TRILLIUM CREEK

Six-Lot Subdivision Application

Icon Construction & Development, LLC

Proposal: This application requests approval of a 6-lot subdivision to be developed on property located at 3841 and 3843 Mapleton Drive in West Linn. Also requested as a part of this application are Water Resource Area and Habitat Conservation Area Permits associated with a stream corridor through the site. The stream is presently piped through the property, but will be day-lighted as a part of the proposed development.

The property is located on the north side of Mapleton Drive, east of Willamette Drive. The subject property is described as Tax Lots 400 and 500 of Clackamas County Assessor's Map 21E24BC. The site is 1.96 acres (85,367square feet) in area. It is presently vacant, the prior single-family home that had occupied the site having been removed. The subject property is zoned R-10.

Figure 1: Vicinity Map

Figure 2: Aerial Photograph

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

DIVISION 8. LAND DIVISION

Chapter 85
GENERAL PROVISIONS

85.160 SUBMITTAL REQUIREMENTS FOR TENTATIVE PLAN

A. A City-wide map shall identify the site. A vicinity map covering one-quarter-mile radius from the development site shall be provided in the application showing existing subdivisions, streets, and unsubdivided land ownerships adjacent to the proposed subdivision and showing how proposed streets and utilities may be extended to connect to existing streets and utilities.

Comment: The required vicinity map is shown on the Tentative Plan.

B. The tentative subdivision plan shall be prepared by a registered civil engineer and/or a licensed land surveyor. A stamp and signature of the engineer or surveyor shall be included on the tentative subdivision plan. A tentative minor partition plan (three lots or less) is only required to be drawn to scale and does not have to be prepared by an engineer or surveyor.

Comment: The Tentative Plan has been stamped by Bruce Goldson, P.E.

C. The tentative plan of a subdivision or partition shall be drawn at a scale not smaller than one inch equals 100 feet, or, for areas over 100 acres, one inch equals 200 feet.

Comment: The Tentative Plan is drawn at a scale of 1" = 40' in conformance with this requirement.

D. The following general information shall be shown on the tentative plan of subdivision or partition:

1. Proposed name of the subdivision and streets; these names shall not duplicate nor resemble the name of any other subdivision or street in the City and shall be determined by the City Manager or designee. Street names should be easily spelled, pronounced, and of limited length. All new street names must, to the greatest extent possible, respect and be representative of the surrounding geography and existing street names. Street names should consider any prominent historical City figures or neighborhood themes that exist. Subdivision street names may not reference names of the builder or developer.

2. Date, north arrow, scale of drawing, and graphic bar scale.

3. Appropriate identification clearly stating the drawing as a tentative plan.

4. Location of the proposed division of land, with a tie to the City coordinate system, where established, and a description sufficient to define its location and boundaries, and a legal description of the tract boundaries.

5. Names and addresses of the owner, developer, and engineer or surveyor.

Comment: The proposed name of the subdivision, Trillium Creek, is shown on the Tentative Plan. There are no new streets or street names. The drawing is dated, shows a north arrow, scale notation and graphic bar scale. The plan is identified as the Tentative Plan. The coordinate tie is shown on the Existing Conditions Map. The Tentative Plan identifies the property by Township, Range, Section and Tax Lot ID. The property is comprised of Lots 5 and the west 100 feet of Lot 6 of the recorded Maple Grove subdivision plat.

E. The following existing conditions shall be shown on the tentative plan of a subdivision or partition:

1. The location, widths, and names of all existing or platted streets and rights-of-way within or adjacent to the tract (within 50 feet), together with easements and other important features such as section lines, donation land claim corners, section corners, City boundary lines, and monuments.

2. Contour lines related to the U.S. Geological Survey datum or some other established benchmark, or other datum approved by the Planning Director and having the following minimum intervals:

a. Two-foot contour intervals for ground slopes less than 20 percent.

b. Five-foot contour intervals for ground slopes exceeding 20 percent.

3. The location of any control points that are the basis for the applicant's mapping.

4. The location, by survey, and direction of all watercourses and areas subject to periodic inundation or storm drainageway overflow or flooding, including boundaries of flood hazard areas as established by the U.S. Army Corps of Engineers or the City zoning ordinance.

5. Natural features such as rock outcroppings, wetlands tied by survey, wooded areas, heritage trees, and isolated trees (six-inch diameter at five feet above grade) identified by size, type, and location. All significant trees and tree clusters identified by the City Arborist using the criteria of CDC 55.100(B)(2), and all heritage trees, shall be delineated. Trees on non-Type I and II lands shall have their "dripline plus 10 feet" protected area calculated per CDC 55.100(B)(2) and expressed in square feet, and also as a percentage of total non-Type I and II area.

6. Existing uses of the property, including location of all existing structures. Label all structures to remain on the property after platting.

7. Identify the size and location of existing sewers, water mains, culverts, drain pipes, gas, electric, and other utility lines within the site, and in the adjoining streets and property.

8. Zoning on and adjacent to the tract.

9. Existing uses to remain on the adjoining property and their scaled location.

10. The location of any existing bicycle or pedestrian ways.

11. The location of adjacent transit stops.

Comment: Street widths are shown on the Tentative Plan. Contour lines are shown on the Tentative Plan as well as the Existing Conditions Plan, Slope Analysis, and preliminary engineering plans. Trees and the location of Trillium Creek (existing culvert and proposed channel) are shown on the Tentative Plan or Existing Conditions Map and Tree Plan. There are no other significant natural features. Significant trees to be retained, together with dripline, and dripline plus 10' are shown on the Tree Plan. The site is vacant so there are no existing uses. The Existing Conditions Plan shows size and location of existing utilities. The Tentative Plan shows zoning on and adjacent to the site. Existing uses on adjacent properties are shown on the Tentative Plan. There are no bicycle or pedestrian ways in this area. There are no transit stops in this area.

