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).: SUB-12-01	
NON-REFUNDABLE FEE(S): 500	REFUNDABLE DEPOSIT(S): 5200	TOTAL

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
- [x] Subdivision (SUB)
- [ ] Temporary Uses *
- [ ] Time Extension *
- [ ] Variance (VAR)
- [ ] 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: 23112 BLAND CIRCLE

Assessor's Map No.: 2s1e35 B
Tax Lot(s): 00502
Total Land Area: 1.1 Acres +/-

Brief Description of Proposal: APPLICANT PROPOSES A 5 LOT SUBDIVISION, CONSISTENT WITH THE REQUIREMENTS OF THE R-7 ZONE. ACCESS WILL BE TAKEN VIA A SHARED PRIVATE DRIVE FROM A BULB EXTENSION OF FALCON DRIVE.

Applicant Name: (please print) OLH 14, LLC — 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) OLH 14, LLC — Phone: 503-209-7555
Address: 5285 MEADOWS ROAD SUITE 171 — Email: jwyland@jtsmithco.com
City State Zip: LAKE OSWEGO, OR 97035

Consultant Name: (please print) 3J CONSULTING, INC. - ANDREW TULL — 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
NOV 21 2012
PLANNING & BUILDING
CITY OF WEST LINN
INT. TIME

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 — Date: 11/9/12
Owner's signature *(required)* — Date: 11/9/12

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Appendixes

GENERAL INFORMATION

Property Owner and Applicant:	**OLH 14, LLC** C/O JT Smith Companies Attn: John Wyland 5285 Meadows Road, Suite #171 Lake Oswego, OR 97035
Applicant's Representative	**3J Consulting, Inc** 10445 SW Canyon Road Beaverton, OR 97005 Contact: Andrew Tull Phone: 503-545-1907 Email: andrew.tull@3j-consulting.com
Contributing Consultant Contact Details:	**Land Use Planning and Civil Engineering** 3J Consulting, Inc. 10445 SW Canyon Road Suite 245 Beaverton, OR 97005 Contact: Andrew Tull or Brian Feeney, PE Phone: 503-946-9365 Email: andrew.tull@3j-consulting.com or brian.feeney@3j-consulting.com

SITE INFORMATION

Parcel Number:	29378006
Address:	Burton Road and 79th Avenue
Size:	1.16 Acres
Zoning Designation:	R-7 (City of West Linn)
Neighborhood:	Savanna Oaks
Comprehensive Plan:	Low Density
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 a bulb of Falcon Drive, a Local Street.
Surrounding Zoning:	North - R-7 - Single Family Residential Detached and Attached South - R-10- Single Family Residential Detached East – FU-10- Future Urban, R-7- Single Family Residential Detached and Attached West – FU-10- Future Urban

INTRODUCTION

APPLICANT'S REQUEST

The Applicant seeks approval of an application for Subdivision Preliminary Plat for the development of 5 residential lots. This narrative describes the proposed subdivision of the site 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 1.16 acres. The property is located on Bland Circle at the northern end of Falcon 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 five buildable lots, each exceeding 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 five parcels will come from two driveways on Falcon Place, a local street. Falcon Drive currently terminates at a T-intersection on the south side of Bland Circle. As proposed, Falcon Place will extend north of Bland Circle in a bulb configuration. One driveway will provide access to lot 1 and the second driveway will provide access to lots 2-5. All 5 properties will access Bland Circle, a collector street, at the same location from Falcon Place. No additional access to Bland Circle is proposed. Additionally, each lot will have adequate off-street parking available.

A traffic study is not being submitted with this application because there are no new access points on Bland Circle Right-of-Way and the proposed improvements are not "newly established" under Chapter 8 of the West Linn TSP (See staff comments on page 4 of the pre-application notes dated August 2, 2012).

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 Approval.

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: The applicant is proposing to locate a stormwater facility which will be embedded in a previous pavement roadway system. As such, no vegetative plantings for stormwater facilities have been proposed.

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.

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 applicant is proposing to locate a stormwater facility which will be embedded in a previous pavement roadway system. As such, no vegetative plantings for stormwater facilities have been proposed. Individual homes, which will be constructed at a later time, will be professionally designed and planted with species from Metro's Native Plant list.

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 intersection of Falcon Place and Bland Circle on the subject site will be free of plantings, fences, walls, structures and obstructions, meeting the requirements for streets and accessways 24 feet or more in width. Additionally, the intersection of the private driveways and Falcon Place will meet the requirements for accessways less than 24 feet in width.

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: 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 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: There are no heritage trees identified on this site. Eighteen significant trees have been identified on the site. Fourteen of the eighteen significant trees will be preserved throughout development of the site and four will be removed. Three significant tree protection easements will be identified on the plat and recorded in the deeds of the future lots.

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: A 5.5-foot-wide planting strip will be installed between the sidewalk and the asphalt within the bulb terminus of Falcon Place and along Bland Circle for the length of the frontage of this property.

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, much of which will remain in the significant tree easements on private property.

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 applicant has identified several clusters of trees located on the site which have been determined to be significant by the City's arborist. No heritage trees have been identified.

The site layout has been prepared in order to limit impacts to significant trees on site. The Applicant is proposing to create four significant tree retention easements encumbering four of the five proposed lots. The proposed easements will contain 15 trees which have a combined canopy of 7,996 square feet. One additional tree will be preserved on the north end of lot 5 without an easement, as this is not a significant tree. Total tree canopy exceeds 20 percent of the net site area.

Of the trees to be removed from the site, four significant trees have been identified. Two of the significant trees have been marked for removal due to the site grading which is necessary to accommodate the proposed widening of Bland Circle. One other significant tree has been proposed to be removed due to lot grading and pad preparation and the other tree has been proposed for removal to accommodate the private access driveway. The two trees which are to be removed for roadways and grading include a 46 inch Douglas Fir and a 30 inch Douglas Fir. The total significant caliper inches to be removed is 76 caliper inches.

The Applicant proposes to mitigate for the removal of the significant trees, consistent with the requirements of this section. As part of this mitigation, a total of 76 caliper inches of trees will either be planted on site or the applicant will plant a portion of the total caliper inches on site and pay a fee in lieu into the City's tree planting fund for the remaining caliper inches.

The requirements of this section have been satisfied.

Division 8. LAND DIVISION

Chapter 85. GENERAL PROVISIONS

Section 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: The 5 lots will take access from the northern terminus of Falcon Place, an existing Local Street, connecting directly to Bland Circle, an existing Collector Street. The two proposed driveways will be adjacent to one another on Falcon Place, which will then provide one access to Bland Circle. No other access to Bland Circle is proposed. The configuration of the proposed bulb terminus of Falcon Place north of Bland Circle has been reviewed and approved by the City Engineer.

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 applicant proposes dedication of the northern street bulb of Falcon Place and right-of-way along Bland Circle to meet the Collector width requirement of 60 feet. Improvements to Bland Circle will connect to the existing street section through a tapered pavement section. Sidewalks will be stubbed so that future development to the east and west can connect.

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.
The following is a summary of the pertinent portions of CDC 85.200.A.3):

Bland Circle is a collector street with a minimum lane width of 10 feet, some unstriped parking, 5-6 foot bicycle lanes with new construction/reconstruction, 6-foot sidewalks and planter strips and transit and neighborhood traffic management where appropriate. Falcon Drive is a local street with a minimum lane width of 12 feet, some unstriped parking, 5-6 foot bicycle lanes with new construction/reconstruction, 6-foot sidewalks and planter strips, no transit and neighborhood traffic management where appropriate.

Applicant's Finding: The applicant's proposal includes half-street improvements to the adjacent portion of Bland Circle and a bulb terminus of Falcon Place consistent with these standards. The proposed street improvements include a 6-foot sidewalk and 5.5-foot planter strip along the bulb of Falcon Place and the entire frontage of the property along Bland Circle. This is consistent with the pre-application notes provided by the City.

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 Finding: The proposed extension of Falcon Place will serve an additional 5 lots, 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. Reserve strips. 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. Alignment. 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: The proposed bulb terminus of Falcon Place is in alignment with the section of Falcon Drive south of Bland Circle.

The requirements of this section have been satisfied.

8. Future extension of streets. 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: The parcels to the north of this site were subdivided as part of the Bland Acres Subdivision and access is not possible due to the existing lot configuration. The parcels on the east and west of this site have direct access to Bland Circle. A future street extension is not feasible or necessary on this property.

The requirements of this section have been satisfied.

9. Intersection angles. 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: Falcon Drive intersects Bland Circle at a near-to right angle. The proposed bulb north of Bland will align exactly with the existing Falcon Drive. All corner radii are a minimum of 15-feet along Bland and Falcon. The intersection of more than two streets is not 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 bulb of Falcon Place, 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: The applicant proposes a bulb terminus/cul-de-sac at the north end of Falcon Drive. The cul-de-sac will not exceed 400 feet in length and will serve 5 dwelling units.

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: The proposed cul-de-sac is the northern terminus of Falcon Drive. However, because this is a cul-de-sac, the proposed name of the bulb is “Falcon Place”, as place describes cul-de-sacs.

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 existing grades and curves of Bland Circle and Falcon Drive will not change. The grade of the proposed bulb/northern end of Falcon Place, a local street, will not exceed 15 percent.

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 frontage 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 5.5-foot planter strip between the proposed sidewalk and paved street, consistent with the City's pre-application notes from the meeting August 2, 2012 as reviewed by the City Engineer.

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 5 proposed lots will have access to the northern terminus of Falcon Place, 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 five new lots. Off-site improvements are not necessary or proportionate to mitigate impacts from this 5-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. The proposed lots are at the terminus of an existing local street. Lots 1-3 will have western-facing solar access due to the placement of the driveways. Lots 4 and 5 will have southern-facing solar access due to the yard setback requirements.

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 subdivision is located at the northern end of Falcon Place, and the blocks to the south are approximately 300 feet in length (west side) and 700 feet (east side). The length between Bland Circle and Crestview Drive to the north is approximately 600 feet and meets this standard.

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 exceed 7,000 square feet in size to accommodate single-family detached dwelling units. All 5 proposed lots exceed the minimum requirements for front lot line length, lot width and lot depth.

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. Shared access will be utilized by four of the five lots.

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: The lines of the proposed lots are radial to the curve of the bulb terminus of Falcon Place.

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:

Based on existing development patterns and the location of this site on a collector street, no other reasonable street access is possible. Therefore, flag lots are permitted. Each of the four flag lots proposed will have a minimum street frontage of 8 feet in width and the combined access will be 16 feet. Each of these four accessways will have mutual maintenance agreements and reciprocal access and utility easements. All lot sizes meet the 7,000 square foot minimum exclusive of the accessway.

All setbacks will meet the requirements of the R-7 zone and the front yard setback allowance discussed in subsection b., above. Lots 2 and 3 will likely be oriented with a front yard setback based on the access drives (western orientation) and lots 4 and 5 will likely be oriented with a front yard setback based on the northernmost property line of lot 3 (southern orientation). This will result in some measure of privacy for all lots.

All lots meet the lot depth standard of the R-7 zone when calculating depth from the rear property line of the parcel which substantially separates the flag lot from the street from which the lot gains access.

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 7,813 square feet to 10,230 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 City Pedestrian Master Plan identifies Bland Circle as one of the roadways with sidewalk deficiencies. The applicant proposes to install a 6-foot wide sidewalk along the north side of Bland Circle for the entire frontage of the subject property.

Neither Bland Circle nor Falcon Drive are identified in the City Bicycle Master Plan as a

roadway with a bicycle facility deficiency.

The lots in this subdivision will be connected to other subdivisions via the existing street network. The subdivision to the north of this property is constructed and does not have a location for a trail. Future subdivisions to the east and west are easily accessible by via Bland Circle.

The requirements of this section have been satisfied.

D. Transit facilities.

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. Water.

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 August 2, 2012 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 install an 8" main line connecting to the existing water line in Bland Circle. 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: An 8" sanitary sewer line will connect to the existing stub in Falcon Drive. This line will serve the individual lots from the access driveway/easement area. 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 are roughly proportional to the development of a 5-lot subdivision. 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 1.06 acres. At 6.2 dwelling units per net acre, the maximum number of dwelling units on this site is 6.6. The proposed 5 dwelling units would be 76 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. However, the applicant's arborist worked with the City Arborist to create the tree plan included with this submittal. 14 of 18 significant trees and a minimum 20% canopy cover will be retained.

The requirements of this section have been satisfied.

10. Annexation and street lights. 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.

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. Streets within subdivisions.

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. Who may apply.

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 August 2, 2012.

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: Meetings were held with the Savannah Oaks and Willamette neighborhood associations on November 6, 2012 and November 14, 2012, respectively. These meetings were scheduled and noticed per the requirements of this section, and the required neighborhood meeting documentation is submitted with this application.

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 application.

First American

First American Title Company of Oregon
121 SW Morrison St, FL 3
Portland, OR 97204
Phn - (503)222-3651 (800)929-3651
Fax - (877)242-3513

PUBLIC RECORD REPORT
FOR NEW SUBDIVISION OR LAND PARTITION

THIS REPORT IS ISSUED BY THE ABOVE-NAMED COMPANY ("THE COMPANY") FOR THE EXCLUSIVE USE OF:

John Wyland, Jtsmith Companies
5285 Meadow Drive
Lake Oswego, OR 97035
Phone: (503)209-7555
Fax:

Date Prepared : November 08, 2012
Effective Date : 8:00 A.M on November 01, 2012
Order No. : 7019-1991380
Reference :

The information contained in this report is furnished by First American Title Insurance Company of Oregon (the "Company") as an information service based on the records and indices maintained by the Company for the county identified below. This report is not title insurance, is not a preliminary title report for title insurance, and is not a commitment for title insurance. No examination has been made of the Company's records, other than as specifically set forth in this report. Liability for any loss arising from errors and/or omissions is limited to the lesser of the fee paid or the actual loss to the Customer, and the Company will have no greater liability by reason of this report. This report is subject to the Definitions, Conditions and Stipulations contained in it.

REPORT

A. The Land referred to in this report is located in the County of Clackamas, State of Oregon, and is described as follows:

As fully set forth on Exhibit "A" attached hereto and by this reference made a part hereof.

B. As of the Effective Date, the tax account and map references pertinent to the Land are as follows:

As fully set forth on Exhibit "A" attached hereto and by this reference made a part hereof.

C. As of the Effective Date and according to the Public Records, we find title to the land apparently vested in:

As fully set forth on Exhibit "B" attached hereto and by this reference made a part hereof.

D. As of the Effective Date and according to the Public Records, the Land is subject to the following liens and encumbrances, which are not necessarily shown in the order of priority:

As fully set forth on Exhibit "C" attached hereto and by this reference made a part hereof.

EXHIBIT "A"
(Land Description Map Tax and Account)

That portion of Lot 30, BLAND ACRES, in the County of Clackamas and State of Oregon, described as follows:

Beginning at the most Westerly corner of said Lot; thence North 63°51' East along the Northwesterly line thereof, 171.73 feet to the most Northerly corner of that tract of land conveyed to E. J. Henderling by Deed recorded May 4, 1973, as Recorder's Fee No. 73 13628, and the true point of beginning; thence South 13°48' East along the Easterly line of said Henderling tract, 331.43 feet to the most Southerly corner thereof, being a point on the Southwesterly line of said Lot 30; thence South 71°07' East along said Southwesterly line, 150.00 feet to a point thereon; thence Northwesterly to a point on the Northwesterly line of said Lot that bears North 63°51' East, 150.00 feet from the true point of beginning; thence South 63°51' West along said Northwesterly line, 150.00 feet to the true point of beginning.

NOTE: This Legal Description was created prior to January 01, 2008.

Map No.: 21E35B 00502
Tax Account No.: 00405476

EXHIBIT "B"
(Vesting)

OLH 14, LLC

EXHIBIT "C"
(Liens and Encumbrances)

1. Taxes for the year 2012-2013

Tax Amount	$	7,244.21
Unpaid Balance:	$	7,244.21 , plus interest and penalties, if any
Code No.:	003-002	
Map & Tax Lot No.:	21E35B 00502	
Property ID No.:	00405476	

2. City liens, if any, of the City of West Linn.

3. The rights of the public in and to that portion of the premises herein described lying within the limits of streets, roads and highways.

4. Terms and Provisions of Water Line Agreement and the terms and conditions thereof:

Between:	Robert H. Eastman and Magali Eastman, husband and wife
And:	Charles C. Hagel and Joyce Hagel, husband and wife
Recording Information:	October 12, 1978 as Fee No. 78044002

DEFINITIONS, CONDITIONS AND STIPULATIONS

1. **Definitions.** The following terms have the stated meaning when used in this report:
   (a) "Customer": The person or persons named or shown as the addressee of this report.
   (b) "Effective Date": The effective date stated in this report.
   (c) "Land": The land specifically described in this report and improvements affixed thereto which by law constitute real property.
   (d) "Public Records": Those records which by the laws of the state of Oregon impart constructive notice of matters relating to the Land.

2. **Liability of the Company.**
   (a) This is not a commitment to issue title insurance and does not constitute a policy of title insurance.
   (b) The liability of the Company for errors or omissions in this public record report is limited to the amount of the charge paid by the Customer, provided, however, that the Company has no liability in the event of no actual loss to the Customer.
   (c) No costs (including, without limitation attorney fees and other expenses) of defense, or prosecution of any action, is afforded to the Customer.
   (d) In any event, the Company assumes no liability for loss or damage by reason of the following:
      (1) Taxes or assessments which are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the Public Records.
      (2) Any facts, rights, interests or claims which are not shown by the Public Records but which could be ascertained by an inspection of the land or by making inquiry of persons in possession thereof.
      (3) Easements, liens or encumbrances, or claims thereof, which are not shown by the Public Records.
      (4) Discrepancies, encroachments, shortage in area, conflicts in boundary lines or any other facts which a survey would disclose.
      (5) (i) Unpatented mining claims; (ii) reservations or exceptions in patents or in Acts authorizing the issuance thereof, (iii) water rights or claims or title to water.
      (6) Any right, title, interest, estate or easement in land beyond the lines of the area specifically described or referred to in this report, or in abutting streets, roads, avenues, alleys, lanes, ways or waterways.
      (7) Any law, ordinance or governmental regulation (including but not limited to building and zoning laws, ordinances or regulations) restricting, regulating, prohibiting or relating to (i) the occupancy, use or enjoyment on the land; (ii) the character, dimensions or location of any improvement now or hereafter erected on the land; (iii) a separation in ownership or a change in the dimensions or area of the land or any parcel of which the land is or was a part; or (iv) environmental protection, or the effect of any violation of these laws, ordinances or governmental regulations, except to the extent that a notice of the enforcement thereof or a notice of a defect, lien or encumbrance resulting from a violation or alleged violation affecting the land has been recorded in the Public Records at the effective date hereof.
      (8) Any governmental police power not excluded by 2(d)(7) above, except to the extent that notice of the exercise thereof or a notice of a defect, lien or encumbrance resulting from a violation or alleged violation affecting the land has been recorded in the Public Records at the effective date hereof.
      (9) Defects, liens, encumbrances, adverse claims or other matters created, suffered, assumed, agreed to or actually known by the Customer.

3. **Report Entire Contract.** Any right or action or right of action that the Customer may have or may bring against the Company arising out of the subject matter of this report must be based on the provisions of this report. No provision or condition of this report can be waived or changed except by a writing signed by an authorized officer of the Company. By accepting this form report, the Customer acknowledges and agrees that the Customer has elected to utilize this form of public record report and accepts the limitation of liability of the Company as set forth herein.

4. **Charge.** The charge for this report does not include supplemental reports, updates or other additional services of the Company.

2.00

151-978

AGREEMENT FOR EASEMENT

This Agreement for Easement, made and entered into this 27 day of September, 1978, by and between ROBERT H. EASTMAN and MAGALI EASTMAN, Husband and Wife, as First Parties, and CHARLES C. HAGEL and JOYCE HAGEL, Husband and Wife, as Second Parties, witnesseth:

That whereas First Parties have a well upon their property, which property is described as follows:

> Part of Lot 30, BLAND ACRES, County of Clackamas and State of Oregon, described as follows: Beginning at the most Westerly corner of said lot, said point being the Southerly corner of Lot 27; thence North 63° 51' East 171.73 feet to a point; thence South 13° 48' East 331.43 feet, more or less, to a point on the South line of said lot; thence following the South line North 71° 07' West 199.44 feet to that point of said lot that is the most Southwesterly corner thereof, said point having a common boundary with Lots 26 and 30 of said legal subdivision; thence North 13° 48' West 187.5 feet to the true place of beginning.

And whereas Second Parties own the property abutting First Parties' property directly on the east side thereof, more fully described as follows:

> In the County of Clackamas and State of Oregon, that portion of Lot 30, BLAND ACRES, described as fdllows: Beginning at the most westerly corner of said Lot; thence North 63° 51' East along the northwesterly line thereof, 171.73 feet to the most northerly corner of that tract of land conveyed to E. J. Henderling by Deed recorded May 4, 1973, Fee No. 73 13628, and the true point of beginning; thence South 13° 48' East along the easterly line of said Henderling tract, 331.43 feet to the most southerly corner thereof, being a point on the southwesterly line, 150.00 feet to a point thereon; thence northwesterly to a point on the northwesterly line of said lot that bears North 63° 51' East, 150.00 feet from the true point of beginning; thence South 63° 51' West along said northwesterly line, 150.00 feet to the true point of beginning.

C.H. JH
See below---~~southwesterly line~~

C.H. southwesterly line of said Lot 30; thence south 71° 07' East along said southwesterly line, 150.00 feet (see above)

Page 1 EASEMENT

78 44002

AFTER RECORDING RETURN TO:
Mr. & Mrs. Charles Hagel
23112 S. Bland Circle
West Linn, Oregon 97068

Recorded By Pioneer National Title Insurance Company

And whereas said well on first parties' land is located a distance of 28 feet westerly of second parties' west line and about 41 feet northerly of the north line of Bland Circle Drive in said county and state. And whereas it is the intent of First Parties to sell to Second Parties the right to draw water from said well to the extent of one-half the capacity thereof, with Second Parties paying all the cost of installation of pipes, wires, and other apparatus to deliver said water to their premises in addition to the initial consideration herein provided for;

NOW THEREFORE, in consideration of the payment of FOUR THOUSAND FIVE HUNDRED DOLLARS ($4,500) from Second Parties to First Parties, it is agreed as follows:

1. That First Parties hereby grant to Second Parties, their heirs and assigns, an easement over and across the land of First Parties six (6) feet in width, being three (3) feet on either side of the center line described as follows:

> Commencing of the westerly line of Second Parties, running at right angles westerly therefrom thirty-two (32) feet to a point which is forty-one (41) feet northerly at that point from the north line of Bland Circle Drive

for the purpose of installing and maintaining a 1 inch water line and necessary electrical wires from the well on First Parties' premises to Second Parties' premises.

2. First Parties shall have all surface rights to said easement and may cultivate the same, install shrubs, etc., thereon. Said water pipe shall be buried to a depth required by applicable codes and to such depth that it will not interfere with normal cultivation of the surface.

3. Second party shall pay all installation costs and one-half legal and other fees in connection with creation of the easement, it being understood that Donald L. Alderton, the attorney preparing this document, is the attorney for first parties only and second parties are at liberty to and have been advised to seek counsel of their own.

4. Any future maintenance costs, such as repairs to pump, piping, shaft, electrical service, wiring, or other necessary repair shall be borne one-half by first parties and one-half by second parties. Any substantial repairs shall be done only after obtaining two competitive bids. Thereupon, ~~first~~ BOTH parties shall have the right to accept such bids and have said work done. In the event either party or their successors fail to pay their one-half share of said repair costs, the party paying said costs or their successors shall have the right and hereby are empowered to file in the lien records of said county a Notice stating the amount of such repairs, the cost thereof and thereby shall have a lien on the land of the other for one-half the same. Said lien may be foreclosed in the same manner as provided by law for the foreclosure of mechanics liens, including the provision for recovery of reasonable counsel fees in the event said foreclosure is completed.

5. The above lien notice shall not be filed prior to thirty days from date of written notice to second parties at the address of the premises being served by said well by U.S. mail in registered form, with postage thereon prepaid.

6. The parties contemplate that in the event said well becomes useless, that then the parties will join in a joint statement to that effect which then be recorded in the Deed Records of said county and thereupon

said easement will be terminated.

7. The sum of $4,500.00 above-mentioned shall be paid in the form of a cashier's check to the first parties prior to second party's commencing any work of pipe laying or other hook-up work.

8. This easement shall be deemed an easement in perpetuity until terminated by the parties or their successors and shall pass with and inure to the benefit of the title to each respective parcel of land affected hereby.

9. It is contemplated that at some time in the future it may be desirable for the parties or one of them to hook up to a public water supply. If either party decides to do this, then in the event said party retains no use of the well for irrigation, domestic or other use, upon 30 days' written notice to the other, shall thereafter not be liable for any of the maintenance costs or operational costs of the well. However, if the one connecting to the public supply for domestic purposes retains irrigation use of the well, then the same coequal liability for costs of operation and repair shall apply as they do now.

10. In the event of low water such as to impair the volume pumped, the parties shall go on an irrigation schedule that will allow alternate days of irrigation so as to result in the least inconvenience to each party.

11. An electrical meter for the well shall be installed forthwith at second party's expense and the parties shall share coequally the future cost of electricity metered thereby for that purpose.

12. Any pressure switches or special equipment and or any items necessary to add to the existing system to properly deliver water to second party's premises shall be paid for entirely by second parties.

13. Neither party hereto shall be held responsible for natural disasters, acts of God, earthquakes, shifts of soil, or other matters which may affect said well, pump, or equipment. All repair necessitated by any such events shall be shared coequally, unless BOTH parties have decided or decide after such event to hook up to a public water supply, in which event all such repairs shall be the sole responsibility of BOTH party. C.H. J.H. M.E.

14. First parties do not in any way guarantee the natural quality or quantity of water from such well.

15. If second parties or their successors withdraw from use of the well entirely, they shall thereupon terminate the easement herein granted. BY REGISTERED LETTER, M.E. C.H. J.H.

16. NEITHER PARTY SHALL LEGALLY HAVE THE RIGHT TO SELL WATER OR FURNISH WATER TO ANOTHER BUSSINESS OR RESIDENCE FROM SAID WELL, HERE IN MENTIONED. M.E. C.H. J.H.

IN WITNESS WHEREOF the parties have hereunto set their hands and seals this 27 day of September, 1978, in duplicate.

Joyce M. Hagel (SEAL)

Charles C. Hagel (SEAL)

Robert H. Eastman (SEAL)

Magali Eastman (SEAL)

STATE OF OREGON
County of Multnomah } ss.

BE IT REMEMBERED that on this 29th day of September, 1978, before me, the undersigned, a Notary Public in and for said county and state, personally appeared the within named ROBERT H. EASTMAN, MAGALI EASTMAN, CHARLES C. HAGEL, and JOYCE HAGEL, who are known to me to be the identical individuals described in and who executed the within instrument, and acknow-

ledged that they executed the same freely and voluntarily.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and year last above written.

Notary Public for Oregon
My commission expires 1-28-80

(Seal)

STATE OF OREGON,
County of Clackamas } ss.

On this 25th day of September, 1978, before me, the undersigned, a notary public in and for said county and state, personally appeared the within named Kenneth D. Eastman and known to me to be the identical individual described in and who executed the within instrument and acknowledged to me that he executed the same freely and voluntarily.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my official seal the day and year last above written.

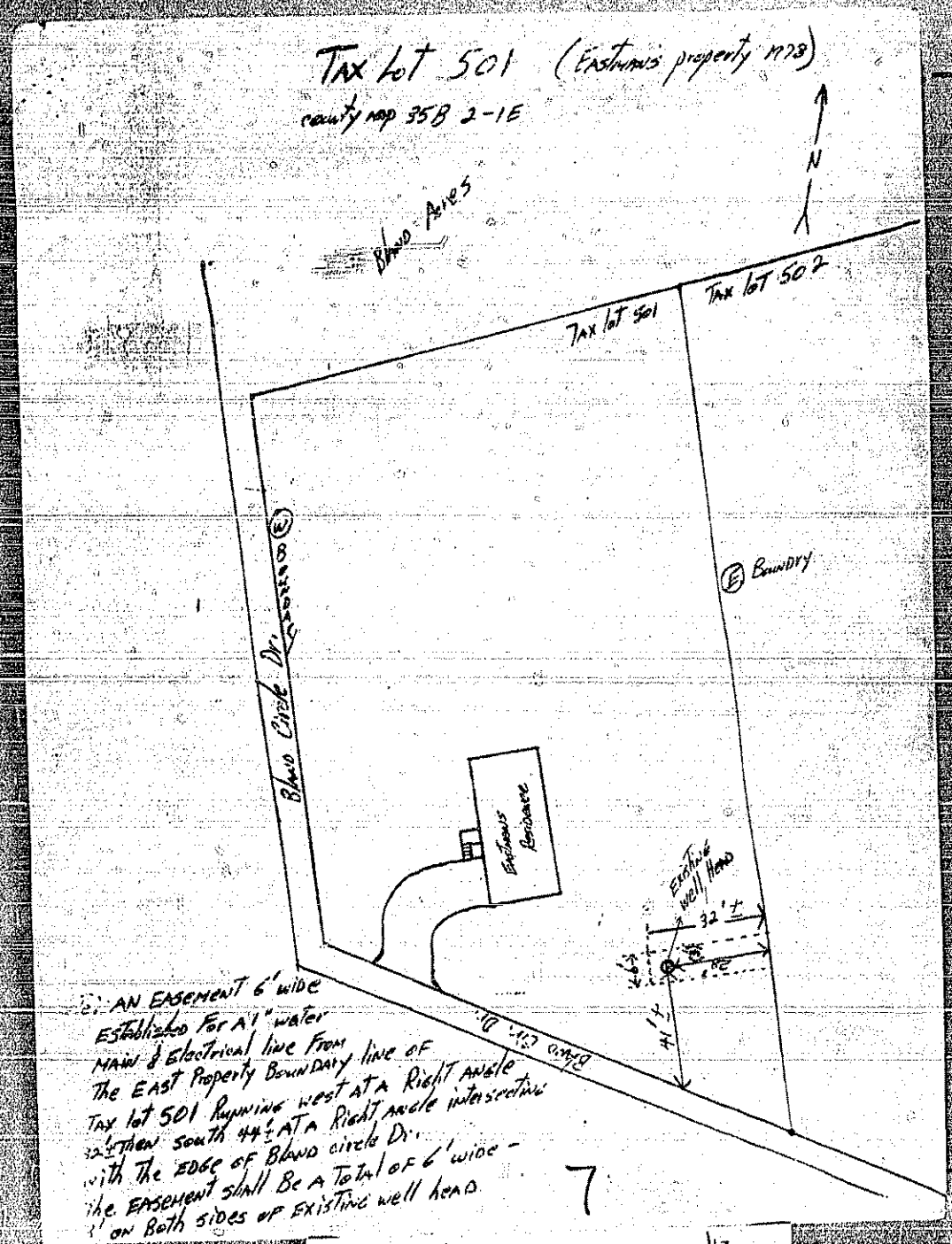
Notary Public for Oregon.
My commission expires May 30, 1982

COM-61-78

Page 6 EASEMENT

Tax Lot 501 (Eastmans property #73)

county map 35B 2-1E



STATE OF OREGON)
County of Clackamas) ss.

I, George D. Poppen, County Clerk, Ex-Officio Recorder of Conveyances and Ex-Officio Clerk of the Circuit 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

OCT 12 All 97

GEORGE D. POPPEN
County Clerk

By Margaret D. Poppen
Deputy

Recording Certificate

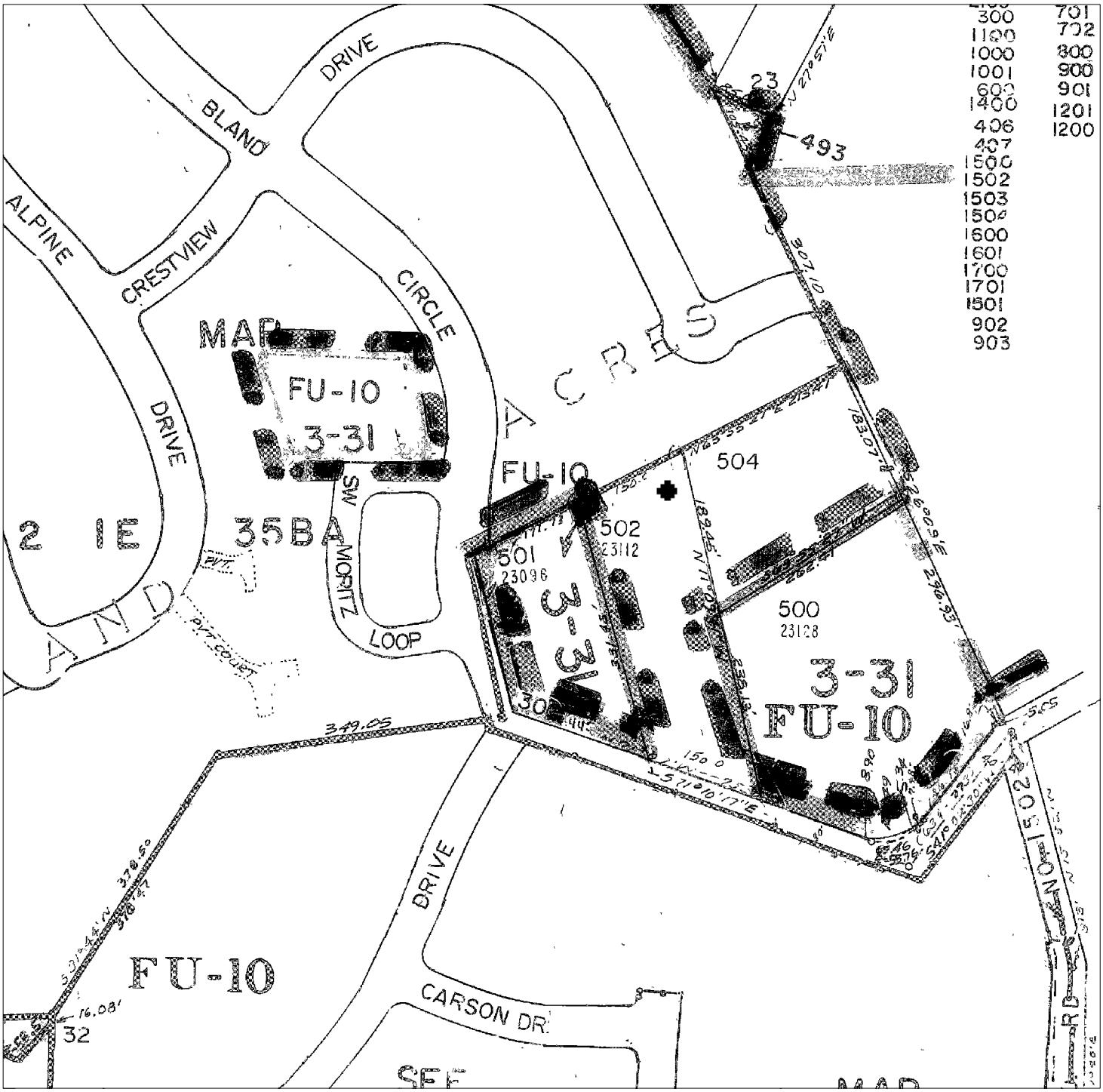
CCP-94 78 41002

First American Title Insurance Company of Oregon

An assumed business name of TITLE INSURANCE COMPANY OF OREGON

This map is provided as a convenience in locating property
First American Title Insurance Company assumes no liability for any variations as may be disclosed by an actual survey

Reference Parcel Number 21E35B 00502



First American Title Company of Oregon
121 SW Morrison St, FL 3
Portland, OR 97204
Phone: (503)222-3651 / Fax: (877)242-3513

PR: NWEST **Ofc:** 7019 (1011)

Final Invoice

To: John Wyland Jtsmith Companies
5285 Meadow Drive
Lake Oswego, OR 97035

Invoice No.: 1011 - 7019111802
Date: 11/19/2012
Our File No.: 7019-1991380
Title Officer: Edmund Salvati
Escrow Officer:
Customer ID: 5663583

Attention:

Your Reference No.:

RE: **Property:**
23112 Bland Circle, West Linn, OR 97068

Liability Amounts
Owners:
Lenders:

Buyers:
Sellers: OLH 14 LLC

Description of Charge	Invoice Amount
Guarantee: Subdivision/Plat Certificate	$275.00

INVOICE TOTAL **$275.00**

Comments:

Thank you for your business!

To assure proper credit, please send a copy of this Invoice and Payment to:
Attention: Accounts Receivable Department
121 SW Morrison St, Ste 300
Portland, OR 97204

Clackamas County Official Records 2012-044891
Sherry Hall, County Clerk
07/18/2012 09:47:44 AM
D-D Cnt=1 Stn=6 KARLYNWUN
$15.00 $16.00 $10.00 $20.00 $17.00 $78.00

RECORDING REQUESTED BY:
Fidelity National Title Company of Oregon

GRANTOR:
THE BANK OF NEW YORK MELLON FKA THE BANK OF NEW YORK, AS SUCCESSOR TRUSTEE et al.
2375 N Glenville Drive
Richardson, TX 75082

GRANTEE:
OLH 14, LLC
5285 Meadows Rd #171
Lake Oswego, OR 97035

SEND TAX STATEMENTS TO:
OLH 14, LLC
5285 Meadows Rd #171
Lake Oswego, OR 97035

AFTER RECORDING RETURN TO:
OLH 14, LLC
5285 Meadows Rd #171
Lake Oswego, OR 97035

Escrow No: 20120054464-FTPOR03

23112 S Bland Circle
West Linn, OR 97068

SPACE ABOVE THIS LINE FOR RECORDER'S USE

SPECIAL WARRANTY DEED – STATUTORY FORM

(INDIVIDUAL or CORPORATION)

THE BANK OF NEW YORK MELLON FKA THE BANK OF NEW YORK, AS SUCCESSOR TRUSTEE TO JPMORGAN CHASE BANK, N.A., AS TRUSTEE FOR THE HOLDERS OFSAMI II TRUST, 2006-AR7, MORTGAGE PASS-THROUGH CERTIFICATES, SERIES 2006-AR7 Grantor, conveys and specially warrants to OLH 14, LLC

Grantee, the following described real property free and clear of encumbrances and claims created or suffered by the grantor or by any predecessor in interest to grantor as beneficiary, assignee, or nominee, or the trustee or successor trustee under that certain trust deed recorded in Clackamas County, Instrument No. 2006-068042, except as specifically set forth below.

SEE LEGAL DESCRIPTION ATTACHED HERETO: EXHIBIT A

The true consideration for this conveyance is $250,000.00.

ENCUMBRANCES: Save and Except: Taxes, covenants, conditions, restrictions, easements, rights of way, homeowners association assessments, if any, and other matters of record.

2012-2013 Taxes a lien, not yet due and payable.

The Grantees(s) or Purchaser(s) of the property may not re-sell, record an additional conveyance document, or otherwise transfer title to the property within 60 days following the grantor's execution of this deed.

BEFORE SIGNING OR ACCEPTING THIS INSTRUMENT, THE PERSON TRANSFERRING FEE TITLE SHOULD INQUIRE ABOUT THE PERSON'S RIGHTS, IF ANY, UNDER ORS 195.300, 195.301 AND 195.305 TO 195.336 AND SECTIONS 5 TO 11, CHAPTER 424, OREGON LAWS 2007, SECTIONS 2 TO 9 AND 17, CHAPTER 855, OREGON LAWS 2009, AND SECTIONS 2 TO 7, CHAPTER 8, OREGON LAWS 2010. THIS INSTRUMENT DOES NOT ALLOW USE OF THE PROPERTY DESCRIBED IN THIS INSTRUMENT IN VIOLATION OF APPLICABLE LAND USE LAWS AND REGULATIONS. BEFORE SIGNING OR ACCEPTING THIS INSTRUMENT, THE PERSON ACQUIRING FEE TITLE TO THE PROPERTY SHOULD CHECK WITH THE APPROPRIATE CITY OR COUNTY PLANNING

LSI Title Agency 1106 00987

DEPARTMENT TO VERIFY THAT THE UNIT OF LAND BEING TRANSFERRED IS A LAWFULLY ESTABLISHED LOT OR PARCEL, AS DEFINED IN ORS 92.010 OR 215.010, TO VERIFY THE APPROVED USES OF THE LOT OR PARCEL, TO DETERMINE ANY LIMITS ON LAWSUITS AGAINST FARMING OR FOREST PRACTICES, AS DEFINED IN ORS 30.930, AND TO INQUIRE ABOUT THE RIGHTS OF NEIGHBORING PROPERTY OWNERS, IF ANY, UNDER ORS 195.300, 195.301 AND 195.305 TO 195.336 AND SECTIONS 5 TO 11, CHAPTER 424, OREGON LAWS 2007, SECTIONS 2 TO 9 AND 17, CHAPTER 855, OREGON LAWS 2009, AND SECTIONS 2 TO 7, CHAPTER 8, OREGON LAWS 2010.

Dated 7/13/12 If a corporate grantor, it has caused its name to be signed by order of its board of directors.

