



June 24, 2016

Mr. Peter Spir
City of West Linn
Planning Department
PO Box 29
West Linn, OR 97068

Rick Givens
Planning Consultant
18680 Sunblaze Dr.
Oregon City, Oregon 97045

Dear Peter:

As requested by staff, we are submitting the following revisions to the application for the Tanner Ridge at Rosemont PUD application:

- 1) Revised application narrative requesting an access spacing variance and providing analysis of the relevant approval criteria.
- 2) Revised storm report prepared by Theta Engineering, Inc., together with revised Preliminary Utility Plan and Grading Plan drawings.
- 3) CD containing digital copies of the revised documents.
- 4) Check for \$1,450.00 for the application fee for the additional variance.

We are requesting that the requirement for a geotechnical report be removed due to the very small area of the site that is in excess of 25% grade, and because the fact that the vast majority of this area is in rear yards where no construction will be built.

It is our understanding that this additional material will complete our application so that it may now be scheduled for hearing.

Sincerely yours,

Rick Givens

TANNER RIDGE AT ROSEMONT

Planned Unit Development Subdivision Application

Icon Construction & Development, LLC

Proposal: This application requests approval of a 50-lot Planned Unit Development subdivision to be developed on property located at 1270 Rosemont Road in West Linn. The property is situated southeast of Remington Drive and northwest of Douglas Park. The subject property is described as Tax Lots 21E26A 1100 and 21E26D 300. The site is 15.97 acres (695,610 square feet) in area and is presently vacant. The subject property is zoned R-10.

The application is being proposed for development pursuant to the Planned Unit Development provisions of Chapter 24 of the West Linn Community Development Code (CDC). These provisions allow for greater design flexibility and for the creation of common area open space.



Vicinity Map



The proposed development conforms to the applicable provisions of the CDC as follows:

CHAPTER 24 – PLANNED UNIT DEVELOPMENT

24.010 PURPOSE

The purpose of the Planned Unit Development overlay zone is to provide a means for creating planned environments:

- A. To produce a development which would be as good or better than that resulting from traditional lot-by-lot development.*
- B. To preserve, to the greatest extent possible, the existing landscape features and amenities through the use of a plan that relates the type and design of the development to a particular site.*
- C. To correlate comprehensively the provisions of this title and all applicable plans; to encourage developments which will provide a desirable, attractive, and stable environment in harmony with that of the surrounding area.*

D. To allow flexibility in design, placement of buildings, use of open spaces, circulation facilities, off-street parking areas, and to best utilize the potentials of sites characterized by special features of geography, topography, size, and shape.

E. To allow a mixture of densities between zoning districts and plan designations when more than one district or designation is included in the development.

F. To develop projects that are compatible with neighboring development in terms of architecture, massing, and scale. Where that cannot be accomplished, appropriate transitions should be provided that are deferential or sympathetic to existing development.

G. To carry out the goals of West Linn's Vision, Imagine West Linn, especially goals relating to housing, commercial, and public facilities.

Applicant Response: The proposed development will be better than that which would result from the traditional R-10 subdivision process. The lots will be developed with single-family homes and will be compatible with the surrounding neighborhood in size and setbacks. The benefit of the PUD process, however, is that clustering of homes within the proposed development will provide for the preservation and dedication of 3.63 acres of the site to the City of West Linn as park space. This open space will provide for the preservation of wetlands and wooded areas of the site and, in conjunction with the adjoining Parker Rd. right-of-way walking path, will provide for a nature park that will benefit the proposed development and the surrounding neighborhood.

24.020 ADMINISTRATION AND APPROVAL PROCESS

A. The Planned Unit Development (PUD) zone is an overlay zone and the following are preconditions to filing an application:

1. Attending a pre-application conference with the City Community Development Department pursuant to CDC 99.030;

2. Attending a meeting with the respective City-recognized neighborhood association(s), per CDC 99.038, and presenting their preliminary proposal and receiving comments.

B. The application shall be filed by the owner of record or authorized agent.

C. Action on the application shall be as provided by Chapter 99 CDC, Procedures for Decision-Making: Quasi-Judicial. (Ord. 1474, 2001; Ord. 1590 § 1, 2009; Ord. 1621 § 25, 2014)

Applicant Response: The applicant attended a pre-application conference with City staff on January 21, 2016, as required by this section. A meeting with the Parker Crest Neighborhood Association was held on March 16, 2016. The Savanna Oaks and Hidden Falls Neighborhood Associations were also invited to attend this meeting as the site is located within 500 feet of the boundary line between these neighborhoods. The application is being filed by Icon Construction and Development, LLC, who will be the

developer of the subject property. The owner of the subject property, Terwilliger Plaza Foundation Holdings, LLC., has given its authorization for the filing of this application by signing the attached City of West Linn Development Review Application form. The required decision-making procedures of Chapter 99 will be followed by the City of West Linn in the review of this application.

24.030 EXPIRATION OR EXTENSION OF APPROVAL

Applicant Response: Not applicable.

24.040 NON-COMPLIANCE – BOND

Applicant Response: Not applicable.

24.050 STAGED DEVELOPMENT

The applicant may elect to develop the site in stages. "Staged development" is defined as an application that proposes numerous phases or stages to be undertaken over a period of time. Typically, the first phase will be sufficiently detailed pursuant to the submittal standards of Chapter 85 CDC. Subsequent phases shall provide the type of use(s); the land area(s) involved; the number of units; generalized location and size (square feet) of commercial, industrial, or office projects; parks and open space; street layout, access, and circulation; etc. Generalized building footprints for commercial, office, public, and multi-family projects and parking lot layout will be required. Staged development shall be subject to the provisions of CDC 99.125.

Applicant Response: Not applicable. The project will be developed in a single phase.

24.060 AREA OF APPLICATION

A. Planned unit developments (PUDs) may be established in all residential, commercial, and industrial districts on parcels of land which are suitable for and of sufficient size to be planned and developed in a manner consistent with the purposes of this section.

B. All qualifying non-residential, all mixed use developments, and all qualifying residential developments of five or more lots shall be developed as PUDs with the Hearings Officer as the decision-making body, while all qualifying residential developments of four or fewer lots shall be developed as a PUD with the Planning Director as the decision-making body, whenever one of the following qualifying criteria apply:

- 1. Any development site composed of more than 25 percent of Type I or Type II lands, as defined by CDC 24.060(C), shall be developed as a PUD.*
- 2. More than 20 percent of the dwelling units are to be attached on common wall except in the R-3 and R-2.1 zones. A PUD is not required in R-3 and R-2.1 zones where common wall/multi-family projects are proposed. However, other criteria (such as density transfer, mixed uses, etc.) may trigger a PUD.*

3. *A large area is specifically identified by the Planning Director or Planning Commission as needing greater design flexibility, increased open space, or a wider variety of housing types. (Ord. 1408, 1998)*

Applicant Response: The site contains 11,119 sq. ft. of Type II slopes and an additional 22,835 sq. ft. of drainageway and associated wetlands. The combined total Type II land is 33,954 sq. ft., or 5.1% of the 659,610 sq. ft. total site area. Since the site does not contain more than 25 percent Type I or Type II lands, it is not required to be developed as a PUD. The applicant is proposing that this project be developed as a PUD because of the increased flexibility in design standards afforded by Chapter 24 and the opportunity to preserve significant trees and drainage corridor areas as open space. The property is large enough to be planned and developed in a manner that is consistent with the purposes of the PUD provisions, as demonstrated by the site plan. It provides for appropriate building sites while preserving open space that will make a positive addition to the City's park system in this area.

24.070 EXEMPTIONS FROM PLANNED UNIT DEVELOPMENT REQUIREMENTS

A planned unit development (PUD) shall not apply in cases where all the following conditions exist:

- A. No density transfer is proposed pursuant to provisions of this chapter.*
- B. No development, construction, or grading will take place on Type I and II lands.*
- C. All the Type I and II lands shall be dedicated to the City as open space, or protected by easement with appropriate delineation.*

Applicant Response: Density transfer is being proposed from the areas planned to be dedicated to the City as park land. The proposed development, therefore, is consistent with this section.

24.080 SUBMITTAL REQUIREMENTS

The submittal requirements shall apply to non-exempt projects as identified in CDC 55.025, and shall include the following:

- A. *Narrative discussing proposal and applicability of the PUD and addressing approval criteria of this chapter and design review, CDC 55.100.*
- B. *Narrative and table showing applicable density calculations.*
- C. *Map showing how the densities will be distributed within the project site.*
- D. *Compliance with submittal requirements of Chapter 55 CDC, Design Review, including full response to approval criteria for Chapter 55 CDC, Design Review, and Chapter 85 CDC, if it is a single-family PUD.*
- E. *Narrative, tables, and showing all density transfers.*
- F. *Tables and maps identifying all Type I, II, III and IV lands by acreage, location and type (please refer to definitions of these lands in Chapter 02CDC).*
- G. *Other material as required by the Planning Director. (Ord. 1408, 1998; Ord. 1463, 2000)*

Applicant Response: This narrative is provided in response to Item A. Density calculations are provided in a table depicted on the Tentative Plat. The site plan shows the distribution of densities for this project. The tree preservation provisions of Chapter 55 of the CDC apply to this project and have been satisfied in the design of the site plan, as discussed below in this report. The provisions of Chapter 85 are addressed below in this narrative. The density calculations and open spaces depicted on the Tentative Plan satisfy the requirement of Subsection E. Areas of Type II land exist on the property and are depicted on the Tentative Plan as the drainageway and associated wetlands areas, as well as a minor area of slopes in the range of 25 to 35% grade. No other additional materials were identified for this property by the Planning Director.

24.090 APPLICABILITY AND ALLOWED USES

Applicant Response: The provisions of this section allow the PUD Overlay Zone to be applied to the subject property since it is in a residential zone. The only uses proposed are single-family detached homes and open space that will be dedicated to the City of West Linn as park land for nature preservation and recreational hiking purposes. These uses are authorized by this section. No commercial uses are proposed.

24.100 APPROVAL CRITERIA

- A. *The approval criteria of CDC 55.100, design review, shall apply to non-exempted projects per CDC 55.025. Single-family detached, single-family attached, and duplex residential units proposed shall comply with the provisions of Chapter 43 CDC at time of building permit application.*

Applicant Response: Only single-family detached homes are proposed so the approval criteria of CDC 55.025 do not apply. The provisions of Chapter 43 will be reviewed at the time of building permit application.

B. The application shall also demonstrate compliance with the following criteria:

- 1. The proposal shall preserve the existing amenities of the site to the greatest extent possible by relating the type and design of the development to the topography, landscape features, and natural amenities existing on the site and in the vicinity.*
- 2. The proposed PUD shall provide a desirable, attractive, and stable environment in harmony with that of the surrounding area through thorough, well-developed, detailed planning and by comprehensively correlating the provisions of this code and all applicable adopted plans.*
- 3. The placement and design of buildings, use of open spaces, circulation facilities, off-street parking areas, and landscaping shall be designed to best utilize the potentials of the site characterized by special features of geography, topography, size, and shape.*
- 4. The PUD shall be developed so that it is compatible with neighboring development in terms of architecture, massing, and scale. Where that cannot be accomplished, appropriate transitions shall be provided that are deferential or sympathetic to existing development.*

Applicant Response: The existing amenities of the site are the significant trees as mapped on the Tree Plan and the pond, wetlands and stream corridor areas located along the west side of this site. Except where grading associated with the construction of the cul-de-sac street requires removal, the significant trees will be preserved in park areas and through the use of conservation easements on lots.

The proposed development pattern provides suitable building sites for detached single-family homes consistent with the character of the surrounding single-family neighborhood. As discussed in this narrative, this project has been designed to conform to all applicable review and approval criteria.

The site plan provides for the dedication of 3.63 acres as park for purposes of preservation of significant trees and a main drainage corridor and associated wetlands. The plan also provides for drainage corridor easements in various areas of the site to provide of the passage of ephemeral drainageways depicted on City maps.

Ensuring compatibility with the surrounding neighborhood was a primary concern in preparing this application. Homes will be of a similar size and value as is found in the single-family neighborhood on Roxbury Drive. At the neighborhood meeting conducted prior to the submittal of this application, neighborhood concerns regarding potential for cut-through traffic from Rosemont Road to Parker Road via Roxbury Drive. Taking consideration of this commentary, the applicant has redesigned the street layout since

the date of the meeting so as to provide for a direct connection from Rosemont to Parker Drive via the new Meadowlark Drive within the subdivision.

C. All densities, density transfers, transitions, density bonuses, and proposed setbacks shall conform to provisions of this chapter as required by CDC 24.080 and 24.110 through 24.170 inclusive.

Applicant Response: As addressed in this narrative and shown in density calculations on the Tentative Plan, the proposed development is consistent with these provisions.

24.110 RESIDENTIAL DENSITY CALCULATIONS

A. The PUD allows density to be transferred on residential portions of the site. The following sections explain how the allowed number of dwelling units per acre is calculated. The standards are also intended to ensure that PUDs and adjoining developments are compatible and maintain a sense of neighborhood unity.

B. Net acres for land to be developed with detached single-family dwellings, or multi-family dwellings including duplexes, is computed by subtracting the following from the gross acres:

- 1. Any land area which is included in a boundary street right-of-way or water course, or planned open space areas if density transfer is not requested.*
- 2. An allocation of 25 percent for public or private facilities (e.g., streets, paths, right-of-way, etc.) or, when a tentative plat or plan has been developed, the total land area allocated for public or private facilities.*
- 3. A lot of at least the size required by the applicable base zone, if an existing dwelling is to remain on the site.*

C. The allowed density or number of dwelling units on the site, subject to the limitations in CDC 24.140 and 24.150, is computed by dividing the number of square feet in the net acres by the minimum number of square feet required for each lot, by the base zone.

Applicant Response: See Density shown on the Tentative Plan and in response to Chapter 24.130.

24.130 ALLOWABLE DENSITY ON TYPE I AND II LANDS

Applicant Response:

This subsection provides for reduced density of development for various types of physical features that may exist on a given property. In the case of the subject property, there are minor areas of slopes in the 25% to 35% category (Type II). When density is transferred from such slopes, the density is reduced to 50% (if developed) or 75% (if undeveloped) of that normally permitted by the underlying zone. Building envelopes area shown on the Tentative Plan to show the limits of Type II lands proposed to be

developed. Additionally, lands within Water Resource Areas are limited to transfer of 50% of density that would normally accrue from the underlying zone. Taking into account these areas, density calculations are shown in Table 1, below:

Table 1: Density Calculations

	Area in Sq. Ft.
Gross Site Area	659,610
Land in a boundary street right-of-way, water course, or planned open space where density transfer is not requested	0
Area in street rights-of-way:	124,185
Net Site Area:	535,425
Type II Slopes Developed: $4,273 \text{ sq.ft.} / 10,000 \times .5 =$	0.21 Units
Type II Slopes Undeveloped: $6,846 \text{ sq. ft.} / 10,000 \times .75 =$	0.51 Units
Water Resource Area: $99,364 \text{ sq.ft.} / 10,000 \times .5 =$	4.97 Units
Open space (Type III and IV lands) $58,759 \text{ sq. ft.} / 10,000 =$	5.88 Units
Type III & IV lands developed: $366,185 \text{ sq. ft.} / 10,000 =$	36.62 Units
Total allowable base density:	48 Units
Density Bonus for Park Dedication: 5% (See Section 24.150)	2 Units
TOTAL ALLOWABLE DENSITY:	50 UNITS

24.140 TRANSITIONS AND LIMITATIONS ON DENSITY TRANSFER

A. Because the PUD and the provisions of this chapter allow increased residential densities and various housing types, it is necessary that some kind of transition be provided between the project site and the surrounding properties. These transitions will, for example, mitigate the impacts of multi-family housing next to single-family housing. Transitions are not required in all cases, however. The following exceptions shall apply:

- 1. Single-family PUD next to single-family non-PUD does not require a transition (e.g., even though it is R-5 single-family next to R-10, etc.). Also, similar type housing does not need to transition (e.g., duplex next to duplex);*

Applicant Response: The subject property is being developed with lots for single-family detached homes so no transition is required.

