in residential development in the R-7 zone, not materially detrimental to the purposes and standards of the code. Development of this property with the lot depth variance is not inconsistent with all other regulatory requirements, and will not conflict with the goals and policies of the West Linn Comprehensive Plan.

The requirements of this section have been satisfied.

**D. The variance request is the minimum variance which would alleviate the exceptional and extraordinary circumstance.**

**Applicant's Finding:** Due to the layout of the existing streets, Crestview Drive and Sunbreak Lane, this variance request is the minimum variance which would alleviate the exceptional and extraordinary circumstance.

The requirements of this section have been satisfied.

**E. The exceptional and extraordinary circumstance does not arise from the violation of this code.**

**Applicant's Finding:** The exceptional and extraordinary circumstance arises from the existing lot size and street layout, not from a violation of this code. There are no code violations associated with this property.

The requirements of this section have been satisfied.

**F. The variance will not impose physical limitations on other properties or uses in the area, and will not impose physical limitations on future use of neighboring vacant or underdeveloped properties as authorized by the underlying zoning classification. (Ord. 1442, 1999)**

**Applicant's Finding:** The lot depth variance will not impose physical limitations on other properties or uses in the area. Approval of the lot depth variance does not impose any physical limitations on future use of neighboring vacant or underdeveloped properties as authorized by the underlying zoning classification. In fact, development of this property with the lot depth variance will extend Sunbreak Lane to the west, fostering the ability of the neighboring property to develop in the future. All other adjacent properties are developed.

The requirements of this section have been satisfied.

## DIVISION 3 SUPPLEMENTAL PROVISIONS AND EXCEPTIONS

## CHAPTER 33. STORMWATER QUALITY AND DETENTION

### 33.040 APPROVAL CRITERIA

**The Planning Director and City Engineer shall make written findings with respect to the following criteria when approving, approving with conditions, or denying applications for stormwater detention permits and stormwater quality permits.**

**A. Stormwater quality facilities shall meet non-point source pollution control standards required by the Public Works Design Standards.**

**Applicant's Finding:** The proposed stormwater design meets non-point source pollution control standards, as shown in the stormwater report.

The requirements of this section have been satisfied.

**B. Design of stormwater detention and pollution reduction facilities and related detention and water quality calculations shall meet Public Works Design Standards and shall be prepared by a professional engineer licensed to practice in the State of Oregon.**

**Applicant's Finding:** The stormwater detention and pollution reduction facilities and related calculations were prepared by a professional engineer licensed to practice in the state of Oregon.

The requirements of this section have been satisfied.

**C. Soil stabilization techniques, erosion control, and adequate improvements to accommodate the intended drainage through the drainage basin shall be used. Storm drainage shall not be diverted from its natural watercourse unless no feasible alternatives exist. Interbasin transfers of storm drainage will not be permitted.**

**Applicant's Finding:** Soil stabilization techniques, erosion control and adequate improvements to accommodate drainage are detailed in the stormwater report and meet all standards.

The requirements of this section have been satisfied.

**D. Stormwater detention and treatment facilities shall encroach no further than 25 feet into the outside boundary of a water quality resource area. The area of encroachment must be replaced by adding an equal area to the water quality resource area on the subject property.**

**Applicant's Finding:** No stormwater detention or treatment facilities are proposed near or encroaching into the boundary of a water quality resource area.

The requirements of this section have been satisfied.

**E. Stormwater detention and treatment facilities shall be vegetated with plants from the Metro's Native Plant List as described in CDC 33.070.**

**Applicant's Finding:** All stormwater detention and treatment facilities will be vegetated with plants from Metro's Native Plant List.

The requirements of this section have been satisfied.

**F. Projects must either stockpile existing topsoil for reuse on the site or import topsoil, rather than amend subsoils. Soil amendments are allowed only where the applicant can demonstrate they are the only practical alternative for enabling the soil to support healthy plantings, promoting better stormwater treatment, or improving soil infiltration capacity (where appropriate).**

**Applicant's Finding:** No soil amendments are proposed. Topsoil will be stockpiled and reused on site following bulk earthworks.

The requirements of this section have been satisfied.

**G. Interim erosion control measures, such as mulching, shall be placed immediately upon completion of grading of the facilities. (Ord. 1463, 2000)**

**Applicant's Finding:** Interim erosion control measures will be used as necessary.

The requirements of this section have been satisfied.

**33.060 MAINTENANCE AND ACCESS REQUIREMENTS**

Maintenance and access requirements shall meet Public Works Design Standards. (Ord. 1463, 2000)

**Applicant's Finding:** The stormwater report includes maintenance and access pursuant to Public Works Design Standards.

The requirements of this section have been satisfied.

**33.070 PLANT MATERIAL FOR WATER QUALITY FACILITIES**

**Metro's Native Plant List is incorporated by reference as a part of this chapter. The applicant shall submit a detailed planting plan using species from Metro's Native Plant List. The intent of this plan is to establish native vegetation to protect against erosion and sediment infiltration. A mix of low maintenance trees, shrubs, and groundcover is preferred with an even distribution.**

**A. The planting plan shall be prepared by a professional landscape architect if the development site contains more than 5,000 square feet of impervious area. The planting plan shall include a table listing the scientific names, size, and quantity of plants.**

**B. The plan shall include plant location, species, size, and quantity for stormwater detention and treatment facilities. Evergreen trees shall have a minimum height of four feet and deciduous trees shall be at least one-inch caliper in size at the time of planting. Shrubs shall be a minimum of one gallon in size at the time of planting. Spaces shall be filled at mature growth but not so that overplanting occurs and overcrowding results. Temporary irrigation systems or other means of ensuring establishment of the plantings must be specified.**

**C. Plantings shall be designed to minimize or eliminate the need for herbicides, fertilizers, pesticides, or soil amendments at any time before, during, or after construction, or on a long-term basis. Plantings shall be designed to minimize or eliminate the need for frequent mowing and irrigation.**

**D. The applicant is responsible for implementing the planting plan during the next fall or spring planting season following permit approval. Prior to planting, noxious vegetation shall be removed. All soil areas must be covered with specified plants and mulch to prevent erosion.**

**E. Plantings shall be incorporated into a public improvement guarantee agreement, which includes a maintenance bond as required by CDC 91.010(C). The maintenance bond is required for any project involving stormwater quality and detention facilities. (Ord. 1463, 2000)**

**Applicant's Finding:** The planting plan for the water quality tract is included within the stormwater report and meets the requirements of this section.

The requirements of this section have been satisfied.

**CHAPTER 42. CLEAR VISION AREAS**

**42.020 CLEAR VISION AREAS REQUIRED, USES PROHIBITED**

**A. A clear vision area shall be maintained on the corners of all property adjacent to an intersection as provided by CDC 42.040 and 42.050.**

**B. A clear vision area shall contain no planting, fence, wall, structure or temporary or permanent obstruction (except for an occasional utility pole or tree) exceeding three feet in height, measured from the top of the curb, or, where no curb exists, from the street centerline grade, except that trees exceeding this height may be located in this area, provided all branches below eight feet are removed. (Ord. 1192, 1987)**

**42.030 EXCEPTIONS**

**The following described area in Willamette shall be exempt from the provisions of this chapter. The parcels of land zoned General Commercial which abut Willamette Falls Drive, located between 10th and 16th Streets. Beginning at the intersection of Willamette Falls Drive and 11th Street on 7th Avenue to 16th Street; on 16th Street to 9th Avenue; on 9th Avenue to 14th Street to the Tualatin River; following the Tualatin River and Willamette River to 12th Street; on 12th Street to 4th Avenue; on 4th Avenue to 11th Street; on 11th Street to Willamette Falls Drive. This described area does not include the northerly side of Willamette Falls Drive.**

**42.040 COMPUTATION; STREET AND ACCESSWAY 24 FEET OR MORE IN WIDTH**

**The clear vision area for all street intersections and street and accessway intersections (accessways having 24 feet or more in width) shall be that triangular area formed by the right-of-way or property**

**lines along such lots and a straight line joining the right-of-way or property line at points which are 30 feet distant from the intersection of the right-of-way line and measured along such lines.**

**42.050 COMPUTATION; ACCESSWAY LESS THAN 24 FEET IN WIDTH**

**The clear vision area for street and accessway intersections (accessways having less than 24 feet in width) shall be that triangular area whose base extends 30 feet along the street right-of-way line in both directions from the centerline of the accessway at the front setback line of a single-family and two-family residence, and 30 feet back from the property line on all other types of uses.**

**Applicant's Finding:** All clear vision areas at the intersections of public streets with driveways or other public streets on the subject site will be free of plantings, fences, walls, structures and obstructions, meeting the requirements for clear vision areas.

The requirements of this section have been satisfied.

**CHAPTER 44. FENCES**

**44.020 SIGHT-OBSCURING FENCE; SETBACK AND HEIGHT LIMITATIONS**

**A. A sight- or non-sight-obscuring fence may be located on the property line or in a yard setback area subject to the following:**

**1. The fence is located within:**

**a. A required front yard area, and it does not exceed three feet, except pillars and driveway entry features subject to the requirements of Chapter 42 CDC, Clear Vision Areas, and approval by the Planning Director;**

**b. A required side yard which abuts a street and it is within that portion of the side yard which is also part of the front yard setback area and it does not exceed three feet;**

**c. A required side yard which abuts a street and it is within that portion of the side yard which is not also a portion of the front yard setback area and it does not exceed six feet provided the provisions of Chapter 42 CDC are met;**

**d. A required rear yard which abuts a street and it does not exceed six feet; or**

**e. A required side yard area which does not abut a street or a rear yard and it does not exceed six feet.**

**Applicant's Finding:** New fences are not indicated on the proposed plans because the exact locations have yet to be determined. All fences constructed as part of this subdivision will meet the requirements of these standards. The existing 4'wire fence will be removed as part of site construction.

The requirements of this section have been satisfied.

**B. Fence or wall on a retaining wall. When a fence is built on a retaining wall or an artificial berm, the following standards shall apply:**

**1. When the retaining wall or artificial berm is 30 inches or less in height from finished grade, the maximum fence or wall height on top of the retaining wall shall be six feet.**

**2. When the retaining wall or earth berm is greater than 30 inches in height, the combined height of the retaining wall and fence or wall from finished grade shall not exceed eight and one-half feet.**

**3. Fences or walls located on top of retaining walls or earth berms in excess of 30 inches above finished grade may exceed the total allowed combined height of eight and one-half feet; provided, that the fence or wall is located a minimum of two feet from the retaining wall and the fence or wall height shall not exceed six feet.**

**Applicant's Finding:** Any fences built on retaining walls will meet these standards.

The requirements of this section have been satisfied.

**44.030 SCREENING OF OUTDOOR STORAGE**

**A. All service, repair, and storage activities carried on in connection with any commercial, business or industrial activity and not conducted within an enclosed building shall be screened from view of all adjacent properties and adjacent streets by a sight-obscuring fence.**

**B. The sight-obscuring fence shall be in accordance with provisions of Chapter 42 CDC, Clear Vision Areas, and shall be subject to the provisions of Chapter 55 CDC, Design Review.**

**Applicant's Finding:** This site is residential and no service, repair or storage activities in connection with commercial, business or industry activities are proposed.

The requirements of this section have been satisfied.

**44.040 LANDSCAPING**

**Landscaping which is located on the fence line and which impairs sight vision shall not be located within the clear vision area as provided in Chapter 42 CDC.**

**44.050 STANDARDS FOR CONSTRUCTION**

**A. The structural side of the fence shall face the owner's property; and**

**B. The sides of the fence abutting adjoining properties and the street shall be maintained. (Ord. 1291, 1990**

**Applicant's Finding:** Any fences built will meet these standards.

The requirements of this section have been satisfied.

**CHAPTER 54. LANDSCAPING**

**54.020 APPROVAL CRITERIA**

**A. Every development proposal requires inventorying existing site conditions which include trees and landscaping. In designing the new project, every reasonable attempt should be made to preserve and protect existing trees and to incorporate them into the new landscape plan. Similarly, significant**

**landscaping (e.g., bushes, shrubs) should be integrated. The rationale is that saving a 30-foot-tall mature tree helps maintain the continuity of the site, they are qualitatively superior to two or three two-inch caliper street trees, they provide immediate micro-climate benefits (e.g., shade), they soften views of the street, and they can increase the attractiveness, marketability, and value of the development.**

**B. To encourage tree preservation, the parking requirement may be reduced by one space for every significant tree that is preserved in the parking lot area for a maximum reduction of 10 percent of the required parking. The City Parks Supervisor or Arborist shall determine the significance of the tree and/or landscaping to determine eligibility for these reductions.**

**C. Developers must also comply with the municipal code chapter on tree protection.**

**D. Heritage trees. Heritage trees are trees which, because of their age, type, notability, or historical association, are of special importance. Heritage trees are trees designated by the City Council following review of a nomination. A heritage tree may not be removed without a public hearing at least 30 days prior to the proposed date of removal. Development proposals involving land with heritage tree(s) shall be required to protect and save the tree(s). Further discussion of heritage trees is found in the municipal code.**

**Applicant's Finding:** This site is largely open and grassy with very few trees. There are no heritage trees identified on this site. There are 2 oak trees, and 3 birch trees located in the alignment of the extension of Crestview Drive that will need to be removed. There are 4 spruce trees and 1 pine tree located in the alignment of the extension of Sunbreak Lane that will need to be removed. The largest tree on site, a 30"fir in the southwest corner of the site, will be considered for preservation but will only be possibly retained with a modification to sidewalk City's construction standards.

The requirements of this section have been satisfied.

**F. Landscaping (trees) in new subdivision.**

**1. Street trees shall be planted by the City within the planting strips (minimum six-foot width) of any new subdivision in conformity with the street tree plan for the area, and in accordance with the planting specifications of the Parks and Recreation Department. All trees shall be planted during the first planting season after occupancy. In selecting types of trees, the City Arborist may determine the appropriateness of the trees to local conditions and whether that tree has been overplanted, and whether alternate species should be selected. Also see subsection (C) of this section.**

**2. The cost of street trees shall be paid by the developer of the subdivision.**

**3. The fee per street tree, as established by the City, shall be based upon the following:**

**a. The cost of the tree;**

**b. Labor and equipment for original placement;**

**c. Regular maintenance necessary for tree establishment during the initial two-year period following the City schedule of maintenance; and**

**d. A two-year replacement warranty based on the City's established failure rate. (Ord. 1408, 1998; Ord. 1463, 2000)**

**Applicant's Finding:** The applicant will pay for the installation of street trees by the City and maintain the trees for the two-year establishment period.

The requirements of this section have been satisfied.

**54.030 PLANTING STRIPS FOR MODIFIED AND NEW STREETS**

**All proposed changes in width in a public street right-of-way or any proposed street improvement shall, where feasible, include allowances for planting strips. Plans and specifications for planting such areas shall be integrated into the general plan of street improvements. This chapter requires any multi-family, commercial, or public facility which causes change in public right-of-way or street improvement to comply with the street tree planting plan and standards.**

**Applicant's Finding:** 6-foot-wide planting strips will be installed between the sidewalk and the asphalt within all new street right-of-way and along Bland Circle.

The requirements of this section have been satisfied.

**54.040 INSTALLATION**

**A. All landscaping shall be installed according to accepted planting procedures.**

**B. The soil and plant materials shall be of good quality.**

**C. Landscaping shall be installed in accordance with the provisions of this code.**

**D. Certificates of occupancy shall not be issued unless the landscaping requirements have been met or other arrangements have been made and approved by the City such as the posting of a bond.**

**Applicant's Finding:** All landscaping installation will meet the requirements of this section.

The requirements of this section have been satisfied.

**54.050 PROTECTION OF STREET TREES**

**Street trees may not be topped or trimmed unless approval is granted by the Parks Supervisor or, in emergency cases, when a tree imminently threatens power lines.**

**Applicant's Finding:** There are no existing street trees adjacent to this property.

The requirements of this section have been satisfied.

**54.060 MAINTENANCE**

**A. The owner, tenant and their agent, if any, shall be jointly and severally responsible for the maintenance of all landscaping which shall be maintained in good condition so as to present a healthy, neat, and orderly appearance and shall be kept free from refuse and debris.**

**B. All plant growth in interior landscaped areas shall be controlled by pruning, trimming, or otherwise so that:**

1. **It will not interfere with the maintenance or repair of any public utility;**
2. **It will not restrict pedestrian or vehicular access; and**
3. **It will not constitute a traffic hazard because of reduced visibility.**

**Applicant's Finding:** The owners of this property, including future homeowners, will be responsible for maintenance of landscaping.

The requirements of this section have been satisfied.

**54.070 SPECIFICATION SUMMARY**

*****25% of residential/multi-family site must be landscaped.**

**Applicant's Finding:** A minimum of 25% of this site will be landscaped as part of the yards of future homes.

The requirements of this section have been satisfied.

**DIVISION 4. DESIGN REVIEW**

**CHAPTER 55. DESIGN REVIEW**

**55.100 APPROVAL STANDARDS - CLASS II DESIGN REVIEW**

**B. Relationship to the natural and physical environment.**

**1. The buildings and other site elements shall be designed and located so that all heritage trees, as defined in the municipal code, shall be saved. Diseased heritage trees, as determined by the City Arborist, may be removed at his/her direction.**

**Applicant's Finding:** No heritage trees were identified on this site.

The requirements of this section have been satisfied.

**2. All heritage trees, as defined in the municipal code, all trees and clusters of trees ("cluster" is defined as three or more trees with overlapping driplines; however, native oaks need not have an overlapping dripline) that are considered significant by the City Arborist, either individually or in**

**consultation with certified arborists or similarly qualified professionals, based on accepted arboricultural standards including consideration of their size, type, location, health, long term survivability, and/or numbers, shall be protected pursuant to the criteria of subsections (B)(2)(a) through (f) of this section. In cases where there is a difference of opinion on the significance of a tree or tree cluster, the City Arborist's findings shall prevail. It is important to acknowledge that all trees are not significant and, further, that this code section will not necessarily protect all trees deemed significant.**

**a. Non-residential and residential projects on Type I and II lands shall protect all heritage trees and all significant trees and tree clusters by either the dedication of these areas or establishing tree conservation easements. Development of Type I and II lands shall require the careful layout of streets, driveways, building pads, lots, and utilities to avoid heritage trees and significant trees and tree clusters, and other natural resources pursuant to this code. The method for delineating the protected trees or tree clusters ("dripline + 10 feet") is explained in subsection (B)(2)(b) of this section. Exemptions of subsections (B)(2)(c), (e), and (f) of this section shall apply.**

**b. Non-residential and residential projects on non-Type I and II lands shall set aside up to 20 percent of the area to protect trees and tree clusters that are determined to be significant, plus any heritage trees. Therefore, in the event that the City Arborist determines that a significant tree cluster exists at a development site, then up to 20 percent of the non-Type I and II lands shall be devoted to the protection of those trees, either by dedication or easement. The exact percentage is determined by establishing the driplines of the trees or tree clusters that are to be protected. In order to protect the roots which typically extend further, an additional 10-foot measurement beyond the dripline shall be added. The square footage of the area inside this "dripline plus 10 feet" measurement shall be the basis for calculating the percentage (see figure below). The City Arborist will identify which tree(s) are to be protected. Development of non-Type I and II lands shall also require the careful layout of streets, driveways, building pads, lots, and utilities to avoid significant trees, tree clusters, heritage trees, and other natural resources pursuant to this code. Exemptions of subsections (B)(2)(c), (e), and (f) of this section shall apply. Please note that in the event that more than 20 percent of the non-Type I and II lands comprise significant trees or tree clusters, the developer shall not be required to save the excess trees, but is encouraged to do so.**

**c. Where stubouts of streets occur on abutting properties, and the extension of those streets will mean the loss of significant trees, tree clusters, or heritage trees, it is understood that tree loss may be inevitable. In these cases, the objective shall be to minimize tree loss. These provisions shall also apply in those cases where access, per construction code standards, to a parcel is blocked by a row or screen of significant trees or tree clusters.**

**d. For both non-residential and residential development, the layout shall achieve at least 70 percent of maximum density for the developable net area. The developable net area excludes all Type I and II lands and up to 20 percent of the remainder of the site for the purpose of protection of stands or clusters of trees as defined in subsection (B)(2) of this section.**

**e. For arterial and collector street projects, including Oregon Department of Transportation street improvements, the roads and graded areas shall avoid tree clusters where possible. Significant trees, tree clusters, and heritage tree loss may occur, however, but shall be minimized.**

**f. If the protection of significant tree(s) or tree clusters is to occur in an area of grading that is necessary for the development of street grades, per City construction codes, which will result in an**

**adjustment in the grade of over or under two feet, which will then threaten the health of the tree(s), the applicant will submit evidence to the Planning Director that all reasonable alternative grading plans have been considered and cannot work. The applicant will then submit a mitigation plan to the City Arborist to compensate for the removal of the tree(s) on an "inch by inch" basis (e.g., a 48-inch Douglas fir could be replaced by 12 trees, each four-inch). The mix of tree sizes and types shall be approved by the City Arborist.**

**Applicant's Finding:** The vast majority of existing significant trees on the site fall within the areas which are intended to allow for the connections of Crestview and Sunbreak. As such, almost none of the existing trees on the property can be retained.

Due to the Applicant's engineering design, it has been determined that a cluster of oak trees in the northwest corner of the site, along the proposed connection of Crestview, may be able to be maintained through the installation of a retaining wall. The Applicant has proposed to install the retaining wall approximately 10 feet away from the trunk of the tree cluster. This retaining wall will be located within the dripline plus ten area of the tree however, this proposal is the maximum amount of space available to preserve the tree given the significant grading efforts necessary to connect the two sections of Crestview Drive. The Applicant has proposed to create a tree preservation easement for the tree cluster that will be retained however, rather than using the City's drip line plus ten methodology for the creation of the easement, the Applicant has proposed to use the retaining wall as the edge of the easement.

As the removal of the other significant trees on site is being completed to allow for road extensions, the applicant has proposed to mitigate through plantings. Three significant trees with caliper measurements totaling 78 inches are going to be removed from the site. To mitigate for this removal, the Applicant has proposed to plant a total of 39 trees with caliper sizes of at least two inches. The result will be an inch for inch mitigation.

The requirements of this section have been satisfied.

## CHAPTER 92. REQUIRED IMPROVEMENTS

### 92.010 PUBLIC IMPROVEMENTS FOR ALL DEVELOPMENT

**The following improvements shall be installed at the expense of the developer and meet all City codes and standards:**

**A. <u>Streets within subdivisions</u>.**

**1. All streets within a subdivision, including alleys, shall be graded for the full right-of-way width and improved to the City's permanent improvement standards and specifications which include sidewalks and bicycle lanes, unless the decision-making authority makes the following findings:**

**a. The right-of-way cannot be reasonably improved in a manner consistent with City road standards or City standards for the protection of wetlands and natural drainageways.**

**b. The right-of-way does not provide a link in a continuous pattern of connected local streets, or, if it does provide such a link, that an alternative street link already exists or the applicant has proposed an alternative street which provides the necessary connectivity, or the applicant has proven that there is no feasible location on the property for an alternative street providing the link.**

**2. When the decision-making authority makes these findings, the decision-making authority may impose any of the following conditions of approval:**

**a. A condition that the applicant initiate vacation proceedings for all or part of the right-of-way.**

**b. A condition that the applicant build a trail, bicycle path, or other appropriate way.**

**If the applicant initiates vacation proceedings pursuant to subsection (A)(2)(a) of this section, and the right-of-way cannot be vacated because of opposition from adjacent property owners, the City Council shall consider and decide whether to process a City-initiated street vacation pursuant to Chapter 271 ORS.**

**Construction staging area shall be established and approved by the City Engineer. Clearing, grubbing, and grading for a development shall be confined to areas that have been granted approval in the land use approval process only. Clearing, grubbing, and grading outside of land use approved areas can only be approved through a land use approval modification and/or an approved Building Department grading permit for survey purposes. Catch basins shall be installed and connected to pipe lines leading to storm sewers or drainageways.**

**B. Extension of streets to subdivisions. The extension of subdivision streets to the intercepting paving line of existing streets with which subdivision streets intersect shall be graded for the full right-of-way width and improved to a minimum street structural section and width of 24 feet.**

**C. Local and minor collector streets within the rights-of-way abutting a subdivision shall be graded for the full right-of-way width and approved to the City's permanent improvement standards and specifications. The City Engineer shall review the need for street improvements and shall specify whether full street or partial street improvements shall be required. The City Engineer shall also specify the extent of storm drainage improvements required. The City Engineer shall be guided by the purpose of the City's systems development charge program in determining the extent of improvements which are the responsibility of the subdivider.**

**D. Monuments. Upon completion of the first pavement lift of all street improvements, monuments shall be installed and/or reestablished at every street intersection and all points of curvature and points of tangency of street centerlines with an iron survey control rod. Elevation benchmarks shall be established at each street intersection monument with a cap (in a monument box) with elevations to a U.S. Geological Survey datum that exceeds a distance of 800 feet from an existing benchmark.**

**E. Surface drainage and storm sewer system. A registered civil engineer shall prepare a plan and statement which shall be supported by factual data that clearly shows that there will be no adverse impacts from increased intensity of runoff off site of a 100-year storm, or the plan and statement shall identify all off-site impacts and measures to mitigate those impacts commensurate to the particular land use application. Mitigation measures shall maintain pre-existing levels and meet buildout volumes, and meet planning and engineering requirements.**

**F. Sanitary sewers. Sanitary sewers shall be installed to City standards to serve the subdivision and to connect the subdivision to existing mains.**

**1. If the area outside the subdivision to be directly served by the sewer line has reached a state of development to justify sewer installation at the time, the Planning Commission may**

**recommend to the City Council construction as an assessment project with such arrangement with the subdivider as is desirable to assure financing his share of the construction.**

**2. If the installation is not made as an assessment project, the City may reimburse the subdivider an amount estimated to be a proportionate share of the cost for each connection made to the sewer by property owners outside of the subdivision for a period of 10 years from the time of installation of the sewers. The actual amount shall be determined by the City Administrator considering current construction costs.**

**G. Water system. Water lines with valves and fire hydrants providing service to each building site in the subdivision and connecting the subdivision to City mains shall be installed. Prior to starting building construction, the design shall take into account provisions for extension beyond the subdivision and to adequately grid the City system. Hydrant spacing is to be based on accessible area served according to the City Engineer's recommendations and City standards. If required water mains will directly serve property outside the subdivision, the City may reimburse the developer an amount estimated to be the proportionate share of the cost for each connection made to the water mains by property owners outside the subdivision for a period of 10 years from the time of installation of the mains. If oversizing of water mains is required to areas outside the subdivision as a general improvement, but to which no new connections can be identified, the City may reimburse the developer that proportionate share of the cost for oversizing. The actual amount and reimbursement method shall be as determined by the City Administrator considering current or actual construction costs.**

**H. Sidewalks.**

**1. Sidewalks shall be installed on both sides of a public street and in any special pedestrian way within the subdivision, except that in the case of primary or secondary arterials, or special type industrial districts, or special site conditions, the Planning Commission may approve a subdivision without sidewalks if alternate pedestrian routes are available.**

**In the case of the double-frontage lots, provision of sidewalks along the frontage not used for access shall be the responsibility of the developer. Providing front and side yard sidewalks shall be the responsibility of the land owner at the time a request for a building permit is received. Additionally, deed restrictions and CC&Rs shall reflect that sidewalks are to be installed prior to occupancy and it is the responsibility of the lot or homeowner to provide the sidewalk, except as required above for double-frontage lots.**

**2. On local streets serving only single-family dwellings, sidewalks may be constructed during home construction, but a letter of credit shall be required from the developer to ensure construction of all missing sidewalk segments within four years of final plat approval pursuant to CDC 91.010(A)(2).**

**3. The sidewalks shall measure at least six feet in width and be separated from the curb by a six-foot minimum width planter strip. Reductions in widths to preserve trees or other topographic features, inadequate right-of-way, or constraints, may be permitted if approved by the City Engineer in consultation with the Planning Director.**

**4. Sidewalks should be buffered from the roadway on high volume arterials or collectors by landscape strip or berm of three and one-half-foot minimum width.**

**5. The City Engineer may allow the installation of sidewalks on one side of any street only if the City Engineer finds that the presence of any of the factors listed below justifies such waiver:**

**a. The street has, or is projected to have, very low volume traffic density;**

**b. The street is a dead-end street;**

**c. The housing along the street is very low density; or**

**d. The street contains exceptional topographic conditions such as steep slopes, unstable soils, or other similar conditions making the location of a sidewalk undesirable.**

**I. Bicycle routes. If appropriate to the extension of a system of bicycle routes, existing or planned, the Planning Commission may require the installation of separate bicycle lanes within streets and separate bicycle paths.**

**J. Street name signs. All street name signs and traffic control devices for the initial signing of the new development shall be installed by the City with sign and installation costs paid by the developer.**

**K. Dead-end street signs. Signs indicating "future roadway" shall be installed at the end of all discontinued streets. Signs shall be installed by the City per City standards, with sign and installation costs paid by the developer.**

**L. Signs indicating future use shall be installed on land dedicated for public facilities (e.g., parks, water reservoir, fire halls, etc.). Sign and installation costs shall be paid by the developer.**

**M. Street lights. Street lights shall be installed and shall be served from an underground source of supply. The street lighting shall meet IES lighting standards. The street lights shall be the shoe-box style light (flat lens) with a 30-foot bronze pole in residential (non-intersection) areas. The street light shall be the cobra head style (drop lens) with an approximate 50-foot (sized for intersection width) bronze pole. The developer shall submit to the City Engineer for approval of any alternate residential, commercial, and industrial lighting, and alternate lighting fixture design. The developer and/or homeowners association is required to pay for all expenses related to street light energy and maintenance costs until annexed into the City.**

**N. Utilities. The developer shall make necessary arrangements with utility companies or other persons or corporations affected for the installation of underground lines and facilities. Electrical lines and other wires, including but not limited to communication, street lighting, and cable television, shall be placed underground.**

**O. Curb cuts and driveways. Curb cuts and driveway installations are not required of the subdivider at the time of street construction, but, if installed, shall be according to City standards. Proper curb cuts and hard-surfaced driveways shall be required at the time buildings are constructed.**

**P. Street trees. Street trees shall be provided by the City Parks and Recreation Department in accordance with standards as adopted by the City in the Municipal Code. The fee charged the subdivider for providing and maintaining these trees shall be set by resolution of the City Council.**

**Q. Joint mailbox facilities shall be provided in all residential subdivisions, with each joint mailbox serving at least two, but no more than eight, dwelling units. Joint mailbox structures shall be placed in the street right-of-way adjacent to roadway curbs. Proposed locations of joint mailboxes shall be**

**designated on a copy of the tentative plan of the subdivision, and shall be approved as part of the tentative plan approval. In addition, sketch plans for the joint mailbox structures to be used shall be submitted and approved by the City Engineer prior to final plat approval. (Ord. 1180, 1986; Ord. 1192, 1987; Ord. 1287, 1990; Ord. 1321, 1992; Ord. 1339, 1993; Ord. 1401, 1997; Ord. 1408, 1998; Ord. 1442, 1999)**

**Applicant's Finding:** All improvements will be installed per the submitted plans and in conformance with the requirements of this title.

The requirements of this section have been satisfied.

**92.030 IMPROVEMENT PROCEDURES**

**In addition to other requirements, improvements installed by the developer, either as a requirement of these regulations or at the developer's own option, shall conform to the requirements of this title and permanent improvement standards and specifications adopted by the City and shall be installed in accordance with the following procedure:**

**A. Improvement work shall not be commenced until plans have been checked for adequacy and approved by the City. To the extent necessary for evaluation of the proposal, the improvement plans may be required before approval of the tentative plan of a subdivision or partition. Plans shall be prepared in accordance with the requirements of the City.**

**B. Improvement work shall not be commenced until the City has been notified in advance, and if work has been discontinued for any reason, it shall not be resumed until the City has been notified.**

**C. Improvements shall be constructed under the Engineer. The City may require changes in typical sections and details in the public interest if unusual conditions arise during construction to warrant the change.**

**D. All underground utilities, sanitary sewers, and storm drains installed in streets by the subdivider or by any utility company shall be constructed prior to the surfacing of the streets. Stubs for service connections for underground utilities and sanitary sewers shall be placed to a length obviating the necessity for disturbing the street improvements when service connections are made.**

**E. A digital and mylar map showing all public improvements as built shall be filed with the City Engineer upon completion of the improvements. (Ord. 1408, 1998)**

**Applicant's Finding:** All improvements will be installed in conformance with the requirements of this title.

The requirements of this section have been satisfied.

**CHAPTER 99 PROCEDURES FOR DECISION MAKING: QUASI-JUDICIAL**

**99.030 APPLICATION PROCESS: WHO MAY APPLY, PRE-APPLICATION CONFERENCE, REQUIREMENTS, REFUSAL OF APPLICATION, FEES**

**A. <u>Who may apply</u>.**

**1. Applications for approval required under this chapter may be initiated by:**

**a. The owner of the property that is the subject of the application or the owner's duly authorized representative;**

**b. The purchaser of such property who submits a duly executed written contract or copy thereof, which has been recorded with the Clackamas Clerk;**

**c. A lessee in possession of such property who submits written consent of the owner to make such application; or**

**d. Motion by the Planning Commission or City Council.**

**2. Any person authorized by this chapter to submit an application for approval may be represented by an agent who is authorized in writing by such a person to make the application.**

**Applicant's Finding:** The owner of the property is initiating this application for approval.

The requirements of this section have been satisfied.

**B. Pre-application conferences.**

**1. Subject to subsection (B)(4) of this section, a pre-application conference is required for, but not limited to, ***j. land divisions.**

**Applicant's Finding:** A pre-application meeting was held March 21, 2013.

The requirements of this section have been satisfied.

**C. The requirements for making an application.**

**1. The application shall be made on forms provided by the Director as provided by CDC 99.040(A)(1);**

**2. The application shall be complete and shall contain the information requested on the form, shall address the appropriate submittal requirements and approval criteria in sufficient detail for review and action, and shall be accompanied by the deposit or fee required by CDC 99.033. No application will be accepted if not accompanied by the required fee or deposit. In the event an additional deposit is required by CDC 99.033 and not provided within the time required, the application shall be rejected without further processing or deliberation and all application materials shall be returned to the applicant, notwithstanding any determination of completeness. (Ord. 1527, 2005; Ord. 1568, 2008; Ord. 1590 § 1, 2009; Ord. 1599 § 6, 2011)**

**Applicant's Finding:** This application has been made on forms provided by the City's Planning Department. The application contains the necessary information and the required fee.

The requirements of this section have been satisfied.

**99.033 FEES**

**The Council shall adopt a schedule of fees reasonably calculated to defray the expenses of the administrative process. The Council may establish either a set fee or a deposit system in which the applicant pays a deposit and the City determines the total administrative cost at the end of the process and refunds any unused amount of the deposit to the applicant. No additional deposit shall be required for additional costs that are incurred because the matter is referred to or called up by a higher decision-making authority. The Council shall charge no fees for City-initiated land use applications or appeals filed by a recognized neighborhood association pursuant to the provisions of CDC 99.240. (Ord. 1527, 2005; Ord. 1568, 2008; Ord. 1604 § 70, 2011)**

**Applicant's Finding:** The required fee was submitted with the land use application.

The requirements of this section have been satisfied.

**99.038 NEIGHBORHOOD CONTACT REQUIRED FOR CERTAIN APPLICATIONS**

**Prior to submittal of an application for any subdivision, conditional use permit, multi-family project, planned unit development, commercial, office, or industrial development of over 1,500 square feet, or a zone change that requires a Comprehensive Plan amendment, the applicant shall contact and discuss the proposed development with any affected neighborhood as provided in this section. Although not required for other or smaller projects, contact with neighbors is highly recommended. The Planning Director may require neighborhood contact pursuant to this section prior to the filing of an application for any other development permit if the Director deems neighborhood contact to be beneficial.**

**A. Purpose. The purpose of neighborhood contact is to identify potential issues or conflicts regarding a proposed application so that they may be addressed prior to filing. This contact is intended to result in a better application and to expedite and lessen the expense of the review process by avoiding needless delays, appeals, remands, or denials. The City expects an applicant to take the reasonable concerns and recommendations of the neighborhood into consideration when preparing an application. The City expects the neighborhood association to work with the applicant to provide such input.**

**B. The applicant shall contact by letter all recognized neighborhood associations whose boundaries contain all or part of the site of the proposed development and all property owners within 500 feet of the site.**

**C. The letter shall be sent by certified mail, return receipt requested, to the president of the neighborhood association, and to one designee as submitted to the City by the neighborhood association, and shall be sent by regular mail to the other officers of the association and the property owners within 500 feet. If another neighborhood association boundary is located within the 500-foot notice radius, the letter shall be sent to that association's president, and to one designee as submitted to the City by the neighborhood association as well. The letter shall briefly describe the nature and location of the proposed development, and invite the association and interested persons to a meeting to discuss the proposal in more detail. The meeting shall be scheduled at the association's regularly scheduled monthly meeting, or at another time at the discretion of the association, and not less than 20 days from the date of mailing of the notice. If the meeting is scheduled as part of the association's regular monthly meeting, the letter shall explain that the proposal may not be the only topic of**

**discussion on the meeting agenda. The letter shall encourage concerned citizens to contact their association president, or their association designee, with any questions that they may want to relay to the applicant.**

**Neighborhood contact shall be initiated by the applicant by mailing the association president, and to one designee as submitted to the City by the neighborhood association, a letter, return receipt requested, formally requesting, within 60 days, a date and location to have their required neighborhood meeting. The 60 days shall be calculated from the date that the applicant mails this letter to the association. If the neighborhood association does not want to meet within the 60-day timeframe, or if there is no neighborhood association, the applicant may hold a public meeting during the evening after 6:00 p.m., or on the weekend no less than 20 days from the date of mailing of the notice. All meetings shall be held at a location open to the public within the boundaries of the association or at a public facility within the City of West Linn. If the meeting is held at a business, it shall be posted at the time of the meeting as the meeting place and shall note that the meeting is open to the public and all interested persons may attend.**

**D. On the same date the letters described in subsections A through C of this section are mailed, the applicant shall provide and post notice on the property subject to the proposed application. The notice shall be posted at a location visible from the public right-of-way. If the site is not located adjacent to a through street, then an additional sign shall be posted on the nearest through street. The sign notice shall be at least 11 inches by 17 inches in size on durable material and in clear, legible writing. The notice shall state that the site may be subject to a proposed development (e.g., subdivision, variance, conditional use) and shall set forth the name of the applicant and a telephone number where the applicant can be reached for additional information. The site shall remain posted until the conclusion of the meeting.**

**E. An application shall not be accepted as complete unless and until the applicant demonstrates compliance with this section by including with the application:**

**1. A copy of the certified letter to the neighborhood association with a copy of return receipt;**

**2. A copy of the letter to officers of the association and to property owners within 500 feet, including an affidavit of mailing and a copy of the mailing list containing the names and addresses of such owners and residents;**

**3. A copy of the required posted notice, along with an affidavit of posting;**

**4. A copy of the minutes of the meetings, produced by the neighborhood association, which shall include a record of any verbal comments received, and copies of any written comments from property owners, residents, and neighborhood association members. If there are no minutes, the applicant may provide a summary of the meeting comments. The applicant shall also send a copy of the summary to the chair of the neighborhood association. The chair shall be allowed to supplement the summary with any additional comments regarding the content of the meeting, as long as such comments are filed before the record is closed;**

**5. An audiotape of the meeting; and**

**6. In the event that it is discovered by staff that the aforementioned procedures of this section were not followed, or that a review of the audio tape and meeting minutes show the applicant has made a material misrepresentation of the project at the neighborhood meeting, the**

**application shall be deemed incomplete until the applicant demonstrates compliance with this section. (Ord. 1425, 1998; Ord. 1474, 2001; Ord. 1568, 2008; Ord. 1590 § 1, 2009)**

**Applicant's Finding:**

This section requires the applicant to contact and discuss the proposed development with any affected neighborhood as provided in this section.

A meeting was held with the Savanna Oaks neighborhood association on May 7, 2013. The meeting was scheduled and noticed per the requirements of this section, and the required neighborhood meeting documentation is submitted with this application. The applicant provided renderings and information regarding the proposed subdivision and answered all questions asked by the members of the neighborhood association.

This section does not contain any requirements for the presentation or the materials used to make the presentation. The section describes when a neighborhood meeting is required, how notice of the meeting is to be accomplished and what the application must include from the neighborhood meeting. Some changes have occurred in the proposed plan since the neighborhood meeting; however, the basic information of the subdivision (location, general lot layout, street connections, etc.) was presented to and discussed with the neighborhood association members.

The requirements of this section have been satisfied.

**SUMMARY AND CONCLUSION**

Based upon the materials submitted herein, the Applicant respectfully requests that the City's Planning Commission approve this Subdivision and Class II Variance application.

First American Title Company of Oregon

Property Information Department
121 SW Morrison Street Suite 300 - Portland, OR 97204
Phone: 503.219.TRIO (8746) Fax: 503.790.7872
Email: pid.portland@firstam.com
Today's Date : 6/18/2013

## OWNERSHIP INFORMATION

| | | | |
|---|---|---|---|
| Owner | : **Omlor John J & Rachel** | Ref Parcel Number | : 21E35A 01300 |
| Co Owner | : | Parcel Number | : 00405145 |
| Site Address | : 23150 Bland Cir West Linn 97068 | T: 02S R: 01E S: 35 Q: NE QQ: | |
| Mail Address | : 23150 Bland Cir West Linn Or 97068 | County | : Clackamas (OR) |
| Taxpayer | : Omlor John J & Rachel | Telephone | : 503-656-9502 |

## PROPERTY DESCRIPTION

| | |
|---|---|
| Map Page & Grid | : 686 H7 |
| Census Tract | : 205.01 Block: 2 |
| Improvement Type | : 142 Sgl Family,R1-4,1-Story (Basement) |
| Subdivision/Plat | : Bland Acres |
| Neighborhood | : West Linn Newer |
| Land Use | : 101 Res,Residential Land,Improved |
| Legal | : 304 BLAND AC PT LT 28 |
| | : |
| | : |

## ASSESSMENT AND TAX INFORMATION

| | |
|---|---|
| Mkt Land | : $355,686 |
| Mkt Structure | : $205,860 |
| Mkt Total | : $561,546 |
| % Improved | : 37 |
| 12-13 Taxes | : $7,394.41 |
| Exempt Amount | : |
| Exempt Type | : |
| Levy Code | : 003002 |
| Millage Rate | : 18.7110 |
| M50AssdValue | : $401,115 |

## PROPERTY CHARACTERISTICS

| | | | | | |
|---|---|---|---|---|---|
| Bedrooms | : 5 | Building SF | : 3,000 | BldgTotSqFt | : 2,250 |
| Bathrooms | : 3.00 | 1st Floor SF | : 1,500 | Lot Acres | : 2.82 |
| Full Baths | : 3 | Upper Finished SF | : 532 | Lot SqFt | : 122,996 |
| Half Baths | : | Finished SF | : 2,250 | Garage SF | : 540 |
| Fireplace | : Stacked | Above Ground SF | : 1,500 | Year Built | : 1976 |
| Heat Type | : Forced Air-Gas | Upper Total SF | : 532 | School Dist | : 003 |
| Floor Cover | : Carpet | UnFinUpperStorySF | : | Foundation | : Concrete |
| Stories | : 1 Story-Bsmt | Basement Fin SF | : 750 | Roof Type | : Clay Tile |
| Int Finish | : Drywall | Basement Unfin SF | : 750 | Roof Shape | : Gable |
| Ext Finsh | : Stucco | Basement Total SF | : 1,500 | | |

## TRANSFER INFORMATION

| Owner Name(s) | Sale Date | Doc# | Sale Price | Deed Type | Loan Amount | Loan Type |
|---|---|---|---|---|---|---|
| :Omlor John J;Rachel | : | | : | : | : | : |
| : | : | | : | : | : | : |
| : | : | | : | : | : | : |
| : | : | | : | : | : | : |
| : | : | | : | : | : | : |
| : | : | | : | : | : | : |

FORM No. 763—SPECIAL WARRANTY DEED (Individual or Corporate). STEVENS-NESS LAW PUBLISHING CO., PORTLAND, OR. 97204

1-1-74

# SPECIAL WARRANTY DEED

*KNOW ALL MEN BY THESE PRESENTS, That* ... WESTLAND PROPERTIES INC. ..... *hereinafter called grantor, for the consideration hereinafter stated, does hereby grant, bargain, sell and convey unto* ..... JOHN J. OMLOR and RACHEL OMLOR, husband and wife ..... *hereinafter called grantee, and unto grantee's heirs, successors and assigns all of that certain real property with the tenements, hereditaments and appurtenances thereunto belonging or in anywise appertaining, situated in the County of* Clackamas, *State of Oregon, described as follows, to-wit:*

That portion of Lot 28, Bland Acres, in Clackamas County, Oregon, described as follows:

BEGINNING at the Northeast corner of said Lot 28; thence South 84° 56' West along the North line of said lot, a distance of 215.0 feet to the Northwest corner of that tract conveyed by Contract to Dennis C. Florendo, et ux, by Recorder's Fee No. 72-30433, said point being the true point of beginning of the tract herein to be described; thence continuing South 84°56' West along said North line, a distance of 215.0 feet to the Northwest corner of said Lot 28; thence South 26°09' East along the Westerly line of Lot 28, a distance of 787.10 feet to the Southwest corner thereof, thence North 60°53'30" East along the Southerly line, a distance of 132.15 feet to the Southwest corner of the Florendo tract; thence Northwesterly along the Westerly line of said Florendo tract, a distance of 700 feet, more or less, to the true place of beginning.