THE BANK OF NEW YORK MELLON FKA THE BANK OF NEW YORK, AS SUCCESSOR TRUSTEE TO JPMORGAN CHASE BANK, N.A., AS TRUSTEE FOR THE HOLDERS OFSAMI II TRUST, 2006-AR7, MORTGAGE PASS-THROUGH CERTIFICATES, SERIES 2006-AR7

By: _____
BANK OF AMERICA, N.A., SUCCESSOR BY MERGER TO BAC HOME LOANS SERVICING, LP, FKA COUNTRYWIDE HOME LOANS SERVICING, LP, AS ATTORNEY IN FACT

Name: Shanda Kreuzer

Title: Assistant vice President
BAC, as Attorney in fact

State of AZ
County of Maricopa

This instrument was acknowledged before me on July 13, 2012 by Shanda Kreuzer as AVP of _____.

_____, Notary Public - State of AZ
My commission expires: 9/14/15

TODD GABERT
NOTARY PUBLIC - ARIZONA
Maricopa County
My Commission Expires
September 14, 2015

LEGAL DESCRIPTION

EXHIBIT A

THAT PORTION OF LOT 30, BLAND ACRES, IN THE COUNTY OF CLACKAMAS AND STATE OF OREGON, DESCRIBED AS FOLLOWS:
BEGINNING AT THE MOST WESTERLY CORNER OF SAID LOT; THENCE NORTH 63 51' EAST ALONG THE NORTHWESTERLY LINE THEREOF, 171.73 FEET TO THE MOST NORTHERLY CORNER OF THAT TRACT OF LAND CONVEYED TO E.J. HENDERLING BY DEED RECORDED MAY 4, 1973, AS RECORDER'S FEE NO. 73 13628, AND THE TRUE POINT OF BEGINNING; THENCE SOUTH 13 48' EAST ALONG THE EASTERLY LINE OF SAID HENDERLING TRACT, 331.43 FEET TO THE MOST SOUTHERLY CORNER THEREOF, BEING A POINT ON THE SOUTHWESTERLY LINE OF SAID LOT 30; THENCE SOUTH 71 07' EAST ALONG SAID SOUTHWESTERLY LINE, 150.00 FEET TO A POINT THEREON; THENCE NORTHWESTERLY TO A POINT ON THE NORTHWESTERLY LINE OF SAID LOT THAT BEARS NORTH 63 51' EAST, 150.00 FEET FROM THE TRUE POINT OF BEGINNING; THENCE SOUTH 63 51' WEST ALONG SAID NORTHWESTERLY LINE, 150.00 FEET TO THE TRUE POINT OF BEGINNING.

City of West Linn

PRE-APPLICATION CONFERENCE MEETING

Notes

August 2, 2012

SUBJECT: 5-lot subdivision with possible variance for 5 houses on a private street, at 23112 Bland Circle

ATTENDEES: Applicants: Jeff Smith, John Wyland, Andrew Tull, Brian Feeney, Michael Robinson

Staff: Tom Soppe (Planning Department), Khoi Le (Engineering Division)

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.

<u>Project Details</u>

The site is an approximately 1.16-acre parcel zoned R-7 in the Savanna Oaks neighborhood. It is located on Bland Circle and is a long, narrow property with its narrow side fronting the street. At the north end is the one existing house on the site. Just south of this is an existing garage. The site is heavily wooded. Theoretically it is large enough for 7 lots in the R-7 zone, but this is unlikely to be achieved since some of the site has to consist of public or private roadway, and this cannot be counted towards the size of any lot. Four to six lots is a more realistic result in maximizing the property's subdivision development potential. Across the street from the west end of the parcel, Falcon Drive heads south from Bland Circle. Currently this is a "T" intersection, but upon subdivision of the subject property, a private or public road would have to head north from here.

Existing house on site

The applicant presents two conceptual plans as to how the property could be subdivided. One conceptualizes 5 lots on a dead end public street, which would functionally be a continuation of Falcon Drive (whether or not it has the same name, although it would be preferable if it did in order to avoid confusion). The other conceptualizes 5 lots served by a private street also aligned with the Falcon/Bland intersection; this concept plan also includes an open space tract along Bland Circle. For either a public or private proposed street, the applicant should align the centerline as best as possible across from the centerline of existing Falcon Drive. If it cannot be reasonably straight across, a private drive would have to be 150 feet away and a public street 200 feet away from an existing intersection across the street. Due to existing site dimensions, neither of those is an option on this site. Therefore the applicant should just make the centerline of the private or public proposed street as aligned as possible with Falcon's existing centerline. Building 5 lots accessing from a private street requires a variances as private streets and shared driveways are limited to 4 lots.

If the applicant opts for any scenario involving private access easements for some lots across other lots, please note that the Chapter 2 definition of lot area excludes access easement areas from lot area calculation. Therefore each lot should be at least 7,000 square feet not counting the access easement. On the concept plan with the private street, this might only affect Lot 1, which could absorb part of Tract A if need be.

Section 55.100(B)(2) provides for significant tree preservation. The applicant should ensure that conceptual plans will be able to preserve 20% of the site for significant tree preservation, and should propose these areas to be in open space tracts or conservation

easements as required. The CDC provides for 20% of a site be set aside for significant tree preservation, or all significant tree areas if significant tree areas constitute less than 20% of a site. This 20% "saved" area can count, if need be, areas where trees are removed but mitigated for under 55.100(B)(2)(f). Only those trees need to be mitigated for per code, as trees removed in the non-20% areas can be removed without mitigation, although mitigation and/or preservation are always encouraged and extra mitigation can be conditioned. The applicant is encouraged to work with the City Arborist Mike Perkins (503-723-2554 or mperkins@westlinnoregon.gov) as soon as possible since the significant tree code is based on what he determines to be significant, and therefore subdivision layout may depend on this. The mitigation plan can be on site or on other land, or can be a fee-in-lieu based on how much buying and planting the trees would cost, if the Parks Department agrees to this.

The applicant has expressed interest in a variance or variances to ease public street width and sidewalk requirements in order to help preserve trees on site. Planter strip requirements can be waived by staff without a variance to preserve trees. Sidewalks can be reduced to as narrow as 4 feet without a variance to preserve trees. It would require a variance to eliminate the sidewalk, or to make the two-lane dead end street pavement any narrower than 20 feet. The latter may be unlikely to pass due to emergency access concerns and functionality concerns. Also, building a public street without a sidewalk, even for tree preservation, may run into significant legal justification problems due to ADA requirements. The applicant may find it easier to make the street and sidewalk as narrow as possible and avoid this variance unless further legal research shows that building the street without a sidewalk would be achievable under ADA standards.

There are other methods for working with the site to avoid significant tree removal as much as possible, including the lot size flexibility that would be available via applying for the subdivision as a Planned Unit Development (see CDC Chapter 24), and including proposing single-family attached units (no more than two attached to each other) as allowed by the R-7 zone.

Looking up at tall trees on site

Water service would be available to the subdivision as there are lines under Bland Circle that allow for the needed capacity. There are not known pressure issues in this general area.

For stormwater treatment, the City now standardly requires a raingarden on each individual lot. Regarding stormwater, 85.200(H)(2) states in part, "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."

Subsection 85.170(B)(2)(c)(1) lists the circumstances that require a transportation impact analysis. The proposal involves no new points of Bland Circle right of way so the traffic study is not required related to the spacing scenarios listed in this subsection, or any of the other reasons. 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 private drive is proposed it would not be a newly established private drive, and therefore the TSP Chapter 8 standards would not be applicable despite the standard being 150 feet between driveways, which is not the case here. If a public street is proposed, this would

not be a newly established intersection as it would be an extension of the Falcon Drive intersection.

Proposing two driveways onto the site (i.e. a separate driveway for Lot 1) would require both a traffic study and a Class II Variance since it would be a case of a new driveway not meeting the 150-foot spacing standards from TSP Table 8-3 for collectors.

Bland Circle frontage along site, existing driveway on left and Falcon Drive entrance on right

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.

The minimum right of way width for collectors is 60 feet, and the right of way width along this section of Bland Circle is 40 feet, so the City will require 20 feet of dedication (the area across the street is already subdivided and will likely never provide any of the required extra 20 feet).

There is no plat pertaining to this area besides Bland Acres; on that plat the subject parcel was part of the same lot as three surrounding current taxlots. This may have been done legitimately as part of partitioning processes, before partitions were required

to have their own plats, or via another legitimate (or grandfathered-in) way. The applicant should be prepared to present proof that the site is a legal lot of record.

Engineering Notes

I. TRANSPORTATION

BLAND CIRCLE

	EXISTING CONDITIONS	POTENTIAL POST DEVELOPMENT CONDITIONS
Classification	**Collector**	**Collector**
Zone	**R-7**	**R-7**
Right of Way Width	**38'-40'**	**60'**
Full Pavement Width	**21'-25'**	**18'**
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 Falcon Dr and Bland Cir**	**May be needed at end of sidewalk**
Post Speed	**25 MPH**	**25 MPH**
Stripe	**None in front – Double Yellow Line and Reflector**	**May be needed. Will be reviewed at construction phase**

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 Trees. Coordinate with Parks Department for requirements.

7. In case the access road is determined to be a private road the driveway approach shall be designed with the following requirements:

   Driveway Approach: 36' maximum width including wings. See WL-504A, 504B, and 505 for technical and construction specifications. Driveway approach is recommended to be lined up with Falcon Drive. Driveway approach serving 3 lots or more should be designed in accordance with Commercial Driveway Design Guidelines and Standards. Intersection of new driveway to existing roadway should be designed in accordance with Public Works Standards Section 5.0015 Intersections.

8. In case the access road is determined to be a public road, the road shall be designed with the following requirements:

   - 48' wide right of way
   - 24' wide pavement consisting of 4" AC, 2" leveling course, 10" of rock
   - Usual standard is 6' wide sidewalk and 6' wide planter strip on both sides- can apply for narrowed sidewalk and reduced or eliminated planter strip if this preserves trees, per Planning notes in this document.

9. Provide necessary striping.

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

B. CITY TRANSPORTATION MASTER PLAN

PEDESTRIAN MASTER PLAN

Bland Circle is indicated in the City Pedestrian Master Plan as one of the roadways with sidewalk deficiencies. 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). Therefore 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 facility deficiency. No bicycle lane improvement was listed in the 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.

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

Type of Use	Trip per Use	Factor	Reimbursement	Improvement	Admin.	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	Admin.	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

II. 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 Falcon Drive for connection. There is currently a 48" detention pipe located downstream of the potential

development. This detention pipe was only designed to detain run-off from Remington Ridge II Subdivision. Any additional runoff to the detention pipe will not be permitted. Detention capacity analysis on the detention pipe will be required.

5. As-Built: Remington Ridge II. Plat: Remington Ridge No. 2 and City GIS available per request.

B. SURFACE WATER SDC EFFECTIVE JULY 1ST 2012

Unit		Factor	Reimbursement	Improvement	Admin.	Total
Per Factor of 1		1.00	$773	$232	$51	$1,056
Single Family	Per House	1.00	$773	$232	$51	$1,056

III. 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 Falcon Drive for connection.
3. As-Built: Remington Ridge II. Plat: Remington Ridge No. 2 and City GIS available for request.

B. SANITARY SEWER SDC EFFECTIVE JULY 1ST 2012

Unit	Meter Size	Factor	Reimbursement	Improvement	Admin.	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

IV. 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)	Emerg. 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

No.	Location	Ex. Diameter (in.)	Proposed Diameter (in.)	Priority	Length (ft)	SDC Allocation	Unit Cost ($/lf)	Est. Project Cost ($)
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. Existing public water system is available on Bland Circle for connection.
3. As-Built: Remington Ridge II. Plat: Remington Ridge No. 2 and City GIS available per request.

J. WATER SDC EFFECTIVE JULY 1ST 2012

Unit	Meter Size	Factor	Reimbursement	Improvement	Admin.	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 pursue a Class II Variance for public street width or for having 5 lots access a private street. Subdivisions and Class II Variances are both Planning Commission decisions.

A neighborhood meeting is required for a subdivision approval per 99.038. The site is within the Savanna Oaks neighborhood but is just across Bland Circle from the Willamette neighborhood. Contact Dave Rittenhouse, President of the Savanna Oaks Neighborhood Association, at 503-635-0800 or daver@europa.com, and Beth Smolens, President of the Willamette Neighborhood Association at (503) 503-722-1531 or willametteneighborhood@gmail.com. (See 99.038 for how to include the adjacent neighborhood.) The applicant is required to provide the neighborhood association with conceptual plans and other material at least 10 days prior to the meeting. While a meeting with Savanna Oaks is required, it is not required to have a meeting with neighboring Willamette (but it is always encouraged). Per 99.038 Willamette must be contacted about the meeting with Savanna Oaks regardless. See 99.038(C) for the proper procedure for this. If the two associations and the applicant all agree to officially make it a "combined" meeting, this is fine as well.

The criteria of 85.200 shall be responded to individually in a narrative. If the applicant applies for a variance or variances, the criteria of 75.060 should be responded to as well.

Prepare the application and submit 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 $5,200 in this case. There is also a $500 fee for eventual final

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.**

Follow 85.150-170 (and 75.050 if there is a variance) strictly and completely regarding submittal requirements (including plans, maps, etc.) that should accompany the narrative and the application form. Submittal requirements may be waived but the applicant must first identify the specific submittal requirement and request, in letter form, 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.

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.

N/A is not an acceptable response to the approval criteria. Prepare the application and submit to the Planning Department with deposit fees and signed application form.

Pre-application notes are void after 18 months. After 18 months with no application approved or in process, a new pre-application conference is required.

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.

Civil Engineering
Water Resources
Land Use Planning

October 15, 2012

23112 Bland Circle
Proposed Residential Subdivision

To Our Neighbors,

3J Consulting acts on behalf of JT Smith Companies regarding the planned subdivision of a small property located off of Bland Circle. The location of the property and the proposed project is shown on the attached map. The address of the project is 23112 Bland Circle. The tax lot number for the property is 2S1E35B 00502. The property is currently located inside the City of West Linn's boundaries and it zoned R-7 or Single Family Residential.

JT Smith Companies is considering a subdivision of the 1.1 acre property in order to create 5 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 zoning R-7 district. The proposed site improvements will include a small extension of Falcon Street, north into the property and the introduction of a shared driveway system which will provide access to each of the lots.

Before finalizing an application to the City's Planning Department for the proposed subdivision, 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 meetings to discuss this proposal have been scheduled to allow interested individuals to learn more about this project. These meetings have been scheduled during the Savannah Oaks and Willamette Neighborhood Association's regularly scheduled meetings and these presentations will be made in addition to the agendas set by the associations. These meetings are to be held at the following dates and times:

Savannah Oaks Neighborhood Association Meeting
November 6, 2012 at 7:30 pm
Willamette Fire Station 59
1860 Willamette Falls Drive, West Linn, OR 97068

or

Willamette Neighborhood Association Meeting
November 14, 2012 at 7:00 pm
Pacific West Bank in Willamette Marketplace
2000 SW 8th Ave, West Linn, OR 97068

The purpose of these meetings is to provide a forum for surrounding property owners and residents to review the proposal 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.

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

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
Senior Planner
3J Consulting, Inc.

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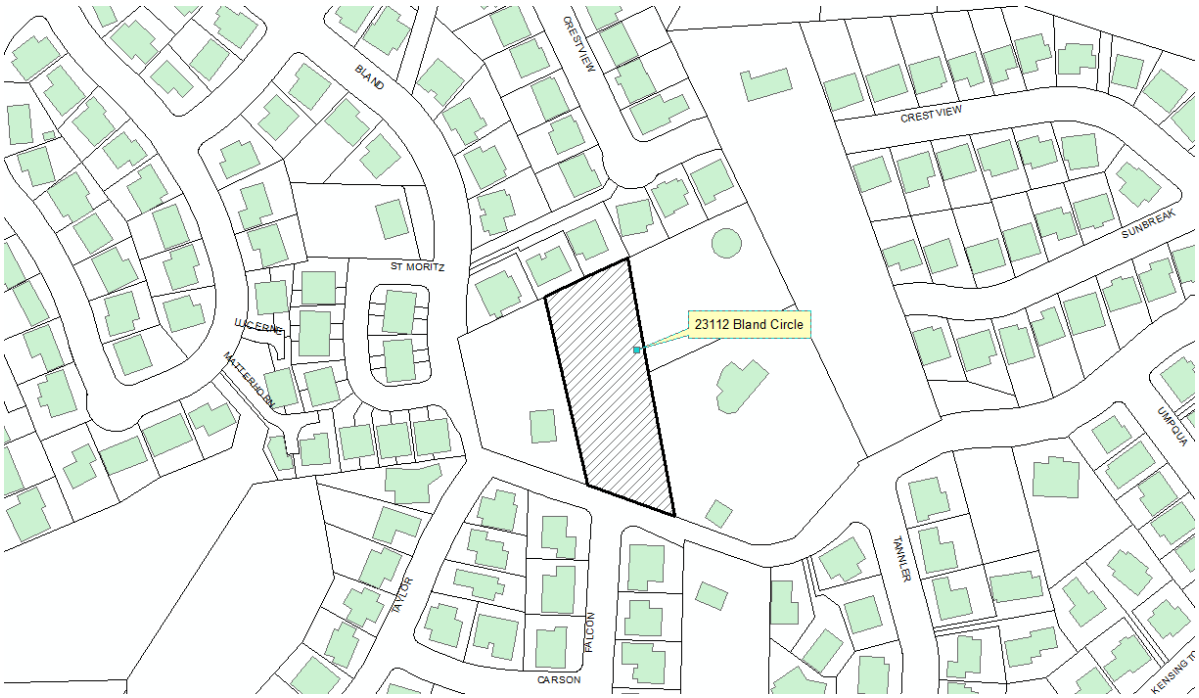

Site Location Map | 23112 Bland Circle

Civil Engineering
Water Resources
Land Use Planning

Meeting Minutes - Falcon Place - Savannah Oaks

Date: November 7, 2012
Meeting No: Neighborhood Meeting
Project: Falcon Place
3J No.: 12093
Location: Fire Station 59 - West Linn

Presenters	Company
Andrew Tull	**3J**
John Wyland	**JT Smith Companies**
Mike Robinson	**Perkins Coie**

In preparation for the submission of a land use application for the subdivision, the applicant conducted a neighborhood meeting with the Savannah Oaks neighborhood association. Ten members of the neighborhood association and the community attended the meeting.

We were expected at 7:30 but were invited in before 7:30 to begin the presentation. When 3 people arrived after the presentation had started, the applicant stayed after the meeting to answer questions from the neighbors who arrived late. The meeting began with a presentation by Mike Robinson, Andrew Tull, and John Wyland. The project team started by explaining that the property would be subdivided in accordance with the City's development codes and that no variations would be sought. A description of the development, the road access, and the proposed lots was provided. The general timeframe for the land use and construction process was described.

Following the introduction of the project, neighbors and attendees openly asked questions of the project team. The following is a record of the questions and the project teams' responses.

Item	Question	Response
1	How many trees are located on site? How many are significant?	48. The City's arborist is currently reviewing trees for significance.
2	How tall will the retaining wall be?	3 to 4 feet is the preliminary height
3	Can you install a pocket park? A pocket park within the trees would be very nice.	We can get back to you on that. We've had a tough time getting the lots and the access to fit given the size of the site.
4	7,000 SF lots are proposed, how does that compare to the other homes on Falcon Drive?	I would say they are equivalent? Maybe 8,000 sf within the Remington Ridge Development.
5	What size homes will be considered?	3,000-4,000 SF
6	The homes are going to be sprinklered in exchange for a more narrow roadway?	That's correct, the reduction of the road width allows us to retain more trees than a public road section would otherwise allow. The fire department is willing to trade width and grade standards if the homes have fire suppression devices.
7	Next step and timeline for construction?	We will be meeting with the Willamette neighborhood next week. We plan to submit

		within a month. The City then takes 30 days to deem the application complete. Then the City's 120 review clock. The City will probably make a decision within 3 months.
8	If the project is appealed, will you go to the City Council	We believe that is correct.
9	Can you send copies of the pre-app materials to the President of the NA for distribution?	I can ask the planner to send through the pre-app materials
10	How wide is the road going to be going into the site?	15 or 16 feet
11	How will you aid people coming and going from the site and consider safety at the intersection?	We will be cutting back obstructive vegetation and adding a significant amount of pavement. Visibility should be greatly improved. The turnout will also improve visibility.
12	Visibility to the east is also an issue. The County comes every year to cut vegetation. Will the road have a stop sign? Could you ask the City about this?	We can discuss the need for a stop sign with the City's Engineer.
13	What about the rodents that were displaced after clearing	You can call the builder with any problems that you're having. JT Smith wants to be a good neighbor and they don't want to cause problems within the neighborhood.
14	Could you please present to the neighbors who came in late?	We'd be more than happy to stay late and relay any of the information that we've relayed here to the neighbors who arrived late.

The meeting concluded at 7.55pm.

Civil Engineering
Water Resources
Land Use Planning

Meeting Minutes - Falcon Place - Willamette

Date: November 7, 2012
Meeting No: Neighborhood Meeting
Project: Falcon Place
3J No.: 12093
Location: Fire Station 59 - West Linn

Presenters	Company
Jeff Smith	**JT Smith Companies**
Andrew Tull	**3J**
John Wyland	**JT Smith Companies**
Mike Robinson	**Perkins Coie**

In preparation for the submission of a land use application for the subdivision, the applicant conducted a neighborhood meeting with the Willamette neighborhood association. Ten members of the neighborhood association and the community attended the meeting.

The meeting began with a presentation by Mike Robinson, Andrew Tull, and John Wyland. The project team started by explaining that the property would be subdivided in accordance with the City's development codes and that no variations would be sought. A description of the development, the road access, and the proposed lots was provided. The general timeframe for the land use and construction process was described.

Following the introduction of the project, neighbors and attendees openly asked questions of the project team. The following is a record of the questions and the project teams' responses.

Item	Question	Response
1	Please talk about the proposed road section	We provided an explanation of the proposed improvements to Bland Circle
2	What are the SF of the homes	We'll propose a range of housing, 2500 to 3400 sf
3	Will the lots be stair steps	Yes, the lots will be stepped through lot grading
4	Where are the madrones on the property	They are located near the entrance, we are trying to retain them.
5	We are very unhappy with the Street Trees along River Heights, the ones along Willamette are Nice	Noted, this project will have street trees
6	What are the timeframes before you start work	We will submit a land use application. Then the builder will start building. The intent is to start in the spring.
7	Please talk about the driveway and its width?	The road will be narrower than a normal private drive. We've agreed to sprinkle the homes so the fire department has allowed us to drop the road width to 16 feet. This will allow us to save trees
8	What about trash cans? Will they be lined up on bland?	The Garbage hauler will tell us where to place the trash cans. We may try to create a pad somewhere on the site to try to keep the trash

		cans out of the street. Either way, the garbage hauler will tell us where they want them.
9	Was this a bank owned property?	Yes.
10	Will the houses be built all at once?	We will start 1 building each week for 5 weeks. Noise associated with framing should be about 30 days per house. Should be about 10 weeks. We'll work within the City's operating hours.
11	Will we receive other notifications?	Our application will go in next week. The City will review and we'll probably have a February Hearing. you will receive notice from the City.
12	Will there be a big sign?	No big sign will be installed or monumentation. Perhaps a small sign.
13	Will you meet the tree preservation standards?	Yes, we've got two arborists on site. We will be working to save as many trees as possible and we will provide easements over the significant trees we plan to retain.
14		

The meeting concluded at 7.45pm.

21E35A 01200
John C Devries
22850 Weatherhill Rd
West Linn, OR 97068

21E35A 01201
Li Wei
22864 Weatherhill Rd
West Linn, OR 97068

21E35A 01300
John J & Rachel Omlor
23150 Bland Cir
West Linn, OR 97068

21E35AB03900
Jason M & Julie K Fewell
2985 Sunbreak Ln
West Linn, OR 97068

21E35AB04000
Kurt J & Jennifer L Hill
2973 Sunbreak Ln
West Linn, OR 97068

21E35AB04200
Brian & Christy Riehm
2984 Sunbreak Ln
West Linn, OR 97068

21E35AB04300
Eric G Egland
2976 Sunbreak Ln
West Linn, OR 97068

21E35AB04400
Pierre G Bossaert
2471 Crestview Dr
West Linn, OR 97068

21E35AB04500
Steve P & Ann E Crawford
2483 Crestview Dr
West Linn, OR 97068

21E35AB04800
Charles H & Theresa A Parker
2486 Crestview Dr
West Linn, OR 97068

21E35AB04900
C C Briggs
2474 Crestview Dr
West Linn, OR 97068

21E35AB05000
City Of West Linn
22500 Salamo Rd #600
West Linn, OR 97068

21E35AC04900
Michael S & Lisa M Noel
2265 Tannler Dr
West Linn, OR 97068

21E35AC05000
Jon & Barbara Udell
2255 Tannler Dr
West Linn, OR 97068

21E35AC05100
Jeffrey R & Dawn A Hudson
2235 Tannler Dr
West Linn, OR 97068

21E35AC05200
Rebecca M Van Horn
2225 Tannler Dr
West Linn, OR 97068

21E35AC05300
Florentino B & Collette Versoza
2215 Tannler Dr
West Linn, OR 97068

21E35AC05400
Vincent P Morales
2205 Tannler Dr
West Linn, OR 97068

21E35AC11501
Joseph L Chan
23156 Bland Cir
West Linn, OR 97068

21E35B 00403
Li Wei
22864 Weatherhill Rd
West Linn, OR 97068

21E35B 00405
David E & Diana E Dean
22870 Weatherhill Rd
West Linn, OR 97068

21E35B 00493
Li Wei
22864 Weatherhill Rd
West Linn, OR 97068

21E35B 00500
Johnny N & Laurie A Coppedge
23128 Bland Cir
West Linn, OR 97068

21E35B 00501
Dana L & Rosalee Patelzick
23096 Bland Cir
West Linn, OR 97068

21E35B 00504
City Of West Linn
22500 Salamo Rd #600
West Linn, OR 97068

21E35BA00100
David & Nicolle Landau
23065 Bland Cir
West Linn, OR 97068

21E35BA00190
David & Nicolle Landau
23065 Bland Cir
West Linn, OR 97068

21E35BA00501
Richard S Rogoway
Po Box 1744
Clackamas, OR 97015

21E35BA00502
Melba Adamson
2219 Saint Moritz Loop
West Linn, OR 97068

21E35BA00503
Anahita Ariana
2225 Saint Moritz Loop
West Linn, OR 97068

21E35BA00504
Joellen M Hagerty
2237 Saint Moritz Loop
West Linn, OR 97068

21E35BA00505
Darla D Lindsey
2241 Saint Moritz Loop
West Linn, OR 97068

21E35BA00506
James D & Linda Latham Jr.
2259 Saint Moritz Loop
West Linn, OR 97068

21E35BA00507
Vicki Patrick
2288 Saint Moritz Loop
West Linn, OR 97068

21E35BA00508
Gregory Moore
64367 E Idlewind Ln
Tucson, AZ 85739

21E35BA00509
Ronald Hawk
2276 Saint Moritz Loop
West Linn, OR 97068

21E35BA00510
B Paul & Mary K Jackson
333 S State St #v
Lake Oswego, OR 97034

21E35BA00511
Teri P Jorgensen
2262 Saint Moritz Loop
West Linn, OR 97068

21E35BA00512
Jeffrey Jetton
16697 Maple Cir
Lake Oswego, OR 97034

21E35BA00514
Mark E Lyons
2246 Saint Moritz Loop
West Linn, OR 97068

21E35BA00515
Woodridge Properties LLC
1132 SW 19th Ave #106
Portland, OR 97205

21E35BA00516
William S & Barbara W Crampton
2238 Saint Moritz Loop
West Linn, OR 97068

21E35BA00517
Jeffrey M & Connie J Depaola
2226 Saint Moritz Loop
West Linn, OR 97068

21E35BA00518
Sara J Newton
2220 Saint Moritz Loop
West Linn, OR 97068

21E35BA00519
John C & Janet L Umbras
2212 Saint Moritz Loop
West Linn, OR 97068

21E35BA00520
William D Tuininga
2204 Saint Moritz Loop
West Linn, OR 97068

21E35BA00521
Edna Mo
Po Box 1651
Lake Oswego, OR 97035

21E35BA00522
Jay J & Queenie W Cheng
2212 Lucerne Pl
West Linn, OR 97068

21E35BA00523
Sidney A Brockley
Po Box 899
Carlton, OR 97111

21E35BA00524
Cherie G Lingelbach
2208 Matterhorn Ct
West Linn, OR 97068

21E35BA00525
Thomas A Hooker
2209 Matterhorn Ct
West Linn, OR 97068

21E35BA00526
Carol M Skellenger
2227 Matterhorn Ct
West Linn, OR 97068

21E35BA00527
Devlp Corp Renaissance
16771 Boones Ferry Rd
Lake Oswego, OR 97035

21E35BA00528
Devlp Corp Renaissance
16771 Boones Ferry Rd
Lake Oswego, OR 97035

21E35BA00600
City Of West Linn
22500 Salamo Rd #600
West Linn, OR 97068

21E35BA03900
Robert A & Kruesella Taylor Jr.
2175 Alpine Dr
West Linn, OR 97068

21E35BA04000
James P & Leah M Vanwinkle
2165 Alpine Dr
West Linn, OR 97068

21E35BA04100
Richard M & Celeste G Obrien
2155 Alpine Dr
West Linn, OR 97068

21E35BA04200
William M & Tiffany J Cabine
1420 NW 20th Ave #305
Portland, OR 97209

21E35BA04300
Ronald H Ziegler
25020 SW Valley View Rd
West Linn, OR 97068

21E35BA04400
Daniel & Jennifer A Kling
23056 Bland Cir
West Linn, OR 97068

21E35BA04500
Jay S Hemmady
23060 Bland Cir
West Linn, OR 97068

21E35BA08600
Jeremy A Rower
2255 Crestview Dr
West Linn, OR 97068

21E35BA08700
Darren & Leslie Karr
2265 Crestview Dr
West Linn, OR 97068

21E35BA08800
David A & Sandra Quesnel
2275 Crestview Dr
West Linn, OR 97068

21E35BA08900
David P & Jillian N Smith
2285 Crestview Dr
West Linn, OR 97068

21E35BA09000
James Butler
2295 Crestview Dr
West Linn, OR 97068

21E35BA09100
Charles W & Roberta R Mathews III
2305 Crestview Dr
West Linn, OR 97068

21E35BA09200
Wade Radcliffe
2300 Crestview Dr
West Linn, OR 97068

21E35BA09300
Brian N Bell
2290 Crestview Dr
West Linn, OR 97068

21E35BA09400
Edison & Tamara J Ghorbani-Elizeh
2280 Crestview Dr
West Linn, OR 97068

21E35BA09500
Heather & Thomas J Sobotta
5235 Erskine Way SW
Seattle, WA 98136

21E35BA09600
Antonio L Xavier
2260 Crestview Dr
West Linn, OR 97068

21E35BA09700
John H Chan
2250 Crestview Dr
West Linn, OR 97068

21E35BA10000
Richard Mreen
23049 Bland Cir
West Linn, OR 97068

21E35BA10100
Cory L & Jodi L Huot
23055 Bland Cir
West Linn, OR 97068

21E35BA10200
James P & Jennifer L Meagher
23063 Bland Cir
West Linn, OR 97068

21E35BA10300
Posey Of Bhatia
71 View St
Los Altos, CA 94022

21E35BA10400
Lorentz S & Alison F Bruun
23069 Bland Cir
West Linn, OR 97068

21E35BA10500
Terry L & Sandra J Griffith
23083 Bland Cir
West Linn, OR 97068

21E35BA10600
Ann M Hillson
23073 Bland Cir
West Linn, OR 97068

21E35BA10700
Troy Allen & Erin K Pendergraft
23073 Bland Cir
West Linn, OR 97068

21E35BA10800
Sean & Stacey Driggers
9374 Sunnyview Rd NE
Salem, OR 97317

21E35BA10900
Kaykel Investments LLC
15375 NW West Union Rd
Portland, OR 97229

21E35BA11000
Kaykel Investments LLC
15375 NW West Union Rd
Portland, OR 97229

21E35BA11100
City Of West Linn
22500 Salamo Rd #600
West Linn, OR 97068

21E35BA11200
City Of West Linn
22500 Salamo Rd #600
West Linn, OR 97068

21E35BD01900
Jana H & Erik E Wills
2430 Remington Dr
West Linn, OR 97068

21E35BD02000
J Steven James
2428 Remington Dr
West Linn, OR 97068

21E35BD02100
Miguel A Gomez
2424 Remington Dr
West Linn, OR 97068

21E35BD02500
Ronald Eric Yost
2315 Falcon Dr
West Linn, OR 97068

21E35BD02600
Lisa Pellicano Larson
2313 Falcon Dr
West Linn, OR 97068

21E35BD02700
Riad Alharithi
2314 Falcon Dr
West Linn, OR 97068

21E35BD03800
Gregory P Garcia
2397 Taylor Dr
West Linn, OR 97068

21E35BD03900
Stephen D & Roberta Nopson
2393 Taylor Dr
West Linn, OR 97068

21E35BD04000
Steven P Summers
2387 Taylor Dr
West Linn, OR 97068

21E35BD04100
Brian C Lee
2383 Taylor Dr
West Linn, OR 97068

21E35BD04200
Hongchae Lee
2377 Taylor Dr
West Linn, OR 97068

21E35BD04300
Dave E & Mehrnoosh Brown
2373 Taylor Dr
West Linn, OR 97068

21E35BD05600
Robert L Kitzberger
1950 Taylor Ct
West Linn, OR 97068

21E35BD05700
Leonell J King
1930 Taylor Ct
West Linn, OR 97068

21E35BD05900
Andrew N Hedberg
2374 Taylor Dr
West Linn, OR 97068

21E35BD06000
Norma Jean Juhr
2207 Carson Dr
West Linn, OR 97068

21E35BD06100
Christopher W & Ili Veley
2211 Carson Dr
West Linn, OR 97068

21E35BD06200
Jackie L & Karen J Forrester
2208 Carson Dr
West Linn, OR 97068

21E35BD06300
Paul Glaunert
2350 Falcon Dr
West Linn, OR 97068

21E35BD06400
Alison Pyle
17550 SE Royer Rd
Damascus, OR 97089

21E35BD06500
Samuel E Torres
2394 Taylor Dr
West Linn, OR 97068

21E35BD06600
Jason Strobbe
2398 Taylor Dr
West Linn, OR 97068

21E35BD06700
City Of West Linn
22500 Salamo Rd #600
West Linn, OR 97068

21E35BD07000
Matthew D & Elizabeth D Orth
150 SE Ginseng Dr
Estacada, OR 97023

21E35BD07100
Marilyn Devault
23121 Bland Cir
West Linn, OR 97068

21E35BD07201
Michael E & April I Browne
23130 Bland Cir
West Linn, OR 97068

21E35BD07202
Edward W Schwarz Jr.
2206 Tannler Dr
West Linn, OR 97068

21E35BD07203
Ming Li
23136 Bland Cir
West Linn, OR 97068

21E35BD07204
Bonni C Canary
286 SW Forest Cove Rd
West Linn, OR 97068

21E35BD07300
John L Gunn
2264 Tannler Dr
West Linn, OR 97068

21E35BD07301
Mohammad Y Saleh
2242 Tannler Dr
West Linn, OR 97068

21E35BD07302
Gary K Noack
2218 Tannler Dr
West Linn, OR 97068

21E35BD07400
Lisa K Shepard
12425 SW 55th Pl
Portland, OR 97219

21E35BD07500
Andrew S & Karin Walton
2311 Falcon Dr
West Linn, OR 97068

21E35BD07600
Bradley P & April S Goehring
2309 Falcon Dr
West Linn, OR 97068

21E35BD07700
Michael R & Kathleen C Halicki
2307 Falcon Dr
West Linn, OR 97068

21E35BD07800
Richard E & Kelly M Mooney
2305 Falcon Dr
West Linn, OR 97068

21E35BD07900
James C & Jennifer Geyer
2303 Falcon Dr
West Linn, OR 97068

21E35BD08000
David L & Laurie A Wallace
2304 Falcon Dr
West Linn, OR 97068

21E35BD08100
Bruce Petterson
2306 Falcon Dr
West Linn, OR 97068

21E35BD08200
Josh C & Melissa L Juenger
2308 Falcon Dr
West Linn, OR 97068

John Wyland
JT Smith Companies
5285 Meadows Road #171
Lake Oswego, OR 97035

Mr. Ed Schwarz
Savannah Oaks NA
2206 Tannler Drive
West Linn, OR 97068

Mr. Ken Pryor
2119 Greene Street
West Linn, OR 97068

Elizabeth Kieres
22106 Horizon Drive
West Linn, OR 97068

Elizabeth Kieres
1852 4th Avenue
West Linn, OR 97068

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21E35BD08100
Bruce Petterson
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Josh C & Melissa L Juenger
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Beaverton, OR 97005

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10445 SW Canyon Road
Suite 245
Beaverton, OR 97005

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:

KEN PRYOR
2119 GREESE STREET
WEST LINN, OR 97068

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X [signature] ☐ Agent ☐ Addressee

B. Received by (Printed Name) KEN PRYOR
C. Date of Delivery 10-22-12

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 1010 0000 6641 3101

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 KIERES
1852 4TH AVENUE
WEST LINN, OR 97068

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X [signature] ☐ Agent ☐ Addressee

B. Received by (Printed Name) Elizabeth Smolens
C. Date of Delivery

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

OCT 22 2012

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 1010 0000 6641 3118

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

NEIGHBORHOOD MEETING

AFFIDAVIT OF POSTING NOTICE

STATE OF OREGON)
Washington 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 23112 Bland Circle in West Linn, Oregon and that pursuant to Community Development Code Section 99, did on the 15th day of October, 2012 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 adjacent to the intersection of Bland Circle and Falcon Street.

This 13TH day of NOVEMBER, 2012.

Signature

Subscribed and sworn to, or affirmed, before me this 13th day of November, 2012.

OFFICIAL SEAL
PATRICK C SLUYS
NOTARY PUBLIC - OREGON
COMMISSION NO. 462094
MY COMMISSION EXPIRES SEPTEMBER 22, 2015

Notary Public for the State of Oregon
County of Washington
My Commission Expires: September 22nd 2015

OFFICIAL SEAL
PATRICK C SLUYS
NOTARY PUBLIC - OREGON
COMMISSION NO. 462094
MY COMMISSION EXPIRES SEPTEMBER 22, 2015

NEIGHBORHOOD MEETING

AFFIDAVIT OF MAILING

STATE OF OREGON)

SS

County of ~~Clackamas~~ Washington)

I, Andrew Tull, being duly sworn, state that on the 15th day of October, 2012 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 23112 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 13TH day of NOVEMBER, 2012.

Signature

Subscribed and sworn to, or affirmed, before me this 13th day of November, 2012.