F. The following proposed improvements shall be shown on the tentative plan or supplemental drawings:

1. The street – street location, proposed name, right-of-way width, and approximate radius of curves of each proposed street and street grades. Proposed street names shall comply with the street naming method explained in CDC 85.200(A)(12).

Comment: Radius and right-of-way information is shown on the Tentative Plan. Grade information is shown on the Street Plan.

2. The type, method, and location of any erosion prevention and sediment control measures and/or facilities in accordance with the most current version of Clackamas County's Erosion/Sedimentation Control Plans Technical Guidance Handbook, which are necessary to prevent and control visible or measurable erosion as determined by the following criteria:

a. Deposition of soil, sand, dirt, dust, mud, rock, gravel, refuse, or any other organic or inorganic material exceeding one cubic foot in volume in a public

right-of-way or public property, or into the City surface water management system either by direct deposit, dropping, discharge, or as a result of erosion; or

b. Flow of water over bare soils, turbid or sediment-laden flows, or evidence of on-site erosion such as rivulets or bare soil slopes, where the flow of water is not filtered or captured on the development site; or

c. Earth slides, mud flows, land slumping, slope failure, or other earth movement that is likely to leave the property of origin.

Additional on-site measures may later be required if original measures prove to be inadequate in meeting these attainment standards. For the purposes of this code, "one cubic foot in volume" is defined to include the volume of material, wet or dry, at the time of deposition and includes any water of a discolored or turbid nature.

Comment: Erosion and sediment control measures addressing these concerns are shown on the Grading Plan.

3. Any proposed infrastructure improvements that address those identified in the City Transportation System Plan.

Comment: The street frontage on Mapleton Drive will be improved to City local street standards, consistent with the TSP.

4. Any proposed bicycle or pedestrian paths. The location of proposed transit stops.

Comment: None are proposed.

5. Any easement(s) – location, width, and purpose of the easement(s).

Comment: Proposed easements, width and their purpose are shown on the Tentative Plan and Utility Plan.

6. The configuration including location and approximate dimensions and area of each lot or parcel, and in the case of a subdivision, the proposed lot and block number.

Comment: The Tentative Plan shows the proposed lots, their dimensions and lot area. The lot numbers are shown. There is only a single block so block numbers are not required.

7. A street tree planting plan and schedule approved by the Parks Department.

Comment: A proposed preliminary street tree planting plan is shown on the Tentative Plan. Park approval will be obtained prior to final plat approval.

8. Any land area to be dedicated to the City or put in common ownership.

Comment: No dedications to the City or common ownership are proposed.

9. Phase boundaries shall be shown. (Ord. 1382, 1995; Ord. 1403, 1997; Ord. 1544, 2007; Ord. 1565, 2008; Ord. 1636 §§ 53, 54, 2014

Comment: The project is comprised of a single phase.

85.170 SUPPLEMENTAL SUBMITTAL REQUIREMENTS FOR TENTATIVE SUBDIVISION OR PARTITION PLAN

The following information shall be submitted to supplement the tentative subdivision plan:

A. General.

1. Narrative stating how the plan meets each of the applicable approval criteria and each subsection below.

Comment: Addressed in this narrative.

2. Statement or affidavit of ownership of the tract (County Assessor's map and tax lot number).

Comment: A copy of the deed to Tax Lots 400 & 500 of Clackamas County Assessor's Map 21E24BC is attached to verify the ownership of the subject property.

3. A legal description of the tract.

Comment: The subject property is comprised of Lots 5 and the west 100 feet of Lot 6 of the recorded subdivision plat of Maple Grove.

4. If the project is intended to be phased, then such a proposal shall be submitted at this time with drawing and explanation as to when each phase will occur and which lots will be in each phase.

Comment: N/A. The proposed subdivision will not be phased.

5. Where the land to be subdivided or partitioned contains only a part of the contiguous land owned by the developer, the Commission or Planning Director, as applicable, shall require a master plan of the remaining portion illustrating how the remainder of the property may suitably be subdivided.

Comment: N/A. There is no contiguous undeveloped land owned by the developer.

6. Where the proposed subdivision site includes hillsides, as defined in CDC 02.030 Type I and II lands, or any lands identified as a hazard site in the West Linn Comprehensive Inventory Plan Report, the requirements for erosion control as described in CDC 85.160(F)(2) shall be addressed in a narrative.

Comment: N/A. The property does not include such lands.

7. Table and calculations showing the allowable number of lots under the zone and how many lots are proposed.

Comment: Provided on the Tentative Plan.

8. Map and table showing square footage of site comprising slopes by various classifications as identified in CDC 55.110(B)(3).

Comment: Provided on the Slope Analysis Map submitted with this application.

B. Transportation.

1. Centerline profiles with extensions shall be provided beyond the limits of the proposed subdivision to the point where grades meet, showing the finished grade of streets and the nature and extent of street construction. Where street connections are not proposed within or beyond the limits of the proposed subdivision on blocks exceeding 330 feet, or for cul-de-sacs, the tentative plat or partition shall indicate the location of easements that provide connectivity for bicycle and pedestrian use to accessible public rights-of-way.