76 16079

A Recording Service of: Title Data, Inc.

Title Data, Inc. FA POR10350 CL 76016079.001

This deed given in fulfillment of Contract dated August 28, 1973

(IF SPACE INSUFFICIENT, CONTINUE DESCRIPTION ON REVERSE SIDE)

*To Have and to Hold the same unto the said grantee and grantee's heirs, successors and assigns forever.*

*And the grantor hereby covenants to and with the said grantee and grantee's heirs, successors and assigns that said real property is free from encumbrances created or suffered thereon by grantor and that grantor will warrant and defend the same and every part and parcel thereof against the lawful claims and demands of all persons claiming by, through, or under the grantor.*

*The true and actual consideration paid for this transfer, stated in terms of dollars, is $.....*

*①However, the actual consideration consists of or includes other property or value given or promised which is the whole part of the consideration (indicate which).① (The sentence between the symbols①, if not applicable, should be deleted. See ORS 93.030.)*

*In construing this deed and where the context so requires, the singular includes the plural and all grammatical changes shall be implied to make the provisions hereof apply equally to corporations and to individuals.*

*In Witness Whereof, the grantor has executed this instrument this* 17th *day of* May, 1976; *if a corporate grantor, it has caused its name to be signed and seal affixed by its officers, duly authorized thereto by order of its board of directors.*

WESTLAND PROPERTIES INC.

Butty L. Van Winkle

(If executed by a corporation, affix corporate seal)

STATE OF OREGON, County of ..... } ss.
....., 19....

Personally appeared the above named .....
.....
.....and acknowledged the foregoing instrument to be.....voluntary act and deed.

Before me:

(OFFICIAL SEAL) .....
Notary Public for Oregon
My commission expires .....

STATE OF OREGON, County of Clackamas } ss.
May 17, 19 76

Personally appeared Butty L. Van Winkle and .....who, being duly sworn, each for himself and not one for the other, did say that the former is the .....president and that the latter is the .....secretary ~~&~~ -treasurer of WESTLAND PROPERTIES, INC., a corporation, and that the seal affixed to the foregoing instrument is the corporate seal of said corporation and that said instrument was signed and sealed in behalf of said corporation by authority of its board of directors; and each of them acknowledged said instrument to be its voluntary act and deed.

Before me:
Bernice Lane
(OFFICIAL SEAL)
Notary Public for Oregon
My commission expires: 5/12/78

Westland Properties, Inc.
GRANTOR'S NAME AND ADDRESS

John J. Omlor & Rachel Omlor
5121 S. E. Maldrum
Milwaukie, Oregon 97222
GRANTEE'S NAME AND ADDRESS

After recording return to:
John J. Omlor & Rachel Omlor
5121 S. E. Maldrum
Milwaukie, Oregon 97222
NAME, ADDRESS, ZIP

Until a change is requested all tax statements shall be sent to the following address:
SEE ABOVE -- Omlor
NAME, ADDRESS, ZIP

2

STATE OF OREGON
County of Clackamas } ss.

I, George D. Poppen, County Clerk, Ex-Officio Recorder of Conveyances and Ex-Officio Clerk of the County Court of the State of Oregon, for the County of Clackamas, do hereby certify that the within instrument of writing was received for and recorded in the records of said county at

76 MAY 18 P 3:45

RECORDER OF CONVEYANCES * CLACKAMAS COUNTY, OREGON *

Witness my hand and seal of said County affixed.

GEORGE D. POPPEN, County Clerk

By ..... Deputy.

Recording Certificate 76 16079

CCJ-154

STATE OF OREGON,

**City of West Linn**

# PRE-APPLICATION CONFERENCE MEETING

## Notes

**March 21, 2013**

SUBJECT: Eleven lot "Sunbreak" subdivision at 23150 Bland Circle with possible Class II Variances for lots that do not meet the dimensional standards of the R-7 zone (the "*two and a half times rule*") and blocks in excess of 800 feet.

ATTENDEES: Applicants: Jeff Smith, John Wyland, Heather Austin, Andrew Tull
Staff: Peter Spir (Planning Department), Khoi Le (Engineering Division)
Neighborhood representative: Ed Schwarz, Savanna Oaks N.A.

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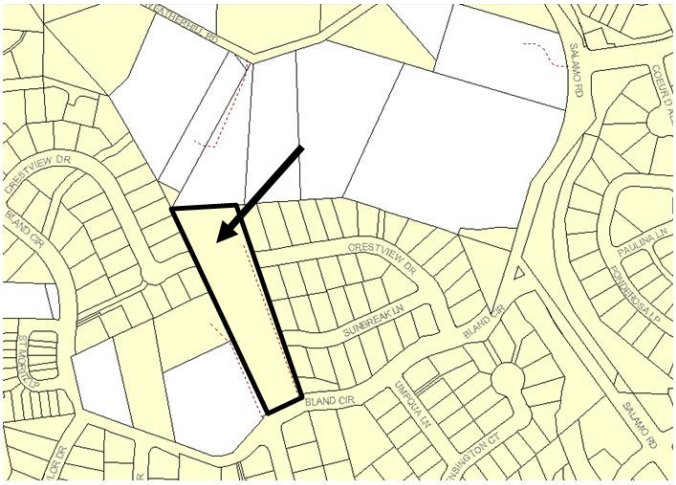
***The following is a summary of the meeting discussion provided to you from staff meeting notes. Additional information may be provided to address any "follow-up" items identified during the meeting. <u>These comments are PRELIMINARY in nature</u>. Please contact the Planning Department with any questions regarding approval criteria, submittal requirements, or any other planning-related items. Please note disclaimer statement below.***

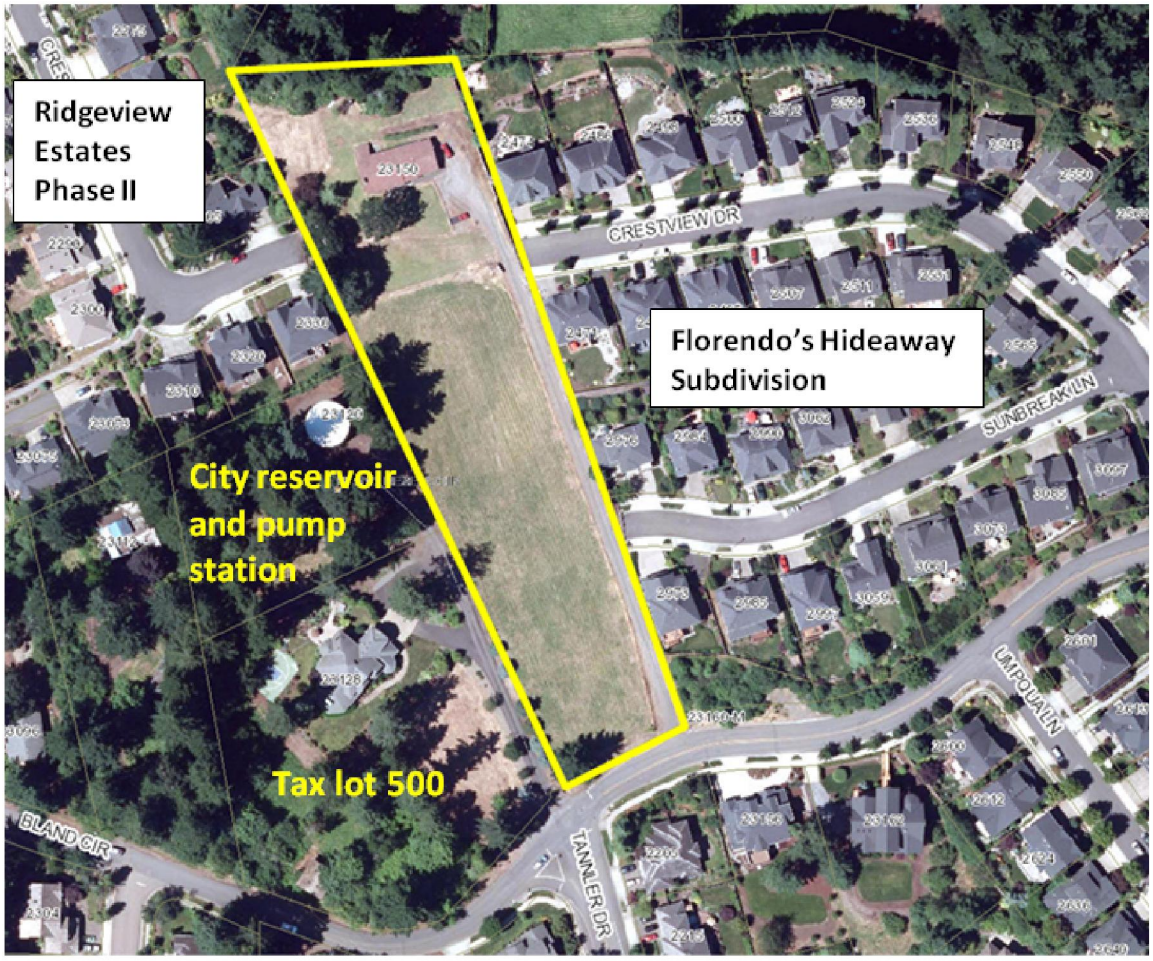
## General Overview

The site address is 23150 Bland Circle in the Savanna Oaks neighborhood. It comprises 2.8-acres and is zoned R-7 (single family residential/ 7,000 square foot minimum lot size). The applicant is proposing 11 lots ranging from 7,010 to 10,190 square feet. The general form of the parcel is rectangular with a lot depth of over 787 feet and a width of 133 feet fronting Bland Circle. The notable physical characteristics of the site include a near constant uphill slope from Bland Circle and, with few exceptions, a lack of trees. Street stubouts from subdivisions to the east and northwest will facilitate and dictate *most* of the street alignments within this site. There is a house at the top of the property with a large parking pad.




K SUBDIVISION

Development




## Specific Proposal

Eleven lots are proposed for Sunbreak subdivision. The lots are arranged on either side of Crestview Drive and Sunbreak Lane. These streets extend from, and will connect with, adjacent subdivisions however the west end of Sunbreak Drive will require some realignment to facilitate reasonable development on tax lot 500 and to connect with Bland Circle at Tannler Drive. Per the R-7 zoning, all lots are over 7,000 square feet in size. The proposed lot sizes range from 7,010 square feet up to 10,654 square feet. To accommodate a storm water treatment and detention pond, tract A is established at the low point adjacent to Bland Circle.

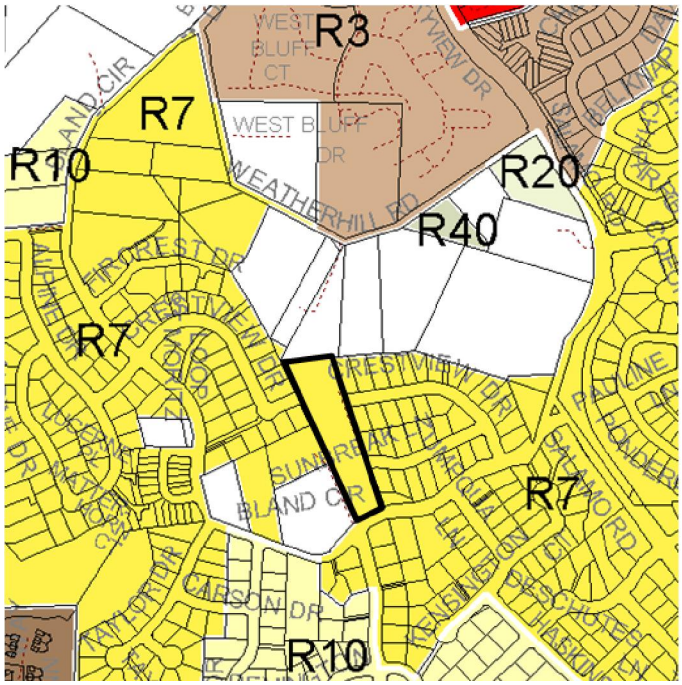
## Surrounding Land Uses and Zoning

Along the east edge of the property is Florendo's Hideaway subdivision while Ridge View Estates Phase II subdivision occupies the land to the northwest of the property. Both subdivisions are occupied by single family homes consistent with the R-7 zoning. To the west is a City owned water reservoir and pump station while further down and also to

the west is a single family home on a large parcel that is unincorporated. To the south of the property are Bland Circle and the R-7 zoned Renaissance Heights II subdivision. To the north is an unincorporated property occupied by a single family home.

Table 1: Surrounding Land Use and Zoning

| DIRECTION FROM SITE | LAND USE | ZONING |
|---|---|---|
| North | Single family residential | Unincorporated |
| East | Single family residential (Fernando's Hideaway Subdiv.) | R-7 |
| South | Bland Circle with Single family residential further south | R-7 |
| West (Three lots north to south) | Single family residential (Ridge View Estates Phase II)<br>Bland Circle Pump Station and Reservoir<br>Single family residential (Tax lot 500) | R-7<br>R-7<br>Unincorporated |




## Site Analysis

Slopes

The land rises 82 feet from Bland Circle's elevation of 505 feet to the north end of the property where the elevation is 587 feet. The slope of the hillside is fairly constant averaging 14 percent although the northernmost 150 feet, where the house and parking

are located, has a more modest slope of 0-5 percent. There are some small isolated slopes over 25 percent; most notably along the existing gravel driveway. However, these 25 percent sloped areas are not extensive enough to trigger a PUD. (It would require over 25 percent of the site to be sloped over 25 percent before a PUD is required.)

For most of the property there is a 10-12 foot drop in elevation from east to west yielding an average six percent cross slope.

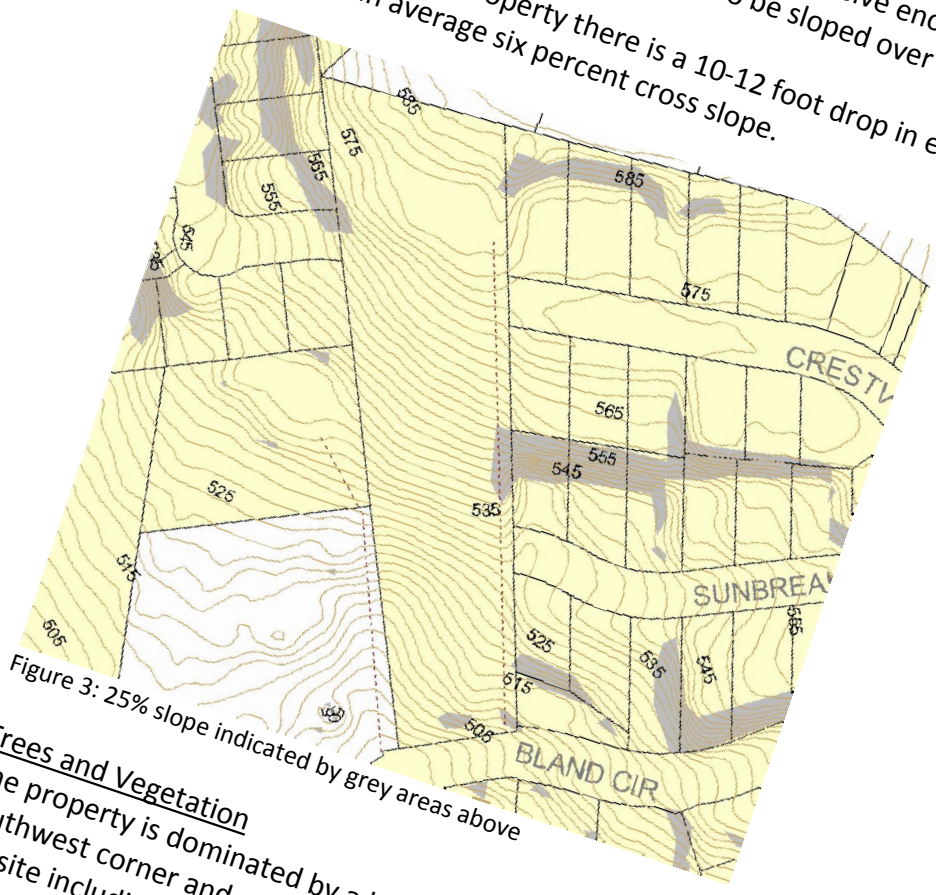



Figure 3: 25% slope indicated by grey areas above

Trees and Vegetation

The property is dominated by a large grass pasture. There is a large conifer at the southwest corner and a collection of various mature trees along the northwest edge of the site including at least two oaks trees which are located in the alignment of any connection to Crestview Drive. The backdrop to the property is a row of mature conifers behind the house. These trees are actually on the property to the north and are not part of this application.

Section 55.100(B)(2) provides for significant tree preservation and can require that up to 20 percent of the site be set aside for their protection. The code makes accommodation for the removal of trees in anticipated street alignments such as Crestview Drive (see 55.100(B)(2) exemptions) but the applicant should anticipate being required to mitigate for their loss on an inch by inch basis exclusive of normal street tree requirements. The mitigation can be on or off-site, or can be satisfied by a fee-in-lieu payment, if the Parks Department agrees to this.

The applicant's arborist should contact City Arborist Mike Perkins (503-723-2554 or mperkins@westlinnoregon.gov ) once the preliminary tree inventory is complete to verify which trees are significant.

Figure 4: Oak trees near northwest corner of the property in line with the Crestview Drive stub out

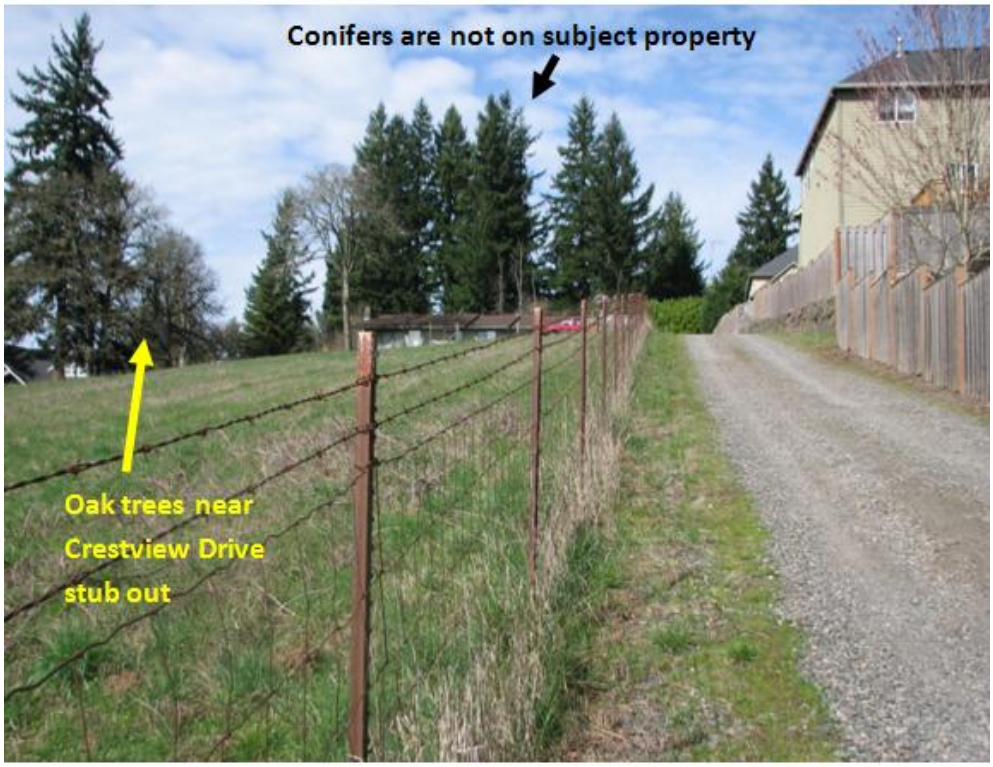


Figure 5: Trees near the top of the property


Figure 6: Looking downhill on property towards Bland Circle

Streams

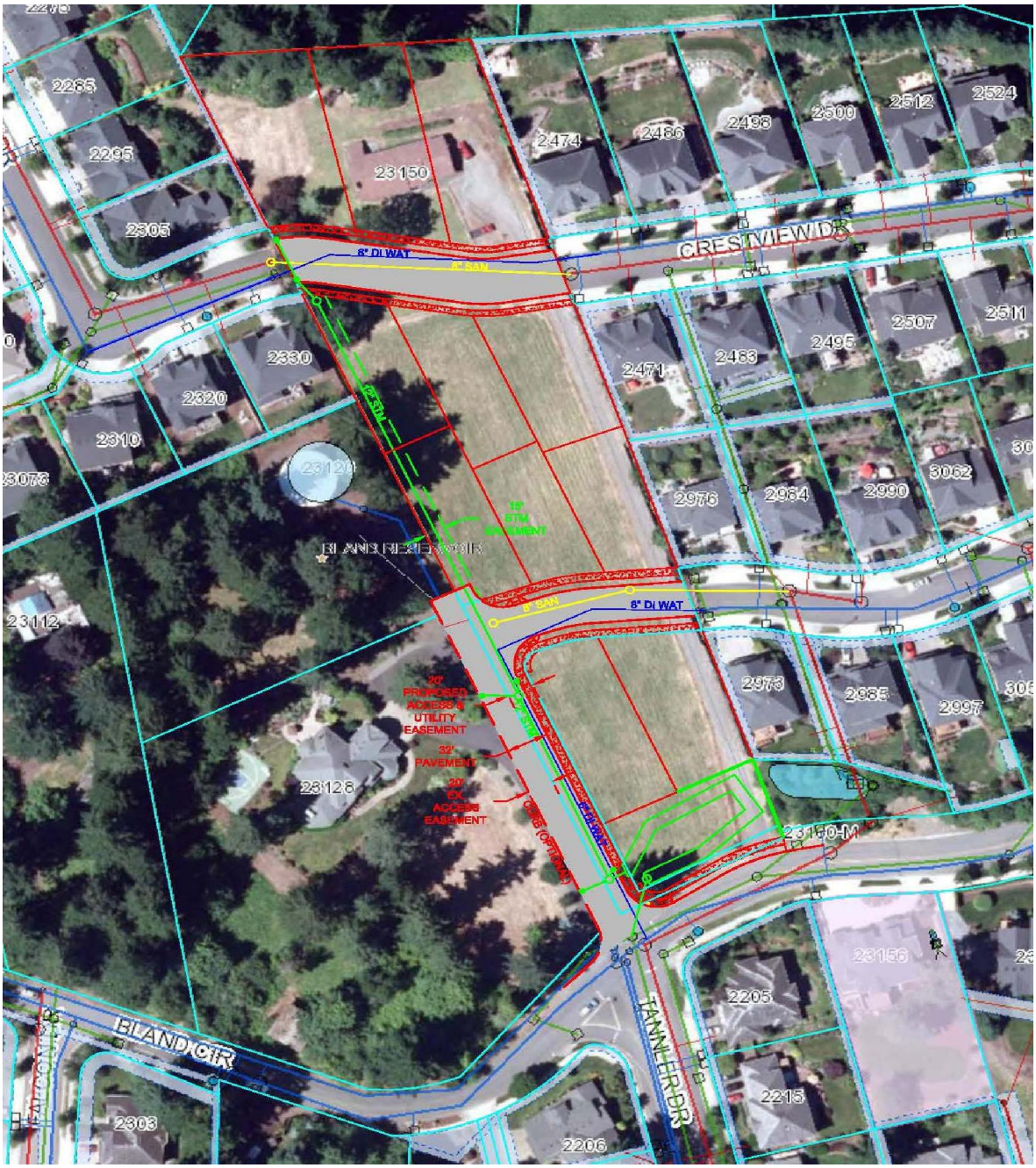
There are no streams, wetlands or other Goal 5 protected resources on the property.

## Expected Development Pattern/Street Connectivity

"Florendo's Hideaway" subdivision stubs Crestview Drive and Sunbreak Lane into the subject property. The expectation is that these streets will extend across this property and connect with the properties to the west. The connection of Crestview Drive is fairly obvious since that street's namesake is already built and stubbed out in Ridge View Estates Phase II to the west. Unfortunately, it is unlikely that two oak trees in the Crestview Drive alignment can be "designed around" since the grades in that area will need to be dropped significantly to connect with Ridge View Estates II.

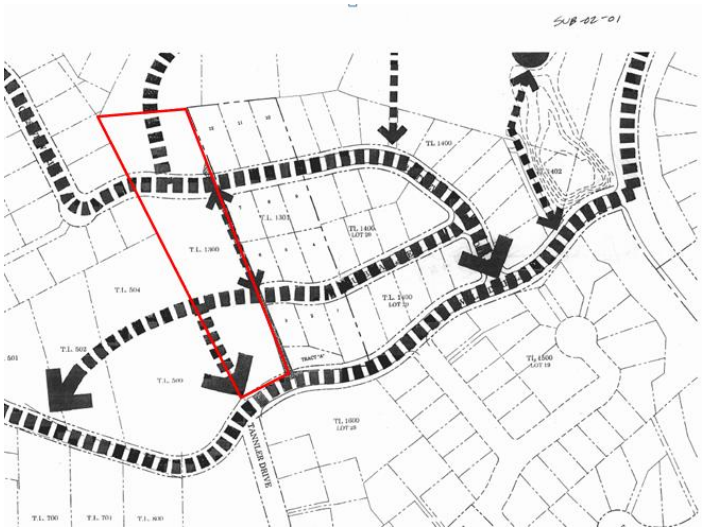
For Sunbreak Lane, the connection is challenging since the portion of the property that it would connect with (tax lot 500) is occupied by a large, attractive contemporary house. The applicant's initial proposed alignment would go right into that house. A more appropriate road alignment (and one that the applicant subsequently agreed to in principle) would angle southwards along the common lot line to connect Sunbreak Lane with Bland Circle at the Tannler Drive intersection. This alignment (See illustration of

street below) is consistent with the plan submitted when Florendo's Hideaway was applied for in 2002.




The applicant agreed to the concept of a shared street improvement to include ROW dedication, six foot wide sidewalk, six foot wide planter curb/gutter and 20 feet of street width with the expectation that the owner of tax lot 500 will complete the remaining street section when that property is developed. The use of a sidewalk easement on lot 2 would be supported by staff so as to minimize the impact on lot size. A hammerhead feature was also proposed to facilitate turn movements and provide access to lot 3.

The applicant also agreed to provide a curb, planter and sidewalk along Bland Circle frontage.




Proposed alignment submitted as part of Fernando's Hideaway 2002 application

Connecting Sunbreak Lane to Bland Circle also positively responds to the approval criteria of 85.200(A) (1):

> *"…Streets should provide for the continuation, or the appropriate projection, of existing principal streets in surrounding areas and should not impede or adversely affect development of adjoining lands or access thereto.*
>
> *To accomplish this, the emphasis should be upon a connected continuous pattern of local, collector, and arterial streets rather than discontinuous curvilinear streets and cul-de-sacs."*

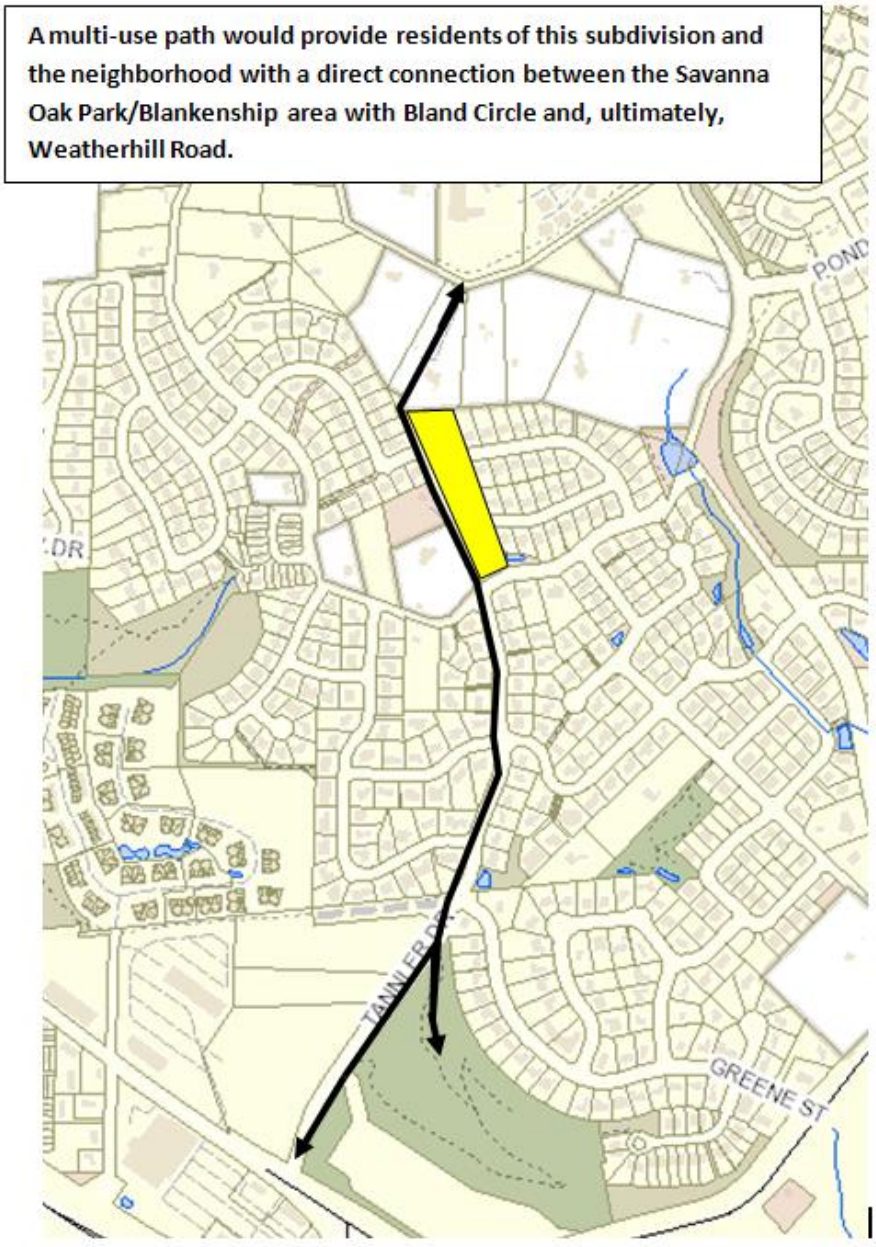
Sunbreak Lane, as originally proposed, would have violated 85.200(A) (11):

> *"11. Cul-de-sacs. Cul-de-sacs are not allowed except as required by topography, slope, site limitations, and lot shapes. Cul-de-sacs shall have maximum lengths of 400 feet and serve no more than 12 dwelling units, unless by variance per Chapter 75 CDC."*

Staff discussed extending a multi-use path from the vicinity of lot 3 northwards through the City's reservoir/pump station property and along the west edge of lot 8 to Crestview Drive to facilitate pedestrian and bicycle to and from Tannler Drive and Savanna Oaks Park. Without that connection, the long east –west oriented blocks require a lengthy detour and discourage multi-modal use. The path would also provide a relatively safe

alternative to using Bland Circle which has many unimproved sections which lack sidewalks.

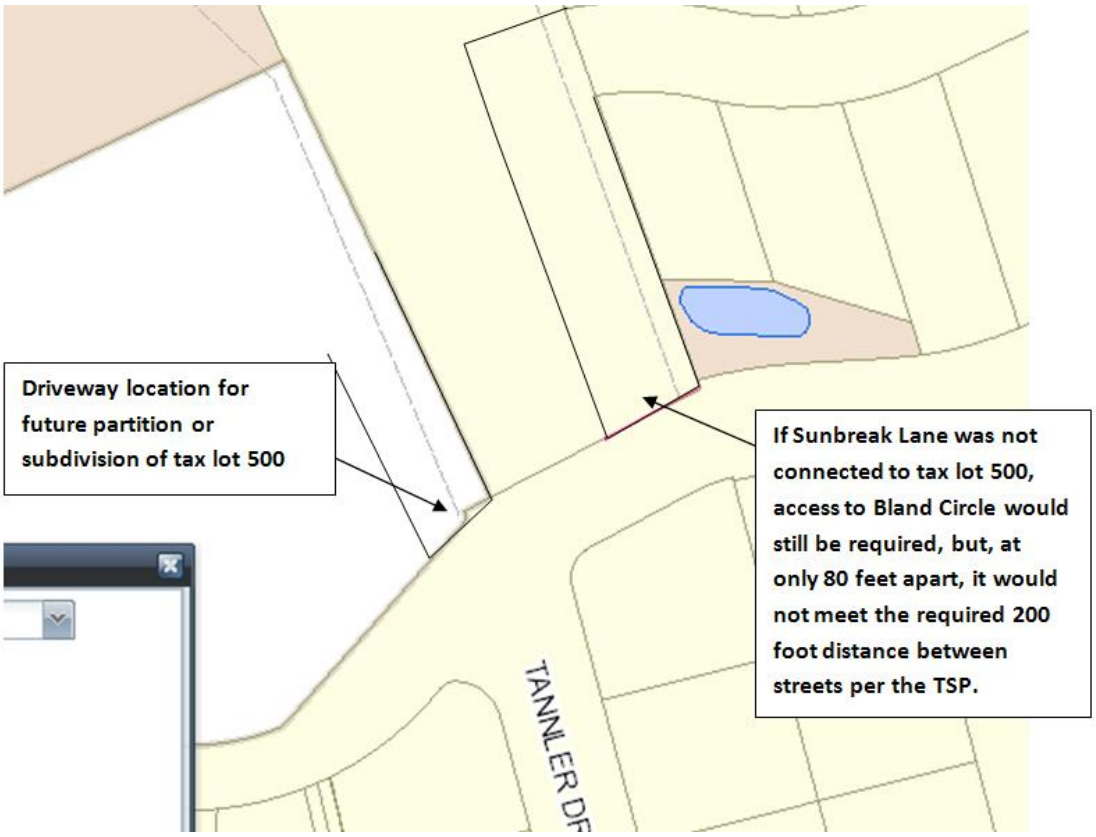
Extending that trail to the north property line via the west edge of lot 9 was not discussed, but such an alignment would provide for the long term connection with Weatherhill Road. The alternative to the trail would be the extension of the street from Crestview Drive northwards towards Weatherhill Road.



Regarding block length, staff notes that there is a maximum length of blocks of 800 feet in 85.200(B). Crestview Drive will be 1,849 feet in length. Sunbreak Lane will be 861 feet long. The applicant should be able to respond to the following code language:

> 85.200 (B) (2.)*Sizes. The recommended block size is 400 feet in length to encourage greater connectivity within the subdivision. Blocks shall not exceed 800 feet in length between street lines, except for blocks adjacent to arterial streets or unless topographical conditions or the layout of adjacent streets justifies a variation. Designs of proposed intersections shall demonstrate adequate sight distances to the City Engineer's specifications. Block sizes and proposed accesses must be consistent with the adopted TSP.*

It can be shown that Crestview Drive "justifies a variation" from 85.200(B) (2) given the layout of adjacent streets and the TSP separation requirements illustrated below.



View from the end of Sunbreak Lane in Fernando's Hideaway subdivision looking across applicant's property to the house on tax lot 500

Subsection 85.170(B) (2) (c) (1) lists the circumstances that require a traffic impact analysis (TIA).

> c. When required. A Traffic Impact Analysis may be required to be submitted to the City with a land use application, when the following conditions apply:

1) The development application involves one or more of the following actions:

(A) A change in zoning or a plan amendment designation; or

(B) Any proposed development or land use action that ODOT states may have operational or safety concerns along a State highway; and

(C) The development shall cause one or more of the following effects, which can be determined by field counts, site observation, traffic impact analysis or study, field measurements, crash history, Institute of Transportation Engineers Trip Generation manual; and information and studies provided by the local reviewing jurisdiction and/or ODOT:

(1) An increase in site traffic volume generation by 250 average daily trips (ADT) or more (or as required by the City Engineer); or

(2) An increase in use of adjacent streets by vehicles exceeding the 20,000-pound gross vehicle weights by 10 vehicles or more per day; or

(3) The location of the access driveway does not meet minimum intersection sight distance requirements, or is located where vehicles entering or leaving the property are restricted, or such vehicles queue or hesitate on the State highway, creating a safety hazard; or

(4) The location of the access driveway does not meet the access spacing standard of the roadway on which the driveway is located; or

(5) A change in internal traffic patterns that may cause safety problems, such as backup onto the highway or traffic crashes in the approach area.

The proposal does not meet any of the criteria that trigger a TIA. (There will be no new or additional points of Bland Circle right of way. Sunbreak Lane will connect with Bland Circle using an existing driveway alignment and the existing gravel driveway to the applicant's property will be eliminated. No additional driveways are being created. ) The applicant will be required to provide a study by a traffic engineer that addresses, at minimum, trip generation, a discussion of the Bland Circle and Tannler intersection including safety. (The specific study requirements will be determined by the City Engineer.)

Subsection 48.025(B) (6) requires access driveways to meet the standards in Chapter 8 of the Transportation System Plan (TSP). Specifically, it states, "The access spacing standards found in Chapter 8 of the adopted Transportation System Plan (TSP) shall be applicable to all *newly established* public street intersections, private drives, and non-traversable medians." (staff's emphasis) If a public street is proposed using the existing alignment of the driveway accessing tax lot 500 and the pump station (lining up with the Bland Circle and Tannler Drive intersection) it would not be a newly established private drive, and therefore the TSP Chapter 8 standards would not be applicable. From that intersection to the nearest access driveway (Falcon Place) on the north side of Bland Circle is 440 feet so the access separation standards of 150 feet for driveways are met. The nearest public intersection is 1200 feet away so the access separation and 200 feet for public intersections is also met.

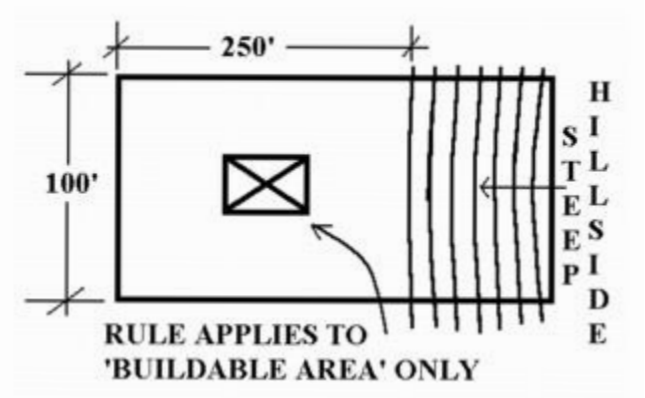
If the applicant connected Sunbreak Lane to Bland Circle using the existing gravel driveway alignment on the east side of the property it would violate the 200 foot intersection spacing requirements of the TSP with only 80 feet to the Tannler intersection. (See illustration on page 11.)

Tannler Drive and Bland Circle intersection

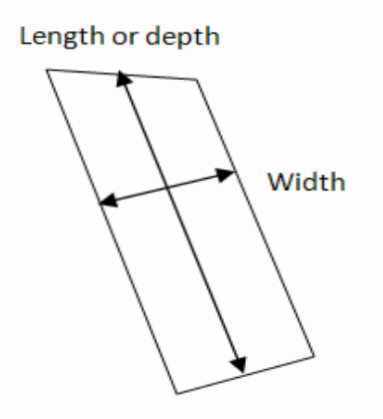
## Subdivision of Property and Lot Layout

Predictably, the lots are shown on both sides of the two streets. Because this is a long and narrow property the lots reflect that to the extent that some violate the "two and a half times" rule. This rule is explained in CDC 12.070(D):

*"D. The lot depth comprising non-Type I and II lands shall be less than two and one-half times the width and more than an average depth of 90 feet. (See diagram below.) "*

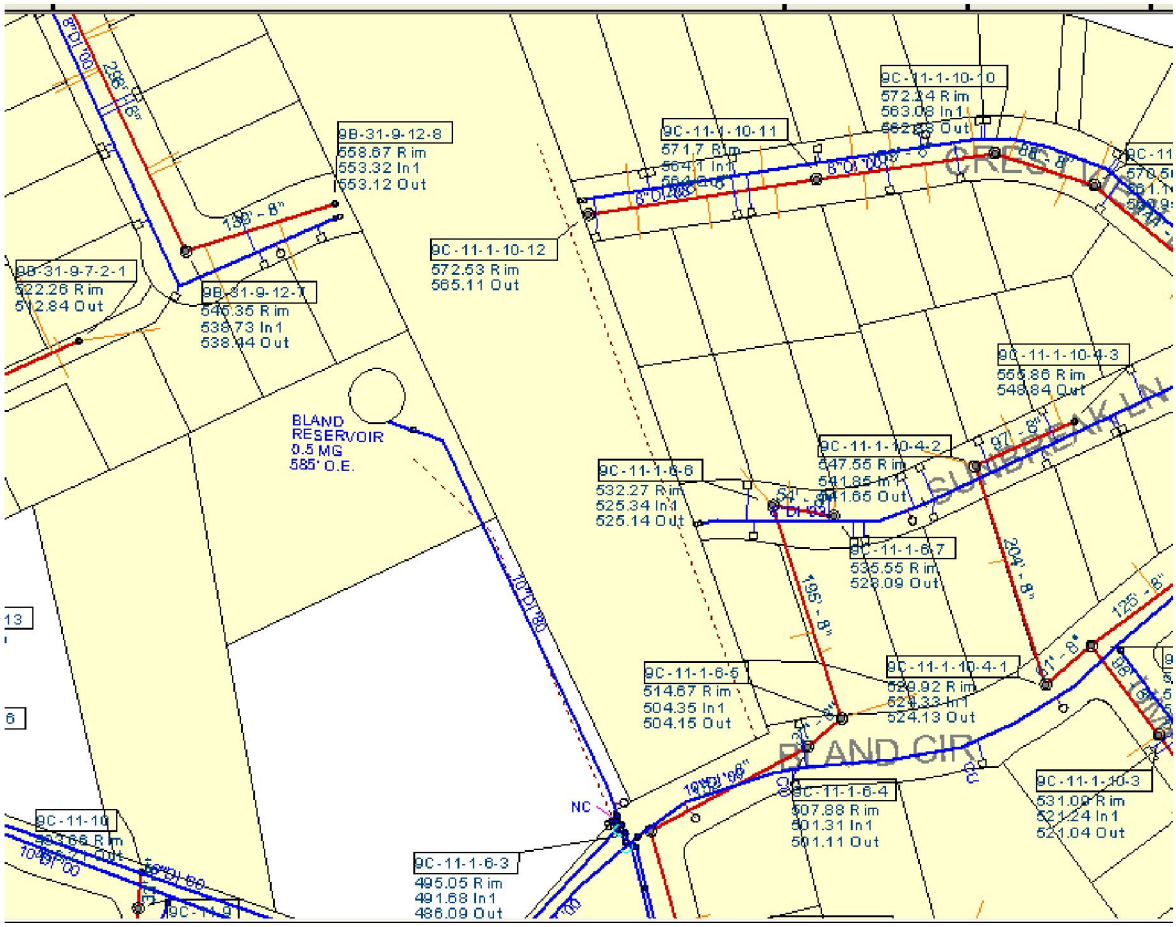



Lots 3, 7, 8 and 11are too long (staff measured the width at right angles to the side lot lines and lot depth at the midpoint (see diagram below)). These lots need to be re-designed per code or Class II variances need to be requested. Staff can support the variances given the location of the streets and the shape of the property.