24.150 DENSITY BONUSES

A. Although the density may be reduced by CDC 24.130, applicants are encouraged to seek density bonus credits under such categories as “site planning and design excellence.” The permitted number of dwelling units may be increased up to 29 percent above those computed under the formula above based on a finding of the Planning Director that the density bonus credits have been satisfied as set forth in the following section and in CDC 24.160:

Applicant Response: Pursuant to Section 24.160(3), a density bonus of five percent is permissible for “improved site area is dedicated and accepted by the City, or other public agency, as usable, accessible park land.” The applicant has had positive preliminary discussions with the City Park Department regarding the dedication of Tracts A and B to the City of West Linn for park purposes. Although the primary purpose of the parks will be for preservation of natural areas, the applicant proposes to improve the park sites by removing invasive blackberries, doing mitigation plantings of wetland landscape materials as discussed in the report prepared by Schott and Associates that is appended to this application, and by developing pedestrian pathways as shown on the Tentative Plan.

24.170 USABLE OPEN SPACE REQUIRED

Residential planned unit developments (PUDs) shall comply with the following usable open space requirements:

A. PUDs that contain multi-family units shall comply with the requirements of CDC 55.100(F).

Applicant Response: Not applicable. No multi-family units are proposed.

B. PUDs that contain 10 or more single-family detached, single-family attached, or duplex residential units shall comply with the following usable open space requirements.

Applicant Response: The proposed development contains 50 lots for single-family detached homes. These provisions apply, as discussed below:

- 1. The plan shall include an open space area with at least 300 square feet of usable area per dwelling unit.*

Comment: The plan proposes 50 units, which, at 300 sq. ft. per unit, would require a total of at least 15,000 sq. ft. of usable area. The site plan provides for usable open space areas: Tract A (0.75 acres or 32,682 sq. ft.) and Tract B (2.9 acres or 126,250 sq. ft.). Tract A, alone, contains more than double the required usable area per dwelling unit. This criterion is met.

2. *The usable open space shall meet the design requirements of CDC 55.100(F)(2).*

Comment: CDC 55.100(F)(2) states:

2. *The required recreation space may be provided as follows:*
 - a. *It may be all outdoor space; or*
 - b. *It may be part outdoor space and part indoor space; for example, an outdoor tennis court and indoor recreation room; and*
 - c. *Where some or all of the required recreation area is indoor, such as an indoor recreation room, then these indoor areas must be readily accessible to all residents of the development subject to clearly posted restrictions as to hours of operation and such regulations necessary for the safety of minors.*
 - d. *In considering the requirements of this subsection F, the emphasis shall be on usable recreation space. No single area of outdoor recreational space shall encompass an area of less than 250 square feet. All common outdoor recreational space shall be clearly delineated and readily identifiable as such. Small, marginal, and incidental lots or parcels of land are not usable recreation spaces. The location of outdoor recreation space should be integral to the overall design concept of the site and be free of hazards or constraints that would interfere with active recreation.*

All of the proposed open space is outdoor area. All of the open space exists in contiguous tracts that are well in excess of 200 square feet. The proposed open space will be dedicated as park land. No small, marginal, or incidental lots or parcels of open space are proposed. The two park tracts are contiguous to the Park Road pedestrian pathway and the proposed pedestrian paths within the new park land will provide for a logical connected pedestrian trail system.

3. *The usable open space shall be owned in common by the residents of the development unless the decision-making authority determines, based upon a request from the applicant and the recommendation of the City Director of Parks and Recreation, that the usable open space should be dedicated to the City for public use. If owned in common by the residents of the development, then a homeowner's association shall be organized prior to occupancy to maintain the usable open space.*

Comment: The open space is proposed to be dedicated to the City of West Linn as park land. Preliminary discussions with the City of West Linn Parks Director indicates support for this proposal.

4. *If the usable open space contains active recreational facilities such as hard surface athletic courts or swimming pools, then the usable open space area*

shall not be located on the perimeter of the development unless buffered by a transition pursuant to CDC 24.140(B).

Comment: No such active recreational facilities are proposed so buffering is not required.

24.180 APPLICABILITY OF THE BASE ZONE PROVISIONS

The provisions of the base zone are applicable as follows:

A. *Lot dimensional standards.* *The minimum lot size and lot depth and lot width standards do not apply except as related to the density computation under this chapter.*

B. *Lot coverage.* *The lot coverage provisions of the base zone shall apply for detached single-family units. For single-family attached residential units, duplex residential units, and multiple-family residential units, the following lot coverage provisions shall apply, based upon the underlying base zone.*

<i>R-40, R-20</i>	<i>35 percent</i>
<i>R-15</i>	<i>40 percent</i>
<i>R-10, R-7</i>	<i>45 percent</i>
<i>R-5, R-4.5</i>	<i>50 percent</i>
<i>R-3, R-2.1</i>	<i>60 percent</i>

Applicant Response: The proposed homes will conform to the maximum 45 percent lot coverage standard for the R-10 zone.

C. *Building height.* *The building height provisions of the underlying zone shall apply.*

Applicant Response: The proposed homes will comply with the height standards of the R-10 zone.

D. *Structure setback provisions.*

1. *Setback areas contiguous to the perimeter of the project shall be the same as those required by the base zone unless otherwise provided by the base zone or Chapter 55 CDC.*

2. *The side yard setback provisions shall not apply except that all detached structures shall maintain a minimum side yard setback of five feet, or meet the Uniform Building Code requirement for fire walls.*

3. *The side street setback shall be 10 feet.*

4. *The front yard and rear yard setbacks shall be 15 feet. Porches may encroach forward another five feet. Additional encroachments, such as porches, are allowed per Chapter 38 CDC.*

5. *The setback for a garage in the front yard that opens onto the street shall be 20 feet unless the provisions of CDC 41.010 apply. Garages in the rear yard may meet the standards of CDC 34.060.*

6. *The applicant may propose alternative setbacks. The proposed setbacks must be approved by the decision-making body and established as conditions of approval, or by amendment to conditions of approval. The decision-making body will consider among other things maintenance of privacy, adequate light, defensible space, traffic safety, etc.*

Applicant Response: The proposed development will comply with these structure setbacks.

E. All other provisions of the base zone shall apply except as modified by this chapter.

Applicant Response: Plans will be reviewed at the time of building permit submittal to ensure that all other provisions of the R-10 zone are met.

24.190 PUD AMENDMENT TRIGGER

Applicant Response: Not applicable. No amendment of a prior PUD approval is being requested.

85.170(B) (2): Per the requirements of this section, a traffic analysis is required whenever a proposed development will generate traffic in excess of 250 vehicle trips per day. A traffic report has been prepared for this project by Lancaster Engineering and is attached to this application. Please refer to that report.

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.

Comment: The subject property fronts on Rosemont Road, on the north, and Parker Road, on the south. Rosemont Road and Parker Road are classified by the City of West Linn as Minor Arterial streets. These streets are both paved with two travel lanes. Both will require half-street improvements along the project frontage to bring them into compliance with full City standards. Additional right-of-way dedication is proposed along Rosemont Road to meet minor arterial standards. Internal streets are all local streets. Meadowlark Drive is a proposed north-south street that connects

directly between Rosemont Road and Parker Road. Heron Drive is an east-west street that provides for a connection to the stub of Roxbury Drive to the east. To the west, Heron Ct. ends in a cul-de-sac as a connection to Rosemont is impractical due to grades and the Parker pedestrian path precludes any future connection to the west. All of these streets are proposed to be improved to full City local street standards with 56 feet of right-of-way, 32' of pavement, curbs, 5' planters and sidewalks on both sides of the street. This standard conforms to the specifications in the City of West Linn Roadway Cross-Section Standards table in Section 85.200(A)2.

No reserve strips are warranted as there are no stub streets proposed. The extension of Roxbury Drive aligns with the current centerline of that street. No other streets that could be extended abut the subject property. The intersections of Meadowlark Drive with Parker Road and Rosemont Road are "T" intersections that do not have other intersecting streets located within 200 feet of their proposed locations. There are no adjoining undeveloped properties so no stub streets are necessary. All intersection angles are at approximately 90 degrees, as required. Additional right-of-way dedication is proposed along Rosemont Road, consistent with minor arterial standards and the dedication widths obtained with the development of other nearby subdivisions.

Section 85.200(A)7 states, "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." This criterion is applicable to the intersection of the proposed Meadowlark Drive/Parker Road and the existing intersection of Dillon Lane with Parker Road. The separation distance between these two intersections is 229 feet, which exceeds the minimum 200' standard.

One cul-de-sac street, Heron Ct., is proposed in this development. The following provisions of Section 85.200(A)11 are applicable:

- a. *New cul-de-sacs and other closed-end streets (not including stub streets intended to be connected) on sites containing less than five acres, or sites accommodating uses other than residential or mixed use development, are not allowed unless the applicant demonstrates that there is no feasible alternative due to:*
 - 1) *Physical constraints (e.g., existing development, the size or shape of the site, steep topography, or a fish bearing stream or wetland protected by Chapter 32 CDC), or*
 - 2) *Existing easements or leases.*

Comment: The subject property contains over 15 acres, so this provision does not apply.

- b. *New cul-de-sacs and other closed-end streets, consistent with subsection (A)(11)(a) of this section, shall not exceed 200 feet in length or serve more than 25 dwelling units unless the design complies with all adopted Tualatin Valley Fire*

and Rescue (TVFR) access standards and adequately provides for anticipated traffic, consistent with the Transportation System Plan (TSP).

Comment: Not applicable.

- c. New cul-de-sacs and other closed-end streets (not including stub streets intended to be connected) on sites containing five acres or more that are proposed to accommodate residential or mixed use development are prohibited unless barriers (e.g., existing development, steep topography, or a fish bearing stream or wetland protected by Chapter 32 CDC, or easements, leases or covenants established prior to May 1, 1995) prevent street extensions. In that case, the street shall not exceed 200 feet in length or serve more than 25 dwelling units, and its design shall comply with all adopted TVFR access standards and adequately provide for anticipated traffic, consistent with the TSP.*

Comment: The physical constraints of site topography, and grading due to a desire to minimize removal of trees, precludes Heron Ct. connecting to Rosemont Road. Sight distance would also be problematic. The Parker pedestrian path precludes extension of Heron Drive to the west. The proposed Heron Ct. cul-de-sac is approximately 585 feet long and serves 20 lots. The width of the road, with a full 56' of right-of-way and 32' of paving will meet all TVFR standards and will accommodate anticipated traffic from 20 homes.. A variance to the 200' maximum cul-de-sac length standard is being requested. Please refer to the discussion of Chapter 75 below in this report.

- d. Applicants for a proposed subdivision, partition or a multifamily, commercial or industrial development accessed by an existing cul-de-sac/closed-end street shall demonstrate that the proposal is consistent with all applicable traffic standards and TVFR access standards.*

Comment: Not applicable. The site is not accessed from an existing cul-de-sac or closed-end street.

- e. All cul-de-sacs and other closed-end streets shall include direct pedestrian and bicycle accessways from the terminus of the street to an adjacent street or pedestrian and bicycle accessways unless the applicant demonstrates that such connections are precluded by physical constraints or that necessary easements cannot be obtained at a reasonable cost.*

Comment: A pathway from the end of the cul-de-sac to the Parker Rd. pedestrian trail is shown on the Tentative Plan.

- f. All cul-de-sacs/closed-end streets 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).*

Comment: The cul-de-sac terminates in a circular turn-around consistent with City standards.

The proposed street names do not duplicate other street names in West Linn. The maximum street grade proposed is 15% for Meadowlark Drive, which is consistent with City standards. The minimum centerline curve radius proposed is 125 feet, which exceeds the minimum standard of 50 feet. City staff have indicated at the pre-application conference that the proposed intersections with Rosemont and Parker are acceptable. No alleys are proposed. All proposed streets have sidewalks and planter strips, consistent with City standards. All proposed streets will be dedicated without any reservations or restrictions. All lots in the subdivision have access to a public street, as shown on the Tentative Plan. No gated streets or special entry designs are proposed.

B. Blocks and lots.

Comment: No new blocks having a length of more than 800 feet are proposed. Due to terrain and surrounding development patterns, it is not practicable to make blocks that are shorter. The proposed lots are rectangular; contain sufficient area to meet the requirements of the R-10 zone, as modified by the PUD provisions. The lots have buildable depths that do not exceed 2.5 times their width.

The development conforms to the provisions of Chapter 48, as discussed below in this report.

85.200(B) (5). This section states, "Double frontage 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."

The only through lots proposed are those that back up to Rosemont Road (Lots 1-6 and 40-50). Rosemont Road is a minor arterial street. As stated in Section 85.200(B)(5), double frontage lots are appropriate to provide separation of residential development from arterial streets. Further, site grading will provide for a substantial cut in the vicinity of Lots 40-50. This topographic break also warrants the use of double frontage lots per the criteria of that section. Direct access to lots from a minor arterial street is not appropriate, especially given the limited sight distance along Rosemont Road. Fencing will be provided on the Rosemont Road frontage of lots where there is no grading/retaining wall to provide for mitigation of impacts of Rosemont Road. We would also note that the provisions of Section 48.025(B)(4) require that local streets or alleys be used to provide access to residential lots adjacent to arterial streets. The proposed design is consistent with this standard.

The proposed lot lines within the development are approximately at right angles to the streets on which they front, as required by Section 85.200(B)(6).

Flag lots are proposed in three areas of this site where frontage is limited. Lot 6 is located on the knuckle at the intersection of Heron Dr. and Roxbury Drive. It has a

20' accessway, which exceeds City standards. Lots 9 and 10 are located on the east side of Roxbury Dr. where the depth of the lot is approximately 220 feet from the right-of-way to the east property line. There is no practicable street configuration that would serve that area. The combined access drive to those two lots 20 feet, which exceeds City standards. Lots 39 and 40 also share a 20' wide accessway. Those lots are at the end of Heron Ct., where there is insufficient frontage for them to be directly accessed from the cul-de-sac. Common accessways proposed will have mutual maintenance agreements and reciprocal access and utility easements.

The proposed lots are not large enough to allow for future re-division under the provisions of the R-10 zone.

C. Pedestrian and bicycle trails.

Comment: A pedestrian trail is proposed from the end of Heron Ct. to the pathway on the old Parker Road right-of-way. This pathway will be developed to City standards. No bicycle land improvements were listed on the Bicycle Master Plan.

D. Transit facilities.

Comment: Not applicable. No transit facilities are proposed or required as there is no TriMet service in this area.

E. Lot grading.

Comment: Grading of the proposed building site will conform to City standards. Preliminary grading plans for the street area is shown on the Preliminary Grading Plan submitted with this application. Compliance for individual homes will be reviewed at the time of building permit application.

F. Water.

Comment: City water is available in Rosemont Road and Roxbury Dr. Comments from City Public Works at the pre-application conference indicate that the existing 8-inch line in Rosemont Road will have to be upgraded by the developer to a 12-inch line. The Preliminary Utility Plan shows the proposed water system within the development, which provides for a looped system with the existing line in Roxbury Drive and extends service through to Parker Road. All lots will be served from this public water system.