Comment: No new streets or future connections to other properties are proposed.

2. Traffic Impact Analysis (TIA).

a. Purpose. The purpose of this section of the code is to implement Section 660-012-0045(2)(e) of the State Transportation Planning Rule that requires the City to adopt a process to apply conditions to development proposals in order to minimize adverse impacts to and protect transportation facilities. This section establishes the standards for when a proposal must be reviewed for potential traffic impacts; when a Traffic Impact Analysis must be submitted with a development application in order to determine whether conditions are needed to minimize impacts to and protect transportation facilities; what must be in a Traffic Impact Study; and who is qualified to prepare the study.

b. Typical average daily trips. The latest edition of the Trip Generation manual, published by the Institute of Transportation Engineers (ITE) shall be used as the standards by which to gauge average daily vehicle trips.

Comment: Based on ITE data, the proposed six lot subdivision would be expected to generate approximately 60 vehicle trips per day.

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

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

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

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

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

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

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

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

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

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

Comment: The proposed development does not include any of these factors that would trigger the need for a Traffic Impact Analysis and no such requirement was listed in the Pre-application Conference notes.

d. Traffic impact analysis requirements.

Comment: Not applicable. A TIA is not required for this development.

e. Approval criteria.

Comment: Not applicable. A TIA is not required for this development.

f. Conditions of approval. The City may deny, approve, or approve the proposal with appropriate conditions.

Comment: Not applicable. A TIA is not required for this development.

C. Grading.

1. If areas are to be graded, a plan showing the location of cuts, fill, and retaining walls, and information on the character of soils, shall be provided. The grading plan shall show proposed and existing contours at intervals per CDC 85.160(E)(2).

2. The grading plan shall demonstrate that the proposed grading to accommodate roadway standards and create appropriate building sites is the minimum amount necessary.

3. The grading plan must identify proposed building sites and include tables and maps identifying acreage, location and type of development constraints due to site characteristics such as slope, drainage and geologic hazards. For Type I, II, and III lands (refer to definitions in Chapter 02 CDC), the applicant must provide a geologic report, with text, figures and attachments as needed to meet the industry standard of practice, prepared by a certified engineering geologist and/or a geotechnical professional engineer, that includes:

a. Site characteristics, geologic descriptions and a summary of the site investigation conducted;

b. Assessment of engineering geological conditions and factors;

c. Review of the City of West Linn's Natural Hazard Mitigation Plan and applicability to the site; and

d. Conclusions and recommendations focused on geologic constraints for the proposed land use or development activity, limitations and potential risks of development, recommendations for mitigation approaches and additional work needed at future development stages including further testing and monitoring.

Comment: A grading plan is included with this application and addresses these criteria.

D. Water.

1. A plan for domestic potable water supply lines and related water service facilities, such as reservoirs, etc., shall be prepared by a licensed engineer consistent with the adopted Comprehensive Water System Plan and most recently adopted updates and amendments.

2. Location and sizing of the water lines within the development and off-site extensions. Show on-site water line extensions in street stubouts to the edge of the site, or as needed to complete a loop in the system.

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

4. For all non-single-family developments, calculate fire flow demand of the site and demonstrate to the Fire Chief. Demonstrate to the City Engineer how the system can meet the demand.

Comment: The Preliminary Sanitary Sewer and Water Plan included with this application shows the proposed water system and addresses these criteria.

E. Sewer.

1. A plan prepared by a licensed engineer shall show how the proposal is consistent with the Sanitary Sewer Master Plan and subsequent updates and amendments. Agreement with that plan must demonstrate how the sanitary sewer proposal will be accomplished and how it is efficient. The sewer system must be in the correct zone.

2. Sanitary sewer information will include plan view of the sanitary sewer lines, including manhole locations and depths. Show how each lot or parcel would be sewered.

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

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

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

6. The sanitary sewer line shall minimize disturbance of natural areas and, in those cases where that is unavoidable, disturbance shall be mitigated pursuant to the appropriate chapters (e.g., Chapter 32 CDC, Water Resource Area Protection).

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

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

Comment: The Preliminary Sanitary Sewer and Water Plan included with this application shows the proposed sewer system and addresses these criteria. Note that the sewer line shown in the private driveway easement is proposed to be a public line and that a public utility easement is included.

F. Storm. A storm detention and treatment plan and narrative compliant with CDC 92.010(E) must be submitted for storm drainage and flood control including profiles of proposed drainageways with reference to the most recently adopted Storm Drainage Master Plan.

Comment: The Preliminary Storm Drainage Plan and Storm Water report included with this application show the proposed storm sewer system and address these criteria.

85.200 APPROVAL CRITERIA

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

A. Streets.

1. General. The location, width and grade of streets shall be considered in their relation to existing and planned streets, to the generalized or reasonable layout of streets on adjacent undeveloped lots or parcels, to topographical conditions, to public convenience and safety, to accommodate various types of transportation (automobile, bus, pedestrian, bicycle), and to the proposed use of land to be served by the streets. The functional class of a street aids in defining the primary function and associated design standards for the facility. The hierarchy of the facilities within the network in regard to the type of traffic served (through or local trips), balance of function (providing access and/or capacity), and the level of use (generally measured in vehicles per day) are generally dictated by the functional class. The street system shall assure an adequate traffic or circulation system with intersection angles, grades, tangents, and curves appropriate for the traffic to be carried. Streets should provide for the continuation, or the appropriate

projection, of existing principal streets in surrounding areas and should not impede or adversely affect development of adjoining lands or access thereto.