The applicant shall also provide the necessary calculations to demonstrate that the development is attaining at least 70 percent of the maximum allowable denisty of the R-7 zone.


Development
Opportunity
Bill Gaffney
503.319.6775




For stormwater treatment, there was discussion of designing a shared storm water facility with the existing stormwater facility at the southwest corner of Fernando's Hideaway.

# Engineering Notes

## I. TRANSPORTATION

**BLAND CIRCLE**

| | EXISTING CONDITIONS | POTENTIAL POST DEVELOPMENT CONDITIONS |
|---|---|---|
| Classification | Collector | Collector |
| Zone | R-7 | R-7 |
| Right of Way Width | 51' | 58' |
| Full Pavement Width | 28' | 36' |
| Curb and Gutter | On the opposite side | Curb and Gutter |
| Planter Strip | On the opposite side | 5.5' Planter |

| | | |
|---|---|---|
| Sidewalk | On the opposite side | 6’ Sidewalk |
| Street Light | None in front – Shoe Box Style | Yes |
| Street Tree | On the opposite side | Yes |
| ADA Ramps | At the intersection of Bland Cir. and Tannler Dr. | |
| Post Speed | 25 MPH | 25 MPH |
| Stripe | Yellow Line and Stop Bar | Provide appropriate striping after street improvement. |

**A. MINIMUM REQUIRED IMPROVEMENTS**

1. Provide at least 20’ of dedication for a complete full build out right of way width of 60’.

2. Provide a minimum 17’ pavement improvement with the following sections:
   - 12” of 1-1/2”-0 Crush Rock
   - 2” of ¾” -0 Leveling Course
   - 5” of AC Pavement consisting of 2” Class “C” over 3” Class “B”
   - See Public Works Standards Section 5.0030 Pavement Design for design requirements.

3. Provide curb and gutter. See WL-501 Detail for technical and construction specifications. See Public Works Standards Section 5.0040 Concrete Curb for design requirements.

4. Provide 6’ wide concrete sidewalk with sidewalk ramp at each end to allow access for disability. See WL-508 for sidewalk technical and construction specifications. See WL-507A and WL-507B for ADA technical and construction specifications. See Public Works Standards Section 5.0050 Sidewalks and Section 5.0051 Sidewalk Ramps for design requirements.

5. Provide illumination analysis of the existing conditions. Install street lights as recommended in accordance to the followings:
   - Average Maintained Illumination: 0.6 foot-candles (Residential)
   - Uniformity Average to Minimum: 4 to 1
   - Street Light should match with existing surrounding lights – Shoe Box on Bronze Pole.
   - Bulb: Flat lens 100 watts maximum

6. Provide Street Tree. Coordinate with Parks Department for requirements.

7. Provide necessary striping.

8. All new and existing overhead utilities along the development must be placed underground.

**CRESTVIEW DRIVE**

| | EXISTING CONDITIONS | POTENTIAL POST DEVELOPMENT CONDITIONS |
|---|---|---|
| Classification | Local | Local |
| Zone | R-7 | R-7 |
| Right of Way Width | 56’ | 56’ |
| Full Pavement Width | 32’ with parking | 32’ with parking |
| Curb and Gutter | None | Yes |
| Planter Strip | None | 5.5’ Planter |
| Sidewalk | None | 6’ Sidewalk |
| Street Light | None | Yes – Shoe Box Style |
| Street Tree | None | Yes |
| ADA Ramps | None | None |
| Post Speed | 25 MPH | 25 MPH |
| Stripe | None | None |

**B. MINIMUM REQUIRED IMPROVEMENTS**

9. Provide at least 56’ of dedication for a complete new street connection.

10. Provide a minimum 32’ pavement improvement with the following sections:
    - 10” of 1-1/2”-0 Crush Rock
    - 2” of ¾” -0 Leveling Course
    - 4” of AC Pavement consisting of 2” Class “C” over 2” Class “B”
    - See Public Works Standards Section 5.0030 Pavement Design for design requirements.

11. Provide curb and gutter. See WL-501 Detail for technical and construction specifications. See Public Works Standards Section 5.0040 Concrete Curb for design requirements.

12. Provide 6’ wide concrete sidewalk with sidewalk ramp at each end to allow access for disability. See WL-508 for sidewalk technical and construction specifications. See WL-507A and WL-507B for ADA technical and construction specifications. See Public Works Standards Section 5.0050 Sidewalks and Section 5.0051 Sidewalk Ramps for design requirements.

13. Provide illumination analysis of the existing conditions. Install street lights as recommended in accordance to the followings:
    - Average Maintained Illumination: 0.6 foot-candles (Residential)
    - Uniformity Average to Minimum: 4 to 1
    - Street Light should match with existing surrounding lights – Shoe Box on Bronze Pole.
    - Bulb: Flat lens 100 watts maximum

14. Provide Street Tree. Coordinate with Parks Department for requirements.

15. All new and existing overhead utilities along the development must be placed underground.

**SUNBREAK LANE**

| | EXISTING CONDITIONS | POTENTIAL POST DEVELOPMENT CONDITIONS |
|---|---|---|
| Classification | Local | Local |
| Zone | R-7 | R-7 |
| Right of Way Width | 52’ | 52’ |
| Full Pavement Width | 26’ with parking on one side | 26’ |
| Curb and Gutter | None | Yes |
| Planter Strip | None | 5.5’ Planter |
| Sidewalk | None | 6’ Sidewalk |
| Street Light | None | Yes – Shoe Box Style |
| Street Tree | None | Yes |
| ADA Ramps | None | None |
| Post Speed | 25 MPH | 25 MPH |
| Stripe | None | None |

**C. MINIMUM REQUIRED IMPROVEMENTS**

16. Provide at least 52’ of dedication for a complete new street.

17. Provide a minimum 32’ pavement improvement with the following sections:
    - 10” of 1-1/2”-0 Crush Rock
    - 2” of ¾” -0 Leveling Course
    - 4” of AC Pavement consisting of 2” Class “C” over 2” Class “B”
    - See Public Works Standards Section 5.0030 Pavement Design for design requirements.

18. Provide curb and gutter. See WL-501 Detail for technical and construction specifications. See Public Works Standards Section 5.0040 Concrete Curb for design requirements.

19. Provide 6’ wide concrete sidewalk with sidewalk ramp at each end to allow access for disability. See WL-508 for sidewalk technical and construction specifications. See WL-507A and WL-507B for ADA technical and construction specifications. See Public Works Standards Section 5.0050 Sidewalks and Section 5.0051 Sidewalk Ramps for design requirements.

20. Provide illumination analysis of the existing conditions. Install street lights as recommended in accordance to the followings:

- Average Maintained Illumination: 0.6 foot-candles (Residential)
- Uniformity Average to Minimum: 4 to 1
- Street Light should match with existing surrounding lights – Shoe Box on Bronze Pole.
- Bulb: Flat lens 100 watts maximum

21. Provide Street Tree. Coordinate with Parks Department for requirements.

22. All new and existing overhead utilities along the development must be placed underground.

23. Construct Sunbreak Lane connecting with Tannler Drive per design shown on page 8.

**D. CITY TRANSPORTATION MASTER PLAN**

**PEDESTRIAN MASTER PLAN**

Bland Circle is indicated in the City Pedestrian Master Plan as one of the roadways with sidewalk deficient. Sidewalk project along Bland Circle from the North Limit to Salamo Road is identified as project number 47 with medium level of priority on Pedestrian Master Plan Project list (See TSP page 5-7). This will conclude that sidewalk improvement shall be a "must" on any development along Bland Circle especially from the North Limit to Salamo Road.

**BICYCLE MASTER PLAN**

Bland Circle is not indicated in the City Bicycle Master Plan as one of the roadways with bicycle deficient. No bicycle lane improvement was listed on Bicycle Master Plan.

However being classified as a Collector, Bland Circle cross section must include 6' wide bicycle lane for any development along Bland Circle.

**MOTOR VEHICLE MASTER PLAN**

**Existing Operations Conditions**

Salamo Road and Bland Circle intersection was analyzed in TSP Existing Operation Conditions Section. The intersection has a LOS A/B. No collision occurs at this intersection. Truck Freight section indicated there were 24 trucks drove by this intersection when data was collected.

**Future Operations Conditions**

Salamo Road and Bland Circle intersect will have LOS A/D in 2030. This intersection will be operated at adequate level up to 2030. No further analysis was done beyond 2030.

**E. STREET SDC AND BIKE/PEDESTRIAN EFFECTIVE JULY 1ST 2012**

| Type of Use | Trip per Use | Factor | Reimbursement | Improvement | Administrative | Total |
|---|---|---|---|---|---|---|
| Per Factor of 1 | | 1.00 | $2,146 | $4,597 | $175 | $6,918 |
| Single Family | Per House | 1.01 | $2,115 | $4,643 | $177 | $6,987 |

| Type of Use | Trip per Use | Factor | Reimbursement | Improvement | Administrative | Total |
|---|---|---|---|---|---|---|
| Per Factor of 1 | | 1.00 | $0 | $1,503 | $39 | $1,542 |
| Single Family | Per House | 1.00 | $0 | $1,503 | $39 | $1,542 |

## I. STORM DRAINAGE

### A. MINIMUM REQUIRED IMPROVEMENTS

1. Provide treatment for new impervious of 500 square feet or more.
2. Provide detention for new impervious of 5000 square feet or more.
3. Storm Drainage Analysis Report is required.
4. Existing public storm drainage system is available on Tannler Drive for connection. If a storm-water facility constructed, the City prefer it to be shallow without fence.
5. As-Built: Florendo's Hideaway and City GIS available per request.

**B. SURFACE WATER SDC EFFECTIVE JULY 1ST 2012**

| Unit | | Factor | Reimbursement | Improvement | Administrative | Total |
|---|---|---|---|---|---|---|
| Per Factor of 1 | | 1.00 | $773 | $232 | $51 | $1,056 |
| Single Family | Per House | 1.00 | $773 | $232 | $51 | $1,056 |

## II. SANITARY SEWER

### A. MINIMUM REQUIRED IMPROVEMENTS

1. New sanitary sewer system installing to serve the development must be 8" main.
2. Existing public sanitary sewer system is available on Crestview Drive and Sunbreak Lane for connection.
3. As-Built: Florendo's Hideaway and City GIS available per request.

**B. SANITARY SEWER SDC EFFECTIVE JULY 1ST 2012**

| Unit | Meter Size | Factor | Reimbursement | Improvement | Administrative | Total |
|---|---|---|---|---|---|---|
| Per Factor of 1 | | 1.00 | $597 | $2,325 | $108 | $3,030 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Single Family | Per House | 1.00 | $597 | $2,325 | $108 | $3,030 |

**Tri-City Service District Sewer SDC 1 EDU = $2,020**

## III. WATER

### A. PRESSURE ZONE

1. Zone: Horton
2. Overflow Elevation: 730 Upper Elevation: 620 Lower Elevation: 475
3. Sub pressure zone serves customer at ground elevation as low as 340.

### B. RESERVOIR AND PUMP STATION

1. Reservoir: Horton is located at the intersection of Horton Rd and Santa Anita Dr. The reservoir usable capacity is approximate 1.5 million gallon. The reservoir is filled by Bolton Pump Station. Horton Reservoir also supplies water to Rosemont Reservoir through Horton Pump Station.
2. Pump Station: Horton Pump Station consists of 4 pumps. Two can pump 900 gpm and two can pump 1,300 gpm with total capacity of 4,400 gpm and a nominal capacity of 3,100 gpm. There is an emergency standby diesel generator onsite in case power failure.

### C. EXISTING POPULATION AND PROJECTED POPULATION AT SATURATION

1. Existing Population: 6,192
2. Projected Population at Saturation: 7,843

### D. WATER DEMAND AT SATURATION

| Average Day Demand (mgd) | Maximum Day Demand (mgd) | Peak Hour Demand (mgd) |
|---|---|---|
| 1.1 | 2.3 | 12.6 |

### E. RESERVOIR AND PUMP STATION CURRENT OPERATNG CONDITIONS

1. In accordance with Water System Plan, both the reservoir and pump station are listed in good conditions.

### F. HORTON PRESSURE ZONE PEFORMANCE

| Year | MDD (mg) | Fire Flow (mg) | Total Supply Need (mg) | Normal Supply Capacity (mg) | Emergency Supply Capacity (mg) | Normal Supply Deficit (mg) | Emergency Supply Deficit (mg) |
|---|---|---|---|---|---|---|---|
| **Current** | **3.1** | **0.5** | **3.6** | **4.3** | **1.3** | **(0.7)** | **1.3** |
| **2015** | **3.2** | **0.5** | **3.7** | **4.3** | **1.3** | **(0.6)** | **1.4** |
| **2030** | **3.6** | **0.5** | **4.1** | **4.3** | **1.3** | **(0.2)** | **1.7** |
| **Saturation** | **3.8** | **0.5** | **4.3** | **4.3** | **1.3** | **0** | **1.8** |

1. The table above indicates that there is a surplus in supply capacity during a normal condition.

## G. HORTON PRESSURE ZONE SUPPLY AND STORAGE DEFICIT

| Year | Normal Conditions | | | Emergency Conditions | | |
|---|---|---|---|---|---|---|
| | Supply Deficit (mgd) | Storage Volume (mg) | Overall Deficit (mgd) | Supply Deficit (mgd) | Storage Deficit (mgd) | Overall Deficit (mgd) |
| **Current** | **0** | **1.1** | **0** | **1.3** | **1.1** | **0.2** |
| **2015** | **0** | **1.1** | **0** | **1.4** | **1.1** | **0.3** |
| **2030** | **0** | **1.1** | **0** | **1.7** | **1.1** | **0.6** |
| **Saturation** | **0** | **1.1** | **0** | **1.8** | **1.1** | **0.7** |

1. The table above indicates that there is no storage volume deficit during a normal condition.

## H. HORTON PRESSURE ZONE MASTER PROJECT LIST

| Number | Location | Ex. Diameter (inches) | Proposed Diameter (inches) | Priority | Length (ft) | SDC Allocation | Unit Cost ($/lf) | Estimated Project Cost ($) |
|---|---|---|---|---|---|---|---|---|
| 29 | Weatherhill Rd. from Salamo Rd to S Bland Cir. and then South | | 8 | 4 | 2,312 | 100% | 125 | $289,000 |
| 31 | Sussex St. south of Sunset Ave. | 4 | 8 | 5 | 248 | 0% | 125 | $31,000 |
| 32 | From River View Ave. to Falls View Dr. | 4 | 8 | 5 | 213 | 0% | 125 | $26,625 |
| 39 | Clark St. south of Skyline | 6 | 8 | 5 | 425 | 0% | 125 | $53,125 |
| 42 | North of Linn Ln. | 6 | 8 | 5 | 369 | 0% | 125 | $46,125 |
| 43 | Parkview Ter. And Rosepark Dr. | 6 | 8 | 5 | 765 | 0% | 125 | $95,625 |
| 47 | Apollo Rd. west of Athena Rd. | 6 | 8 | 5 | 385 | 0% | 125 | $48,125 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 48 | Palomino Wy. from Saddle Ct. to Palomino Cir. | 6 | 8 | 4 | 246 | 100% | 125 | $30,750 |

1. The table above indicates that there is no improvement required along the proposed project frontage.

**I. MINIMUM REQUIRED IMPROVEMENTS**

1. New water system installing to serve the development must be 8" main
2. Provide loop system on Crestview Drive.
3. Extend existing 8" DI on Sunbreak Lane is a possibility.
4. As-Built: Florendo's Hideaway and City GIS available per request.

**J. WATER SDC EFFECTIVE JULY 1ST 2012**

| Unit | Meter Size | Factor | Reimbursement | Improvement | Administrative | Total |
|---|---|---|---|---|---|---|
| Per Factor of 1 | | 1.00 | $571 | $6,793 | $191 | $7,555 |
| 5/8" Meter | 1 | | $571 | $6,793 | $191 | $7,555 |

**Process**

A subdivision approval is required. The applicant might also be required to pursue Class II Variances for lots that do not meet the "two and a half times" rule and blocks over 800 feet long. Subdivisions and Class II Variances are both Planning Commission decisions.

Follow 85.150-170 (and 75.050 if there is a variance) strictly and completely regarding submittal requirements (including plans, maps, etc.). Submittal requirements may be waived but the applicant must first identify the specific submittal requirement and request, in writing, that it be waived by the Planning Director and must identify the specific grounds for that waiver. The waiver may or may not be granted by the Planning Director. Waivers may also be subsequently overruled by the decision making body.

The approval criteria of 85.200 shall be responded to in a narrative. If the applicant applies for a Class II variance(s), the approval criteria of 75.060 must be responded to as well.

Submit the application to the Planning Department with a signed application form. The deposit for a Subdivision application is $4,200, plus $200 per lot, for a total initial

deposit of $6,400 in this case. The final plat fee is $2,000. There is also a $500 fee for final site inspection. The deposit for Class II Variance is $2,900. (Any additional Class II Variance beyond the first one has a deposit of $1,450.) **PLEASE NOTE** that the deposits are initial deposits, and staff time is charged against the deposit account. It is common for there to be more staff time spent on development applications than deposits cover, and therefore additional billing may be likely to occur.

Once the submittal is deemed complete, the staff will schedule a hearing with the Planning Commission. Staff will send out public notice of the Planning Commission hearing at least 20 days before it occurs. The Planning Commission's decision may be appealed to City Council by the applicant or anyone with standing.

The CDC is online at http://westlinnoregon.gov/planning/community-development-code-cdc.

The applicant inquired in their submittal about whether an expedited land division application could be processed concurrently with a variance or variances. Section 99.060(E) provides for expedited land division applications. Per 99.060(E) (1), these can be processed concurrently with certain other applications, but a variance is not one of them. If the applicant applies for any variances, expedited land division is not an option.

A neighborhood meeting is required for a subdivision approval per 99.038. Follow the requirements of that code section explicitly. The site is within the Savanna Oaks neighborhood but is also within 500 feet of the Willamette neighborhood. Contact Ed Schwarz, President of the Savanna Oaks Neighborhood Association, at savannaoaksNA@westlinnoregon.gov and Beth Smolens, President of the Willamette Neighborhood Association at willametteNA@westlinnoregon.gov .The applicant is required to provide the neighborhood associations with conceptual plans and other material at least 10 days prior to the meeting. **Because of the time and scheduling requirements of 99.038, the applicant should address this requirement as soon as possible.**

Pre-application notes are void after 18 months and a new pre-application conference is required.

For annexation questions please contact City of West Linn Economic Development Co-coordinator Chris Kerr at 723-2538

***Typical land use applications can take 6-10 months from beginning to end.***

**DISCLAIMER:** This summary discussion covers issues identified to date. It does not imply that these are the only issues. The burden of proof is on the applicant to demonstrate that all approval criteria have been met. These notes do not constitute an endorsement of the proposed application. Staff responses are based on limited material presented at this pre-application meeting. New issues, requirements, etc. could emerge as the application is developed. Thus, there is no "shelf life" for pre-apps.

7012 1070 0000 6447 3095

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WEST LINN OR 97068

OFFICIAL USE

| | | |
|---|---|---|
| Postage | $ $0.45 | 0100 |
| Certified Fee | $2.95 | 14 |
| Return Receipt Fee (Endorsement Required) | $2.35 | Postmark Here |
| Restricted Delivery Fee (Endorsement Required) | $0.00 | |
| Total Postage & Fees | $ $5.75 | 10/15/2012 |

Sent To: BETH KIERES
Street, Apt. No.; or PO Box No.: 22106 HORIZON DRIVE
City, State, ZIP+4: WEST LINN, OR 97068

PS Form 3800, August 2006 — See Reverse for Instructions

7012 2920 0001 9457 6988

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WEST LINN OR 97068

OFFICIAL USE

| | | |
|---|---|---|
| Postage | $ $0.46 | 0159 |
| Certified Fee | $3.10 | APR 17 2013 |
| Return Receipt Fee (Endorsement Required) | $2.55 | Postmark Here |
| Restricted Delivery Fee (Endorsement Required) | $0.00 | |
| Total Postage & Fees | $ $6.11 | 04/17/2013 |

Sent To: ED SCHWARZ
Street, Apt. No.; or PO Box No.: 2206 TANNLER
City, State, ZIP+4: WEST LINN, OR 97068

PS Form 3800, August 2006 — See Reverse for Instructions

**SENDER: *COMPLETE THIS SECTION***

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

ED SCHWARZ
2206 TANNLER
WEST LINN, OR 97068

***COMPLETE THIS SECTION ON DELIVERY***

A. Signature
X Edward Schwarz ☐ Agent ☐ Addressee

B. Received by *(Printed Name)*: EDWARD SCHWARZ
C. Date of Delivery:

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☒ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? *(Extra Fee)* ☐ Yes

2. Article Number *(Transfer from service label)*: 7012 2920 0001 9457 6988

PS Form 3811, February 2004 — Domestic Return Receipt — 102595-02-M-1540

**SENDER: *COMPLETE THIS SECTION***

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

BETH SMOLENS
1852 4TH AVE
WEST LINN, OR 97068

***COMPLETE THIS SECTION ON DELIVERY***

A. Signature
X [signature] ☐ Agent ☐ Addressee

B. Received by (*Printed Name*) AEON HELMONS C. Date of Delivery 4-12-13

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☑ Certified Mail ☐ Express Mail
☐ Registered ☑ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (*Extra Fee*) ☐ Yes

2. Article Number (*Transfer from service label*) 7007 0220 0001 7088 9515

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

**SENDER: *COMPLETE THIS SECTION***

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

ED SCHWARZ
2206 TANNLER DR.
WEST LINN, OR 97068

***COMPLETE THIS SECTION ON DELIVERY***

A. Signature
X [signature] ☐ Agent ☐ Addressee

B. Received by (*Printed Name*) EDWARD SCHWARZ C. Date of Delivery APR 13 2013

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

WEST LINN OR USPS

3. Service Type
☑ Certified Mail ☐ Express Mail
☐ Registered ☑ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (*Extra Fee*) ☐ Yes

2. Article Number (*Transfer from service label*) 7007 0220 0001 7088 9508

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

# PUBLIC NOTICE

## OF TWO NEIGHBORHOOD MEETINGS

## THIS SITE MAY BE SUBJECT TO A PROPOSED SUBDIVISION.

PLEASE CONTACT THE APPLICANT FOR MORE INFORMATION AT
THE FOLLOWING NUMBER OR FEEL FREE TO ATTEND ONE OF THE
TWO SCHEDULED NEIGHBORHOOD MEETINGS:

3J CONSULTING, INC. C/O ANDREW TULL
503-946-9365

### NEIGHBORHOOD MEETING 1:

SAVANNAH OAKS NEIGHBORHOOD
ASSOCIATION MEETING
MAY 7, 2013 AT 7:00 PM
WILLAMETTE FIRE STATION 59
1860 WILLAMETTE FALLS DRIVE,
WEST LINN, OR 97068

### NEIGHBORHOOD MEETING 2:

WILLAMETTE NEIGHBORHOOD
ASSOCIATION MEETING
MAY 8, 2013 AT 7:00 PM
PACIFIC WEST BANK IN
WILLAMETTE MARKETPLACE
2000 SW 8TH AVE,
WEST LINN, OR 97068

**NEIGHBORHOOD MEETING**

**AFFIDAVIT OF POSTING NOTICE**

STATE OF OREGON )

SS

County of Clackamas )

I, Andrew Tull, being duly sworn, state that I represent the party initiating interest in a proposed subdivision affecting the land located at 23150 Bland Circle in West Linn, Oregon and that pursuant to Community Development Code Section 99, did on the 17th day of April, 2013 personally post notice indicating that the site may be proposed for a subdivision application.

The sign was posted along the southern boundary of the property along Bland Circle.

This 10TH day of MAY, 2013.

Signature

Subscribed and sworn to, or affirmed, before me this 10 day of MAY, 2013.

OFFICIAL SEAL
BRIAN D FAST
NOTARY PUBLIC - OREGON
COMMISSION NO. 446377
MY COMMISSION EXPIRES FEBRUARY 03, 2014

Notary Public for the State of OREGON

County of WASHINGTON

My Commission Expires: 2/3/14

**NEIGHBORHOOD MEETING**

**AFFIDAVIT OF MAILING**

STATE OF OREGON )

SS

County of Clackamas )

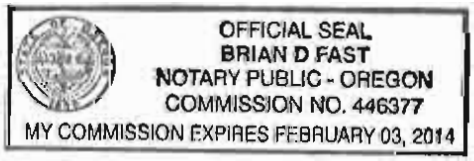
I, Andrew Tull, being duly sworn, state that on the 17th day of April, 2013 I caused to have mailed, to each of the persons on the attached list, a notice of a meeting to discuss a proposed development at 23150 Bland Circle. A copy of the notice so mailed is attached hereto and made a part thereof.

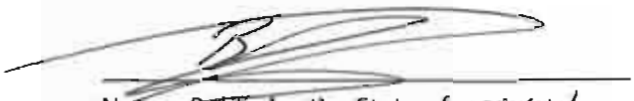
I further state that said notices were enclosed in envelopes plainly address to said persons and were deposited on the date indicated above in the United States Post Office with postage prepaid thereon.

This 10TH day of MAY, 2013.

Signature

Subscribed and sworn to, or affirmed, before me this 10 day of MAY, 2013.



Notary Public for the State of OREGON

County of WASHINGTON

My Commission Expires: 2/3/14

Civil Engineering
Water Resources
Land Use Planning

April 17, 2013

**23150 Bland Circle and 22882 Weatherhill Road**
**Proposed Residential Subdivisions**

To Our Neighbors,

3J Consulting acts on behalf of JT Smith Companies regarding two subdivision projects which are located within the Savannah Oaks and Willamette Neighborhood Associations. The first proposed subdivision is a small property located off of Bland Circle and is identified as 23150 Bland Circle. The second proposed subdivision is located on a property which takes access off of Weatherhill Road and is listed as 22882 Weatherhill Road. The location of each property is shown on the attached maps. Both properties are located inside the City of West Linn's boundaries and both properties are zoned R-7 or Single Family Residential.

The Sunbreak Subdivision will create 11 new residential lots. The property currently contains one existing home which will be removed in order to allow for the proposed development. Each of the proposed lots will exceed 7,000 square feet which is the minimum lot size within the R-7 zoning district. The proposed site improvements will include a small extension of Tannler Street, north into the property and the completion of Sunbreak Street and Crestview Drive, which have long been anticipated by the City and the surrounding community. A series of small pedestrian trails may also be included within the development to provide pedestrian connectivity to the surrounding neighborhoods.

The Weatherhill Subdivision will create a total of 9 new residential lots. The property also currently contains one existing home which will be removed in order to allow for the proposed development. Each of the proposed lots within the development will exceed 7,000 square feet which is the minimum lot size within the R-7 zoning district. The proposed improvements will likely involve the installation of a new public road and potential pedestrian network.

Before finalizing and delivering the two subdivision applications to the City's Planning Department, we would like to take the opportunity to discuss this proposal with the members of the Savannah Oaks Neighborhood Association, members of the Willamette Neighborhood Association, and property owners residing within 500 feet of the property.

Two presentations to discuss this proposal have been scheduled to allow interested individuals to learn more about these projects. The presentations have been scheduled during the Savannah Oaks and Willamette Neighborhood Association's regularly scheduled meetings and those presentations will be made in addition to the agendas set by the associations. The meetings are to be held at the following dates and times:

**Savannah Oaks Neighborhood Association Meeting**
**May 7, 2013 at 7:00 pm**
**Willamette Fire Station 59**
**1860 Willamette Falls Drive, West Linn, OR 97068**

or

**Willamette Neighborhood Association Meeting**
**May 8, 2013 at 7:00 pm**
**Pacific West Bank in Willamette Marketplace**
**2000 SW 8th Ave, West Linn, OR 97068**

3J Consulting, Inc.
10445 SW Canyon Road Suite 245 Beaverton, OR 97005
Ph: 503-946-9365
andrew.lull@3j-consulting.com

The purpose of these meetings is to provide a forum for surrounding property owners and residents to review both projects and to identify issues so they can be given proper consideration. These meetings will provide the opportunity to share with the project team any special information you know about the property involved. The project team will try to answer questions related to how the project meets the relevant development standards consistent with West Linn's land use regulations.

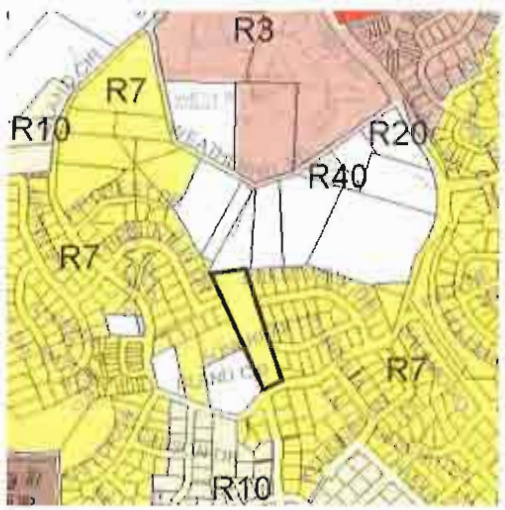
Please note that these will be informational meetings based upon preliminary development plans and that these plans may change slightly before the application is submitted to the City. Additional information may be available from each respective association's President and/or officers and any concerned citizens are encouraged to contact the relevant neighborhood association with any comments or concerns.

We look forward to discussing this proposal with you. Please feel free to contact us at 503-545-1907 or at andrew.tull@3j-consulting.com if you have any questions.

Sincerely,

Andrew Tull
Principal Planner
3J Consulting, Inc.

copy: File




**Site Location Map I | Sunbreak Subdivision - 23150 Bland Circle**


**Site Location Map II | Weatherhill Subdivision - 22882 Weatherhill Road**

# STORMWATER REPORT

## SUNBREAK SUBVISION
## WEST LINN, OR

**June 19, 2013**

*Prepared For:*

LF3, LLC
West Linn, OR

*Prepared By:*
***3J Consulting, Inc.***
*10445 SW Canyon Rd, Suite 245*
*Beaverton, Oregon 97005*
*Project No: 13113*
*KEF*

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# LIST OF FIGURES



# LIST OF TABLES

# EXECUTIVE SUMMARY

The existing site is located on private property at 23150 Bland Circle in West Linn, Oregon (See Figure 2). The property is approximately 2.8 acres and currently contains a single family home, pasture and an asphalt driveway. The proposed development will consist of subdividing the property to create 11 lots with minimum area of 7,000 $ft^2$. Additionally, the existing Crestview Drive and Sunbreak Lane will connect through the proposed development. Half-street improvements along Bland Circle will be constructed as well. The purpose of this storm water report is to describe the design of the stormwater management systems following the City of West Linn requirements.

Stormwater runoff from the proposed development will be conveyed to a detention pond for water quality treatment and detention. The pond has been sized to comply with the following requirements:

- Treat stormwater runoff using the City of Portland's requirement of 0.83 inches of precipitation for a 24-hour storm event.
- Capture and detain the 2, 5, 10 and 25-year, 24-hour post developed runoff rate to release at the 2, 5, 10 and 25-year, 24-hour existing runoff rate.

A geotechnical investigation was completed in April 2013 showing that infiltration rates on the site are 1.7 and 1.0 in/hr at 2 and 3.5 feet below ground surface, respectively.

The purpose of this report is to describe the facilities being proposed and to show that the design follows the City of West Linn's Public Works Design Standards.

# PROJECT DESCRIPTION

The existing site is located on private property at 23150 Bland Circle in West Linn, Oregon (See Figure 1 and 2).

The purpose of this report is to describe the facilities being proposed and show that the design follows the City of West Linn Public Works Design Standards in effect at the time of this report.

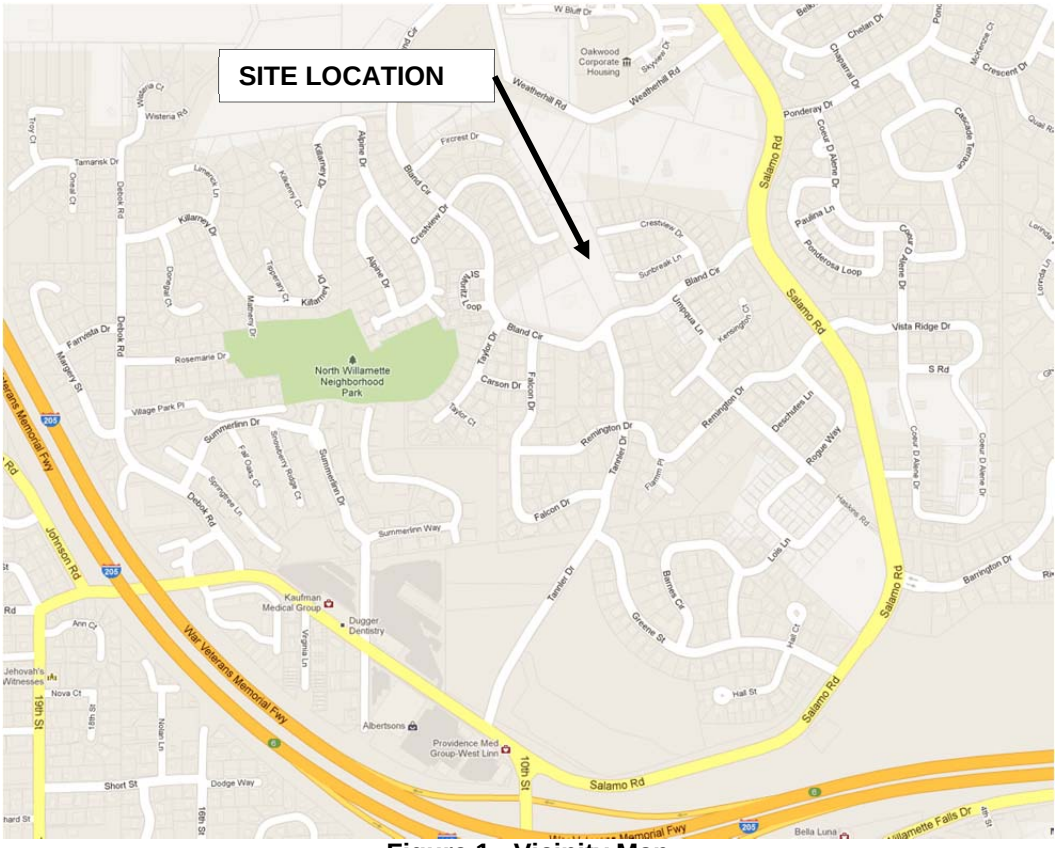



**Figure 1 - Vicinity Map**

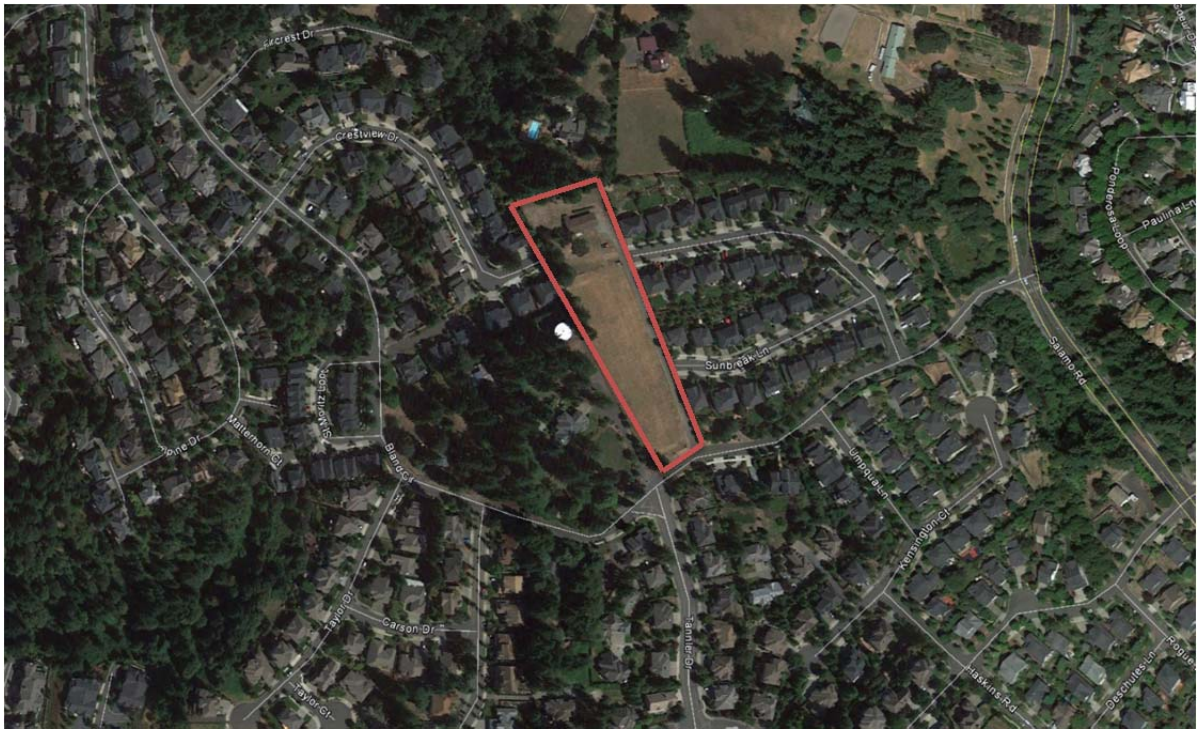



**Figure 2 - Site Location**

## EXISTING CONDITIONS

### Site

The property slopes toward south-southeast at grades ranging from 10% to 25%. Elevations range from a maximum of 592 feet on the north side of the property to a minimum of 500 feet on the south side. Currently the property contains a single family home, pasture and an asphalt driveway.

### Climate

The site is located in Clackamas County approximately 12 miles south of downtown Portland in the West Linn foothills. Average annual rainfall recorded in this area is 47 inches.

### Flood Map

The flood plain map shows that the site resides in Zone X, where no base flood elevations have been determined (See Technical Appendix: Exhibits – FIRM Panel 257 of 1175).

### Site Geology

The soil type as classified by the United States Department of Agriculture Soil Survey of Clackamas County is identified in Table 1 (See Technical Appendix: Exhibits - Hydrologic Soil Group for Clackamas County Area, Oregon).

| Soil Type | Hydrologic Group |
|---|---|
| Nekia silty clay loam | C |
| Saum silt loam | C |

**Table 1 - Soil Characteristics**

The soil on the proposed site consists of approximately 3% Nekia silty loam and 97% Saum silt loam. Both soil types are classified as hydrologic group C. Group C soils generally have slow infiltration rates.

A geotechnical investigation was completed in April 2013 showing that infiltration rates on the site are 1.7 and 1.0 in/hr at 2 and 3.5 feet below ground surface, respectively (See Technical Appendix: Geotechnical Report).

## Existing Drainage

### Existing Site

The existing site does not contain a stormwater management system. Stormwater runoff from the site sheet flows south and southwest towards adjacent property and Bland Circle and Tannler Drive.

### Basin Areas

Table 2 shows the current impervious and pervious areas for the property (See Technical Appendix: Exhibits – Existing Site Conditions).

| Existing Basin Area | sq. ft. | acres |
|---|---|---|
| Impervious Area | 10,716 | 0.25 |
| Pervious Area | 111,296 | 2.56 |
| Total Existing Basin Area | 122,012 | 2.80 |

**Table 2 – Existing Basin Areas**

### Curve Number

The major factors for determining the CN values are hydrologic soil group, cover type, treatment, hydrologic condition, and antecedent runoff condition. The curve number represents runoff potential from the ground. Tables 2-2a and 2-2c in the TR-55 manual were used to determine the appropriate curve numbers (See Technical Appendix: Exhibits – Table 2-2a and 2-2c Runoff Curve Numbers).

The existing site consists of meadow, trees, a house and driveway. The pervious area was considered to be meadow (CN=71) and the impervious surface has CN=98. The post-developed pervious area was considered to be open space in fair condition (grass cover 50%-75%) with a corresponding curve number of 79.

### Time of Concentration

The time of concentration was calculated for the existing site using the TR-55 Method. The time of concentration of 16 minutes was calculated for the existing basin (See Technical Appendix: Calculations– Time of Concentration). The time of concentration for the post-developed conditions was assumed to be 5 minutes.

## POST-DEVELOPED CONDITIONS

### Post-Developed Site

Stormwater runoff from the site will be conveyed to a proposed detention pond in the southern portion of the site (Tract A) via catch basins and manholes. The pond will treat and detain the stormwater releasing it to the existing storm system in Bland Circle.

**Basin Areas**
Table 3 shows the post-developed impervious and pervious areas (See Technical Appendix: Exhibits – Post-Developed Site Conditions).

| Existing Basin Area | sq. ft. | acres |
|---|---|---|
| Impervious Area | 63,889 | 1.47 |
| Pervious Area | 57,970 | 1.33 |
| Total Existing Basin Area | 121,859 | 2.80 |

**Table 3 – Post-Developed Basin Areas**

# HYDROLOGIC ANALYSIS DESIGN GUIDELINES

## Design Guidelines
The site is located within the jurisdiction of the City of West Linn, which follows the City of Portland's Stormwater Management Manual for the design of stormwater facilities. Stormwater runoff from the proposed development will be conveyed to a wet detention pond for water quality treatment and detention. The pond has been sized to comply with the following requirements:

- Treat stormwater runoff for water quality storm event (0.83 inches);
- Capture and detain the 2, 5, 10 and 25-year, 24-hour post developed runoff rates to the existing 2, 5, 10 and 25-year, 24-hour existing runoff rates.

An infiltration rate of 1.0 in/hr with a factor of safety of 4 was used for the bottom surface area of the pond.

## Hydrograph Method
Naturally occurring rainstorms dissipate over long periods of time. An effective way of estimating storm rainfall is by using the hydrograph method. The Santa Barbara Unit Hydrograph (SBUH) method was used to develop runoff rates. The computer software XPSTORM was used to compute runoff rates and volumes.