G. Sewer.

Comment: As shown on the Preliminary Utility Plan, there are existing public sewer lines located in Parker Road and in Roxbury Drive. These sewer lines will be extended to service all lots within the proposed subdivision.

H. Storm.

Comment: Tanner Creek, which crosses the subject property along its western border will accommodate storm water from the proposed development. As shown on the Preliminary Utility Plan, storm sewer will be installed in the new streets and

directed to a detention and treatment facility to be developed in Tract "B". Treated storm water will be discharged to the creek at pre-development levels, consistent with City standards.

- I. Utility easements. Utility easements are shown on the plans submitted with this application.
- J. Supplemental provisions.
 1. Wetland and natural drainageways. Comment: Please refer to the Natural Resource Assessment report by Schott and Associates for discussion of compliance with Water Resource Area requirements.
 2. Willamette and Tualatin Greenways. Comment: Not applicable. The site is not located in a greenway area.
 3. Street trees. Comment: Street trees will be provided as required, as shown on the Tentative Plan.
 4. Lighting. Comment: Prior to final plat approval an analysis of existing street lighting will be conducted and, if necessary, improvements made to comply with these standards. The preliminary design for streetlight placement within the subdivision is shown on the preliminary utility plan. To reduce ambient light and glare, high or low pressure sodium light bulbs will be provided for all streetlights within the subdivision. The lights will be shielded so that the light is directed downwards rather than omni-directional.
 5. Dedications and exactions. Comment: No new dedications or exactions to service off-site properties are anticipated in conjunction with this application.
 6. Underground utilities. Comment: All utilities within the development will be placed underground, as required by this section. Existing overhead utilities on Rosemont will also be placed underground.
 7. Density requirement. Comment: The density calculations submitted with this application demonstrate that the maximum density permitted on this site is 50 units. The proposed density of 50 units satisfies the minimum density standard.
 8. Mix requirement. Comment: Not applicable. This requirement only applies in the R-2.1 and R-3 zones. The subject property is zoned R-10.
 9. Heritage trees/significant tree and tree cluster protection. Comment: No heritage trees, as defined in the Municipal Code, are present on the site. Other existing trees are mapped on the Tree Plan, including those identified by the City Arborist as "significant". Please see discussion of Chapter 55, below.
 10. Annexation and street lights. Comment: Not applicable. The subject property is within the city limits.

Chapter 48 - ACCESS, EGRESS AND CIRCULATION

48.025 ACCESS CONTROL

B. Access control standards.

1. Traffic impact analysis requirements. *The City or other agency with access jurisdiction may require a traffic study prepared by a qualified professional to determine access, circulation and other transportation requirements. (See also CDC 55.125, Traffic Impact Analysis.)*

Comment: A Traffic Impact Analysis has been prepared by Lancaster Engineering and is included in the application package.

2. *The City or other agency with access permit jurisdiction may require the closing or consolidation of existing curb cuts or other vehicle access points, recording of reciprocal access easements (i.e., for shared driveways), development of a frontage street, installation of traffic control devices, and/or other mitigation as a condition of granting an access permit, to ensure the safe and efficient operation of the street and highway system. Access to and from off-street parking areas shall not permit backing onto a public street.*

Comment: Access to the site will be via new intersections of Meadowlark Dr. with Rosemont Road and Parker Road. No driveway accesses onto Rosemont or Parker will remain following development.

3. Access options. *When vehicle access is required for development (i.e., for off-street parking, delivery, service, drive-through facilities, etc.), access shall be provided by one of the following methods (planned access shall be consistent with adopted public works standards and TSP). These methods are "options" to the developer/subdivider.*

a) Option 1. *Access is from an existing or proposed alley or mid-block lane. If a property has access to an alley or lane, direct access to a public street is not permitted.*

b) Option 2. *Access is from a private street or driveway connected to an adjoining property that has direct access to a public street (i.e., "shared driveway"). A public access easement covering the driveway shall be recorded in this case to assure access to the closest public street for all users of the private street/drive.*

c) Option 3. *Access is from a public street adjacent to the development lot or parcel. If practicable, the owner/developer may be required to close or consolidate an existing access point as a condition of approving a new access. Street accesses shall comply with the access spacing standards in subsection (B)(6) of this section.*

Comment: All lots will take access from the new local street system within the PUD.

4. Subdivisions fronting onto an arterial street. *New residential land divisions fronting onto an arterial street shall be required to provide alleys or secondary (local or collector) streets for access to individual lots. When alleys or secondary streets cannot be constructed due to topographic or other physical constraints, access may be provided by consolidating driveways for clusters of two or more lots (e.g., includes flag lots and mid-block lanes).*

Comment: The site plan provides local street access for all lots. No access will be provided via the minor arterial streets (Rosemont Rd. and Parker Rd.).

5. Double-frontage lots. *When a lot or parcel has frontage onto two or more streets, access shall be provided first from the street with the lowest classification. For example, access shall be provided from a local street before a collector or arterial street. When a lot or parcel has frontage opposite that of the adjacent lots or parcels, access shall be provided from the street with the lowest classification.*

Comment: Double-frontage lots are proposed along Rosemont Road. All of these lots will take access from the local streets (Heron Dr. and Heron Ct.).

6. Access spacing.

a. *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 and non-traversable medians.*

b. *Private drives and other access ways are subject to the requirements of CDC 48.060.*

Comment: The proposed intersections of Meadowlark Dr. with Rosemont Rd. and Parker Rd. comply with the access spacing standards of the TSP.

7. Number of access points. *For single-family (detached and attached), two-family, and duplex housing types, one street access point is permitted per lot or parcel, when alley access cannot otherwise be provided; except that two access points may be permitted corner lots (i.e., no more than one access per street), subject to the access spacing standards in subsection (B)(6) of this section. The number of street access points for multiple family, commercial, industrial, and public/institutional developments shall be minimized to protect the function, safety and operation of the street(s) and sidewalk(s) for all users. Shared access may be required, in conformance with subsection (B)(8) of this section, in order to maintain the required access spacing, and minimize the number of access points.*

Comment: Each proposed lot will have one access point, as specified in this section. Shared accesses for flag lots are proposed.

8. Shared driveways. *The number of driveway and private street intersections with public streets shall be minimized by the use of shared driveways with adjoining lots where feasible. The City shall require shared driveways as a condition of land division or site design review, as applicable, for traffic safety and access management purposes in accordance with the following standards:*

a. Shared driveways and frontage streets may be required to consolidate access onto a collector or arterial street. When shared driveways or frontage streets are required, they shall be stubbed to adjacent developable parcels to indicate future extension. "Stub" means that a driveway or street temporarily ends at the property line, but may be extended in the future as the adjacent lot or parcel develops. "Developable" means that a lot or parcel is either vacant or it is likely to receive additional development (i.e., due to infill or redevelopment potential).

b. Access easements (i.e., for the benefit of affected properties) shall be recorded for all shared driveways, including pathways, at the time of final plat approval or as a condition of site development approval.

c. Exception. Shared driveways are not required when existing development patterns or physical constraints (e.g., topography, lot or parcel configuration, and similar conditions) prevent extending the street/driveway in the future.

Comment: Shared accesses for flag lots are proposed. All other lots will have individual driveway accesses.

C. Street connectivity and formation of blocks required. In order to promote efficient vehicular and pedestrian circulation throughout the City, land divisions and large site developments shall produce complete blocks bounded by a connecting network of public and/or private streets, in accordance with the following standards:

1. Block length and perimeter. The maximum block length shall not exceed 800 feet or 1,800 feet along an arterial.

Comment: No block lengths in excess of 800 feet are proposed.

2. Street standards. Public and private streets shall also conform to Chapter 92 CDC, Required Improvements, and to any other applicable sections of the West Linn Community Development Code and approved TSP.

Comment: Proposed streets will comply with the public street standards of Chapter 92 (see below).

3. Exception. Exceptions to the above standards may be granted when blocks are divided by one or more pathway(s), in conformance with the provisions of CDC 85.200(C), Pedestrian and Bicycle Trails, or cases where extreme topographic (e.g., slope, creek, wetlands, etc.) conditions or compelling functional limitations preclude implementation, not just inconveniences or design challenges. (Ord. 1635 § 25, 2014; Ord. 1636 § 33, 2014)

Comment: No exceptions to block length are necessary.

48.030 MINIMUM VEHICULAR REQUIREMENTS FOR RESIDENTIAL USES

A. Direct individual access from single-family dwellings and duplex lots to an arterial street, as designated in the transportation element of the Comprehensive Plan, is

prohibited for lots or parcels created after the effective date of this code where an alternate access is either available or is expected to be available by imminent development application. Evidence of alternate or future access may include temporary cul-de-sacs, dedications or stubouts on adjacent lots or parcels, or tentative street layout plans submitted at one time by adjacent property owner/developer or by the owner/developer, or previous owner/developer, of the property in question.

Comment: No individual access from the proposed lots to Rosemont Rd. or Parker Rd. is proposed. All lots will take access from the internal local street system.

B. When any portion of any house is less than 150 feet from the adjacent right-of-way, access to the home is as follows:

- 1. One single-family residence, including residences with an accessory dwelling unit as defined in CDC 02.030, shall provide 10 feet of unobstructed horizontal clearance. Dual-track or other driveway designs that minimize the total area of impervious driveway surface are encouraged.*
- 2. Two to four single-family residential homes equals a 14- to 20-foot-wide paved or all-weather surface. Width shall depend upon adequacy of line of sight and number of homes.*
- 3. Maximum driveway grade shall be 15 percent. The 15 percent shall be measured along the centerline of the driveway only. Variations require approval of a Class II variance by the Planning Commission pursuant to Chapter 75 CDC. Regardless, the last 18 feet in front of the garage shall be under 12 percent grade as measured along the centerline of the driveway only. Grades elsewhere along the driveway shall not apply.*
- 4. The driveway shall include a minimum of 20 feet in length between the garage door and the back of sidewalk, or, if no sidewalk is proposed, to the paved portion of the right-of-way.*

Comment: All lots will have individual driveways that conform to these standards. Driveways will be reviewed at the time of building permit application.

C. When any portion of one or more homes is more than 150 feet from the adjacent right-of-way, the provisions of subsection B of this section shall apply in addition to the following provisions.

- 1. A turnaround may be required as prescribed by the Fire Chief.*
- 2. Minimum vertical clearance for the driveway shall be 13 feet, six inches.*
- 3. A minimum centerline turning radius of 45 feet is required unless waived by the Fire Chief.*
- 4. There shall be sufficient horizontal clearance on either side of the driveway so that the total horizontal clearance is 20 feet.*

Comment: Lots 9, 10 and 39 may have portions of the homes located more than 150 feet for the adjacent right-of-way. The applicant will coordinate with TVFR to ensure that these standards are met to the Fire Chief's satisfaction.

D. Access to five or more single-family homes shall be by a street built to full construction code standards. All streets shall be public. This full street provision may only be waived by variance.

Comment: All proposed streets will be built to full City standards for local streets.

E. Access and/or service drives for multi-family dwellings shall be fully improved with hard surface pavement:

Comment: Not applicable. No multi-family dwellings are proposed.

F. Where on-site maneuvering and/or access drives are necessary to accommodate required parking, in no case shall said maneuvering and/or access drives be less than that required in Chapters 46 and 48 CDC.

Comment: Not applicable. All lots are for single-family homes and all parking will be provided on the home's driveway.

G. The number of driveways or curb cuts shall be minimized on arterials or collectors. Consolidation or joint use of existing driveways shall be required when feasible.

Comment: No driveways onto arterial or collector streets are proposed.

H. In order to facilitate through traffic and improve neighborhood connections, it may be necessary to construct a public street through a multi-family site.

Comment: Not applicable. No multi-family development is proposed.

I. Gated accessways to residential development other than a single-family home are prohibited. (Ord. 1408, 1998; Ord. 1463, 2000; Ord. 1513, 2005; Ord. 1584, 2008; Ord. 1590 § 1, 2009; Ord. 1636 § 34, 2014)

Comment: Not applicable. No gated accesses are proposed.

Chapter 55 - DESIGN REVIEW

As required by this chapter, the applicant retained the services of an arborist (Multnomah Tree Experts) to identify the size, species, and condition of existing trees on the subject property. The trees were surveyed and mapped by Centerline Concepts, Inc., as shown on the Existing Conditions Map submitted with this application. Subsequently, the City Arborist visited the site and identified 101 significant trees. These trees are shown on the Tree Preservation Plan submitted with this application. The following provisions of Chapter 55 relating to tree preservation are applicable to this proposal:

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.

Comment: No heritage trees are located on the subject property.

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.

Comment: None of the significant trees identified by the City Arborist are located on Type I or II lands.

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.

Comment: The Tree Preservation Plan identifies all of the significant trees on non-Type I and II lands. The plan shows a total of 69,424 sq. ft. of the site being devoted to the preservation of significant trees. Seventy-three of the 101 identified significant trees (72%) will be preserved. The portion of the site devoted to tree preservation equates to 10.5% of the site area. While this is less than the required 20% maximum set-aside for preservation of significant trees, the significant trees that are being removed are located in an area that must be graded due to street construction. Please see discussion of subsection f, below.

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 lot or parcel is blocked by a row or screen of significant trees or tree clusters.

Comment: Not applicable. No stubouts of streets on abutting properties will require the removal of significant trees.

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.

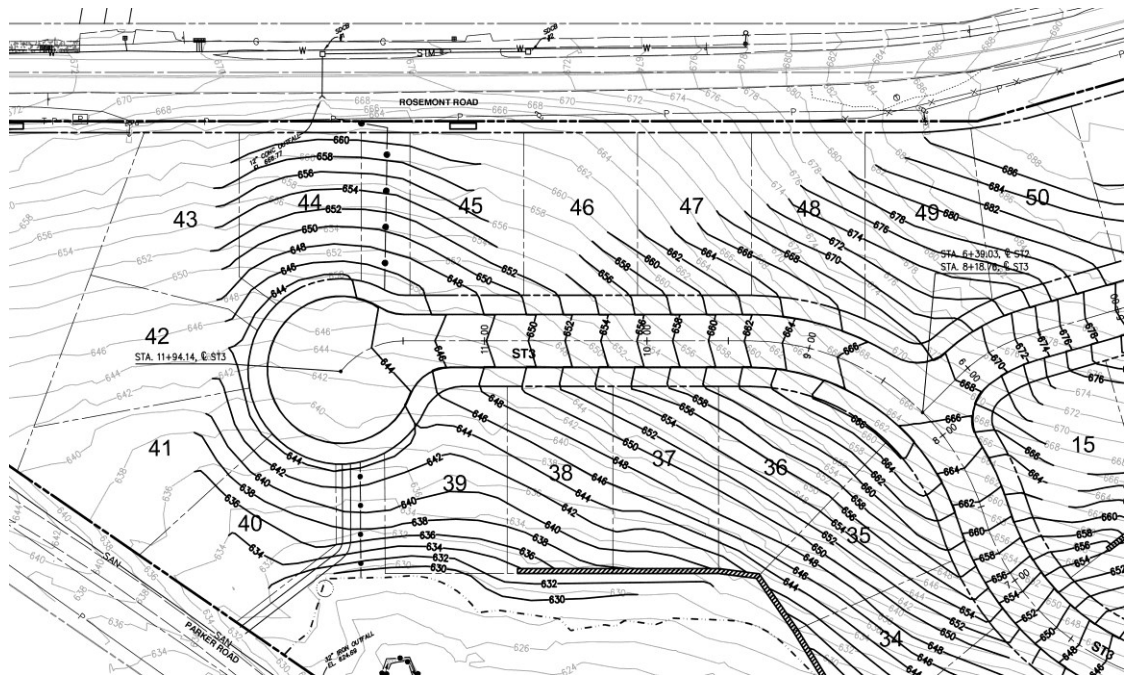
Comment: The density calculations submitted with this application demonstrate that the project will achieve more than 70% of maximum density.