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

Internal streets are the responsibility of the developer. All streets bordering the development site are to be developed by the developer with, typically, half-street improvements or to City standards prescribed by the City Engineer. Additional travel lanes may be required to be consistent with adjacent road widths or to be consistent with the adopted Transportation System Plan (TSP) and any adopted updated plans.

An applicant may submit a written request for a waiver of abutting street improvements if the TSP prohibits the street improvement for which the waiver is requested. Those areas with numerous (particularly contiguous) under-developed or undeveloped tracts will be required to install street improvements. When an applicant requests a waiver of street improvements and the waiver is granted, the applicant shall pay an in-lieu fee equal to the estimated cost, accepted by the City Engineer, of the otherwise required street improvements. As a basis for this determination, the City Engineer shall consider the cost of similar improvements in recent development projects and may require up to three estimates from the applicant. The amount of the fee shall be established prior to the Planning Commission's decision on the associated application. The in-lieu fee shall be used for in kind or related improvements.

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

Comment: The subject property is an infill property, with properties to the north, east and west being fully developed without any street stubs provided to this site. As a result, it is not feasible to provide for greater street connectivity from this site. The proposed shared private driveway from Mapleton Drive provides for access to Lots 2 through 5. Lots 1 and 6 will take direct access from Mapleton Drive. Mapleton Drive will be improved to local street standards along the project's frontage.The grade of Mapleton Drive is less than 5 percent. The grade of the proposed shared driveway is approximately 7.5% at its steepest point, with slopes of approximately 10% at the

steepest on the Y turn-around. All street improvements will be the responsibility of the developer. The street system has been laid out to minimize tree removal, but the site is heavily treed

2. Right-of-way widths shall depend upon which classification of street is proposed. The right-of-way widths are established in the adopted TSP.

Comment: Mapleton Drive is listed as a local street in the West Linn TSP. The proposed right-of-way dedication is consistent with local street standards.

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

The following table identifies appropriate street width (curb to curb) in feet for various street classifications. The desirable width shall be required unless the applicant or his or her engineer can demonstrate that site conditions, topography, or site design require the reduced minimum width. For local streets, a 12-foot travel lane may only be used as a shared local street when the available right-of-way is too narrow to accommodate bike lanes and sidewalks.

Comment: The site plan proposes a half-street improvement along Mapleton Drive that will provide for a travel lane plus parking, consistent with the local street improvements specified in this section's table.

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

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

Comment: The applicant will work with the City Engineer in developing final construction plans consistent with his recommendations on these improvements.

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

a. *When a local street is the only street serving a residential area and is expected to carry more than the normal local street traffic load, the designs with two travel and one parking lane are appropriate.*

b. *Streets intended to serve as signed but unstriped bike routes should have the travel lane widened by two feet.*

c. *Collectors should have two travel lanes and may accommodate some parking. Bike routes are appropriate.*

d. *Arterials should have two travel lanes. On-street parking is not allowed unless part of a Street Master Plan. Bike lanes are required as directed by the Parks Master Plan and Transportation Master Plan.*

Comment: Mapleton Drive carries normal local street traffic. It is not planned to have a bicycle route. Mapleton Drive is a local street, not a collector so subsections 5.c. and 5.d are not applicable.

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

Comment: No dead end streets are proposed so reserve strips or street plugs are not needed.

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

Comment: No new public streets are proposed so this subsection does not apply.

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

Comment: Not applicable. Adjacent properties are fully developed and no future extensions of streets are practicable.

9. *Intersection angles. Streets shall be laid out to intersect angles as near to right angles as practical, except where topography requires lesser angles, but in no case less than 60 degrees unless a special intersection design is approved. Intersections which are not at right angles shall have minimum corner radii of 15 feet along right-of-way lines which form acute angles. Right-of-way lines at intersections with arterial streets shall have minimum curb radii of not less than 35 feet. Other street intersections shall have curb radii of not less than 25 feet. All radii shall maintain a uniform width between the roadway and the right-of-way*

lines. The intersection of more than two streets at any one point will not be allowed unless no alternative design exists.

Comment: No new public street intersections are proposed. The private drive serving Lots 2 through 5 intersects Mapleton Drive at a 90 degree angle.

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

Comment: Additional right-of-way consistent with local street standards is provided on the Tentative Plan.

11. Cul-de-sacs.

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.