## Design Storm
The rainfall distribution to be used for this area is the design storm of 24-hour duration based on the standard Type 1A rainfall distribution. Table 4 shows total precipitation depths for the various storm events, which were used as a multiplier for the Type 1A 24-hour rainfall distribution.

| Recurrence Interval (years) | Total Precipitation Depth (in.) |
|---|---|
| Water Quality | 0.83 |
| 2 | 2.50 |
| 5 | 3.00 |
| 10 | 3.40 |
| 25 | 3.90 |
| 100 | 4.50 |

**Table 4 - Design Storms**

### Basin Runoff

Table 5 shows the runoff rates for the existing and post-developed conditions (See Technical Appendix: Hydrographs – Hydrograph Report: Existing and Post-Developed).

| Recurrence Interval (years) | Existing Runoff Rate (cfs) | Post-Developed Runoff Rate (cfs) |
|---|---|---|
| WQ | N/A | 0.24 |
| 2 | 0.21 | 1.05 |
| 5 | 0.37 | 1.35 |
| 10 | 0.52 | 1.59 |
| 25 | 0.73 | 1.91 |
| 100 | 1.00 | 2.30 |

**Table 5 - Basin Runoff Rates**

## HYDRAULIC ANALYSIS AND DESIGN CHARACTERISTICS

The stormwater conveyance system and flow control structure will be sized in the final design phase of the project.

## WATER QUALITY/QUANTITY

### Water Quality Guidelines

The stormwater facility design follows West Linn's design standards and the City of Portland's Stormwater Management Manual guidelines. The stormwater facility will be designed for flow control and pollution reduction. The City of Portland's performance approach was used to size an extended wet pond. The pond will detain the water quality volume for a minimum of 24 hours. The water quality volume (based on preliminary analysis) for the post-developed condition is 3,483 $ft^3$.

### Water Quantity Guidelines

The pond has been designed to release flows at or below the required release rates (as described on the previous page) based on the Existing Runoff Rates shown in Table 5.

### Wet detention Pond Volume

The pond will be approximately 41 feet wide by 90 feet long. It will be constructed with 3:1 side slopes. Table 6 shows the available storage capacity of the proposed pond.

| Elevation (ft.) | Surface Area ($ft^2$) | Average Surface Area ($ft^2$) | Sectional Volume ($ft^3$) | Total Volume ($ft^3$) |
|---|---|---|---|---|
| 498.5 | 1,031 | | | |
| | | 1,156 | 578 | |
| 499 | 1,281 | | | **578** |
| | | 1,552 | 1,552 | |
| 500 | 1,823 | | | **2,130** |
| | | 2,124 | 2,124 | |
| 501 | 2,425 | | | **4,254** |
| | | 2,755 | 2,755 | |
| 502 | 3,086 | | | **7,010** |
| | | 3,266 | 1,633 | |
| 502.5 | 3,446 | | | **8,643** |
| | | | | |

**Table 6 – Proposed Pond Volume**

**Post-Developed Peak Release Rates**

The proposed pond will release less than required. Table 7 shows the release rate from the pond (See Technical Appendix – Hydrographs). These figures may change depending of the final design of the stormwater conveyance system.

| Recurrence Interval (years) | Peak Release Rate from Pond (cfs) |
|---|---|
| WQ | 0.04 |
| 2 | 0.21 |
| 5 | 0.34 |
| 10 | 0.50 |
| 25 | 0.73 |
| 100 | 1.61 |

**Table 7 – Post-developed Release Rates**

Table 8 below shows the maximum depth and stage in the pond during all storm events analyzed. The flow control structure will be finalized and presented in the final Storm Water Report.

| Recurrence Interval (years) | Maximum Stage in Pond (ft) | Maximum Depth in Pond (ft) | Maximum Freeboard in Pond (ft) |
|---|---|---|---|
| WQ | 499.12 | 0.62 | 3.38 |
| 2 | 500.58 | 2.08 | 1.92 |
| 5 | 500.87 | 2.37 | 1.63 |
| 10 | 501.04 | 2.54 | 1.46 |
| 25 | 501.24 | 2.74 | 1.26 |
| 100 | 501.35 | 2.85 | 1.15 |

**Table 8 – Peak Release Rates**

# SUMMARY

The stormwater design for the proposed Sunbreak Subdivision will meet or exceed the City of West Linn's requirements. All sizing of water quality/quantity facilities followed the City of Portland's Stormwater Management Manual.

# TECHNICAL APPENDIXED

**Exhibits**
- FIRM Panel 260 of 1175
- Hydrologic Soil Group-Clackamas County Area, Oregon
- Table 2-2a and 2-2c Runoff Curve Numbers
- Existing Site Conditions
- Post-Developed Site Conditions

**Drawings**
- Sheet C1.0 “Existing Conditions Plan”
- Sheet C2.5 “Composite Utility Plan”

**Hydrographs**
- Existing Runoff Hydrograph
- Post Developed Runoff Hydrograph
- Peak Release Rate Hydrograph

**Calculations**
- Time of Concentration

**Geotechnical Reports**
- Geotechnical Engineering Report, GeoPacific Engineering, Inc, April 29, 2013

**Operations and Maintenance**
- Operations and Maintenance Plan for Stormwater Facilities - To be Completed with the Final Design

# REFERENCES


1. City of West Linn’s Public Works Design Standards Issued in 2010

2. City of Portland’s Stormwater Management Manual Issued in August 2008

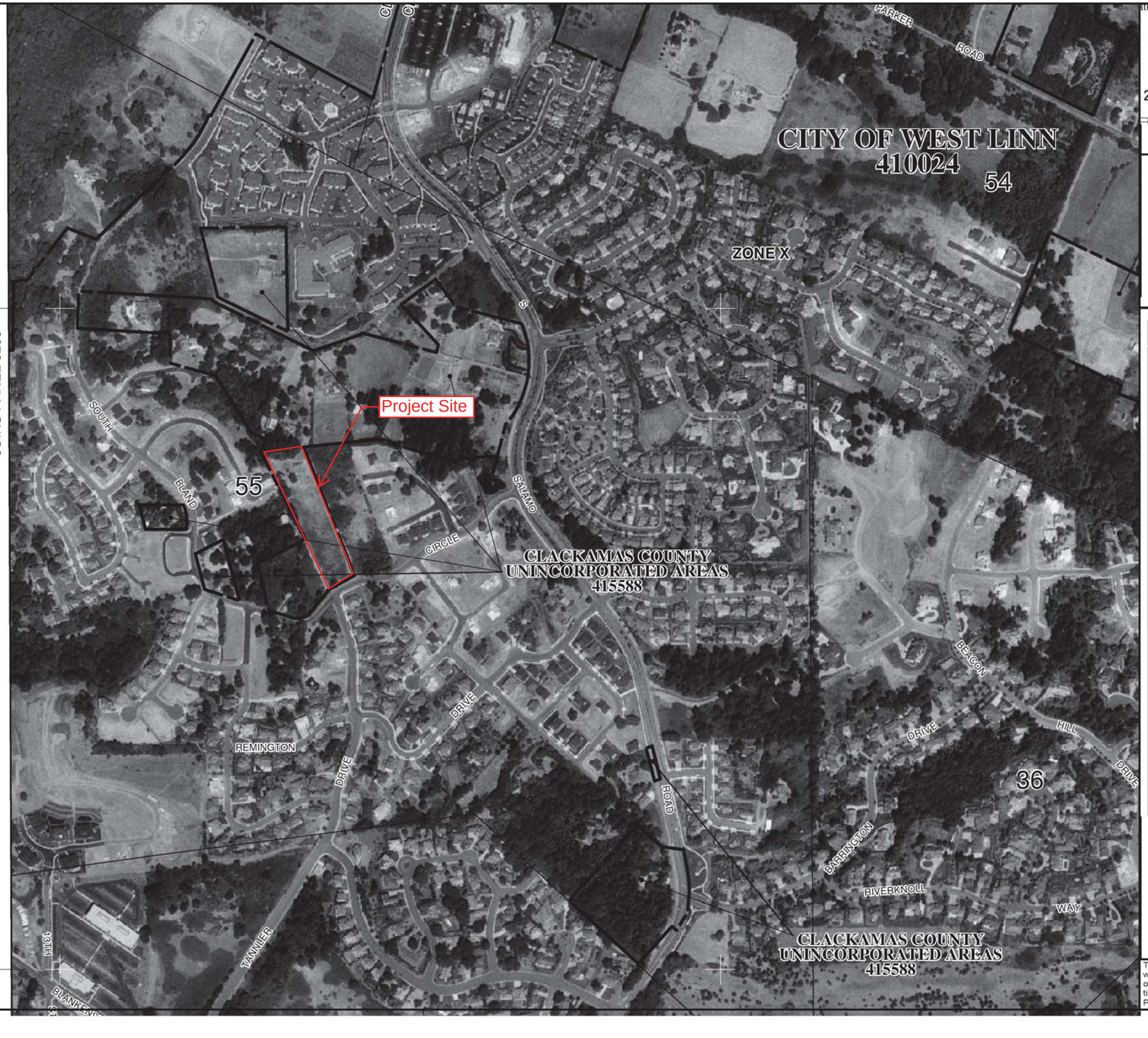
3. Soil Survey of Clackamas County Area. National Resource Conservation Service

4. Urban Hydrology for Small Watersheds – TR-55 Issued in June 1986 – U.S. Department of Agriculture, Natural Resources Conservation Service, Conservation Engineering Division

5. http://westlinnoregon.gov/publicworks/stormwater-fact-sheet

# EXHIBITS

tional Flood Insurance Program at 1-800-638-6620.




MAP SCALE 1" = 500'

250 0 500 1000 FEET

150 0 150 300

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0257D

# FIRM

## FLOOD INSURANCE RATE MAP

**CLACKAMAS COUNTY, OREGON**

**AND INCORPORATED AREAS**

**PANEL 257 OF 1175**

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

| COMMUNITY | NUMBER | PANEL | SUFFIX |
|---|---|---|---|
| CLACKAMAS COUNTY | 415588 | 0257 | D |
| OREGON CITY, CITY OF | 410021 | 0257 | D |
| WEST LINN, CITY OF | 410024 | 0257 | D |

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

**MAP NUMBER**
**41005C0257D**

**EFFECTIVE DATE**
**JUNE 17, 2008**

Federal Emergency Management Agency


122° 39' 3"
122° 38' 57"
45° 21' 27"
45° 21' 21"
527340
527360
527380
527400
527420
527440
5022740
5022720
5022700
5022680
5022660
5022640
5022620
5022600
5022580
64C
78C
Bland Cir
Map Scale: 1:831 if printed on A size (8.5" x 11") sheet.
N
Meters
0 5 10 20 30
Feet
0 30 60 120 180

## MAP LEGEND

**Area of Interest (AOI)**

- Area of Interest (AOI)

**Soils**

- Soil Map Units

**Soil Ratings**

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

**Political Features**

- Cities

**Water Features**

- Streams and Canals

**Transportation**

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

## MAP INFORMATION

Map Scale: 1:831 if printed on A size (8.5" × 11") sheet.

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 accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 10N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Clackamas County Area, Oregon
Survey Area Data: Version 7, Aug 20, 2012

Date(s) aerial images were photographed: 8/3/2005

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.

# Hydrologic Soil Group

| Hydrologic Soil Group— Summary by Map Unit — Clackamas County Area, Oregon (OR610) | | | | |
|---|---|---|---|---|
| Map unit symbol | Map unit name | Rating | Acres in AOI | Percent of AOI |
| 64C | Nekia silty clay loam, 8 to 15 percent slopes | C | 0.1 | 3.1% |
| 78C | Saum silt loam, 8 to 15 percent slopes | C | 1.6 | 96.9% |
| **Totals for Area of Interest** | | | **1.6** | **100.0%** |

## Description

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 soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

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. Only the soils that in their natural condition are in group D are assigned to dual classes.

## Rating Options

*Aggregation Method:* Dominant Condition

*Component Percent Cutoff:* *None Specified*

*Tie-break Rule:* Higher

**Table 2-2a** Runoff curve numbers for urban areas [1/]

| Cover description | | Curve numbers for hydrologic soil group | | | |
|---|---|---|---|---|---|
| Cover type and hydrologic condition | Average percent impervious area [2/] | 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 2-2c** 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 $I_a = 0.2S$.

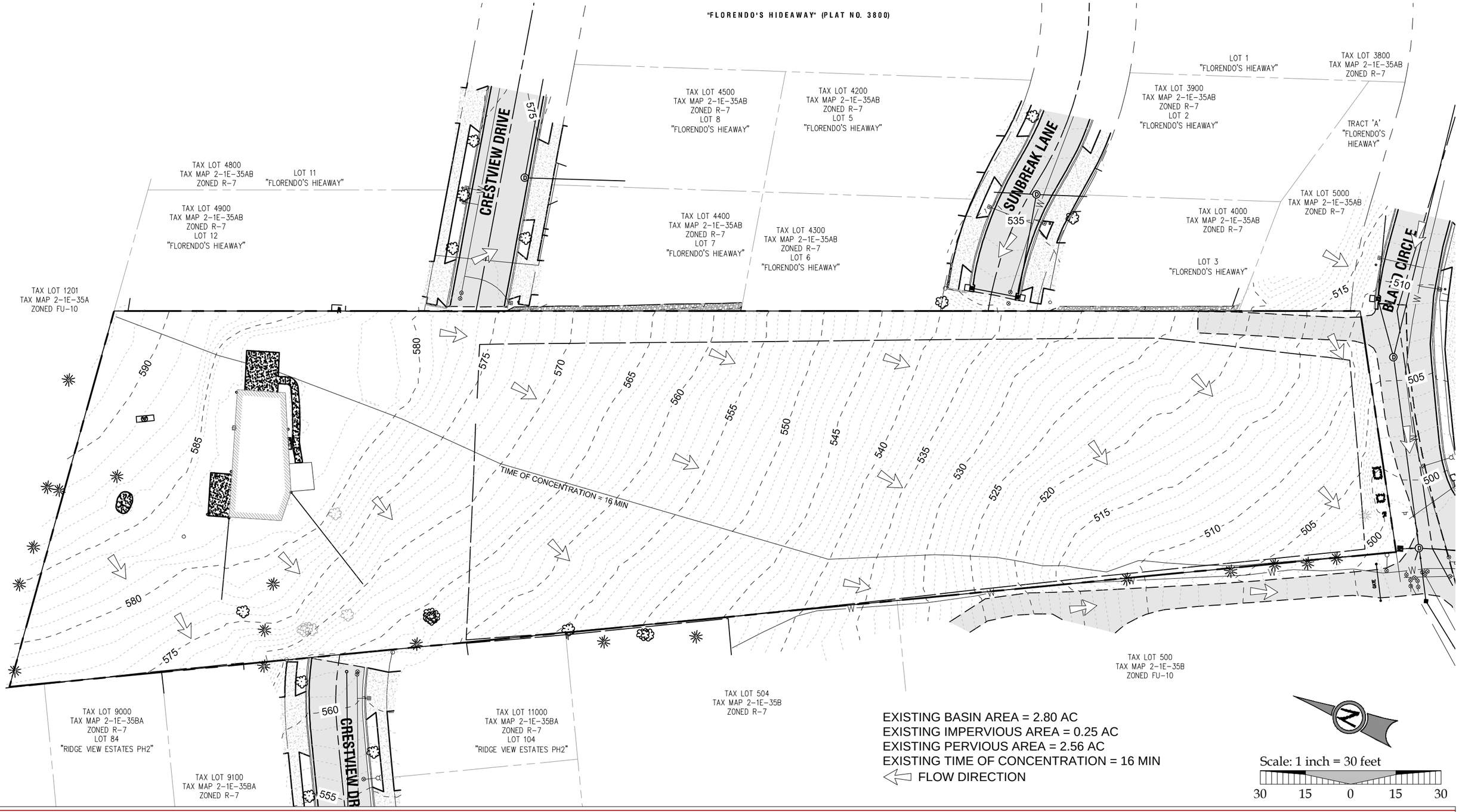
2 *Poor:* <50%) ground cover or heavily grazed with no mulch.
*Fair:* 50 to 75% ground cover and not heavily grazed.
*Good:* > 75% ground cover and lightly or only occasionally grazed.

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.




3J CONSULTING, INC

CIVIL ENGINEERING
WATER RESOURCES
LAND USE PLANNING

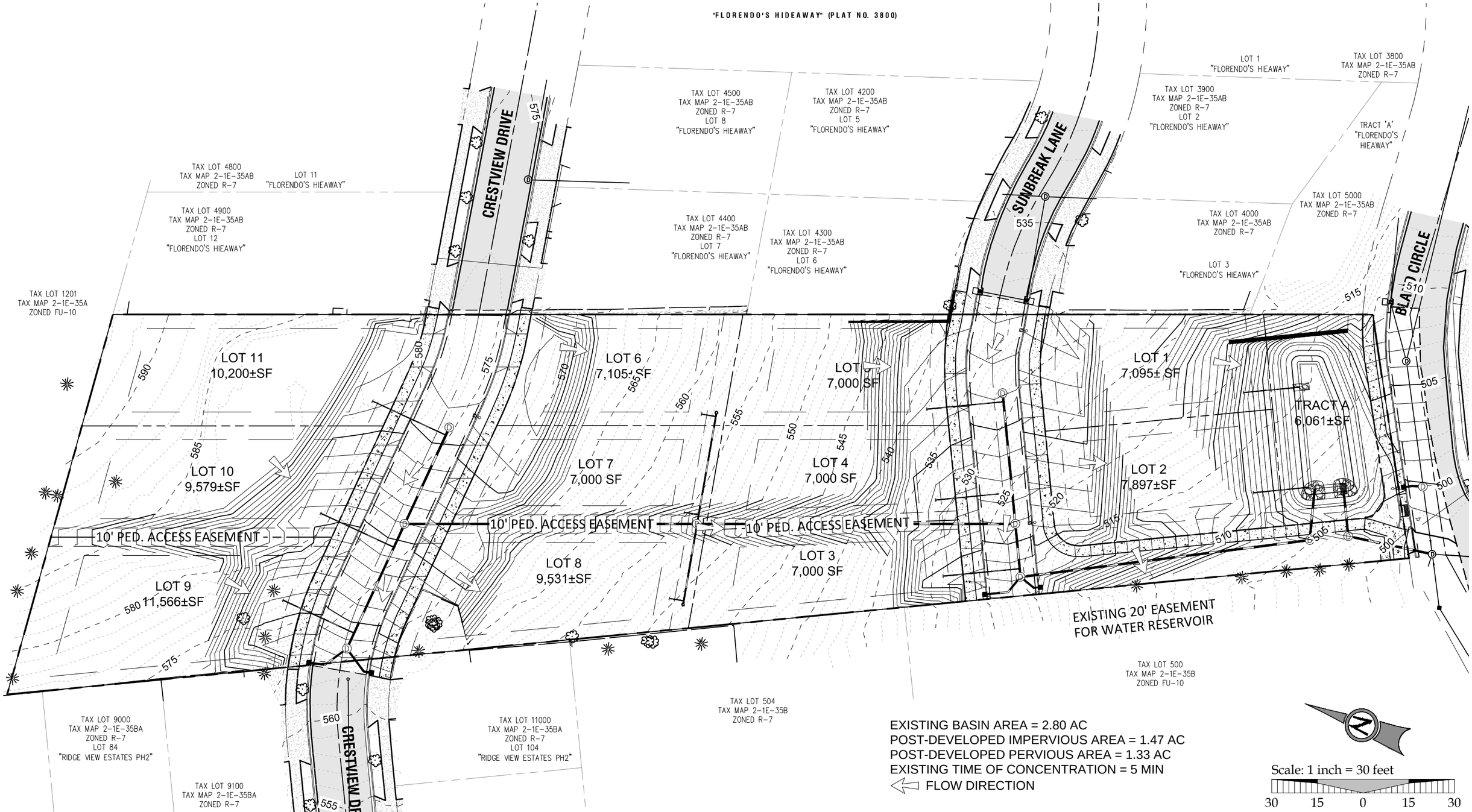
# EXISTING SITE CONDITIONS
# SUNBREAK SUBDIVISION

Storm Report

## Exhibit 1

Date: 06/19/13

By: KEF




3J CONSULTING, INC

*CIVIL ENGINEERING*
*WATER RESOURCES*
*LAND USE PLANNING*

# POST-DEVELOPED SITE CONDITIONS
# SUNBREAK SUBDIVISION

Storm Report

## Exhibit 2

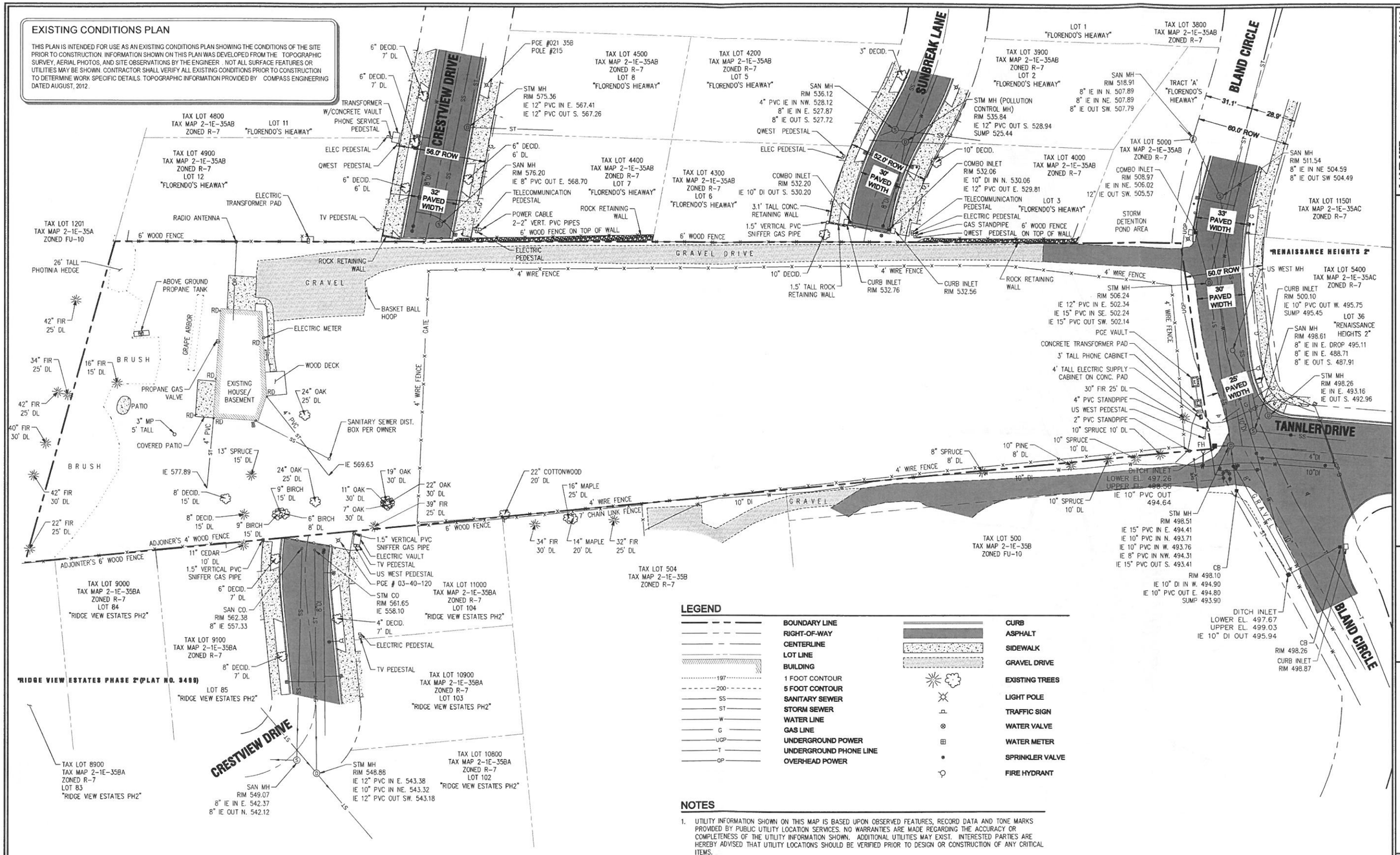
Date: 06/13/13

By: KEF

# DRAWINGS

## EXISTING CONDITIONS PLAN

THIS PLAN IS INTENDED FOR USE AS AN EXISTING CONDITIONS PLAN SHOWING THE CONDITIONS OF THE SITE PRIOR TO CONSTRUCTION. INFORMATION SHOWN ON THIS PLAN WAS DEVELOPED FROM THE TOPOGRAPHIC SURVEY, AERIAL PHOTOS, AND SITE OBSERVATIONS BY THE ENGINEER . NOT ALL SURFACE FEATURES OR UTILITIES MAY BE SHOWN. CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS PRIOR TO CONSTRUCTION TO DETERMINE WORK SPECIFIC DETAILS. TOPOGRAPHIC INFORMATION PROVIDED BY COMPASS ENGINEERING DATED AUGUST, 2012.




## LEGEND

| | |
|---|---|
| BOUNDARY LINE | CURB |
| RIGHT-OF-WAY | ASPHALT |
| CENTERLINE | SIDEWALK |
| LOT LINE | GRAVEL DRIVE |
| BUILDING | EXISTING TREES |
| 1 FOOT CONTOUR | LIGHT POLE |
| 5 FOOT CONTOUR | TRAFFIC SIGN |
| SANITARY SEWER | WATER VALVE |
| STORM SEWER | WATER METER |
| WATER LINE | SPRINKLER VALVE |
| GAS LINE | FIRE HYDRANT |
| UNDERGROUND POWER | |
| UNDERGROUND PHONE LINE | |
| OVERHEAD POWER | |

## NOTES

1. UTILITY INFORMATION SHOWN ON THIS MAP IS BASED UPON OBSERVED FEATURES, RECORD DATA AND TONE MARKS PROVIDED BY PUBLIC UTILITY LOCATION SERVICES. NO WARRANTIES ARE MADE REGARDING THE ACCURACY OR COMPLETENESS OF THE UTILITY INFORMATION SHOWN. ADDITIONAL UTILITIES MAY EXIST. INTERESTED PARTIES ARE HEREBY ADVISED THAT UTILITY LOCATIONS SHOULD BE VERIFIED PRIOR TO DESIGN OR CONSTRUCTION OF ANY CRITICAL ITEMS.
2. VERTICAL DATUM: NAVD '88 UTILIZING GPS POSITIONING TIED TO THE ORGN WITH REAL TIME CORRECTORS REFERENCED TO NAD 83(2011).
3. TOPOGRAPHIC FEATURES SHOWN ON THIS MAP WERE LOCATED USING STANDARD PRECISION TOPOGRAPHIC MAPPING PROCEDURES. THIRD PARTY USERS OF DATA FROM THIS MAP PROVIDED VIA AUTOCAD DRAWING FILES OR DATA EXCHANGE FILES SHOULD NOT RELY ON ANY AUTOCAD GENERATED INFORMATION WHICH IS BEYOND THE LIMITS OF PRECISION OF THIS MAP. THIRD PARTIES USING DATA FROM THIS MAP IN AN AUTOCAD FORMAT SHOULD VERIFY ANY ELEMENTS REQUIRING PRECISE LOCATIONS PRIOR TO COMMENCEMENT OF ANY CRITICAL DESIGN OR CONSTRUCTION. CONTACT COMPASS ENGINEERING FOR FURTHER INFORMATION. FURTHERMORE, COMPASS ENGINEERING WILL NOT BE RESPONSIBLE NOR HELD LIABLE FOR ANY DESIGN OR CONSTRUCTION RELATED PROBLEMS THAT ARISE OUT OF THIRD PARTY USAGE OF THIS MAP (IN AUTOCAD OR OTHER FORMAT) FOR ANY PURPOSE OTHER THAN SPECIFICALLY STATED HEREIN. THIS STATEMENT IS AN OFFICIAL PART OF THIS MAP.

A PORTION OF LOT 28, "BLAND ACRES"
TAX LOT 1300, LOCATED IN THE NW & NE
1/4 OF SECTION 35, T.2S., R.1E., W.M.
CITY OF WEST LINN, CLACKAMAS COUNTY, OREGON

Scale: 1 inch = 30 feet
30 15 0 15 30

| # | REVISION SUMMARY | BY | DATE |
|---|---|---|---|
| | LAND USE | | 6/18/13 |

EXISTING CONDITIONS
**SUNBREAK SUBDIVISION**
LF 3, LLC
WEST LINN, OR

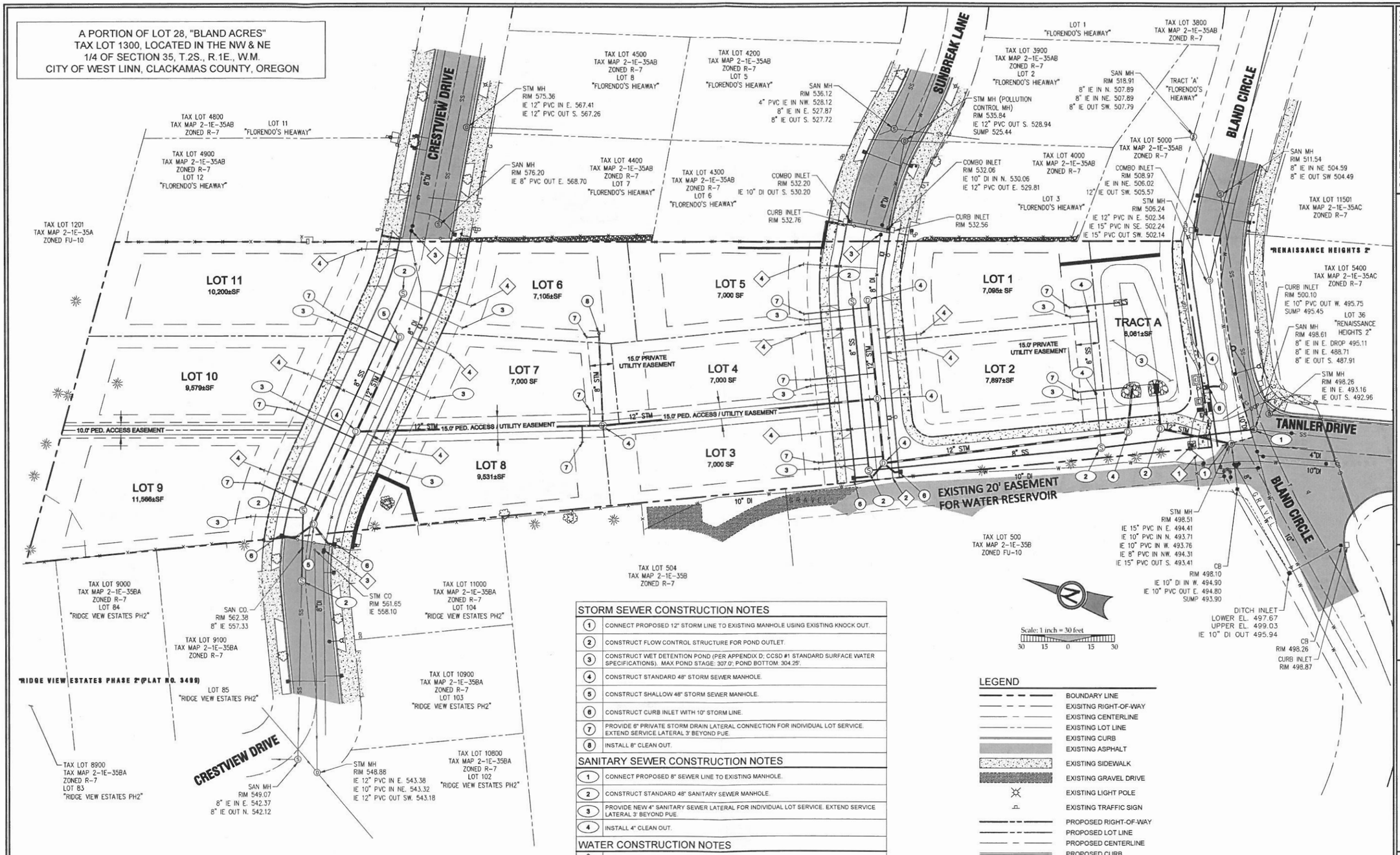

3J CONSULTING, INC
CIVIL ENGINEERING
WATER RESOURCES
LAND USE PLANNING
10445 SW CANYON ROAD SUITE 245, BEAVERTON, OR 97005
PHONE & FAX: (503) 946-9365


| | |
|---|---|
| 3J JOB ID # | 13113 |
| LAND USE # | |
| TAX LOT # | 2S1E35A01300 |
| DESIGNED BY | CLF/JTE |
| CHECKED BY | BKF |

SHEET TITLE: EXISTING

SHEET NUMBER: **C1.0**

A PORTION OF LOT 28, "BLAND ACRES"
TAX LOT 1300, LOCATED IN THE NW & NE
1/4 OF SECTION 35, T.2S., R.1E., W.M.
CITY OF WEST LINN, CLACKAMAS COUNTY, OREGON




## STORM SEWER CONSTRUCTION NOTES

| | |
|---|---|
| 1 | CONNECT PROPOSED 12" STORM LINE TO EXISTING MANHOLE USING EXISTING KNOCK OUT. |
| 2 | CONSTRUCT FLOW CONTROL STRUCTURE FOR POND OUTLET. |
| 3 | CONSTRUCT WET DETENTION POND (PER APPENDIX D; CCSD #1 STANDARD SURFACE WATER SPECIFICATIONS). MAX POND STAGE: 307.0; POND BOTTOM: 304.25'. |
| 4 | CONSTRUCT STANDARD 48" STORM SEWER MANHOLE. |
| 5 | CONSTRUCT SHALLOW 48" STORM SEWER MANHOLE. |
| 6 | CONSTRUCT CURB INLET WITH 10" STORM LINE. |
| 7 | PROVIDE 6" PRIVATE STORM DRAIN LATERAL CONNECTION FOR INDIVIDUAL LOT SERVICE. EXTEND SERVICE LATERAL 3' BEYOND PUE. |
| 8 | INSTALL 6" CLEAN OUT. |

## SANITARY SEWER CONSTRUCTION NOTES

| | |
|---|---|
| 1 | CONNECT PROPOSED 8" SEWER LINE TO EXISTING MANHOLE. |
| 2 | CONSTRUCT STANDARD 48" SANITARY SEWER MANHOLE. |
| 3 | PROVIDE NEW 4" SANITARY SEWER LATERAL FOR INDIVIDUAL LOT SERVICE. EXTEND SERVICE LATERAL 3' BEYOND PUE. |
| 4 | INSTALL 4" CLEAN OUT. |

## WATER CONSTRUCTION NOTES

| | |
|---|---|
| 1 | RELOCATE EXISTING FIRE HYDRANT. |
| 2 | HOT TAP EXISTING WATER MAIN TO COMPLETE LOOPED SYSTEM. |
| 3 | REMOVE EXISTING BLOW-OFF AND CONNECT TO EXISTING WATER MAIN. |
| 4 | INSTALL SINGLE WATER METER FOR INDIVIDUAL LOT SERVICE. EXTEND 1" SERVICE LATERAL 3' BEYOND PUE. |

## LEGEND

- BOUNDARY LINE
- EXISITNG RIGHT-OF-WAY
- EXISTING CENTERLINE
- EXISTING LOT LINE
- EXISTING CURB
- EXISTING ASPHALT
- EXISTING SIDEWALK
- EXISTING GRAVEL DRIVE
- EXISTING LIGHT POLE
- EXISTING TRAFFIC SIGN
- PROPOSED RIGHT-OF-WAY
- PROPOSED LOT LINE
- PROPOSED CENTERLINE
- PROPOSED CURB
- PROPOSED SIDEWALK
- PROPOSED SETBACK LINE
- SANITARY SEWER LINE AND MANHOLE
- STORM DRAIN LINE AND MANHOLE
- DOMESTIC WATER SERVICE & METER
- STORM SEWER LATERAL AS NOTED
- SANITARY SEWER LATERAL AS NOTED
- STORM SEWER CURB INLET
- PROPOSED STREET LIGHT
- PROPOSED RETAINING WALL

| # | REVISION SUMMARY | BY | DATE |
|---|---|---|---|
| A | LAND USE | | 6/18/13 |

COMPOSITE UTILITY PLAN
*SUNBREAK SUBDIVISION*
LF 3, LLC
WEST LINN, OR

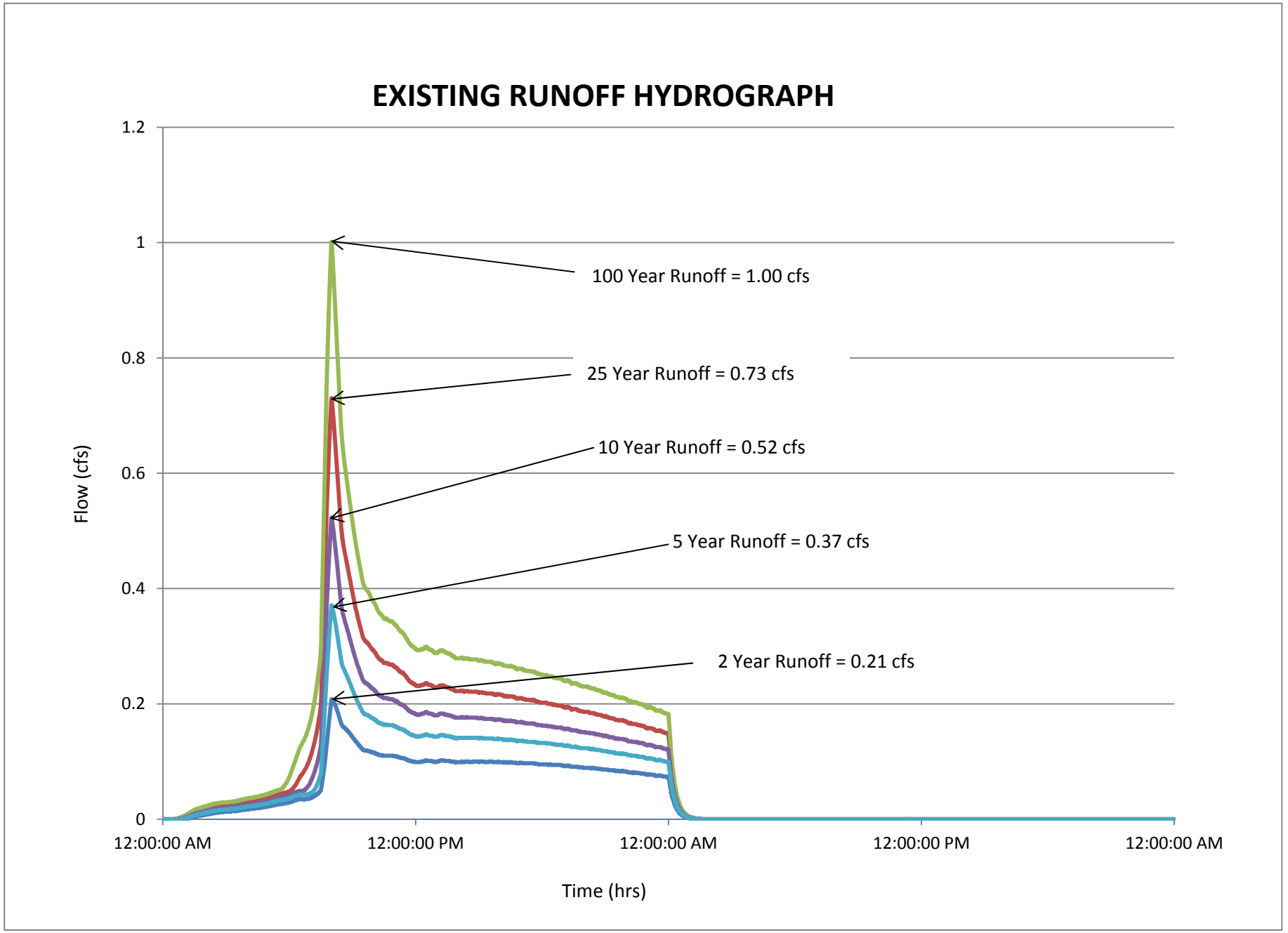

3J CONSULTING, INC
CIVIL ENGINEERING
WATER RESOURCES
LAND USE PLANNING
10445 SW CANYON ROAD SUITE 245, BEAVERTON, OR 97005
PHONE & FAX: (503) 946-9365

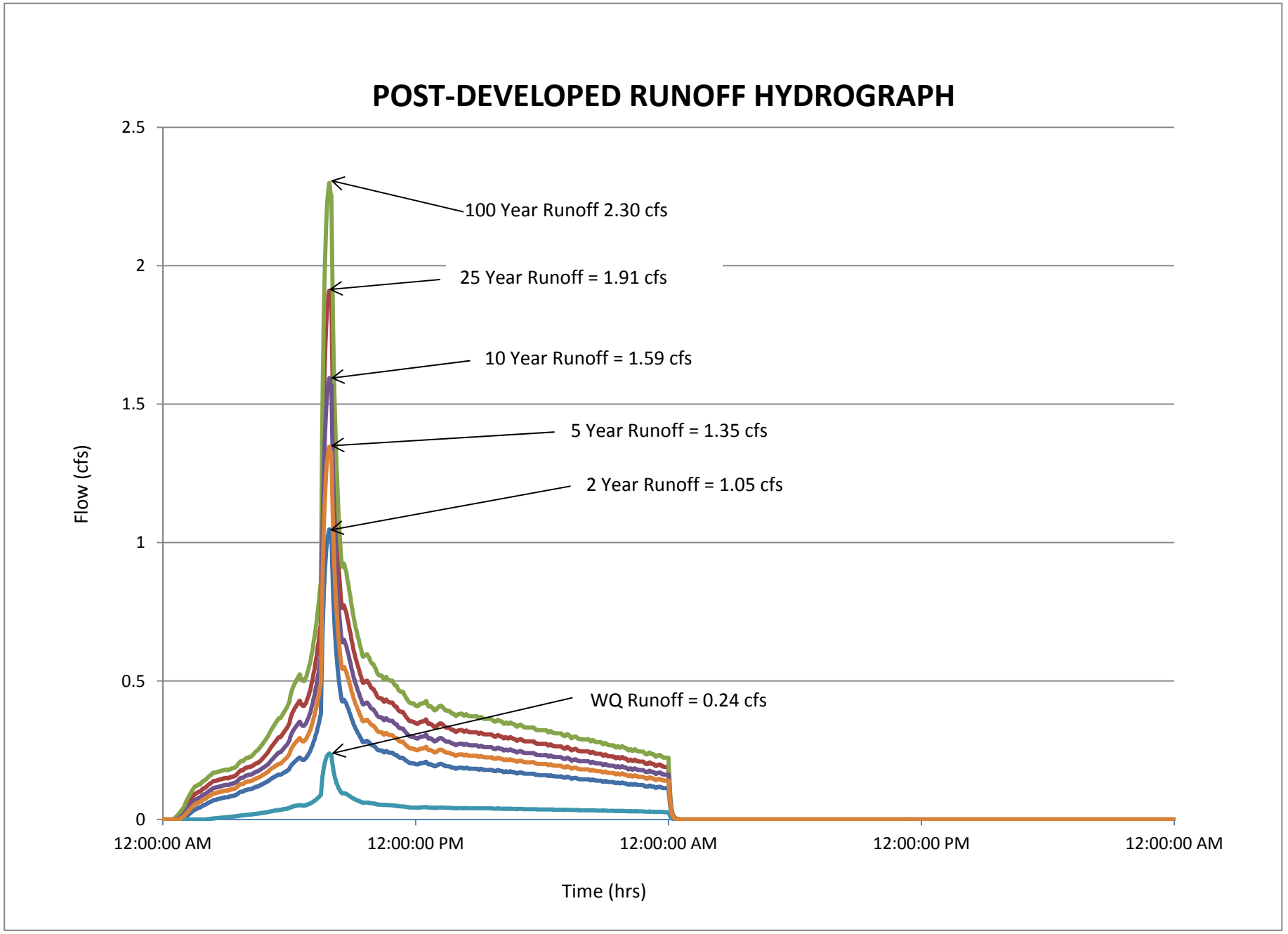

| | |
|---|---|
| 3J JOB ID # | 13113 |
| LAND USE # | |
| TAX LOT # | 2S1E35A01300 |
| DESIGNED BY | CLF/JTE |
| CHECKED BY | BKF |