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.

Comment: While the project will require the widening of Rosemont Road, it is not anticipated that this construction will require the removal of significant trees.

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.

Comment: The subject property is located on a hillside that poses difficulties in grading for streets, particularly those in cross-slope configurations such as Heron Ct. The natural grade falls 8 or more feet across the street section in this area. In the initial grading plan configuration of Heron Ct., the project engineer followed standard grading practice of matching the street grade to the centerline profile of the street. This resulted in significant grading on both sides of the road, with cuts on the uphill side and fills on the downhill side, together with a retaining wall at the bottom of the slope to avoid impacting the wetlands buffer. The grading plan below is for an earlier configuration of the site plan, but illustrates that the grading would have been extensive on both sides of the street and would have required the cutting of the significant trees throughout the graded area.



Original Grading Plan

In order to minimize grading impacts, the plan now proposed provides for a retaining wall along Rosemont Road and excavating the north side of Heron Ct. so that the street grade will match as closely as possible the natural grade on the downhill side of the street (see Grading Plan). This reduces the number of significant trees that will be impacted by the development by eliminating most of the fill on the downhill side of the street. A total of 23 significant trees are proposed to be cut due to grading impacts. The Tree Preservation Plan indicates the location of these trees and a table is provided showing the inch-for-inch number of mitigation trees that will need to be planted to satisfy the requirements of this section. Because the location of mitigation trees will be dependent upon the footprint of the homes to be built on the lot, the applicant proposes that a planting plan be prepared for each individual lot and submitted to the City Arborist for review at the time of building permit application.

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:*

Comment: As shown on the Tentative Plan, the developer proposes to construct all streets within the subdivision to full City standards.

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

Comment: Not applicable. This subsection applies only when an applicant is proposing to construct less than full standard streets.

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.*

Comment: As shown on the Grading Plan submitted with this application, the proposed streets will be graded to their intersection with intersecting streets and improved to full City standards.

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.

Comment: As shown on the Grading Plan submitted with this application, the proposed streets will be graded for the full right-of-way and improved to City standards.

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.

Comment: Monumentation will be installed and/or reestablished at street intersections in accordance with this subsection.

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.

Comment: The project engineer has prepared a storm drainage plan, as shown on the Utility Plan, and a storm report for this project. Please refer to those documents.

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.

Comment: Sanitary sewers are available to this project from existing lines in Parker Rd. and Roxbury Dr. Sewer will be extended to service all lots within the development, as required by this subsection.

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.

Comment: Water lines will be installed within the proposed development and will connect to existing lines in Parker Rd. and Roxbury Dr. Additionally, the developer will replace and upgrade the existing water line in Rosemont Rd. to City standards and the system within the proposed subdivision will be connected to this line. Tying these lines together will improve the water system in this area by providing looping that will aid in maintaining appropriate flows and will avoid sedimentation associated with dead-end lines.

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.

Comment: As required by this subsection, sidewalks will be installed along all street frontages in this development.

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).

Comment: Sidewalks will be constructed during home construction on each lot. The required letter of credit will be provided.

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.

Comment: Sidewalks will be installed to City specifications.

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.*

Comment: The proposed plans provide for a landscape strip between the sidewalk and the roadway along minor arterial streets abutting this property.

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.*

Comment: Sidewalks are proposed on both sides of all streets within this subdivision.

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.*

Comment: The street section along Rosemont Rd. and Parker Rd. provides for bicycle routes. No routes are called for on the local streets within this subdivision.

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.*

Comment: The developer will provide all required signs, consistent with City standards.

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.*

Comment: Not applicable. No dead-end streets are proposed.

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.*

Comment: The developer will provide signs designating future use for the proposed park dedication, as required by this section.

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.

Comment: Street lights will be installed by the developer, consistent with the requirements of this subsection.

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.

Comment: The developer will coordinate with utility companies for the installation of underground facilities for electrical, cable, natural gas, telephone, and street lighting. As required by this section.

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.

Comment: Curb cuts will be installed at the time of home construction and will be installed to City standards.

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.

Comment: The developer will coordinate with the City Parks and Recreation Department regarding installation of street trees and will be responsible for paying the appropriate fee.

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)

Comment: The developer will coordinate with the US Postal Service and the City Engineer regarding the location of joint mailbox clusters and will install them in accordance with this section.

CHAPTER 28 - WILLAMETTE AND TUALATIN RIVER PROTECTION

City Planning staff has indicated that they have adopted a new policy determining that the provisions of Chapter 28 are applicable to developments containing Habitat Conservation Areas shown on City mapping. The applicant strongly disagrees with this interpretation. These provisions have never been applied to other developments outside of the Willamette River and Tualatin River Greenways, and we believe that this interpretation is in direct conflict with the plain language of that section. Although we are paying the required fee deposit and will address the language of this section, we request that the Planning Commission determine that these provisions do not, in fact, apply and that the fee deposit be refunded.

28.030 APPLICABILITY

A. The Willamette and Tualatin River Protection Area is an overlay zone. The zone boundaries are identified on the City's zoning map, and include:

- 1. All land within the City of West Linn's Willamette River Greenway Area.*
- 2. All land within 200 feet of the ordinary low water mark of the Tualatin River, and all land within the 100-year floodplain of the Tualatin River.*
- 3. In addition to the Willamette Greenway and Tualatin River Protection Area boundaries, this chapter also relies on the HCA Map to delineate where development should or should not occur. Specifically, the intent is to keep out of, or minimize disturbance of, the habitat conservation areas (HCAs). Therefore, if all, or any part, of a lot or parcel is in the Willamette Greenway and Tualatin River Protection Area boundaries, and there are HCAs on the lot or parcel, a Willamette and Tualatin River Protection Area permit shall be required unless the development proposal is exempt per CDC 28.040.*

Comment: The subject property is not within the identified Willamette River Greenway or within 200 feet of the ordinary low water mark of the Tualatin River. The Planning staff interpretation is based upon subsection 28.030(A)3. The site contains a minor area of HCA outside of the Water Resource Area boundary and staff's opinion is that the language of this subsection makes these provisions applicable to this project. However, we note that the plain language states that "*if all, or any part, of a lot or parcel is in the Willamette Greenway and Tualatin River Protection Area boundaries, **and** there are HCAs on the lot or parcel, a Willamette and Tualatin River Protection Area permit shall be required*" (emphasis added). The property must be within one of the river areas and have an HCA before the provisions of subsection 28.030(A)3 apply. This has been the consistent policy of the City of West Linn for years since the adoption of this Chapter. The property is not in either river resource area and, therefore, this chapter is not applicable despite there being Habitat Conservation Area on the property.

28.040 EXEMPTIONS/USES PERMITTED OUTRIGHT

The use of Habitat Conservation Areas for residential purposes is not listed as a use that is exempt or permitted outright. However CDC 28.040AA does apply to this proposal:

AA. Lands that are designated as an HCA only due to a forested canopy shall be exempted since trees are already protected in the municipal code and Chapters 55 and 85 CDC. Development of lands that are designated as HCA due to other variables such as wetlands, flood areas and steep slopes shall still be regulated by the provisions of this chapter and not exempted.

Please see discussion of this provision under section 28.070, below.

28.050 PROHIBITED USES

The following are prohibited:

1. *Residential floating structures, also known as floating homes or houseboats.*
2. *Permanent ski jumps.*
3. *More than one dock with or without a boat house per riverfront lot of record, except City-owned tax lots 100, 200, 300, 400, and 500 of Assessor's Map 21 East 24.*
4. *The location of any dock under any water condition that prevents what would otherwise be historic, safe, uninterrupted water passage.*
5. *Any new lawn area or garden area consisting primarily of non-native vegetation within HCA lands. A lawn area in the "Allowed Development" area is permitted.*
6. *Planting of any species identified as nuisance or prohibited plants on the Metro Native Plant List.*
7. *Non-permitted storage of hazardous materials as defined by the Oregon Department of Environmental Quality and dumping of any materials of any kind.*
8. *Excessive trimming or removal of existing native vegetation within the HCA unless it is to reestablish native vegetation in place of non-native or invasive vegetation. (Ord. 1576, 2008)*

Comment: None of the uses listed in this section are proposed within the Habitat Conservation Area.

28.060 ADMINISTRATION AND APPROVAL PROCESS

An application for a protection area permit shall be processed pursuant to the provisions of Chapter 99 CDC, Procedures for Decision-Making: Quasi-Judicial.

Comment: The application is being processed quasi-judicially, in accordance with the provisions of Chapter 99 of the CDC.

28.070 PLANNING DIRECTOR VERIFICATION OF METRO HABITAT PROTECTION MAP BOUNDARIES

A. The HCA Map is the basis for identifying and designating the habitat conservation areas in the City. A copy of the latest, updated HCA Map is on file at the City and is adopted by reference for use with this chapter.

It is inevitable, given the large area that Metro's HCA Map covers, that there may be some errors. In cases where, for example, three properties share the same contours and the same natural features but the map shows the middle lot with an HCA designation on it, it is reasonable to question the accuracy of that HCA designation. Using tree overstory as the sole basis for HCA

designation will also allow a change in designation since trees are already protected in the municipal code and Chapters 55 and 85 CDC.

The Habitat Conservation Areas map submitted with this application shows the location of the HCA per the City of West Linn GIS mapping system. A reduced versions of this map is shown below for illustration purposes:



The areas that are designated HCA due strictly to forested tree canopy are shown in gray. As noted in section 28.070(F) "Lands that are designated as an HCA only due to a forested overstory are exempt under CDC 28.040, Exemptions, since trees are already protected in the municipal code and Chapters 55 and 85 CDC." Therefore, the areas mapped in gray are not subject to the provisions of Chapter 28.

The HCA areas mapped in green are associated with water resources and, other than our objection to applicability of Chapter 28 outside of the Willamette River Greenway and Tualatin River areas, would otherwise be subject to these provisions.

There are discrepancies in two areas between the general mapping of water resources shown on the City's HCA map and the field surveyed locations mapped in preparation of this

application. These two areas are highlighted in light red on the Habitat Conservation Areas map. The first area is in the vicinity of Lots 24 and 25 and the intersection of Meadowlark Dr. with Parker Road. The surveyed location of Tanner Creek swings to the west and exits the property at the southwest corner of the site. The GIS mapped HCA boundary does not follow the stream alignment but instead continues straight, intersecting Parker Road near the southeast corner of the property. The vegetation in this area of the site is predominantly invasive Himalayan blackberries. There is no riparian vegetation and slope are less than 15% in grade so there are no reasons for the HCA to be farther than 50 feet from the stream corridor as it is elsewhere along the stream.

The second area of discrepancy between field surveyed water resource areas and the GIS mapping lies in the vicinity of Lot 35. The GIS mapping shows wetlands farther to the north than the field-delineated mapping found and, as a result, the HCA bumps farther to the north than it should. The GIS mapping also shows a finger of HCA running through the central portion of Lot 35 and exiting at the southeast corner of that lot. Schott & Associates reviewed that area of the site to confirm whether there were any water resources in that area, but they found no water resources there. That portion of the site is under forested canopy and has upland vegetation consisting of Himalayan blackberry and English Ivy (see Schott & Associates letter to Rick Givens dated May 23, 2016). These two areas should be designated in the gray color as Habitat and Impact Areas not designated as HCAs.

B. The Planning Director shall verify the appropriate HCA or non-HCA designation by site visits or consultations with Metro or by other means. Determination is based on whether the Metro criteria are met or whether the Metro designation was based solely on tree overstory in which case a redesignation is appropriate. In cases where the determination is that the map is incorrect, the Planning Director will make a written finding of this as well as the site conditions that led to that conclusion.

Comment: We request that the Planning Director conduct any necessary field visits and review the information in this report, the Schott & Associates report and letter, and mapping submitted with this application to confirm that the two areas discussed above are not within the portion of the HCA that is subject to this section. As discussed in A, above, these two areas should be designated in the gray color as Habitat and Impact Areas not designated as HCAs.

C. Class B public notice, per Chapter 99 CDC, shall be required prior to issuance of the redesignation decision if it involves redesignation of the HCA boundary to allow the construction of, or addition to, a house.

Comment: The appropriate public notice will be provided by the City per the provisions of Chapter 99 CDC.

D. This determination and findings shall become part of the City record and part of the record for any associated land use application. The Planning Director shall also include in the record the revised map boundary. The Planning Director's determination and map revisions shall also be sent to Metro so that their map may be corrected as necessary.

Comment: The determination and findings will be a part of the record of this application.

E. *The Planning Director determination is appealable to the City Council per Chapter 99 CDC.*

Comment: It is understood that actions by the Planning Director or Planning Commission on this matter may be appealed to the City Council.

F. *Lands that are designated as an HCA only due to a forested overstory are exempt under CDC 28.040, Exemptions, since trees are already protected in the municipal code and Chapters 55 and 85 CDC. Similar exemptions apply to lands that exhibit no constraints. (Ord. 1576, 2008; Ord. 1604 §§ 25 – 28, 2011)*

Comment: The areas shown in gray, plus the two areas shown in light red, are exempt due to this provision as there are no habitat resources other than forested overstory.

28.110 APPROVAL CRITERIA

No application for development on property within the protection area shall be approved unless the decision-making authority finds that the following standards have been met or can be met by conditions of approval. The development shall comply with the following criteria as applicable:

A. *Development: All sites.*

1. *Sites shall first be reviewed using the HCA Map to determine if the site is buildable or what portion of the site is buildable. HCAs shall be verified by the Planning Director per CDC 28.070 and site visit. Also, “tree canopy only” HCAs shall not constitute a development limitation and may be exempted per CDC 28.070(A). The municipal code protection for trees and Chapters 55 and 85 CDC tree protection shall still apply.*

2. *HCAs shall be avoided to the greatest degree possible and development activity shall instead be directed to the areas designated “Habitat and Impact Areas Not Designated as HCAs,” consistent with subsection (A)(3) of this section.*

3. *If the subject property contains no lands designated “Habitat and Impact Areas Not Designated as HCAs” and development within HCA land is the only option it shall be directed towards the low HCA areas first, then medium HCA areas and then to high HCA as the last choice. The goal is to, at best, avoid or, at least, minimize disturbance of the HCAs. (Water-dependent uses are exempt from this provision.)*

4. *All development, including exempted activities of CDC 28.040, shall have approved erosion control measures per Clackamas County Erosion Prevention and Sediment Control Planning and Design Manual, rev. 2008, in place prior to site disturbance and be subject to the requirements of CDC 32.070 and 32.080 as deemed applicable by the Planning Director.*

Comment: With the proposed modification of the HCA boundaries discussed above, all of the HCA falls within the area of Tract B, which is proposed to be dedicated to the City of West Linn for park purposes. The only development proposed within this area is construction of storm water and detention facilities, as shown on the Preliminary Utility Plan, and the proposed pedestrian pathway surface in hog fuel chips.

B. Single-family or attached residential. Development of single-family homes or attached housing shall be permitted on the following HCA designations and in the following order of preference with "a" being the most appropriate and "d" being the least appropriate:

Comment: No residential development is proposed within the HCA.