Notary Public for the State of Oregon

County of Washington

My Commission Expires: September 22 2015

OFFICIAL SEAL
PATRICK C SLUYS
NOTARY PUBLIC - OREGON
COMMISSION NO. 462094
MY COMMISSION EXPIRES SEPTEMBER 22, 2015

OFFICIAL SEAL
PATRICK C SLUYS
NOTARY PUBLIC - OREGON
COMMISSION NO. 462094
MY COMMISSION EXPIRES SEPTEMBER 22, 2015

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
NOVEMBER 6, 2012 AT 7:30 PM
WILLAMETTE FIRE STATION 59
1860 WILLAMETTE FALLS DRIVE,
WEST LINN, OR 97068

NEIGHBORHOOD MEETING 2:

WILLAMETTE NEIGHBORHOOD
ASSOCIATION MEETING
NOVEMBER 14, 2012 AT 7:00 PM
PACIFIC WEST BANK IN
WILLAMETTE MARKETPLACE
2000 SW 8TH AVE,
WEST LINN, OR 97068

Civil Engineering
Water Resources
Land Use Planning

NEIGHBORHOOD MEETING
Falcon Place - Savannah Oaks Neighborhood Association
November 6, 2012; 7pm

NAME	ADDRESS	EMAIL
Patrick & Gary McGuire	1841 Barnes Circle, W.Lin	Patnorthwest@comcast.net
Toby Kolstad	2115 Green St.	tkolstad@AOL.com
ALLEN BAILLIF	1829 BARNES CIR	ANBAILL@COMCAST.NET
Norine Baillif	"	"
Roberta Schwartz	503 723 5015	on file
* ANN HILLSON	23075 Bland Circle	503-699-7702
		ann.hillson@mercer.com
↑ SEND COPY OF SITE PLAN		
↓ Nicolle Landau	23065 SW Bland Cir	nicolletlandau@yahoo.com
		NOTES

3J Consulting, Inc.
4780 SW Joshua Street, Tualatin, OR 97062

Ph: 503-946-9365
john.howorth@3j-consulting.com

Civil Engineering
Water Resources
Land Use Planning

NEIGHBORHOOD MEETING
Falcon Place - Savannah Oaks Neighborhood Association
November 6, 2012; 7pm

NAME	ADDRESS	EMAIL
ED SCHWARZ	2206 TANNLER DR.	ed.schwarz@gmail.com
Shirley O Pryor	2119 Greene St WL	
Ken PRYOR	2119 Greene St WL	paragon399@yahoo.com

3J Consulting, Inc.
4780 SW Joshua Street, Tualatin, OR 97062

Ph: 503-946-9365
john.howorth@3j-consulting.com

Savannah Oaks Neighborhood Association Meeting

November 6, 2012

7:00 PM

Agenda

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1. Call to order
2. Approval of Minutes from September and October 2012
3. Old Business
    a. Report on White Oak Savanna trail opening.
    b. Update on purchase of trailhead signs for White Oak Savanna.
    c. Update on upcoming White Oak Savanna fundraisers.
4. New business
    a. Presentation by 3J Consulting (on behalf of JT Smith Companies) on a new 5 home subdivision at 23112 Bland Circle (at the intersection of Bland Circle and Falcon Drive) to be followed by a question and answer session from NA members.
    b. Update from the October meeting of Neighborhood Association Presidents.
        i. Discuss providing SONA email addresses to the City.
    c. Discussion of SONA goals and plans for 2013.
5. Adjourn

Civil Engineering
Water Resources
Land Use Planning

NEIGHBORHOOD MEETING
Falcon Place - Willamette Neighborhood Association
November 14, 2012; 7pm

NAME	ADDRESS	EMAIL
Elizabeth Rocchia	957 Will. Falls Dr.	erocchia@comcast.net
Gene & Darlene Schwartz	2348 OSTMAN ROAD	darleneschwartz@comcast.net
Stephen & Roberta Nopson	2393 TAYLOR DR.	Roberta.Nopson@Gmail.com
Kathie Halicki	2307 Falcon Dr.	khalicki@MSN.com
Elizabeth Hall	1697 Killarney Dr.	elizabeth@elizabethhallproperties.com
Beth Smolens	1853 4th Ave	willamettena@westlinnoregon.gov

PRELIMINARY STORM WATER REPORT

FALCON PLACE
WEST LINN, OR

November 20, 2012

Prepared For:

OLH 14, LLC
5285 Meadows Road, Suite #171
Lake Oswego, OR 97035

Prepared By:
3J Consulting, Inc.
10445 SW Canyon Rd, Suite 245
Beaverton, Oregon 97005
Project No: 12093

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

EXECUTIVE SUMMARY

The existing site is located on private property at 23112 Bland Circle in West Linn, Oregon (See Figure 2). The property is approximately 1.17 acres and is primarily wooded. There is a house, driveway and detached garage on the property. The purpose of this preliminary report is to describe the design of the stormwater management systems following City of West Linn requirements.

The proposed site will consist of five (5) single family lots, a private access road and a bulb-out access from Bland Circle. Each individual lot will be required to treat and infiltrate all stormwater runoff. Additionally, the private access road will be constructed of a pervious material so all rainwater will be directly infiltrated. The bulb-out access from Bland Circle will be the only area contributing runoff to the public storm system in Bland Circle.

The bulb-out area is 3,999 sf of new impervious area. Per the City of West Linn's Public Works Design Standards, since this is less than 5,000 sf, treatment and detention will not be required.

Sizing of stormwater facilities will be left up to each lot owner; however, some preliminary sizing of facilities has been provided in this report. Additionally the specifications for the shared driveway have been included.

All facilities on each lot will be required to comply with the following requirements:

- All storm events up to and including the 25-year shall be retained and infiltrated on each lot;
- All stormwater facilities should be designed using the City of Portland's Presumptive Approach Calculator.
- All stormwater facilities on each lot will be required to have an emergency overflow to the proposed 12 inch storm line provided in the private shared driveway.

Infiltration testing has not occurred yet; therefore, a infiltration rate of 2.0 in/hr was assumed.

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 23112 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.

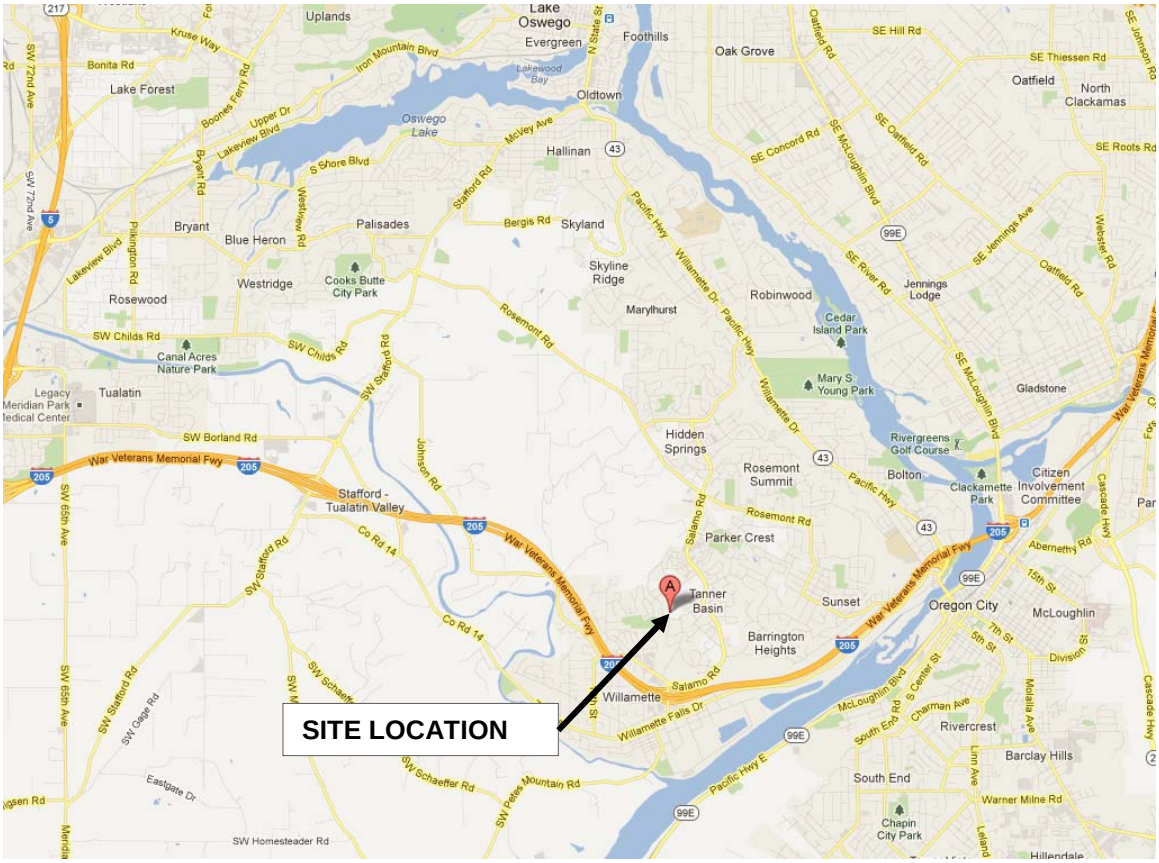


Figure 1 - Vicinity Map

Figure 2 - Site Location

EXISTING CONDITIONS

Site

The property has an average slope of approximately 10%. Elevations range from a maximum of 535 feet in the northeastern corner of the property to a minimum of 501 feet in the southwestern corner. Currently the property contains a house, detached garage, and paved 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 14 inches (See Figure 3).

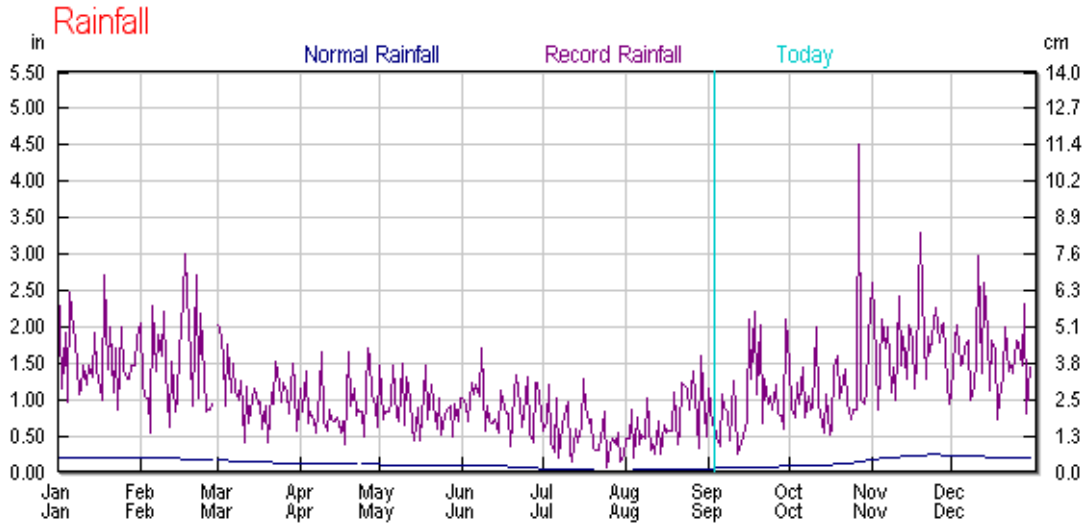


Figure 3 – Rainfall Data

Flood Map

The site does not have a mapped flood plain. The flood plain map shows Zone X, where no base flood elevations have been determined (See Technical Appendix: Exhibits – FIRM Panel 257 of 1175).

Site Geology

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

Soil Type	Hydrologic Group
Saum Silt Loam	B
Nekia Silty Clay Loam	B

Table 1 - Soil Characteristics

The soil on the proposed site consists of approximately 55% Saum Silt Loam and 45% Nekia Silty Clay Loam. Both soils are classified as hydrologic group B. Group B soils generally have moderate infiltration rates; therefore, an infiltration rate of 2.0 in/hr was assumed.

Existing Drainage

Existing Site

The existing site does not contain a stormwater management system. Stormwater runoff from the site sheet flows southwest to the adjacent property and Bland Circle which conveys stormwater to the existing system in Falcon Drive. Falcon Drive contains an underground detention system consisting of a 48 inch, 62 foot long pipe. A flow control structure with a 3.5 inch orifice controls the release rate, while an overflow riser controls larger storm events.

Basin Areas

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

Existing Basin Area	sq. ft.	acres	CN
Impervious Area	8,094	0.19	98
Woods (Good Condition)	42,834	0.98	55
Total Existing Basin Area	51,000	1.17	62

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 wooded land, a house and garage, and driveway. The wooded area was considered to be in good condition (CN=55) and the impervious surface has CN=98.

Time of Concentration
The time of concentration was calculated for the existing site using the TR-55 Method. The time of concentration of 58 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
Each individual lot will be required to provide treatment and retention of stormwater. All storm events up to and including the 25-year will be infiltrated through a low impact design approach following the City of Portland's Stormwater Water Management Manual. The shared driveway will be constructed with a pervious surface, while the sidewalks surrounding the bulb-out will be graded to sheet flow towards the landscape planters for treatment and infiltration. Runoff from the bulb-out will flow to catch basins located in the southwest and southeast corner of the property to convey runoff to the existing system in Falcon Drive.

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

Post-Developed Basin Area	sq. ft.	acres	acres
Basin A			
Assumed Impervious Area (2,500 ft^2/lot)	12,500	0.29	98
Landscaping on lots	5,892	0.14	61
Shared Driveway (Pervious Area)	4,621	0.11	85
Open Space	23,313	0.54	55
Total Basin A	46,326	1.06	70
Basin B			
Bulb-Out	3,999	0.09	98
Open Space	603	0.01	55
Total Basin B	4,602	0.11	92
Total Post Developed Area	51,000	1.17	72

Table 3 – Existing and 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.

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 Hydraflow (Hydrograph extension for AutoCAD Civil 3D) 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 3 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.)
2	2.50
5	3.00
10	3.40
25	3.90
100	4.50

Table 4 - Design Storms

Basin Runoff

The existing runoff rates and volumes were computed to compare the runoff rates and volumes generated for post-developed conditions for Basin B that will drain to the existing storm system in Falcon Drive. Basin A was not considered in this calculation since that portion of the property will no longer flow to Falcon Drive and will be infiltrated onsite.

Table 5 shows the runoff rates and volumes for existing and post-developed conditions (See Technical Appendix: Hydrographs – Existing and Post-Developed Runoff Hydrographs). As the table shows, the increase in flows to the existing system in Falcon Drive will experience slightly larger peaks; however, the volume of water being conveyed will be significantly less.

Recurrence Interval (years)	Existing Runoff Rate (cfs)	Existing Runoff Volume (cf)	Post-Developed Runoff Rate (cfs)	Post-Developed Runoff Volume (cf)
2	0.02	931	0.06	775
5	0.03	1,526	0.07	940
10	0.04	2,418	0.08	1,149
25	0.06	3,450	0.10	1,360
100	0.10	4,842	0.11	1,615

Table 5 - Basin Runoff Rates

HYDRAULIC ANALYSIS AND DESIGN CHARACTERISTICS

System Capacities

The stormwater conveyance system will be sized in the final design phase of the project to convey the 100-year storm event using the Rational Method.

WATER QUALITY

Water Quality Guidelines-Basin A

As mentioned previously, each lot will be required to provide water quality treatment. The City of Portland's Stormwater Management Manual provides guidance on sizing water quality facilities using their Presumptive Approach Calculator.

As an impervious area reduction technique, pervious pavement will be constructed for the road surface of the shared driveway. The design and construction will follow the City of Portland's Stormwater Management Manual.

Water Quality Facilities Basin A

Individual Lots

Preliminary sizing for water quality and quantity facilities have been included in this report; however, each lot owner will be required to finalize the sizing with specific impervious areas. To do the preliminary sizing each lot was assumed to have 2,500 ft^2 of impervious area. The City of Portland's PAC was used to size a swale and basin utilizing infiltration on each lot (See Technical Appendix: Calculations - Presumptive Approach Calculator). Each facility was sized to treat and infiltrate all storm events up to and including the 25-year storm event. Table 6 below shows the minimum dimensions for both a swale and basin based on 2 in/hr of infiltration.

Facility	Bottom Slope (%)	Bottom Width (ft)	Bottom Basin Area (sf)	Top Width (ft)	Top Area (sf)	Length (ft)	Side Slope (H:V)	Depth (in)
Swale	2.00	5.00	229	13	351	27	4:1	12*
Basin	0.00	5.00	125	11	341	31	3:1	12*

*Includes 2 inches of freeboard

Table 6 – Stormwater Water Quality/Quantity Facilities

Shared Driveway

The shared driveway will be constructed of a pervious material consisting of either pervious concrete or porous pavers. Using the City of Portland's detail SW-110, the entire area of driveway can be used to infiltrate all storm events up to and including the 100-year storm event, assuming an infiltration rate of 2 in/hr in the native soil, 4 inches of pervious concrete and 7 inches of rock section (See Technical Appendix: Calculations - Pervious Pavement Design).

SUMMARY

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

TECHNICAL APPENDIX

Exhibits

- FIRM Panel 257 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”
- Sheet C2.1 “Site Plan”
- Sheet C2.2 “Grading & Erosion Control Plan”
- SW-110 Pervious Pavement
- SW-120 Swale Detail
- SW-140 Basin Detail

Hydrographs

- Existing and Post-Developed Conditions: 2-100 Year (10 Pages)

Calculations

- Time of Concentration
- Presumptive Approach Calculator
    - Basin Sizing (11 Pages)
    - Swale Sizing (12 Pages)
    - Pervious Pavement Design (2 Pages)

Geotechnical Report

- Draft Geotechnical Investigation Report, Earth Engineers, Inc. August 31, 2012

Operations and Maintenance

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

REFERENCES

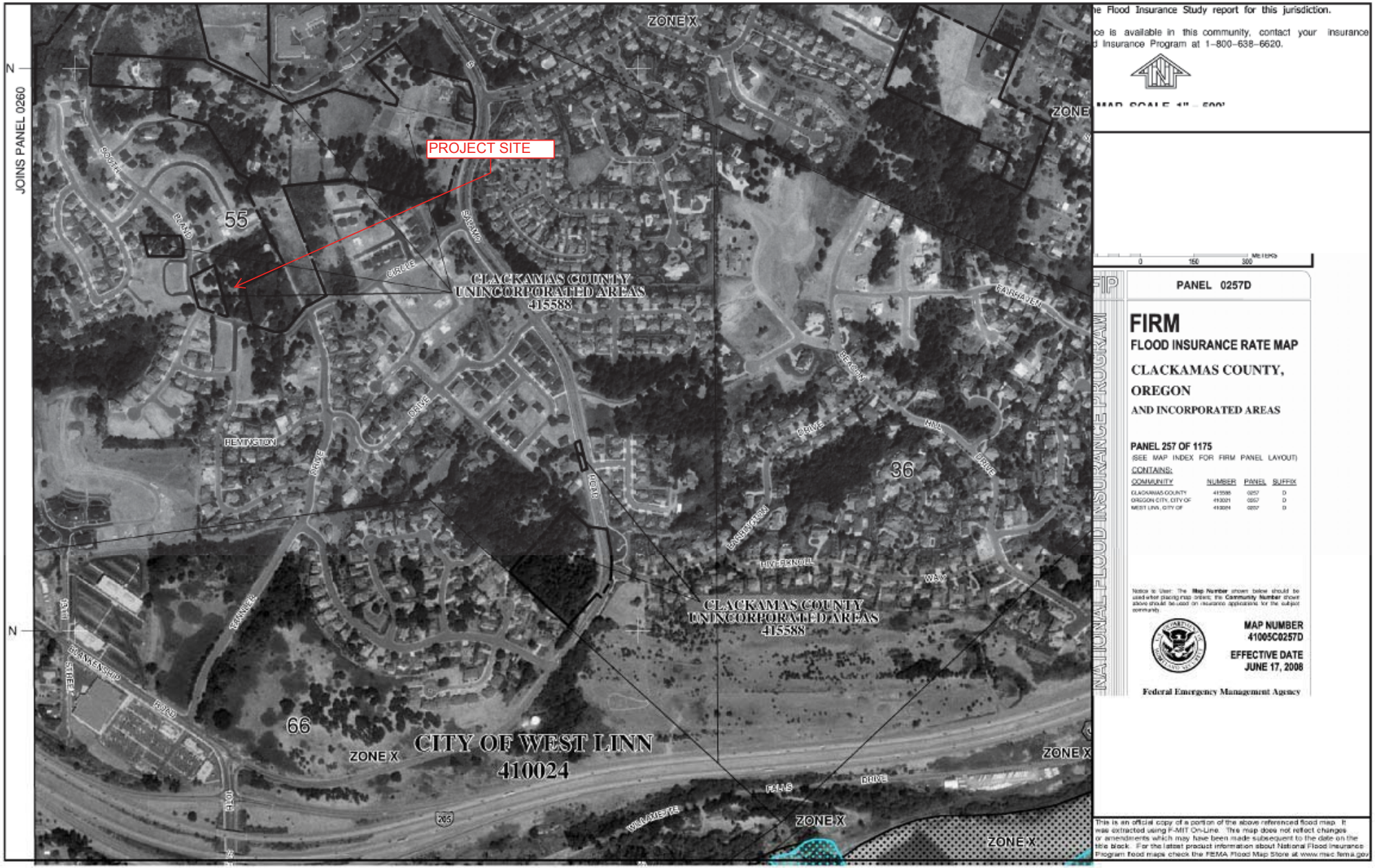
1. City of West Linn’s Public Works Design Standards Issued in 2010

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

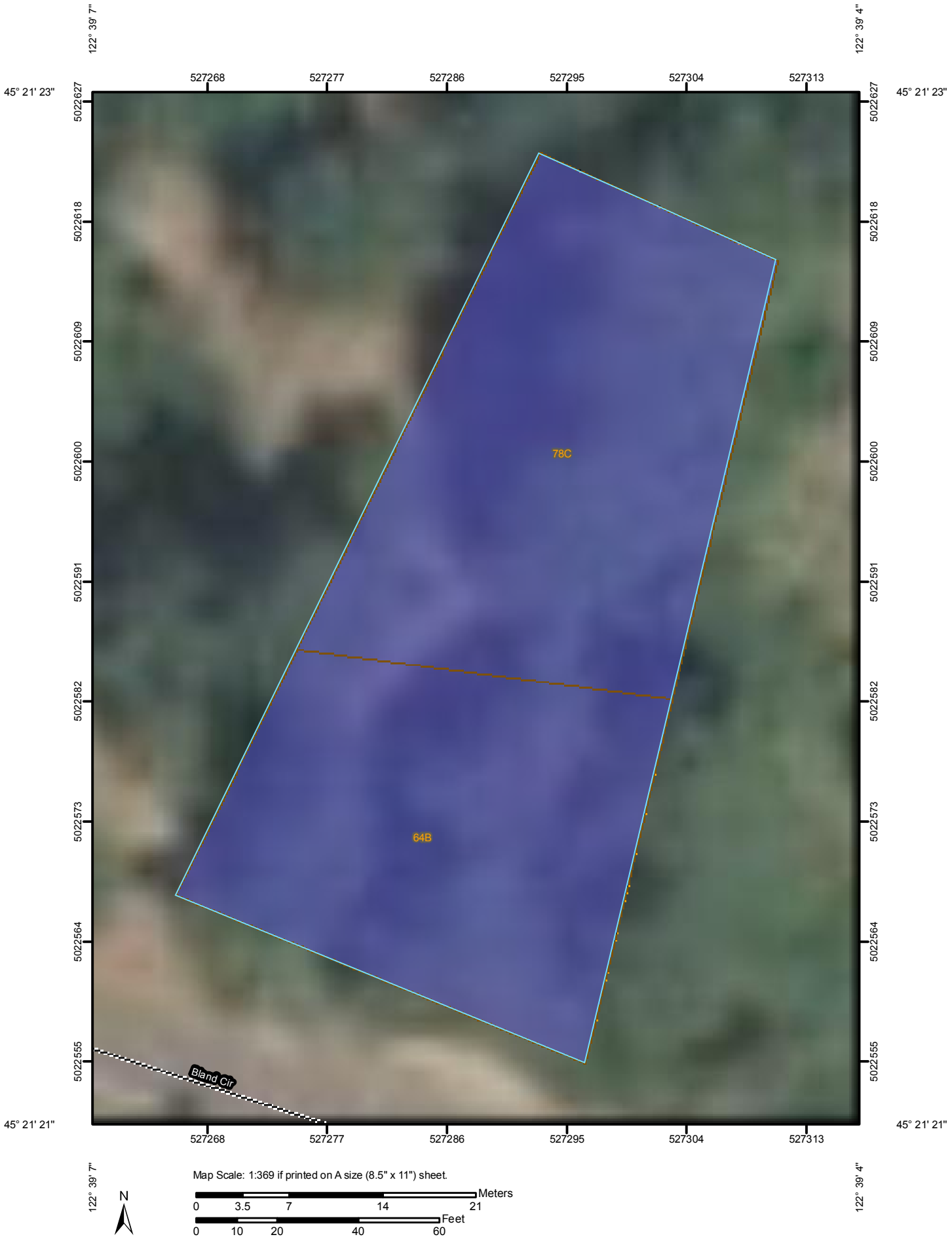
EXHIBITS



he Flood Insurance Study report for this jurisdiction.

ce is available in this community, contact your insurance
d Insurance Program at 1-800-638-6620.

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov


122° 39' 7"
122° 39' 4"
45° 21' 23"
45° 21' 21"
527268
527277
527286
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527304
527313
5022627
5022618
5022609
5022600
5022591
5022582
5022573
5022564
5022555
78C
64B
Bland Cir
Map Scale: 1:369 if printed on A size (8.5" x 11") sheet.
N
Meters
0 3.5 7 14 21
Feet
0 10 20 40 60

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: 1:369 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 6, Feb 9, 2010

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
64B	Nekia silty clay loam, 2 to 8 percent slopes	B	0.2	45.5%
78C	Saum silt loam, 8 to 15 percent slopes	B	0.2	54.5%
Totals for Area of Interest			**0.4**	**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.

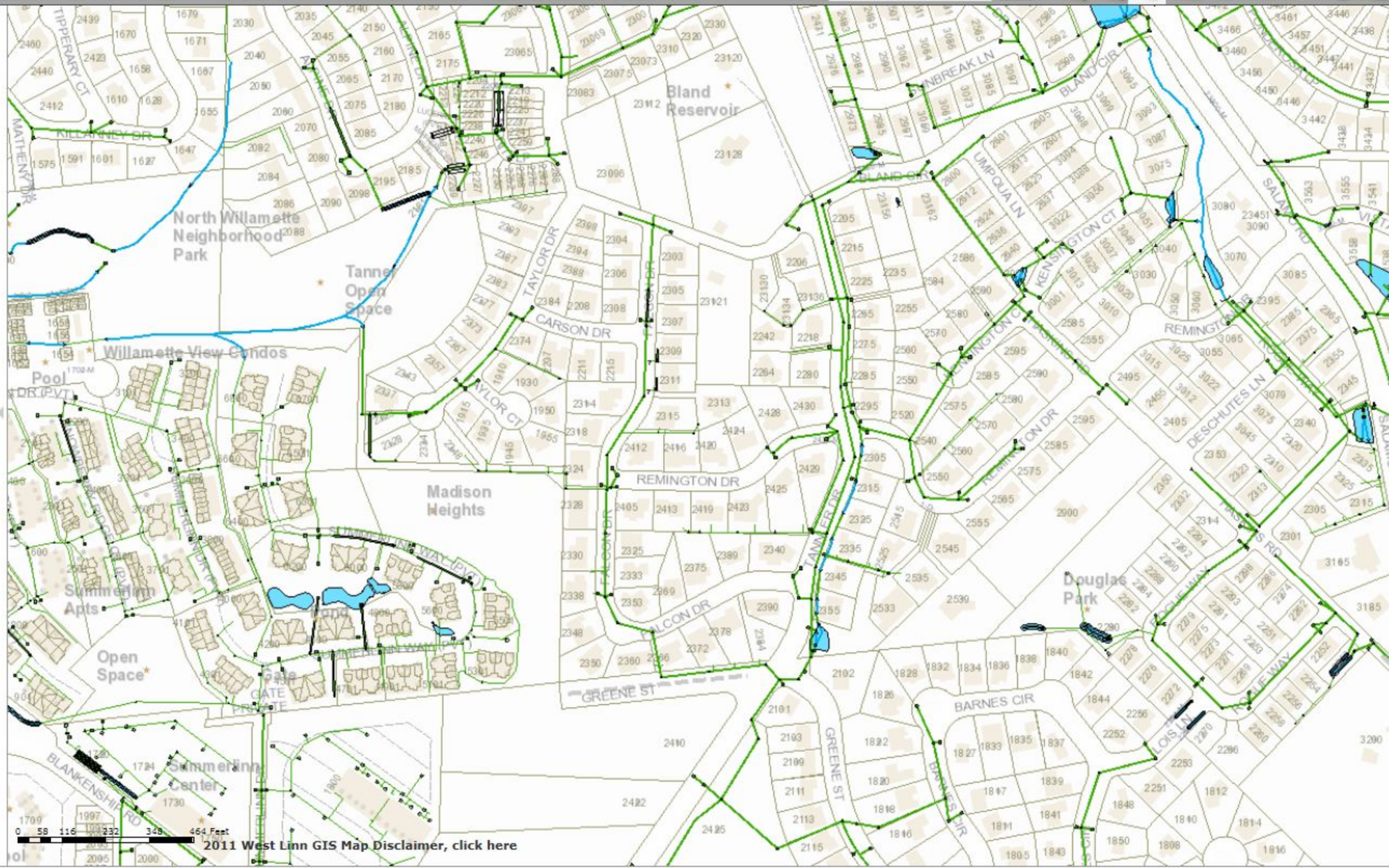
6 *Poor:* Forest litter, small trees, and brush are destroyed by heavy grazing or regular burning.
Fair: Woods are grazed but not burned, and some forest litter covers the soil.
Good: Woods are protected from grazing, and litter and brush adequately cover the soil.

West Linn Interactive Mapping, zoom-in to view more map layers

Results

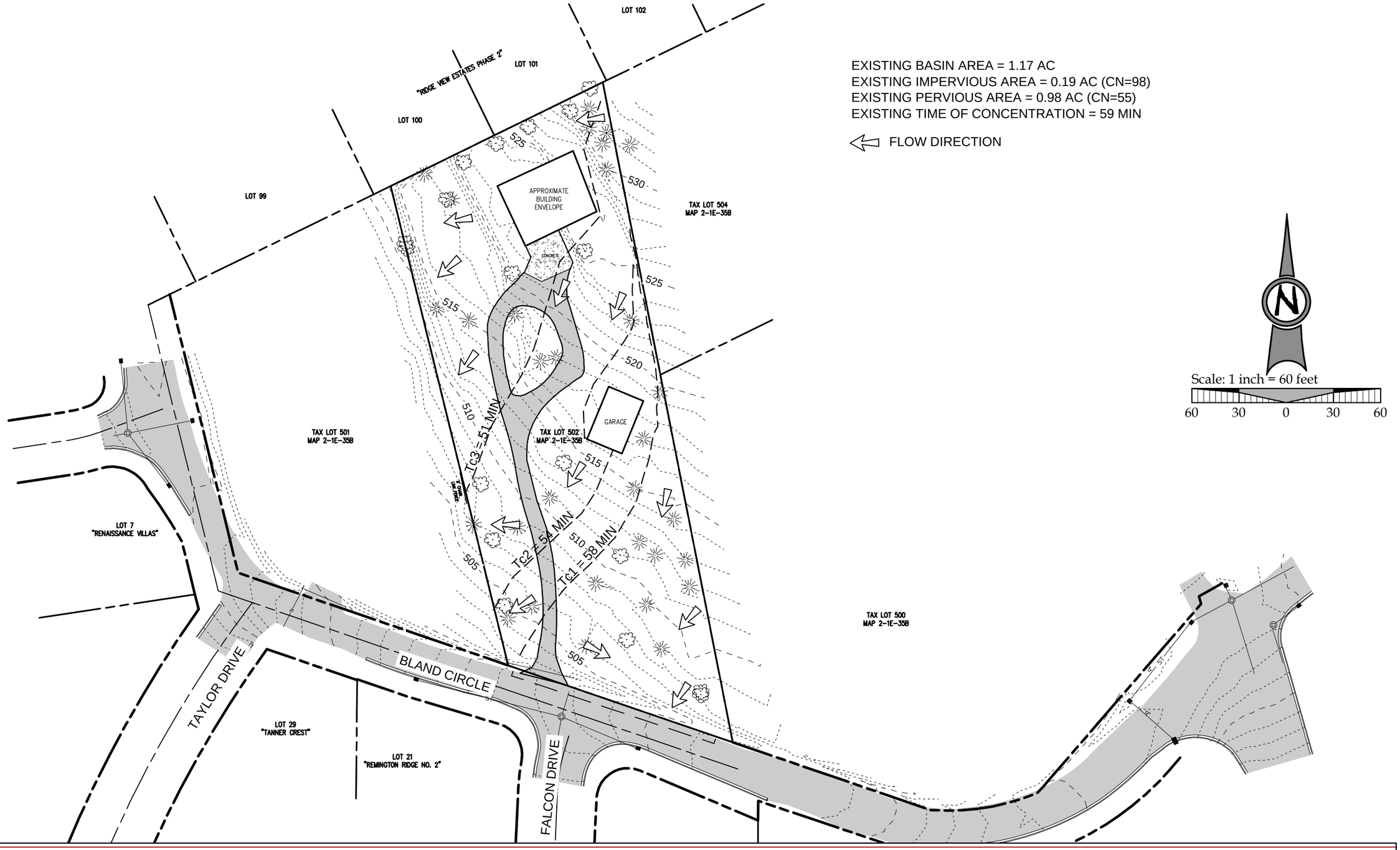
Map Contents

- West_Linn_Base_Map_EX1109V1
  - ZOOM IN TO VIEW GRAY ITEMS IN LIST
  - CLICK PLUS SIGN TO SEE MAP LAYERS
  - Key Locations in West Linn
  - Public Works Utilities
    - City Utility: Water Distribution System
    - City Utility: Sanitary Sewer System
    - City Utility: Storm Water System
      - Storm Text
        - Storm Text, Small
      - Storm Map Symbols
      - Storm Lines
        - Storm Pipes
        - Storm Pipes County
        - Storm Pipes ODOT
        - Ditches and Creeks
        - Private Pipes
      - Ponds
  - Planning Zoning Environmental Historic etc
  - Street Map
  - Boundaries
  - Cadastral Tax Lot Base
  - Contours Terrain
    - 10 Foot Interval Contours
    - 2 Foot Interval Contours
      - 10 Foot Interval Contours
      - 2 Foot Interval Contours
    - Steep Slope
  - Rivers Streams Ponds
  - Neighborhood Associations
  - Air Photos Ortho Rectified
  - Parks and Open Space



EXISTING BASIN AREA = 1.17 AC
EXISTING IMPERVIOUS AREA = 0.19 AC (CN=98)
EXISTING PERVIOUS AREA = 0.98 AC (CN=55)
EXISTING TIME OF CONCENTRATION = 59 MIN

FLOW DIRECTION



3J CONSULTING, INC

CIVIL ENGINEERING
WATER RESOURCES
LAND USE PLANNING

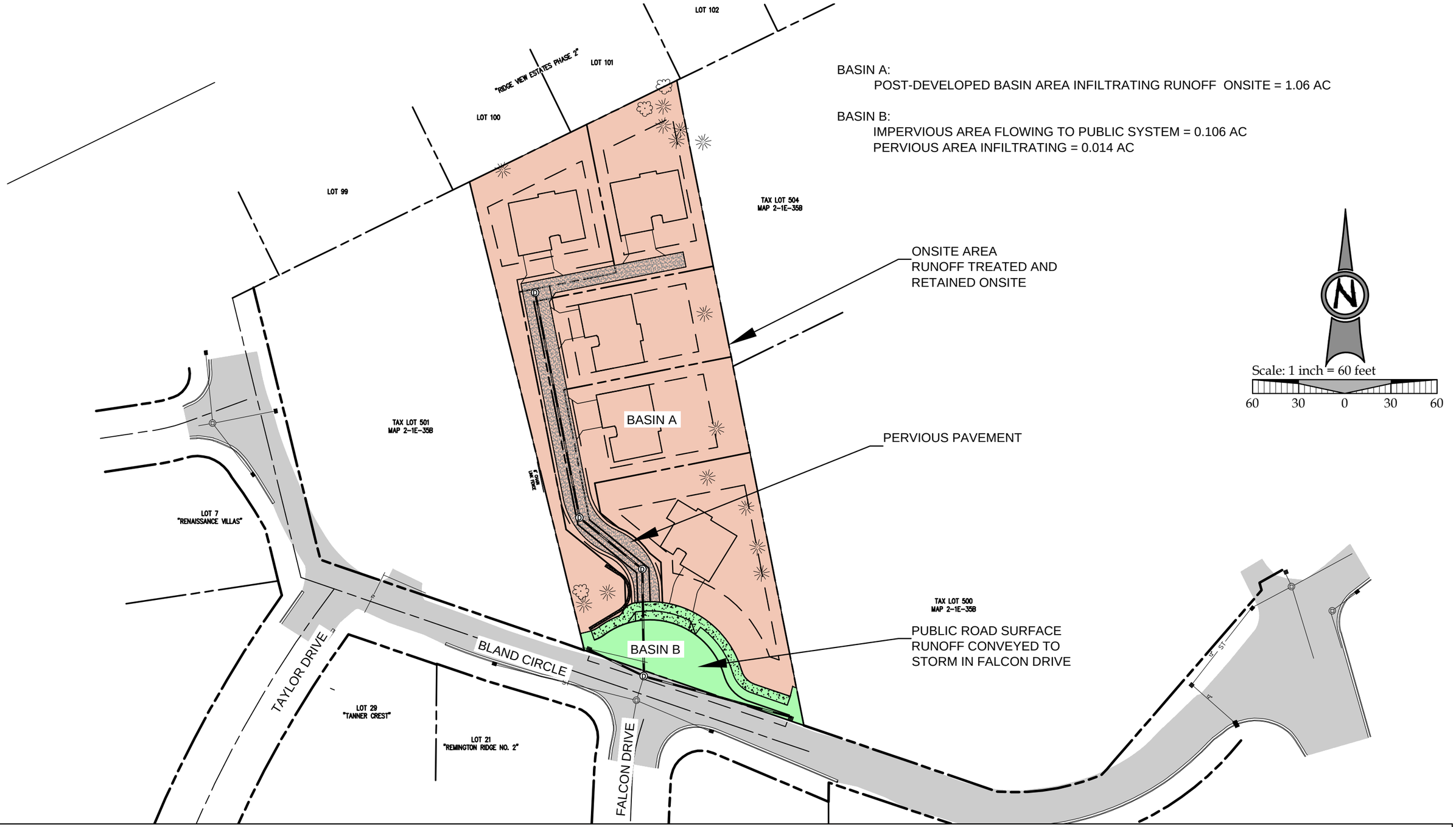
EXISTING SITE CONDITIONS
FALCON PLACE SUBDIVISION

Preliminary Storm Water Report

Exhibit 1

Date: 11.20.2012

By: kef



BASIN A:

POST-DEVELOPED BASIN AREA INFILTRATING RUNOFF ONSITE = 1.06 AC

BASIN B:

IMPERVIOUS AREA FLOWING TO PUBLIC SYSTEM = 0.106 AC

PERVIOUS AREA INFILTRATING = 0.014 AC

Scale: 1 inch = 60 feet

60 30 0 30 60

3J CONSULTING, INC

CIVIL ENGINEERING
WATER RESOURCES
LAND USE PLANNING

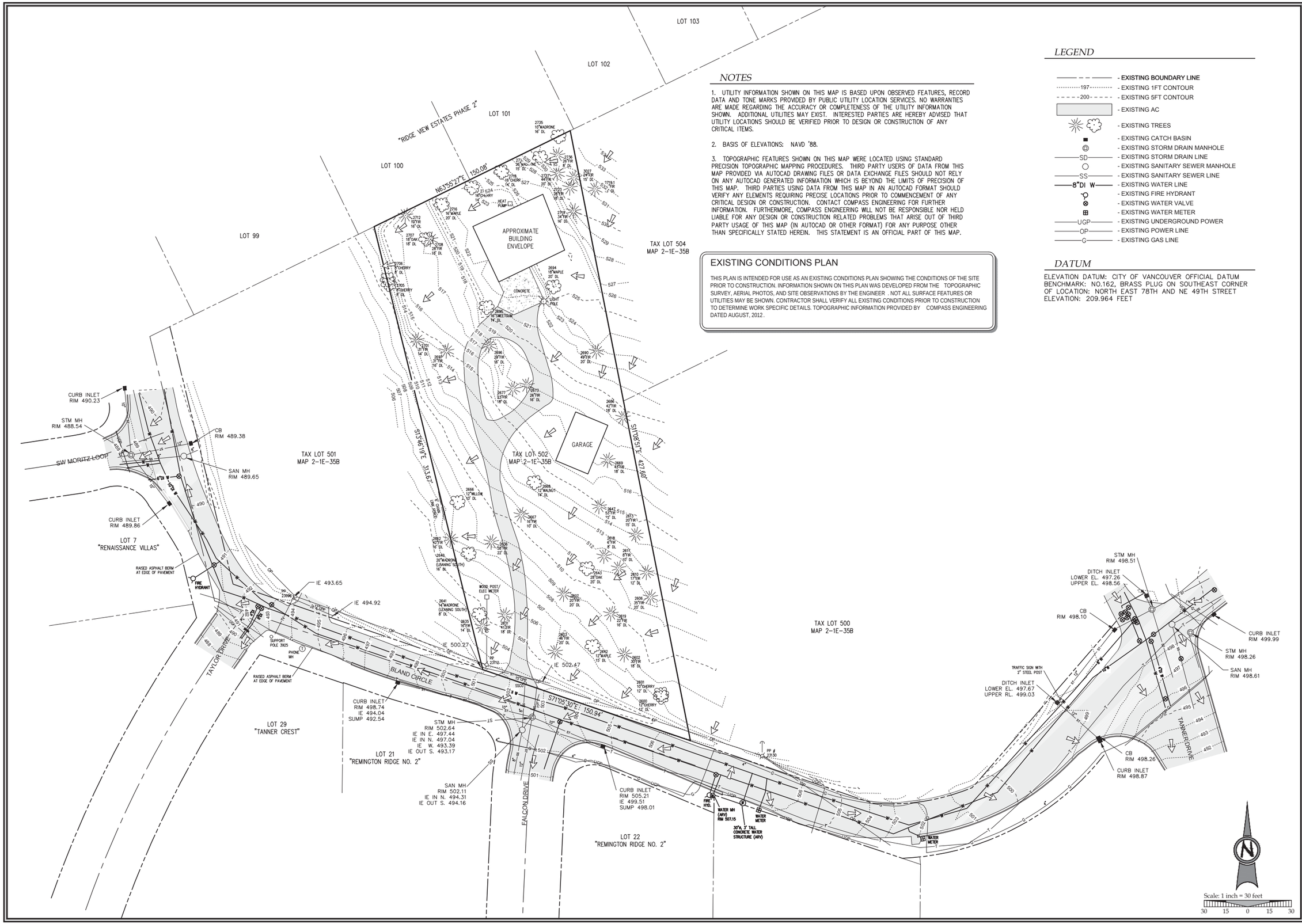
POST-DEVELOPED SITE CONDITIONS
FALCON PLACE SUBDIVISION

Preliminary Storm Water Report

Exhibit 2

Date: 11.20.2012 By: kef

DRAWINGS/STORM FACILITY DETAILS



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. BASIS OF ELEVATIONS: NAVD '88.