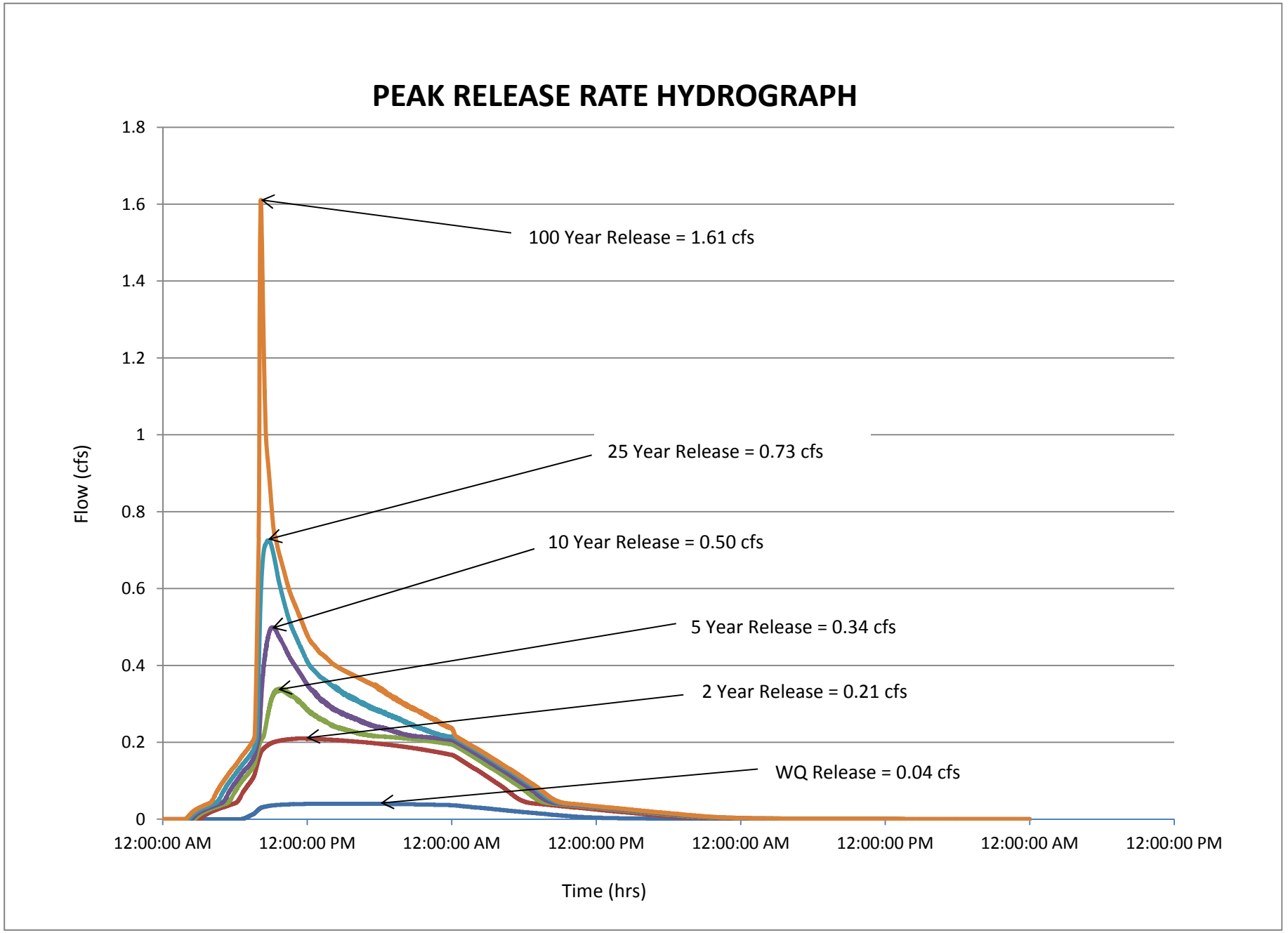
SHEET TITLE
UTILITY PLAN

SHEET NUMBER
C2.5

# HYDROGRAPHS


EXISTING RUNOFF HYDROGRAPH
1.2
1
0.8
0.6
0.4
0.2
0
Flow (cfs)
100 Year Runoff = 1.00 cfs
25 Year Runoff = 0.73 cfs
10 Year Runoff = 0.52 cfs
5 Year Runoff = 0.37 cfs
2 Year Runoff = 0.21 cfs
12:00:00 AM
12:00:00 PM
12:00:00 AM
12:00:00 PM
12:00:00 AM
Time (hrs)


POST-DEVELOPED RUNOFF HYDROGRAPH
2.5
2
1.5
1
0.5
0
Flow (cfs)
100 Year Runoff 2.30 cfs
25 Year Runoff = 1.91 cfs
10 Year Runoff = 1.59 cfs
5 Year Runoff = 1.35 cfs
2 Year Runoff = 1.05 cfs
WQ Runoff = 0.24 cfs
12:00:00 AM
12:00:00 PM
12:00:00 AM
12:00:00 PM
12:00:00 AM
Time (hrs)


PEAK RELEASE RATE HYDROGRAPH
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
Flow (cfs)
100 Year Release = 1.61 cfs
25 Year Release = 0.73 cfs
10 Year Release = 0.50 cfs
5 Year Release = 0.34 cfs
2 Year Release = 0.21 cfs
WQ Release = 0.04 cfs
12:00:00 AM
12:00:00 PM
12:00:00 AM
12:00:00 PM
12:00:00 AM
12:00:00 PM
12:00:00 AM
12:00:00 PM
Time (hrs)

# CALCULATIONS

# Time of Concentration

| | | | |
|---|---|---|---|
| **SUBJECT:** | Sunbreak Subdivision | | |
| **PROJECT NO.** | 13113 | **BY** KEF | **DATE** 4/19/2013 |

| | TC1 | | |
|---|---|---|---|
| **SHEET FLOW** | | | |
| **INPUT** | **VALUE** | **VALUE** | **VALUE** |
| Surface Description | **Type 4 Cultivated (residue > 20%)** | **Type 10 Woods (Dense underbrus** | **Type 10 Woods (Dense underbrush** |
| Manning's "n" | **0.17** | **0.8** | **0.8** |
| Flow Length, L (<300 ft) | **300** ft | **0** ft | **0** ft |
| 2-Yr 24 Hour Rainfall, $P_2$ | **2.5** in | **2.5** in | **2.5** in |
| Land Slope, s | **0.1103** ft/ft | **0.07965** ft/ft | **0.0922** ft/ft |
| **OUTPUT** | | | |
| Travel Time | 0.25 hr | 0.00 hr | 0.00 hr |
| **SHALLOW CONCENTRATED FLOW** | | | |
| **INPUT** | **VALUE** | **VALUE** | **VALUE** |
| Surface Description | **Unpaved** | **Unpaved** | **Paved** |
| Flow Length, L | **415** ft | **0** ft | **0** ft |
| Watercourse Slope*, s | **0.1448** ft/ft | **0.01** ft/ft | **0.027** ft/ft |
| **OUTPUT** | | | |
| Average Velocity, V | 6.14 ft/s | 1.61 ft/s | 3.34 ft/s |
| Travel Time | 0.019 hr | 0.000 hr | 0.000 hr |
| **CHANNEL FLOW** | | | |
| **INPUT** | **VALUE** | **VALUE** | **VALUE** |
| Cross Sectional Flow Area, a | **7.5** $ft^2$ | **7.5** $ft^2$ | **15.05** $ft^2$ |
| Wetted Perimeter, $P_w$ | **11.28** ft | **11.28** ft | **7.69** ft |
| Channel Slope, s | **0.003** ft/ft | **0.003** ft/ft | **0.00** ft/ft |
| Manning's "n" | **0.24** | **0.24** | **0.24** |
| Flow Length, L | **0** ft | **0** ft | **0** ft |
| **OUTPUT** | | | |
| Average Velocity | 0.26 ft/s | 0.26 ft/s | 0.53 ft/s |
| Hydraulic Radius, r = a / $P_w$ | 0.66 ft | 0.66 ft | 1.96 ft |
| Travel Time | 0.00 hr | 0.00 hr | 0.00 hr |
| **Watershed or Subarea $T_c$ =** | **0.27 hr** | **0.00 hr** | **0.00 hr** |
| **Watershed or Subarea $T_c$ =** | **16 minutes** | **0 minutes** | **0 minutes** |

# GEOTECHNICAL REPORTS

Real-World Geotechnical Solutions
Investigation • Design • Construction Support

April 29, 2013
GeoPacific Project No. 13-2967

John Wyland
**J.T. Smith Companies**
5282 Meadows Road, Suite 171
Lake Oswego, Oregon 97035

Copy: Brian Feeney (brian.feeney@3j-consulting.com)

Via e-mail with hard copies mailed

Subject: **GEOTECHNICAL ENGINEERING REPORT**
**SUNBREAK SUBDIVISION**
**23150 BLAND CIRCLE**
**WEST LINN, OREGON**

This report presents the results of a geotechnical engineering study conducted by GeoPacific Engineering, Inc. (GeoPacific) for the above referenced project. The purpose of this study was to evaluate subsurface conditions at the site and to provide geotechnical recommendations for site development. This geotechnical study was performed in accordance with GeoPacific proposal P-4458, dated April 3, 2013, and your subsequent authorization of our agreement and *General Conditions for Geotechnical Services.*

## SITE DESCRIPTION AND PROPOSED DEVELOPMENT

The site is located on the north side of Bland Circle in West Linn, Oregon (Figure 1). The area of the planned development totals approximately 2.8 acres and is roughly rectangular-shaped. A single family residence is present in the northern portion of the site. The area of the site with the existing house shows signs of previous grading activity. The central and southern portions of the site are undeveloped pasture. The topography on the site is sloping down to the south at grades of approximately 10 to 20 percent. Vegetation on the site consists primarily of grass, brush, and a few small trees in the vicinity of the existing residence.

It is our understanding that the proposed development includes grading the site to support lots for new single-family homes, approximately 350 feet of new public streets, and associated underground utilities. The current site plan (Figure 2) shows a total of 11 lots and one tract. The existing residence is to be demolished and removed from the site. We anticipate that the maximum depth of cut and height of fill will be about 5 feet or less.

## REGIONAL GEOLOGIC SETTING

Regionally, the subject site lies within the Willamette Valley/Puget Sound lowland, a broad structural depression situated between the Coast Range on the west and the Cascade Range on the east. A series of discontinuous faults subdivide the Willamette Valley into a mosaic of fault-bounded, structural blocks (Yeats

et al., 1996). Uplifted structural blocks form bedrock highlands, while down-warped structural blocks form sedimentary basins.

The site is underlain by the Columbia River Basalt Formation (Beeson el al., 1989). The Miocene aged (about 14.5 to 16.5 million years ago) Columbia River Basalts are a thick sequence of lava flows. The basalts are composed of dense, finely crystalline rock that is commonly fractured along blocky and columnar vertical joints. Individual basalt flow units typically range from 25 to 125 feet thick and interflow zones are typically vesicular, scoriaceous, brecciated, and sometimes include sedimentary rocks.

Underlying the Columbia River Basalt Formation is the Skamania Volcanics Formation. The Oligocene aged (about 37 to 26 million years ago) Skamania Volcanics extend to depth of several thousand feet and form the crystalline basement of the basin (Schlicker 1963).

At least three major source zones capable of generating damaging earthquakes are thought to exist in the vicinity of the subject site. These include the Gales Creek-Newberg-Mt. Angel Structural Zone, the Portland Hills Fault Zone, and the Cascadia Subduction Zone.

**Gales Creek-Newberg-Mt. Angel Structural Zone**

The Gales Creek-Newberg-Mt. Angel Structural Zone is a 50-mile-long zone of discontinuous, NW-trending faults that lies about 17.3 miles southwest of the subject site. These faults are recognized in the subsurface by vertical separation of the Columbia River Basalt and offset seismic reflectors in the overlying basin sediment (Yeats et al., 1996; Werner et al., 1992). A recent geologic reconnaissance and photogeologic analysis study conducted for the Scoggins Dam site in the Tualatin Basin revealed no evidence of deformed geomorphic surfaces along the structural zone (Unruh et al., 1994). No seismicity has been recorded on the Gales Creek or Newberg Faults (the faults closest to the subject site); however, these faults are considered to be potentially active because they may connect with the seismically active Mount Angel Fault and the rupture plane of the 1993 M5.6 Scotts Mills earthquake (Werner et al. 1992; Geomatrix Consultants, 1995).

**Portland Hills Fault Zone**

The Portland Hills Fault Zone is a series of NW-trending faults that include the central Portland Hills Fault, the western Oatfield Fault, and the eastern East Bank Fault. These faults occur in a northwest-trending zone that varies in width between 3.5 and 5.0 miles. The combined three faults vertically displace the Columbia River Basalt by 1,130 feet and appear to control thickness changes in late Pleistocene (approx. 780,000 years) sediment (Madin, 1990). The Portland Hills Fault occurs along the Willamette River at the base of the Portland Hills, and is about 3.6 miles northeast of the site. The Oatfield Fault occurs along the western side of the Portland Hills, and is about 2.4 miles northeast of the site. The accuracy of the fault mapping is stated to be within 500 meters (Wong, et al., 2000). No historical seismicity is correlated with the mapped portion of the Portland Hills Fault Zone, but in 1991 a M3.5 earthquake occurred on a NW-trending shear plane located 1.3 miles east of the fault (Yelin, 1992). Although there is no definitive evidence of recent activity, the Portland Hills Fault Zone is assumed to be potentially active (Geomatrix Consultants, 1995).

**Cascadia Subduction Zone**

The Cascadia Subduction Zone is a 680-mile-long zone of active tectonic convergence where oceanic crust of the Juan de Fuca Plate is subducting beneath the North American continent at a rate of 4 cm per year (Goldfinger et al., 1996). A growing body of geologic evidence suggests that prehistoric subduction zone earthquakes have occurred (Atwater, 1992; Carver, 1992; Peterson et al., 1993; Geomatrix Consultants, 1995). This evidence includes: (1) buried tidal marshes recording episodic, sudden subsidence along the coast of northern California, Oregon, and Washington, (2) burial of subsided tidal marshes by tsunami wave

deposits, (3) paleoliquefaction features, and (4) geodetic uplift patterns on the Oregon coast. Radiocarbon dates on buried tidal marshes indicate a recurrence interval for major subduction zone earthquakes of 250 to 650 years with the last event occurring 300 years ago (Atwater, 1992; Carver, 1992; Peterson et al., 1993; Geomatrix Consultants, 1995). The inferred seismogenic portion of the plate interface lies roughly along the Oregon Coast at depths of 20 and 40 kilometers below the ocean surface.

## FIELD EXPLORATION

Subsurface conditions were explored on April 12, 2013 by excavating 7 test pits to depths of 7 to 10 feet below the ground surface, using a John Deer 310E backhoe with a 2-foot-wide toothed bucket. The approximate test pit locations are shown on the attached site plan (Figure 2). It should be noted that exploration locations were determined in the field by pacing or taping distances from apparent property corners and other site features shown on the plans provided. As such, the locations of the explorations should be considered approximate.

During excavation of the test pits, a GeoPacific engineer observed and recorded soil information such as color, stratigraphy, strength, and soil moisture. Soils were classified in general accordance with the Unified Soil Classification System (USCS). Rock hardness was classified in accordance with Table 1, modified from the ODOT Rock Hardness Classification Chart.

**Table 1. Rock Hardness Classification Chart**

| ODOT Rock Hardness Rating | Field Criteria | Unconfined Compressive Strength | Typical Equipment Needed For Excavation |
|---|---|---|---|
| Extremely Soft (R0) | Indented by thumbnail | <100 psi | Small excavator |
| Very Soft (R1) | Scratched by thumbnail, crumbled by rock hammer | 100-1,000 psi | Small excavator |
| Soft (R2) | Not scratched by thumbnail, indented by rock hammer | 1,000-4,000 psi | Medium excavator (slow digging with small excavator) |
| Medium Hard (R3) | Scratched or fractured by rock hammer | 4,000-8,000 psi | Medium to large excavator (slow to very slow digging), typically requires chipping with hydraulic hammer or mass excavation) |
| Hard (R4) | Scratched or fractured w/ difficulty | 8,000-16,000 psi | Slow chipping with hydraulic hammer and/or blasting |
| Very Hard (R5) | Not scratched or fractured after many blows, hammer rebounds | >16,000 psi | Blasting |

At the completion of each test pit, the excavation was backfilled using the excavated soils, and tamped with the excavator bucket. This backfill should not be expected to behave as engineered fill and some settling and/or erosion of the ground surface may occur.

## SUBSURFACE CONDITIONS

### Soil and Rock

The following report sections summarize subsurface conditions anticipated at the site, based on our exploration program. On-site soils consist of topsoil, undocumented fill, buried topsoil, residual soil, and Columbia River Basalt materials, as described below.

***Topsoil:*** In all test pits, the ground surface was directly underlain by topsoil consisting of dark brown, moderately organic SILT (OL-ML) with fine roots throughout. Topsoil thickness in test pits ranged from about 4 to 16 inches. There is the potential for some tree roots or thicker topsoil zones in forested areas on site.

***Undocumented Fill:*** Underlying the topsoil, test pits TP-1 and TP-2 encountered undocumented fill material. The fill generally consisted of medium stiff gravelly SILT (ML) to loose silty GRAVEL and COBBLES (GM), with occasional debris. The fill extended to a depth of 4 feet at test pit TP-1, and a depth of 2 feet at test pit TP-2.

***Buried Topsoil:*** Underlying the undocumented fill material, test pits TP-1 and TP-2 encountered buried topsoil consisting of dark brown, moderately organic SILT (OL-ML) with fine roots throughout. The buried topsoil extended to a depth of 5 feet in test pit TP-1, and to a depth of 3.5 feet in test pit TP-2.

***Residual Soil:*** Underlying the buried topsoil in test pit TP-1 and the topsoil in test pits TP-3 through TP-7, the test pits encountered stiff clayey silt to silty gravel and cobble residual soil derived from the in-place weathering of the underlying Columbia River Basalt Formation. Gravel and cobble size highly weathered basalt clasts were common within the residual soil. The residual soil transitioned to less weathered basalt bedrock as discussed below. Where encountered, the residual soil ranged from approximately 1 to 7 feet in thickness.

***Columbia River Basalt:*** Underlying the residual soil, test pits encountered weathered basalt bedrock materials belonging to the Columbia River Basalt Formation. In test pit TP-2 the weathered basalt was encountered directly beneath the buried topsoil layer. The basalt encountered was typically highly weathered and ranged from extremely soft (R0) to medium hard (R3), with hardness generally increasing with depth. The explorations resulted in practical refusal on medium hard (R3) basalt in all test pits except test pit TP-2 at depths of 7 to 9.5 feet, using a John Deer 310E backhoe with 2-foot-wide toothed bucket. Soft (R2) basalt extended beyond the maximum depth of exploration in test pit TP-2, 10 feet.

### Groundwater

On April 12, 2013, groundwater seepage was not encountered in the test pits. The groundwater conditions reported are for the specific date and locations indicated, and therefore may not necessarily be indicative of other times and/or locations. It is anticipated that groundwater conditions will vary depending on the time of year, rainfall, local subsurface conditions, changes in site utilization, and other factors. During periods of heavy and prolonged precipitation, shallow perched groundwater conditions often occur over fine-grained native deposits such as those beneath the site, particularly during the wet season.

## INFILTRATION TESTING

On April 13, 2013, GeoPacific performed two open pit falling head infiltration tests at the approximate locations shown on Figure 2. The tests were conducted at the bottom of test pits in the native soil at approximate depths of 2 and 3.5 feet below the ground surface. The infiltration tests were performed at or

near the locations of test pits TP-4 and TP-7. The soil encountered at the depth of the infiltration tests consisted of reddish brown clayey SILT (ML) residual soil.

The test holes were pre-saturated for 4 hours prior to performing the tests. During the tests, water levels were measured over 30 minute intervals with approximate head pressures ranging between 3 and 8 inches until three successive measurements showing a consistent infiltration rate were achieved. Approximate test locations are shown in Figure 2. Table 2 presents a summary of our infiltration test measurement results.

**Table 2. Results of Infiltration Testing**

| Location | Depth | Infiltration Rate |
|---|---|---|
| TP-4 | 2 feet | 1.7 in/hr |
| TP-7 | 3.5 feet | 1.0 in/hr |

## CONCLUSIONS AND RECOMMENDATIONS

Results of this study indicate that the proposed development is geotechnically feasible, provided that the recommendations of this report are incorporated into the design and construction phases of the project. In our opinion, the greatest geotechnical constraints for project development are the presence of medium hard rock underlying much of the site. The proposed structures may be supported on shallow foundations bearing on competent undisturbed native soils, or engineered fill, designed and constructed as recommended in this report.

Recommendations are presented below for site preparation and undocumented fill removal, engineered fill, wet weather earthwork, seismic design, structural foundations, footing drains, storm water systems, permeable pavement systems, excavation conditions and utility trench backfill, erosion control considerations, and asphalt pavement sections. The recommendations of this report assume the single-family structures will have raised floors and crawlspaces.

### Site Preparation and Undocumented Fill Removal

Within the areas to receive fill, proposed building footprints, or other settlement-sensitive areas, undocumented fill, buried topsoil, vegetation, and debris should be completely removed and replaced with engineered fill. Debris from clearing should be removed from the site. Undocumented fill and buried topsoil were encountered to a depth of about 5 feet in test pit TP-1, and to a depth of about 3.5 feet in test pit TP-2. Other areas of fill, and/or deeper fill deposits, may be encountered on site beyond the locations of the test pits performed for this study.

Organic-rich topsoil should be stripped to the relatively inorganic native soils. We anticipate that the depth of stripping will be an average of roughly 4 to 6 inches over most of the site. Deeper stripping will be needed in areas that have been tilled in the past, areas of localized fill deposits, etc. The final depth of stripping removal may vary depending on local subsurface conditions and the contractor's methods, and should be determined on the basis of a site inspection after the initial stripping has been performed.

Stripped organic soil should be stockpiled only in designated areas or removed from the site and stripping operations should be observed and documented by GeoPacific. Any existing subsurface structures (tile drains, old utility lines, septic leach fields, etc.) beneath structures and pavements should be removed and the excavations backfilled with engineered fill.

In construction areas, once stripping is approved, the area should be ripped or tilled to a depth of 12 inches, moisture conditioned, and compacted in-place prior to the placement of engineered fill or crushed aggregate base for pavement (dry weather conditions). Exposed subgrade soils should be evaluated by GeoPacific. For large areas, this evaluation is normally performed by proof-rolling the exposed subgrade with a fully loaded scraper or dump truck. For smaller areas where access is restricted, and during wet weather, the subgrade should be evaluated by probing the soil with a steel probe.

Soft/loose soils identified during subgrade preparation should be compacted to a firm and unyielding condition or over-excavated and replaced with engineered fill, as described below. The depth of overexcavation, if required, should be evaluated by GeoPacific at the time of construction.

**Engineered Fill**

In general, we anticipate that soils from planned cuts and utility trench excavations will be suitable for use as engineered fill during dry weather conditions, provided they are adequately moisture conditioned prior to compacting and are free of highly organic material and debris. Imported fill material should be reviewed by GeoPacific prior to being imported to the site. Oversize material greater than 6 inches in size should not be used within 3 feet of foundation footings, and material greater than 12 inches in diameter should not be used in engineered fill.

Engineered fill should be compacted in horizontal lifts not exceeding 8 inches using conventional compaction equipment. We recommend that engineered fill be compacted to at least 90 percent of the maximum dry density determined by ASTM D1557 (Modified Proctor) or equivalent. On-site soils may be wet or dry of optimum; therefore, we anticipate that moisture conditioning of native soil will be necessary for compaction operations.

Proper test frequency and earthwork documentation usually requires daily observation and testing during stripping, rough grading, and placement of engineered fill. Field density testing should generally conform to ASTM D2922 and D3017, or D1556. Engineered fill should be periodically observed and tested by the project geotechnical engineer or his representative. Typically, one density test is performed for at least every 2 vertical feet of fill placed or every 500 cubic yards, whichever requires more testing. Because testing is performed on an on-call basis, we recommend that the earthwork contractor be held contractually responsible for test scheduling and frequency.

**Wet Weather Earthwork**

The on-site soils are moisture sensitive and may be difficult to handle or traverse with construction equipment during periods of wet weather. Earthwork is typically most economical when performed under dry weather conditions. Earthwork performed during the wet-weather season will probably require expensive measures such as cement treatment or imported granular material to compact fill to the recommended engineering specifications. If earthwork is to be performed or fill is to be placed in wet weather or under wet conditions when soil moisture content is difficult to control, the following recommendations should be incorporated into the contract specifications.

- Earthwork should be performed in small areas to minimize exposure to wet weather. Excavation or the removal of unsuitable soils should be followed promptly by the placement and compaction of clean engineered fill. The size and type of construction equipment used may have to be limited to prevent soil disturbance. Under some circumstances, it may be necessary to excavate soils with a backhoe to minimize subgrade disturbance caused by equipment traffic;

- The ground surface within the construction area should be graded to promote run-off of surface water and to prevent the ponding of water;
- Material used as engineered fill should consist of clean, granular soil containing less than 5 percent fines. The fines should be non-plastic. Alternatively, cement treatment of on-site soils may be performed to facilitate wet weather placement;
- The ground surface within the construction area should be sealed by a smooth drum vibratory roller, or equivalent, and under no circumstances should be left uncompacted and exposed to moisture. Soils which become too wet for compaction should be removed and replaced with clean granular materials;
- Excavation and placement of fill should be observed by the geotechnical engineer to verify that all unsuitable materials are removed and suitable compaction and site drainage is achieved; and
- Bales of straw and/or geotextile silt fences should be strategically located to control erosion.

If cement or lime treatment is used to facilitate wet weather construction, GeoPacific should be contacted to provide additional recommendations and field monitoring.

## Seismic Design

Structures should be designed to resist earthquake loading in accordance with the methodology described in the 2009 International Building Code (IBC) with applicable 2010 Oregon Structural Specialty Code (OSSC) revisions. We recommend Site Class D be used for design per the OSSC, Table 1613.5.2. Design values determined for the site using the USGS (United States Geological Survey) *Earthquake Ground Motion Parameters* utility are summarized below.

**Table 3. Recommended Earthquake Ground Motion Parameters (2009 IBC / 2010 OSSC)**

| Parameter | Value |
|---|---|
| Location (Lat, Long), degrees | 45.357, -122.650 |
| Mapped Spectral Acceleration Values (MCE, Site Class D): | |
| Short Period, $S_s$ | 0.912 g |
| 1.0 Sec Period, $S_1$ | 0.326 g |
| Soil Factors for Site Class D: | |
| $F_a$ | 1.135 |
| $F_v$ | 1.747 |
| $SD_s = 2/3 \times F_a \times S_s$ | 0.690 g |
| $SD_1 = 2/3 \times F_v \times S_1$ | 0.380 g |

Soil liquefaction is a phenomenon wherein saturated soil deposits temporarily lose strength and behave as a liquid in response to earthquake shaking. Soil liquefaction is generally limited to loose, granular soils located below the water table. Following development, on-site soils will consist predominantly of medium stiff to very stiff silt and engineered fill, which are not considered susceptible to liquefaction. Therefore, it is our opinion that special design or construction measures are not required to mitigate the effects of liquefaction.

**Structural Foundations**

Based on our understanding of the proposed project and the results of our exploration program, and assuming our recommendations for site preparation are followed, medium stiff to stiff native soil or engineered fill soils should be encountered at or near the foundation level of the proposed structures.

Shallow, conventional isolated or continuous spread footings may be used to support the proposed structures, provided they are founded on competent native soils. We recommend a maximum allowable bearing pressure of 2,000 pounds per square foot (psf) for designing footings on native soil near existing grade. The recommended maximum allowable bearing pressure may be increased by a factor of 1.33 for short term transient conditions such as wind and seismic loading. Exterior footings should be founded at least 18 inches below the lowest adjacent finished grade. Minimum footing widths should be determined by the project engineer/architect in accordance with applicable design codes.

Assuming construction is accomplished as recommended herein, and for the foundation loads anticipated, we estimate total settlement of spread foundations of less than about 1 inch and differential settlement between two adjacent load-bearing components supported on competent soil of less than about ½ inch. We anticipate that the majority of the estimated settlement will occur during construction, as loads are applied.

Wind, earthquakes, and unbalanced earth loads will subject the proposed structure to lateral forces. Lateral forces on a structure will be resisted by a combination of sliding resistance of its base or footing on the underlying soil and passive earth pressure against the buried portions of the structure. For use in design, a coefficient of friction of 0.5 may be assumed along the interface between the base of the footing and subgrade soils. Passive earth pressure for buried portions of structures may be calculated using an equivalent fluid weight of 390 pounds per cubic foot (pcf), assuming footings are cast against dense, natural soils or engineered fill. The recommended coefficient of friction and passive earth pressure values do not include a safety factor. The upper 12 inches of soil should be neglected in passive pressure computations unless it is protected by pavement or slabs on grade.

Footing excavations should be trimmed neat and the bottom of the excavation should be carefully prepared. Loose, wet or otherwise softened soil should be removed from the footing excavation prior to placing reinforcing steel bars. GeoPacific should observe foundation excavations prior to placing formwork and reinforcing steel, to verify that adequate bearing soils have been reached.

The above foundation recommendations are for dry weather conditions. Due to the high moisture sensitivity of on-site soils, construction during wet weather may require overexcavation of footings and backfill with compacted, crushed aggregate.

**Footing and Roof Drains**

To minimize the fluctuation of soil moisture content near structural foundations, we recommend that the structures be constructed with perimeter footing drains. Footing drains should consist of 4-inch minimum diameter perforated plastic pipe embedded in a minimum of 1 $ft^3$ per lineal foot of clean, crushed drain rock or 1"- ¼" rounded drain rock. The drain pipe and surrounding drain rock should be wrapped in non-woven geotextile (Mirafi 140N, or approved equivalent) to minimize the potential for clogging and/or ground loss due to piping. Water collected from the footing drains should be directed into the local storm drain system or other suitable outlet. A minimum 0.5 percent fall should be maintained throughout the drain and non-perforated pipe outlet. The footing drains should include clean-outs to allow periodic maintenance and inspection.

Down spouts and roof drains should collect roof water in a system separate from the footing drains in order to reduce the potential for clogging. Roof drain water should be directed to an appropriate discharge point well away from structural foundations. Grades should be sloped downward and away from buildings to reduce the potential for ponded water near structures.

**Storm Water Management**

We understand that on-site storm water systems may include pervious pavement, shallow infiltration facilities, and/or deep infiltration facilities. Infiltration test results indicate that infiltration rates in the near surface residual soils are on the order of 1.7 inches per hour at depths of 2 to 3 feet, and 1 inch per hour at depths of 3 to 4 feet. The designer should select an appropriate infiltration value based on our test results and the location of the proposed infiltration facility. The infiltration rates do not incorporate a factor of safety. For the design infiltration rate, the system designer should incorporate an appropriate factor of safety against slowing of the rate over time due to biological and sediment clogging.

Infiltration test methods and procedures attempt to simulate the as-built conditions of the planned disposal system. However, due to natural variations in soil properties, actual infiltration rates may vary from the measured and/or recommended design rates. All systems should be constructed such that potential overflow is discharged in a controlled manner away from structures, and all systems should include an adequate factor of safety. Infiltration rates presented in this report should not be applied to inappropriate or complex hydrological models such as a closed basin without extensive further studies. Evaluating environmental implications of stormwater disposal at this site are beyond the scope of this study.

**Permeable Pavement Design Recommendations**

We understand that permeable pavements may be incorporated in project design. We recommend pervious Portland cement concrete (PCC), or manufactured permeable paver blocks such as Anchor Holland Permeable with integrated spacer gaps (or similar). Pervious asphalt pavement is not recommended due to its tendency for raveling and insufficient durability. A typical detail for permeable pavement sections is attached to this report.

For use in sizing calculations, we recommend an ultimate infiltration rate of 1.7 or 1 inch per hour be used for the near surface silt soils, depending on the depth of the planned pavement section. For the design infiltration rate, the system designer/builder should incorporate an appropriate factor of safety against slowing of the rate over time due to biological and sediment clogging. Stormwater exceeding soil infiltration and/or soil storage capacities will need to be directed to a suitable discharge location. We suggest the pervious pavement designer assume a void ratio of 30 percent for the crushed rock / reservoir course. The crushed rock / reservoir course material should consist of Open-Graded Aggregate per ODOT Standard Specifications Section 02630.11. Care should be taken to avoid overcompaction of the subgrade soils and reservoir course, which could limit the void ratio of these materials and reduce the functionality as a pervious pavement.

We do not recommend a density specification for the crushed rock / reservoir course material beneath pervious pavements, due to concerns about overcompaction as discussed above. During placement of the base rock / reservoir course material, visual observations should be made to verify the material has been compacted to a relatively firm and unyielding condition.

We assume that the private driveway will accommodate primarily passenger vehicles and light trucks. Consequently, our design was formulated using design methods prescribed by AASHTO for light-duty roads.

Table 4 presents our recommended minimum section for construction of a permeable paver private driveway section in dry-weather conditions. The driveway should be constructed on firm, unyielding subgrade soil. The edges of permeable pavement sections should be retained by concrete curbs extending to subgrade below the base of the section, or as specified by the project civil engineer.

**Table 4. Recommended Permeable Paver Section for Dry-Weather Construction**

| Material Layer | Minimum Thickness (in.) |
|---|---|
| Pervious PCC / Manufactured Paver Blocks | 4 inches / 3.125 inches |
| Open Graded Crushed Aggregate (washed) 1"- 1/10" ODOT Table 02630-2 | 1 inch |
| Open Graded Crushed Aggregate (washed) (2" – ¾ " diameter) | 11 inches (see Note) |
| Non-woven Geotextile Filter Fabric (Mirafi 160N or Equivalent) | - |
| Unyielding Native Subgrade Soil | - |

**Note:** Thickness of reservoir section may need to be increased by the storm water system designer, due to storm water detention or other requirements.

Subgrade strength be verified visually by GeoPacific prior to section placement; soft areas may need to be stabilized or overexcavated prior to pavement section construction. Overexcavations should be backfilled using additional crushed drain rock.

If pavement areas are to be constructed during wet weather, GeoPacific should review the subgrade and proposed construction methods immediately prior to the placement of base course so that specific recommendations can be provided. Wet-weather construction is likely to require additional crushed aggregate base course thickness.

**Excavating Conditions and Utility Trench Backfill**

Subsurface test pit exploration indicates that soft (R2) to medium hard (R3) basalt underlies the site at shallow depths. We expect utility trenches less than about 7 feet below existing grade can be excavated in the soft basalt using conventional large trackhoe equipment. However, practical refusal on medium hard (R3) basalt bedrock was reached in test pits TP-1 and TP-3 through TP-7 at depths of 7 to 9.5 feet, with the medium-sized backhoe used in our exploration. Medium hard Columbia River Basalt typically contains clay seams and fractures, and can be excavated employing a rock bucket and ripper tooth. Some use of pneumatic rock breaker attachments may be necessary, particularly in deeper utility trench excavations.

Maintenance of safe working conditions, including temporary excavation stability, is the responsibility of the contractor. Actual slope inclinations at the time of construction should be determined based on safety requirements and actual soil and groundwater conditions. All temporary cuts in excess of 4 feet in height should be sloped in accordance with U.S. Occupational Safety and Heath Administration (OSHA) regulations (29 CFR Part 1926), or be shored. The existing native soils classify as Type B Soil and temporary excavation side slope inclinations as steep as 1H:1V may be assumed for planning purposes. This cut slope inclination is applicable to excavations above the water table only.

Shallow, perched groundwater should be anticipated in excavations and utility trenches. The depth of groundwater will likely be less during the wet weather season and greater during the dry weather season. Vibrations created by traffic and construction equipment may cause some caving and raveling of excavation walls. In such an event, lateral support for the excavation walls should be provided by the contractor to prevent loss of ground support and possible distress to existing or previously constructed structural improvements.

PVC pipe should be installed in accordance with the procedures specified in ASTM D2321. We recommend that structural trench backfill be compacted to at least 90% of the maximum dry density obtained by Modified Proctor (ASTM D1557) or equivalent. Initial backfill lift thicknesses for a ¾"-0 crushed aggregate base may need to be as great as 4 feet to reduce the risk of flattening underlying flexible pipe. Subsequent lift thickness should not exceed 1 foot. If imported granular fill material is used, then the lifts for large vibrating plate-compaction equipment (e.g. hoe compactor attachments) may be up to 2 feet, provided that proper compaction is being achieved and each lift is tested. Use of large vibrating compaction equipment should be carefully monitored near existing structures and improvements due to the potential for vibration-induced damage.

Adequate density testing should be performed during construction to verify that the recommended relative compaction is achieved. Typically, at least one density test is taken for every 4 vertical feet of backfill on each 200-lineal-foot section of trench.

**Asphalt Pavement Sections**

Table 5 presents recommended minimum pavement sections for on-site public streets that are to be completed as part of the project, under dry weather construction conditions. For on-site streets, a subgrade soil R-value of 15 was assumed for design purposes. The recommended pavement sections were formulated using the Crushed Base Equivalent method and assuming a Traffic Index of 4 for on-site streets. The Traffic Index is generally appropriate for minor residential streets and cul-de-sacs. The project engineer or architect should review the assumed traffic indices to evaluate their suitability for this project. Changes in anticipated traffic levels will affect the corresponding pavement section.

**Table 5. Recommended Minimum Dry Weather Pavement Section**

| Material Layer | Minimum Thickness (inches) | Compaction Standard |
|---|---|---|
| Asphaltic Concrete (AC) | 3 | 92% of Rice Density (top lift)<br>91% of Rice Density (lower lifts)<br>AASHTO T-209 |
| Crushed Aggregate Base ¾"-0 (leveling course) | 2 | 95% of Modified Proctor<br>ASTM D1557 |
| Crushed Aggregate Base 1½"-0 | 8 | 95% of Modified Proctor<br>ASTM D1557 |
| Recommended Subgrade | 12 | 90% of Modified Proctor<br>or approved native |

In new pavement areas, native soil subgrade in pavement areas should be ripped or tilled to a minimum depth of 12 inches, moisture conditioned, and recompacted in-place to at least 90 percent of ASTM D1557 (Modified Proctor) or equivalent. In order to verify subgrade strength, we recommend proof-rolling directly on subgrade with a loaded dump truck during dry weather and on top of base course in wet weather. Soft areas that pump, rut, or weave should be stabilized prior to paving. If pavement areas are to be constructed during wet weather, GeoPacific should review subgrade at the time of construction so that condition specific recommendations can be provided. Wet weather pavement construction is likely to require soil amendment or geotextile fabric and an increase in base course thickness.

During placement of pavement section materials, density testing should be performed to verify compliance with project specifications. Generally, one subgrade, one base course, and one AC compaction test is performed for every 100 to 200 linear feet of paving.

### Erosion Control Considerations

During our field exploration program, we did not observe soil types that would be considered highly susceptible to erosion. In our opinion, the primary concern regarding erosion potential will occur during construction, in areas that have been stripped of vegetation. Erosion at the site during construction can be minimized by implementing the project erosion control plan, which should include judicious use of straw bales and silt fences. If used, these erosion control devices should be in place and remain in place throughout site preparation and construction.

Erosion and sedimentation of exposed soils can also be minimized by quickly re-vegetating exposed areas of soil, and by staging construction such that large areas of the project site are not denuded and exposed at the same time. Areas of exposed soil requiring immediate and/or temporary protection against exposure should be covered with either mulch or erosion control netting/blankets. Areas of exposed soil requiring permanent stabilization should be seeded with an approved grass seed mixture, or hydroseeded with an approved seed-mulch-fertilizer mixture.

## UNCERTAINTIES AND LIMITATIONS

We have prepared this report for the owner and their consultants for use in design of this project only. This report should be provided in its entirety to prospective contractors for bidding and estimating purposes; however, the conclusions and interpretations presented in this report should not be construed as a warranty of the subsurface conditions. Experience has shown that soil and groundwater conditions can vary significantly over small distances. Inconsistent conditions can occur between explorations that may not be detected by a geotechnical study. If, during future site operations, subsurface conditions are encountered which vary appreciably from those described herein, GeoPacific should be notified for review of the recommendations of this report, and revision of such if necessary.

Sufficient geotechnical monitoring, testing and consultation should be provided during construction to confirm that the conditions encountered are consistent with those indicated by explorations. Recommendations for design changes will be provided should conditions revealed during construction differ from those anticipated, and to verify that the geotechnical aspects of construction comply with the contract plans and specifications.

Within the limitations of scope, schedule and budget, GeoPacific executed these services in accordance with generally accepted professional principles and practices in the field of geotechnical engineering at the time the report was prepared. No warranty, expressed or implied, is made. The scope of our work did not include environmental assessments or evaluations regarding the presence or absence of wetlands or hazardous or toxic substances in the soil, surface water, or groundwater at this site.

We appreciate this opportunity to be of service.