C. Setbacks from top of bank.

- 1. Development of single-family homes or attached housing on lands designated as "Habitat and Impact Areas Not Designated as HCAs" shall require a structural setback of 15 feet from any top of bank that represents the edge of the land designated as "Habitat and Impact Areas Not Designated as HCAs."*

Comment: No homes are proposed within 15 feet of the top of any bank.

D. Development of lands designated for industrial, commercial, office, public and other non-residential uses.

Comment: Not applicable. The site does not contain lands designated for such uses.

E. Hardship provisions and non-conforming structures.

Comment: Not applicable. The HCA does not contain any non-conforming structures and no hardship conditions exist.

F. Access and property rights.

Comment: Not applicable. The area within the nonexempt HCA is proposed to be dedicated to the City of West Linn for park purposes. No issues of access or property rights will exist following dedication.

G. Incentives to encourage access in industrial, multi-family, mixed use, commercial, office, public and non-single-family residential zoned areas.

Comment: Not applicable. The property is located in a single-family residentially zoned area.

H. Partitions, subdivisions and incentives.

- 1. When dividing a property into lots or parcels, an applicant shall verify the boundaries of the HCA on the property.*

Comment: The HCA map submitted with this application shows the location of the boundaries and is based upon field work performed by Schott & Associates and survey work performed by Centerline Concepts, Inc.

2. *Applicant shall partition or subdivide the site so that all lots or parcels have a buildable site or envelope available for home construction located on non-HCA land or areas designated "Habitat and Impact Areas Not Designated as HCAs" per the HCA Map.*

Comment: All lots are located outside of the HCA lands (as they are proposed to be adjusted in this application.)

3. *Development of HCA-dominated lands shall be undertaken as a last resort. A planned unit development (PUD) of Chapter 24 CDC may be required.*

Comment: The proposed project is being developed as a planned unit development, consistent with this policy, in part so that the HCA area can be preserved as open space and dedicated to the City for park purposes.

4. *Incentives are available to encourage provision of public access to, and/or along, the river...*

Comment: Not applicable. The subject property is not located near a river.

I. Docks and other water-dependent structures.

Comment: Not applicable. The proposed development does not include a dock or other water-dependent structures.

J. Joint docks.

Comment: Not applicable. The proposed development does not include a dock of any kind.

K. Non-conforming docks and other water-related structures.

Comment: Not applicable. The subject property does not contain a dock or other water-related structure.

- L. *Roads, driveways, utilities, or passive use recreation facilities. Roads, driveways, utilities, public paths, or passive use recreation facilities may be built in those portions of HCAs that include wetlands, riparian areas, and water resource areas when no other practical alternative exists but shall use water-permeable materials unless City engineering standards do not allow that. Construction to the minimum dimensional standards for roads is required. Full mitigation and revegetation is required, with the applicant to submit a mitigation plan pursuant to CDC32.070 and a revegetation plan pursuant to CDC 32.080. The maximum disturbance width for utility corridors is as follows:*

1. *For utility facility connections to utility facilities, no greater than 10 feet wide.*
2. *For upgrade of existing utility facilities, no greater than 15 feet wide.*

3. *For new underground utility facilities, no greater than 25 feet wide, and disturbance of no more than 200 linear feet of water quality resource area, or 20 percent of the total linear feet of water quality resource area, whichever is greater.*

Comment: The proposed public pathway in the HCA in Tract B, is proposed to be surfaced with hog fuel chips, a water permeable material. The new storm sewer lines that outfall to the creek area, together with riprap to dissipate the energy of the water outfalling to the creek, will not disturb a width of more than 25 feet and disturb less than 200 linear feet of water quality resource area.

M. Structures. All buildings and structures in HCAs and riparian areas...

Comment: Not applicable. No buildings or structures are proposed in the HCA or riparian area.

N. Water-permeable materials for hardscapes. The use of water-permeable materials for parking lots, driveways, patios, and paths...

Comment: The proposed public pathway in the HCA in Tract B, is proposed to be surfaced with hog fuel chips, a water permeable material. No other hardscapes are proposed.

O. Signs and graphics. No sign or graphic display inconsistent with the purposes of the protection area shall have a display surface oriented toward or visible from the Willamette or Tualatin River. A limited number of signs may be allowed to direct public access along legal routes in the protection area.

Comment: Not applicable. The subject property is not located near the Willamette or Tualatin Rivers. No signs are proposed in the HCA area.

P. Lighting. Lighting shall not be focused or oriented onto the surface of the river except as required by the Coast Guard. Lighting elsewhere in the protection area shall be the minimum necessary and shall not create off-site glare or be omni-directional. Screens and covers will be required.

Comment: Not applicable. The subject property is not located near the Willamette or Tualatin Rivers. No lights are proposed in the HCA area.

Q. Parking. Parking and unenclosed storage areas located within or adjacent to the protection area boundary shall be screened from the river in accordance with Chapter 46 CDC, Off-Street Parking, Loading and Reservoir Areas. The use of water-permeable material to construct the parking lot is either encouraged or required depending on HCA classification per CDC 28.110(N)(4).

Comment: Not applicable. The subject property is not located near the Willamette or Tualatin Rivers. No parking is proposed in the vicinity of the HCA area.

R. Views. Significant views of the Willamette and Tualatin Rivers shall be protected as much as possible as seen from the following public viewpoints: Mary S. Young Park, Willamette Park,

Cedar Oak Park, Burnside Park, Maddox Park, Cedar Island, the Oregon City Bridge, Willamette Park, and Fields Bridge Park.

Comment: Not applicable. The subject property is not located near the Willamette or Tualatin Rivers.

- S. Aggregate deposits. Extraction of aggregate deposits or dredging shall be conducted in a manner designed to minimize adverse effects on water quality, fish and wildlife, vegetation, bank stabilization, stream flow, visual quality, noise and safety, and to promote necessary reclamation.*

Comment: Not applicable. There are no aggregate deposits on the subject property.

T. Changing the landscape/grading.

- 1. Existing predominant topographical features of the bank line and escarpment shall be preserved and maintained except for disturbance necessary for the construction or establishment of a water related or water dependent use. Measures necessary to reduce potential bank and escarpment erosion, landslides, or flood hazard conditions shall also be taken.*

Any construction to stabilize or protect the bank with rip rap, gabions, etc., shall only be allowed where there is clear evidence of erosion or similar hazard and shall be the minimum needed to stop that erosion or to avoid a specific and identifiable hazard. A geotechnical engineer's stamped report shall accompany the application with evidence to support the proposal.

- 2. The applicant shall establish to the satisfaction of the approval authority that steps have been taken to minimize the impact of the proposal on the riparian environment (areas between the top of the bank and the low water mark of the river including lower terrace, beach and river edge).*
- 3. The applicant shall demonstrate that stabilization measures shall not cause subsequent erosion or deposits on upstream or downstream properties.*
- 4. Prior to any grading or development, that portion of the HCA that includes wetlands, creeks, riparian areas and water resource area shall be protected with an anchored chain link fence (or approved equivalent) at its perimeter and shall remain undisturbed except as specifically allowed by an approved Willamette and Tualatin River Protection and/or water resource area (WRA) permit. Such fencing shall be maintained until construction is complete. That portion of the HCA that includes wetlands, creeks, riparian areas and water resource area shall be identified with City-approved permanent markers at all boundary direction changes and at 30- to 50-foot intervals that clearly delineate the extent of the protected area.*
- 5. Full erosion control measures shall be in place and approved by the City Engineer prior to any grading, development or site clearing.*

Comment: As shown on the Grading Plan submitted with this application, erosion control measures will be provided to protect the riparian area associated with the HCA. The only grading proposed in the HCA area is associated with the construction of detention facilities.

U. Protect riparian and adjacent vegetation. Vegetative ground cover and trees upon the site shall be preserved, conserved, and maintained according to the following provisions:

1. Riparian vegetation below OHW removed during development shall be replaced with indigenous vegetation, which shall be compatible with and enhance the riparian environment and approved by the approval authority as part of the application.

Comment: The only riparian vegetation below OHW that may be removed would be in the vicinity of the detention facility proposed in the area of the existing pond on the property. A plan for replacing indigenous vegetation with appropriate riparian plants will be submitted for review and approval with the construction plans for this project.

2. Vegetative improvements to areas within the protection area may be required if the site is found to be in an unhealthy or disturbed state by the City Arborist or his designated expert. "Unhealthy or disturbed" includes those sites that have a combination of native trees, shrubs, and groundcover on less than 80 percent of the water resource area and less than 50 percent tree canopy coverage in the primary and secondary habitat conservation area to be preserved. "Vegetative improvements" will be documented by submitting a revegetation plan meeting CDC 28.160 criteria that will result in the primary and secondary habitat conservation area to be preserved having a combination of native trees, shrubs, and groundcover on more than 80 percent of its area, and more than 50 percent tree canopy coverage in its area. The vegetative improvements shall be guaranteed for survival for a minimum of two years. Once approved, the applicant is responsible for implementing the plan prior to final inspection.

Comment: No vegetative improvements have been identified by the City Arborist as being necessary.

3. Tree cutting shall be prohibited in the protection area except that:

- a. Diseased trees or trees in danger of falling may be removed with the City Arborist's approval; and*
- b. Tree cutting may be permitted in conjunction with those uses listed in CDC 28.030 with City Arborist approval; to the extent necessary to accommodate the listed uses;*
- c. Selective cutting in accordance with the Oregon Forest Practices Act, if applicable, shall be permitted with City Arborist approval within the area between the OHW and the greenway boundary provided the natural scenic qualities of the greenway are maintained.*

Comment: A few trees may be cut in conjunction with the construction of the detention facility in the area of the existing pond. The construction plans will include provision for mitigation plantings.

Chapter 75 – Variance

As discussed above in this report, the Tentative Plan proposes a cul-de-sac street having a length of more than 200 feet, which requires approval of a variance. The proposed variance satisfies the approval criteria as follows:

B. Class II Variance. Class II variances may be utilized when strict application of code requirements would be inconsistent with the general purpose of the CDC and would create a burden upon a property owner with no corresponding public benefit. A Class II variance will involve a significant change from the code requirements and may create adverse impacts on adjacent property or occupants. It includes any variance that is not classified as a Class I variance or special waiver.

1. Class II Variance Approval Criteria. The approval authority may impose appropriate conditions to ensure compliance with the criteria. The appropriate approval authority shall approve a variance request if all the following criteria are met and corresponding findings of fact prepared.

a. The variance is the minimum variance necessary to make reasonable use of the property. To make this determination, the following factors may be considered, together with any other relevant facts or circumstances:

- 1) Whether the development is similar in size, intensity and type to developments on other properties in the City that have the same zoning designation.*
- 2) Physical characteristics of the property such as lot size or shape, topography, or the existence of natural resources.*
- 3) The potential for economic development of the subject property.*

Comment: The application proposes a cul-de-sac (Heron Ct.) to service the western portion of the property. Access to that area is needed in order to achieve reasonable density for this site, as demonstrated by the density calculations submitted with this application. Not extending a street into that area would require that lot sizes elsewhere be much smaller; something that neighbors were seriously opposed to at the neighborhood meeting.

b. The variance will not result in violation(s) of any other code standard, and the variance will meet the purposes of the regulation being modified.

Comment: No other code provisions would be violated by granting this variance. All lots would have adequate access and the number of homes accessed by the cul-de-sac would not exceed the 25 lot maximum standard.

c. The need for the variance was not created by the applicant and/or owner requesting the variance.

Comment: The need for the variance relates to the physical characteristics of the property. Specifically, the fact that the Parker Rd. pedestrian trail abuts the property on its western border precludes connecting to other streets to the west. Similarly, the grade of the property, which drops significantly from Rosemont Road, precludes providing an additional intersection with that street so as to avoid a cul-de-sac configuration. Further, sight distance issues would not allow for an additional intersection in that area.

d. If more than one variance is requested, the cumulative effect of the variances results in a project that is consistent with the overall purpose of the zone.

Comment: The applicant is proposing one additional variance that relates to access spacing (see below). Both variances relate only to street standards and will have no impact upon density of development or type of housing allowed by the R-10 zoning district. For this reason, this standard is met.

The proposed development also proposes a variance to the access spacing standards for Meadowlark Drive. Specifically, CDC 48.025B(6) states:

6. Access spacing.

a. 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 and non-traversable medians.

b. Private drives and other access ways are subject to the requirements of CDC 48.060.

Table 8-3 of the TSP lists the desired spacing distance between local streets on an arterial street, such as Rosemont and Parker, as 600 feet. On Parker Road, the distance between the proposed Meadowlark Dr./Parker Road intersection and the existing Dillon Ln./Parker Road intersection is only about 225 feet, so a variance is needed. It should be noted that the City Council has approved a change to the designation of Parker Road from arterial to collector, but this change won't go into effect until September. The intersection of Meadowlark Dr. with Rosemont Road is in conformance with the spacing standard in that there are no other local streets within 600 feet of the new intersection. However, City staff has raised the issue of whether the spacing distance of 300 feet listed for private driveways on arterial streets must be met. The driveway to Oppenlander Field is about 225' centerline to centerline from the new intersection. It is the applicant's position that this standard is not applicable in light of the fact that CDC 48.025(6)b makes the access spacing for private drives

not subject to the TSP, but rather to CDC 48.060, and the standard in that section is only 100 feet of spacing for a driveway from the intersection of a local street with an arterial. As the access separation distance between the new intersection and the driveway exceeds this distance, a variance should not be required. Since staff does not agree with this interpretation, we will address the approval standards for both access spacing issues in a combined variance request, with the understanding that it is the applicant's position that the Rosemont/Meadowlark Drive is not in violation of access spacing requirements.

The requested variance conforms to the variance approval criteria as follows:

B. Class II Variance. Class II variances may be utilized when strict application of code requirements would be inconsistent with the general purpose of the CDC and would create a burden upon a property owner with no corresponding public benefit. A Class II variance will involve a significant change from the code requirements and may create adverse impacts on adjacent property or occupants. It includes any variance that is not classified as a Class I variance or special waiver.

1. Class II Variance Approval Criteria. The approval authority may impose appropriate conditions to ensure compliance with the criteria. The appropriate approval authority shall approve a variance request if all the following criteria are met and corresponding findings of fact prepared.

a. The variance is the minimum variance necessary to make reasonable use of the property. To make this determination, the following factors may be considered, together with any other relevant facts or circumstances:

- 1) Whether the development is similar in size, intensity and type to developments on other properties in the City that have the same zoning designation.*
- 2) Physical characteristics of the property such as lot size or shape, topography, or the existence of natural resources.*
- 3) The potential for economic development of the subject property.*

Comment: The intersection of Meadowlark Drive with Rosemont Road is the minimum variance necessary to make reasonable use of the property for the following reasons:

1) Access to Rosemont Road is necessary in order to provide for connectivity from Rosemont through to Parker Road, as well as to avoid placing undue traffic onto Roxbury Drive.

2) Sight distance at the intersection is limited by a vertical curve in Rosemont Road so that it would be unsafe to move the proposed intersection farther away from the Oppenlander driveway. Moving the intersection to the east, so as to align with the park driveway, would bring it within approximately 450 feet of the Wildrose Drive intersection with Rosemont, which would violate the 600 foot minimum separation distance. That location would also fail to provide for

a direct alignment through the site from Rosemont to Parker, which is something that was stated as a strong preference by the neighbors at the neighborhood meeting on this project, who wanted to avoid traffic being directed onto Roxbury Drive.

The intersection of Meadowlark Drive with Parker Road provides for the minimum variance necessary to make reasonable use of the subject property for the following reasons:

1) Access to Parker Road is necessary in order to provide for connectivity from Rosemont through to Parker Road, as well as to avoid creation of a long cul-de-sac street serving the lower portion of the property.