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.

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

- EXISTING BOUNDARY LINE
- EXISTING 1FT CONTOUR
- EXISTING 5FT CONTOUR
- EXISTING AC
- EXISTING TREES
- EXISTING CATCH BASIN
- EXISTING STORM DRAIN MANHOLE
- EXISTING STORM DRAIN LINE
- EXISTING SANITARY SEWER MANHOLE
- EXISTING SANITARY SEWER LINE
- EXISTING WATER LINE
- EXISTING FIRE HYDRANT
- EXISTING WATER VALVE
- EXISTING WATER METER
- EXISTING UNDERGROUND POWER
- EXISTING POWER LINE
- EXISTING GAS LINE

DATUM

ELEVATION DATUM: CITY OF VANCOUVER OFFICIAL DATUM
BENCHMARK: NO.162, BRASS PLUG ON SOUTHEAST CORNER OF LOCATION: NORTH EAST 78TH AND NE 49TH STREET
ELEVATION: 209.964 FEET

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

LAND USE	REVISION SUMMARY	BY	DATE
A			11/20/12

EXISTING CONDITIONS
FALCON PLACE
SUBDIVISION

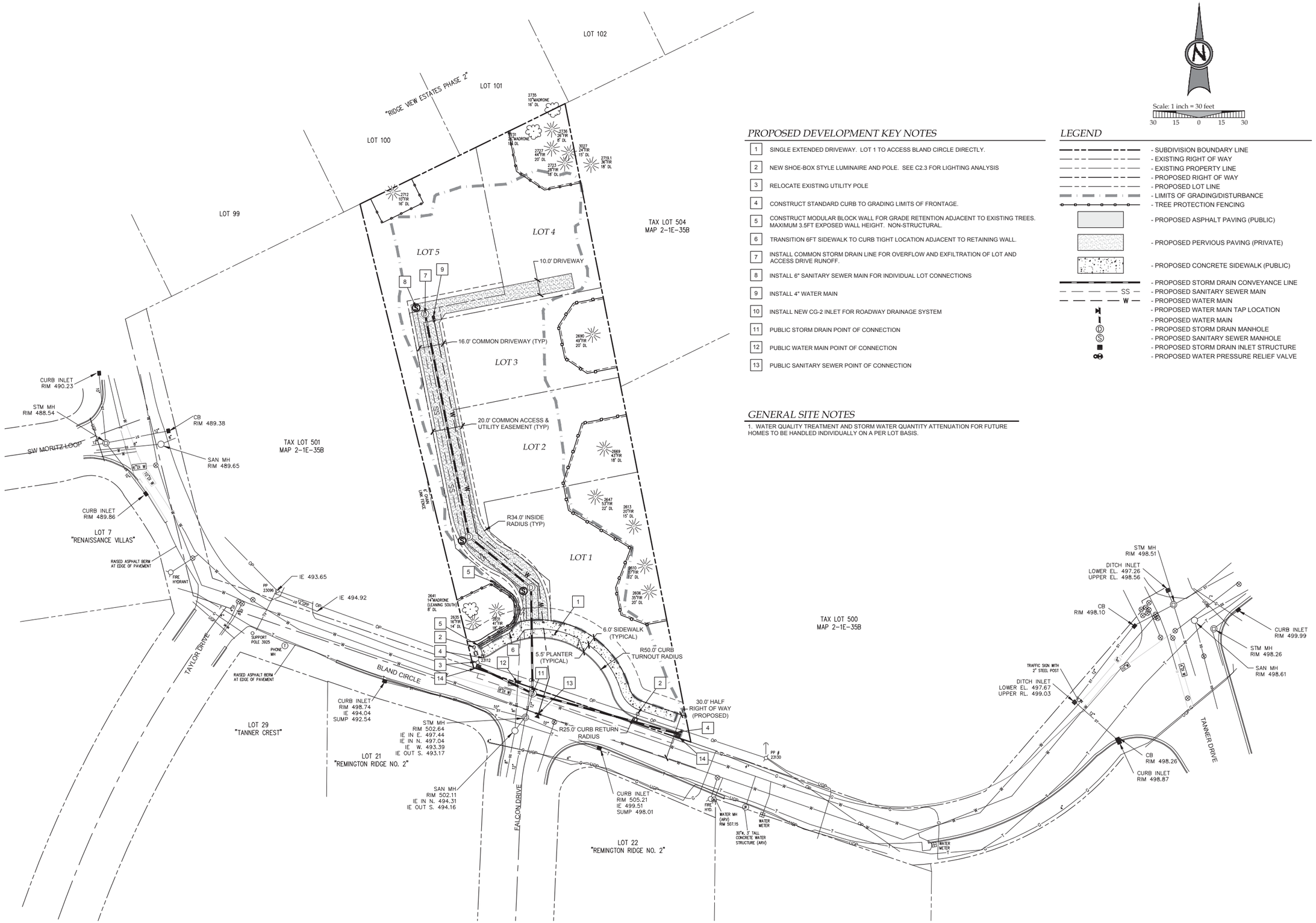
OLH 14, LLC
WEST LINN, OR

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 #	12093
LAND USE #	____
TAX LOT #	21E35B 502
DESIGNED BY	JTE
CHECKED BY	BKF

SHEET TITLE
EXIST. CONDITIONS

SHEET NUMBER
C1.0



Scale: 1 inch = 30 feet

30 15 0 15 30

PROPOSED DEVELOPMENT KEY NOTES

1. SINGLE EXTENDED DRIVEWAY. LOT 1 TO ACCESS BLAND CIRCLE DIRECTLY.
2. NEW SHOE-BOX STYLE LUMINAIRE AND POLE. SEE C2.3 FOR LIGHTING ANALYSIS
3. RELOCATE EXISTING UTILITY POLE
4. CONSTRUCT STANDARD CURB TO GRADING LIMITS OF FRONTAGE.
5. CONSTRUCT MODULAR BLOCK WALL FOR GRADE RETENTION ADJACENT TO EXISTING TREES. MAXIMUM 3.5FT EXPOSED WALL HEIGHT. NON-STRUCTURAL.
6. TRANSITION 6FT SIDEWALK TO CURB TIGHT LOCATION ADJACENT TO RETAINING WALL.
7. INSTALL COMMON STORM DRAIN LINE FOR OVERFLOW AND EXFILTRATION OF LOT AND ACCESS DRIVE RUNOFF.
8. INSTALL 6" SANITARY SEWER MAIN FOR INDIVIDUAL LOT CONNECTIONS
9. INSTALL 4" WATER MAIN
10. INSTALL NEW CG-2 INLET FOR ROADWAY DRAINAGE SYSTEM
11. PUBLIC STORM DRAIN POINT OF CONNECTION
12. PUBLIC WATER MAIN POINT OF CONNECTION
13. PUBLIC SANITARY SEWER POINT OF CONNECTION

GENERAL SITE NOTES

1. WATER QUALITY TREATMENT AND STORM WATER QUANTITY ATTENUATION FOR FUTURE HOMES TO BE HANDLED INDIVIDUALLY ON A PER LOT BASIS.

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
- PROPOSED ASPHALT PAVING (PUBLIC)
- PROPOSED PERVIOUS PAVING (PRIVATE)
- PROPOSED CONCRETE SIDEWALK (PUBLIC)
- PROPOSED STORM DRAIN CONVEYANCE LINE
- PROPOSED SANITARY SEWER MAIN
- PROPOSED WATER MAIN
- PROPOSED WATER MAIN TAP LOCATION
- PROPOSED WATER MAIN
- PROPOSED STORM DRAIN MANHOLE
- PROPOSED SANITARY SEWER MANHOLE
- PROPOSED STORM DRAIN INLET STRUCTURE
- PROPOSED WATER PRESSURE RELIEF VALVE

11/20/12

	BY	DATE
LAND USE		
REVISION SUMMARY		

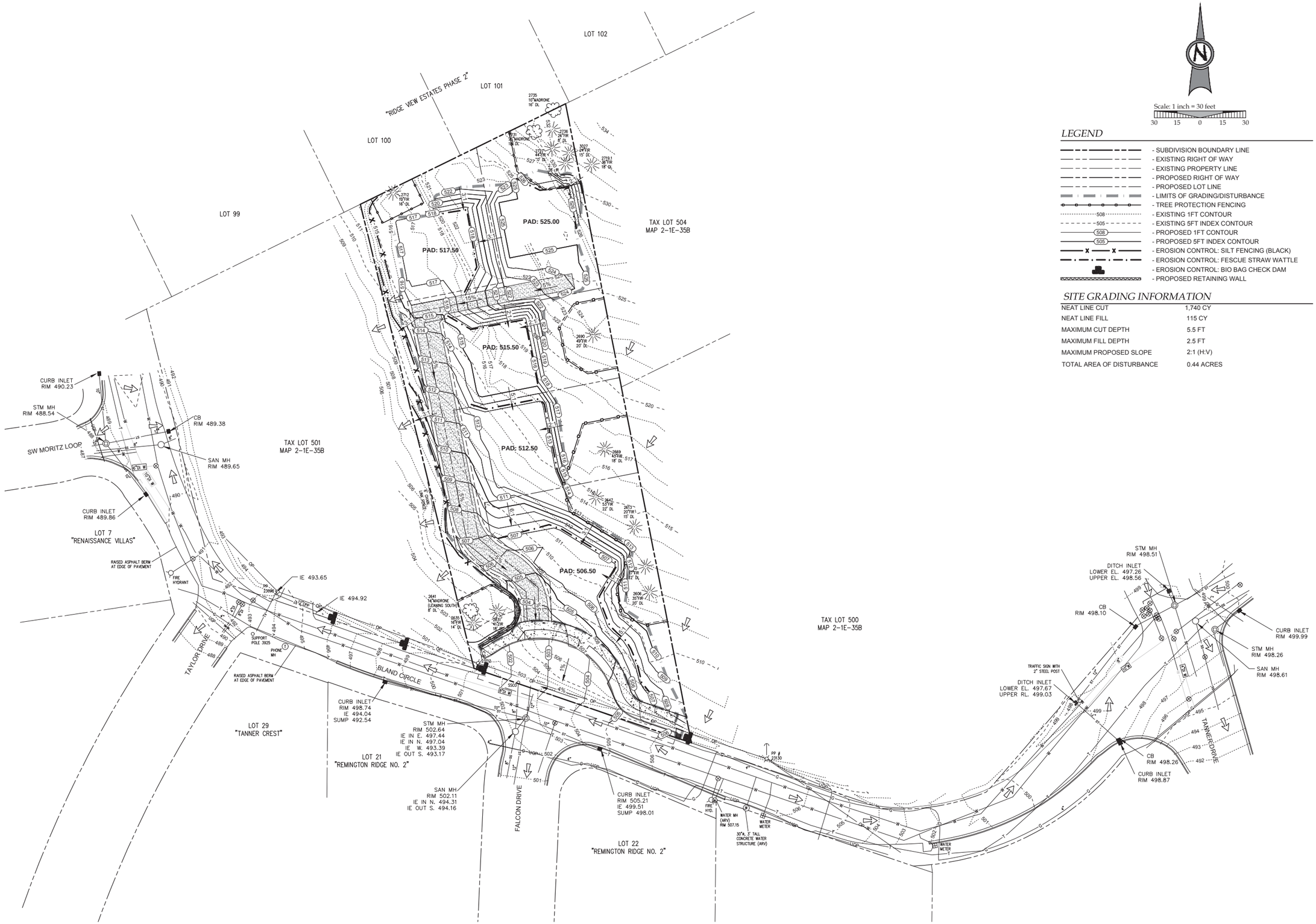
PROPOSED SITE PLAN
FALCON PLACE SUBDIVISION
OLH 14, LLC
WEST LINN, OR

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 #	12093
LAND USE #	____
TAX LOT #	21E35B 502
DESIGNED BY	JTE
CHECKED BY	BKF

SHEET TITLE
SITE PLAN

SHEET NUMBER
C2.1



Scale: 1 inch = 30 feet

30 15 0 15 30

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
- PROPOSED RETAINING WALL

SITE GRADING INFORMATION

NEAT LINE CUT	1,740 CY
NEAT LINE FILL	115 CY
MAXIMUM CUT DEPTH	5.5 FT
MAXIMUM FILL DEPTH	2.5 FT
MAXIMUM PROPOSED SLOPE	2:1 (H:V)
TOTAL AREA OF DISTURBANCE	0.44 ACRES

DATE	BY	REVISION SUMMARY
11/20/12		LAND USE
		A

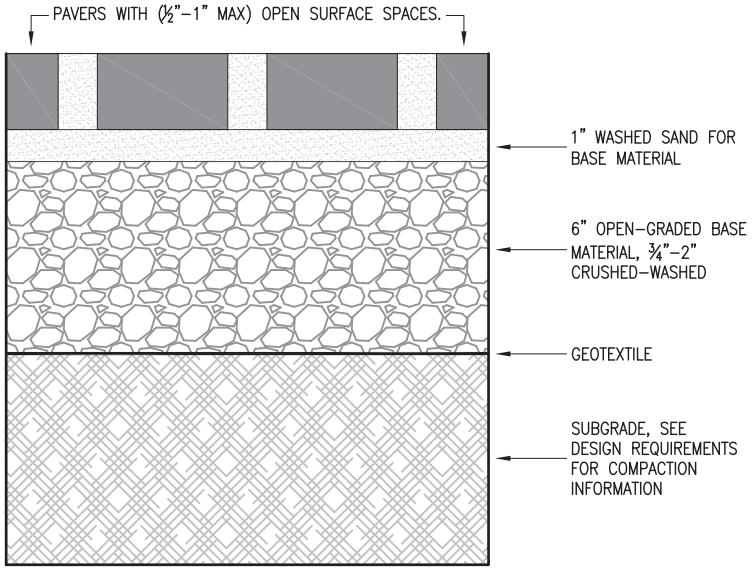
GRADING & EROSION CONTROL PLAN
FALCON PLACE SUBDIVISION
OLH 14, LLC
WEST LINN, OR

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 #	12093
LAND USE #	____
TAX LOT #	21E35B 502
DESIGNED BY	JTE
CHECKED BY	BKF

SHEET TITLE
GRADING & EC

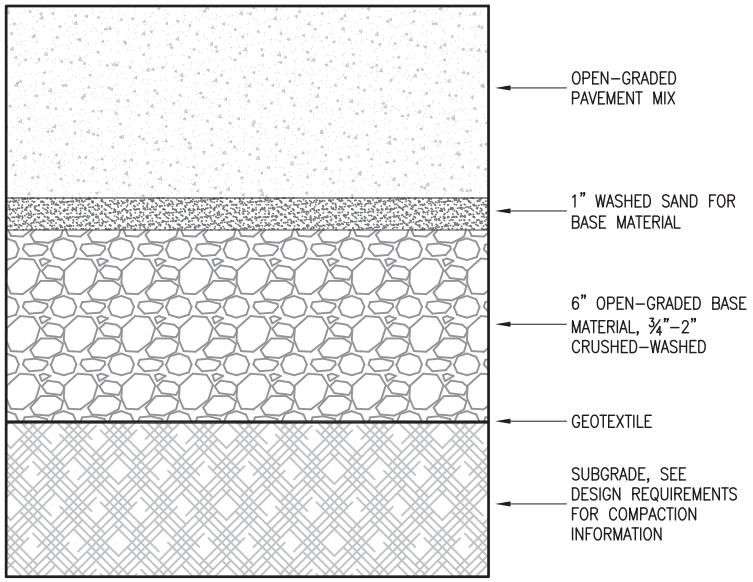
SHEET NUMBER
C2.2



PERMEABLE CONCRETE BLOCK OR "PAVER" SYSTEMS

	RESIDENTIAL DRIVEWAY OR PEDESTRIAN ONLY	PRIVATE STREET, PARKING LOT, OR FIRE LANE	PUBLIC STREET
CONCRETE	4"	4"	7"
ASPHALT	2 ½"	3"	6"
PAVERS	2 ⅜"	3 ⅛"	3 ⅛"
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.



PERVIOUS (OPEN GRADED) CONCRETE AND ASPHALT SYSTEMS

- DRAWING NOT TO SCALE -

STORMWATER MANAGEMENT MANUAL TYPICAL DETAILS

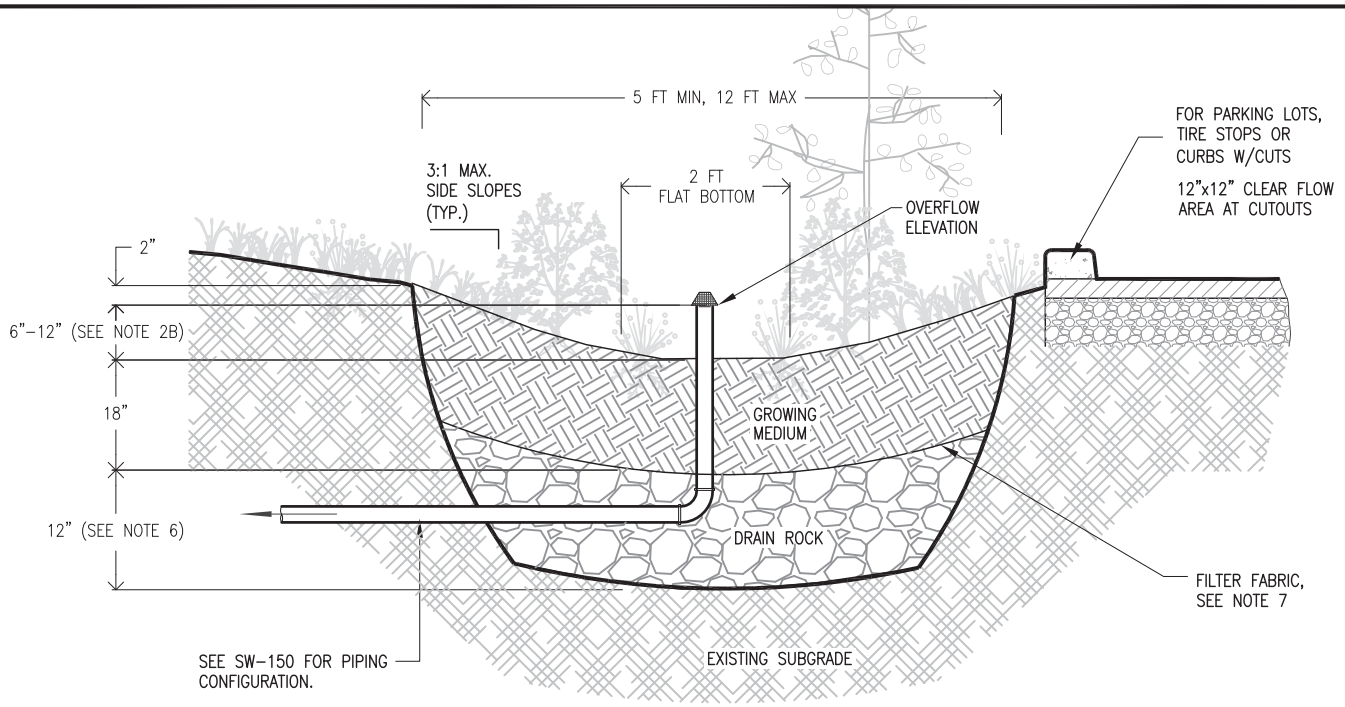
- Simplified / Presumptive / Performance Design Approach -

Pervious Pavement

NUMBER

SW-110

Bureau of Environmental Services



1. Provide protection from all vehicle traffic, equipment staging, and foot traffic in proposed infiltration areas prior to, during, and after construction.

2. Dimensions:
   a. Width of swale: 5' - 12'.
   b. Depth of swale ((from top of growing medium to overflow elevation); Simplified: 9", Presumptive: 6"-12".
   c. Longitudinal slope of swale: 6.0% or less.
   d. Flat bottom width: 2'.
   e. Side slopes of swale: 3:1 maximum.

3. Setbacks (from centerline of facility):
   a. Infiltration swales must be 10' from foundations and 5' from property lines.
   b. Flow-through swales must be lined with connection to approved discharge point according to SWMM Section 1.3.

4. Overflow:
   a. Overflow required for Simplified Approach
   b. Inlet elevation must allow for 2" of freeboard, minimum.
   c. Protect from debris and sediment with strainer or grate.

5. Piping: shall be ABS Sch.40, cast iron, or PVS Sch.40. 3" pipe required for up to 1,500 sq ft of impervious area, otherwise 4" min. Piping must have 1% grade and follow the Uniform Plumbing Code.

6. Drain rock:
   a. Size for infiltration swale: 1½" - ¾" washed
   b. Size for flow-through swale: ¾" washed
   c. Depth for Simplified: 12"
   d. Depth for Presumptive: 0-48", see calcs.

7. Separation between drain rock and growing medium: Use filter fabric (see SWMM Exhibit 2-4 Geotextile table) or a gravel lens (¾ - ¼ inch washed, crushed rock 2 to 3 inches deep).

8. Growing medium:
   a. 18" minimum
   b. See Appendix F.3 for specification or use sand/loam/compost 3-way mix.

9. Vegetation: Follow landscape plans otherwise refer to plant list in SWMM Appendix F. Minimum container size is 1 gallon. # of plantings per 100sf of facility area:
   a. Zone A (wet): 115 herbaceous plants OR 100 herbaceous plants and 4 small shrubs.
   b. Zone B (moderate to dry): 1 tree AND 3 large shrubs / small trees AND 4 small shrubs AND 140 groundcover plants.

   The delineation between Zone A and B shall be either at the outlet elevation or the check dam elevation, whichever is lowest.

10. Waterproof liner: Shall be 30 mil PVC or equivalent for flow-through facilities.

11. Install washed pea gravel or river rock to transition from inlets and splash pad to growing medium.

12. Check dams: Shall be placed according to facility design. Refer to SW-340 for profile and spacing.

13. Inspections: Call BDS IVR Inspection Line, (503) 823-7000, for appropriate inspections.

- DRAWING NOT TO SCALE -

STORMWATER MANAGEMENT MANUAL TYPICAL DETAILS

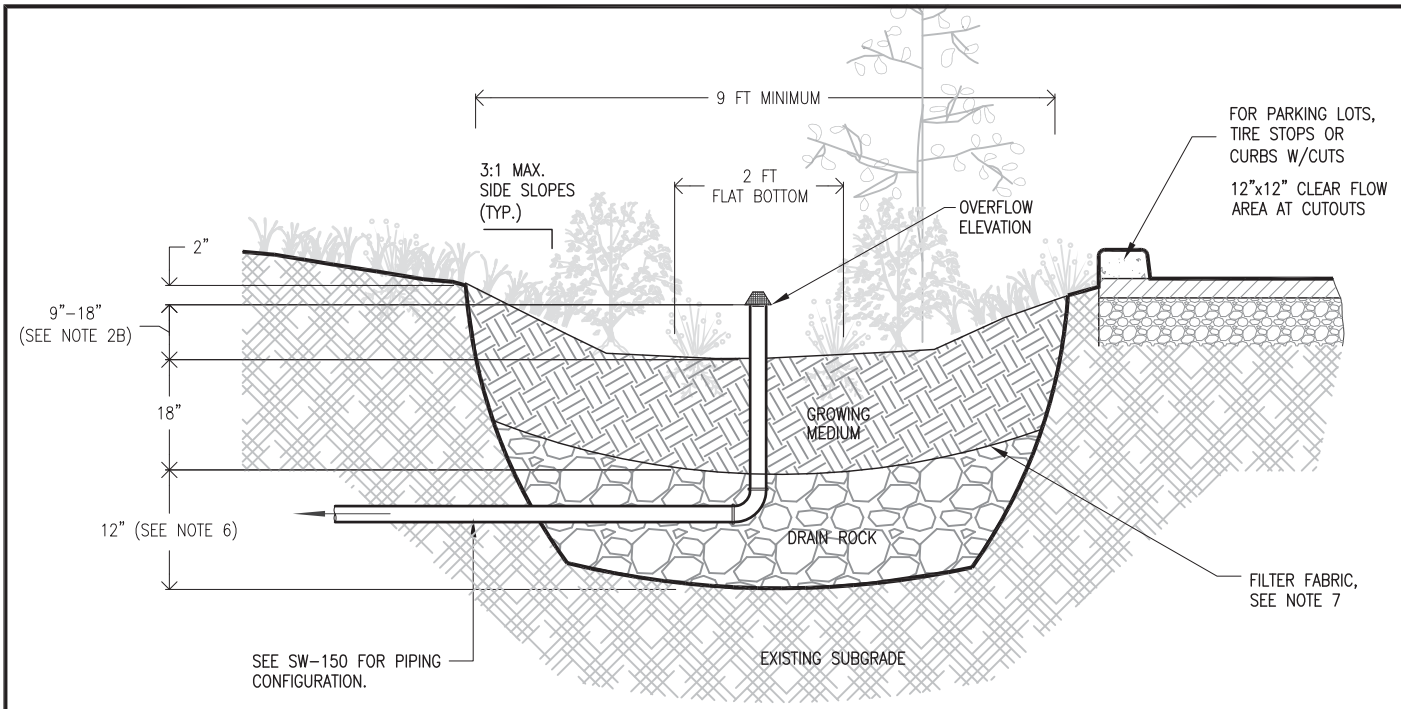
- Simplified / Presumptive Design Approach -

Swale

NUMBER

SW-120

Bureau of Environmental Services



1. Provide protection from all vehicle traffic, equipment staging, and foot traffic in proposed infiltration areas prior to, during, and after construction.

2. Dimensions:
   a. Width of basin: 9' minimum.
   b. Depth of basin (from top of growing medium to overflow elevation); Simplified: 12", Presumptive: 9"-18".
   c. Flat bottom width: 2' min.
   d. Side slopes of basin: 3:1 maximum.

3. Setbacks (from midpoint of facility):
   a. Infiltration basins must be 10' from foundations and 5' from property lines.
   b. Flow-through swales must be lined with connection to approved discharge point according to SWMM Section 1.3.

4. Overflow:
   a. Overflow required for Simplified Approach.
   b. Inlet elevation must allow for 2" of freeboard, minimum.
   c. Protect from debris and sediment with strainer or grate.

5. Piping: shall be ABS Sch.40, cast iron, or PVC Sch.40. 3" pipe required for up to 1,500 sq ft of impervious area, otherwise 4" min. Piping must have 1% grade and follow the Uniform Plumbing Code.

6. Drain rock:
   a. Size for infiltration basin: 1½" - ¾" washed
   b. Size for flow-through basin: ¾" washed
   c. Depth for Simplified: 12"
   d. Depth for Presumptive: 0-48", see calcs.

7. Separation between drain rock and growing medium: Use filter fabric (see SWMM Exhibit 2-5) or a gravel lens (¾ - ¼ inch washed, crushed rock 2 to 3 inches deep).

8. Growing medium:
   a. 18" minimum
   b. See Appendix F.3 for specification or use sand/loam/compost 3-way mix.

9. Vegetation: Follow landscape plans otherwise refer to plant list in SWMM Appendix F. Minimum container size is 1 gallon. # of plantings per 100sf of facility area):
   a. Zone A (wet): 115 herbaceous plants OR 100 herbaceous plants and 4 shrubs
   b. Zone B (moderate to dry): 1 tree AND 3 large shrubs AND 4 medium to small shrubs.

   The delineation between Zone A and B shall be either at the outlet elevation or the check dam elevation, whichever is lowest.

10. Install washed pea gravel or river rock to transition from inlets and splash pad to growing medium.

11. Inspections: Call BDS IVR Inspection Line, (503) 823-7000, for appropriate inspections.

- DRAWING NOT TO SCALE -

STORMWATER MANAGEMENT MANUAL TYPICAL DETAILS

- Simplified / Presumptive Design Approach -

Basin

Bureau of Environmental Services

NUMBER

SW-140

CALCULATIONS

Time of Concentration

SUBJECT:	Falcon Place		
PROJECT NO.	12093	**BY** KEF	**DATE** 9/4/2012

	TC1	TC2	TC3
SHEET FLOW			
INPUT	**VALUE**	**VALUE**	**VALUE**
Surface Description	**Type 10 Woods (Dense_underbrus**	**Type 10 Woods (Dense_underbrus**	**Type 10 Woods (Dense_underbrush**
Manning's "n"	**0.8**	**0.8**	**0.8**
Flow Length, L (<300 ft)	**300** ft	**267.68** ft	**274.07** ft
2-Yr 24 Hour Rainfall, P_2	**2.5** in	**2.5** in	**2.5** in
Land Slope, s	**0.08333** ft/ft	**0.07965** ft/ft	**0.0922** ft/ft
OUTPUT			
Travel Time	0.96 hr	0.89 hr	0.86 hr
SHALLOW CONCENTRATED FLOW			
INPUT	**VALUE**	**VALUE**	**VALUE**
Surface Description	**Unpaved**	**Unpaved**	**Paved**
Flow Length, L	**0** ft	**0** ft	**0** ft
Watercourse Slope*, s	**0.009** ft/ft	**0.01** ft/ft	**0.027** ft/ft
OUTPUT			
Average Velocity, V	1.53 ft/s	1.61 ft/s	3.34 ft/s
Travel Time	0.000 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 =	**0.96 hr**	**0.89 hr**	**0.86 hr**
Watershed or Subarea T_c =	**58 minutes**	**54 minutes**	**51 minutes**

Presumptive Approach Calculator ver. 1.2

Catchment Data

Catchment ID:	**A**
Project Name:	**Falcon Place**
Date:	**10/24/12**
Project Address:	**23112 Bland Circle**
Permit Number:	**0**
	West Linn, OR
Run Time	10/24/2012 5:09:47 PM
Designer:	**Kathleen Freeman, PE**
Company:	**3J Consulting**

Drainage Catchment Information

Catchment ID	A	
	Catchment Area	
Impervious Area	2,500	SF
Impervious Area	0.06	ac
Impervious Area Curve Number, CN_{imp}	98	
Time of Concentration, Tc, minutes	5	min.

Site Soils & Infiltration Testing Data

Infiltration Testing Procedure:	Open Pit Falling Head	
Native Soil Field Tested Infiltration Rate (I_{test}):	2	in/hr
Bottom of Facility Meets Required Separation From High Groundwater Per BES SWMM Section 1.4:	Yes	

Correction Factor Component

CF_{test} (ranges from 1 to 3)	2	

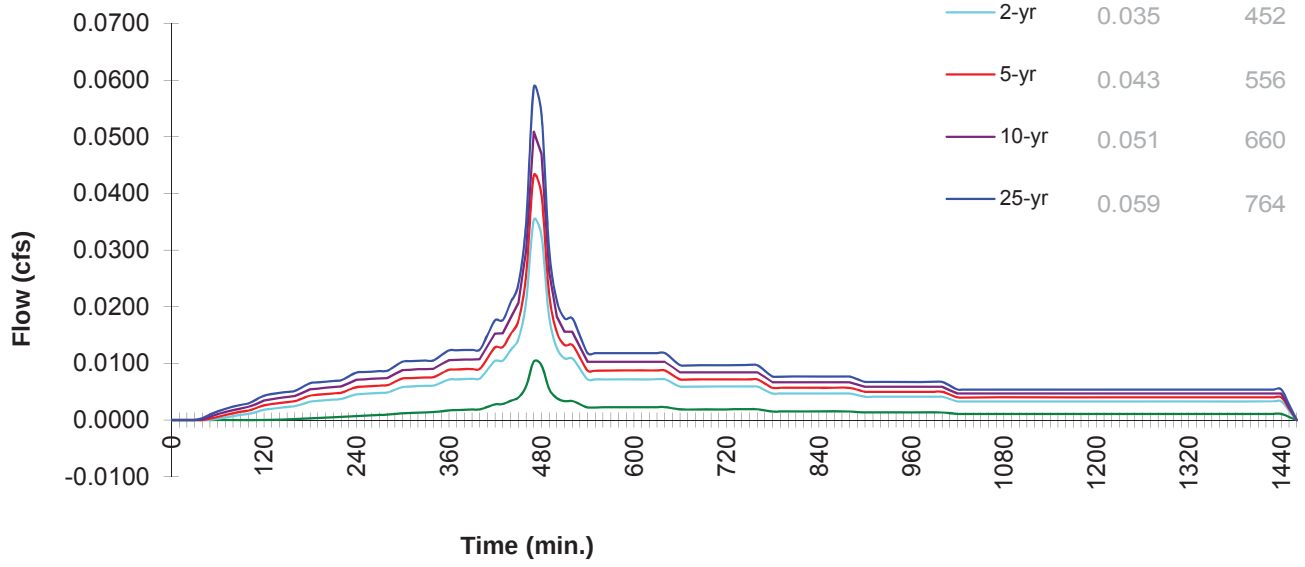
Design Infiltration Rates

I_{dsgn} for Native (I_{test} / CF_{test}):	1.00	in/hr
I_{dsgn} for Imported Growing Medium:	2.00	in/hr

Execute SBUH

SBUH Results

	Peak Rate (cfs)	Volume (cf)
PR	0.01	131
2-yr	0.035	452
5-yr	0.043	556
10-yr	0.051	660
25-yr	0.059	764



Presumptive Approach Calculator ver. 1.2

Catchment ID: A

Run Time 10/24/2012 3:52:43 PM

Project Name: Falcon Place **Catchment ID:** A **Date:** 10/24/2012

Instructions:

1. Identify which Stormwater Hierarchy Category the facility.
2. Select Facility Type.
3. Identify facility shape of surface facility to more accurately estimate surface volume, except for Swales and sloped planters that use the PAC Sloped Facility Worksheet to enter data.
4. Select type of facility configuration.
5. Complete data entry for all highlighted cells.

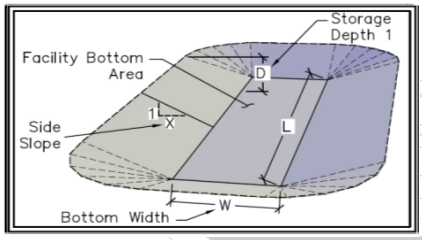
Catchment facility will meet Hierarchy Category: **1**

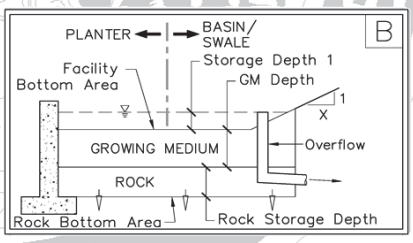
Goal Summary:

Hierarchy Category	SWMM Requirement	RESULTS box below needs to display…	
		Pollution Reduction as a	10-yr (aka disposal) as a
1	On-site infiltration with a surface infiltration facility.	PASS	PASS

Facility Type = Basin

Facility Shape: Rectangle/Square **Facility Configuration:** B





Calculation Guide
Max. Rock Stor. Bottom Area
291 SF

DATA FOR ABOVE GRADE STORAGE COMPONENT

Facility Bottom Area =	125	sf
Bottom Width =	5.0	ft
Facility Side Slope =	3	to 1
Storage Depth 1 =	10	in
Growing Medium Depth =	18	in
Freeboard Depth =	2	in

BELOW GRADE STORAGE

Rock Storage Bottom Area =	291	sf
Rock Storage Depth =	12	in
Rock Void Ratio =	0.3	

Surface Capacity at Depth 1 =	174	cf
Infiltration Area at 75% Depth1 =	250	SF
GM Design Infiltration Rate =	2.00	in/hr
Infiltration Capacity =	0.012	cfs

Rock Storage Capacity =	87	cf
Native Design Infiltration Rate =	1.00	in/hr
Infiltration Capacity =	0.007	cfs

RESULTS

		Overflow Volume		
Pollution Reduction	PASS	0 CF	0%	Surf. Cap. Used
			5%	Rock Cap. Used
10-yr	PASS	0 CF	57%	Surf. Cap. Used
			100%	Rock Cap. Used

Run PAC

FACILITY FACTS

Total Facility Area Including Freeboard =	341 SF
Sizing Ratio (Total Facility Area / Catchment Area) =	0.136

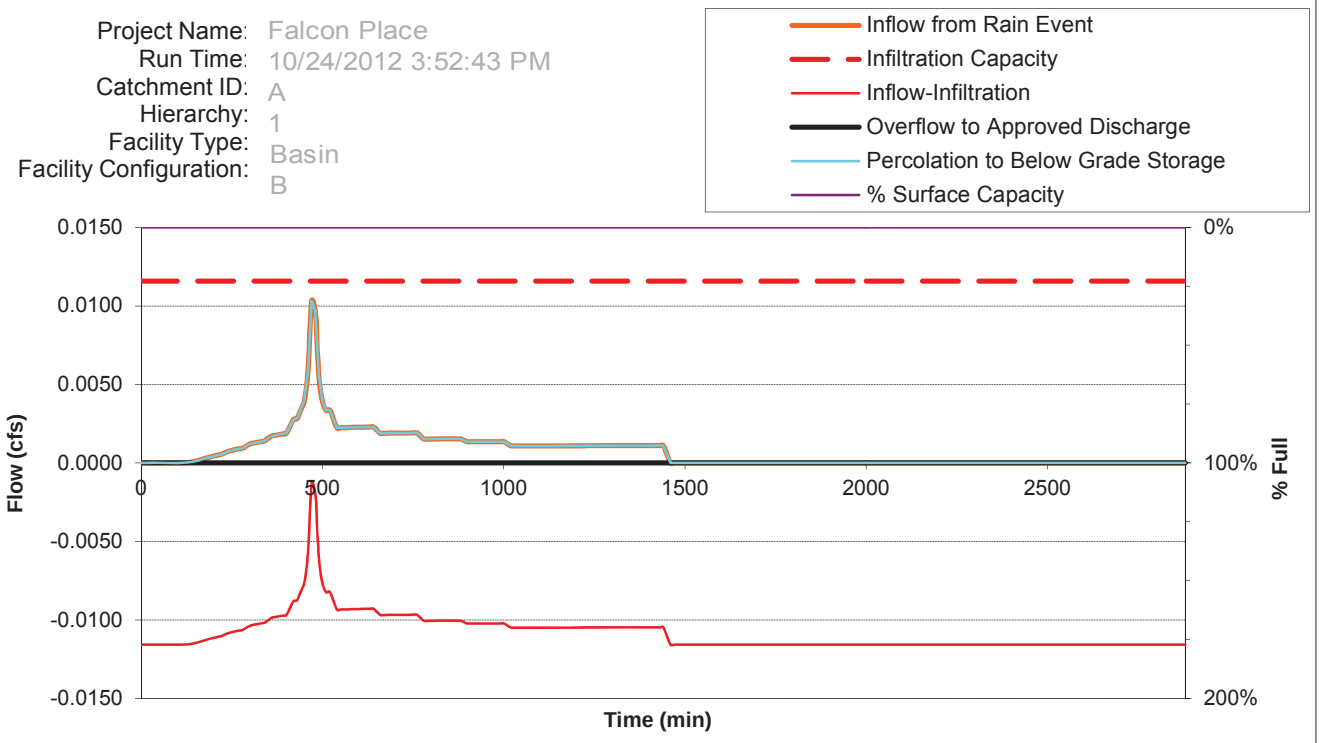
Current data has been exported:

PAC-Basin1.xls10/24/2012 3:56:46 PM

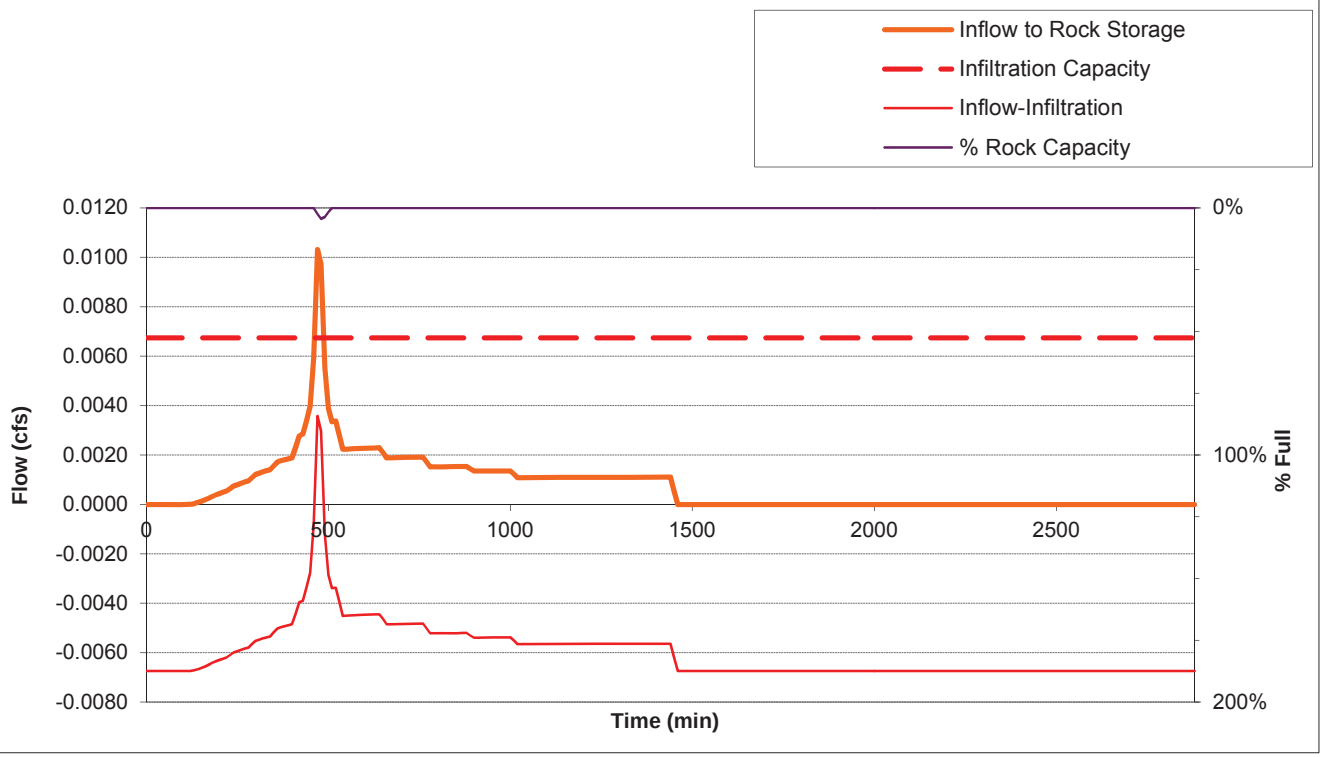
BES - Presumptive Approach Calculator - Ver 1.2