Sincerely,

**GEOPACIFIC ENGINEERING, INC.**


**EXPIRES: 06-30-20 13**

Benjamin G. Anderson
Staff Engineer

Scott L. Hardman, G.E., P.E.
Principal Geotechnical Engineer

Attachments: References
Figure 1 – Vicinity Map
Figure 2 – Site and Exploration Plan
Pervious Pavement (SW-110) Typical Detail
Test Pit Logs (TP-1 through TP-7)

**REFERENCES**

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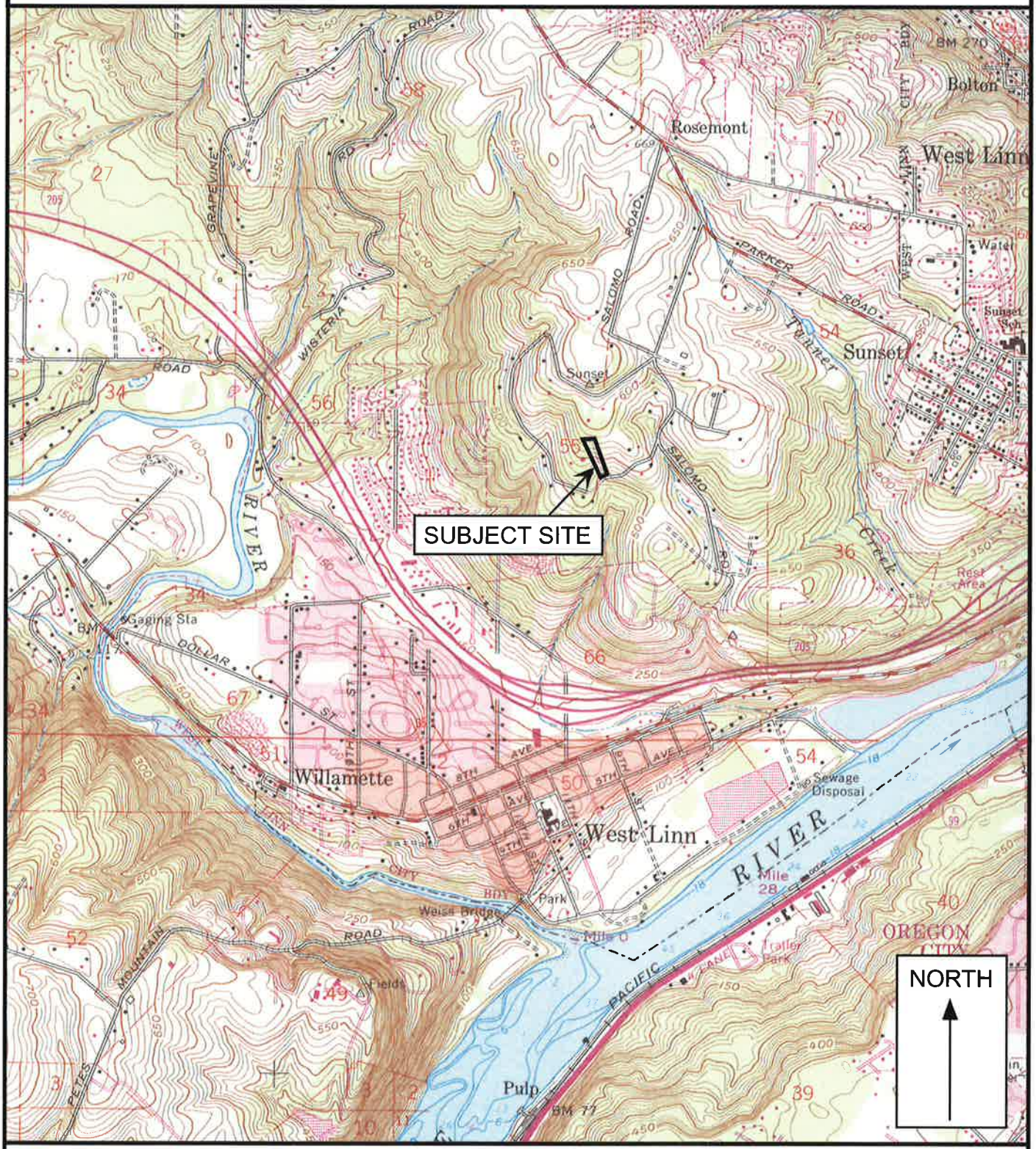
# VICINITY MAP




Legend

Approximate Scale 1 in = 2,000 ft

Date: 04/23/13
Drawn by: BGA

Base map: U.S. Geological Survey 7.5 minute Topographic Map Series, Canby, Oregon Quadrangle, 1961 (Photorevised 1985).

| Project: Sunbreak Subdivision<br>West Linn, Oregon | Project No. 13-2967 | FIGURE 1 |
|---|---|---|

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# SITE PLAN AND EXPLORATION LOCATIONS


## Legend

**TP-1**
Test Pit Designation and Approximate Location

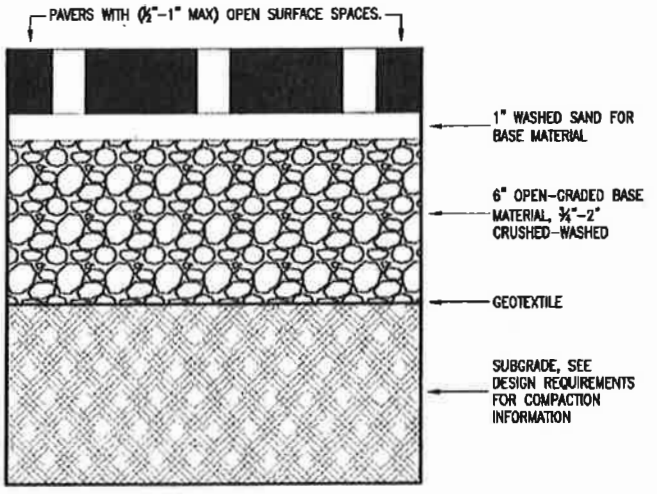
0 120'
APPROXIMATE SCALE 1"=120'

Date: 04/23/13
Drawn by: BGA

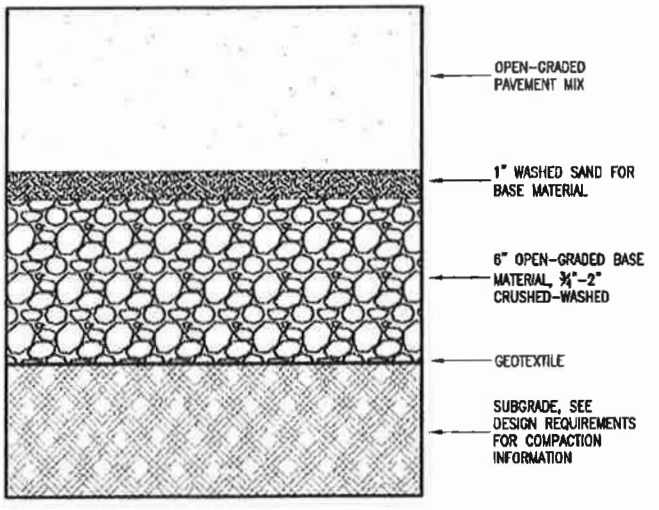
| Project: Sunbreak Subdivision<br>West Linn, Oregon | Project No. 13-2967 | FIGURE 2 |
|---|---|---|

| | RESIDENTIAL DRIVEWAY OR PEDESTRIAN ONLY | PRIVATE STREET, PARKING LOT, OR FIRE LANE | PUBLIC STREET |
|---|---|---|---|
| CONCRETE | 4" | 4" | 7" |
| ~~ASPHALT~~ | ~~2 1/2"~~ | ~~3"~~ | ~~6"~~ |
| PAVERS | 2 3/8" | 3 1/8" | 3 1/8" |
| ENGINEERING REQ'D | NO | YES | YES |
| COMPACTION REQ'D | NO | YES | 95% |

**EXHIBIT 2-8**
PERVIOUS PAVEMENT REQUIREMENTS FOR TOP LIFT DEPTH, ENGINEERING, AND COMPACTION.




PERMEABLE CONCRETE BLOCK OR "PAVER" SYSTEMS




PERVIOUS (OPEN GRADED) CONCRETE AND ~~ASPHALT~~ SYSTEMS

*- DRAWING NOT TO SCALE -*

## STORMWATER MANAGEMENT MANUAL TYPICAL DETAILS

- Simplified / Presumptive / Performance Design Approach -

## Pervious Pavement

NUMBER

SW-110

Bureau of Environmental Services

GeoPacific Engineering, Inc.
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# TEST PIT LOG

Project: Sunbreak Subdivision
West Linn, Oregon

Project No. 13-2967

Test Pit No. **TP- 1**

| Depth (ft) | Pocket Penetrometer (tons/ft²) | Sample Type | In-Situ Dry Density (lb/ft³) | Moisture Content (%) | Water Bearing Zone | Material Description |
|---|---|---|---|---|---|---|
| 1 | | | | | | 3" moderately organic SILT (OL-ML), brown, fine roots throughout, soft, moist (Topsoil) |
| 2 | | | | | | Loose, silty GRAVEL and COBBLES (GM), brown, dry to moist (Undocumented Fill) |
| 3 | | | | | | Construction debris encountered at 3 ft |
| 4 | | | | | | Soft, moderately organic SILT (OL-ML), dark brown, fine roots throughout, moist (Buried Topsoil) |
| 5 | | | | | | Stiff, gravelly SILT (ML), reddish brown, medium roots throughout, moist (Residual Soil) |
| 6 | | | | | | Very soft to soft (R1-R2), highly weathered BASALT, gray, moist (Columbia River Basalt) |
| 7 | | | | | | |
| 8 | | | | | | Test pit terminated at 7.5 feet due to practical refusal on medium hard to hard (R3-R4), moderately weathered BASALT, vesicular, gray and reddish brown, black staining, moist (Columbia River Basalt) |
| 9 | | | | | | |
| 10 | | | | | | Note: No seepage or groundwater encountered. |
| 11 | | | | | | |
| 12 | | | | | | |
| 13 | | | | | | |
| 14 | | | | | | |
| 15 | | | | | | |
| 16 | | | | | | |
| 17 | | | | | | |

LEGEND

Bag Sample

Bucket Sample


Shelby Tube Sample


Seepage


Water Bearing Zone


Water Level at Abandonment

Date Excavated: 04/12/13
Logged By: BGA
Surface Elevation:

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# TEST PIT LOG

Project: Sunbreak Subdivision
West Linn, Oregon

Project No. 13-2967

Test Pit No. **TP-2**

| Depth (ft) | Pocket Penetrometer (tons/ft²) | Sample Type | In-Situ Dry Density (lb/ft³) | Moisture Content (%) | Water Bearing Zone | Material Description |
|---|---|---|---|---|---|---|
| 1 | | | | | | 4" moderately organic SILT (OL-ML), dark brown, fine roots throughout, soft, moist (Topsoil) |
| 2 | | | | | | Medium stiff, gravelly SILT (ML), brown, moist (Undocumented Fill) |
| 3 | | | | | | Soft, moderately organic, gravelly SILT (OL-ML), dark brown, fine roots throughout, moist (Buried Topsoil) |
| 4 | | | | | | Extremely soft to very soft (R0-R1), highly weathered BASALT, gray, moist (Columbia River Basalt) |
| 5 | | | | | | |
| 6 | | | | | | |
| 7 | | | | | | Grades to soft |
| 8 | | | | | | |
| 9 | | | | | | |
| 10 | | | | | | Test pit terminated at 10 feet. |
| 11 | | | | | | Note: No seepage or groundwater encountered. |
| 12 | | | | | | |
| 13 | | | | | | |
| 14 | | | | | | |
| 15 | | | | | | |
| 16 | | | | | | |
| 17 | | | | | | |

LEGEND

Bag Sample

Bucket Sample


Shelby Tube Sample


Seepage


Water Bearing Zone


Water Level at Abandonment

Date Excavated: 04/12/13
Logged By: BGA
Surface Elevation:

GeoPacific Engineering, Inc.
14835 SW 72nd Avenue
Portland, Oregon 97224
Tel: (503) 598-8445 Fax: (503) 941-9281

# TEST PIT LOG

Project: Sunbreak Subdivision
West Linn, Oregon

Project No. 13-2967

Test Pit No. **TP-3**

| Depth (ft) | Pocket Penetrometer (tons/ft²) | Sample Type | In-Situ Dry Density (lb/ft³) | Moisture Content (%) | Water Bearing Zone | Material Description |
|---|---|---|---|---|---|---|
| 1 | | | | | | 10" moderately organic SILT (OL-ML), dark brown, fine roots throughout, soft, moist (Topsoil) |
| | | | | | | Dense, silty GRAVEL and COBBLES (GM), reddish brown, moist (Residual Soil) |
| 2 | | | | | | Extremely soft to very soft (R0-R1), highly weathered BASALT, gray, silty clay to clayey silt matrix, moist (Columbia River Basalt) |
| 3 | | | | | | |
| 4 | | | | | | |
| 5 | | | | | | Grades to soft (R2) |
| 6 | | | | | | |
| 7 | | | | | | |
| 8 | | | | | | Test pit terminated at 7.5 feet due to practical refusal on medium hard to hard (R3-R4), moderately weathered BASALT, vesicular, gray and reddish brown, black staining, moist (Columbia River Basalt) |
| 9 | | | | | | |
| 10 | | | | | | Note: No seepage or groundwater encountered. |
| 11 | | | | | | |
| 12 | | | | | | |
| 13 | | | | | | |
| 14 | | | | | | |
| 15 | | | | | | |
| 16 | | | | | | |
| 17 | | | | | | |

LEGEND

Bag Sample

Bucket Sample


Shelby Tube Sample


Seepage


Water Bearing Zone


Water Level at Abandonment

Date Excavated: 04/12/13
Logged By: BGA
Surface Elevation:

GeoPacific Engineering, Inc.
14835 SW 72nd Avenue
Portland, Oregon 97224
Tel: (503) 598-8445 Fax: (503) 941-9281

# TEST PIT LOG

Project: Sunbreak Subdivision
West Linn, Oregon

Project No. 13-2967

Test Pit No. **TP-4**

| Depth (ft) | Pocket Penetrometer (tons/ft²) | Sample Type | In-Situ Dry Density (lb/ft³) | Moisture Content (%) | Water Bearing Zone | Material Description |
|---|---|---|---|---|---|---|
| 1 | 2.0 | | | | | 4" moderately organic SILT (OL-ML), dark brown, fine roots throughout, soft, moist (Topsoil) |
| 2 | 3.0 | | | | | Medium stiff, clayey SILT (ML), reddish brown, with occasional gravel size basalt clasts (Residual Soil) |
| 3 | 2.0 | | | | | |
| 4 | 2.0 | | | | | |
| 5 | | | | | | Extremely soft to very soft (R0-R1), highly weathered BASALT, gray, silty clay to clayey silt matrix, moist (Columbia River Basalt) |
| 6 | | | | | | Grades to soft (R2) |
| 7 | | | | | | [very hard digging below 6.5 feet] |
| 8 | | | | | | Test pit terminated at 8 feet due to practical refusal on medium hard to hard (R3-R4), moderately weathered BASALT, vesicular, gray and reddish brown, black staining, moist (Columbia River Basalt) |
| 9 | | | | | | |
| 10 | | | | | | Note: No seepage or groundwater encountered. |
| 11 | | | | | | |
| 12 | | | | | | |
| 13 | | | | | | |
| 14 | | | | | | |
| 15 | | | | | | |
| 16 | | | | | | |
| 17 | | | | | | |

LEGEND

Bag Sample

Bucket Sample


Shelby Tube Sample


Seepage


Water Bearing Zone


Water Level at Abandonment

Date Excavated: 04/12/13
Logged By: BGA
Surface Elevation:

GeoPacific Engineering, Inc.
14835 SW 72nd Avenue
Portland, Oregon 97224
Tel: (503) 598-8445 Fax: (503) 941-9281

# TEST PIT LOG

Project: Sunbreak Subdivision
West Linn, Oregon

Project No. 13-2967

Test Pit No. **TP-5**

| Depth (ft) | Pocket Penetrometer (tons/ft²) | Sample Type | In-Situ Dry Density (lb/ft³) | Moisture Content (%) | Water Bearing Zone | Material Description |
|---|---|---|---|---|---|---|
| 1 | | | | | | 16" moderately organic SILT (OL-ML), dark brown, fine to medium roots throughout, soft, moist (Topsoil)<br>Grades to without roots below 10 inches |
| 2 | 2.0 | | | | | Medium stiff, clayey SILT (ML), reddish brown, with occasional gravel size basalt clasts (Residual Soil) |
| 3 | 2.5 | | | | | |
| 4 | 2.0 | | | | | |
| 5 | 2.0 | | | | | |
| 6 | | | | | | |
| 7 | | | | | | |
| 8 | | | | | | |
| 9 | | | | | | Very soft to soft (R1-R2), highly weathered BASALT, gray, silty clay to clayey silt matrix, moist (Columbia River Basalt) |
| 10 | | | | | | Test pit terminated at 9.5 feet due to practical refusal on medium hard to hard (R3-R4), moderately weathered BASALT, vesicular, gray and reddish brown, black staining, moist (Columbia River Basalt)<br><br>Note: No seepage or groundwater encountered. |
| 11 | | | | | | |
| 12 | | | | | | |
| 13 | | | | | | |
| 14 | | | | | | |
| 15 | | | | | | |
| 16 | | | | | | |
| 17 | | | | | | |

LEGEND

Bag Sample

Bucket Sample


Shelby Tube Sample


Seepage


Water Bearing Zone


Water Level at Abandonment

Date Excavated: 04/12/13
Logged By: BGA
Surface Elevation:

GeoPacific Engineering, Inc.
14835 SW 72nd Avenue
Portland, Oregon 97224
Tel: (503) 598-8445 Fax: (503) 941-9281

# TEST PIT LOG

Project: Sunbreak Subdivision
West Linn, Oregon

Project No. 13-2967

Test Pit No. **TP-6**

| Depth (ft) | Pocket Penetrometer (tons/ft²) | Sample Type | In-Situ Dry Density (lb/ft³) | Moisture Content (%) | Water Bearing Zone | Material Description |
|---|---|---|---|---|---|---|
| 1 | | | | | | 4" moderately organic SILT (OL-ML), dark brown, fine roots throughout, soft, moist (Topsoil) |
| 2 | | | | | | Dense, silty GRAVEL and COBBLES (GM), reddish brown, moist (Residual Soil) |
| 3 | | | | | | Extremely soft to very soft (R0-R1), highly weathered BASALT, gray, silty clay to clayey silt matrix, moist (Columbia River Basalt) |
| 4 | | | | | | |
| 5 | | | | | | Grades to soft (R2) |
| 6 | | | | | | |
| 7 | | | | | | Test pit terminated at 7 feet due to practical refusal on medium hard to hard (R3-R4), moderately weathered BASALT, vesicular, gray and reddish brown, black staining, moist (Columbia River Basalt) |
| 8 | | | | | | |
| 9 | | | | | | Note: No seepage or groundwater encountered. |
| 10 | | | | | | |
| 11 | | | | | | |
| 12 | | | | | | |
| 13 | | | | | | |
| 14 | | | | | | |
| 15 | | | | | | |
| 16 | | | | | | |
| 17 | | | | | | |

LEGEND

Bag Sample

Bucket Sample


Shelby Tube Sample


Seepage


Water Bearing Zone


Water Level at Abandonment

Date Excavated: 04/12/13
Logged By: BGA
Surface Elevation:

GeoPacific Engineering, Inc.
14835 SW 72nd Avenue
Portland, Oregon 97224
Tel: (503) 598-8445 Fax: (503) 941-9281

# TEST PIT LOG

Project: Sunbreak Subdivision
West Linn, Oregon

Project No. 13-2967

Test Pit No. **TP-7**

| Depth (ft) | Pocket Penetrometer (tons/ft²) | Sample Type | In-Situ Dry Density (lb/ft³) | Moisture Content (%) | Water Bearing Zone | Material Description |
|---|---|---|---|---|---|---|
| 1 | 3.0 | | | | | 8" moderately organic SILT (OL-ML), dark brown, fine roots throughout, soft, moist (Topsoil) |
| | 3.0 | | | | | Stiff, clayey SILT (ML), reddish brown, with occasional gravel size basalt clasts (Residual Soil) |
| 2 | 3.5 | | | | | |
| | 3.0 | | | | | |
| 3 | 3.5 | | | | | |
| | 3.0 | | | | | |
| 4 | | | | | | |
| 5 | | | | | | Extremely soft to very soft (R0-R1), highly weathered BASALT, gray, silty clay to clayey silt matrix, moist (Columbia River Basalt) |
| 6 | | | | | | Grades to soft (R2) |
| 7 | | | | | | |
| 8 | | | | | | Test pit terminated at 7.5 feet due to practical refusal on medium hard to hard (R3-R4), moderately weathered BASALT, vesicular, gray and reddish brown, black staining, moist (Columbia River Basalt) |
| 9 | | | | | | |
| 10 | | | | | | Note: No seepage or groundwater encountered. |
| 11 | | | | | | |
| 12 | | | | | | |
| 13 | | | | | | |
| 14 | | | | | | |
| 15 | | | | | | |
| 16 | | | | | | |
| 17 | | | | | | |

LEGEND

Bag Sample

Bucket Sample


Shelby Tube Sample


Seepage


Water Bearing Zone


Water Level at Abandonment

Date Excavated: 04/12/13
Logged By: BGA
Surface Elevation:

# OPERATIONS AND MAINTENANCE

To be Completed with Final Design

**Walter H. Knapp & Associates, LLC**
***Consultants in Arboriculture, Silviculture, and Forest Ecology***

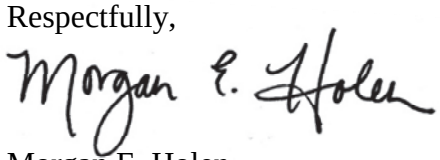
May 9, 2013

Planning and Building
City of West Linn
22500 Salamo Road #1000
West Linn, Oregon 97068

Re: Arborist Report and Tree Preservation Plan for the Sunbreak Project
West Linn, Oregon
Project No.: 1326 Sunbreak

Please find enclosed the Arborist Report and Tree Preservation Plan for the Sunbreak project located at 23150 Bland Circle in West Linn, Oregon. Please contact us if you have questions or need any additional information.

Respectfully,



Morgan E. Holen
*Morgan Holen & Associates, LLC*
*ISA Certified Arborist, PN-6145A*
*ISA Tree Risk Assessment Qualified*
*Forest Biologist*

***7615 SW Dunsmuir Lane, Beaverton, OR 97007***
***Phone: (503) 646-4349 Fax: (503) 747-4863***

**Walter H. Knapp & Associates, LLC**
***Consultants in Arboriculture, Silviculture, and Forest Ecology***

# Arborist Report and Tree Preservation Plan

## Sunbreak

## West Linn, Oregon

**May 9, 2013**

***7615 SW Dunsmuir Lane, Beaverton, OR 97007***
***Phone: (503) 646-4349  Fax: (503) 747-4863***

# Table of Contents



*7615 SW Dunsmuir Lane, Beaverton, OR 97007*
*Phone: (503) 646-4349 Fax: (503) 747-4863*

**Walter H. Knapp & Associates, LLC**
*Consultants in Arboriculture, Silviculture, and Forest Ecology*

May 8, 2013

# SUNBREAK – WEST LINN, OREGON
# ARBORIST REPORT AND TREE PRESERVATION PLAN

1326

## Purpose

This Arborist Report and Tree Preservation Plan for the Sunbreak project in West Linn, Oregon, is provided pursuant to City of West Linn Community Development Code, Chapter 55, Municipal Code Sections 8.500 and 8.600, and the West Linn Tree Technical Manual. This report describes the existing trees located on the project site, as well as recommendations for tree removal, retention and protection.

## Site Description

The project site is located at 23150 Bland Circle in West Linn. The site is gently sloped and primarily an open field with trees scattered near property boundaries and around the existing residence. The site is planned to be subdivided for residential development and Crestview Drive and Sunbreak Lane will be extended through the site. A site visit was conducted on April 24, 2013 by ISA Certified Arborist Morgan Holen (PN-6145A) in order to evaluate the existing trees in terms of species, size, condition, significance, and suitability for preservation with development. The location of individual trees is shown on site plan drawings and tree numbers correspond with the enclosed inventory data.

## Tree Inventory

In all, 36 existing trees were inventoried, including 16 trees located on adjacent properties that will be protected throughout construction. The remaining 20 trees are located on site and include seven different tree species, including three non-native and invasive European white birches (*Betula pendula*). Table 1 provides a summary of the number of on-site trees by species.

**Table 1. Count of On Site Trees by Species and Location – Sunbreak Project.**

| Common Name | Species Name | Quantity | Percent |
|---|---|---|---|
| Douglas-fir | *Pseudotsuga menziesii* | 4 | 20% |
| European white birch | *Betula pendula* | 3 | 15% |
| Oregon white oak | *Quercus garryana* | 3 | 15% |
| pine | *Pinus* spp. | 1 | 5% |
| plum | *Prunus* spp. | 2 | 10% |
| spruce | *Picea* spp. | 6 | 30% |
| willow | *Salix* spp. | 1 | 5% |
| **Total** | | **20** | **100%** |

*7615 SW Dunsmuir Lane, Beaverton, OR 97007*
*Phone: (503) 646-4349 Fax: (503) 747-4863*

Significant trees will be determined by the City Arborist. Based on our evaluation of the size, type, location, health, and long term survivability of the individual trees located on site, six (30%) on site trees was identified as potentially being classified as significant. This includes three Oregon white oaks (trees number 6825, 6826 and 6831) and three Douglas-firs (trees number 6161, 6830 and 6839). The enclosed tree inventory data provides a complete description of the individual trees.

## Tree Plan Recommendations

We coordinated with the project team to discuss trees suitable for preservation in terms of proposed construction impacts. Of the 20 on site trees, 17 (85%) are planned for removal either for construction or because of poor or hazardous condition, and 3 (15%) are planned for retention including potentially significant trees number 6826, 6830 and 6839. Table 2 provides a summary of the number of non-significant and potentially significant trees by treatment recommendation.

**Table 2. Number of On Site Trees by Treatment Recommendation and Significance.**

| Treatment | Remove | Retain | Total | Percent |
|---|---|---|---|---|
| Non-Significant Trees | 14 | 0 | **14** | 70% |
| Potentially Significant | 3 | 3 | **6** | 30% |
| **Total** | **17** | **3** | | |
| Percent | 85% | 15% | **20** | 100% |

The Tree Plan drawing illustrates the location of trees to be removed and preserved, and the approximate location of tree protection measures.

## Tree Protection Standards

Trees to be protected will need special consideration to assure their protection during construction. Tree protection measures include:

### Before Construction

1. **Tree Protection Zone.** The project arborist shall designate the Tree Protection Zone (TPZ) for each tree to be protected. Where feasible, the size of the TPZ shall be established at the dripline of the tree plus 10-feet. Alternatively, the TPZ shall be established at the dripline of protected trees. Where infrastructure (retaining walls, driveways, buildings, and utilities) must be installed closer to the tree(s), the TPZ may be established within the dripline area if the project arborist, in coordination with the City Arborist, determines that the tree(s) will not be unduly damaged. The location of TPZs shall be shown on construction drawings.
2. **Protection Fencing.** Protection fencing shall serve as the tree protection zone and shall be erected before demolition, grubbing, grading, or construction begins. All trees to be retained shall be protected by six-foot-high chain link fences installed at the edge of the TPZ. Protection fencing shall be secured to two-inch diameter

galvanized iron posts, driven to a depth of a least two feet, placed no further than 10-feet apart. If fencing is located on pavement, posts may be supported by an appropriate grade level concrete base. Protection fencing shall remain in place until final inspection of the project permit, or in consultation with the project arborist.

3. **Signage.** An 8.5x11 –inch sign stating, "WARNING: Tree Protection Zone," shall be displayed on each protection fence at all times.
4. **Designation of Cut Trees.** Trees to be removed shall be clearly marked with construction flagging, tree-marking paint, or other methods approved in advanced by the project arborist. Trees shall be carefully removed so as to avoid either above or below ground damage to those trees to be preserved. Roots of stumps that are adjacent to retained trees shall be carefully severed prior to stump extraction.
5. **Preconstruction Conference.** The project arborist shall be on site to discuss methods of tree removal and tree protection prior to any construction.
6. **Verification of Tree Protection Measures.** Prior to commencement of construction, the project arborist will verify in writing to the City Arborist that tree protection fencing has been satisfactorily installed.

**During Construction**

7. **Tree Protection Zone Maintenance.** The protection fencing shall not be moved, removed, or entered by equipment except under direction of the project arborist, in coordination with the City Arborist.
8. **Storage of Material or Equipment.** The contractor shall not store materials or equipment within the TPZ.
9. **Excavation within the TPZ.**
    a. Excavation with the TPZ shall be avoided if alternatives are available.
    b. If excavation within the TPZ is unavoidable, the project arborist shall evaluate the proposed excavation to determine methods to minimize impacts to trees. This can include tunneling, hand digging or other approaches.
    c. All construction within the TPZ shall be under the on-site technical supervision of the project arborist, in coordination with the City Arborist.
10. **Tree Protection Zone.** The project arborist shall monitor construction activities and progress, and provide written reports to the developer and the City at regular intervals. Tree protection inspections will occur monthly or more frequently if needed.
11. **Quality Assurance.** The project arborist shall supervise proper execution of this plan during construction activities that could encroach on retained trees. Tree protection site inspection monitoring reports will be provided to the Client and City on a regular basis throughout construction.

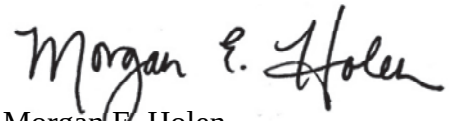
**Post Construction**

12. **Final Report.** After the project has been completed, the project arborist shall provide a final report to the developer and the City. The final report shall include concerns about any trees negatively impacted during construction, and describe the measures needed to maintain and protect the remaining trees for a minimum of two years after project completion.

**Summary**

The enclosed tree inventory provides complete data for individual trees at the Sunbreak project site in West Linn. The location of inventoried trees and tree protection measures shall be shown on site plan drawings. Seventeen trees are recommended for removal because of condition or for the purposes of construction and three potentially significant on-site trees are planned for preservation with protection during construction. It is the Client's responsibility to implement this plan and to monitor the construction process. The project arborist will be available during construction to help with tree related issues.

Please contact us if you have questions or need any additional information.



Morgan E. Holen
*Morgan Holen & Associates, LLC*
*ISA Certified Arborist, PN-6145A*
*ISA Tree Risk Assessment Qualified*
*Forest Biologist*

Enclosure: 1326 Sunbreak - Tree Data 4-24-13

| No. | Common Name | Species Name | DBH* | C-Rad^ | Defects and Comments | Sig? | Recommendation |
|---|---|---|---|---|---|---|---|
| 5197 | flowering pear | *Pyrus calleryana* | 10 | | off-site street tree | n/a | protect adjacent tree |
| 5396 | flowering pear | *Pyrus calleryana* | 6 | 8 | off-site street tree | n/a | protect adjacent tree |
| 5398 | flowering pear | *Pyrus calleryana* | 6 | 7 | off-site street tree | n/a | protect adjacent tree |
| 5399 | flowering pear | *Pyrus calleryana* | 6 | 7 | off-site street tree | n/a | protect adjacent tree |
| 5543 | flowering pear | *Pyrus calleryana* | 6 | 7 | off-site street tree | n/a | protect adjacent tree |
| 5544 | flowering pear | *Pyrus calleryana* | 8 | 7 | off-site street tree | n/a | protect adjacent tree |
| 6156 | spruce | *Picea spp.* | 10 | 10 | on property line | no | remove |
| 6157 | spruce | *Picea spp.* | 10 | 10 | on property line | no | remove |
| 6158 | spruce | *Picea spp.* | 10 | 10 | on property line | no | remove |
| 6159 | pine | *Pinus spp.* | 10 | 8 | on property line | no | remove |
| 6160 | spruce | *Picea spp.* | 8 | 8 | on property line | no | remove |
| 6160.1 | spruce | *Picea spp.* | 8 | 8 | on property line | no | remove |
| 6161 | Douglas-fir | *Pseudotsuga menziesii* | 30 | 22 | no major defects; remove for street construction | YES | remove |
| 6650 | willow | *Salix spp.* | 22 | 20 | broken top, stem decay | no | remove |
| 6651 | Douglas-fir | *Pseudotsuga menziesii* | 34 | 30 | off-site, not evaluated | n/a | protect adjacent tree |
| 6652 | bigleaf maple | *Acer macrophyllum* | 16 | 25 | off-site, not evaluated | n/a | protect adjacent tree |
| 6653 | bigleaf maple | *Acer macrophyllum* | 14 | 20 | off-site, not evaluated | n/a | protect adjacent tree |
| 6654 | Douglas-fir | *Pseudotsuga menziesii* | 32 | 25 | off-site, not evaluated | n/a | protect adjacent tree |
| 6825 | Oregon white oak | *Quercus garryana* | 24 | 25 | moderate condition; remove for street construction | YES | remove |
| 6826 | Oregon white oak | *Quercus garryana* | 59 | 25 | four codom stems; safety prune if retained | YES | retain |
| 6830 | Douglas-fir | *Pseudotsuga menziesii* | 39 | 25 | retain with 6826 | YES | retain |
| 6831 | Oregon white oak | *Quercus garryana* | 24 | 25 | no major defects; remove for street construction | YES | remove |
| 6832 | European white birch | *Betula pendula* | 6 | 8 | invasive species | no | remove |
| 6833 | European white birch | *Betula pendula* | 9 | 15 | invasive species | no | remove |
| 6834 | European white birch | *Betula pendula* | 9 | 15 | invasive species | no | remove |
| 6835 | Deodar cedar | *Cedrus deodara* | 11 | 10 | off-site, good condition | n/a | protect adjacent tree |
| 6836 | plum | *Prunus spp.* | 8 | 15 | poor structure, branch decay | no | remove |
| 6837 | plum | *Prunus spp.* | 8 | 15 | poor structure, stem and branch decay | no | remove |
| 6838 | spruce | *Picea spp.* | 13 | 15 | poor basal structure; sapsuckers | no | remove |
| 6839 | Douglas-fir | *Pseudotsuga menziesii* | 22 | 25 | no major defects | YES | retain |
| 7081 | Douglas-fir | *Pseudotsuga menziesii* | 16 | 12 | minor crown asymmetry | no | remove |
| 7091 | Douglas-fir | *Pseudotsuga menziesii* | 42 | 30 | off-site, not evaluated | n/a | protect adjacent tree |
| 7092 | Douglas-fir | *Pseudotsuga menziesii* | 40 | 30 | off-site, not evaluated | n/a | protect adjacent tree |
| 7093 | Douglas-fir | *Pseudotsuga menziesii* | 34 | 25 | off-site, not evaluated | n/a | protect adjacent tree |
| 7094 | Douglas-fir | *Pseudotsuga menziesii* | 42 | 25 | off-site, not evaluated | n/a | protect adjacent tree |
| 7095 | Douglas-fir | *Pseudotsuga menziesii* | 42 | 25 | off-site, not evaluated | n/a | protect adjacent tree |

*DBH is tree diameter measured at breast height, 4.5-feet above the ground level (inches)

^C-RAD is the average crown radius measured in feet

Sig? asks whether or not the tree is considered significant, either Yes (significant), No (non-significant), or N/A (non-applicable, off-site tree)

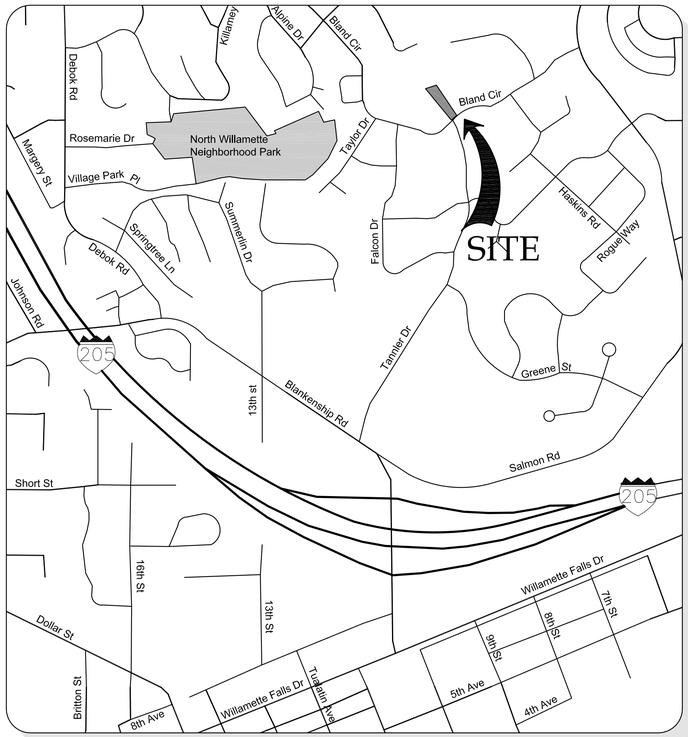
# *LAND USE DOCUMENTS*

FOR

# *SUNBREAK SUBDIVISION*

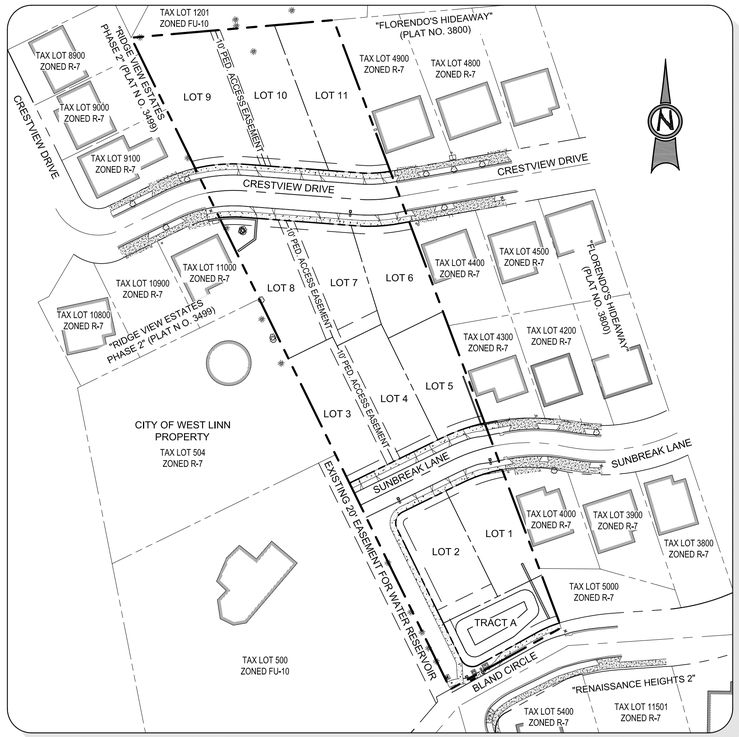
PREPARED FOR

LF 3, LLC




VICINITY MAP

NOT TO SCALE




SITE MAP

Scale: 1 inch = 80 feet

80 40 0 40 80

A PORTION OF LOT 28, "BLAND ACRES"
LOCATED IN THE NW & NE 1/4 OF SECTION 35, T.2S., R.1E., W.M.
CITY OF WEST LINN, CLACKAMAS COUNTY, OREGON

## PROJECT TEAM


**OWNER/APPLICANT**
JT SMITH COMPANIES
5285 MEADOWS ROAD, SUITE #171
LAKE OSWEGO, OR 97035
CONTACT: JOHN WYLAND
jwyland@jtsmithco.com

**CIVIL ENGINEER**
3J CONSULTING, INC.
10445 SW CANYON ROAD, SUITE 245
BEAVERTON, OR 97005
CONTACT: BRIAN FEENEY
PHONE: (503) 946-9365
brian.feeney@3j-consulting.com

**PLANNING CONSULTANT**
3J CONSULTING, INC
10445 SW CANYON ROAD, SUITE 245
BEAVERTON, OR 97005
CONTACT: ANDREW TULL
PHONE: 503-946-9365
EMAIL: andrew.tull@3j-consulting.com

**GEOTECHNICAL CONSULTANT**
GEOPACIFIC ENGINEERING, INC.
14835 SW 72ND AVENUE
PORTLAND, OR 97224
CONTACT: SCOTT HARDMAN
PHONE: (503) 625-4455
shardman@geopacificeng.com

**LAND SURVEYOR**
COMPASS SURVEYING
4107 SE INTERNATIONAL WAY, SUITE 705
MILWAUKIE, OR 97222
CONTACT: DON DEVLAEMINCK, PLS
PHONE: 503-653-9093
dond@compass-engineering.com


## SITE INFORMATION

**SITE ADDRESS**
23150 BLAND CIRCLE
WEST LINN, OR 97068

**TAX LOT(S)**
2S1E35A 1300

**FLOOD HAZARD**
MAP NUMBER: 41005C0257D ZONE X (UNSHADED)

**JURISDICTION**
CITY OF WEST LINN

**ZONING**
R-7

## SHEET INDEX



*LAND USE*

| # | REVISION SUMMARY | BY | DATE |
|---|---|---|---|

6/21/13

COVER SHEET
*SUNBREAK SUBDIVISION*
LF 3, LLC
WEST LINN, OR


3J CONSULTING, INC
*CIVIL ENGINEERING*
*WATER RESOURCES*
*LAND USE PLANNING*
10445 SW CANYON ROAD SUITE 245, BEAVERTON, OR 97005
PHONE & FAX: (503) 946-9365

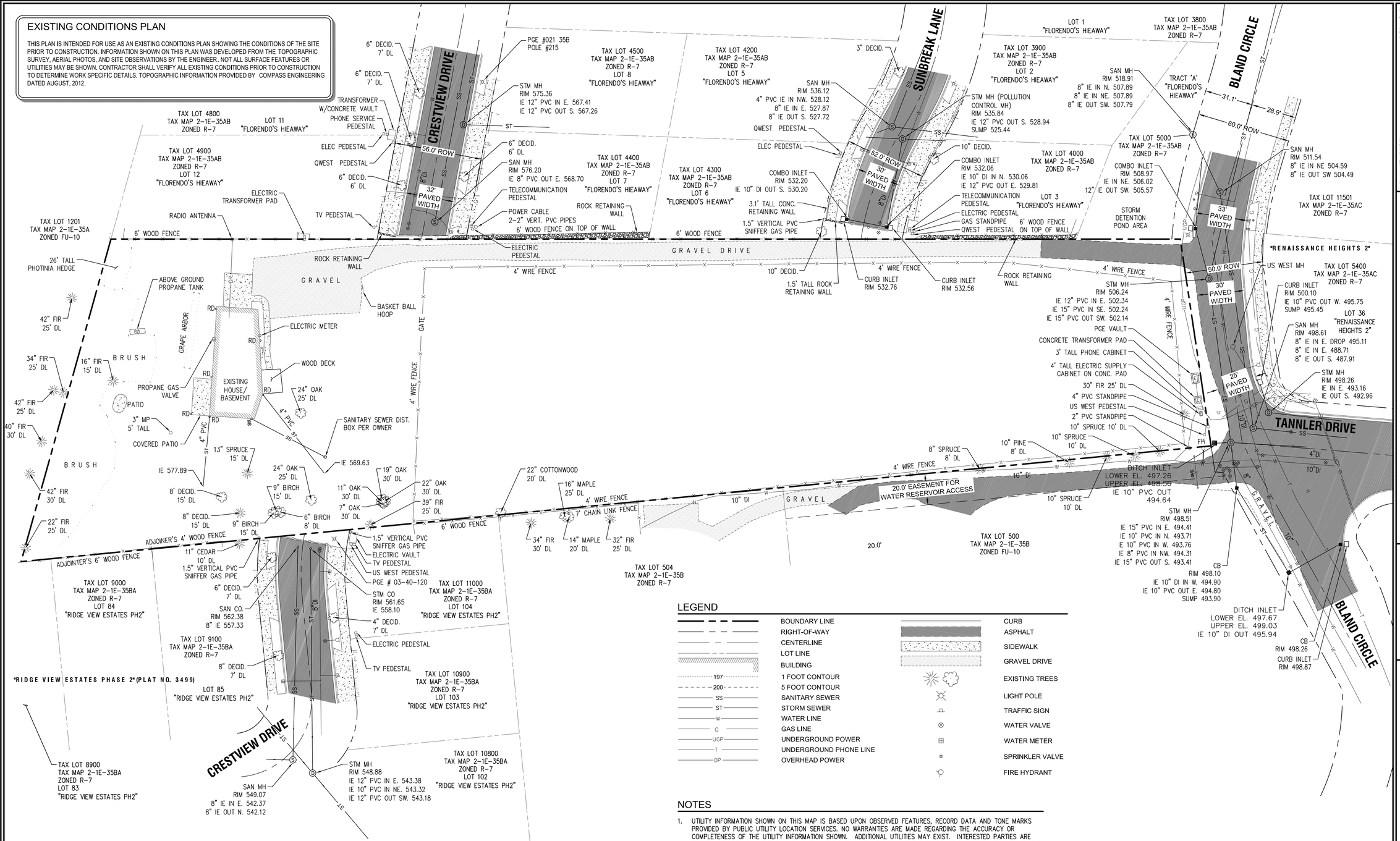

| | |
|---|---|
| 3J JOB ID # | 13113 |
| LAND USE # | _____ |
| TAX LOT # | 2S1E35A01300 |
| DESIGNED BY | CLF/JTE |
| CHECKED BY | BKF |

SHEET TITLE
COVER SHEET

SHEET NUMBER
**C0.0**

## EXISTING CONDITIONS PLAN

THIS PLAN IS INTENDED FOR USE AS AN EXISTING CONDITIONS PLAN SHOWING THE CONDITIONS OF THE SITE PRIOR TO CONSTRUCTION. INFORMATION SHOWN ON THIS PLAN WAS DEVELOPED FROM THE TOPOGRAPHIC SURVEY, AERIAL PHOTOS, AND SITE OBSERVATIONS BY THE ENGINEER. NOT ALL SURFACE FEATURES OR UTILITIES MAY BE SHOWN. CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS PRIOR TO CONSTRUCTION TO DETERMINE WORK SPECIFIC DETAILS. TOPOGRAPHIC INFORMATION PROVIDED BY COMPASS ENGINEERING DATED AUGUST, 2012.