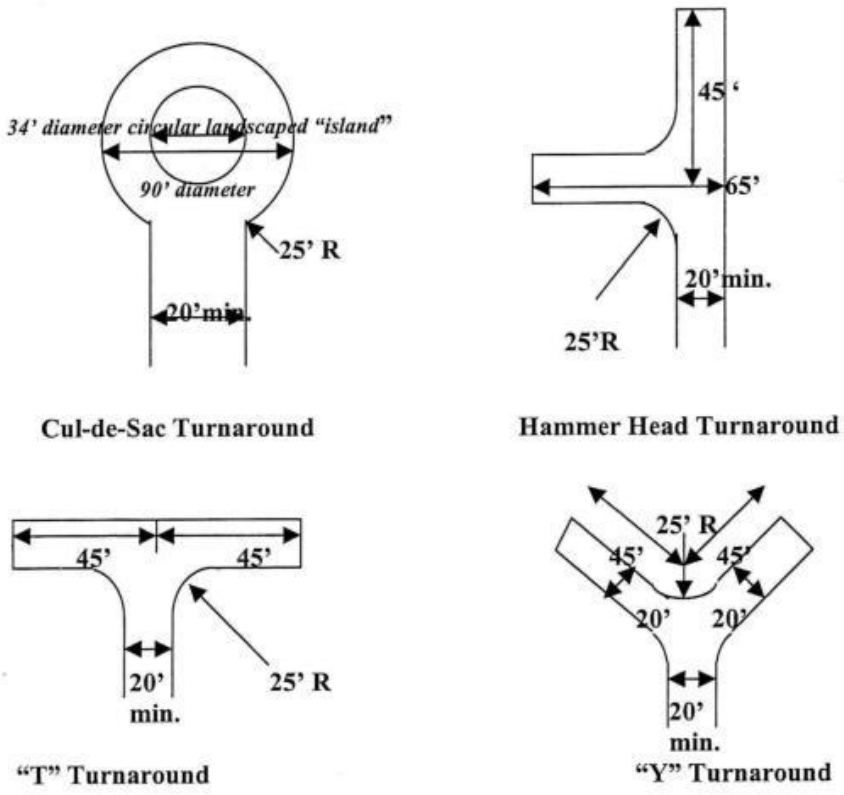
b. New cul-de-sacs and other closed-end streets, consistent with subsection (A)(11)(a) of this section, shall not exceed 200 feet in length or serve more than 25 dwelling units unless the design complies with all adopted Tualatin Valley Fire and Rescue (TVFR) access standards and adequately provides for anticipated traffic, consistent with the Transportation System Plan (TSP).

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.

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.

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.*

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: No new public cul-de-sac streets are proposed. The private drive serving lots 2 through 5 terminates in a Y turnaround consistent with this section and TVF&R standards. Because all surrounding properties are fully developed, it is not feasible to extend a street stub to adjacent parcels for future extension.

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

Comment: Not applicable. No new streets are proposed.

13. Grades and curves. Grades and horizontal/vertical curves shall meet the West Linn Public Works Design Standards.

Comment: As shown on the Street Plan submitted with this application, the street grades and curves for Mapleton Drive and the private drive meet City standards.

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

Comment: Not applicable. The subdivision does not abut or contain an existing or proposed arterial street.

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

a. The alley shall be self-contained within the subdivision. The alley shall not abut undeveloped lots or parcels which are not part of the project proposal. The alley will not stub out to abutting undeveloped parcels which are not part of the project proposal.

b. The alley will be designed to allow unobstructed and easy surveillance by residents and police.

c. The alley should be illuminated. Lighting shall meet the West Linn Public Works Design Standards.

d. The alley should be a semi-private space where strangers are tacitly discouraged.

e. Speed bumps may be installed in sufficient number to provide a safer environment for children at play and to discourage through or speeding traffic.

f. Alleys should be a minimum of 14 feet wide, paved with no curbs.

Comment: Not applicable. The proposed land use is single-family residential and no alleys are proposed.

16. Sidewalks. Sidewalks shall be installed per CDC 92.010(H), Sidewalks. The residential sidewalk width is six feet plus planter strip as specified below. Sidewalks in commercial zones shall be constructed per subsection (A)(3) of this section. See also subsection C of this section. Sidewalk width may be reduced with City Engineer approval to the minimum amount (e.g., four feet wide) necessary to respond to site constraints such as grades, mature trees, rock outcroppings, etc., or to match existing sidewalks or right-of-way limitations.

Comment: At the neighborhood meeting on this project, there was strong neighborhood objection expressed about having standard concrete sidewalks along Mapleton Drive that will not connect to other sidewalks. A preference was expressed by the neighbors for a wider paved section with a striped pedestrian lane. The applicant will comply with City standards for sidewalks unless the Planning Commission approves a modified street section.

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

Comment: A planter strip will be provided along Mapleton Drive.

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

Comment: The public street right-of-way to be dedicated will not have any reservations or restrictions.

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

Comment: All lots in the development will have access to Mapleton Drive, a public street. Lots 2 through 5 all have the specified 8’ minimum street frontage.

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

Comment: No gated streets are proposed.

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

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

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

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

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

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

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

Comment: Not applicable. No special entry treatments are proposed.

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

Comment: Not applicable. No off-site improvements are anticipated.

B. *Blocks and lots.*

1. *General. The length, width, and shape of blocks shall be designed with due regard for the provision of adequate building sites for the use contemplated; consideration of the need for traffic safety, convenience, access, circulation, and control; and recognition of limitations and opportunities of topography and solar access.*

Comment: The surrounding properties are fully developed and there is no possibility of extending streets so as to form new blocks.

2. *Sizes. The recommended block size is 400 feet in length to encourage greater connectivity within the subdivision. Blocks shall not exceed 800 feet in length between street lines, except for blocks adjacent to arterial streets or unless topographical conditions or the layout of adjacent streets justifies a variation. Designs of proposed intersections shall demonstrate adequate sight distances to the City Engineer's specifications. Block sizes and proposed accesses must be consistent with the adopted TSP. Subdivisions of five or more acres that involve construction of a new street shall have block lengths of no more than 530 feet. If block lengths are greater than 530 feet, accessways on public easements or right-of-way for pedestrians and cyclists shall be provided not more than 330 feet apart. Exceptions can be granted when prevented by barriers such as topography, rail lines, freeways, pre-existing development, leases, easements or covenants that existed prior to May 1, 1995, or by requirements of Titles 3 and 13 of the UGMFP. If streets must cross water features protected pursuant to Title 3 UGMFP, provide a crossing every 800 to 1,200 feet unless habitat quality or the length of the crossing prevents a full street connection.*

Comment: As discussed above, the existing development pattern precludes extending streets so as to form new blocks. For this reason, an exception to the block length standards is warranted.