Pollution Reduction Event
Surface Facility Modeling

Project Name: Falcon Place
Run Time: 10/24/2012 3:52:43 PM
Catchment ID: A
Hierarchy: 1
Facility Type: Basin
Facility Configuration: B



Pollution Reduction Event
Below Grade Modeling

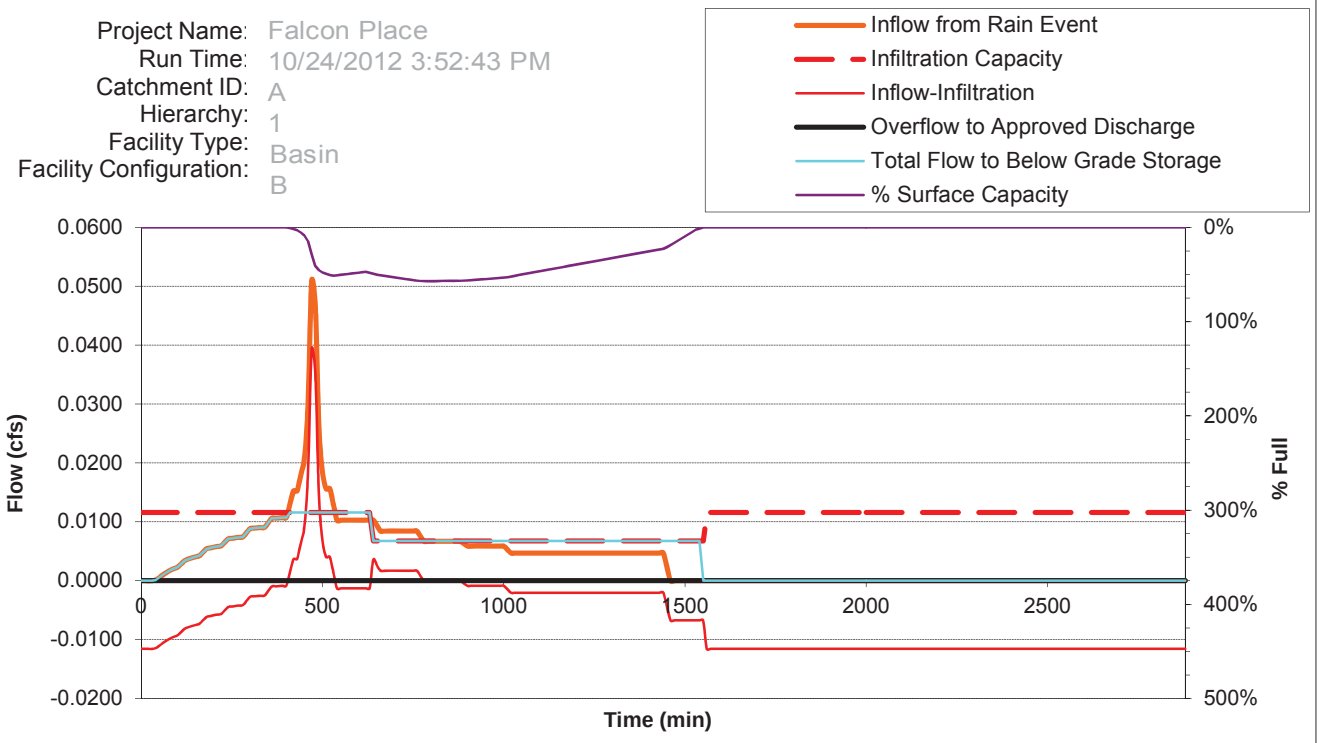


BES - Presumptive Approach Calculator - Ver 1.2

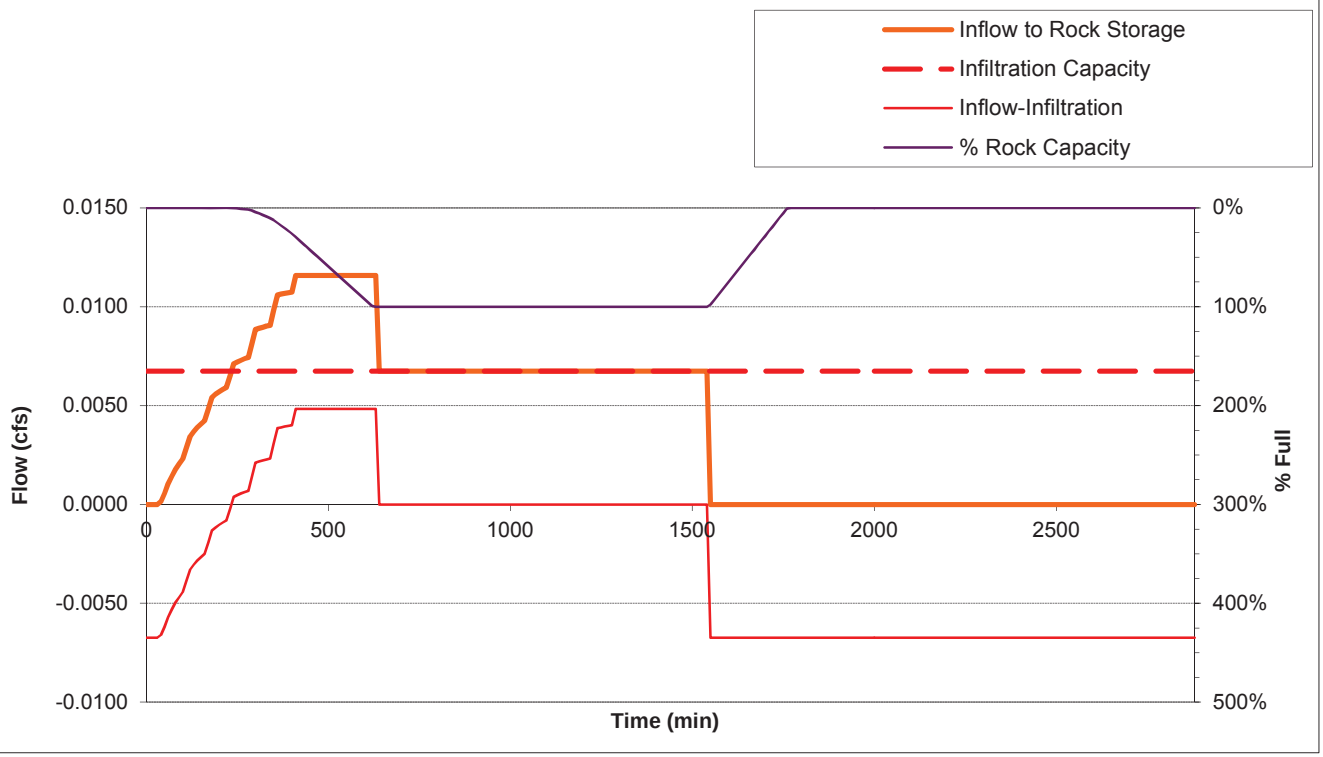
10-yr Con-A&B

10-yr Event
Surface Facility Modeling

Project Name: Falcon Place
Run Time: 10/24/2012 3:52:43 PM
Catchment ID: A
Hierarchy: 1
Facility Type: Basin
Facility Configuration: B



10-yr Event
Below Grade Modeling



INFILTRATION BASIN OVERFLOW OUTFLOW-PAC OUTPUT

	Overflow Outflow Hydrographs				
	Pol-Red	**2-yr**	**5-yr**	**10-yr**	**25-yr**
Time Step (min)	Total Overflow (cfs)	Total Overflow (cfs)	Total Overflow (cfs)	Total Overflow (cfs)	Total Overflow (cfs)
0	0.0000	0.0000	0.0000	0.0000	0.0000
10	0.0000	0.0000	0.0000	0.0000	0.0000
20	0.0000	0.0000	0.0000	0.0000	0.0000
30	0.0000	0.0000	0.0000	0.0000	0.0000
40	0.0000	0.0000	0.0000	0.0000	0.0000
50	0.0000	0.0000	0.0000	0.0000	0.0000
60	0.0000	0.0000	0.0000	0.0000	0.0000
70	0.0000	0.0000	0.0000	0.0000	0.0000
80	0.0000	0.0000	0.0000	0.0000	0.0000
90	0.0000	0.0000	0.0000	0.0000	0.0000
100	0.0000	0.0000	0.0000	0.0000	0.0000
110	0.0000	0.0000	0.0000	0.0000	0.0000
120	0.0000	0.0000	0.0000	0.0000	0.0000
130	0.0000	0.0000	0.0000	0.0000	0.0000
140	0.0000	0.0000	0.0000	0.0000	0.0000
150	0.0000	0.0000	0.0000	0.0000	0.0000
160	0.0000	0.0000	0.0000	0.0000	0.0000
170	0.0000	0.0000	0.0000	0.0000	0.0000
180	0.0000	0.0000	0.0000	0.0000	0.0000
190	0.0000	0.0000	0.0000	0.0000	0.0000
200	0.0000	0.0000	0.0000	0.0000	0.0000
210	0.0000	0.0000	0.0000	0.0000	0.0000
220	0.0000	0.0000	0.0000	0.0000	0.0000
230	0.0000	0.0000	0.0000	0.0000	0.0000
240	0.0000	0.0000	0.0000	0.0000	0.0000
250	0.0000	0.0000	0.0000	0.0000	0.0000
260	0.0000	0.0000	0.0000	0.0000	0.0000
270	0.0000	0.0000	0.0000	0.0000	0.0000
280	0.0000	0.0000	0.0000	0.0000	0.0000
290	0.0000	0.0000	0.0000	0.0000	0.0000
300	0.0000	0.0000	0.0000	0.0000	0.0000
310	0.0000	0.0000	0.0000	0.0000	0.0000
320	0.0000	0.0000	0.0000	0.0000	0.0000
330	0.0000	0.0000	0.0000	0.0000	0.0000
340	0.0000	0.0000	0.0000	0.0000	0.0000
350	0.0000	0.0000	0.0000	0.0000	0.0000
360	0.0000	0.0000	0.0000	0.0000	0.0000
370	0.0000	0.0000	0.0000	0.0000	0.0000
380	0.0000	0.0000	0.0000	0.0000	0.0000
390	0.0000	0.0000	0.0000	0.0000	0.0000
400	0.0000	0.0000	0.0000	0.0000	0.0000
410	0.0000	0.0000	0.0000	0.0000	0.0000

INFILTRATION BASIN OVERFLOW OUTFLOW-PAC OUTPUT

	Overflow Outflow Hydrographs				
	Pol-Red	**2-yr**	**5-yr**	**10-yr**	**25-yr**
Time Step (min)	Total Overflow (cfs)	Total Overflow (cfs)	Total Overflow (cfs)	Total Overflow (cfs)	Total Overflow (cfs)
420	0.0000	0.0000	0.0000	0.0000	0.0000
430	0.0000	0.0000	0.0000	0.0000	0.0000
440	0.0000	0.0000	0.0000	0.0000	0.0000
450	0.0000	0.0000	0.0000	0.0000	0.0000
460	0.0000	0.0000	0.0000	0.0000	0.0000
470	0.0000	0.0000	0.0000	0.0000	0.0000
480	0.0000	0.0000	0.0000	0.0000	0.0000
490	0.0000	0.0000	0.0000	0.0000	0.0000
500	0.0000	0.0000	0.0000	0.0000	0.0000
510	0.0000	0.0000	0.0000	0.0000	0.0000
520	0.0000	0.0000	0.0000	0.0000	0.0000
530	0.0000	0.0000	0.0000	0.0000	0.0000
540	0.0000	0.0000	0.0000	0.0000	0.0000
550	0.0000	0.0000	0.0000	0.0000	0.0000
560	0.0000	0.0000	0.0000	0.0000	0.0000
570	0.0000	0.0000	0.0000	0.0000	0.0000
580	0.0000	0.0000	0.0000	0.0000	0.0000
590	0.0000	0.0000	0.0000	0.0000	0.0000
600	0.0000	0.0000	0.0000	0.0000	0.0000
610	0.0000	0.0000	0.0000	0.0000	0.0000
620	0.0000	0.0000	0.0000	0.0000	0.0000
630	0.0000	0.0000	0.0000	0.0000	0.0000
640	0.0000	0.0000	0.0000	0.0000	0.0000
650	0.0000	0.0000	0.0000	0.0000	0.0000
660	0.0000	0.0000	0.0000	0.0000	0.0000
670	0.0000	0.0000	0.0000	0.0000	0.0000
680	0.0000	0.0000	0.0000	0.0000	0.0000
690	0.0000	0.0000	0.0000	0.0000	0.0000
700	0.0000	0.0000	0.0000	0.0000	0.0000
710	0.0000	0.0000	0.0000	0.0000	0.0000
720	0.0000	0.0000	0.0000	0.0000	0.0000
730	0.0000	0.0000	0.0000	0.0000	0.0000
740	0.0000	0.0000	0.0000	0.0000	0.0000
750	0.0000	0.0000	0.0000	0.0000	0.0000
760	0.0000	0.0000	0.0000	0.0000	0.0000
770	0.0000	0.0000	0.0000	0.0000	0.0000
780	0.0000	0.0000	0.0000	0.0000	0.0000
790	0.0000	0.0000	0.0000	0.0000	0.0000
800	0.0000	0.0000	0.0000	0.0000	0.0000
810	0.0000	0.0000	0.0000	0.0000	0.0000
820	0.0000	0.0000	0.0000	0.0000	0.0000
830	0.0000	0.0000	0.0000	0.0000	0.0000

	Overflow Outflow Hydrographs				
	Pol-Red	**2-yr**	**5-yr**	**10-yr**	**25-yr**
Time Step (min)	Total Overflow (cfs)	Total Overflow (cfs)	Total Overflow (cfs)	Total Overflow (cfs)	Total Overflow (cfs)
840	0.0000	0.0000	0.0000	0.0000	0.0000
850	0.0000	0.0000	0.0000	0.0000	0.0000
860	0.0000	0.0000	0.0000	0.0000	0.0000
870	0.0000	0.0000	0.0000	0.0000	0.0000
880	0.0000	0.0000	0.0000	0.0000	0.0000
890	0.0000	0.0000	0.0000	0.0000	0.0000
900	0.0000	0.0000	0.0000	0.0000	0.0000
910	0.0000	0.0000	0.0000	0.0000	0.0000
920	0.0000	0.0000	0.0000	0.0000	0.0000
930	0.0000	0.0000	0.0000	0.0000	0.0000
940	0.0000	0.0000	0.0000	0.0000	0.0000
950	0.0000	0.0000	0.0000	0.0000	0.0000
960	0.0000	0.0000	0.0000	0.0000	0.0000
970	0.0000	0.0000	0.0000	0.0000	0.0000
980	0.0000	0.0000	0.0000	0.0000	0.0000
990	0.0000	0.0000	0.0000	0.0000	0.0000
1000	0.0000	0.0000	0.0000	0.0000	0.0000
1010	0.0000	0.0000	0.0000	0.0000	0.0000
1020	0.0000	0.0000	0.0000	0.0000	0.0000
1030	0.0000	0.0000	0.0000	0.0000	0.0000
1040	0.0000	0.0000	0.0000	0.0000	0.0000
1050	0.0000	0.0000	0.0000	0.0000	0.0000
1060	0.0000	0.0000	0.0000	0.0000	0.0000
1070	0.0000	0.0000	0.0000	0.0000	0.0000
1080	0.0000	0.0000	0.0000	0.0000	0.0000
1090	0.0000	0.0000	0.0000	0.0000	0.0000
1100	0.0000	0.0000	0.0000	0.0000	0.0000
1110	0.0000	0.0000	0.0000	0.0000	0.0000
1120	0.0000	0.0000	0.0000	0.0000	0.0000
1130	0.0000	0.0000	0.0000	0.0000	0.0000
1140	0.0000	0.0000	0.0000	0.0000	0.0000
1150	0.0000	0.0000	0.0000	0.0000	0.0000
1160	0.0000	0.0000	0.0000	0.0000	0.0000
1170	0.0000	0.0000	0.0000	0.0000	0.0000
1180	0.0000	0.0000	0.0000	0.0000	0.0000
1190	0.0000	0.0000	0.0000	0.0000	0.0000
1200	0.0000	0.0000	0.0000	0.0000	0.0000
1210	0.0000	0.0000	0.0000	0.0000	0.0000
1220	0.0000	0.0000	0.0000	0.0000	0.0000
1230	0.0000	0.0000	0.0000	0.0000	0.0000
1240	0.0000	0.0000	0.0000	0.0000	0.0000
1250	0.0000	0.0000	0.0000	0.0000	0.0000

	Overflow Outflow Hydrographs				
	Pol-Red	**2-yr**	**5-yr**	**10-yr**	**25-yr**
Time Step (min)	Total Overflow (cfs)	Total Overflow (cfs)	Total Overflow (cfs)	Total Overflow (cfs)	Total Overflow (cfs)
1260	0.0000	0.0000	0.0000	0.0000	0.0000
1270	0.0000	0.0000	0.0000	0.0000	0.0000
1280	0.0000	0.0000	0.0000	0.0000	0.0000
1290	0.0000	0.0000	0.0000	0.0000	0.0000
1300	0.0000	0.0000	0.0000	0.0000	0.0000
1310	0.0000	0.0000	0.0000	0.0000	0.0000
1320	0.0000	0.0000	0.0000	0.0000	0.0000
1330	0.0000	0.0000	0.0000	0.0000	0.0000
1340	0.0000	0.0000	0.0000	0.0000	0.0000
1350	0.0000	0.0000	0.0000	0.0000	0.0000
1360	0.0000	0.0000	0.0000	0.0000	0.0000
1370	0.0000	0.0000	0.0000	0.0000	0.0000
1380	0.0000	0.0000	0.0000	0.0000	0.0000
1390	0.0000	0.0000	0.0000	0.0000	0.0000
1400	0.0000	0.0000	0.0000	0.0000	0.0000
1410	0.0000	0.0000	0.0000	0.0000	0.0000
1420	0.0000	0.0000	0.0000	0.0000	0.0000
1430	0.0000	0.0000	0.0000	0.0000	0.0000
1440	0.0000	0.0000	0.0000	0.0000	0.0000
1450	0.0000	0.0000	0.0000	0.0000	0.0000
1460	0.0000	0.0000	0.0000	0.0000	0.0000
1470	0.0000	0.0000	0.0000	0.0000	0.0000
1480	0.0000	0.0000	0.0000	0.0000	0.0000
1490	0.0000	0.0000	0.0000	0.0000	0.0000
1500	0.0000	0.0000	0.0000	0.0000	0.0000
1510	0.0000	0.0000	0.0000	0.0000	0.0000
1520	0.0000	0.0000	0.0000	0.0000	0.0000
1530	0.0000	0.0000	0.0000	0.0000	0.0000
1540	0.0000	0.0000	0.0000	0.0000	0.0000
1550	0.0000	0.0000	0.0000	0.0000	0.0000
1560	0.0000	0.0000	0.0000	0.0000	0.0000
1570	0.0000	0.0000	0.0000	0.0000	0.0000
1580	0.0000	0.0000	0.0000	0.0000	0.0000
1590	0.0000	0.0000	0.0000	0.0000	0.0000
1600	0.0000	0.0000	0.0000	0.0000	0.0000
1610	0.0000	0.0000	0.0000	0.0000	0.0000
1620	0.0000	0.0000	0.0000	0.0000	0.0000
1630	0.0000	0.0000	0.0000	0.0000	0.0000
1640	0.0000	0.0000	0.0000	0.0000	0.0000
1650	0.0000	0.0000	0.0000	0.0000	0.0000
1660	0.0000	0.0000	0.0000	0.0000	0.0000
1670	0.0000	0.0000	0.0000	0.0000	0.0000

INFILTRATION BASIN OVERFLOW OUTFLOW-PAC OUTPUT

	Overflow Outflow Hydrographs				
	Pol-Red	**2-yr**	**5-yr**	**10-yr**	**25-yr**
Time Step (min)	Total Overflow (cfs)	Total Overflow (cfs)	Total Overflow (cfs)	Total Overflow (cfs)	Total Overflow (cfs)
1680	0.0000	0.0000	0.0000	0.0000	0.0000
1690	0.0000	0.0000	0.0000	0.0000	0.0000
1700	0.0000	0.0000	0.0000	0.0000	0.0000
1710	0.0000	0.0000	0.0000	0.0000	0.0000
1720	0.0000	0.0000	0.0000	0.0000	0.0000
1730	0.0000	0.0000	0.0000	0.0000	0.0000
1740	0.0000	0.0000	0.0000	0.0000	0.0000
1750	0.0000	0.0000	0.0000	0.0000	0.0000
1760	0.0000	0.0000	0.0000	0.0000	0.0000
1770	0.0000	0.0000	0.0000	0.0000	0.0000
1780	0.0000	0.0000	0.0000	0.0000	0.0000
1790	0.0000	0.0000	0.0000	0.0000	0.0000
1800	0.0000	0.0000	0.0000	0.0000	0.0000
1810	0.0000	0.0000	0.0000	0.0000	0.0000
1820	0.0000	0.0000	0.0000	0.0000	0.0000
1830	0.0000	0.0000	0.0000	0.0000	0.0000
1840	0.0000	0.0000	0.0000	0.0000	0.0000
1850	0.0000	0.0000	0.0000	0.0000	0.0000
1860	0.0000	0.0000	0.0000	0.0000	0.0000
1870	0.0000	0.0000	0.0000	0.0000	0.0000
1880	0.0000	0.0000	0.0000	0.0000	0.0000
1890	0.0000	0.0000	0.0000	0.0000	0.0000
1900	0.0000	0.0000	0.0000	0.0000	0.0000
1910	0.0000	0.0000	0.0000	0.0000	0.0000
1920	0.0000	0.0000	0.0000	0.0000	0.0000
1930	0.0000	0.0000	0.0000	0.0000	0.0000
1940	0.0000	0.0000	0.0000	0.0000	0.0000
1950	0.0000	0.0000	0.0000	0.0000	0.0000
1960	0.0000	0.0000	0.0000	0.0000	0.0000
1970	0.0000	0.0000	0.0000	0.0000	0.0000
1980	0.0000	0.0000	0.0000	0.0000	0.0000
1990	0.0000	0.0000	0.0000	0.0000	0.0000
2000	0.0000	0.0000	0.0000	0.0000	0.0000
2010	0.0000	0.0000	0.0000	0.0000	0.0000
2020	0.0000	0.0000	0.0000	0.0000	0.0000
2030	0.0000	0.0000	0.0000	0.0000	0.0000
2040	0.0000	0.0000	0.0000	0.0000	0.0000
2050	0.0000	0.0000	0.0000	0.0000	0.0000
2060	0.0000	0.0000	0.0000	0.0000	0.0000
2070	0.0000	0.0000	0.0000	0.0000	0.0000
2080	0.0000	0.0000	0.0000	0.0000	0.0000
2090	0.0000	0.0000	0.0000	0.0000	0.0000

INFILTRATION BASIN OVERFLOW OUTFLOW-PAC OUTPUT

	Overflow Outflow Hydrographs				
	Pol-Red	**2-yr**	**5-yr**	**10-yr**	**25-yr**
Time Step (min)	Total Overflow (cfs)	Total Overflow (cfs)	Total Overflow (cfs)	Total Overflow (cfs)	Total Overflow (cfs)
2100	0.0000	0.0000	0.0000	0.0000	0.0000
2110	0.0000	0.0000	0.0000	0.0000	0.0000
2120	0.0000	0.0000	0.0000	0.0000	0.0000
2130	0.0000	0.0000	0.0000	0.0000	0.0000
2140	0.0000	0.0000	0.0000	0.0000	0.0000
2150	0.0000	0.0000	0.0000	0.0000	0.0000
2160	0.0000	0.0000	0.0000	0.0000	0.0000
2170	0.0000	0.0000	0.0000	0.0000	0.0000
2180	0.0000	0.0000	0.0000	0.0000	0.0000
2190	0.0000	0.0000	0.0000	0.0000	0.0000
2200	0.0000	0.0000	0.0000	0.0000	0.0000
2210	0.0000	0.0000	0.0000	0.0000	0.0000
2220	0.0000	0.0000	0.0000	0.0000	0.0000
2230	0.0000	0.0000	0.0000	0.0000	0.0000
2240	0.0000	0.0000	0.0000	0.0000	0.0000
2250	0.0000	0.0000	0.0000	0.0000	0.0000
2260	0.0000	0.0000	0.0000	0.0000	0.0000
2270	0.0000	0.0000	0.0000	0.0000	0.0000
2280	0.0000	0.0000	0.0000	0.0000	0.0000
2290	0.0000	0.0000	0.0000	0.0000	0.0000
2300	0.0000	0.0000	0.0000	0.0000	0.0000
2310	0.0000	0.0000	0.0000	0.0000	0.0000
2320	0.0000	0.0000	0.0000	0.0000	0.0000
2330	0.0000	0.0000	0.0000	0.0000	0.0000
2340	0.0000	0.0000	0.0000	0.0000	0.0000
2350	0.0000	0.0000	0.0000	0.0000	0.0000
2360	0.0000	0.0000	0.0000	0.0000	0.0000
2370	0.0000	0.0000	0.0000	0.0000	0.0000
2380	0.0000	0.0000	0.0000	0.0000	0.0000
2390	0.0000	0.0000	0.0000	0.0000	0.0000
2400	0.0000	0.0000	0.0000	0.0000	0.0000
2410	0.0000	0.0000	0.0000	0.0000	0.0000
2420	0.0000	0.0000	0.0000	0.0000	0.0000
2430	0.0000	0.0000	0.0000	0.0000	0.0000
2440	0.0000	0.0000	0.0000	0.0000	0.0000
2450	0.0000	0.0000	0.0000	0.0000	0.0000
2460	0.0000	0.0000	0.0000	0.0000	0.0000
2470	0.0000	0.0000	0.0000	0.0000	0.0000
2480	0.0000	0.0000	0.0000	0.0000	0.0000
2490	0.0000	0.0000	0.0000	0.0000	0.0000
2500	0.0000	0.0000	0.0000	0.0000	0.0000
2510	0.0000	0.0000	0.0000	0.0000	0.0000

INFILTRATION BASIN OVERFLOW OUTFLOW-PAC OUTPUT

	Overflow Outflow Hydrographs				
	Pol-Red	**2-yr**	**5-yr**	**10-yr**	**25-yr**
Time Step (min)	Total Overflow (cfs)	Total Overflow (cfs)	Total Overflow (cfs)	Total Overflow (cfs)	Total Overflow (cfs)
2520	0.0000	0.0000	0.0000	0.0000	0.0000
2530	0.0000	0.0000	0.0000	0.0000	0.0000
2540	0.0000	0.0000	0.0000	0.0000	0.0000
2550	0.0000	0.0000	0.0000	0.0000	0.0000
2560	0.0000	0.0000	0.0000	0.0000	0.0000
2570	0.0000	0.0000	0.0000	0.0000	0.0000
2580	0.0000	0.0000	0.0000	0.0000	0.0000
2590	0.0000	0.0000	0.0000	0.0000	0.0000
2600	0.0000	0.0000	0.0000	0.0000	0.0000
2610	0.0000	0.0000	0.0000	0.0000	0.0000
2620	0.0000	0.0000	0.0000	0.0000	0.0000
2630	0.0000	0.0000	0.0000	0.0000	0.0000
2640	0.0000	0.0000	0.0000	0.0000	0.0000
2650	0.0000	0.0000	0.0000	0.0000	0.0000
2660	0.0000	0.0000	0.0000	0.0000	0.0000
2670	0.0000	0.0000	0.0000	0.0000	0.0000
2680	0.0000	0.0000	0.0000	0.0000	0.0000
2690	0.0000	0.0000	0.0000	0.0000	0.0000
2700	0.0000	0.0000	0.0000	0.0000	0.0000
2710	0.0000	0.0000	0.0000	0.0000	0.0000
2720	0.0000	0.0000	0.0000	0.0000	0.0000
2730	0.0000	0.0000	0.0000	0.0000	0.0000
2740	0.0000	0.0000	0.0000	0.0000	0.0000
2750	0.0000	0.0000	0.0000	0.0000	0.0000
2760	0.0000	0.0000	0.0000	0.0000	0.0000
2770	0.0000	0.0000	0.0000	0.0000	0.0000
2780	0.0000	0.0000	0.0000	0.0000	0.0000
2790	0.0000	0.0000	0.0000	0.0000	0.0000
2800	0.0000	0.0000	0.0000	0.0000	0.0000
2810	0.0000	0.0000	0.0000	0.0000	0.0000
2820	0.0000	0.0000	0.0000	0.0000	0.0000
2830	0.0000	0.0000	0.0000	0.0000	0.0000
2840	0.0000	0.0000	0.0000	0.0000	0.0000
2850	0.0000	0.0000	0.0000	0.0000	0.0000
2860	0.0000	0.0000	0.0000	0.0000	0.0000
2870	0.0000	0.0000	0.0000	0.0000	0.0000
2880	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000 Peak cfs	**0.0000** Peak cfs	**0.0000** Peak cfs	**0.0000** Peak cfs	**0.0000** Peak cfs

Presumptive Approach Calculator ver. 1.2

Catchment Data

Catchment ID:	**A**
Project Name:	**Falcon Place**
Date:	**10/24/12**
Project Address:	**23112 Bland Circle**
Permit Number:	**0**
	West Linn, OR
Run Time	10/24/2012 4:34:44 PM
Designer:	**Kathleen Freeman, PE**
Company:	**3J Consulting**

Drainage Catchment Information

Catchment ID	A	
	Catchment Area	
Impervious Area	2,500	SF
Impervious Area	0.06	ac
Impervious Area Curve Number, CN_{imp}	98	
Time of Concentration, Tc, minutes	5	min.

Site Soils & Infiltration Testing Data

Infiltration Testing Procedure:	Open Pit Falling Head	
Native Soil Field Tested Infiltration Rate (I_{test}):	2	in/hr
Bottom of Facility Meets Required Separation From High Groundwater Per BES SWMM Section 1.4:	Yes	

Correction Factor Component

CF_{test} (ranges from 1 to 3)	2	

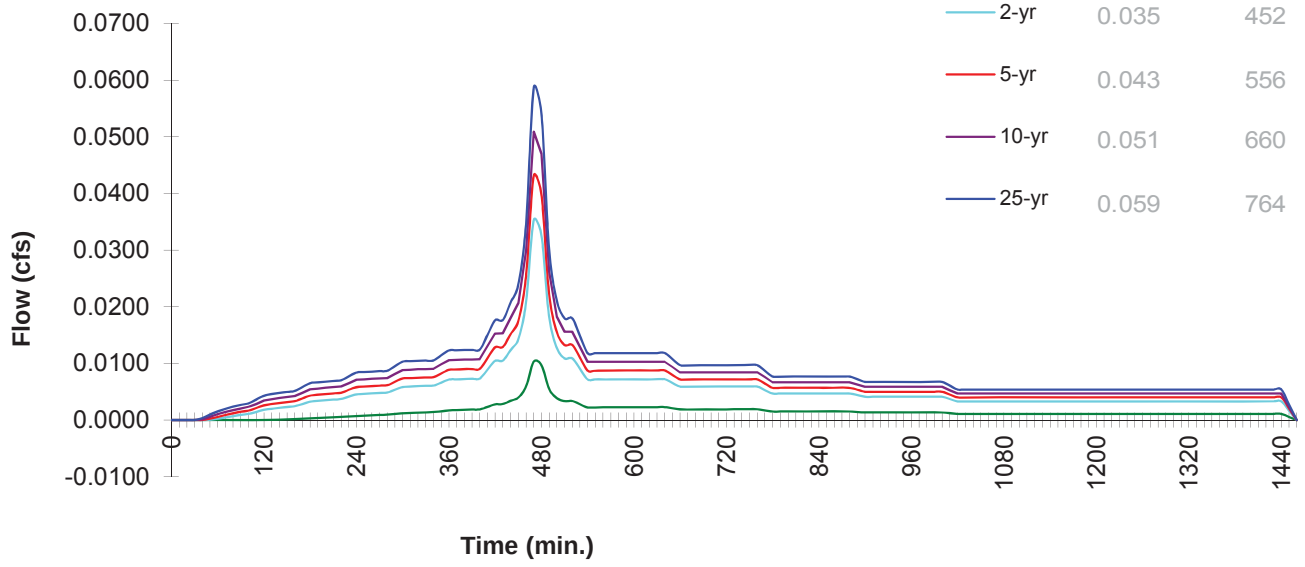
Design Infiltration Rates

I_{dsgn} for Native (I_{test} / CF_{test}):	1.00	in/hr
I_{dsgn} for Imported Growing Medium:	2.00	in/hr

Execute SBUH

SBUH Results

	Peak Rate (cfs)	Volume (cf)
PR	0.01	131
2-yr	0.035	452
5-yr	0.043	556
10-yr	0.051	660
25-yr	0.059	764



Presumptive Approach Calculator ver. 1.2

Catchment ID: A

Run Time 10/24/2012 4:34:44 PM

Project Name: Falcon Place **Catchment ID:** A **Date:** 10/24/2012

Instructions:

1. Identify which Stormwater Hierarchy Category the facility.
2. Select Facility Type.
3. Identify facility shape of surface facility to more accurately estimate surface volume, except for Swales and sloped planters that use the PAC Sloped Facility Worksheet to enter data.
4. Select type of facility configuration.
5. Complete data entry for all highlighted cells.

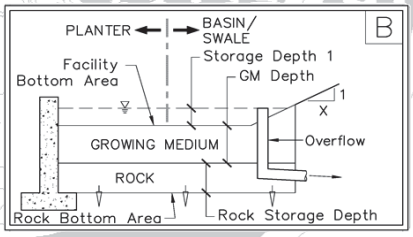
Catchment facility will meet Hierarchy Category: 1

Goal Summary:

Hierarchy Category	SWMM Requirement	RESULTS box below needs to display…	
		Pollution Reduction as a	10-yr (aka disposal) as a
1	On-site infiltration with a surface infiltration facility.	PASS	PASS

Facility Type = Swale

Facility Configuration: B



Refer to Sloped Facility Worksheet and enter Variable Parameters

Calculation Guide
Max. Rock Stor. Bottom Area
Per Swale Dims

DATA FOR ABOVE GRADE STORAGE COMPONENT

Infiltration Area = 229 sf
Surface Capacity Volume = 148.0 cf

BELOW GRADE STORAGE

Rock Storage Bottom Area = 324 sf
Rock Storage Depth = 12 in
Rock Void Ratio = 0.3

Growing Medium Depth = 18 in
Freeboard Depth = N/A in

Surface Capacity at Depth 1 = 148 cf
Infiltration Area at 75% Depth1 = 107 SF
GM Design Infiltration Rate = 2.00 in/hr
Infiltration Capacity = 0.011 cfs

Rock Storage Capacity = 97 cf

Native Design Infiltration Rate = 1.00 in/hr
Infiltration Capacity = 0.008 cfs

RESULTS		Overflow Volume		
Pollution Reduction	PASS	0 CF	0%	Surf. Cap. Used
			3%	Rock Cap. Used
10-yr	PASS	0 CF	65%	Surf. Cap. Used
			100%	Rock Cap. Used

Run PAC

Warning - Data Modified, Re-run Calculator.

FACILITY FACTS

Total Facility Area Including Freeboard = 351 SF
Sizing Ratio (Total Facility Area / Catchment Area) = 0.140

Current data has been exported:

PAC-Swale1.xls **10/24/2012 4:37:15 PM**

Presumptive Approach Calculator Ver 1.2

Instructions:

1. Refer to facility graphics on the Graphics tab, then fill in all relevant facility parameters in the Data Entry table below. Data entry cells vary based on Facility Configuration selected on Facility Design Data tab.
2. Delete all facility parameters that may have been entered by the previous iteration that are no longer applicable.