2) The presence of the Tanner Creek stream corridor to the west of the proposed intersection precludes moving the intersection in that direction. The proposed location is as far removed from Dillon Drive as is reasonably practicable.

b. The variance will not result in violation(s) of any other code standard, and the variance will meet the purposes of the regulation being modified.

Comment: No other code provisions would be violated by granting this variance. Access spacing does not impact any other code provisions.

c. The need for the variance was not created by the applicant and/or owner requesting the variance.

Comment: The need for the variance relates to the physical characteristics of the property. Specifically, the fact Rosemont Road access is only available in a limited area due to sight distance issues and this condition makes it impracticable to comply with the 300 foot separation to a private drive listed in Table 8-3. In the case of the intersection with Parker Drive, the Tanner Creek stream corridor precludes moving the intersection to a point where the 600 foot separation standard could be met. Neither of these physical conditions were created by the applicant.

d. If more than one variance is requested, the cumulative effect of the variances results in a project that is consistent with the overall purpose of the zone.

Comment: The other variance proposed relates to cul-de-sac length, as discussed above. Both variances relate only to street standards and will have no impact upon density of development or type of housing allowed by the R-10 zoning district. For this reason, this standard is met.

Preliminary storm drainage report for Tanner Ridge

Site Conditions:

This vacant parcel is a triangular tract containing approximately 15.8 acres and comprised of two tax lots (2 1E 26D, 00300 & 2 1E 26A, 1100), 1270 Rosemont Road. It is bounded on north by Rosemont Road and the south by Parker Rd and Parker Road right-of-way. The property slopes from north to south with a maximum slope of approximately 15%. An existing wetland and pond are located on the southerly side of the property, adjacent to the pathway in the Parker Road right-of-way. The preliminary plans sites 50 single family residential lots with significant sized open spaces to the west and south.

With development two internal drainage basins will be created. To the north the proposed Heron Ct slopes to the west and Meadowlark Drive slopes to the south. The Heron Ct sub-basin will be collected in a new detention facility and discharged into the natural drainage corridor. The pond will be used for flow control and water quality.

The Meadowlark sub-basin will collect storm water in a detention pond facility that will include both water quantity and quality. This facility will discharge into the drainage course on the property that flows southerly across Parker Road.

The two existing drainage corridors that discharge onto the site from Rosemont Road will be routed through the site and be discharged into the natural drainage corridor.;

Hydrologic Soils Group:

The Oregon Soil Survey was used to determine the soil type and Hydrologic Soil Group.

Map unit Symbol	Map unit name	Rating
23B	Cornelius silt loam	C
23D	Cornelius silt loam	C
78C	Saum silt loam	C

Additionally, Delena silt loam is reported in the wetland, resource area. Group C soils have a moderate infiltration rate when thoroughly wet. The Oregon Soil Survey lists the infiltration rate at 6.5410 to 8.3369 microns/second or approximately 1 inch/hr. Because this is a sloping site significant grading will be required to construct the road system and residential building pads. As a result significant fills will be required that will preclude effective and prudent use of rain gardens.

Summary:

Heron Ct.			
Event	Pre-development	Post-development	Release rate
2-year	0.97 cfs	1.71 cfs	0.97 cfs
5-year	1.36 cfs	2.18 cfs	1.12 cfs
10-year	1.60 cfs	2.46 cfs	1.59 cfs
25-year	2.09 cfs	3.03 cfs	2.09 cfs
100-year	N/A	3.52 cfsj	N/A

Meadowlark			
Event	Pre-developed	Post-development	Release rate
2-year	1.78 cfs	2.32 cfs	1.78 cfs
5-year	2.35 cfs	2.95 cfs	2.32 cfs
10-year	2.70 cfs	3.33 cfs	2.73 cfs
25-year	3.40 cfs	4.10 cfs	3.49 cfs
100-year	N/A	4.76 cfs	N/A

Storm facility on north side of project (Heron Ct.)

Time of Concentration

$$T = 0.42(n L)^{.8} / (P_2)^{0.5} (S_0)^{0.4} \quad \& \quad T = L/60k(s_0)^{0.5}$$

Heron Ct.

Pre-Development: $(.42)[(0.24(300))^{0.8} / (2.6)^{0.5} (0.14)^{.4}] = 17.5 \text{ min}$ & $160/(60)(17)(0.147)^{.5} = 0.5 \text{ min}$ = total 18.0 minutes

Post-Development $(.42)[(0.15(60))^{0.8} / (2.6)^{0.5} (0.1125)^{.4}] = 7.9 \text{ min}$ + $160/(60)(27)(0.125)^{.5} = 0.3 \text{ min}$ + $160/(60)(27)(0.064)^{.5} = 0.6$ = total 8.8 minutes

XXXXXXXXXXXX 2-YEAR 24-HOUR STORM xxxx 2.60 "TOTAL PRECIP XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX/

ENTER: A(PERV),CN(PERV),A(IMPERV),CN(IMPERV),TC FOR BASIN NO. 1

3.9,85,0.0,98,26.2

DATA PRINT OUT:

AREA(ACRES)	PERVIOUS		IMPERVIOUS		TC(MINUTES)
	A	CN	A	CN	
3.9	3.9	85	0.0	98	18.0
PEAK-Q(CFS)	T-PEAK(HRS)		VOL(CU-FT)		
.97	7.83		17750		

ENTER [d:][path]filename[.ext] FOR STORAGE OF COMPUTED HYDROGRAPH:

C:tan2

SPECIFY: C - CONTINUE, N - NEWSTORM, P - PRINT, S - STOP

C

ENTER: A(PERV),CN(PERV),A(IMPERV),CN(IMPERV),TC FOR BASIN NO. 1

2.3,86,1.6,98,8.8

DATA PRINT OUT:

AREA(ACRES)	PERVIOUS		IMPERVIOUS		TC(MINUTES)
	A	CN	A	CN	
3.9	2.3	86	1.6	98	8.8
PEAK-Q(CFS)	T-PEAK(HRS)		VOL(CU-FT)		
1.71	7.83		24824		

ENTER [d:][path]filename[.ext] FOR STORAGE OF COMPUTED HYDROGRAPH:

C:ta2

SPECIFY: C - CONTINUE, N - NEWSTORM, P - PRINT, S - STOP

N

STORM OPTIONS:

1 - S.C.S. TYPE-1A

2 - 7-DAY DESIGN STORM

3 - STORM DATA FILE

SPECIFY STORM OPTION:

1

S.C.S. TYPE - 1A RAINFALL DISTRIBUTION

ENTER; FREQ(YEAR), DURATION(HOUR), PRECIP(INCHES)

5,24,3.1

XXXXXXXXXXXXXXXXXXXXXXXXX S.C.S.TYPE-1A DISTRIBUTION XXX

XXXXXXXXXXXXX 5-YEAR 24-HOUR STORM xxxx 3.10" TOTAL PRECIP XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

ENTER: A(PERV),CN(PERV),A(IMPERV),CN(IMPERV),TC FOR BASIN NO. 1

3.9,85,0.0,98,18.0

DATA PRINT OUT:

AREA(ACRES)	PERVIOUS		IMPERVIOUS		TC(MINUTES)
	A	CN	A	CN	
3.9	3.9	85	0.0	98	18.0
PEAK-Q(CFS)	T-PEAK(HRS)		VOL(CU-FT)		
1.36	7.83		23593		

ENTER [d:][path]filename[.ext] FOR STORAGE OF COMPUTED HYDROGRAPH:

C:tan5

SPECIFY: C-CONTINUE, N-NEWTORM,P-PRINT,S-STOP

C

ENTER: A(PERV),CN(PERV),A(IMPERV),CN(IMPERV),TC FOR BASIN NO. 1

2.3,86,1.6,98,8.8

DATA PRINT OUT:

AREA(ACRES)	PERVIOUS		IMPERVIOUS		TC(MINUTES)
	A	CN	A	CN	

3.9	2.3	86	1.6	98	8.8
PEAK-Q(CFS)	T-PEAK(HRS)		VOL(CU-FT)		
2.18	7.83		31243		

ENTER [d:][path]filename[.ext] FOR STORAGE OF COMPUTED HYDROGRAPH:

C:ta5

SPECIFY: C – CONTINUE, N – NEWSTORM, P – PRINT, S – STOP

N

STORM OPTIONS:

- 1 – S.C.S. TYPE-1A
- 2 - 7-DAY DESIGN STORM
- 3 - STORM DATA FILE

SPECIFY STORM OPTION:

1

S.C.S. TYPE - 1A RAINFALL DISTRIBUTION

ENTER; FREQ(YEAR), DURATION(HOUR), PRECIP(INCHES)

10,24,3.4

XXXXXXXXXXXXXXXXXXXXXXXXX S.C.S.TYPE-1A DISTRIBUTION XXX

XXXXXXXXXXXXX 10-YEAR 24-HOUR STORM xxxx 3.40" TOTAL PRECIP XXX

ENTER: A(PERV),CN(PERV),A(IMPERV),CN(IMPERV),TC FOR BASIN NO. 1

ENTER: A(PERV),CN(PERV),A(IMPERV),CN(IMPERV),TC FOR BASIN NO. 1

3.9,85,0.0,98,18.0

DATA PRINT OUT:

AREA(ACRES)	PERVIOUS		IMPERVIOUS		TC(MINUTES)
	A	CN	A	CN	
3.9	3.9	85	0.0	98	18.0
PEAK-Q(CFS)	T-PEAK(HRS)		VOL(CU-FT)		
1.60	7.83		27221		

ENTER [d:][path]filename[.ext] FOR STORAGE OF COMPUTED HYDROGRAPH:

C:tan10

SPECIFY: C-CONTINUE, N-NEWTORM,P-PRINT,S-STOP

C

ENTER: A(PERV),CN(PERV),A(IMPERV),CN(IMPERV),TC FOR BASIN NO. 1

2.3,86,1.6,98,8.8

DATA PRINT OUT:

AREA(ACRES)	PERVIOUS		IMPERVIOUS		TC(MINUTES)
	A	CN	A	CN	
3.9	2.3	86	1.6	98	8.8
PEAK-Q(CFS)	T-PEAK(HRS)		VOL(CU-FT)		
2.46	7.83		35162		

ENTER [d:][path]filename[.ext] FOR STORAGE OF COMPUTED HYDROGRAPH:

C:ta10

SPECIFY: C – CONTINUE, N – NEWSTORM, P – PRINT, S – STOP

N

STORM OPTIONS:

1 - S.C.S. TYPE-1A

2 - 7-DAY DESIGN STORM

3 - STORM DATA FILE

SPECIFY STORM OPTION:

1

S.C.S. TYPE - 1A RAINFALL DISTRIBUTION

ENTER; FREQ(YEAR), DURATION(HOUR), PRECIP(INCHES)

25,24,4

XXXXXXXXXXXXXXXXXXXX S.C.S.TYPE-1A DISTRIBUTION XXX

XXXXXXXXXXXX 25-YEAR 24-HOUR STORM xxxx 4.00" TOTAL PRECIP XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

3 - STORM DATA FILE

SPECIFY STORM OPTION:

1

S.C.S. TYPE - 1A RAINFALL DISTRIBUTION

ENTER; FREQ(YEAR), DURATION(HOUR), PRECIP(INCHES)

100,24,4.5

XXXXXXXXXXXXXXXXXXXXXXXXX S.C.S.TYPE-1A DISTRIBUTION XXX

XXXXXXXXXXXXX 100-YEAR 24-HOUR STORM xxxx 4.50" TOTAL PRECIP XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

ENTER: A(PERV),CN(PERV),A(IMPERV),CN(IMPERV),TC FOR BASIN NO. 1

2.3,86,1.6,98,8.8

DATA PRINT OUT:

AREA(ACRES)	PERVIOUS		IMPERVIOUS		TC(MINUTES)
	A	CN	A	CN	
3.9	2.3	86	1.6	98	8.8
PEAK-Q(CFS)	T-PEAK(HRS)		VOL(CU-FT)		
3.52	7.83		49023		

ENTER [d:][path]filename[.ext] FOR STORAGE OF COMPUTED HYDROGRAPH:

C:\tan100

SPECIFY: C – CONTINUE, N – NEWSTORM, P – PRINT, S – STOP

S

1 - INFO ON THIS PROGRAM

2 - SBUHYD

3 - MODIFIELD SBUHYD

4 - ROUTE

5 - ROUTE2

6 - ADDHYD

7 - BASEFLOW

8 - PLOTHYD

9 - DTATA

10 - REFAC

11 - RETURN TO DOS

ENTER OPTION:

DETENTION SIZING

ENTER OPTION

10

R/D FACILITY DESIGN ROUTINE

SPECIFY TYPE OF R/D FACILITY

1 - POND

4 - INFILTRATION POND

2 - TANK

5 - INFILTRATION TANK

3 - VAULT

6 - GRAVEL TRENCH/BED

1

ENTER: POND SIDE SLOPE (HORIZ. COMPONENT)

4

ENTER: EFFECTIVE STORAGE DEPTH(ft) BEFORE OVERFLOW

3

ENTER [d:][path]filename[.ext] OF PRIMARY DESIGN INFLOW HYDROGRAPH:

C:TA25

PRELIMINARY DESIGN INFLOW PEAK = 3.03 CFS

ENTER PRIMARY DESIGN RELEASE RATE(cfs)

2.09

ENTER NUMBER OF INFLOW HYDROGRAPHS TO BE TESTED FOR PERFORMANCE (5 MAXIMUM)

3

ENTER [d:][path]filename[ext] OF HYDROGRAPH 1:

C:TA10

ENTER TARGET RELEASE RATE(cfs)

1.60

ENTER [d:][path]filename[ext] OF HYDROGRAPH 2:

C:TA5

ENTER TARGET RELEASE RATE(cfs)

1.36

ENTER [d:][path]filename[ext] OF HYDROGRAPH 3:

C:TA2

ENTER TARGET RELEASE RATE(cfs)

0.97

ENTER: NUMBER OF ORIFICES, RISER-HEAD(ft), RISER-DIAMETER(in)

2,3,12

RISER OVERFLOW DEPTH FOR PRIMARY PEAK INFLOW= .64FT

SPECIFY ITERATION DISPLAY: Y -YES, N - NO

N

SPECIFY: R - REVIEW/REVISE INPUT, C - CONTINUE

C

INITIAL STORAGE VALUE FOR ITERATION PURPOSES: 14202 CU-FT

BOTTOM ORIFICE: ENTER Q-MAX(cfs)

1.20

DIA.= 5.05 INCHES

TOP ORIFICE: ENTER HEIGHT (ft)

2.51

DIA.= 6.85 INCHES

PERFORMANCE: INFLOW TARGET-OUTFLOW ACTUAL-OUTFLOW PK-STAGE STORAGE

DESIGN HYD:	3.03	2.09	2.09	3.00	3393
TEST HYD 1:	2.46	1.60	1.59	2.67	2760
TEST HYD 2:	2.18	1.36	1.12	2.52	2490
TEST HYD 3:	1.71	.97	.97	1.95	1640

SPECIFY: D - DOCUMENT, R -REVISE, A - ADJUST ORIF, E -ENLARGE, S -STOP

PRELIMINARY DESIGN NORTH (Heron Ct)

A proposed detention facility will be constructed in an area without trees within the wetland buffer. Other sites would involve removal of significant trees. The preliminary plan illustrates a facility with sufficient volume as indicated in the calculations. Water quality will be provided in the bottom on the pond. The 100-year event for the North side will be accommodated with 12-inch piping and minimum slopes of 1.0%.