3. *Lot size and shape. Lot or parcel size, width, shape, and orientation shall be appropriate for the location of the subdivision or partition, for the type of use contemplated, for potential utilization of solar access, and for the protection of drainageways, trees, and other natural features. No lot or parcel shall be dimensioned to contain part of an existing or proposed street. All lots or parcels shall be buildable. "Buildable" describes lots that are free of constraints such as wetlands, drainageways, etc., that would make home construction impossible. Lot or parcel sizes shall not be less than the size required by the zoning code unless as allowed by planned unit development (PUD).*

   Depth and width of properties reserved or laid out for commercial and industrial purposes shall be adequate to provide for the off-street parking and service facilities required by the type of use proposed.

Comment: The proposed lots are designed and oriented to provide building envelopes consistent with the planned single-family residential use of the property. All lots can be developed with homes that will conform to required setbacks. The lots are generally oriented with their long axis on a north-south orientation so that solar access will be available. Given tree cover on the site, this may or may not be practicable, however.

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

Comment: The proposed lots conform to the access requirements of Chapter 48 of the CDC. Please see the discussion on that chapter in this narrative.

5. *Double frontage lots and parcels. Double frontage lots and parcels have frontage on a street at the front and rear property lines. 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.

Comment: No double frontage lots are proposed.

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

Comment: As far as practicable, the side lines of the lots and parcels are at right angles to Mapleton Drive.

7. *Flag lots. Flag lots can be created where it can be shown that no other reasonable street access is possible to achieve the requested land division. A single flag lot shall have a minimum street frontage of 15 feet for its accessway. Where two to four flag lots share a common accessway, the minimum street frontage and accessway shall be eight feet in width per lot. Common accessways shall have mutual maintenance agreements and reciprocal access and utility easements. The following dimensional requirements shall apply to flag lots:*

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

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

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

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

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

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

Comment: Lots 2 through 5 of the proposed subdivision are designed as flag lots and will share the use of a common private driveway. Each lot has the specified minimum

8’ frontage onto Mapleton Drive. Because the adjacent properties are fully developed without any street stubs to the subject property, it is not practicable to extend a public street through this site. The applicant did look at designs for a public cul-de-sac street, but this design was abandoned due to the impacts that would result from the required 56’ cul-de-sac radius on the trees and stream corridor. The proposed private accessway is much more conducive to reducing these impacts and serves to provide adequate access to the lots.

As required by this subsection, the standard setback requirements of the R-10 zone will apply to the proposed flag lots. Lots 2 through 4 will be oriented with their rear yard as the north property line. The specific orientation of front and rear yard for Lot 5, which is irregular in shape, will be determined when a house plan has been chosen and will be reviewed by staff at the time of building permit application. The Tentative Plan shows the lot areas of Lots 2 through 5 exclusive of the accessway strip. All of these lots meet the minimum lot depth standard. A pavement width of 26.5 feet is proposed, which exceeds the 12’ minimum of Chapter 48.030. Subsection 7.f. does not apply as the site has sufficient frontage for the proposed accessway to meet the standards of this section.

8. *Large lots or parcels. In dividing tracts into large lots or parcels which, at some future time, are likely to be redivided, the approval authority may:*

    a. *Require that the blocks be of such size and shape, and be so divided into building sites, and contain such easements and site restrictions as will provide for extension and opening of streets at intervals which will permit a subsequent division of any tract into lots or parcels of smaller size; or*

    b. *Alternately, in order to prevent further subdivision or partition of oversized and constrained lots or parcels, restrictions may be imposed on the subdivision or partition plat.*

Comment: Not applicable. No lots are proposed that are large enough to be redivided.

C. *<u>Pedestrian and bicycle trails.</u>*

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

Comment: Not applicable. No trails or multi-use pathways are planned for this area. Subsections 2. through 6., below, also do not apply.

2. *The all-weather surface (asphalt, etc.) trail should be eight feet wide at minimum for bicycle use and six feet wide at minimum for pedestrian use. Trails within 10 feet of a wetland or natural drainageway shall not have an all-weather surface,*

but shall have a soft surface as approved by the Parks Director. These trails shall be contained within a corridor dedicated to the City that is wide enough to provide trail users with a sense of defensible space. Corridors that are too narrow, confined, or with vegetative cover may be threatening and discourage use. Consequently, the minimum corridor width shall be 20 feet. Sharp curves, twists, and blind corners on the trail are to be avoided as much as possible to enhance defensible space. Deviations from the corridor and trail width are permitted only where topographic and ownership constraints require it.

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

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

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

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

Comment: 2 through 6 do not apply as no trails or bike paths are proposed.

D. *Transit facilities*.

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

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

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

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

Comment: No Tri-Met routes exist or are planned for Mapleton Drive so this section does not apply.