Run Time 10/24/2012 4:34:44 PM

Project Name: Falcon Place **Date:** 10/24/2012 **Catchment ID:** A

Data Entry

Parameters | **Rock Storage Parameters** | **Error Messages**

Facility Segment	Length of facility segment (ft) $L_{segment}$	Downstream Check Dam Length (ft) L_{dam}	Longitudinal Facility Slope (ft/ft) S	Bottom Width (ft) W_{bottom}	Side Slope Right X_{right}:1	Side Slope Left X_{left}:1	Downstream Depth (inches) D_{ds}	Landscape Width (ft) $W_{landscape}$	Rock Storage Width (ft) W_{rock}	Rock Storage Depth (inches) D_{rock}	Rock Void Ratio v
1	9	1	0.02	5	4	4	10	13	12	12	0.3
2	9	1	0.02	5	4	4	10	13	12		
3	9	3	0.02	5	4	4	10	13	12		
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											
17											
18											
19											
20											

Project Name: Depth 2= Depth 3=

Worksheet Calculations

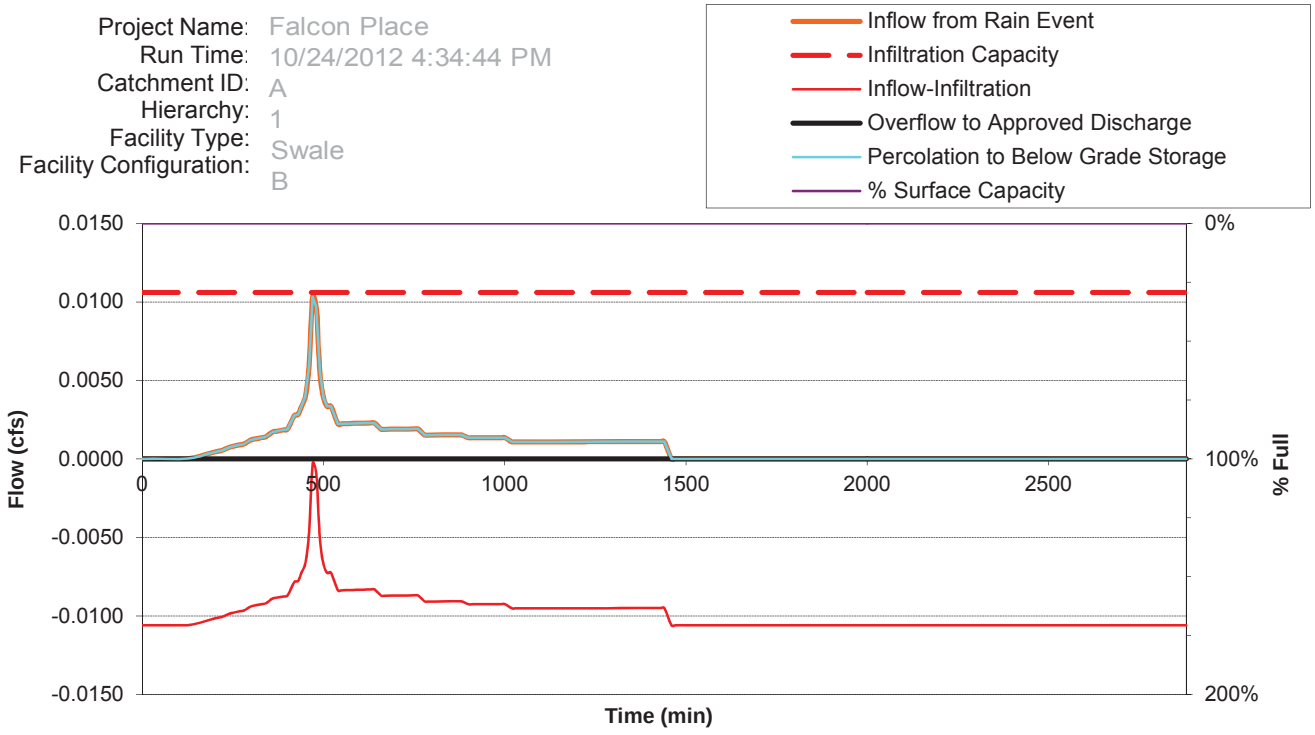
Parameters | **Rock Storage Parameters**

Facility Segment	Adjusted Length of facility segment (ft) L_{adjust}	Adjusted Length if D_{up} = 0 (ft) $L_{adjust2}$	Upstream Depth (inches) D_{up}	Downstream Top Width (ft) $W_{top\text{-}ds}$	Upstream Top Width (ft) $W_{top\text{-}up}$	Downstream Cross-sectional Area (sf) A_{ds}	Upstream Cross-sectional Area (sf) A_{up}	**Surface Capacity Volume (cf) $V_{surface}$**	75% of Max. Downstream Depth (inches) $D_{ds75\%}$	75% of Max. Upstream Depth (inches) $D_{up75\%}$	75% of Max. Adjusted Length if $D_{up75\%}$ = 0 (ft) $L_{adjust3}$	75% of Max. Downstream Top Width (ft) $W_{top\text{-}ds75\%}$	75% of Max. Upstream Top Width (ft) $W_{top\text{-}up75\%}$	**Infiltration Area @ 75% Full (sf) $A_{75\%}$**	Rock Storage Length (ft) L_{rock}	**Rock Storage Bottom Area (sf) A_{rock}**	**Rock Storage Capacity Volume (cf) V_{rock}**
1	8.50	N/A	7.96	11.67	10.31	6.94	5.08	51	7.50	5.46	N/A	10.00	8.64	79	9	108	32
2	8.50	N/A	7.96	11.67	10.31	6.94	5.08	51	7.50	5.46	N/A	10.00	8.64	79	9	108	32
3	7.50	N/A	8.20	11.67	10.47	6.94	5.28	46	7.50	5.70	N/A	10.00	8.80	71	9	108	32
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	0	0	0	0
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	0	0	0	0
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	0	0	0	0
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	0	0	0	0
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	0	0	0	0
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	0	0	0	0
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	0	0	0	0
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	0	0	0	0
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	0	0	0	0
13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	0	0	0	0
14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	0	0	0	0
15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	0	0	0	0
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	0	0	0	0
17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	0	0	0	0
18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	0	0	0	0
19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	0	0	0	0
20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	0	0	0	0
								148	**$V_{surface}$ @ Depth1**					**229**		**324**	**97**

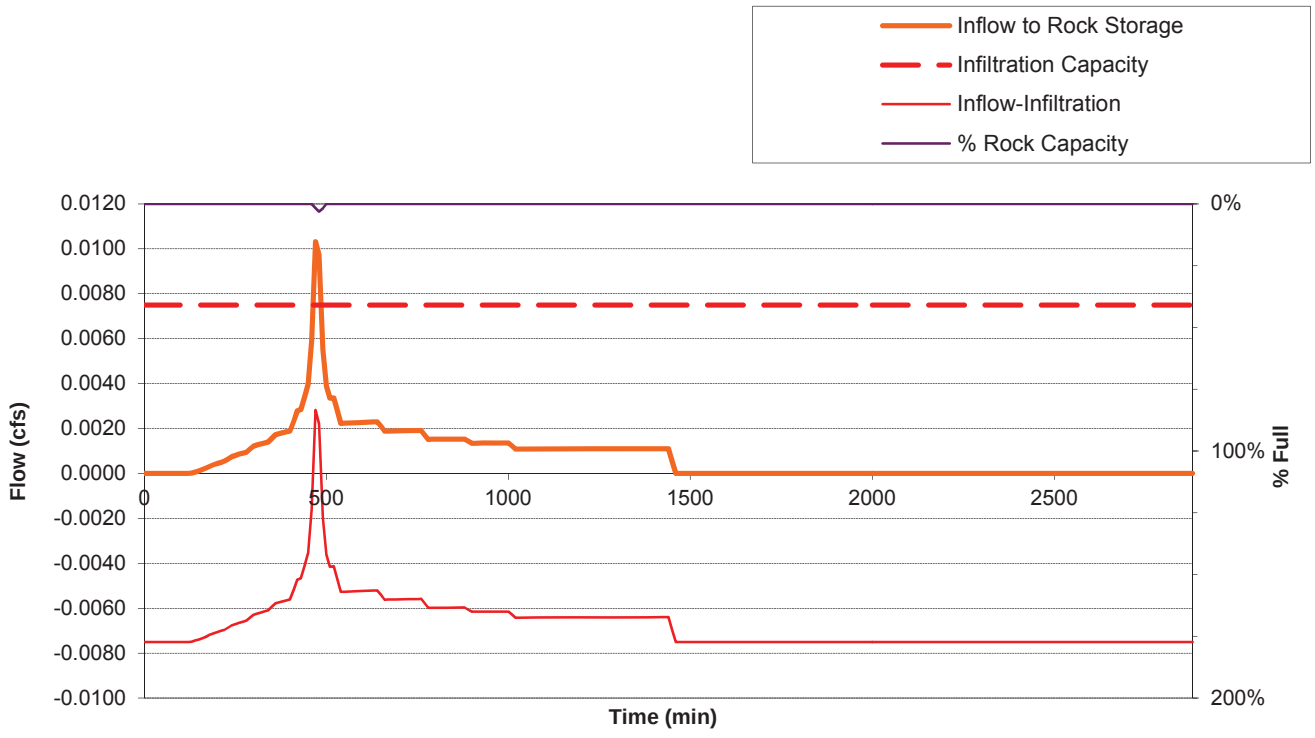
BES - Presumptive Approach Calculator - Ver 1.2

Pollution Reduction Event
Surface Facility Modeling

Project Name: Falcon Place
Run Time: 10/24/2012 4:34:44 PM
Catchment ID: A
Hierarchy: 1
Facility Type: Swale
Facility Configuration: B



Pollution Reduction Event
Below Grade Modeling

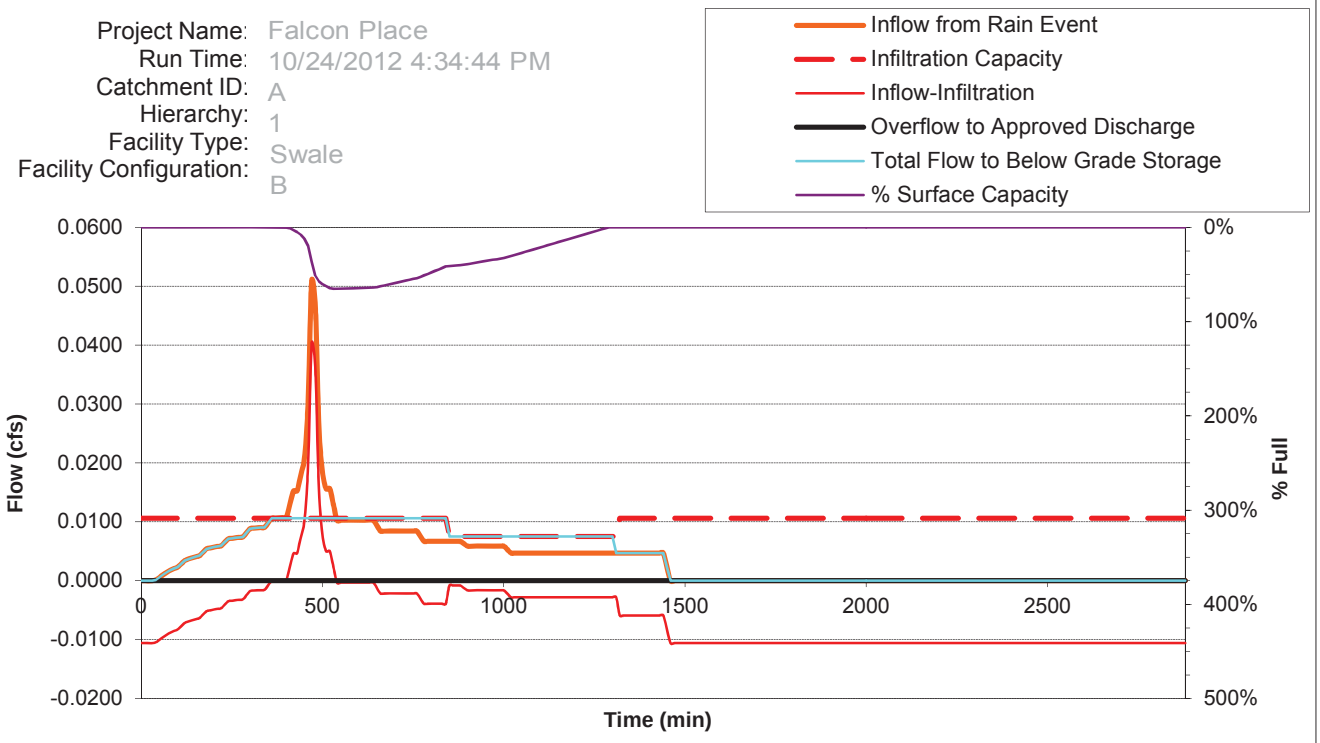


BES - Presumptive Approach Calculator - Ver 1.2

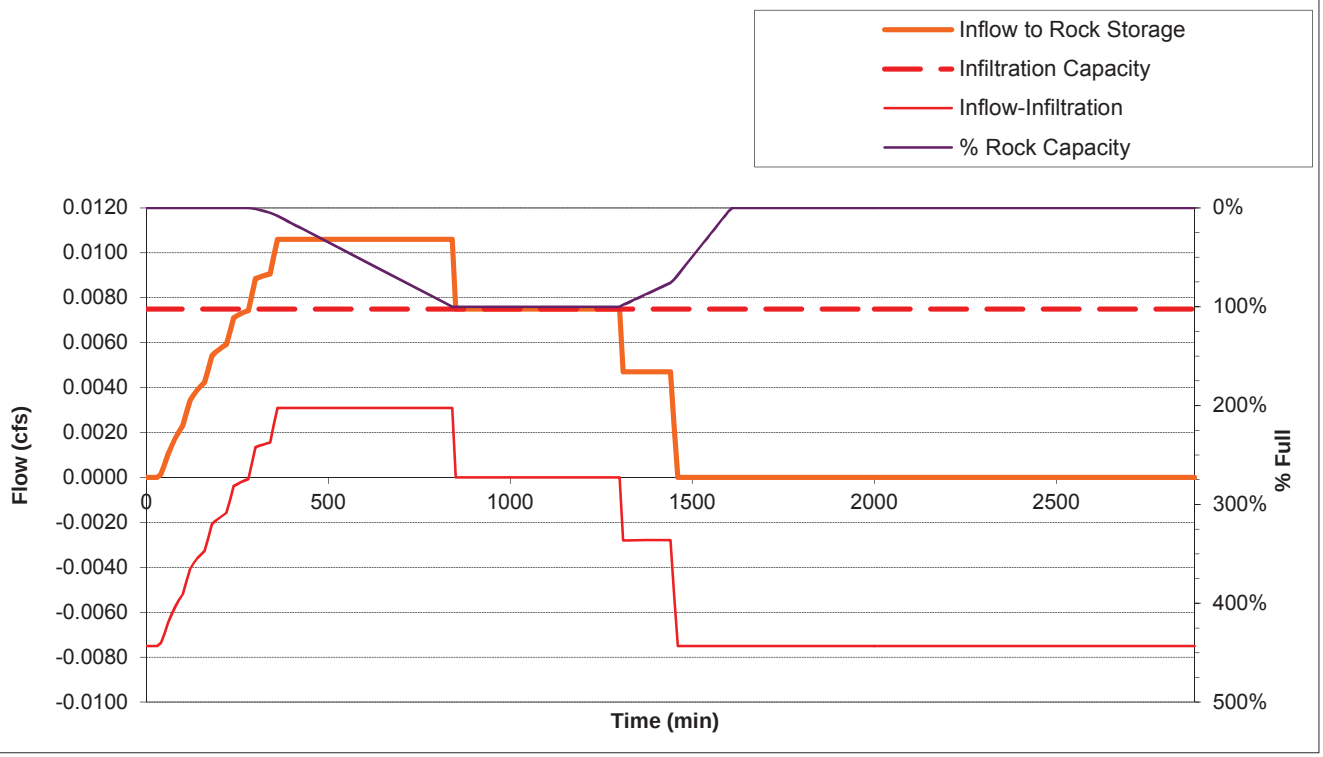
10-yr Con-A&B

10-yr Event
Surface Facility Modeling

Project Name: Falcon Place
Run Time: 10/24/2012 4:34:44 PM
Catchment ID: A
Hierarchy: 1
Facility Type: Swale
Facility Configuration: B



10-yr Event
Below Grade Modeling



INFILTRATION SWALE OVERFLOW OUTFLOW-PAC OUTPUT

	Overflow Outflow Hydrographs				
	Pol-Red	**2-yr**	**5-yr**	**10-yr**	**25-yr**
Time Step (min)	Total Overflow (cfs)	Total Overflow (cfs)	Total Overflow (cfs)	Total Overflow (cfs)	Total Overflow (cfs)
0	0.0000	0.0000	0.0000	0.0000	0.0000
10	0.0000	0.0000	0.0000	0.0000	0.0000
20	0.0000	0.0000	0.0000	0.0000	0.0000
30	0.0000	0.0000	0.0000	0.0000	0.0000
40	0.0000	0.0000	0.0000	0.0000	0.0000
50	0.0000	0.0000	0.0000	0.0000	0.0000
60	0.0000	0.0000	0.0000	0.0000	0.0000
70	0.0000	0.0000	0.0000	0.0000	0.0000
80	0.0000	0.0000	0.0000	0.0000	0.0000
90	0.0000	0.0000	0.0000	0.0000	0.0000
100	0.0000	0.0000	0.0000	0.0000	0.0000
110	0.0000	0.0000	0.0000	0.0000	0.0000
120	0.0000	0.0000	0.0000	0.0000	0.0000
130	0.0000	0.0000	0.0000	0.0000	0.0000
140	0.0000	0.0000	0.0000	0.0000	0.0000
150	0.0000	0.0000	0.0000	0.0000	0.0000
160	0.0000	0.0000	0.0000	0.0000	0.0000
170	0.0000	0.0000	0.0000	0.0000	0.0000
180	0.0000	0.0000	0.0000	0.0000	0.0000
190	0.0000	0.0000	0.0000	0.0000	0.0000
200	0.0000	0.0000	0.0000	0.0000	0.0000
210	0.0000	0.0000	0.0000	0.0000	0.0000
220	0.0000	0.0000	0.0000	0.0000	0.0000
230	0.0000	0.0000	0.0000	0.0000	0.0000
240	0.0000	0.0000	0.0000	0.0000	0.0000
250	0.0000	0.0000	0.0000	0.0000	0.0000
260	0.0000	0.0000	0.0000	0.0000	0.0000
270	0.0000	0.0000	0.0000	0.0000	0.0000
280	0.0000	0.0000	0.0000	0.0000	0.0000
290	0.0000	0.0000	0.0000	0.0000	0.0000
300	0.0000	0.0000	0.0000	0.0000	0.0000
310	0.0000	0.0000	0.0000	0.0000	0.0000
320	0.0000	0.0000	0.0000	0.0000	0.0000
330	0.0000	0.0000	0.0000	0.0000	0.0000
340	0.0000	0.0000	0.0000	0.0000	0.0000
350	0.0000	0.0000	0.0000	0.0000	0.0000
360	0.0000	0.0000	0.0000	0.0000	0.0000
370	0.0000	0.0000	0.0000	0.0000	0.0000
380	0.0000	0.0000	0.0000	0.0000	0.0000
390	0.0000	0.0000	0.0000	0.0000	0.0000
400	0.0000	0.0000	0.0000	0.0000	0.0000
410	0.0000	0.0000	0.0000	0.0000	0.0000

INFILTRATION SWALE OVERFLOW OUTFLOW-PAC OUTPUT

	Overflow Outflow Hydrographs				
	Pol-Red	**2-yr**	**5-yr**	**10-yr**	**25-yr**
Time Step (min)	Total Overflow (cfs)	Total Overflow (cfs)	Total Overflow (cfs)	Total Overflow (cfs)	Total Overflow (cfs)
420	0.0000	0.0000	0.0000	0.0000	0.0000
430	0.0000	0.0000	0.0000	0.0000	0.0000
440	0.0000	0.0000	0.0000	0.0000	0.0000
450	0.0000	0.0000	0.0000	0.0000	0.0000
460	0.0000	0.0000	0.0000	0.0000	0.0000
470	0.0000	0.0000	0.0000	0.0000	0.0000
480	0.0000	0.0000	0.0000	0.0000	0.0000
490	0.0000	0.0000	0.0000	0.0000	0.0000
500	0.0000	0.0000	0.0000	0.0000	0.0000
510	0.0000	0.0000	0.0000	0.0000	0.0000
520	0.0000	0.0000	0.0000	0.0000	0.0000
530	0.0000	0.0000	0.0000	0.0000	0.0000
540	0.0000	0.0000	0.0000	0.0000	0.0000
550	0.0000	0.0000	0.0000	0.0000	0.0000
560	0.0000	0.0000	0.0000	0.0000	0.0000
570	0.0000	0.0000	0.0000	0.0000	0.0000
580	0.0000	0.0000	0.0000	0.0000	0.0000
590	0.0000	0.0000	0.0000	0.0000	0.0000
600	0.0000	0.0000	0.0000	0.0000	0.0000
610	0.0000	0.0000	0.0000	0.0000	0.0000
620	0.0000	0.0000	0.0000	0.0000	0.0000
630	0.0000	0.0000	0.0000	0.0000	0.0000
640	0.0000	0.0000	0.0000	0.0000	0.0000
650	0.0000	0.0000	0.0000	0.0000	0.0000
660	0.0000	0.0000	0.0000	0.0000	0.0000
670	0.0000	0.0000	0.0000	0.0000	0.0000
680	0.0000	0.0000	0.0000	0.0000	0.0000
690	0.0000	0.0000	0.0000	0.0000	0.0000
700	0.0000	0.0000	0.0000	0.0000	0.0000
710	0.0000	0.0000	0.0000	0.0000	0.0000
720	0.0000	0.0000	0.0000	0.0000	0.0000
730	0.0000	0.0000	0.0000	0.0000	0.0000
740	0.0000	0.0000	0.0000	0.0000	0.0000
750	0.0000	0.0000	0.0000	0.0000	0.0000
760	0.0000	0.0000	0.0000	0.0000	0.0000
770	0.0000	0.0000	0.0000	0.0000	0.0000
780	0.0000	0.0000	0.0000	0.0000	0.0000
790	0.0000	0.0000	0.0000	0.0000	0.0000
800	0.0000	0.0000	0.0000	0.0000	0.0000
810	0.0000	0.0000	0.0000	0.0000	0.0000
820	0.0000	0.0000	0.0000	0.0000	0.0000
830	0.0000	0.0000	0.0000	0.0000	0.0000

INFILTRATION SWALE OVERFLOW OUTFLOW-PAC OUTPUT

	Overflow Outflow Hydrographs				
	Pol-Red	**2-yr**	**5-yr**	**10-yr**	**25-yr**
Time Step (min)	Total Overflow (cfs)	Total Overflow (cfs)	Total Overflow (cfs)	Total Overflow (cfs)	Total Overflow (cfs)
840	0.0000	0.0000	0.0000	0.0000	0.0000
850	0.0000	0.0000	0.0000	0.0000	0.0000
860	0.0000	0.0000	0.0000	0.0000	0.0000
870	0.0000	0.0000	0.0000	0.0000	0.0000
880	0.0000	0.0000	0.0000	0.0000	0.0000
890	0.0000	0.0000	0.0000	0.0000	0.0000
900	0.0000	0.0000	0.0000	0.0000	0.0000
910	0.0000	0.0000	0.0000	0.0000	0.0000
920	0.0000	0.0000	0.0000	0.0000	0.0000
930	0.0000	0.0000	0.0000	0.0000	0.0000
940	0.0000	0.0000	0.0000	0.0000	0.0000
950	0.0000	0.0000	0.0000	0.0000	0.0000
960	0.0000	0.0000	0.0000	0.0000	0.0000
970	0.0000	0.0000	0.0000	0.0000	0.0000
980	0.0000	0.0000	0.0000	0.0000	0.0000
990	0.0000	0.0000	0.0000	0.0000	0.0000
1000	0.0000	0.0000	0.0000	0.0000	0.0000
1010	0.0000	0.0000	0.0000	0.0000	0.0000
1020	0.0000	0.0000	0.0000	0.0000	0.0000
1030	0.0000	0.0000	0.0000	0.0000	0.0000
1040	0.0000	0.0000	0.0000	0.0000	0.0000
1050	0.0000	0.0000	0.0000	0.0000	0.0000
1060	0.0000	0.0000	0.0000	0.0000	0.0000
1070	0.0000	0.0000	0.0000	0.0000	0.0000
1080	0.0000	0.0000	0.0000	0.0000	0.0000
1090	0.0000	0.0000	0.0000	0.0000	0.0000
1100	0.0000	0.0000	0.0000	0.0000	0.0000
1110	0.0000	0.0000	0.0000	0.0000	0.0000
1120	0.0000	0.0000	0.0000	0.0000	0.0000
1130	0.0000	0.0000	0.0000	0.0000	0.0000
1140	0.0000	0.0000	0.0000	0.0000	0.0000
1150	0.0000	0.0000	0.0000	0.0000	0.0000
1160	0.0000	0.0000	0.0000	0.0000	0.0000
1170	0.0000	0.0000	0.0000	0.0000	0.0000
1180	0.0000	0.0000	0.0000	0.0000	0.0000
1190	0.0000	0.0000	0.0000	0.0000	0.0000
1200	0.0000	0.0000	0.0000	0.0000	0.0000
1210	0.0000	0.0000	0.0000	0.0000	0.0000
1220	0.0000	0.0000	0.0000	0.0000	0.0000
1230	0.0000	0.0000	0.0000	0.0000	0.0000
1240	0.0000	0.0000	0.0000	0.0000	0.0000
1250	0.0000	0.0000	0.0000	0.0000	0.0000

INFILTRATION SWALE OVERFLOW OUTFLOW-PAC OUTPUT

	Overflow Outflow Hydrographs				
	Pol-Red	**2-yr**	**5-yr**	**10-yr**	**25-yr**
Time Step (min)	Total Overflow (cfs)	Total Overflow (cfs)	Total Overflow (cfs)	Total Overflow (cfs)	Total Overflow (cfs)
1260	0.0000	0.0000	0.0000	0.0000	0.0000
1270	0.0000	0.0000	0.0000	0.0000	0.0000
1280	0.0000	0.0000	0.0000	0.0000	0.0000
1290	0.0000	0.0000	0.0000	0.0000	0.0000
1300	0.0000	0.0000	0.0000	0.0000	0.0000
1310	0.0000	0.0000	0.0000	0.0000	0.0000
1320	0.0000	0.0000	0.0000	0.0000	0.0000
1330	0.0000	0.0000	0.0000	0.0000	0.0000
1340	0.0000	0.0000	0.0000	0.0000	0.0000
1350	0.0000	0.0000	0.0000	0.0000	0.0000
1360	0.0000	0.0000	0.0000	0.0000	0.0000
1370	0.0000	0.0000	0.0000	0.0000	0.0000
1380	0.0000	0.0000	0.0000	0.0000	0.0000
1390	0.0000	0.0000	0.0000	0.0000	0.0000
1400	0.0000	0.0000	0.0000	0.0000	0.0000
1410	0.0000	0.0000	0.0000	0.0000	0.0000
1420	0.0000	0.0000	0.0000	0.0000	0.0000
1430	0.0000	0.0000	0.0000	0.0000	0.0000
1440	0.0000	0.0000	0.0000	0.0000	0.0000
1450	0.0000	0.0000	0.0000	0.0000	0.0000
1460	0.0000	0.0000	0.0000	0.0000	0.0000
1470	0.0000	0.0000	0.0000	0.0000	0.0000
1480	0.0000	0.0000	0.0000	0.0000	0.0000
1490	0.0000	0.0000	0.0000	0.0000	0.0000
1500	0.0000	0.0000	0.0000	0.0000	0.0000
1510	0.0000	0.0000	0.0000	0.0000	0.0000
1520	0.0000	0.0000	0.0000	0.0000	0.0000
1530	0.0000	0.0000	0.0000	0.0000	0.0000
1540	0.0000	0.0000	0.0000	0.0000	0.0000
1550	0.0000	0.0000	0.0000	0.0000	0.0000
1560	0.0000	0.0000	0.0000	0.0000	0.0000
1570	0.0000	0.0000	0.0000	0.0000	0.0000
1580	0.0000	0.0000	0.0000	0.0000	0.0000
1590	0.0000	0.0000	0.0000	0.0000	0.0000
1600	0.0000	0.0000	0.0000	0.0000	0.0000
1610	0.0000	0.0000	0.0000	0.0000	0.0000
1620	0.0000	0.0000	0.0000	0.0000	0.0000
1630	0.0000	0.0000	0.0000	0.0000	0.0000
1640	0.0000	0.0000	0.0000	0.0000	0.0000
1650	0.0000	0.0000	0.0000	0.0000	0.0000
1660	0.0000	0.0000	0.0000	0.0000	0.0000
1670	0.0000	0.0000	0.0000	0.0000	0.0000

INFILTRATION SWALE OVERFLOW OUTFLOW-PAC OUTPUT

	Overflow Outflow Hydrographs				
	Pol-Red	**2-yr**	**5-yr**	**10-yr**	**25-yr**
Time Step (min)	Total Overflow (cfs)	Total Overflow (cfs)	Total Overflow (cfs)	Total Overflow (cfs)	Total Overflow (cfs)
1680	0.0000	0.0000	0.0000	0.0000	0.0000
1690	0.0000	0.0000	0.0000	0.0000	0.0000
1700	0.0000	0.0000	0.0000	0.0000	0.0000
1710	0.0000	0.0000	0.0000	0.0000	0.0000
1720	0.0000	0.0000	0.0000	0.0000	0.0000
1730	0.0000	0.0000	0.0000	0.0000	0.0000
1740	0.0000	0.0000	0.0000	0.0000	0.0000
1750	0.0000	0.0000	0.0000	0.0000	0.0000
1760	0.0000	0.0000	0.0000	0.0000	0.0000
1770	0.0000	0.0000	0.0000	0.0000	0.0000
1780	0.0000	0.0000	0.0000	0.0000	0.0000
1790	0.0000	0.0000	0.0000	0.0000	0.0000
1800	0.0000	0.0000	0.0000	0.0000	0.0000
1810	0.0000	0.0000	0.0000	0.0000	0.0000
1820	0.0000	0.0000	0.0000	0.0000	0.0000
1830	0.0000	0.0000	0.0000	0.0000	0.0000
1840	0.0000	0.0000	0.0000	0.0000	0.0000
1850	0.0000	0.0000	0.0000	0.0000	0.0000
1860	0.0000	0.0000	0.0000	0.0000	0.0000
1870	0.0000	0.0000	0.0000	0.0000	0.0000
1880	0.0000	0.0000	0.0000	0.0000	0.0000
1890	0.0000	0.0000	0.0000	0.0000	0.0000
1900	0.0000	0.0000	0.0000	0.0000	0.0000
1910	0.0000	0.0000	0.0000	0.0000	0.0000
1920	0.0000	0.0000	0.0000	0.0000	0.0000
1930	0.0000	0.0000	0.0000	0.0000	0.0000
1940	0.0000	0.0000	0.0000	0.0000	0.0000
1950	0.0000	0.0000	0.0000	0.0000	0.0000
1960	0.0000	0.0000	0.0000	0.0000	0.0000
1970	0.0000	0.0000	0.0000	0.0000	0.0000
1980	0.0000	0.0000	0.0000	0.0000	0.0000
1990	0.0000	0.0000	0.0000	0.0000	0.0000
2000	0.0000	0.0000	0.0000	0.0000	0.0000
2010	0.0000	0.0000	0.0000	0.0000	0.0000
2020	0.0000	0.0000	0.0000	0.0000	0.0000
2030	0.0000	0.0000	0.0000	0.0000	0.0000
2040	0.0000	0.0000	0.0000	0.0000	0.0000
2050	0.0000	0.0000	0.0000	0.0000	0.0000
2060	0.0000	0.0000	0.0000	0.0000	0.0000
2070	0.0000	0.0000	0.0000	0.0000	0.0000
2080	0.0000	0.0000	0.0000	0.0000	0.0000
2090	0.0000	0.0000	0.0000	0.0000	0.0000

INFILTRATION SWALE OVERFLOW OUTFLOW-PAC OUTPUT

	Overflow Outflow Hydrographs				
	Pol-Red	**2-yr**	**5-yr**	**10-yr**	**25-yr**
Time Step (min)	Total Overflow (cfs)	Total Overflow (cfs)	Total Overflow (cfs)	Total Overflow (cfs)	Total Overflow (cfs)
2100	0.0000	0.0000	0.0000	0.0000	0.0000
2110	0.0000	0.0000	0.0000	0.0000	0.0000
2120	0.0000	0.0000	0.0000	0.0000	0.0000
2130	0.0000	0.0000	0.0000	0.0000	0.0000
2140	0.0000	0.0000	0.0000	0.0000	0.0000
2150	0.0000	0.0000	0.0000	0.0000	0.0000
2160	0.0000	0.0000	0.0000	0.0000	0.0000
2170	0.0000	0.0000	0.0000	0.0000	0.0000
2180	0.0000	0.0000	0.0000	0.0000	0.0000
2190	0.0000	0.0000	0.0000	0.0000	0.0000
2200	0.0000	0.0000	0.0000	0.0000	0.0000
2210	0.0000	0.0000	0.0000	0.0000	0.0000
2220	0.0000	0.0000	0.0000	0.0000	0.0000
2230	0.0000	0.0000	0.0000	0.0000	0.0000
2240	0.0000	0.0000	0.0000	0.0000	0.0000
2250	0.0000	0.0000	0.0000	0.0000	0.0000
2260	0.0000	0.0000	0.0000	0.0000	0.0000
2270	0.0000	0.0000	0.0000	0.0000	0.0000
2280	0.0000	0.0000	0.0000	0.0000	0.0000
2290	0.0000	0.0000	0.0000	0.0000	0.0000
2300	0.0000	0.0000	0.0000	0.0000	0.0000
2310	0.0000	0.0000	0.0000	0.0000	0.0000
2320	0.0000	0.0000	0.0000	0.0000	0.0000
2330	0.0000	0.0000	0.0000	0.0000	0.0000
2340	0.0000	0.0000	0.0000	0.0000	0.0000
2350	0.0000	0.0000	0.0000	0.0000	0.0000
2360	0.0000	0.0000	0.0000	0.0000	0.0000
2370	0.0000	0.0000	0.0000	0.0000	0.0000
2380	0.0000	0.0000	0.0000	0.0000	0.0000
2390	0.0000	0.0000	0.0000	0.0000	0.0000
2400	0.0000	0.0000	0.0000	0.0000	0.0000
2410	0.0000	0.0000	0.0000	0.0000	0.0000
2420	0.0000	0.0000	0.0000	0.0000	0.0000
2430	0.0000	0.0000	0.0000	0.0000	0.0000
2440	0.0000	0.0000	0.0000	0.0000	0.0000
2450	0.0000	0.0000	0.0000	0.0000	0.0000
2460	0.0000	0.0000	0.0000	0.0000	0.0000
2470	0.0000	0.0000	0.0000	0.0000	0.0000
2480	0.0000	0.0000	0.0000	0.0000	0.0000
2490	0.0000	0.0000	0.0000	0.0000	0.0000
2500	0.0000	0.0000	0.0000	0.0000	0.0000
2510	0.0000	0.0000	0.0000	0.0000	0.0000

INFILTRATION SWALE OVERFLOW OUTFLOW-PAC OUTPUT

	Overflow Outflow Hydrographs				
	Pol-Red	**2-yr**	**5-yr**	**10-yr**	**25-yr**
Time Step (min)	Total Overflow (cfs)	Total Overflow (cfs)	Total Overflow (cfs)	Total Overflow (cfs)	Total Overflow (cfs)
2520	0.0000	0.0000	0.0000	0.0000	0.0000
2530	0.0000	0.0000	0.0000	0.0000	0.0000
2540	0.0000	0.0000	0.0000	0.0000	0.0000
2550	0.0000	0.0000	0.0000	0.0000	0.0000
2560	0.0000	0.0000	0.0000	0.0000	0.0000
2570	0.0000	0.0000	0.0000	0.0000	0.0000
2580	0.0000	0.0000	0.0000	0.0000	0.0000
2590	0.0000	0.0000	0.0000	0.0000	0.0000
2600	0.0000	0.0000	0.0000	0.0000	0.0000
2610	0.0000	0.0000	0.0000	0.0000	0.0000
2620	0.0000	0.0000	0.0000	0.0000	0.0000
2630	0.0000	0.0000	0.0000	0.0000	0.0000
2640	0.0000	0.0000	0.0000	0.0000	0.0000
2650	0.0000	0.0000	0.0000	0.0000	0.0000
2660	0.0000	0.0000	0.0000	0.0000	0.0000
2670	0.0000	0.0000	0.0000	0.0000	0.0000
2680	0.0000	0.0000	0.0000	0.0000	0.0000
2690	0.0000	0.0000	0.0000	0.0000	0.0000
2700	0.0000	0.0000	0.0000	0.0000	0.0000
2710	0.0000	0.0000	0.0000	0.0000	0.0000
2720	0.0000	0.0000	0.0000	0.0000	0.0000
2730	0.0000	0.0000	0.0000	0.0000	0.0000
2740	0.0000	0.0000	0.0000	0.0000	0.0000
2750	0.0000	0.0000	0.0000	0.0000	0.0000
2760	0.0000	0.0000	0.0000	0.0000	0.0000
2770	0.0000	0.0000	0.0000	0.0000	0.0000
2780	0.0000	0.0000	0.0000	0.0000	0.0000
2790	0.0000	0.0000	0.0000	0.0000	0.0000
2800	0.0000	0.0000	0.0000	0.0000	0.0000
2810	0.0000	0.0000	0.0000	0.0000	0.0000
2820	0.0000	0.0000	0.0000	0.0000	0.0000
2830	0.0000	0.0000	0.0000	0.0000	0.0000
2840	0.0000	0.0000	0.0000	0.0000	0.0000
2850	0.0000	0.0000	0.0000	0.0000	0.0000
2860	0.0000	0.0000	0.0000	0.0000	0.0000
2870	0.0000	0.0000	0.0000	0.0000	0.0000
2880	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000 Peak cfs	**0.0000** Peak cfs	**0.0000** Peak cfs	**0.0000** Peak cfs	**0.0000** Peak cfs

PERVIOUS PAVEMENT DESIGN

Shared Driveway

PROJECT NAME	Falcon Place	**BY**	KEF	**DATE**	11/20/2012
PROJECT NUMBER	12093				

Pervious Concrete Catchment Area

Area To Infiltrate	4,616	sq ft
Thickness	4	in
Porosity	15	%

Effective Base Rock Storage Area

Effective Storage Area	4,616	sq ft
Thickness	7	in
Porosity	35	%

Storm Event Information

Return Period (yr)	100
24-hr precip. (in)	4.4
Location	Portland
Hydrologic Soil Group	B

Infiltration Area

Effective Infiltration Surface Area A_i	4,616	sq ft
Measured Infiltration Rate I_M	2	in/hr
Design Infiltration Rate I_D (SF=4)	0.5	in/hr
Maximum Infiltration Rate	192.3	CF/hr
Additional Gravel Base	0	in
Porosity	35	%

Storage Capacity

Storage in Concrete	0	CF
Storage in Base Rock	942	CF
Storage in Infiltration Area Rock	0	CF
Maximum Storage	942	CF

Allow storage in concrete? (Y/N)	**N**
Allow storage in base rock? (Y/N)	**Y**

Additional Infiltration Storage		Base Rock Storage		**Total Effective Storage**	
Stage (in)	0.00	Stage (in)	0.64	**Stage (in)**	**0.64**
% Used	0%	% Used	9%	**% Used**	**9%**

PERVIOUS PAVEMENT DESIGN

Shared Driveway

PROJECT NAME	Falcon Place	**BY**	KEF	**DATE**	11/20/2012
PROJECT NUMBER	12093				

					Max			STORAGE INFORMATION					
			Rainfall	Total	Infiltrated	Storage	Inc. Vol.	Effective Add. Gravel Area		Effective Base Rock Area		Total Effective Areas	
T	% Rainfall	Precip.	Vol. Perv.	Volume	Volume	State	Runoff	Stage	Used	Stage	Used	Storage Used	Limited stage
(hr)	(%)	(in)	(CF)	(CF)	(CF)	(CF)	(CF)	(in)	%	(in)	%	%	
0	0	0.000	0.0	0.0	0.0	0	0.0	0.00	0%	0.00	0%	0%	0.00
1	2.40	0.106	40.6	40.6	40.6	0	0.0	0.00	0%	0.00	0%	0%	0.00
2	2.60	0.114	44.0	44.0	44.0	0	0.0	0.00	0%	0.00	0%	0%	0.00
3	3.20	0.141	54.2	54.2	54.2	0	0.0	0.00	0%	0.00	0%	0%	0.00
4	3.80	0.167	64.3	64.3	64.3	0	0.0	0.00	0%	0.00	0%	0%	0.00
5	4.44	0.195	75.1	75.1	75.1	0	0.0	0.00	0%	0.00	0%	0%	0.00
6	5.18	0.228	87.7	87.7	87.7	0	0.0	0.00	0%	0.00	0%	0%	0.00
7	6.48	0.285	109.7	109.7	109.7	0	0.0	0.00	0%	0.00	0%	0%	0.00
8	16.44	0.723	278.3	278.3	192.3	86	0.0	0.00	0%	**0.64**	**9%**	**9%**	**0.64**
9	7.58	0.334	128.3	128.3	192.3	22	0.0	0.00	0%	0.16	2%	2%	0.16
10	5.28	0.232	89.4	89.4	89.4	22	0.0	0.00	0%	0.16	2%	2%	0.16
11	4.96	0.218	83.9	83.9	83.9	22	0.0	0.00	0%	0.16	2%	2%	0.16
12	4.32	0.190	73.1	73.1	73.1	22	0.0	0.00	0%	0.16	2%	2%	0.16
13	4.02	0.177	68.0	68.0	68.0	22	0.0	0.00	0%	0.16	2%	2%	0.16
14	3.42	0.150	57.9	57.9	57.9	22	0.0	0.00	0%	0.16	2%	2%	0.16
15	3.28	0.144	55.5	55.5	55.5	22	0.0	0.00	0%	0.16	2%	2%	0.16
16	3.00	0.132	50.8	50.8	50.8	22	0.0	0.00	0%	0.16	2%	2%	0.16
17	2.80	0.123	47.4	47.4	47.4	22	0.0	0.00	0%	0.16	2%	2%	0.16
18	2.40	0.106	40.6	40.6	40.6	22	0.0	0.00	0%	0.16	2%	2%	0.16
19	2.40	0.106	40.6	40.6	40.6	22	0.0	0.00	0%	0.16	2%	2%	0.16
20	2.40	0.106	40.6	40.6	40.6	22	0.0	0.00	0%	0.16	2%	2%	0.16
21	2.40	0.106	40.6	40.6	40.6	22	0.0	0.00	0%	0.16	2%	2%	0.16
22	2.40	0.106	40.6	40.6	40.6	22	0.0	0.00	0%	0.16	2%	2%	0.16
23	2.40	0.106	40.6	40.6	40.6	22	0.0	0.00	0%	0.16	2%	2%	0.16
24	2.40	0.106	40.6	40.6	40.6	22	0.0	0.00	0%	0.16	2%	2%	0.16
25	0	0.000	0.0	0.0	21.9	0	0.0	0.00	0%	0.00	0%	0%	0.00
26	0	0.000	0.0	0.0	0.0	0	0.0	0.00	0%	0.00	0%	0%	0.00
27	0	0.000	0.0	0.0	0.0	0	0.0	0.00	0%	0.00	0%	0%	0.00
28	0	0.000	0.0	0.0	0.0	0	0.0	0.00	0%	0.00	0%	0%	0.00
29	0	0.000	0.0	0.0	0.0	0	0.0	0.00	0%	0.00	0%	0%	0.00
30	0	0.000	0.0	0.0	0.0	0	0.0	0.00	0%	0.00	0%	0%	0.00
31	0	0.000	0.0	0.0	0.0	0	0.0	0.00	0%	0.00	0%	0%	0.00
32	0	0.000	0.0	0.0	0.0	0	0.0	0.00	0%	0.00	0%	0%	0.00
33	0	0.000	0.0	0.0	0.0	0	0.0	0.00	0%	0.00	0%	0%	0.00
34	0	0.000	0.0	0.0	0.0	0	0.0	0.00	0%	0.00	0%	0%	0.00
35	0	0.000	0.0	0.0	0.0	0	0.0	0.00	0%	0.00	0%	0%	0.00
36	0	0.000	0.0	0.0	0.0	0	0.0	0.00	0%	0.00	0%	0%	0.00
37	0	0.000	0.0	0.0	0.0	0	0.0	0.00	0%	0.00	0%	0%	0.00
38	0	0.000	0.0	0.0	0.0	0	0.0	0.00	0%	0.00	0%	0%	0.00
39	0	0.000	0.0	0.0	0.0	0	0.0	0.00	0%	0.00	0%	0%	0.00
40	0	0.000	0.0	0.0	0.0	0	0.0	0.00	0%	0.00	0%	0%	0.00
41	0	0.000	0.0	0.0	0.0	0	0.0	0.00	0%	0.00	0%	0%	0.00
42	0	0.000	0.0	0.0	0.0	0	0.0	0.00	0%	0.00	0%	0%	0.00
43	0	0.000	0.0	0.0	0.0	0	0.0	0.00	0%	0.00	0%	0%	0.00
44	0	0.000	0.0	0.0	0.0	0	0.0	0.00	0%	0.00	0%	0%	0.00
45	0	0.000	0.0	0.0	0.0	0	0.0	0.00	0%	0.00	0%	0%	0.00
46	0	0.000	0.0	0.0	0.0	0	0.0	0.00	0%	0.00	0%	0%	0.00
47	0	0.000	0.0	0.0	0.0	0	0.0	0.00	0%	0.00	0%	0%	0.00
48	0	0.000	0.0	0.0	0.0	0	0.0	0.00	0%	0.00	0%	0%	0.00

GEOTECHNICAL REPORT

GeoPacific Engineering, Inc.