STORM DRAINAGE FACILITY OF THE SOUTHERLY SIDE – Meadowlark Drive

Time of Concentration

$$T = 0.42(n L)^{.8} / (P2)^{.5} (S0)^{.4} \quad \& \quad T = L/60k(s0)^{.5}$$

Tanner site B

$$\text{Pre-Development: } (.42)[(0.24(300))^{.8} / (2.6)^{.5} (0.153)^{.4}] = 16.9 \text{ min} \quad \& \quad 280 / (60)(17)(0.10)^{.5} = 0.9 \text{ min} = \text{total } 17.8 \text{ minutes}$$

$$\text{Post-Development } (.42)[(0.15(200))^{.8} / (2.6)^{.5} (0.16)^{.4}] = 8.3 \text{ min} + 60 / (60)(27)(0.125)^{.5} = 0.1 \text{ min} + 230 / (60)(42)(.12)^{.5} = 0.3 = \text{Total } 8.7 \text{ minutes}$$

ENTER OPTION:

2

SBUN/SCS METHOD FOR COMPUTING RUNOFF HYDROGRAPH

STORM OPTIONS:

1 - S.C.S. TYPE-1A

2 - 7-DAY DESIGN STORM

3 - STORM DATA FILE

SPECIFY STORM OPTION:

1

S.C.S. TYPE - 1A RAINFALL DISTRIBUTION

ENTER; FREQ(YEAR), DURATION(HOUR), PRECIP(INCHES)

2,24,2.6

XXXXXXXXXXXXXXXXXXXXXXXXX S.C.S.TYPE-1A DISTRIBUTION

XX

XXXXXXXXXXXXX 2-YEAR 24-HOUR STORM xxxxx 2.60 "TOTAL PRECIP

XX/

ENTER: A(PERV),CN(PERV),A(IMPERV),CN(IMPERV),TC FOR BASIN NO. 1

5.25,89,0.0,98,16.9

DATA PRINT OUT:

AREA(ACRES)	PERVIOUS		IMPERVIOUS		TC(MINUTES)
	A	CN	A	CN	
5.3	5.3	89	.0	98	16.9
PEAK-Q(CFS)	T-PEAK(HRS)		VOL(CU-FT)		
1.78	7.83		29309		

ENTER [d:][path]filename[.ext] FOR STORAGE OF COMPUTED HYDROGRAPH:

C:PAR2

SPECIFY: C - CONTINUE, N - NEWSTORM, P -PRINT, S - STOP

C

ENTER: A(PERV),CN(PERV),A(IMPERV),CN(IMPERV),TC FOR BASIN NO. 1

3.04,86,2.21,98,8.7

DATA PRINT OUT:

AREA(ACRES)	PERVIOUS	IMPERVIOUS	TC(MINUTES)
3.04	86	2.21	98

	A	CN	A	CN	
5.3	3.0	86	2.2	98	8.7
PEAK-Q(CFS)	T-PEAK(HRS)		VOL(CU-FT)		
2.32	7.83		33631		

ENTER [d:][path]filename[.ext] FOR STORAGE OF COMPUTED HYDROGRAPH:

C:2PAR

SPECIFY: C - CONTINUE, N - NEWSTORM, P - PRINT, S - STOP

N

STORM OPTIONS:

1 - S.C.S. TYPE-1A

2 - 7-DAY DESIGN STORM

3 - STORM DATA FILE

SPECIFY STORM OPTION:

1

S.C.S. TYPE - 1A RAINFALL DISTRIBUTION

ENTER; FREQ(YEAR), DURATION(HOUR), PRECIP(INCHES)

5,24,3.1

XXXXXXXXXXXXXXXXXXXXXXXXX S.C.S.TYPE-1A DISTRIBUTION

XXXXXXXXXXXXXXXXXXXXXXXXX

XXXXXXXXXXXXX 5-YEAR 24-HOUR STORM XXXX 3.10" TOTAL PRECIP

XXXXXXXXXXXXXXXXXXXXXXXXX

ENTER: A(PERV),CN(PERV),A(IMPERV),CN(IMPERV),TC FOR BASIN NO. 1

5.25,89,0.0,98,16.9

DATA PRINT OUT:

AREA(ACRES) PERVIOUS IMPERVIOUS TC(MINUTES)

A CN A CN

5.3 5.3 89 0.0 98 16.9

PEAK-Q(CFS) T-PEAK(HRS) VOL(CU-FT)

2.35 7.83 37826

ENTER [d:][path]filename[.ext] FOR STORAGE OF COMPUTED HYDROGRAPH:

C:par5

SPECIFY: C-CONTINUE, N-NEWSTORM,P-PRINT,S-STOP

C

ENTER: A(PERV),CN(PERV),A(IMPERV),CN(IMPERV),TC FOR BASIN NO. 1

3.04,86,2.21,98,8.7

DATA PRINT OUT:

AREA(ACRES) PERVIOUS IMPERVIOUS TC(MINUTES)

A CN A CN

5.3 5.3 89 0.0 98 16.9

PEAK-Q(CFS) T-PEAK(HRS) VOL(CU-FT)

2.95 7.83 42287

ENTER [d:][path]filename[.ext] FOR STORAGE OF COMPUTED HYDROGRAPH:

C:5PAR

STORM OPTIONS:

1 - S.C.S. TYPE-1A

2 - 7-DAY DESIGN STORM

3 - STORM DATA FILE

SPECIFY STORM OPTION:

1

S.C.S. TYPE - 1A RAINFALL DISTRIBUTION

ENTER; FREQ(YEAR), DURATION(HOUR), PRECIP(INCHES)

10,24,3.4

XXXXXXXXXXXXXXXXXXXXXXXXX S.C.S.TYPE-1A DISTRIBUTION

XX

XXXXXXXXXXXXX 10-YEAR 24-HOUR STORM xxxx 3.40" TOTAL PRECIP

XX

ENTER: A(PERV),CN(PERV),A(IMPERV),CN(IMPERV),TC FOR BASIN NO. 1

5.25,89,0.0,98,16.9

DATA PRINT OUT:

AREA(ACRES)	PERVIOUS		IMPERVIOUS		TC(MINUTES)
	A	CN	A	CN	
5.3	5.3	89	.0	98	16.9
PEAK-Q(CFS)	T-PEAK(HRS)		VOL(CU-FT)		
2.70	7.83		43044		

ENTER [d:][path]filename[.ext] FOR STORAGE OF COMPUTED HYDROGRAPH:

C:par10

SPECIFY: C-CONTINUE, N-NEWSTORM,P-PRINT,S-STOP

C

ENTER: A(PERV),CN(PERV),A(IMPERV),CN(IMPERV),TC FOR BASIN NO. 1

3.04,86,2.21,98,8.7

DATA PRINT OUT:

AREA(ACRES)	PERVIOUS		IMPERVIOUS		TC(MINUTES)
	A	CN	A	CN	
5.3	3.0	86	2.2	98	8.7
PEAK-Q(CFS)	T-PEAK(HRS)		VOL(CU-FT)		
3.33	7.83		47571		

ENTER [d:][path]filename[.ext] FOR STORAGE OF COMPUTED HYDROGRAPH:

C:10PAR

SPECIFY: C-CONTINUE, N-NEWSTORM,P-PRINT,S-STOP

N

STORM OPTIONS:

1 - S.C.S.. TYPE-1A

2 - 7-DAY DESIGN STORM

3 - STORM DATA FILE

SPECIFY STORM OPTION:

1

S.C.S. TYPE - 1A RAINFALL DISTRIBUTION

ENTER; FREQ(YEAR), DURATION(HOUR), PRECIP(INCHES)

25,24,4

XXXXXXXXXXXXXXXXXXXXXXXXX S.C.S.TYPE-1A DISTRIBUTION

XX

XXXXXXXXXXXXX 25-YEAR 24-HOUR STORM xxxx 4.00" TOTAL PRECIP

XX

ENTER: A(PERV),CN(PERV),A(IMPERV),CN(IMPERV),TC FOR BASIN NO. 1

5.25,89,0.0,98,16.9

DATA PRINT OUT:

AREA(ACRES)	PERVIOUS		IMPERVIOUS		TC(MINUTES)
	A	CN	A	CN	
5.3	5.3	89	.0	98	16.9

PEAK-Q(CFS)	T-PEAK(HRS)	VOL(CU-FT)
3.40	7.83	53657

ENTER [d:][path]filename[.ext] FOR STORAGE OF COMPUTED HYDROGRAPH:

C:par25

SPECIFY: C-CONTINUE, N-NEWSTORM,P-PRINT, S-STOP

C

ENTER: A(PERV),CN(PERV),A(IMPERV),CN(IMPERV),TC FOR BASIN NO. 1

3.04,86,2.21,98,8.7

DATA PRINT OUT:

AREA(ACRES)	PERVIOUS		IMPERVIOUS		TC(MINUTES)
	A	CN	A	CN	
5.3	3.0	86	2.2	98	8.7

PEAK-Q(CFS)	T-PEAK(HRS)	VOL(CU-FT)
4.10	7.83	58285

ENTER [d:][path]filename[.ext] FOR STORAGE OF COMPUTED HYDROGRAPH:

C:25PAR

SPECIFY: C - CONTINUE, N - NEWSTORM, P -PRINT, S - STOP

N

STORM OPTIONS:

1 - S.C.S. TYPE-1A

2 - 7-DAY DESIGN STORM

3 - STORM DATA FILE

SPECIFY STORM OPTION:

1

S.C.S. TYPE - 1A RAINFALL DISTRIBUTION

ENTER; FREQ(YEAR), DURATION(HOUR), PRECIP(INCHES)

100,24,4.5

XXXXXXXXXXXXXXXXXXXXXXXXXX S.C.S.TYPE-1A DISTRIBUTION XXX

XXXXXXXXXXXXX 100-YEAR 24-HOUR STORM xxxx 4.50" TOTAL PRECIP XXX

ENTER: A(PERV),CN(PERV),A(IMPERV),CN(IMPERV),TC FOR BASIN NO. 1

3.04,86,2.21,98,8.7

DATA PRINT OUT:

AREA(ACRES)	PERVIOUS		IMPERVIOUS		TC(MINUTES)
	A	CN	A	CN	
5.3	3.0	86	2.2	98	8.7
PEAK-Q(CFS)	T-PEAK(HRS)		VOL(CU-FT)		
4.76	7.83		67327		

ENTER [d:][path]filename[.ext] FOR STORAGE OF COMPUTED HYDROGRAPH:

C:PAR100

SPECIFY: C – CONTINUE, N – NEWSTORM, P – PRINT, S – STOP

s

DETENTION SIZING

ENTER OPTION

10

R/D FACILITY DESIGN ROUTINE

SPECIFY TYPE OF R/D FACILITY

1 - POND 4 - INFILTRATION POND

2 - TANK 5 - INFILTRATION TANK

3 - VAULT 6 - GRAVEL TRENCH/BED

1

ENTER: POND SIDE SLOPE (HORIZ. COMPONENT)

3

ENTER: EFFECTIVE STORAGE DEPTH(ft) BEFORE OVERFLOW

3.5

ENTER [d:][path]filename[.ext] OF PRIMARY DESIGN INFLOW HYDROGRAPH:

C:25PAR

PRELIMINARY DESIGN INFLOW PEAK = 4.10

ENTER PRIMARY DESIGN RELEASE RATE(cfs)

3.40

ENTER NUMBER OF INFLOW HYDROGRAPHS TO BE TESTED FOR PERFORMANCE (5 MAXIMUM)

3

ENTER [d:][path]filename[ext] OF HYDROGRAPH 1:

C:10PAR

ENTER TARGET RELEASE RATE(cfs)

2.70

ENTER [d:][path]filename[ext] OF HYDROGRAPH 2:

C:5PAR

ENTER TARGET RELEASE RATE(cfs)

2.35

ENTER [d:][path]filename[ext] OF HYDROGRAPH 3:

C:2PAR

ENTER TARGET RELEASE RATE(cfs)

1.78

ENTER: NUMBER OF ORIFICES, RISER-HEAD(ft), RISER-DIAMETER(in)

2,3.5,18

RISER OVERFLOW DEPTH FOR PRIMARY PEAK INFLOW= 0.43FT

SPECIFY ITERATION DISPLAY: Y -YES, N - NO

N

SPECIFY: R - REVIEW/REVISE INPUT, C - CONTINUE

C

INITIAL STORAGE VALUE FOR ITERATION PURPOSES: 18057 hCU-FT

BOTTOM ORIFICE: ENTER Q-MAX(cfs)

2.25

DIA.= 6.66 INCHES

TOP ORIFICE: ENTER HEIGHT (ft)

2.79

DIA.= 7.13 INCHES

PERFORMANCE: INFLOW TARGET-OUTFLOW ACTUAL-OUTFLOW PK-STAGE STORAGE

DESIGN HYD:	4.10	3.40	3.40	3.50	2397
TEST HYD 1:	3.33	2.70	2.73	3.05	1860
TEST HYD 2:	2.95	2.35	2.32	2.87	1660
TEST HYD 3:	2.32	1.70	1.78	2.20	1050

SPECIFY: D - DOCUMENT, R -REVISE, A - ADJUST ORIF, E -ENLARGE, S -STOP

PRELIMINARY DESIGN SOUTH (Meadowlark)

The proposed detention facility can easily be sited in adjacent to the road and near the proposed open space that will provide water quantity and quality. This pond is located at the south edge of the project as illustrated on the preliminary plans. Water quality swale can be routed inside the detention pond. This facility would have a control manhole with discharge to the existing drainage way at Parker Road. Storm piping following the road gradient will easily allow the 100-year event to past.

DOWNSTREAM CAPACITY:

The existing 36-inch culvert in Parker road has a capacity of approximately 68 CFS and the estimated 100-year flow for the entire drainage basin is approximately 49CFS.

Conclusion:

This preliminary analysis of the storm water collection and discharge for the Tanner Ridge development demonstrates feasibility and to meet the minimum standards of the City of West Linn. Calculations and preliminary drawings show that the storm water can be collected and discharged per standard engineering practice and City standards for the 2, 5, 10, & 25 year storm events with detention facilities that control the flow to the pre-design rates. . A final report will be prepared with the design phase that will provide necessary detail and final sizing.