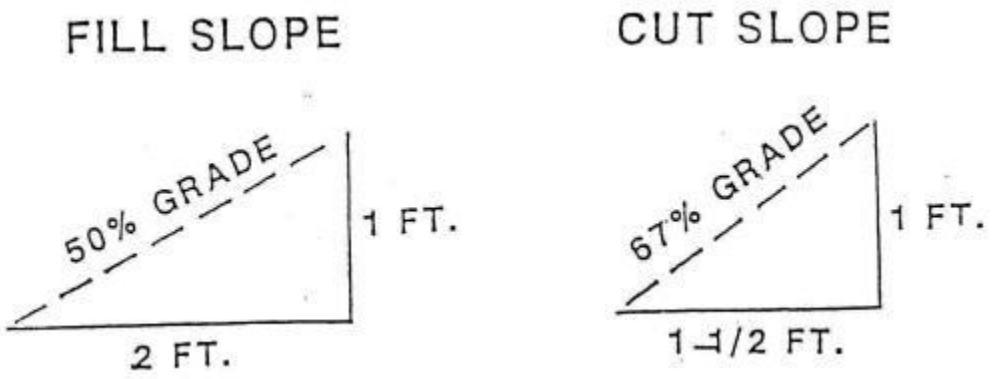
E. Grading. Grading of building sites shall conform to the following standards unless physical conditions demonstrate the propriety of other standards:

Comment: Building site grading plans will be provided with the building permit application and will be reviewed for conformance with the standards of 1. to 8., below, at that time. An engineering geologist's report is included with this application submittal. No lands over 50% slope will be graded.

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

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

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



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

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

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

5. *Type I lands shall require a report submitted by an engineering geologist, and Type I and Type II lands shall require a geologic hazard report.*

6. *Per the submittals required by CDC 85.170(C)(3), the applicant must demonstrate that the proposed methods of rendering known or potential hazard sites safe for development, including proposed geotechnical remediation, are feasible and adequate to prevent landslides or other damage to property and safety. The review authority may impose conditions, including limits on type or intensity of land use, which it determines are necessary to mitigate known risks of landslides or property damage.*

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

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

    b. *Cuts shall not remove the toe of any slope where a severe landslide or erosion hazard exists.*

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

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

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

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

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

    b. *Emergency access can be provided.*

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

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

F. Water.

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

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

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

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

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

Comment: A preliminary utility plan has been prepared for the proposed development and is submitted with this application. The water system in this area is looped and has adequate sizing to serve the proposed development. All lots will be served from the existing water line in Mapleton Drive. Lots 2 through 5 will have water meters in the Mapleton Drive right-of-way and will extend individual service lines from that point.

G. Sewer.

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

Comment: A preliminary design for the sewer system has been prepared by Bruce Goldson, P.E. and is included in the submittal package for this application. The plan calls for a new service line to be extended in the private accessway to serve Lots 2 through 5. Lots 1 and 6 will be served directly from the line in Mapleton Drive. This system is consistent with the Sanitary Sewer Mater Plan as the system in this area of the City is already developed and there are no requirements for major improvements.

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

Comment: The plan shows both plan view and profile view of the sewer line, together with invert elevations.

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

Comment: A new public sewer line is needed in the private accessway in order to provide for service to Lots 2 through 5. As previously discussed, existing development patterns as well as trees and the stream corridor through the site preclude the use of a public street. The proposed sewer line will be designed to City standards and maintenance access will be ensured via an easement.

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

Comment: Not applicable. No down system properties are in need of sewer access via the proposed development. Access is already provided via the existing sewer in Mapleton Drive.

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

Comment: The sewer line is the minimum length necessary to provide service to Lots 2 through 5, as shown on the preliminary sewer plan.

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

Comment: There are no wetlands on the site and the drainageway is in a pipe at this time. The sewer line will be installed to serve Lots 2 through 5 and the drainageway will be restored to an above-ground condition with appropriate mitigation measures.

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

Comment: All abutting properties are fully developed and there is no need for the line to be stubbed from the site.

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

Comment: The sewer system will be designed and built to DEQ, City, and Tri-City Service District sewer standards and will be designed by a registered professional engineer. The ability to meet standards will be demonstrated at the preconstruction phase.

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

Comment: Pre-application conference notes indicate that there is adequate capacity in the existing sewer system in Mapleton Drive to service the proposed development. The City Engineer will respond with more detailed comments as a part of the staff report for this project.

H. *Storm detention and treatment. All proposed storm detention and treatment facilities comply with the standards for the improvement of public and private drainage*

systems located in the West Linn Public Works Design Standards, there will be no adverse off-site impacts caused by the development (including impacts from increased intensity of runoff downstream or constrictions causing ponding upstream), and there is sufficient factual data to support the conclusions of the submitted plan.

Comment: The applicant's engineer has prepared a storm water report and a preliminary storm water design plan that address these issues. Please refer to those documents.

A storm water detention facility is proposed to be provided underground within the private drive easement. This facility is small, underground, and handles only the private drive serving Lots 2 through 5. For this reason, it is a minor utility. Rain gardens will be provided on each lot to handle roof runoff from the new homes.

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

Comment: Utility easements are indicated on the preliminary utility plan and Tentative Plan.

J. Supplemental provisions.

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

Comment: No wetlands exist on the site. The provisions of Chapter 32 are addressed in the memorandum prepared by Schott & Associates dated 11/8/2018 and included with this application. Please refer to that document.

2. Willamette and Tualatin Greenways. The Willamette and Tualatin River Greenways shall be protected as required by Chapter 28 CDC, Willamette and Tualatin River Protection.