Real-World Geotechnical Solutions
Investigation • Design • Construction Support

October 17, 2012
GeoPacific Project No. 12-2771

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

Copies: John Wyland (jwyland@jtsmithco.com)

Subject: **GEOTECHNICAL ENGINEERING REPORT**
FALCON PLACE
23112 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 No. P-4254, dated August 22, 2012, and your subsequent authorization of our agreement and *General Conditions for Geotechnical Services.*

SITE DESCRIPTION AND PROPOSED DEVELOPMENT

The site is located north of Bland Circle in West Linn, Oregon (Figure 1). Comprised of a single tax lot, the property is approximately 1.2 acres in size and roughly rectangular-shaped. An existing residence is present in the northeast corner of the site, and a detached garage is located in the eastern-central portion of the site. The existing residence and garage are to be removed.

The site is moderately sloped in topography. Generally, the site slopes from the northeast to the southeast corner at a grades of 10 percent. Site elevations range from approximately 530 feet above mean sea level (msl) to 500 feet msl. In the northern portion of the site there are two retaining walls of up to 3.5 feet in height, located to the west of the residence. Vegetation on the site consists primarily of grass, brush, and small to large trees.

The proposed development includes grading the site to support lots for single-family home construction, street improvements, and associated underground improvements. The current development plan (Figure 2) shows a total of 5 lots. We anticipate that the maximum depth of cut and height of fill will be about 5 feet or less.

SITE GEOLOGY

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. Valley-fill sediment in the adjacent basin achieves a maximum thickness of 1,500 feet and overlies Miocene Columbia River Basalt at depth (Madin, 1990; Yeats et al., 1996).

Locally, the site is situated on an uplifted structural block of Columbia River Basalt (Schlicker and Finlayson, 1979). Columbia River Basalt is differentiated into several members. The basalt underlying the subject site is part of the Wanapum Basalt member, which is typically dark gray to black and displays blocky to columnar jointing (Burns et al, 1997). Interflow zones between flows are typically vesicular, scoriaceous, and brecciated, and sometimes include sedimentary rocks. Where highly weathered, the upper portion of the basalt is altered to a distinctive red-brown clayey silt known as laterite or residual soil.

REGIONAL SEISMIC SETTING

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

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 5 miles northeast of the site. The Oatfield Fault occurs along the western side of the Portland Hills, and is about 3 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 1.8 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).

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 14.5 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 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 fault 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).

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 between 20 and 40 miles.

FIELD EXPLORATION

Subsurface conditions were explored on October 5, 2012 by excavating 4 test pits to depths of 9 to 10 feet below 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

The following discussion is a summary of subsurface conditions encountered in the test pit explorations. For more detailed information regarding subsurface conditions at specific exploration locations, refer to the attached test pit logs. Also, please note that subsurface conditions can vary between exploration locations, as discussed in the *Uncertainty and Limitations* section below.

Soil

On-site soils consist of undocumented fill, topsoil, residual soil, and Columbia River Basalt materials, as described below.

Undocumented Fill: Undocumented fill was encountered in test pits TP-2, TP-3, and TP-4. The fill consisted generally of soft to medium stiff, low organic, dry to moist silt with occasional gravel and debris. The fill extended to a depth of 24 inches at TP-2, and to 18 inches at TP-3 and TP-4.

Topsoil: In all test pits, the ground surface is directly underlain by topsoil consisting of brown, low to moderately organic silt with roots. Topsoil thickness in test pits ranged from about 6 to 9 inches. There is the potential for some tree roots or thicker topsoil zones in forested areas on site.

Residual Soil: Underlying the topsoil, the test pits encountered very stiff silty clay residual soil. Highly weathered basalt clasts were common within the residual soil. The residual soil was

encountered in all test pits and transitioned to less weathered basalt bedrock as discussed below. In test pits locations, the residual soil ranged from approximately 1 to 5 feet in thickness.

Columbia River Basalt: Underlying the residual soil, test pits encountered weathered basalt bedrock materials belonging to the Columbia River Basalt formation. The basalt encountered was typically highly weathered and ranged from extremely soft (R0) to medium hard (R3), with hardness increasing with depth. The explorations resulted in practical refusal on medium hard (R3) basalt in test pits TP-1, TP-2, and TP-4 at depths of 9 to 10 feet, using a John Deer 310E backhoe with 2-foot-wide toothed bucket. Soft (R2) basalt extended beyond the maximum depth of exploration (10 feet) in test pit TP-3.

Groundwater

On October 5, 2012, groundwater seepage was not encountered in the test pits. However, 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 can occur over fine-grained native deposits such as those beneath the site, particularly during the wet season.

CONCLUSIONS AND RECOMMENDATIONS

Results of this study indicate that the proposed development is geotechnically feasible, provided the recommendations of this report are followed. In our opinion, the greatest geotechnical constraint for project development is the presence of medium hard rock underlying much of the site.

The proposed residential structures may be supported on shallow foundations bearing on competent undisturbed native soils and/or engineered fill, designed and constructed as recommended in this report. The recommendations of this report assume the single-family structures will have raised floors and crawlspaces. If structures are planned with basements or concrete slab-on-grade floors, GeoPacific should be contacted for additional recommendations regarding basement retaining wall design and drainage, concrete floor slabs and moisture protection, or other issues.

Site Preparation and Undocumented Fill Removal

We recommend that the areas to be graded should first be cleared of vegetation and organic debris. Organic materials from clearing should be removed from the site or utilized in landscaping. Organic-rich topsoil should then be removed to competent native soils. Topsoil depths ranged from about 6 to 9 inches and we anticipate that the average depth of stripping may be roughly 8 inches over most of the site. Thicker stripping depths and root-picking will be required in treed areas.

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 site observations 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. 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.

Within the proposed building footprints or other settlement-sensitive areas, undocumented fill and debris should be completely removed. Exposed foundation subgrade soils should be evaluated by GeoPacific. In pavement areas, debris should be completely removed. Undocumented fill beneath pavement areas should be evaluated by GeoPacific. We anticipate that the majority of the undocumented fill will be suitable for re-use provided any organic debris is removed and the soils moisture-conditioned (dried) to allow compaction to project specifications.

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, 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

On-site native soils will be suitable for use as engineered fill during dry weather, provided they are adequately moisture conditioned prior to compacting. Imported fill material should be reviewed by the geotechnical engineer 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. Placement of boulders greater than 12 inches in size may be feasible in deeper fill areas, provided the boulders are surrounded in properly compacted engineered fill and boulders are not nested or stacked. Specific recommendations should be provided by GeoPacific in the field based on the quantity and size of rock materials being generated in the cuts.

Engineered fill should be compacted in horizontal lifts not exceeding 12 inches using heavy vibratory compaction equipment. We recommend that engineered fill be compacted to at least 90% of the maximum dry density determined by Modified Proctor (ASTM D1557) or equivalent. We anticipate that aeration 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 conform to ASTM D2922 and D3017, or D1556. Engineered fill should be periodically observed and tested by GeoPacific. Typically, one density test is performed for at least every 2 vertical feet of fill placed or every 500 yd^3, 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

Soils underlying the site are moisture sensitive and will 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.

Structural Foundations

Assuming our recommendations for site preparation are followed, native deposits and/or engineered fill soils will be encountered at or near the foundation level of the proposed structures. Native soils underlying the site are generally very stiff and should provide adequate support of the structural loads.

Shallow, conventional isolated or continuous spread footings may be used to support the proposed structures, provided they are founded on competent native soils or compacted engineered fill placed directly upon the competent native soils. We recommend a maximum allowable bearing pressure of 2,000 pounds per square foot (psf) for designing the footings. The recommended maximum allowable bearing pressure may be increased by 1/3 for short term transient conditions such as wind and seismic loading. All 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 0.45 may be assumed along the interface between the base of the footing and subgrade soils with no factor of safety included. Passive earth pressure for buried portions of structures may be calculated using an equivalent fluid weight of 330 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.

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. The outside edge of all perimeter footings should be provided with a drainage system consisting of 3-inch minimum diameter perforated plastic pipe embedded in a minimum of 1 ft^3 per lineal foot of clean, free-draining sand and gravel or 2"-1/2" 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.

Construction should include typical measures for controlling subsurface water beneath the homes, including positive crawlspace drainage to an adequate low-point drain exiting the foundation, visqueen covering the exposed ground in the crawlspace, and crawlspace ventilation (foundation vents). The homebuyers should be informed and educated that some slow flowing water in the crawlspaces is considered normal and not necessarily detrimental to the home given these other design elements incorporated into its construction. Appropriate design professionals should be

consulted regarding crawlspace ventilation, building material selection and mold prevention issues, which are outside GeoPacific's area of expertise.

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.

Seismic Design

Structures should be designed to resist earthquake loading in accordance with the methodology described in the 2009 International Residential Code (IRC) for One- and Two-Family Dwellings, with applicable 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 1. Recommended Earthquake Ground Motion Parameters (2009 IRC)

Parameter	Value
Location (Lat, Long), degrees	45.3565, -122.6517
Mapped Spectral Acceleration Values (MCE):	
Short Period, S_s	0.91 g
1.0 Sec Period, S_1	0.33 g
Soil Factors for Site Class D:	
F_a	1.14
F_v	1.75
Residential Site Value = 2/3 x F_a x S_s	0.69 g
Residential Seismic Design Category	D_1

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 engineered fill or native fine-grained soils, 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.

Excavating Conditions and Utility Trenches

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 9 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, TP-2, and TP-4 at depths of 9 to10 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 A 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.

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 thick nesses 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, one density test is taken for every 4 vertical feet of backfill on each 200-lineal-foot section of trench.

Pavement Sections

Table 2 presents recommended minimum pavement section for dry weather construction conditions. 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 2. Recommended Minimum Dry Weather Pavement Sections

Material Layer	Minimum Thickness (inches)	Compaction Standard
Asphaltic Concrete (AC)	3	92% of Rice Density (top lift) 91% of Rice Density (lower lifts) AASHTO T-209
Crushed Aggregate Base ¾"-0 (leveling course)	2	95% of Modified Proctor ASTM D1557
Crushed Aggregate Base 1½"-0	8	95% of Modified Proctor ASTM D1557
Recommended Subgrade	12	90% of Modified Proctor 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 near the ground surface 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.

UNCERTAINTY 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 attempted to execute these services in accordance with generally accepted professional principles and practices in the fields of geotechnical engineering and engineering geology 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.

REGISTERED PROFESSIONAL ENGINEER
64,422PE
OREGON
SEPTEMBER 26, 2008
SCOTT L. HARDMAN

10-17-12

EXPIRES: 06-30-2013

Benjamin G. Anderson, E.I.T.
Geotechnical Staff

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

Attachments: References
Figure 1 – Vicinity Map
Figure 2 – Site Plan and Exploration Locations
Test Pit Logs (TP-1 through TP-4)

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GeoPacific Engineering, Inc.
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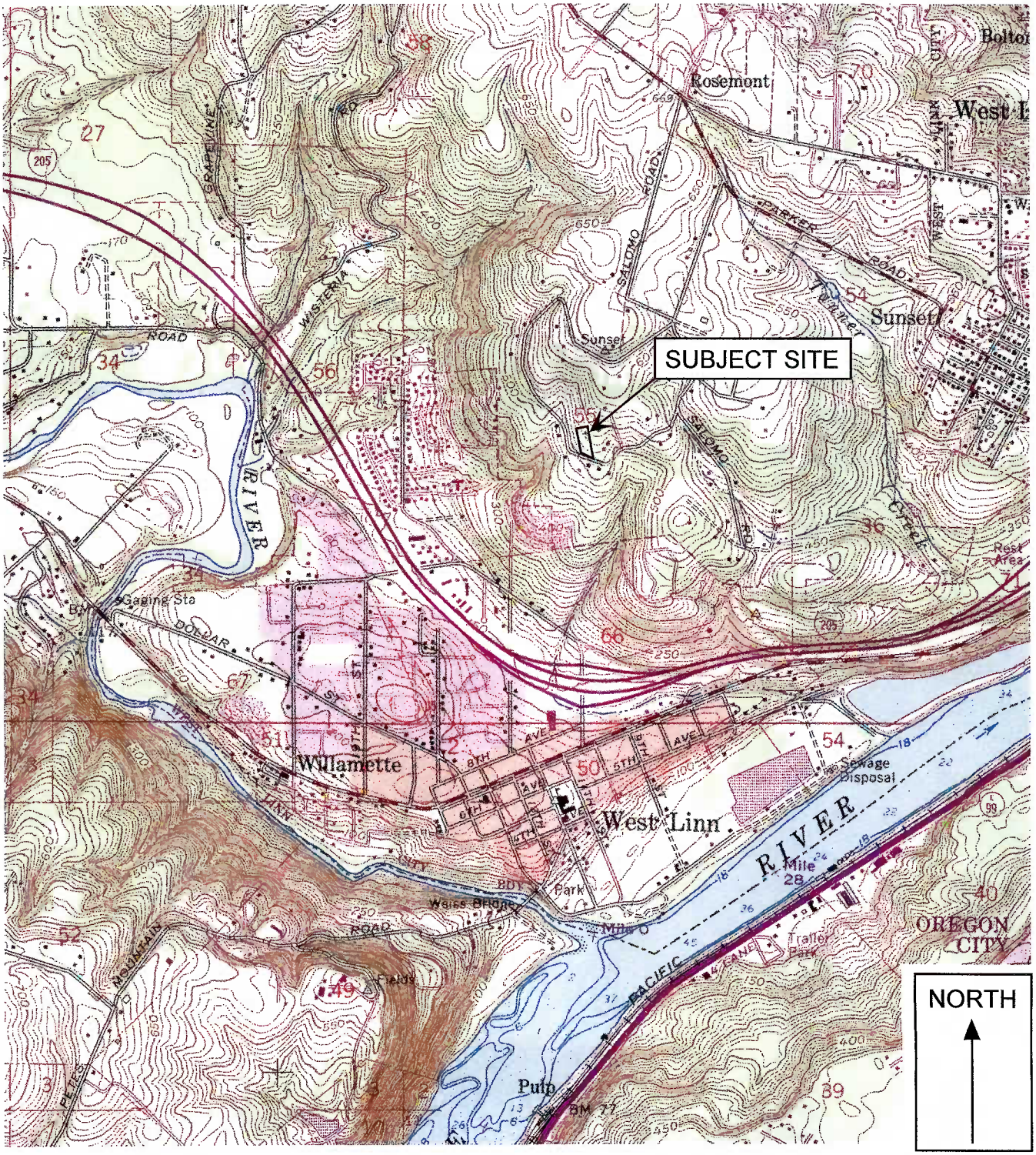
Tel: (503) 598-8445 Fax: (503) 941-9281

VICINITY MAP



Legend

Approximate Scale 1 in = 2,000 ft

Date: 10/12/12
Drawn by: BGA

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

Project: Falcon Place West Linn, Oregon	Project No. 12-2771	FIGURE 1

GeoPacific Engineering, Inc.
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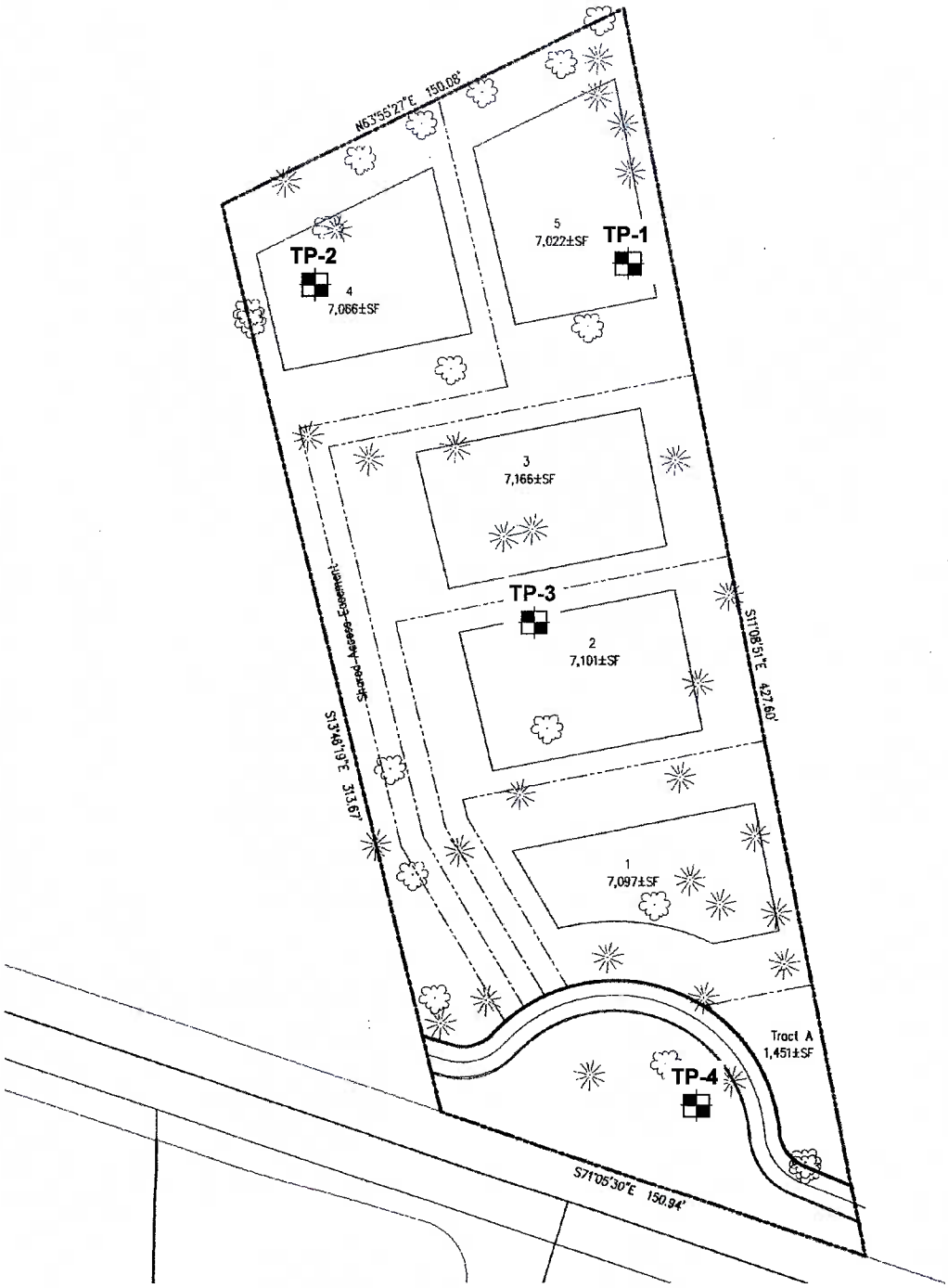
SITE PLAN AND EXPLORATION LOCATIONS



Legend

TP-1
Test Pit Designation and Approximate Location

Date: 10/15/12
Drawn by: BGA

0 60'

APPROXIMATE SCALE 1"=60'

Project: Falcon Place West Linn, Oregon	Project No. 12-2771	FIGURE 2

GeoPacific Engineering, Inc.
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TEST PIT LOG

Project: Falcon Place
West Linn, Oregon

Project No. 12-2771

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	>4.5					6" medium stiff SILT (ML), low to moderately organic, brown, fine roots throughout, dry (Topsoil) Very stiff, silty CLAY (CL), reddish brown, moist (Residual Soil)
2–8						Extremely soft to very soft (R0-R1), highly weathered BASALT, silty clay to clayey silt matrix, gray, yellow and black secondary mineralization, moist (Columbia River Basalt) Grades to soft (R2)
9–17						Test Pit Terminated at 9 feet due to practical refusal on medium hard to hard (R3-R4), moderately weathered BASALT, vesicular, light gray, black staining, moist (Columbia River Basalt) Note: No seepage or groundwater encountered.

LEGEND

Bag Sample

Bucket Sample


Shelby Tube Sample


Seepage


Water Bearing Zone


Water Level at Abandonment

Date Excavated: 10/5/12
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: Falcon Place
West Linn, Oregon

Project No. 12-2771

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						9" medium stiff SILT (ML), low to moderately organic, occasional angular gravel and construction debris, brown, fine roots throughout, dry (Topsoil)
						Soft to medium stiff SILT (ML), low organic, brown, with occasional angular gravel and construction debris, dry to moist (Fill)
2	>4.5					Very stiff, silty CLAY (CL), reddish brown, moist (Residual Soil)
3	>4.5					
4						Grades to with occasional soft basalt clasts (6" diam.)
5						
6						
7						Extremely soft to very soft (R0-R1), highly weathered BASALT, silty clay to clayey silt matrix, gray, moist (Columbia River Basalt)
8						Grades to reddish brown
9						
10						Test Pit Terminated at 10 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)
11						
12						Note: No seepage or groundwater encountered.
13						
14						
15						
16						
17						

LEGEND

Bag Sample

Bucket Sample


Shelby Tube Sample


Seepage


Water Bearing Zone


Water Level at Abandonment

Date Excavated: 10/5/12
Logged By: BGA
Surface Elevation:

GeoPacific Engineering, Inc.
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TEST PIT LOG

Project: Falcon Place
West Linn, Oregon

Project No. 12-2771

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						9" medium stiff SILT (ML), low to moderately organic, occasional angular gravel and construction debris, brown, fine roots throughout, dry (Topsoil)
						Soft to medium stiff SILT (ML), low organic, brown, with occasional angular gravel and construction debris, dry to moist (Fill)
2	>4.5					Very stiff, silty CLAY (CL), reddish brown, moist (Residual Soil)
3	>4.5					
4						Grades to with occasional soft basalt clasts (6" diam.)
5						
6						Extremely soft to very soft (R0-R1), highly weathered BASALT, silty clay to clayey silt matrix, gray, moist (Columbia River Basalt)
7						
8						Grades to reddish brown and soft (R2)
9						
10						Test Pit Terminated at 10 feet
						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: 10/5/12
Logged By: BGA
Surface Elevation:

GeoPacific Engineering, Inc.
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TEST PIT LOG

Project: Falcon Place
West Linn, Oregon

Project No. 12-2771

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						9" medium stiff SILT (ML), low to moderately organic, occasional angular gravel and construction debris, brown, fine roots throughout, dry (Topsoil)
						Soft to medium stiff SILT (ML), low organic, brown, with fine to heavy roots, dry to moist (Fill)
2	>4.5					Very stiff, silty CLAY (CL), reddish brown, moist (Residual Soil)
3	>4.5					Grades to with occasional soft basalt clasts (6" diam.)
4						
5						Extremely soft to very soft (R0-R1), highly weathered BASALT, silty clay to clayey silt matrix, gray, moist (Columbia River Basalt)
6						Grades to soft (R2)
7						
8						
9						
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)
11						
12						Note: No seepage or groundwater encountered.
13						
14						
15						
16						
17						

LEGEND

Bag Sample

Bucket Sample


Shelby Tube Sample


Seepage


Water Bearing Zone


Water Level at Abandonment

Date Excavated: 10/5/12
Logged By: BGA
Surface Elevation:

Walter H. Knapp & Associates, LLC
Consultants in Arboriculture, Silviculture, and Forest Ecology

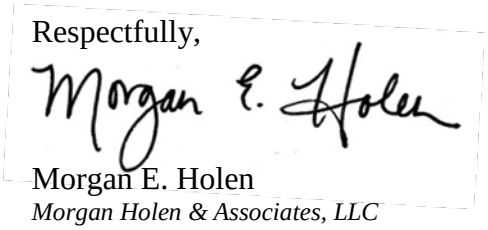
November 19, 2012

Planning and Building
City of West Linn
22500 Salamo Road #1000
West Linn, Oregon 97068

Re: Arborist Report and Tree Preservation Plan for Falcon Place Subdivision
West Linn, Oregon
Project No.: 1245 Falcon Place

Please find enclosed the Arborist Report and Tree Preservation Plan for the Flacon Place Subdivision project located at 23112 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 Certified Tree Risk Assessor, PN- 449

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

Falcon Place
West Linn, Oregon

November 19, 2012

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Walter H. Knapp & Associates, LLC
Consultants in Arboriculture, Silviculture, and Forest Ecology

November 19, 2012

FALCON PLACE – WEST LINN, OREGON
ARBORIST REPORT AND TREE PRESERVATION PLAN

1245

Purpose

This Arborist Report and Tree Preservation Plan for the Falcon Place 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 Falcon Place project site is located at 23112 Bland Circle in West Linn. The site is gently sloping with a mix of trees scattered across the site and one existing home that is planned for demolition. The site is planned for residential development. A site visit was conducted on September 13, 2012 by ISA Certified Arborists Morgan Holen (PN-6145A) and Walt Knapp (PN-0497A) 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, 49 existing trees were inventoried, including one significant Douglas-fir (*Pseudotsuga menziesii*) located on the adjacent property to the east that will be protected throughout construction. The remaining 48 on-site trees include 10 different tree species. However, Douglas-fir is most common, accounting for 30 (62.5%) of the on-site trees. 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.

Common Name	Species Name	Quantity	Percent
bigleaf maple	*Acer macrophyllum*	1	2.1%
cherry	*Prunus* spp.	2	4.2%
Douglas-fir	*Pseudotsuga menziesii*	30	62.5%
English walnut	*Juglans regia*	1	2.1%
Norway maple	*Acer platanoides*	2	4.2%
Oregon white oak	*Quercus garryana*	2	4.2%
pacific madrone	*Arbutus menziesii*	4	8.3%
Scouler's willow	*Salix scouleriana*	1	2.1%
sweet cherry	*Prunus avium*	4	8.3%
sweetgum	*Liquidambar styraciflua*	1	2.1%
Total		**48**	**100%**

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Significant trees were discussed with the City's Arborist Mike Perkins during a site visit on September 13, 2012 and determined based on size, type, location, health, and long term survivability. Of the 48 inventoried trees, 29 (60%) are classified as non-significant in the inventory data and 19 (40%) trees are classified as significant.

The 19 significant trees include four native and rather uncommon pacific madrones (*Arbutus menziesii*) and 15 Douglas-firs measuring between 17- and 53-inches in diameter and found to be in good condition. The Douglas-firs appeared to consist of two ages classes as inferred by size and stand characteristics. The younger Douglas-firs, located mainly in the interior of the site, have relatively smaller diameters and live crowns and do not appear significant. The significant Douglas-firs primarily exceed 30-inches in diameter and are located in a group in the northeast corner of the site, scattered along the eastern property boundary, and across the front (southern portion) of the site.

Tree Plan Recommendations

We coordinated with the project to team to discuss trees and groups of trees suitable for preservation in terms of proposed construction impacts, and modified site plans to preserve as many significant trees as possible.

Using the proposed site plan, we conducted exploratory excavation at tree 2631 on November 15, 2012 in order to determine whether or not critical roots would be impacted during retaining wall construction. Careful excavation occurred under our direct supervision. No critical roots were revealed within a two foot depth approximately nine feet from the face of the tree to the east and southeast. In fact, just three roots were revealed, all non-critical in size. This significant tree can be retained and protected during construction. [If critical roots would have been revealed, exploratory excavation would have stopped before impacts occurred and the tree would have been recommended for removal for construction purposes.]

Of the 48 on site trees, 32 (67%) are planned for removal and 16 (33%) are planned for retention. Of the 19 significant trees, five (26%) are planned for removal and 14 (74%) are planned for retention. Table 2 provides a summary of the number of non-significant and 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	27	2	**29**	60%
Significant Trees	5	14	**19**	40%
Total	**32**	**16**		
Percent	67%	33%	**48**	100%

The Tree Plan drawing illustrates the location of trees to be removed and preserved, and the approximate location of tree protection fencing. The City's standard protection area for groups of trees is the dripline plus 10-feet. This standard will not be feasible for all trees during construction, but the tree protection standards provided herein present alternative methods that will provide the same level of tree protection as the City's standard.

Tree Protection Standards

Trees to be protected during construction will need special consideration to assure their protection during construction. We recommend a preconstruction meeting with the owner, contractors and project arborist to review tree protection measures and address questions or concerns on site. Tree protection measures include:

Before Construction

1. **Tree Protection Zone.** The project arborist shall designate the Tree Protection Zone (TPZ) for each tree or group of trees to be protected. Where feasible, the size of the TPZ shall be established at the dripline of the tree or grove of trees plus 10-feet. Alternatively, the TPZ shall be established at the dripline of the tree or grove of tree. 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. 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

6. **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.

7. **Storage of Material or Equipment.** The contractor shall not store materials or equipment within the TPZ.
8. **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.
9. **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.
10. **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

11. **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 Falcon Place project site. The location of inventoried trees and tree protection measures shall be shown on site plan drawings. Thirty-two trees are recommended for removal because of condition or for the purposes of construction at the Flacon Place project site, and 16 on-site trees and one neighboring tree 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 Certified Tree Risk Assessor, PN- 449

Walter H. Knapp
Walter H. Knapp & Associates, LLC
Certified Forester, SAF 406
ISA Certified Arborist, PN-0497A

Enclosure: 1245 Falcon Place - Tree Data 11-19-12

No.	Common Name	Species Name	DBH*	C-Rad^	Defects and Comments	Sig?	Recommendation
2600	sweet cherry	*Prunus avium*	12		invasive species	No	remove for species
2601	sweet cherry	*Prunus avium*	10		invasive species	No	remove for species
2602	Douglas-fir	*Pseudotsuga menziesii*	30	18		Yes	remove for construction
2606	Douglas-fir	*Pseudotsuga menziesii*	35	20		Yes	retain
2610	Douglas-fir	*Pseudotsuga menziesii*	17	12	codominant crown class	Yes	retain
2613	Douglas-fir	*Pseudotsuga menziesii*	20	15		Yes	retain
2617	Douglas-fir	*Pseudotsuga menziesii*	8		suppressed	No	remove for condition
2618	Douglas-fir	*Pseudotsuga menziesii*	6		suppressed	No	remove for condition
2619	Douglas-fir	*Pseudotsuga menziesii*	22	16		No	remove for construction
2603	Douglas-fir	*Pseudotsuga menziesii*	46	20		Yes	remove for construction
2627	Douglas-fir	*Pseudotsuga menziesii*	20	20		No	remove for construction
2631	Douglas-fir	*Pseudotsuga menziesii*	41	18		Yes	retain
2635	Douglas-fir	*Pseudotsuga menziesii*	16	14		No	retain
2636	Douglas-fir	*Pseudotsuga menziesii*	53	22	modify street to preserve tree	Yes	remove for construction
2640	pacific madrone	*Arbutus menziesii*	22	16	lean to south	Yes	remove for construction
2641	pacific madrone	*Arbutus menziesii*	14	8	lean to south	Yes	retain
2642	bigleaf maple	*Acer macrophyllum*	12		topped, decay	No	remove for condition
2643	Oregon white oak	*Quercus garryana*	28	20	fair condition, stand grown	No	remove for construction
2647	Douglas-fir	*Pseudotsuga menziesii*	53	22		Yes	retain
2662	Douglas-fir	*Pseudotsuga menziesii*	42	16	thin crown, located on property line	No	remove for construction
2666	Scouler's willow	*Salix scouleriana*	12		history of branch failure, decay	No	remove for condition
2667	Douglas-fir	*Pseudotsuga menziesii*	16	10		No	remove for construction
2668	English walnut	*Juglans regia*	12	14		No	remove for construction
2669	Douglas-fir	*Pseudotsuga menziesii*	43	18		Yes	retain
2673	Douglas-fir	*Pseudotsuga menziesii*	26	16	retain with 2677 only	No	remove for construction
2677	Douglas-fir	*Pseudotsuga menziesii*	23	18	retain with 2673 only	No	remove for construction
2686	Douglas-fir	*Pseudotsuga menziesii*	42	18	numerous Phellinus pini conks	No	remove for condition
2690	Douglas-fir	*Pseudotsuga menziesii*	49	20		Yes	retain
2694	Norway maple	*Acer platanoides*	18	20	invasive species	No	remove for species
2695	sweetgum	*Liquidambar styraciflua*	16	14	poor structure and condition	No	remove for condition

No.	Common Name	Species Name	DBH*	C-Rad^	Defects and Comments	Sig?	Recommendation
2696	Douglas-fir	*Pseudotsuga menziesii*	29	16	pistolbutt	No	remove for construction
2697	Douglas-fir	*Pseudotsuga menziesii*	31	16	minor pistolbutt	No	remove for construction
2701	Douglas-fir	*Pseudotsuga menziesii*	31	14	fill material at base	No	remove for construction
2705	sweet cherry	*Prunus avium*	8		dead, windsnap	No	remove dead tree
2706	sweet cherry	*Prunus avium*	8		invasive species	No	remove for species
2707	Oregon white oak	*Quercus garryana*	18	18	basal decay, not sustainable	No	remove for condition
2708	Douglas-fir	*Pseudotsuga menziesii*	28	18	natural lean away from oak 2707	No	remove for construction
2712	Douglas-fir	*Pseudotsuga menziesii*	10	16		No	retain
2716	Norway maple	*Acer platanoides*	16	20	invasive species	No	remove for species
2717	cherry	*Prunus* spp.	16	14	poor condition	No	remove for condition
2718	cherry	*Prunus* spp.	16	14	poor condition	No	remove for condition
2719	Douglas-fir	*Pseudotsuga menziesii*	34	16		Yes	remove for construction
2723	Douglas-fir	*Pseudotsuga menziesii*	28	18	good vigor, retain in group only, one sided crown to west	Yes	retain group
2727	Douglas-fir	*Pseudotsuga menziesii*	44	20		Yes	retain group
2731	pacific madrone	*Arbutus menziesii*	26			Yes	retain group
2735	pacific madrone	*Arbutus menziesii*	10		lean to north	Yes	retain group
2736	Douglas-fir	*Pseudotsuga menziesii*	26	8	lean to north	Yes	retain group
2719.1	Douglas-fir	*Pseudotsuga menziesii*	36	18	7' outside property, 23' to tree 2719	Yes	protect adjacent tree
3027	Douglas-fir	*Pseudotsuga menziesii*	24	15		Yes	retain group

*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

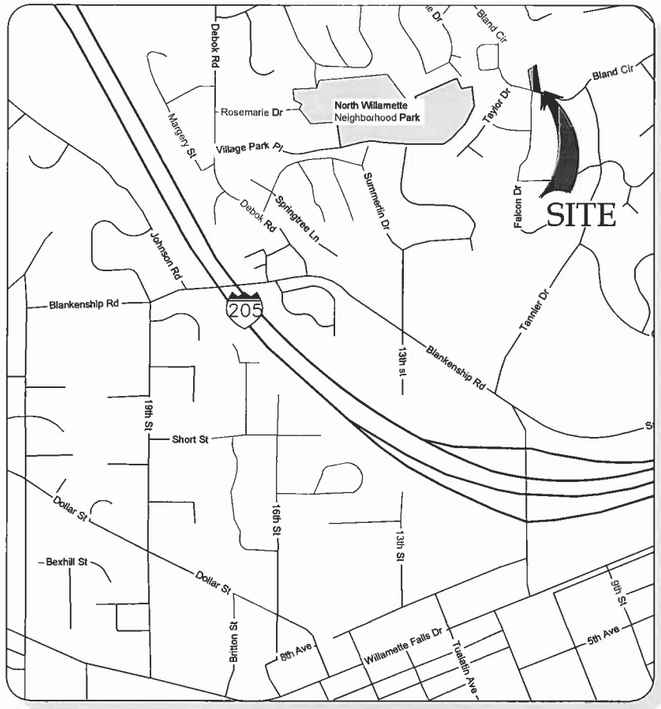
Sig? asks whether or not the tree is considered significant, either Yes (significant) or No (non-significant)

LAND USE DOCUMENTS

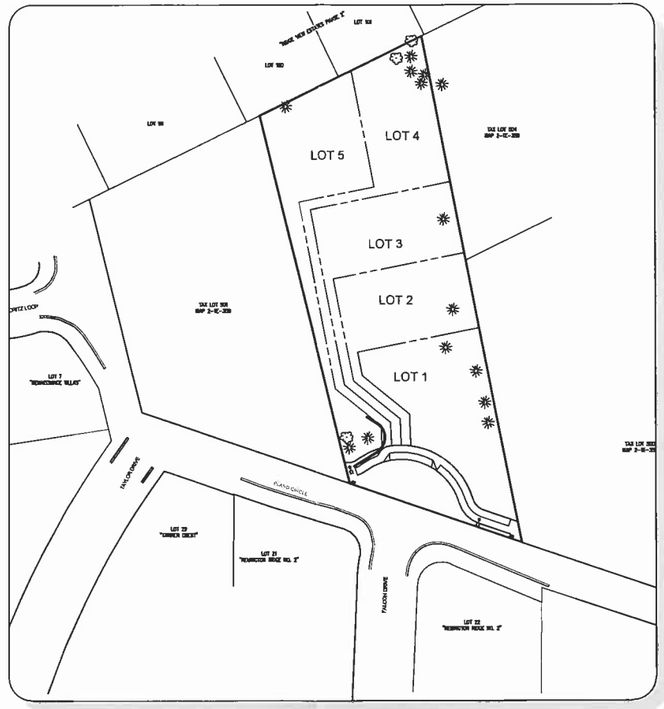
FOR

FALCON PLACE SUBDIVISION

PREPARED FOR
OLH 14, LLC



VICINITY MAP
NOT TO SCALE



SITE MAP
Scale: 1 inch = 60 feet
60 30 0 30 60

PROJECT TEAM

OWNER | APPLICANT
JT SMITH COMPANIES
JOHN WYLAND
5285 MEADOWS ROAD, SUITE #171
LAKE OSWEGO, OR 97035

CIVIL ENGINEER
3J CONSULTING, INC
10445 SW CANYON ROAD, SUITE 245
BEAVERTON, OR 97005
CONTACT: BRIAN FEENEY, PE
PHONE: 503-946-9365
EMAIL: brian.feeney@3j-consulting.com

PLANNING
3J CONSULTING, INC
10445 SW CANYON ROAD, SUITE 245
BEAVERTON, OR 97005
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LAND SURVEYING
COMPASS SURVEYING
4107 SE INTERNATIONAL WAY, SUITE 705
MILWAUKIE, OR 97222
CONTACT: DON DEVLAEMINCK, PLS
PHONE: 503-653-9093

SITE INFORMATION

SITE ADDRESS
23112 BLAND CIRCLE
WEST LINN, OR 97068

TAX LOT(S)
2S1E35B 502

JURISDICTION
CITY OF WEST LINN

ZONING
R-7

FLOOD HAZARD
MAP NUMBER: 41005C0257D
ZONE X (UNSHADED)

INDEX OF PLANS

#	REVISION SUMMARY	BY	DATE
	LAND USE		11/20/12

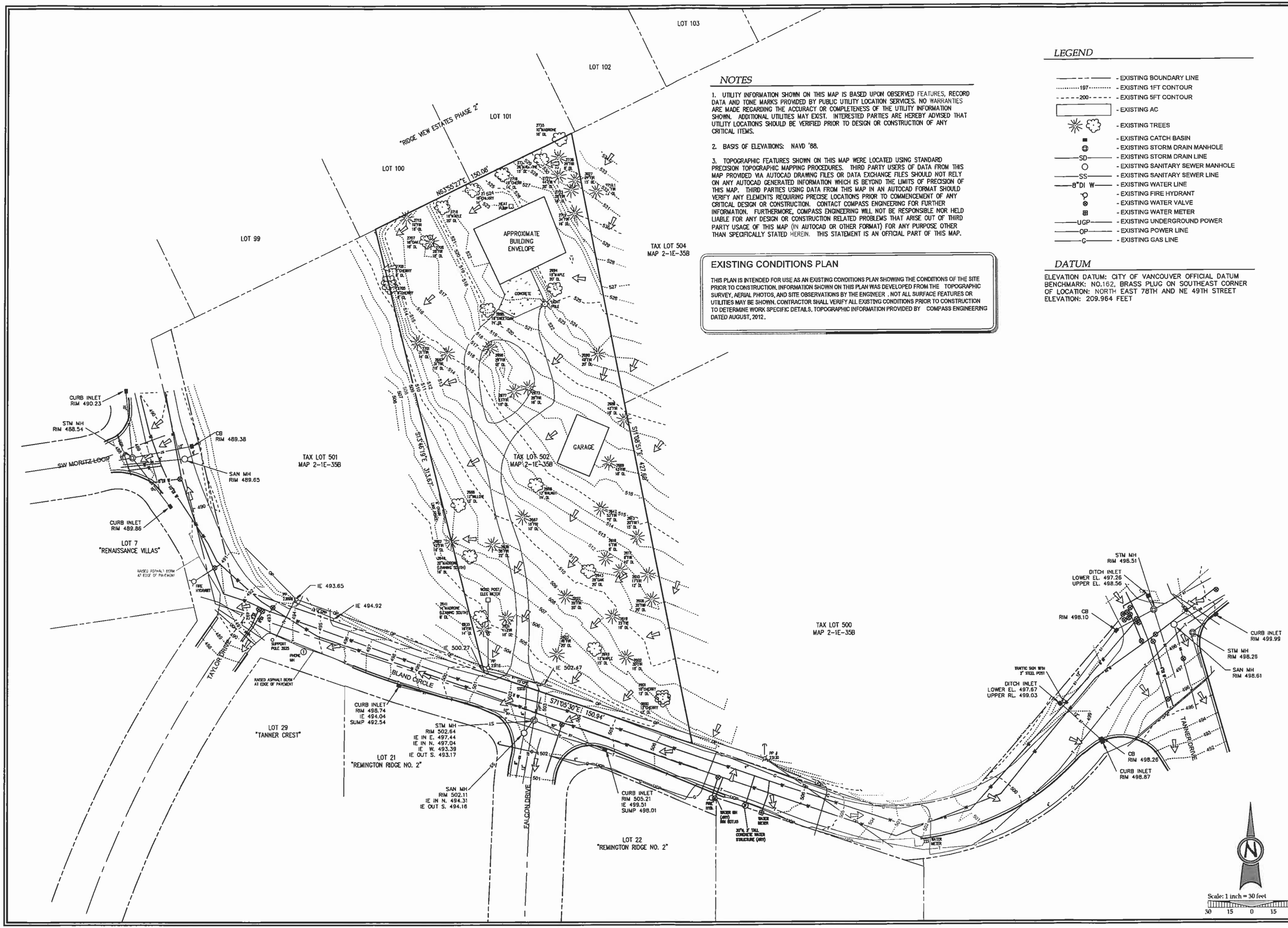
COVER SHEET
FALCON PLACE SUBDIVISION
OLH 14, LLC
WEST LINN, OR

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 #	12093
LAND USE #	___
TAX LOT #	21E35B 502
DESIGNED BY	JTE
CHECKED BY	BKF

SHEET TITLE
COVER SHEET

SHEET NUMBER
C0.0



NOTES

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2. BASIS OF ELEVATIONS: NAVD '88.