## LEGEND

| | |
|---|---|
| BOUNDARY LINE | CURB |
| RIGHT-OF-WAY | ASPHALT |
| CENTERLINE | SIDEWALK |
| LOT LINE | GRAVEL DRIVE |
| BUILDING | EXISTING TREES |
| 1 FOOT CONTOUR | LIGHT POLE |
| 5 FOOT CONTOUR | TRAFFIC SIGN |
| SANITARY SEWER | WATER VALVE |
| STORM SEWER | WATER METER |
| WATER LINE | SPRINKLER VALVE |
| GAS LINE | FIRE HYDRANT |
| UNDERGROUND POWER | |
| UNDERGROUND PHONE LINE | |
| OVERHEAD POWER | |

## NOTES

1. UTILITY INFORMATION SHOWN ON THIS MAP IS BASED UPON OBSERVED FEATURES, RECORD DATA AND TONE MARKS PROVIDED BY PUBLIC UTILITY LOCATION SERVICES. NO WARRANTIES ARE MADE REGARDING THE ACCURACY OR COMPLETENESS OF THE UTILITY INFORMATION SHOWN. ADDITIONAL UTILITIES MAY EXIST. INTERESTED PARTIES ARE HEREBY ADVISED THAT UTILITY LOCATIONS SHOULD BE VERIFIED PRIOR TO DESIGN OR CONSTRUCTION OF ANY CRITICAL ITEMS.
2. VERTICAL DATUM: NAVD '88 UTILIZING GPS POSITIONING TIED TO THE ORGN WITH REAL TIME CORRECTORS REFERENCED TO NAD 83(2011).
3. TOPOGRAPHIC FEATURES SHOWN ON THIS MAP WERE LOCATED USING STANDARD PRECISION TOPOGRAPHIC MAPPING PROCEDURES. THIRD PARTY USERS OF DATA FROM THIS MAP PROVIDED VIA AUTOCAD DRAWING FILES OR DATA EXCHANGE FILES SHOULD NOT RELY ON ANY AUTOCAD GENERATED INFORMATION WHICH IS BEYOND THE LIMITS OF PRECISION OF THIS MAP. THIRD PARTIES USING DATA FROM THIS MAP IN AN AUTOCAD FORMAT SHOULD VERIFY ANY ELEMENTS REQUIRING PRECISE LOCATIONS PRIOR TO COMMENCEMENT OF ANY CRITICAL DESIGN OR CONSTRUCTION. CONTACT COMPASS ENGINEERING FOR FURTHER INFORMATION. FURTHERMORE, COMPASS ENGINEERING WILL NOT BE RESPONSIBLE NOR HELD LIABLE FOR ANY DESIGN OR CONSTRUCTION RELATED PROBLEMS THAT ARISE OUT OF THIRD PARTY USAGE OF THIS MAP (IN AUTOCAD OR OTHER FORMAT) FOR ANY PURPOSE OTHER THAN SPECIFICALLY STATED HEREIN. THIS STATEMENT IS AN OFFICIAL PART OF THIS MAP.

A PORTION OF LOT 28, "BLAND ACRES"
TAX LOT 1300, LOCATED IN THE NW & NE
1/4 OF SECTION 35, T.2S., R.1E., W.M.
CITY OF WEST LINN, CLACKAMAS COUNTY, OREGON

Scale: 1 inch = 30 feet
30 15 0 15 30

| # | REVISION SUMMARY | BY | DATE |
|---|---|---|---|
| | LAND USE | | 6/21/13 |

EXISTING CONDITIONS
*SUNBREAK SUBDIVISION*
LF 3, LLC
WEST LINN, OR

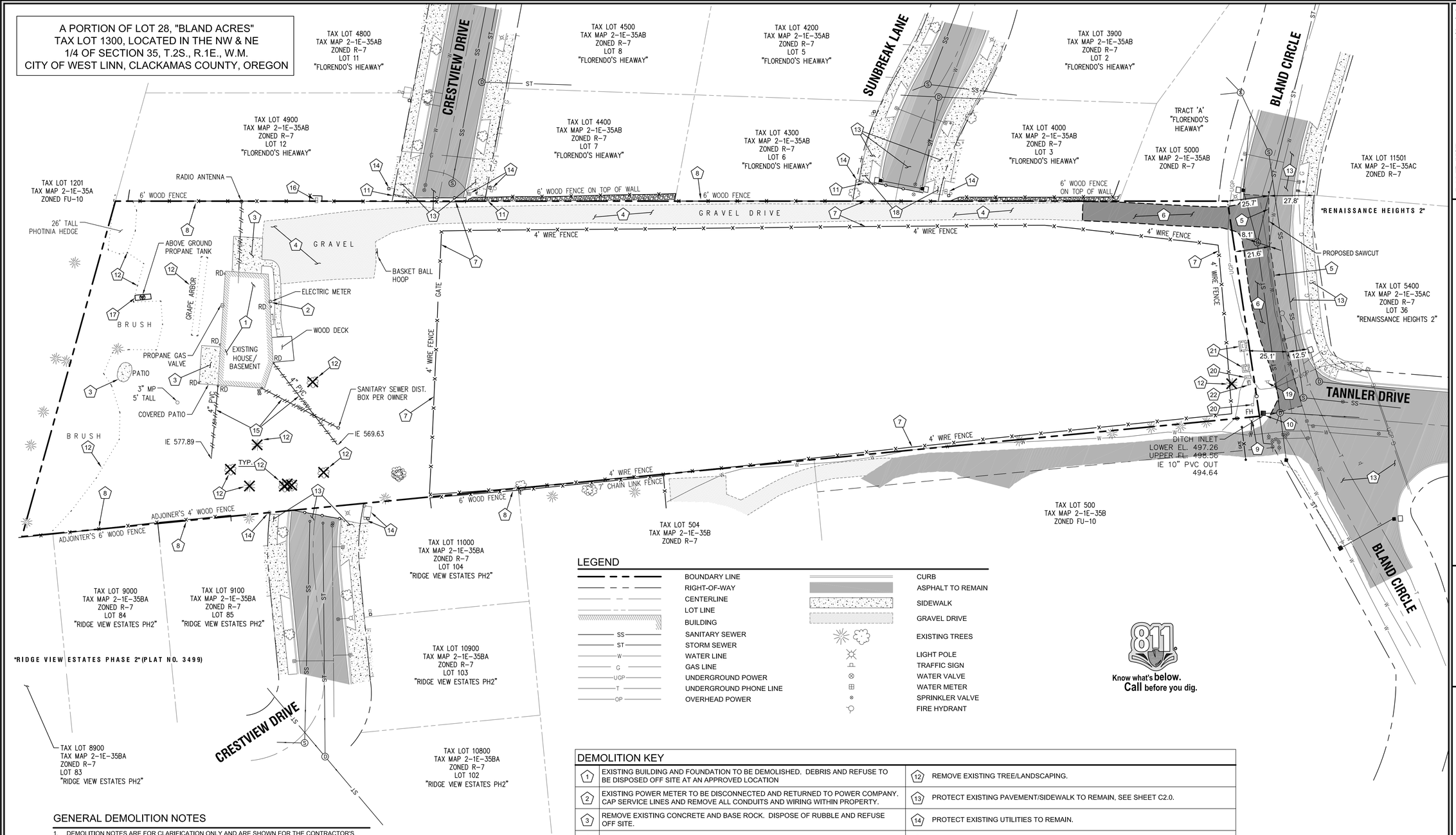

3J CONSULTING, INC
CIVIL ENGINEERING
WATER RESOURCES
LAND USE PLANNING
10445 SW CANYON ROAD SUITE 245, BEAVERTON, OR 97005
PHONE & FAX: (503) 946-9365


| | |
|---|---|
| 3J JOB ID # | 13113 |
| LAND USE # | |
| TAX LOT # | 2S1E35A01300 |
| DESIGNED BY | CLF/JTE |
| CHECKED BY | BKF |

SHEET TITLE
EXISTING

SHEET NUMBER
**C1.0**

A PORTION OF LOT 28, "BLAND ACRES"
TAX LOT 1300, LOCATED IN THE NW & NE
1/4 OF SECTION 35, T.2S., R.1E., W.M.
CITY OF WEST LINN, CLACKAMAS COUNTY, OREGON




## LEGEND

| | | | |
|---|---|---|---|
| | BOUNDARY LINE | | CURB |
| | RIGHT-OF-WAY | | ASPHALT TO REMAIN |
| | CENTERLINE | | SIDEWALK |
| | LOT LINE | | GRAVEL DRIVE |
| | BUILDING | | |
| SS | SANITARY SEWER | | EXISTING TREES |
| ST | STORM SEWER | | LIGHT POLE |
| W | WATER LINE | | TRAFFIC SIGN |
| G | GAS LINE | | WATER VALVE |
| UGP | UNDERGROUND POWER | | WATER METER |
| T | UNDERGROUND PHONE LINE | | SPRINKLER VALVE |
| OP | OVERHEAD POWER | | FIRE HYDRANT |

Know what's **below.**
**Call** before you dig.

## GENERAL DEMOLITION NOTES

1. DEMOLITION NOTES ARE FOR CLARIFICATION ONLY AND ARE SHOWN FOR THE CONTRACTOR'S BENEFIT. THESE NOTES ARE NOT INTENDED TO BE COMPREHENSIVE. THE CONTRACTOR SHALL REMOVE OR RELOCATE ALL EXISTING ON-SITE IMPROVEMENTS NECESSARY TO ACCOMMODATE THE PROPOSED CONSTRUCTION.
2. ALL EXISTING PROPERTY UTILITY SERVICES TO BE TERMINATED AND CAPPED AT THE RIGHT OF WAY PRIOR TO DEMOLISHING ANY EXISTING BUILDINGS.
3. CONTRACTOR IS TO REMOVE ALL EXISTING SURFACE IMPROVEMENTS AND DEBRIS WITHIN THE LIMITS OF WORK UNLESS OTHERWISE NOTED. ALL DEBRIS FOUND ON SITE SHALL BE DISPOSED OF IN ACCORDANCE WITH APPLICABLE STATE CODES.
4. CONTRACTOR TO PROTECT EXISTING FEATURES WHICH ARE TO REMAIN.
5. CONTRACTOR SHALL ADJUST ALL EXISTING MANHOLE RIMS, DRAINAGE STRUCTURES, VALVE BOXES, VAULT LIDS AND UTILITY ACCESS STRUCTURES TO FINISH GRADE WITHIN AREAS AFFECTED BY PROPOSED CONSTRUCTION.
6. CONSTRUCTION AND DEMOLITION ACTIVITIES SHALL BE PHASED IN SUCH A MANNER AS TO ENSURE THAT PUBLIC ACCESS ROADS ARE NOT BLOCKED AND REMAIN OPERATIONAL.
7. SEE TREE PROTECTION AND REMOVAL PLAN (SHEET C1.1) FOR ALL TREE REMOVAL INFORMATION.

## DEMOLITION KEY

| | | | |
|---|---|---|---|
| 1 | EXISTING BUILDING AND FOUNDATION TO BE DEMOLISHED. DEBRIS AND REFUSE TO BE DISPOSED OFF SITE AT AN APPROVED LOCATION | 12 | REMOVE EXISTING TREE/LANDSCAPING. |
| 2 | EXISTING POWER METER TO BE DISCONNECTED AND RETURNED TO POWER COMPANY. CAP SERVICE LINES AND REMOVE ALL CONDUITS AND WIRING WITHIN PROPERTY. | 13 | PROTECT EXISTING PAVEMENT/SIDEWALK TO REMAIN, SEE SHEET C2.0. |
| 3 | REMOVE EXISTING CONCRETE AND BASE ROCK. DISPOSE OF RUBBLE AND REFUSE OFF SITE. | 14 | PROTECT EXISTING UTILITIES TO REMAIN. |
| 4 | REMOVE EXISTING GRAVEL DRIVEWAY. DISPOSE OF RUBBLE AND REFUSE OFF SITE. | 15 | REMOVE EXISTING STORM AND SEWER LINES AND STRUCTURES (TYPICAL FOR ALL). |
| 5 | SAWCUT EXISTING ASPHALT PAVEMENT. | 16 | REMOVE EXISTING TRANSFORMER AND ELECTRICAL LINE TO EXISTING RESIDENCE. CONTRACTOR TO COORDINATE WITH PORTLAND GENERAL ELECTRIC. |
| 6 | REMOVE EXISTING ASPHALT SURFACING AND BASE ROCK. DISPOSE OF RUBBLE AND REFUSE OFF SITE. | 17 | REMOVE EXISTING PROPANE TANK AND GAS LINE. CONTRACTOR TO COORDINATE WITH NW NATURAL GAS. |
| 7 | REMOVE EXISTING FENCING AND DISPOSE OF OFF SITE. | 18 | DEMOLISH EXISTING CONCRETE/SIDEWALK TO NEAREST JOINT. SAWCUT NEW JOINT IF PROPOSED IMPROVEMENTS ARE TO MATCH EXISTING. SEE SHEET C2.0. |
| 8 | PROTECT EXISTING FENCING TO REMAIN. | 19 | REMOVE AND REPLACE STOP SIGN. SEE SITE PLAN, SHEET C2.0. |
| 9 | REMOVE AND RELOCATE EXISTING FIRE HYDRANT, SEE SHEET C2.5. | 20 | PROTECT EXISTING COMMUNICATIONS PEDESTAL. |
| 10 | REMOVE EXISTING DITCH INLET AND PIPING AND DISPOSE OF OFF-SITE. | 21 | PROTECT EXISTING TRANSFORMER AND PRIMARY CABLE. |
| 11 | PROVIDE TEMPORARY SHORING AND REMOVE RETAINING WALL IN AREA OF IMPROVEMENTS. | 22 | PROTECT EXISTING STREET LIGHT CABINET. |

Scale: 1 inch = 30 feet
30 15 0 15 30

| # | REVISION SUMMARY | BY | DATE |
|---|---|---|---|
| | LAND USE | | 6/21/13 |

DEMOLITION PLAN
*SUNBREAK SUBDIVISION*
LF 3, LLC
WEST LINN, OR

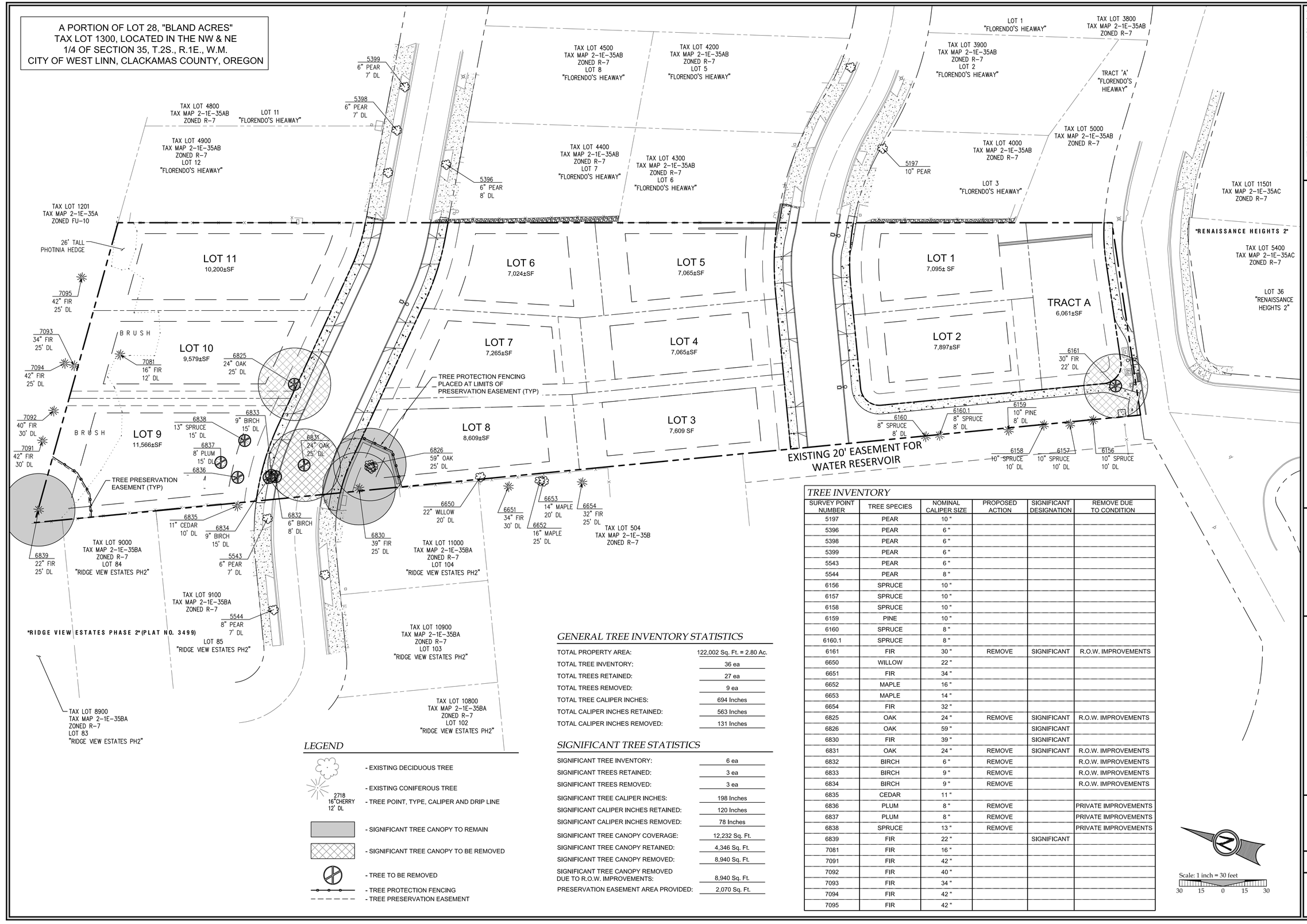

3J CONSULTING, INC
*CIVIL ENGINEERING*
*WATER RESOURCES*
*LAND USE PLANNING*
10445 SW CANYON ROAD SUITE 245, BEAVERTON, OR 97005
PHONE & FAX: (503) 946-9365


| | |
|---|---|
| 3J JOB ID # | 13113 |
| LAND USE # | |
| TAX LOT # | 2S1E35A01300 |
| DESIGNED BY | CLF/JTE |
| CHECKED BY | BKF |

SHEET TITLE
DEMOLITION

SHEET NUMBER
**C1.1**

A PORTION OF LOT 28, "BLAND ACRES"
TAX LOT 1300, LOCATED IN THE NW & NE
1/4 OF SECTION 35, T.2S., R.1E., W.M.
CITY OF WEST LINN, CLACKAMAS COUNTY, OREGON




## LEGEND

- EXISTING DECIDUOUS TREE
- EXISTING CONIFEROUS TREE
- 2718 16"CHERRY 12' DL — TREE POINT, TYPE, CALIPER AND DRIP LINE
- SIGNIFICANT TREE CANOPY TO REMAIN
- SIGNIFICANT TREE CANOPY TO BE REMOVED
- TREE TO BE REMOVED
- TREE PROTECTION FENCING
- TREE PRESERVATION EASEMENT

## GENERAL TREE INVENTORY STATISTICS

| | |
|---|---|
| TOTAL PROPERTY AREA: | 122,002 Sq. Ft. = 2.80 Ac. |
| TOTAL TREE INVENTORY: | 36 ea |
| TOTAL TREES RETAINED: | 27 ea |
| TOTAL TREES REMOVED: | 9 ea |
| TOTAL TREE CALIPER INCHES: | 694 Inches |
| TOTAL CALIPER INCHES RETAINED: | 563 Inches |
| TOTAL CALIPER INCHES REMOVED: | 131 Inches |

## SIGNIFICANT TREE STATISTICS

| | |
|---|---|
| SIGNIFICANT TREE INVENTORY: | 6 ea |
| SIGNIFICANT TREES RETAINED: | 3 ea |
| SIGNIFICANT TREES REMOVED: | 3 ea |
| SIGNIFICANT TREE CALIPER INCHES: | 198 Inches |
| SIGNIFICANT CALIPER INCHES RETAINED: | 120 Inches |
| SIGNIFICANT CALIPER INCHES REMOVED: | 78 Inches |
| SIGNIFICANT TREE CANOPY COVERAGE: | 12,232 Sq. Ft. |
| SIGNIFICANT TREE CANOPY RETAINED: | 4,346 Sq. Ft. |
| SIGNIFICANT TREE CANOPY REMOVED: | 8,940 Sq. Ft. |
| SIGNIFICANT TREE CANOPY REMOVED DUE TO R.O.W. IMPROVEMENTS: | 8,940 Sq. Ft. |
| PRESERVATION EASEMENT AREA PROVIDED: | 2,070 Sq. Ft. |

## TREE INVENTORY

| SURVEY POINT NUMBER | TREE SPECIES | NOMINAL CALIPER SIZE | PROPOSED ACTION | SIGNIFICANT DESIGNATION | REMOVE DUE TO CONDITION |
|---|---|---|---|---|---|
| 5197 | PEAR | 10 " | | | |
| 5396 | PEAR | 6 " | | | |
| 5398 | PEAR | 6 " | | | |
| 5399 | PEAR | 6 " | | | |
| 5543 | PEAR | 6 " | | | |
| 5544 | PEAR | 8 " | | | |
| 6156 | SPRUCE | 10 " | | | |
| 6157 | SPRUCE | 10 " | | | |
| 6158 | SPRUCE | 10 " | | | |
| 6159 | PINE | 10 " | | | |
| 6160 | SPRUCE | 8 " | | | |
| 6160.1 | SPRUCE | 8 " | | | |
| 6161 | FIR | 30 " | REMOVE | SIGNIFICANT | R.O.W. IMPROVEMENTS |
| 6650 | WILLOW | 22 " | | | |
| 6651 | FIR | 34 " | | | |
| 6652 | MAPLE | 16 " | | | |
| 6653 | MAPLE | 14 " | | | |
| 6654 | FIR | 32 " | | | |
| 6825 | OAK | 24 " | REMOVE | SIGNIFICANT | R.O.W. IMPROVEMENTS |
| 6826 | OAK | 59 " | | SIGNIFICANT | |
| 6830 | FIR | 39 " | | SIGNIFICANT | |
| 6831 | OAK | 24 " | REMOVE | SIGNIFICANT | R.O.W. IMPROVEMENTS |
| 6832 | BIRCH | 6 " | REMOVE | | R.O.W. IMPROVEMENTS |
| 6833 | BIRCH | 9 " | REMOVE | | R.O.W. IMPROVEMENTS |
| 6834 | BIRCH | 9 " | REMOVE | | R.O.W. IMPROVEMENTS |
| 6835 | CEDAR | 11 " | | | |
| 6836 | PLUM | 8 " | REMOVE | | PRIVATE IMPROVEMENTS |
| 6837 | PLUM | 8 " | REMOVE | | PRIVATE IMPROVEMENTS |
| 6838 | SPRUCE | 13 " | REMOVE | | PRIVATE IMPROVEMENTS |
| 6839 | FIR | 22 " | | SIGNIFICANT | |
| 7081 | FIR | 16 " | | | |
| 7091 | FIR | 42 " | | | |
| 7092 | FIR | 40 " | | | |
| 7093 | FIR | 34 " | | | |
| 7094 | FIR | 42 " | | | |
| 7095 | FIR | 42 " | | | |

Scale: 1 inch = 30 feet
30 15 0 15 30

| # | REVISION SUMMARY | BY | DATE |
|---|---|---|---|
| | LAND USE | | 6/21/13 |

# TREE PROTECTION AND REMOVAL PLAN
# SUNBREAK SUBDIVISION
LF 3, LLC
WEST LINN, OR

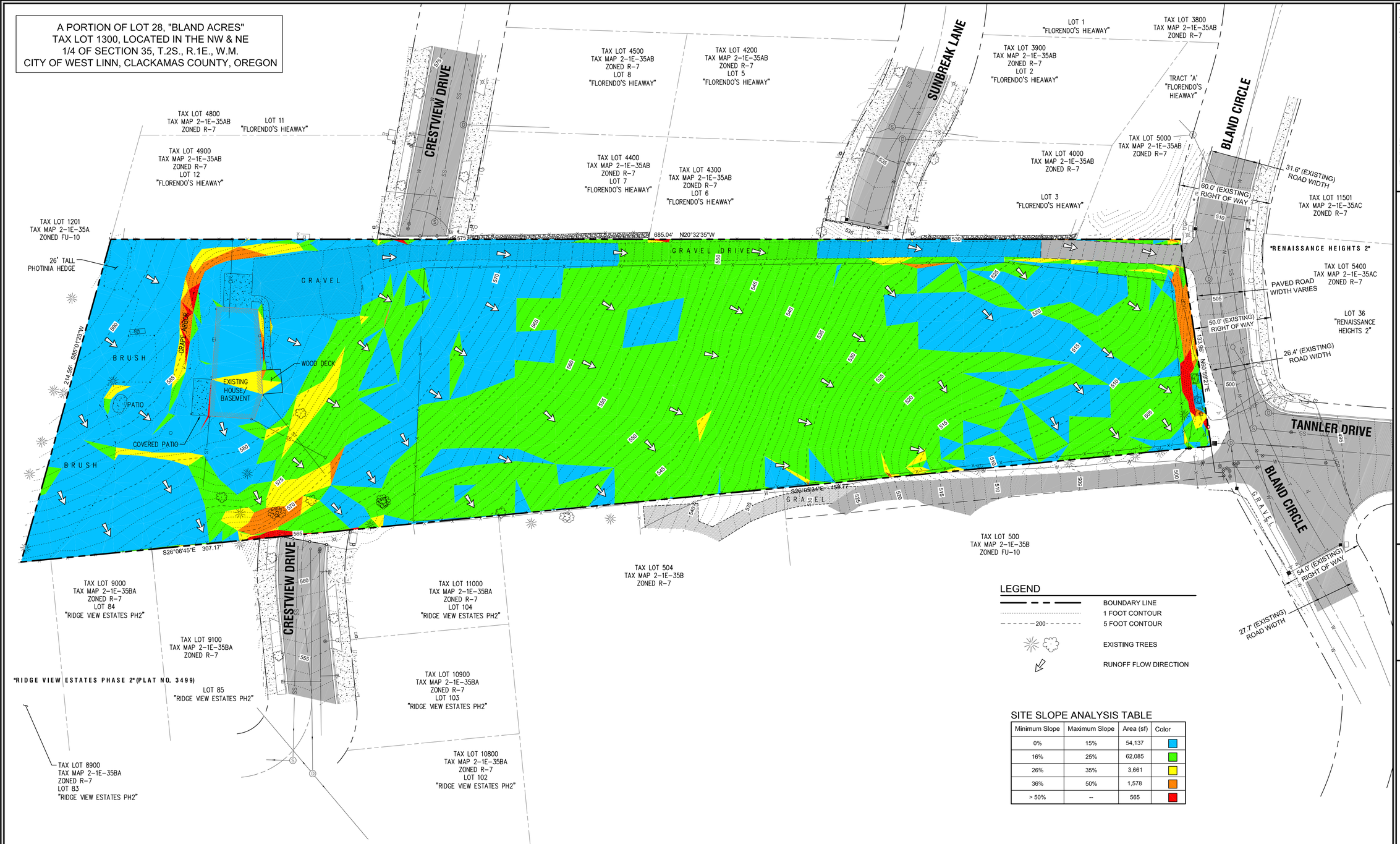

3J CONSULTING, INC
CIVIL ENGINEERING
WATER RESOURCES
LAND USE PLANNING
10445 SW CANYON ROAD SUITE 245, BEAVERTON, OR 97005
PHONE & FAX: (503) 946-9365


| | |
|---|---|
| 3J JOB ID # | 13113 |
| LAND USE # | |
| TAX LOT # | 2S1E35A01300 |
| DESIGNED BY | CLF/JTE |
| CHECKED BY | BKF |

SHEET TITLE
TREE PLAN

SHEET NUMBER
C1.2

A PORTION OF LOT 28, "BLAND ACRES"
TAX LOT 1300, LOCATED IN THE NW & NE
1/4 OF SECTION 35, T.2S., R.1E., W.M.
CITY OF WEST LINN, CLACKAMAS COUNTY, OREGON




## LEGEND

- BOUNDARY LINE
- 1 FOOT CONTOUR
- 200 — 5 FOOT CONTOUR
- EXISTING TREES
- RUNOFF FLOW DIRECTION

## SITE SLOPE ANALYSIS TABLE

| Minimum Slope | Maximum Slope | Area (sf) | Color |
|---|---|---|---|
| 0% | 15% | 54,137 | |
| 16% | 25% | 62,085 | |
| 26% | 35% | 3,661 | |
| 36% | 50% | 1,578 | |
| > 50% | -- | 565 | |

Scale: 1 inch = 30 feet
30 15 0 15 30

| # | REVISION SUMMARY | BY | DATE |
|---|---|---|---|
| | LAND USE | | 6/21/13 |

SLOPE ANALYSIS PLAN
*SUNBREAK SUBDIVISION*
LF 3, LLC
WEST LINN, OR

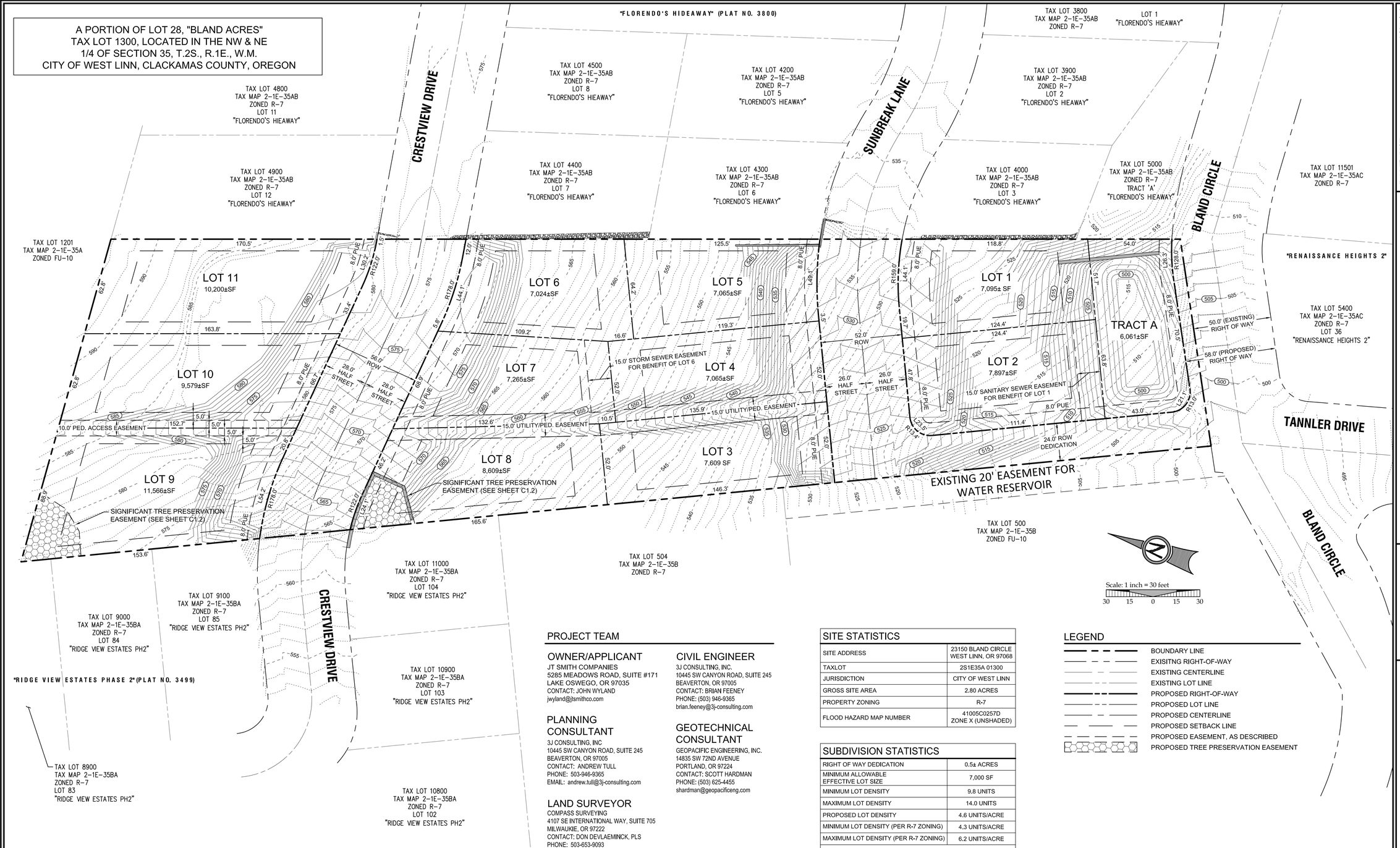

3J CONSULTING, INC
CIVIL ENGINEERING
WATER RESOURCES
LAND USE PLANNING
10445 SW CANYON ROAD SUITE 245, BEAVERTON, OR 97005
PHONE & FAX: (503) 946-9365


| | |
|---|---|
| 3J JOB ID # | 13113 |
| LAND USE # | _____ |
| TAX LOT # | 2S1E35A01300 |
| DESIGNED BY | CLF/JTE |
| CHECKED BY | BKF |

SHEET TITLE
SLOPE ANALYSIS

SHEET NUMBER
**C1.3**

A PORTION OF LOT 28, "BLAND ACRES"
TAX LOT 1300, LOCATED IN THE NW & NE
1/4 OF SECTION 35, T.2S., R.1E., W.M.
CITY OF WEST LINN, CLACKAMAS COUNTY, OREGON




## PROJECT TEAM

### OWNER/APPLICANT
JT SMITH COMPANIES
5285 MEADOWS ROAD, SUITE #171
LAKE OSWEGO, OR 97035
CONTACT: JOHN WYLAND
jwyland@jtsmithco.com

### PLANNING CONSULTANT
3J CONSULTING, INC
10445 SW CANYON ROAD, SUITE 245
BEAVERTON, OR 97005
CONTACT: ANDREW TULL
PHONE: 503-946-9365
EMAIL: andrew.tull@3j-consulting.com

### LAND SURVEYOR
COMPASS SURVEYING
4107 SE INTERNATIONAL WAY, SUITE 705
MILWAUKIE, OR 97222
CONTACT: DON DEVLAEMINCK, PLS
PHONE: 503-653-9093
dond@compass-engineering.com

### CIVIL ENGINEER
3J CONSULTING, INC.
10445 SW CANYON ROAD, SUITE 245
BEAVERTON, OR 97005
CONTACT: BRIAN FEENEY
PHONE: (503) 946-9365
brian.feeney@3j-consulting.com

### GEOTECHNICAL CONSULTANT
GEOPACIFIC ENGINEERING, INC.
14835 SW 72ND AVENUE
PORTLAND, OR 97224
CONTACT: SCOTT HARDMAN
PHONE: (503) 625-4455
shardman@geopacificeng.com

## SITE STATISTICS

| | |
|---|---|
| SITE ADDRESS | 23150 BLAND CIRCLE WEST LINN, OR 97068 |
| TAXLOT | 2S1E35A 01300 |
| JURISDICTION | CITY OF WEST LINN |
| GROSS SITE AREA | 2.80 ACRES |
| PROPERTY ZONING | R-7 |
| FLOOD HAZARD MAP NUMBER | 41005C0257D ZONE X (UNSHADED) |

## SUBDIVISION STATISTICS

| | |
|---|---|
| RIGHT OF WAY DEDICATION | 0.5± ACRES |
| MINIMUM ALLOWABLE EFFECTIVE LOT SIZE | 7,000 SF |
| MINIMUM LOT DENSITY | 9.8 UNITS |
| MAXIMUM LOT DENSITY | 14.0 UNITS |
| PROPOSED LOT DENSITY | 4.6 UNITS/ACRE |
| MINIMUM LOT DENSITY (PER R-7 ZONING) | 4.3 UNITS/ACRE |
| MAXIMUM LOT DENSITY (PER R-7 ZONING) | 6.2 UNITS/ACRE |
| SETBACKS: | |
| FRONT | 20 FEET |
| SIDE | 7.5 FEET |
| REAR | 20 FEET |
| STREET SIDE | 15 FEET |
| MAX. HEIGHT | 35 FEET |

## LEGEND

- BOUNDARY LINE
- EXISITNG RIGHT-OF-WAY
- EXISTING CENTERLINE
- EXISTING LOT LINE
- PROPOSED RIGHT-OF-WAY
- PROPOSED LOT LINE
- PROPOSED CENTERLINE
- PROPOSED SETBACK LINE
- PROPOSED EASEMENT, AS DESCRIBED
- PROPOSED TREE PRESERVATION EASEMENT

| # | REVISION SUMMARY | BY | DATE |
|---|---|---|---|
| | LAND USE | | 6/21/13 |

TENTATIVE SUBDIVISION PLAT
*SUNBREAK SUBDIVISION*
LF 3, LLC
WEST LINN, OR

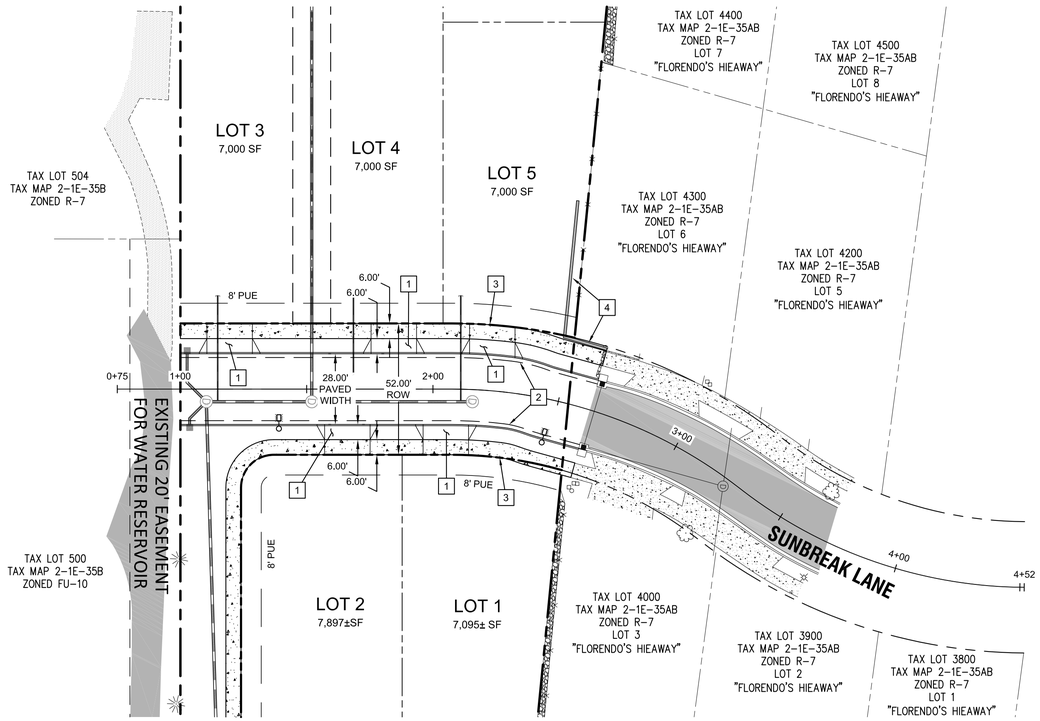

3J CONSULTING, INC
*CIVIL ENGINEERING*
*WATER RESOURCES*
*LAND USE PLANNING*
10445 SW CANYON ROAD SUITE 245, BEAVERTON, OR 97005
PHONE & FAX: (503) 946-9365


| | |
|---|---|
| 3J JOB ID # | 13113 |
| LAND USE # | _____ |
| TAX LOT # | 2S1E35A01300 |
| DESIGNED BY | CLF/JTE |
| CHECKED BY | BKF |

SHEET TITLE
SUBDIVISION PLAT

SHEET NUMBER
**C2.0**

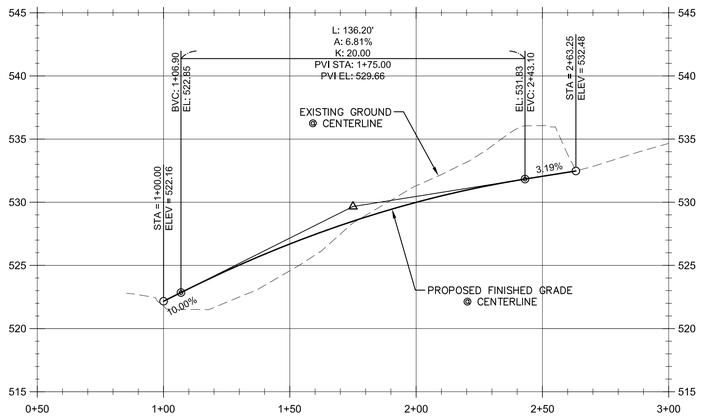
A PORTION OF LOT 28, "BLAND ACRES"
TAX LOT 1300, LOCATED IN THE NW & NE
1/4 OF SECTION 35, T.2S., R.1E., W.M.
CITY OF WEST LINN, CLACKAMAS COUNTY, OREGON




Scale: 1 inch = 30 feet
30 15 0 15 30

LEGEND

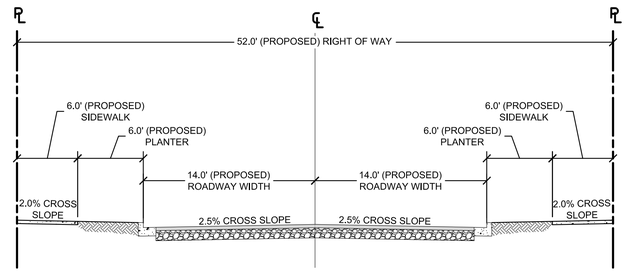
- BOUNDARY LINE
- EXISITNG RIGHT-OF-WAY
- EXISTING CENTERLINE
- EXISTING LOT LINE
- EXISTING CURB
- EXISTING ASPHALT
- EXISTING SIDEWALK
- EXISTING GRAVEL DRIVE
- EXISTING LIGHT POLE
- PROPOSED RIGHT-OF-WAY
- PROPOSED LOT LINE
- PROPOSED CENTERLINE
- PROPOSED CURB
- PROPOSED SIDEWALK
- STORM DRAIN LINE AND MANHOLE
- STORM SEWER CURB INLET
- PROPOSED STREET LIGHT
- PROPOSED RETAINING WALL




CL -SUNBREAK PROFILE
(STA:0+50.00 - STA:3+00.00)
SCALE: HORIZ 1"=10'
VERT 1"=1'

Know what's **below.**
**Call** before you dig.

| PROPOSED DEVELOPMENT KEY NOTES | |
|---|---|
| 1 | PROPOSED LOT ACCESS LOCATION |
| 2 | CONSTRUCT STANDARD CURB AND GUTTER. |
| 3 | CONSTRUCT 6-FT WIDE SIDEWALK. |
| 4 | CONSTRUCT RETAINING WALL. |