Prepared By:
Bruce D. Goldson, PE
Theta
June 21, 2016



Table 4-4 MANNING'S COEFFICIENTS/ "K" FACTORS

Sheet Flow Equations Manning's Values (for initial 300 ft. of travel)		n
Smooth surfaces (concrete, asphalt, gravel, or bare hand packed soil)		0.01
Fallow fields or loose soil surface (no residue)		0.05
Cultivated soil with residue cover (s # 0.20 ft/ft)		0.06
Cultivated soil with residue cover (s > 0.20 ft/ft)		0.17
Short prairie grass and lawns		0.15
Dense grasses		0.24
Bermuda grass		0.41
Range (natural)		0.13
Woods or forest with light underbrush		0.40
Woods or forest with dense underbrush		0.80
Manning values for sheet flow only, from Overton and Meadows (1976) See SCS TR-57 (1961) "n" Values Used in Travel Time/Time of Concentration Calculation - Shallow Concentrated Flow (After the initial 300 ft. of sheet flow R=0.1)		
1.	Forest with heavy ground litter and meadows (n = 0.10)	3
2.	Brushy ground with some trees (n = 0.060)	5
3.	Fallow or minimum tillage cultivation (n=0.040)	8
4.	High grass (n=0.035)	9
5.	Short grass, pasture, and lawns (n=0.030)	11
6.	Nearly bare ground (n=0.025)	13
7.	Paved and gravel areas (n=0.012)	27
Channel flow (intermittent) (At beginning of visible channels R=0.2)		
1.	Forested swale with heavy ground litter (n=0.10)	5
2.	Forested drainage course/ravine with defined channel bed (n=0.050)	10
3.	Rock-lined waterway (n=0.035)	15
4.	Grassed waterway (n=0.030)	17
5.	Earth-lined waterway (n=0.025)	20
6.	CMP pipe (n=0.024)	21
7.	Concrete pipe (0.012)	42
8.	Other waterways and pipe $0.508/n$	
Channel flow (continuous stream, R=1)		
9.	Meandering stream with some pools (n=0.040)	20
10.	Rock-lined stream (n=0.035)	23
11.	Grass-lined stream (n=0.030)	27
12.	Other streams, man-made channels and pipe $0.807/n$ **	
** See Table 6-1 for additional Manning's "n" values for open channels		

Table 4-3 MODIFIED CURVE NUMBERS

SCS Western Washington Runoff Curve Numbers					
Runoff curve numbers for selected agricultural, suburban, and urban land use for Type 1A rainfall distribution, 24-hour storm duration. (Published by SCS in 1982)					
LAND USE DESCRIPTION		CURVE NUMBERS BY HYDROLOGIC SOIL GROUP			
		A	B	C	D
Cultivated land	Winter Condition	86	91	94	95
Mountain Open Areas:	Low growing brush and grassland.	74	82	89	92
Meadow or pasture:		65	78	85	89
Wood or forest land:	Undisturbed	42	64	76	81
	Established second growth ²	48	68	78	83
	Young second growth or brush	55	72	81	86
Orchard:	With over crop	81	88	92	94
Open spaces, lawns, parks, golf courses, cemeteries, landscaping	Good Condition: Grass cover on >=75% of area	68	80	86	90
	Fair Condition: Grass cover on 50-75% of area	77	85	90	92
Gravel Roads and Parking Lots:		76	85	89	91
Dirt Roads and Parking Lots:		72	82	87	89
Impervious surfaces, pavement, roofs, etc.		98	98	98	98
Open water bodies: Lakes, wetlands, ponds, etc.		100	100	100	100
Single Family Residential ³ :					
Dwelling unit/gross acre	% Impervious ⁴	Select a separate curve number for pervious and impervious portions of the site or basin.			
1.0 DU/GA	15				
1.5 DU/GA	20				
2.0 DU/GA	25				
2.5 DU/GA	30				
3.0 DU/GA	34				
3.5 DU/GA	38				
4.0 DU/GA	42				
4.5 DU/GA	46				
5.0 DU/GA	48				
5.5 DU/GA	50				
6.0 DU/GA	52				
6.5 DU/GA	54				
7.0 DU/GA	56				
Planned Unit Developments, condominiums, apartments, commercial businesses & industrial areas ³	% impervious ⁴ Must be computed	Select a separate curve number for pervious and impervious portions of the site or basin.			

¹ For a more detailed description of agricultural land use curve numbers, refer to National Engineering Handbook, Sec. 4, Hydrology, Chapter 9, August 1972.

² Modified by KCFW, 1995.

³ Assumes roof and driveway runoff is directed into street/storm system.

⁴ The remaining pervious areas (lawn) are considered to be in good condition for these curve numbers.

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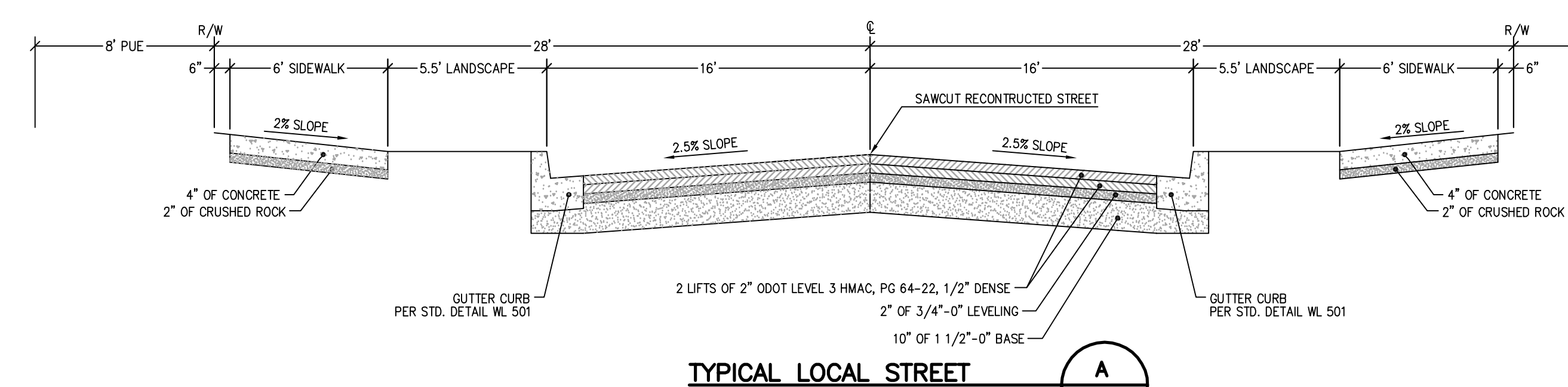
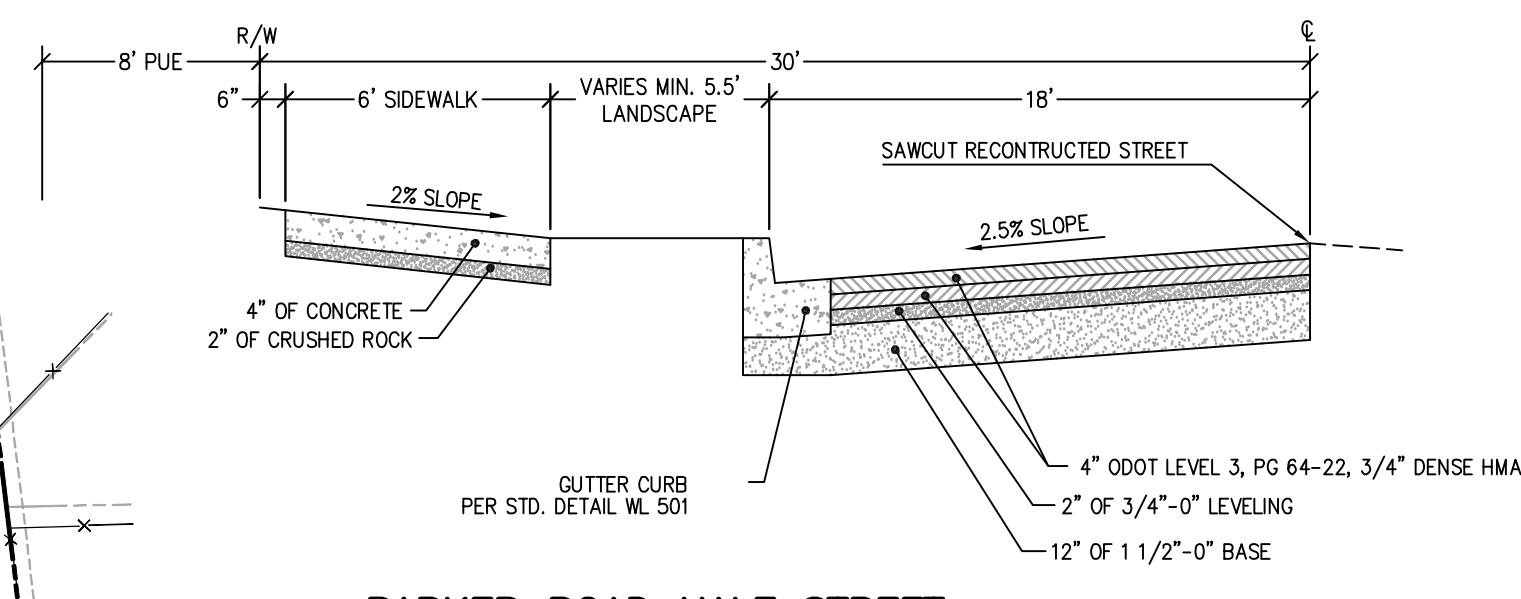
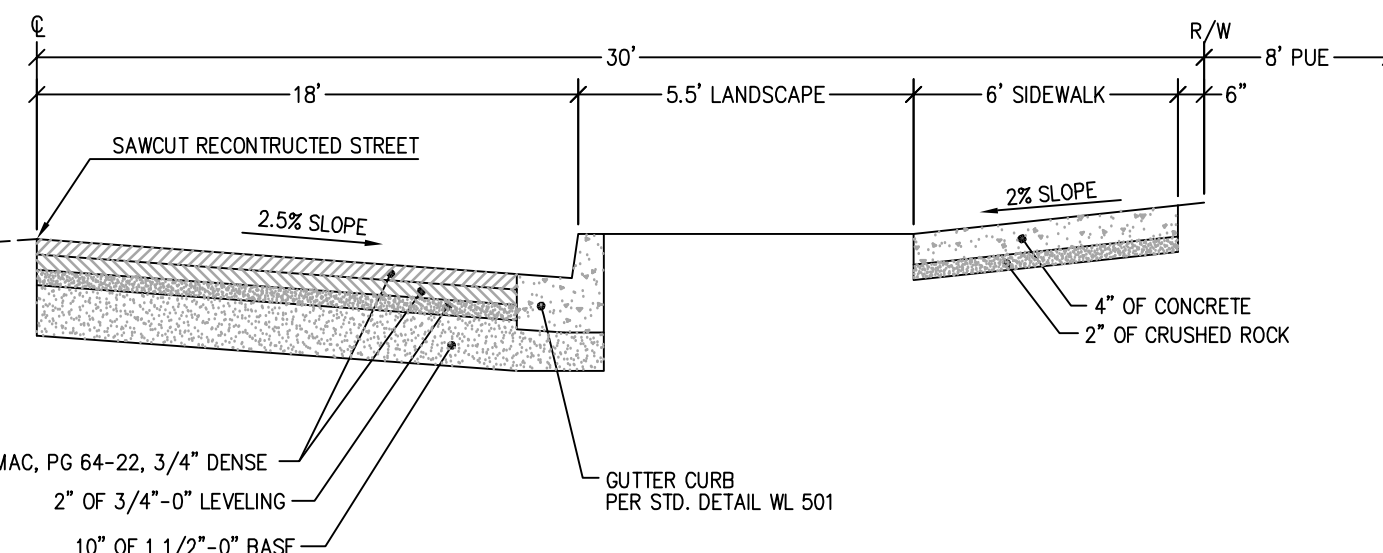
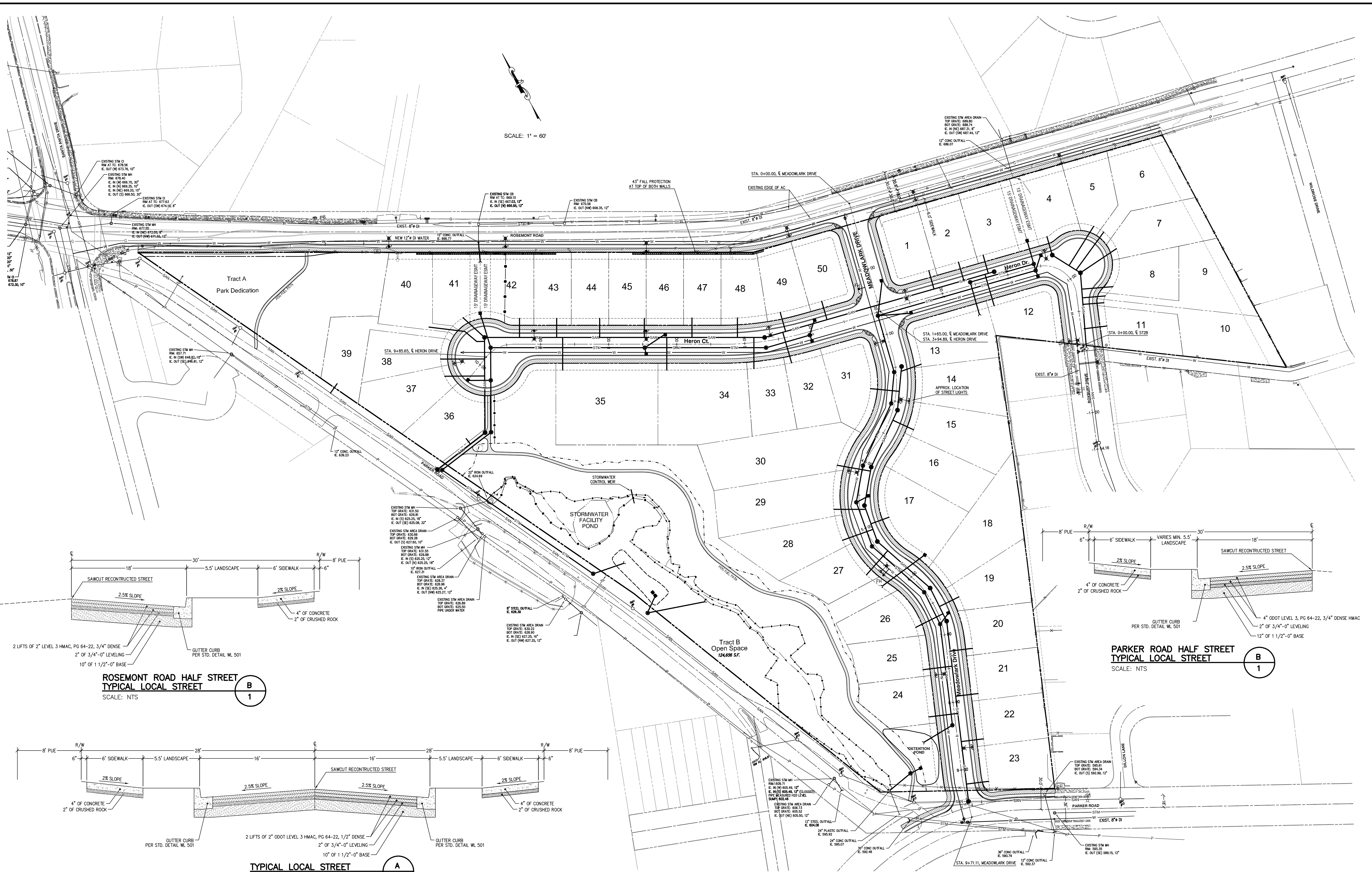
4.1.2.1 RAINFALL DISTRIBUTION

The rainfall distribution to be used within the City is the design storm of 24-hour duration based on the standard SCS Type 1A rainfall distribution (See Figure 4-2).

Table 4-1 below links the total depth per year of reoccurrence.

Table 4-1: TOTAL DEPTH	
Reoccurrence Year	Total Depth
2	2.6
5	3.1
10	3.4
25	4.0
50	4.4
100	4.5

SCALE: 1" = 60'



2015-129M	DESIGNED: BDG	DATE	NO.	REVISION
	DRAWN: BJS			
	SCALE: 1" = 60'			
	DATE: March, 2016			
	FILE: Rosemont Design Review5			

Theta, llc
ENGINEERING - SURVEYING - PLANNING
PO Box 1345
Lake Oswego, Oregon 97035
503/461-8822
email: thetaeng@comcast.net

Icon Construction & Development, LLC
1980 Willamette Falls Drive, Suite 200
West Linn, OR 97068
PH: (503) 657-0406

Tanner Ridge
SHEET: 1/3

UTILITY PLAN