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.

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

- EXISTING BOUNDARY LINE
- 197 - EXISTING 1FT CONTOUR
- 200 - EXISTING 5FT CONTOUR
- EXISTING AC
- EXISTING TREES
- EXISTING CATCH BASIN
- EXISTING STORM DRAIN MANHOLE
- SD - EXISTING STORM DRAIN LINE
- EXISTING SANITARY SEWER MANHOLE
- SS - EXISTING SANITARY SEWER LINE
- 8"DI W - EXISTING WATER LINE
- EXISTING FIRE HYDRANT
- EXISTING WATER VALVE
- EXISTING WATER METER
- UGP - EXISTING UNDERGROUND POWER
- OP - EXISTING POWER LINE
- G - EXISTING GAS LINE

DATUM

ELEVATION DATUM: CITY OF VANCOUVER OFFICIAL DATUM
BENCHMARK: NO.162, BRASS PLUG ON SOUTHEAST CORNER OF LOCATION: NORTH EAST 78TH AND NE 49TH STREET
ELEVATION: 209.964 FEET

#	REVISION SUMMARY	BY	DATE
	LAND USE		11/20/12

EXISTING CONDITIONS
FALCON PLACE
SUBDIVISION

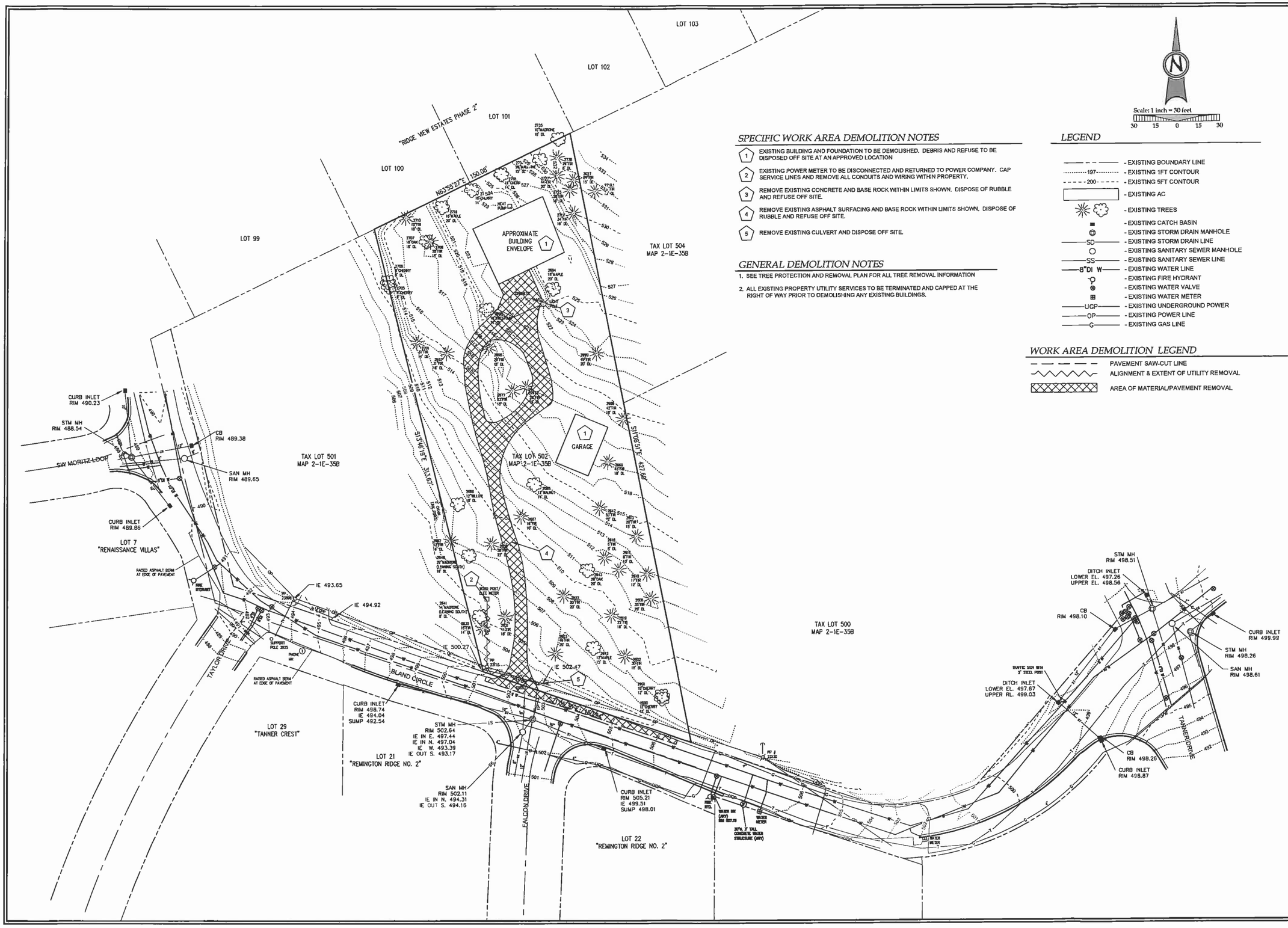
OLH 14, LLC
WEST LINN, OR

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 #	12093
LAND USE #	____
TAX LOT #	21E35B 502
DESIGNED BY	JTE
CHECKED BY	BKF

SHEET TITLE
EXIST. CONDITIONS

SHEET NUMBER
C1.0



SPECIFIC WORK AREA DEMOLITION NOTES

1. EXISTING BUILDING AND FOUNDATION TO BE DEMOLISHED. DEBRIS AND REFUSE TO BE DISPOSED OFF SITE AT AN APPROVED LOCATION
2. EXISTING POWER METER TO BE DISCONNECTED AND RETURNED TO POWER COMPANY. CAP SERVICE LINES AND REMOVE ALL CONDUITS AND WIRING WITHIN PROPERTY.
3. REMOVE EXISTING CONCRETE AND BASE ROCK WITHIN LIMITS SHOWN. DISPOSE OF RUBBLE AND REFUSE OFF SITE.
4. REMOVE EXISTING ASPHALT SURFACING AND BASE ROCK WITHIN LIMITS SHOWN. DISPOSE OF RUBBLE AND REFUSE OFF SITE.
5. REMOVE EXISTING CULVERT AND DISPOSE OFF SITE.

GENERAL DEMOLITION NOTES

1. SEE TREE PROTECTION AND REMOVAL PLAN FOR ALL TREE REMOVAL INFORMATION
2. ALL EXISTING PROPERTY UTILITY SERVICES TO BE TERMINATED AND CAPPED AT THE RIGHT OF WAY PRIOR TO DEMOLISHING ANY EXISTING BUILDINGS.

Scale: 1 inch = 30 feet

30 15 0 15 30

LEGEND

- EXISTING BOUNDARY LINE
- 197 - EXISTING 1FT CONTOUR
- 200 - EXISTING 5FT CONTOUR
- EXISTING AC
- EXISTING TREES
- EXISTING CATCH BASIN
- EXISTING STORM DRAIN MANHOLE
- SD - EXISTING STORM DRAIN LINE
- EXISTING SANITARY SEWER MANHOLE
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- EXISTING FIRE HYDRANT
- EXISTING WATER VALVE
- EXISTING WATER METER
- UGP - EXISTING UNDERGROUND POWER
- OP - EXISTING POWER LINE
- G - EXISTING GAS LINE

WORK AREA DEMOLITION LEGEND

- PAVEMENT SAW-CUT LINE
- ALIGNMENT & EXTENT OF UTILITY REMOVAL
- AREA OF MATERIAL/PAVEMENT REMOVAL

#	REVISION SUMMARY	BY	DATE
A	LAND USE		11/20/12

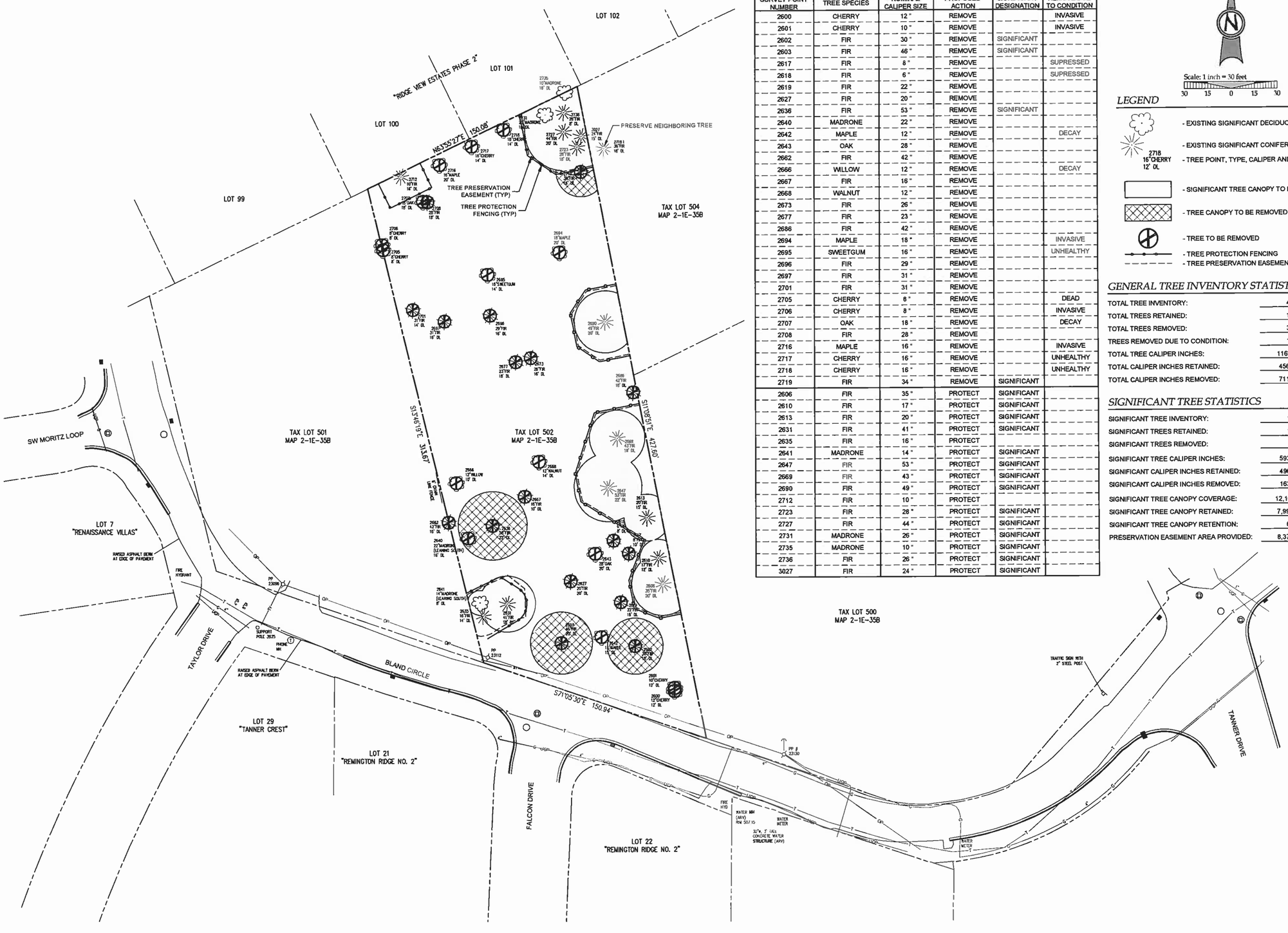
DEMOLITION PLAN
FALCON PLACE SUBDIVISION
OLH 14, LLC
WEST LINN, OR

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 #	12093
LAND USE #	___
TAX LOT #	21E35B 502
DESIGNED BY	JTE
CHECKED BY	BKF

SHEET TITLE
DEMO. PLAN

SHEET NUMBER
C1.1



TREE INVENTORY

SURVEY POINT NUMBER	TREE SPECIES	NOMINAL CALIPER SIZE	PROPOSED ACTION	SIGNIFICANT DESIGNATION	REMOVE DUE TO CONDITION
2600	CHERRY	12 "	REMOVE		INVASIVE
2601	CHERRY	10 "	REMOVE		INVASIVE
2602	FIR	30 "	REMOVE	SIGNIFICANT	
2603	FIR	46 "	REMOVE	SIGNIFICANT	
2617	FIR	8 "	REMOVE		SUPRESSED
2618	FIR	6 "	REMOVE		SUPRESSED
2619	FIR	22 "	REMOVE		
2627	FIR	20 "	REMOVE		
2636	FIR	53 "	REMOVE	SIGNIFICANT	
2640	MADRONE	22 "	REMOVE		
2642	MAPLE	12 "	REMOVE		DECAY
2643	OAK	28 "	REMOVE		
2662	FIR	42 "	REMOVE		
2666	WILLOW	12 "	REMOVE		DECAY
2667	FIR	16 "	REMOVE		
2668	WALNUT	12 "	REMOVE		
2673	FIR	26 "	REMOVE		
2677	FIR	23 "	REMOVE		
2686	FIR	42 "	REMOVE		
2694	MAPLE	18 "	REMOVE		INVASIVE
2695	SWEETGUM	16 "	REMOVE		UNHEALTHY
2696	FIR	29 "	REMOVE		
2697	FIR	31 "	REMOVE		
2701	FIR	31 "	REMOVE		
2705	CHERRY	8 "	REMOVE		DEAD
2706	CHERRY	8 "	REMOVE		INVASIVE
2707	OAK	18 "	REMOVE		DECAY
2708	FIR	28 "	REMOVE		
2716	MAPLE	16 "	REMOVE		INVASIVE
2717	CHERRY	16 "	REMOVE		UNHEALTHY
2718	CHERRY	16 "	REMOVE		UNHEALTHY
2719	FIR	34 "	REMOVE	SIGNIFICANT	
2606	FIR	35 "	PROTECT	SIGNIFICANT	
2610	FIR	17 "	PROTECT	SIGNIFICANT	
2613	FIR	20 "	PROTECT	SIGNIFICANT	
2631	FIR	41 "	PROTECT	SIGNIFICANT	
2635	FIR	16 "	PROTECT		
2641	MADRONE	14 "	PROTECT	SIGNIFICANT	
2647	FIR	53 "	PROTECT	SIGNIFICANT	
2669	FIR	43 "	PROTECT	SIGNIFICANT	
2690	FIR	49 "	PROTECT	SIGNIFICANT	
2712	FIR	10 "	PROTECT		
2723	FIR	28 "	PROTECT	SIGNIFICANT	
2727	FIR	44 "	PROTECT	SIGNIFICANT	
2731	MADRONE	26 "	PROTECT	SIGNIFICANT	
2735	MADRONE	10 "	PROTECT	SIGNIFICANT	
2736	FIR	26 "	PROTECT	SIGNIFICANT	
3027	FIR	24 "	PROTECT	SIGNIFICANT	

Scale: 1 inch = 30 feet

30 15 0 15 30

LEGEND

- EXISTING SIGNIFICANT DECIDUOUS TREE
- EXISTING SIGNIFICANT CONIFEROUS TREE
- 2718 16"CHERRY 12' DL — TREE POINT, TYPE, CALIPER AND DRIP LINE
- SIGNIFICANT TREE CANOPY TO REMAIN
- TREE CANOPY TO BE REMOVED
- TREE TO BE REMOVED
- TREE PROTECTION FENCING
- TREE PRESERVATION EASEMENT

GENERAL TREE INVENTORY STATISTICS

TOTAL TREE INVENTORY:	48 ea
TOTAL TREES RETAINED:	16 ea
TOTAL TREES REMOVED:	32 ea
TREES REMOVED DUE TO CONDITION:	14 ea
TOTAL TREE CALIPER INCHES:	1167 Inches
TOTAL CALIPER INCHES RETAINED:	456 Inches
TOTAL CALIPER INCHES REMOVED:	711 Inches

SIGNIFICANT TREE STATISTICS

SIGNIFICANT TREE INVENTORY:	18 ea
SIGNIFICANT TREES RETAINED:	14 ea
SIGNIFICANT TREES REMOVED:	4 ea
SIGNIFICANT TREE CALIPER INCHES:	593 Inches
SIGNIFICANT CALIPER INCHES RETAINED:	496 Inches
SIGNIFICANT CALIPER INCHES REMOVED:	163 Inches
SIGNIFICANT TREE CANOPY COVERAGE:	12,101 Sq. Ft.
SIGNIFICANT TREE CANOPY RETAINED:	7,996 Sq. Ft.
SIGNIFICANT TREE CANOPY RETENTION:	66.1%
PRESERVATION EASEMENT AREA PROVIDED:	8,370 Sq. Ft.

LAND USE	REVISION SUMMARY	BY	DATE
A			11/20/12

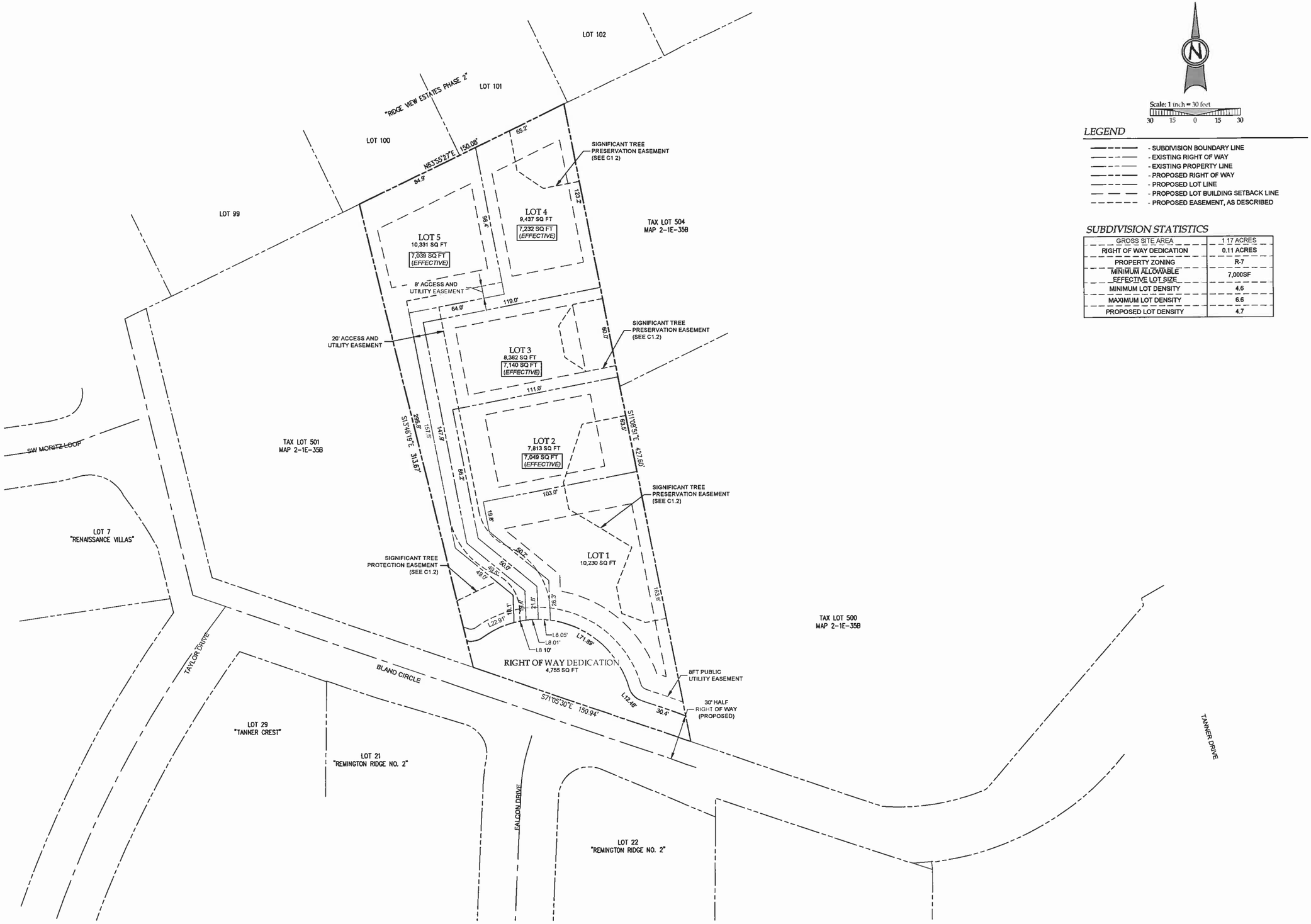
TREE PROTECTION AND REMOVAL PLAN
FALCON PLACE
SUBDIVISION
OLH 14, LLC
WEST LINN, OR

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 #	12093
LAND USE #	____
TAX LOT #	21E35B 502
DESIGNED BY	JTE
CHECKED BY	BKF

SHEET TITLE
TREE PLAN

SHEET NUMBER
C1.2



Scale: 1 inch = 30 feet

30 15 0 15 30

LEGEND

- SUBDIVISION BOUNDARY LINE
- EXISTING RIGHT OF WAY
- EXISTING PROPERTY LINE
- PROPOSED RIGHT OF WAY
- PROPOSED LOT LINE
- PROPOSED LOT BUILDING SETBACK LINE
- PROPOSED EASEMENT, AS DESCRIBED

SUBDIVISION STATISTICS

GROSS SITE AREA	1.17 ACRES
RIGHT OF WAY DEDICATION	0.11 ACRES
PROPERTY ZONING	R-7
MINIMUM ALLOWABLE EFFECTIVE LOT SIZE	7,000SF
MINIMUM LOT DENSITY	4.6
MAXIMUM LOT DENSITY	6.6
PROPOSED LOT DENSITY	4.7

#	REVISION SUMMARY	BY	DATE
	LAND USE		11/20/12

TENTATIVE SUBDIVISION PLAT
FALCON PLACE SUBDIVISION

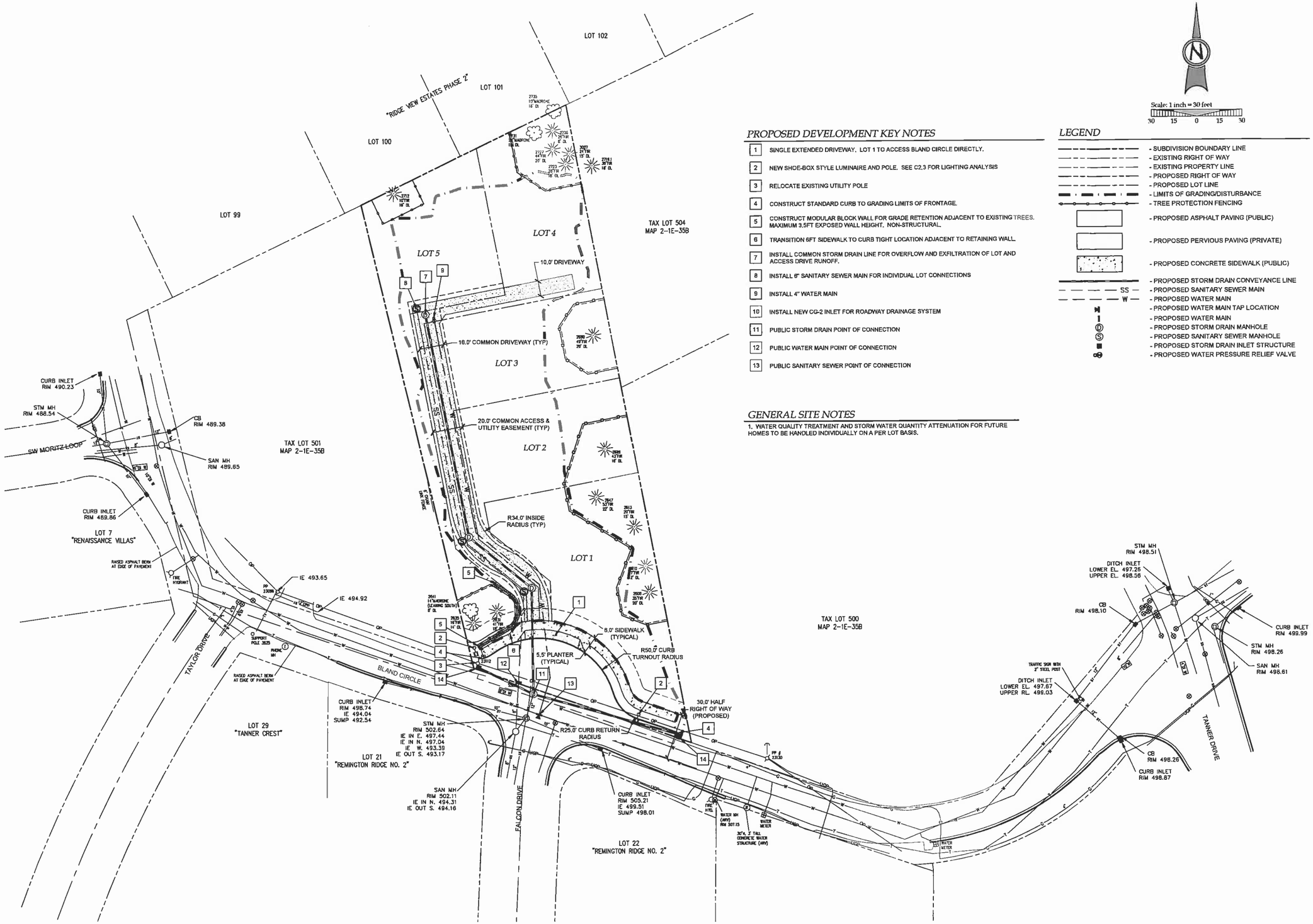
OLH 14, LLC
WEST LINN, OR

3J CONSULTING, INC
CIVIL ENGINEERING
WATER RESOURCES
LAND USE PLANNING
15445 SW CANYON ROAD SUITE 245, BEAVERTON, OR 97006
PHONE & FAX: (503) 946-9365

3J JOB ID #	12093
LAND USE #	____
TAX LOT #	21E35B 502
DESIGNED BY	JTE
CHECKED BY	BKF

SHEET TITLE
SUBDIVISION PLAT

SHEET NUMBER
C2.0



Scale: 1 inch = 30 feet

30 15 0 15 30

PROPOSED DEVELOPMENT KEY NOTES

1. SINGLE EXTENDED DRIVEWAY. LOT 1 TO ACCESS BLAND CIRCLE DIRECTLY.
2. NEW SHOE-BOX STYLE LUMINAIRE AND POLE. SEE C2.3 FOR LIGHTING ANALYSIS
3. RELOCATE EXISTING UTILITY POLE
4. CONSTRUCT STANDARD CURB TO GRADING LIMITS OF FRONTAGE.
5. CONSTRUCT MODULAR BLOCK WALL FOR GRADE RETENTION ADJACENT TO EXISTING TREES. MAXIMUM 3.5FT EXPOSED WALL HEIGHT. NON-STRUCTURAL.
6. TRANSITION 6FT SIDEWALK TO CURB TIGHT LOCATION ADJACENT TO RETAINING WALL.
7. INSTALL COMMON STORM DRAIN LINE FOR OVERFLOW AND EXFILTRATION OF LOT AND ACCESS DRIVE RUNOFF.
8. INSTALL 8" SANITARY SEWER MAIN FOR INDIVIDUAL LOT CONNECTIONS
9. INSTALL 4" WATER MAIN
10. INSTALL NEW CG-2 INLET FOR ROADWAY DRAINAGE SYSTEM
11. PUBLIC STORM DRAIN POINT OF CONNECTION
12. PUBLIC WATER MAIN POINT OF CONNECTION
13. PUBLIC SANITARY SEWER POINT OF CONNECTION

GENERAL SITE NOTES

1. WATER QUALITY TREATMENT AND STORM WATER QUANTITY ATTENUATION FOR FUTURE HOMES TO BE HANDLED INDIVIDUALLY ON A PER LOT BASIS.

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
- PROPOSED ASPHALT PAVING (PUBLIC)
- PROPOSED PERVIOUS PAVING (PRIVATE)
- PROPOSED CONCRETE SIDEWALK (PUBLIC)
- PROPOSED STORM DRAIN CONVEYANCE LINE
- SS — PROPOSED SANITARY SEWER MAIN
- W — PROPOSED WATER MAIN
- PROPOSED WATER MAIN TAP LOCATION
- PROPOSED WATER MAIN
- PROPOSED STORM DRAIN MANHOLE
- PROPOSED SANITARY SEWER MANHOLE
- PROPOSED STORM DRAIN INLET STRUCTURE
- PROPOSED WATER PRESSURE RELIEF VALVE

#	REVISION SUMMARY	BY	DATE
	LAND USE		11/20/12

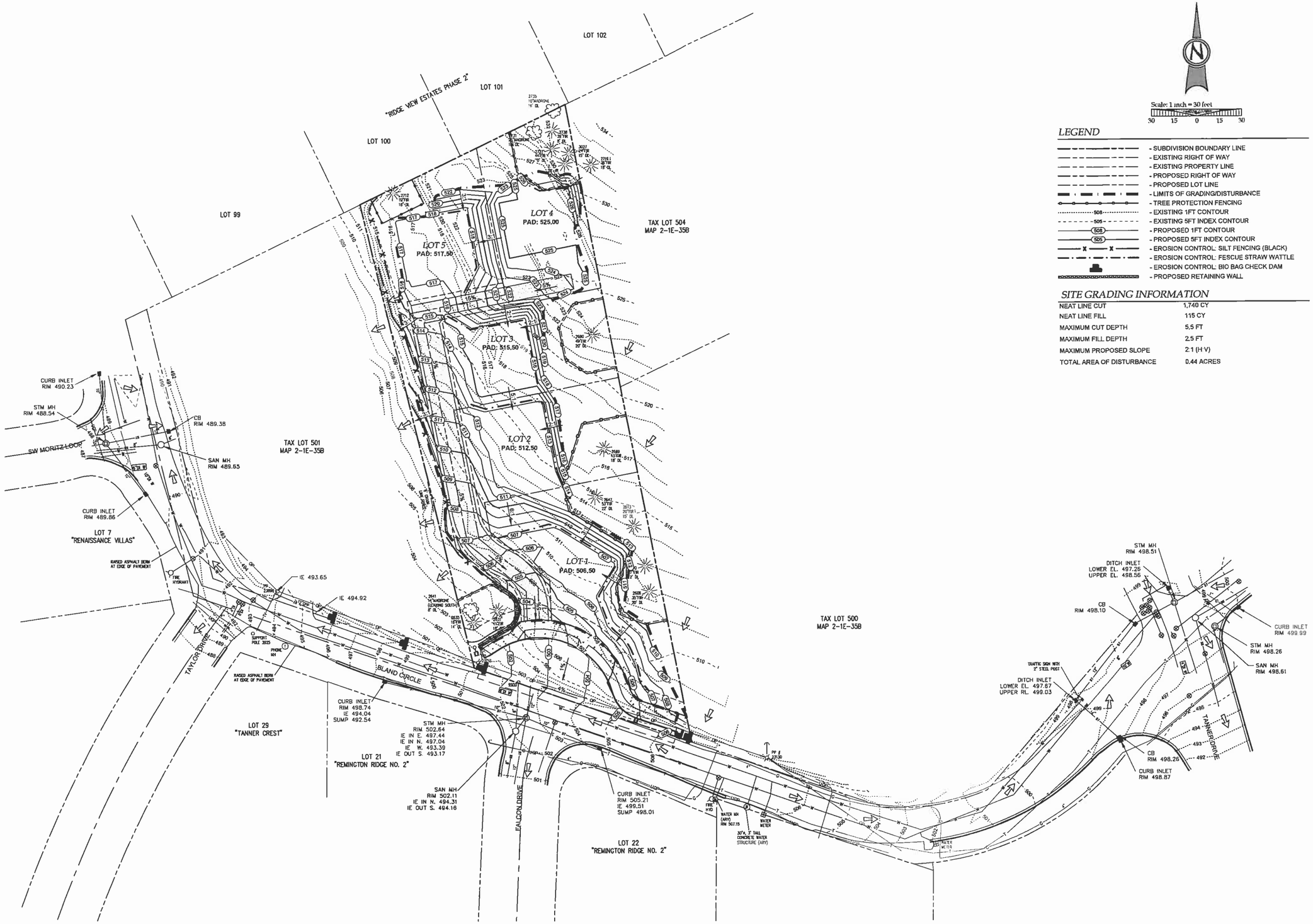
PROPOSED SITE PLAN
FALCON PLACE SUBDIVISION
OLH 14, LLC
WEST LINN, OR

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 #	12053
LAND USE #	____
TAX LOT #	21E35B 502
DESIGNED BY	JTE
CHECKED BY	BKF

SHEET TITLE
SITE PLAN

SHEET NUMBER
C2.1



Scale: 1 inch = 30 feet

30 15 0 15 30

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
- PROPOSED RETAINING WALL

SITE GRADING INFORMATION

NEAT LINE CUT	1,740 CY
NEAT LINE FILL	115 CY
MAXIMUM CUT DEPTH	5.5 FT
MAXIMUM FILL DEPTH	2.5 FT
MAXIMUM PROPOSED SLOPE	2:1 (H:V)
TOTAL AREA OF DISTURBANCE	0.44 ACRES

#	REVISION SUMMARY	BY	DATE
1	LAND USE		11/20/12

GRADING & EROSION CONTROL PLAN
FALCON PLACE
SUBDIVISION

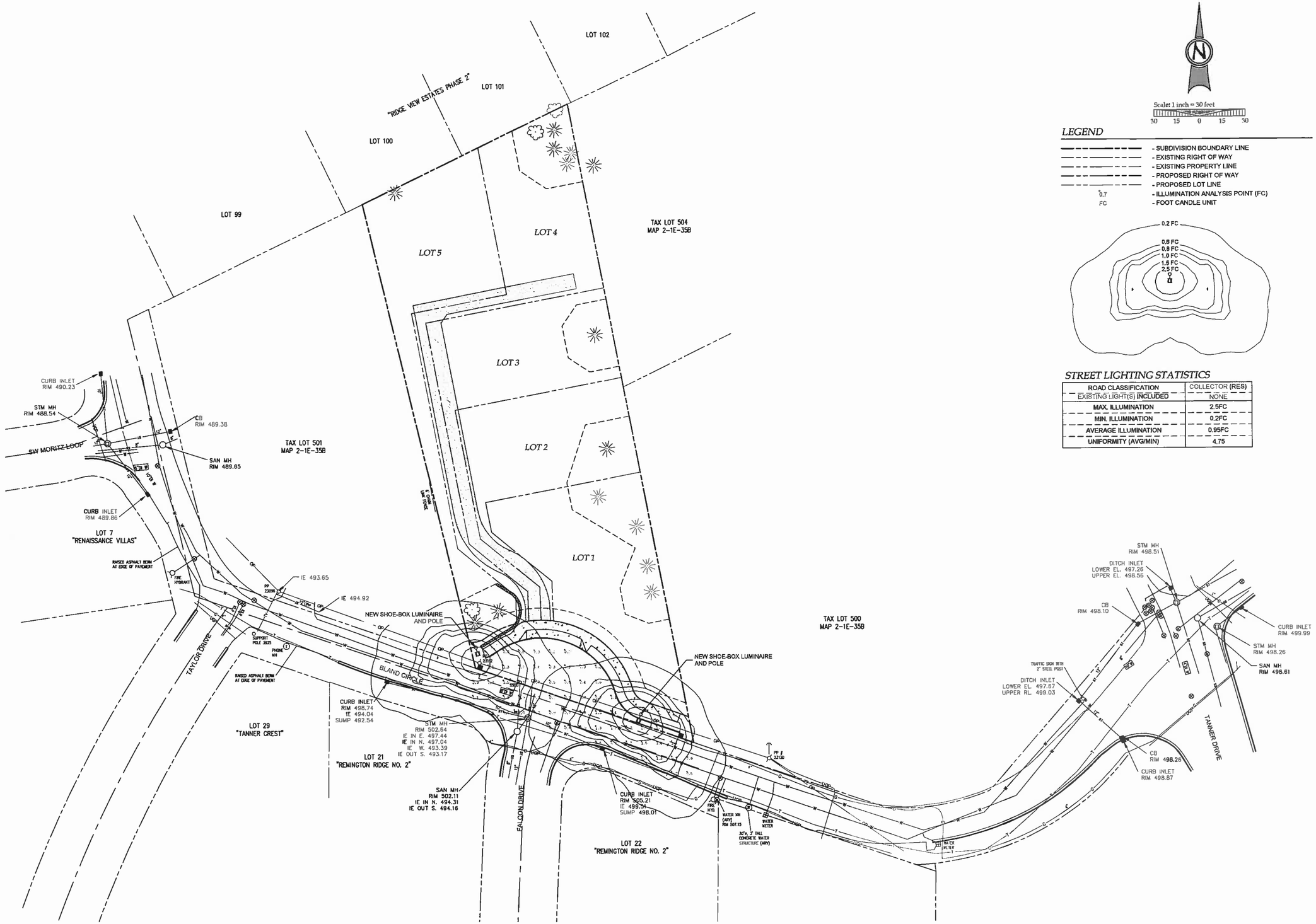
OLH 14, LLC
WEST LINN, OR

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 #	12093
LAND USE #	____
TAX LOT #	21E35B 502
DESIGNED BY	JTE
CHECKED BY	BKF

SHEET TITLE
GRADING & EC

SHEET NUMBER
C2.2



LEGEND

- SUBDIVISION BOUNDARY LINE
- EXISTING RIGHT OF WAY
- EXISTING PROPERTY LINE
- PROPOSED RIGHT OF WAY
- PROPOSED LOT LINE
- 0.7 FC - ILLUMINATION ANALYSIS POINT (FC)
- FOOT CANDLE UNIT

STREET LIGHTING STATISTICS

ROAD CLASSIFICATION	COLLECTOR (RES)
EXISTING LIGHT(S) INCLUDED	NONE
MAX. ILLUMINATION	2.5FC
MIN. ILLUMINATION	0.2FC
AVERAGE ILLUMINATION	0.95FC
UNIFORMITY (AVG/MIN)	4.75

LAND USE	11/20/12	
REVISION SUMMARY	BY	DATE
A		

STREET LIGHTING PLAN
FALCON PLACE SUBDIVISION
OLH 14, 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 #	12093
LAND USE #	____
TAX LOT #	21E35B 502
DESIGNED BY	JTE
CHECKED BY	BKF

SHEET TITLE
LIGHTING PLAN

SHEET NUMBER
C2.3