*TYPICAL SECTION - SUNBREAK LANE IMPROVEMENTS*
SCALE: N.T.S

| | BY | DATE |
|---|---|---|
| REVISION SUMMARY | | 6/21/13 |

*LAND USE*

SUNBREAK LANE PLAN AND PROFILE
*SUNBREAK SUBDIVISION*
LF 3, LLC
WEST LINN, OR

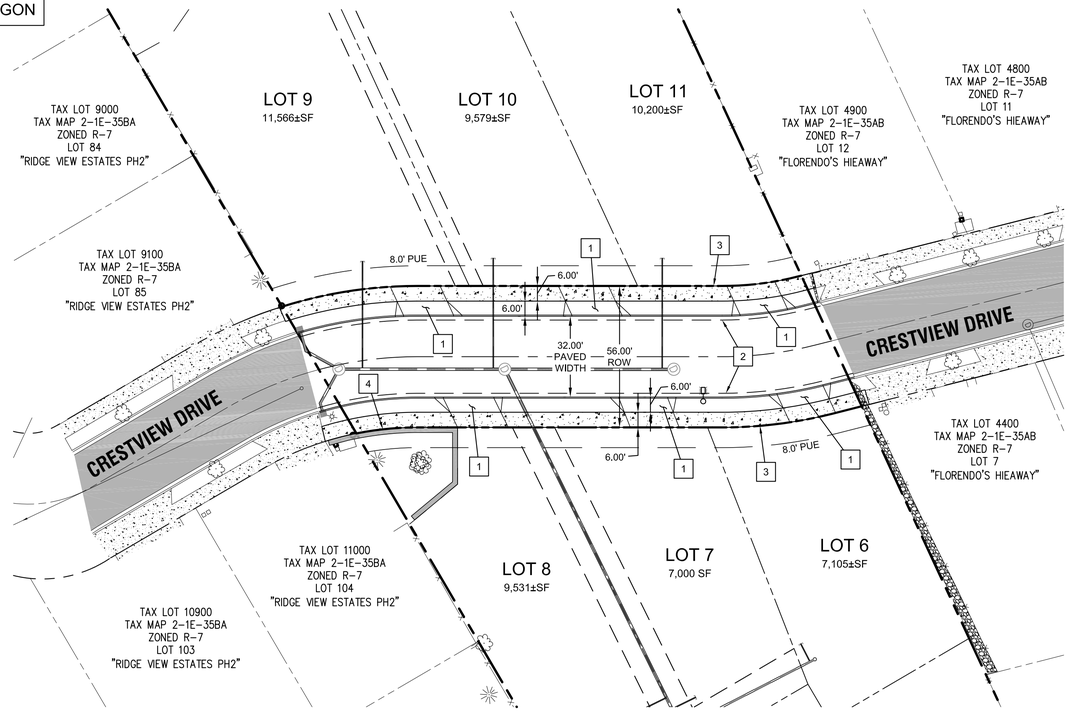

3J CONSULTING, INC
*CIVIL ENGINEERING*
*WATER RESOURCES*
*LAND USE PLANNING*
10445 SW CANYON ROAD SUITE 245, BEAVERTON, OR 97005
PHONE & FAX: (503) 946-9365

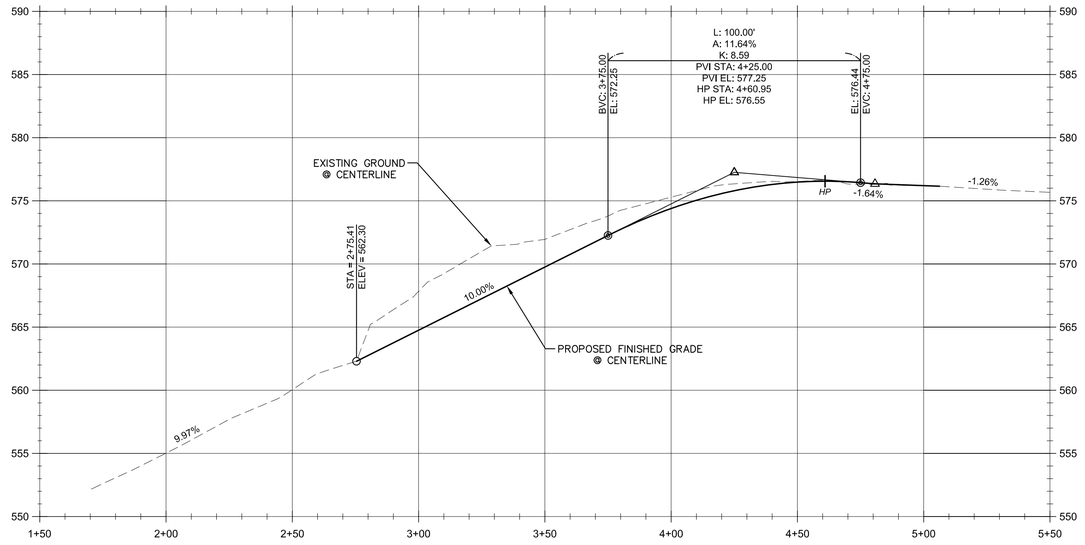

| | |
|---|---|
| 3J JOB ID # | 13113 |
| LAND USE # | _____ |
| TAX LOT # | 2S1E35A01300 |
| DESIGNED BY | CLF/JTE |
| CHECKED BY | BKF |

SHEET TITLE
SUNBREAK PLAN

SHEET NUMBER
**C2.1**

A PORTION OF LOT 28, "BLAND ACRES"
TAX LOT 1300, LOCATED IN THE NW & NE
1/4 OF SECTION 35, T.2S., R.1E., W.M.
CITY OF WEST LINN, CLACKAMAS COUNTY, OREGON




SCALE: HORIZ 1"=10'
VERT 1"=1'

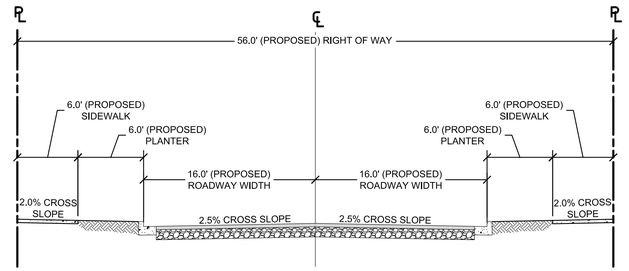

Scale: 1 inch = 30 feet
30 15 0 15 30

LEGEND

- BOUNDARY LINE
- EXISITNG RIGHT-OF-WAY
- EXISTING CENTERLINE
- EXISTING LOT LINE
- EXISTING CURB
- EXISTING ASPHALT
- EXISTING SIDEWALK
- EXISTING LIGHT POLE
- PROPOSED RIGHT-OF-WAY
- PROPOSED LOT LINE
- PROPOSED CENTERLINE
- PROPOSED CURB
- PROPOSED SIDEWALK
- STORM DRAIN LINE AND MANHOLE
- STORM SEWER CURB INLET
- PROPOSED STREET LIGHT
- PROPOSED RETAINING WALL

| PROPOSED DEVELOPMENT KEY NOTES | |
|---|---|
| 1 | PROPOSED LOT ACCESS LOCATION |
| 2 | CONSTRUCT STANDARD CURB AND GUTTER. |
| 3 | CONSTRUCT 6-FT WIDE SIDEWALK. |
| 4 | CONSTRUCT RETAINING WALL ALONG BACK OF WALK TO PRESERVE UTILITIES AND TREES. |

811 Know what's **below.** **Call** before you dig.




*TYPICAL SECTION - CRESTVIEW DRIVE IMPROVEMENTS*
SCALE: N.T.S

| LAND USE | REVISION SUMMARY | BY | DATE |
|---|---|---|---|
| A | | | 6/21/13 |

CRESTVIEW DRIVE PLAN & PROFILE
*SUNBREAK SUBDIVISION*
LF 3, LLC
WEST LINN, OR

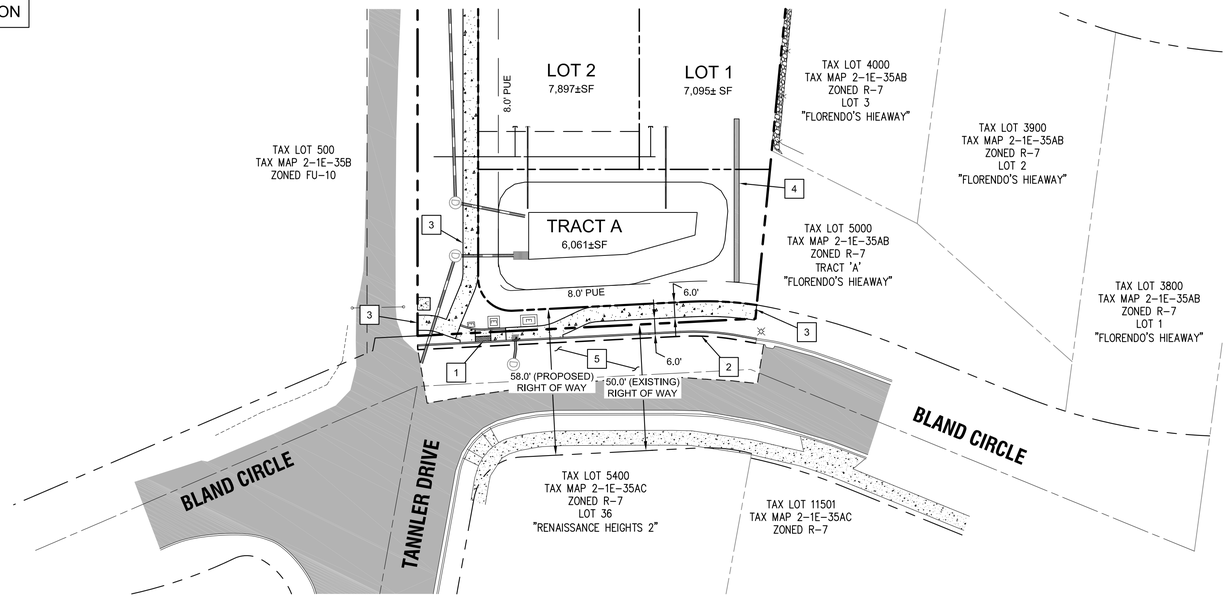

3J CONSULTING, INC
*CIVIL ENGINEERING*
*WATER RESOURCES*
*LAND USE PLANNING*
10445 SW CANYON ROAD SUITE 245, BEAVERTON, OR 97005
PHONE & FAX: (503) 946-9365

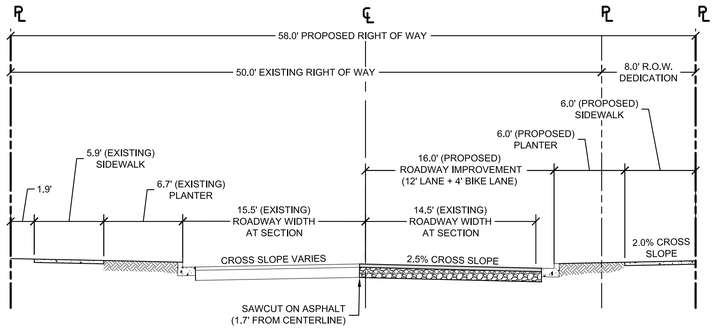

| | |
|---|---|
| 3J JOB ID # | 13113 |
| LAND USE # | _____ |
| TAX LOT # | 2S1E35A01300 |
| DESIGNED BY | CLF/JTE |
| CHECKED BY | BKF |

SHEET TITLE
CRESTVIEW P&P

SHEET NUMBER
**C2.2**

A PORTION OF LOT 28, "BLAND ACRES"
TAX LOT 1300, LOCATED IN THE NW & NE
1/4 OF SECTION 35, T.2S., R.1E., W.M.
CITY OF WEST LINN, CLACKAMAS COUNTY, OREGON




*SECTION 'A' - BLAND CIRCLE IMPROVEMENTS*
SCALE: N.T.S

Know what's **below.**
**Call** before you dig.


Scale: 1 inch = 30 feet
30 15 0 15 30

LEGEND

- BOUNDARY LINE
- EXISITNG RIGHT-OF-WAY
- EXISTING CENTERLINE
- EXISTING LOT LINE
- EXISTING CURB
- EXISTING ASPHALT
- EXISTING SIDEWALK
- EXISTING LIGHT POLE
- PROPOSED RIGHT-OF-WAY
- PROPOSED LOT LINE
- PROPOSED CENTERLINE
- PROPOSED CURB
- PROPOSED SIDEWALK
- STORM DRAIN LINE AND MANHOLE
- STORM SEWER CURB INLET
- PROPOSED STREET LIGHT
- PROPOSED RETAINING WALL

| PROPOSED DEVELOPMENT KEY NOTES | |
|---|---|
| 1 | PROPOSED ADA ACCESS RAMP. |
| 2 | CONSTRUCT STANDARD CURB AND GUTTER. |
| 3 | CONSTRUCT 6-FT WIDE SIDEWALK. |
| 4 | CONSTRUCT RETAINING WALL. |
| 5 | INSTALL NEW PAVEMENT. |

*LAND USE*

| # | REVISION SUMMARY | BY | DATE |
|---|---|---|---|
| | | | 6/21/13 |

BLAND CIRCLE STREET IMPROVEMENT PLAN
*SUNBREAK SUBDIVISION*
LF 3, LLC
WEST LINN, OR

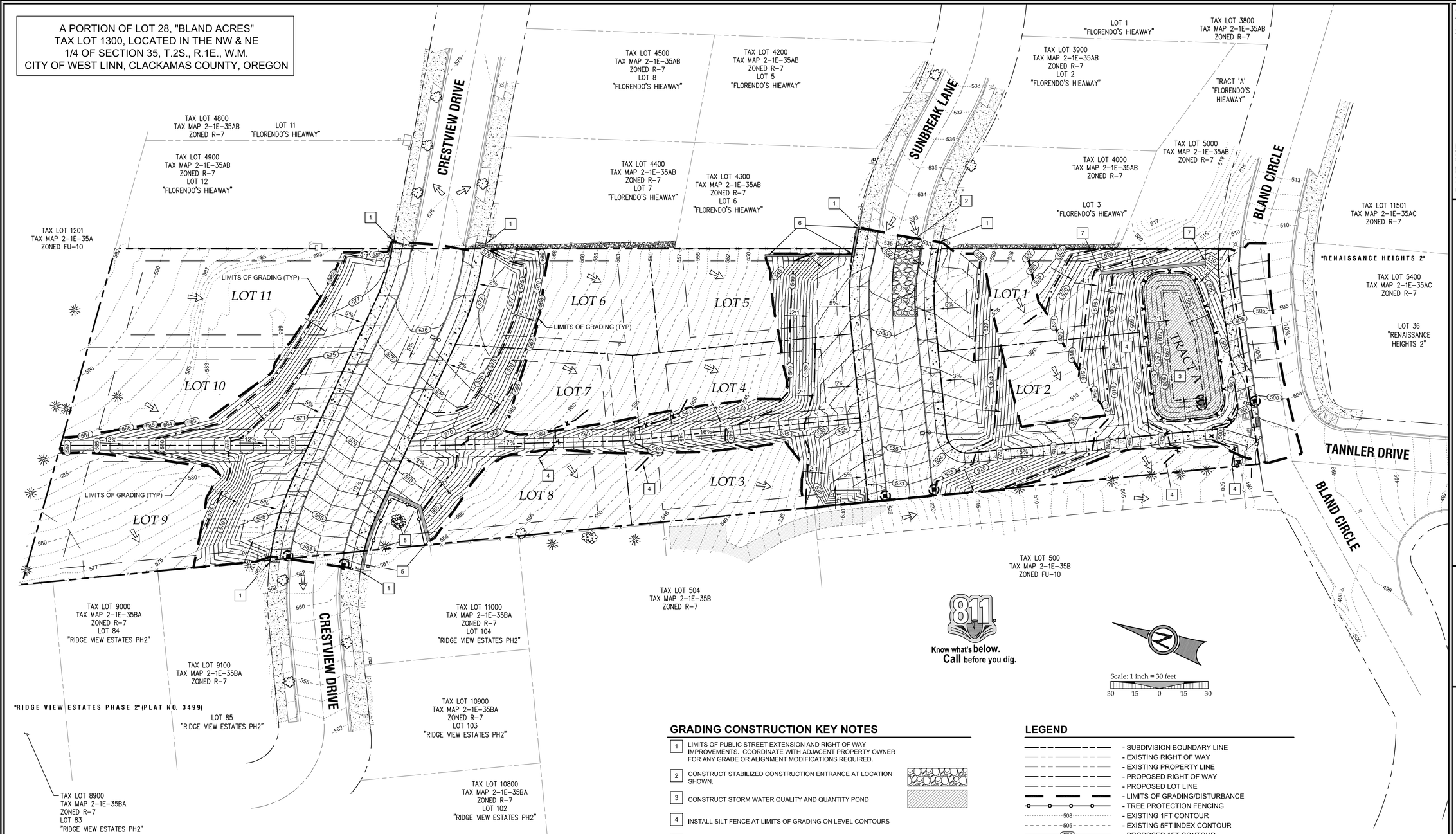
3J CONSULTING, INC
*CIVIL ENGINEERING*
*WATER RESOURCES*
*LAND USE PLANNING*
10445 SW CANYON ROAD SUITE 245, BEAVERTON, OR 97005
PHONE & FAX: (503) 946-9365

| | |
|---|---|
| 3J JOB ID # | 13113 |
| LAND USE # | _____ |
| TAX LOT # | 2S1E35A01300 |
| DESIGNED BY | CLF/JTE |
| CHECKED BY | BKF |

SHEET TITLE
BLAND CIRC. PLAN

SHEET NUMBER
**C2.3**

A PORTION OF LOT 28, "BLAND ACRES"
TAX LOT 1300, LOCATED IN THE NW & NE
1/4 OF SECTION 35, T.2S., R.1E., W.M.
CITY OF WEST LINN, CLACKAMAS COUNTY, OREGON




811 Know what's **below.** **Call** before you dig.

Scale: 1 inch = 30 feet
30 15 0 15 30

## GRADING CONSTRUCTION KEY NOTES

1. LIMITS OF PUBLIC STREET EXTENSION AND RIGHT OF WAY IMPROVEMENTS. COORDINATE WITH ADJACENT PROPERTY OWNER FOR ANY GRADE OR ALIGNMENT MODIFICATIONS REQUIRED.
2. CONSTRUCT STABILIZED CONSTRUCTION ENTRANCE AT LOCATION SHOWN.
3. CONSTRUCT STORM WATER QUALITY AND QUANTITY POND
4. INSTALL SILT FENCE AT LIMITS OF GRADING ON LEVEL CONTOURS
5. CONSTRUCT MODULAR BLOCK RETAINING WALL, 6FT MAX EXPOSED HEIGHT
6. CONSTRUCT CAST IN PLACE CONCRETE RETAINING WALL TO MATCH ADJACENT EXISTING WALL, 6FT MAX EXPOSED HEIGHT
7. CONSTRUCT M.S.E. MODULAR BLOCK WALL, 13FT MAX EXPOSED HEIGHT
8. ALL GRADING AND DISTURBANCE ACTIVITIES ADJACENT TO SIGNIFICANT TREES SHALL BE COMPLETED UNDER SUPERVISION AND DIRECTION BY THE PROJECT ARBORIST AND THE CITY OF WEST LINN.

## GRADING GENERAL NOTES:

1. ALL GRADING ACTIVITIES SHALL CONFORM TO THE UNIFORM BUILDING CODE AND THE OREGON SPECIALTY CODE AMENDMENTS, INCLUDING APPENDIX J.

## LEGEND

- SUBDIVISION BOUNDARY LINE
- EXISTING RIGHT OF WAY
- EXISTING PROPERTY LINE
- PROPOSED RIGHT OF WAY
- PROPOSED LOT LINE
- LIMITS OF GRADING/DISTURBANCE
- TREE PROTECTION FENCING
- 508 - EXISTING 1FT CONTOUR
- 505 - EXISTING 5FT INDEX CONTOUR
- (508) - PROPOSED 1FT CONTOUR
- (505) - PROPOSED 5FT INDEX CONTOUR
- EROSION CONTROL: SILT FENCING (BLACK)
- EROSION CONTROL: FESCUE STRAW WATTLE
- EROSION CONTROL: BIO BAG CHECK DAM
- EROSION CONTROL: INLET PROTECTION
- PROPOSED RETAINING WALL

## SITE GRADING INFORMATION

| | |
|---|---|
| CUT | 7,928 CY |
| FILL | 2,855 CY |
| STRIPPINGS* | 1,150 CY |

*(* ASSUMED REPLACEMENT / STOCKPILE ON SITE OUTSIDE BUILDING ENVELOPE)*

| | |
|---|---|
| MAXIMUM CUT DEPTH | 17.5 FT |
| MAXIMUM FILL DEPTH | 10.7 FT |
| MAXIMUM PROPOSED SLOPE | 2:1 (H:V) |
| TOTAL AREA OF DISTURBANCE | 1.69 ACRES |

| # | REVISION SUMMARY | BY | DATE |
|---|---|---|---|
| | LAND USE | | 6/21/13 |

GRADING AND EROSION CONTROL PLAN
*SUNBREAK*
*SUBDIVISION*
LF 3, LLC
WEST LINN, OR

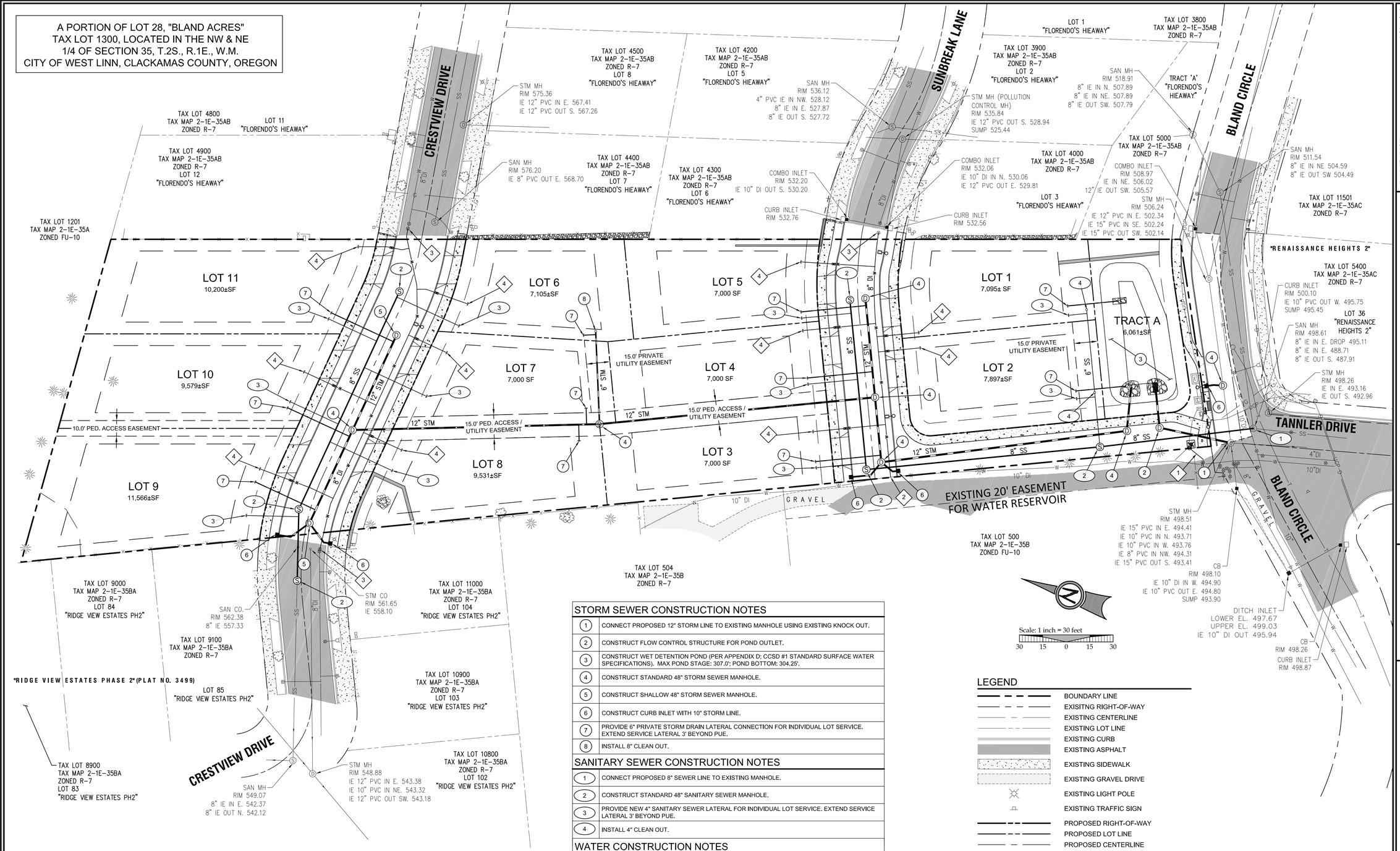

3J CONSULTING, INC
*CIVIL ENGINEERING*
*WATER RESOURCES*
*LAND USE PLANNING*
10445 SW CANYON ROAD SUITE 245, BEAVERTON, OR 97005
PHONE & FAX: (503) 946-9365


| | |
|---|---|
| 3J JOB ID # | 13113 |
| LAND USE # | _____ |
| TAX LOT # | 2S1E35A01300 |
| DESIGNED BY | CLF/JTE |
| CHECKED BY | BKF |

SHEET TITLE
GRADING / ESCP

SHEET NUMBER
**C2.4**

A PORTION OF LOT 28, "BLAND ACRES"
TAX LOT 1300, LOCATED IN THE NW & NE
1/4 OF SECTION 35, T.2S., R.1E., W.M.
CITY OF WEST LINN, CLACKAMAS COUNTY, OREGON




## STORM SEWER CONSTRUCTION NOTES

| | |
|---|---|
| 1 | CONNECT PROPOSED 12" STORM LINE TO EXISTING MANHOLE USING EXISTING KNOCK OUT. |
| 2 | CONSTRUCT FLOW CONTROL STRUCTURE FOR POND OUTLET. |
| 3 | CONSTRUCT WET DETENTION POND (PER APPENDIX D; CCSD #1 STANDARD SURFACE WATER SPECIFICATIONS). MAX POND STAGE: 307.0'; POND BOTTOM: 304.25'. |
| 4 | CONSTRUCT STANDARD 48" STORM SEWER MANHOLE. |
| 5 | CONSTRUCT SHALLOW 48" STORM SEWER MANHOLE. |
| 6 | CONSTRUCT CURB INLET WITH 10" STORM LINE. |
| 7 | PROVIDE 6" PRIVATE STORM DRAIN LATERAL CONNECTION FOR INDIVIDUAL LOT SERVICE. EXTEND SERVICE LATERAL 3' BEYOND PUE. |
| 8 | INSTALL 8" CLEAN OUT. |

## SANITARY SEWER CONSTRUCTION NOTES

| | |
|---|---|
| 1 | CONNECT PROPOSED 8" SEWER LINE TO EXISTING MANHOLE. |
| 2 | CONSTRUCT STANDARD 48" SANITARY SEWER MANHOLE. |
| 3 | PROVIDE NEW 4" SANITARY SEWER LATERAL FOR INDIVIDUAL LOT SERVICE. EXTEND SERVICE LATERAL 3' BEYOND PUE. |
| 4 | INSTALL 4" CLEAN OUT. |

## WATER CONSTRUCTION NOTES

| | |
|---|---|
| 1 | RELOCATE EXISTING FIRE HYDRANT. |
| 2 | HOT TAP EXISTING WATER MAIN TO COMPLETE LOOPED SYSTEM. |
| 3 | REMOVE EXISTING BLOW-OFF AND CONNECT TO EXISTING WATER MAIN. |
| 4 | INSTALL SINGLE WATER METER FOR INDIVIDUAL LOT SERVICE. EXTEND 1" SERVICE LATERAL 3' BEYOND PUE. |

## LEGEND

- BOUNDARY LINE
- EXISITNG RIGHT-OF-WAY
- EXISTING CENTERLINE
- EXISTING LOT LINE
- EXISTING CURB
- EXISTING ASPHALT
- EXISTING SIDEWALK
- EXISTING GRAVEL DRIVE
- EXISTING LIGHT POLE
- EXISTING TRAFFIC SIGN
- PROPOSED RIGHT-OF-WAY
- PROPOSED LOT LINE
- PROPOSED CENTERLINE
- PROPOSED CURB
- PROPOSED SIDEWALK
- PROPOSED SETBACK LINE
- SANITARY SEWER LINE AND MANHOLE
- STORM DRAIN LINE AND MANHOLE
- DOMESTIC WATER SERVICE & METER
- STORM SEWER LATERAL AS NOTED
- SANITARY SEWER LATERAL AS NOTED
- STORM SEWER CURB INLET
- PROPOSED STREET LIGHT
- PROPOSED RETAINING WALL

811 Know what's **below.** **Call** before you dig.

| LAND USE # | REVISION SUMMARY | BY | DATE |
|---|---|---|---|
| | | | 6/21/13 |

COMPOSITE UTILITY PLAN
*SUNBREAK SUBDIVISION*
LF 3, LLC
WEST LINN, OR

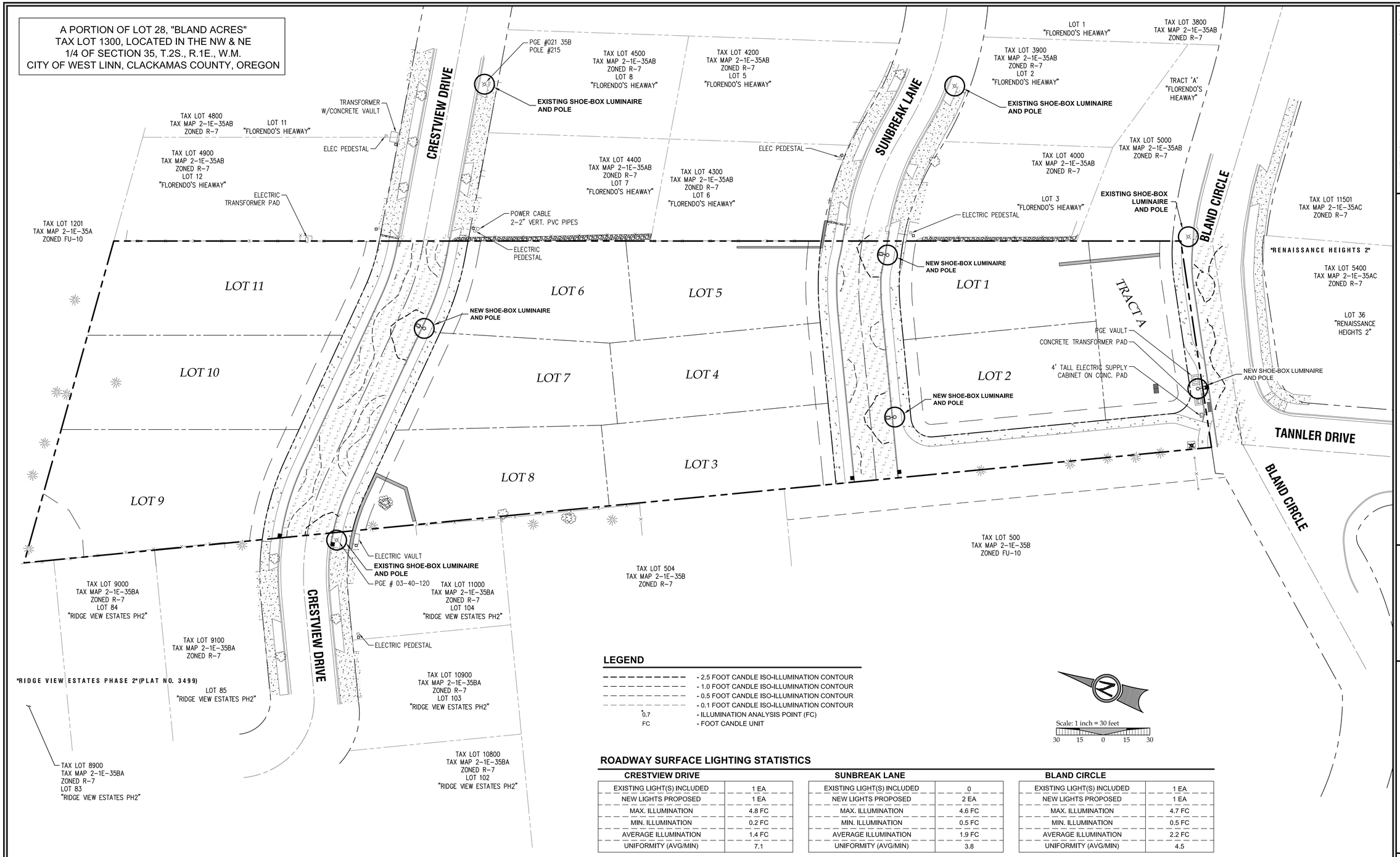

3J CONSULTING, INC
CIVIL ENGINEERING
WATER RESOURCES
LAND USE PLANNING
10445 SW CANYON ROAD SUITE 245, BEAVERTON, OR 97005
PHONE & FAX: (503) 946-9365


| | |
|---|---|
| 3J JOB ID # | 13113 |
| LAND USE # | |
| TAX LOT # | 2S1E35A01300 |
| DESIGNED BY | CLF/JTE |
| CHECKED BY | BKF |

SHEET TITLE
UTILTIY PLAN

SHEET NUMBER
**C2.5**

A PORTION OF LOT 28, "BLAND ACRES"
TAX LOT 1300, LOCATED IN THE NW & NE
1/4 OF SECTION 35, T.2S., R.1E., W.M.
CITY OF WEST LINN, CLACKAMAS COUNTY, OREGON




## LEGEND

- 2.5 FOOT CANDLE ISO-ILLUMINATION CONTOUR
- 1.0 FOOT CANDLE ISO-ILLUMINATION CONTOUR
- 0.5 FOOT CANDLE ISO-ILLUMINATION CONTOUR
- 0.1 FOOT CANDLE ISO-ILLUMINATION CONTOUR
- 0.7 FC - ILLUMINATION ANALYSIS POINT (FC)
- FC - FOOT CANDLE UNIT

Scale: 1 inch = 30 feet

30 15 0 15 30

## ROADWAY SURFACE LIGHTING STATISTICS

| CRESTVIEW DRIVE | |
|---|---|
| EXISTING LIGHT(S) INCLUDED | 1 EA |
| NEW LIGHTS PROPOSED | 1 EA |
| MAX. ILLUMINATION | 4.8 FC |
| MIN. ILLUMINATION | 0.2 FC |
| AVERAGE ILLUMINATION | 1.4 FC |
| UNIFORMITY (AVG/MIN) | 7.1 |

| SUNBREAK LANE | |
|---|---|
| EXISTING LIGHT(S) INCLUDED | 0 |
| NEW LIGHTS PROPOSED | 2 EA |
| MAX. ILLUMINATION | 4.6 FC |
| MIN. ILLUMINATION | 0.5 FC |
| AVERAGE ILLUMINATION | 1.9 FC |
| UNIFORMITY (AVG/MIN) | 3.8 |

| BLAND CIRCLE | |
|---|---|
| EXISTING LIGHT(S) INCLUDED | 1 EA |
| NEW LIGHTS PROPOSED | 1 EA |
| MAX. ILLUMINATION | 4.7 FC |
| MIN. ILLUMINATION | 0.5 FC |
| AVERAGE ILLUMINATION | 2.2 FC |
| UNIFORMITY (AVG/MIN) | 4.5 |

811 Know what's **below.** **Call** before you dig.

LAND USE

| # | REVISION SUMMARY | BY | DATE |
|---|---|---|---|
| | | | 6/21/13 |

ROADWAY ILLUMINATION PLAN
*SUNBREAK SUBDIVISION*
LF 3, LLC
WEST LINN, OR

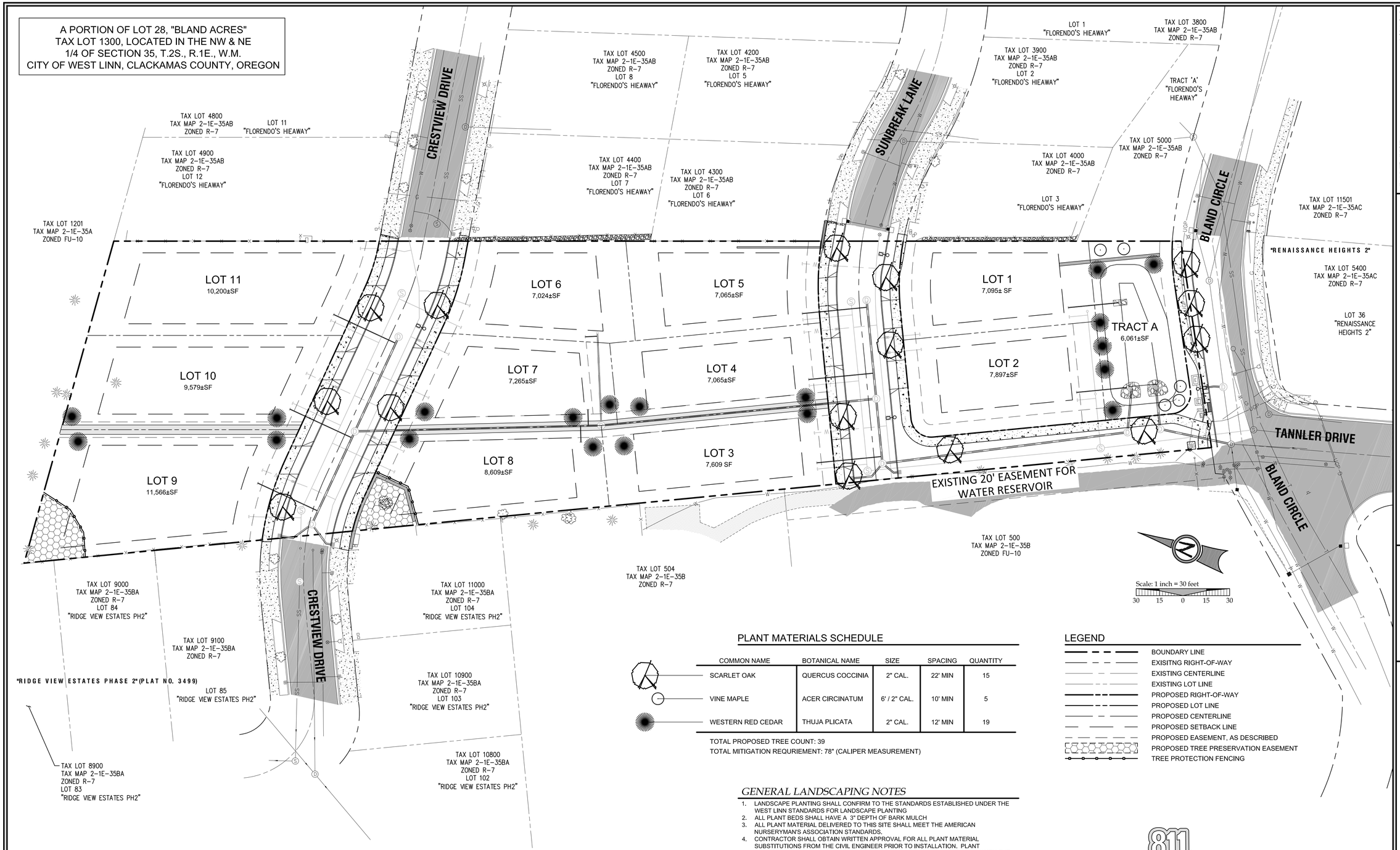

3J CONSULTING, INC
*CIVIL ENGINEERING*
*WATER RESOURCES*
*LAND USE PLANNING*
10445 SW CANYON ROAD SUITE 245, BEAVERTON, OR 97005
PHONE & FAX: (503) 946-8365


| | |
|---|---|
| 3J JOB ID # | 13113 |
| LAND USE # | _____ |
| TAX LOT # | 2S1E35A01300 |
| DESIGNED BY | CLF/JTE |
| CHECKED BY | BKF |

SHEET TITLE
LIGHTING PLAN

SHEET NUMBER
**C2.6**

A PORTION OF LOT 28, "BLAND ACRES"
TAX LOT 1300, LOCATED IN THE NW & NE
1/4 OF SECTION 35, T.2S., R.1E., W.M.
CITY OF WEST LINN, CLACKAMAS COUNTY, OREGON




## PLANT MATERIALS SCHEDULE

| COMMON NAME | BOTANICAL NAME | SIZE | SPACING | QUANTITY |
|---|---|---|---|---|
| SCARLET OAK | QUERCUS COCCINIA | 2" CAL. | 22' MIN | 15 |
| VINE MAPLE | ACER CIRCINATUM | 6' / 2" CAL. | 10' MIN | 5 |
| WESTERN RED CEDAR | THUJA PLICATA | 2" CAL. | 12' MIN | 19 |

TOTAL PROPOSED TREE COUNT: 39
TOTAL MITIGATION REQURIEMENT: 78" (CALIPER MEASUREMENT)

## LEGEND

- BOUNDARY LINE
- EXISITNG RIGHT-OF-WAY
- EXISTING CENTERLINE
- EXISTING LOT LINE
- PROPOSED RIGHT-OF-WAY
- PROPOSED LOT LINE
- PROPOSED CENTERLINE
- PROPOSED SETBACK LINE
- PROPOSED EASEMENT, AS DESCRIBED
- PROPOSED TREE PRESERVATION EASEMENT
- TREE PROTECTION FENCING

## *GENERAL LANDSCAPING NOTES*

1. LANDSCAPE PLANTING SHALL CONFIRM TO THE STANDARDS ESTABLISHED UNDER THE WEST LINN STANDARDS FOR LANDSCAPE PLANTING
2. ALL PLANT BEDS SHALL HAVE A 3" DEPTH OF BARK MULCH
3. ALL PLANT MATERIAL DELIVERED TO THIS SITE SHALL MEET THE AMERICAN NURSERYMAN'S ASSOCIATION STANDARDS.
4. CONTRACTOR SHALL OBTAIN WRITTEN APPROVAL FOR ALL PLANT MATERIAL SUBSTITUTIONS FROM THE CIVIL ENGINEER PRIOR TO INSTALLATION. PLANT SUBSTITUTIONS WITHOUT PRIOR WRITTEN APPROVAL THAT DO NOT COMPLY WITH THE DRAWINGS AND SPECIFICATIONS MAY BE REJECTED BY THE LANDSCAPE ARCHITECT AT NO COST TO THE OWNER. THESE ITEMS MAY BE REQUIRED TO BE REPLACED WITH PLANT MATERIALS THAT ARE IN COMPLIANCE WITH THESE DRAWINGS.

811
Know what's **below.**
**Call** before you dig.

| # | REVISION SUMMARY | BY | DATE |
|---|---|---|---|
| | LAND USE | | 6/21/13 |

MITIGATION PLANTING PLAN
*SUNBREAK SUBDIVISION*
LF 3, LLC
WEST LINN, OR


3J CONSULTING, INC
*CIVIL ENGINEERING*
*WATER RESOURCES*
*LAND USE PLANNING*
10445 SW CANYON ROAD SUITE 245, BEAVERTON, OR 97005
PHONE & FAX: (503) 946-9365


| | |
|---|---|
| 3J JOB ID # | 13113 |
| LAND USE # | _____ |
| TAX LOT # | 2S1E35A01300 |
| DESIGNED BY | CLF/JTE |
| CHECKED BY | BKF |

SHEET TITLE
PLANTING PLAN

SHEET NUMBER
**L1.0**