Comment: Chapter 28 is addressed in this report, below. The fact that the creek was placed in a storm pipe through the property, combined with grading for the driveway and old home site, have severely degraded the original riparian habitat area that was associated with Trillium Creek to the point that it provides no significant functional value for riparian habitat purposes. Please refer to the Schott & Associates memorandum dated 11/8/2018 attached to this application.

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

Comment: Street trees are proposed for the development, as shown on the Tentative Plan.

4. *Lighting. All subdivision street or alley lights shall meet West Linn Public Works Design Standards.*

Comment: Street lighting will be provided to City standards.

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

Comment: The existing right-of-way for Mapleton Drive meets West Linn local street standards. No dedication is required.

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

Comment: Underground utilities will be provided, as shown on the Preliminary Utility Plan.

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

Comment: As shown in the density calculations on the Tentative Plan, the proposed density of six lots will comply with these provisions.

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

Comment: Not applicable. The site is not zoned R-2.1 or R-3.

9. *Heritage trees/significant tree and tree cluster protection. All heritage trees, as defined in the municipal code, shall be saved. Diseased heritage trees, as determined by the City Arborist, may be removed at his/her direction. All non-heritage trees and clusters of trees (three or more trees with overlapping dripline;*

however, native oaks need not have an overlapping dripline) that are considered significant by virtue of their size, type, location, health, or numbers shall be saved pursuant to CDC 55.100(B)(2). Trees are defined per the municipal code as having a trunk six inches in diameter or 19 inches in circumference at a point five feet above the mean ground level at the base of the trunk. (Ord. 1377, 1995; Ord. 1382, 1995; Ord. 1401, 1997; Ord. 1403, 1997; Ord. 1408, 1998; Ord. 1425, 1998; Ord. 1442, 1999; Ord. 1463, 2000; Ord. 1526,

Comment: No heritage trees exist on the site. Preservation of significant trees conforms to the provisions of Chapter 55. See discussion below.

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: The trip generation rate for single-family homes is approximately 10 vehicle trips per day according to Institute of Transportation Engineers data. One of these trips will occur in the am peak hour and one will occur in the pm peak hour. The proposed subdivision will add six new dwellings. A total of 60 new trips per day would be expected from this development, with 6 occurring in the am peak hour and 6 occurring in the pm peak hour. Because of the small size and limited amount of traffic to be generated by this development, a Traffic Impact Analysis is not required for this project.

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: Two individual curb cuts (Lots 1 and 6) and one curb cut for a shared private drive (Lots 2 through 5) are proposed. The proposed curb cut location meet the minimum 30 foot separation standard for local streets.

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 either Mapleton Drive or the new private street within the subdivision. The private street has direct access to Mapleton Drive, a local public street, therefore b) is satisfied.

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. The site does not abut an arterial street.

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: No double-frontage lots are proposed.

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 minimum 30 foot access spacing for private driveways onto a local street will be met, as shown on the site plan.

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.

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:

Comment: Lots 2 through 5 will share access via the proposed private street, consistent with this standard. The private street will serve four lots, the maximum permitted. Lots 1 and 6 will take direct access to Mapleton Drive.

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.

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.

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: The existing development pattern has set the block length in this area. All adjoining parcels to the west, north and south are fully developed so no new street connections are possible. Required improvement standards of Chapter 92 will be met, as shown on the Street Plan submitted with this application.

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: All lots will take access from the internal local street system. No arterial streets are located in this area.

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.

Comment: Not applicable. The proposed plan provides for four lots to share an accessway that will result in them being more than 150 feet from the Mapleton Dr. right-of-way.

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.

Comment: The proposed Tentative Plan provides for four lots (Lots 2 through 5) to share a private accessway from Mapleton Drive. These lots will be more than 150 feet from the right-of-way of Mapleton Drive so the provisions of subsesction C also apply. The accessway easement measures 32’ in width (4 x 8’ per lot) and the proposed paved width is 26.5’. The proposed width is wider than the minimum requirements of this standard to better meet fire code requirements.

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.

Comment: As shown on the preliminary street plan submitted with this application, no point of the proposed shared driveway will exceed the 15 percent maximum grade standard. The maximum centerline grade is 7.44% and the maximum grade on the turn-around is 10.01%

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.

Comment: The proposed design incorporates a "Y" turnaround consistent with TVF&R requirements.

2. Minimum vertical clearance for the driveway shall be 13 feet, six inches.

Comment: The required vertical clearance will be maintained.

3. A minimum centerline turning radius of 45 feet is required unless waived by the Fire Chief.

Comment: The proposed private access drive has centerline turning radii of 75', as shown on the Tentative Plan.

4. There shall be sufficient horizontal clearance on either side of the driveway so that the total horizontal clearance is 20 feet.

Comment: The easement width of 32 feet will be maintained clear of all obstructions and the paved width of 26.5' by itself would meet this standard.

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: The proposed private accessway will serve four lots.

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.

48.060 WIDTH AND LOCATION OF CURB CUTS AND ACCESS SEPARATION REQUIREMENTS

A. Minimum curb cut width shall be 16 feet.

Comment: All curb cuts will be at least 16 feet in width, as shown on the preliminary street plan.

B. Maximum curb cut width shall be 36 feet, except along Highway 43 in which case the maximum curb cut shall be 40 feet. For emergency service providers, including fire stations, the maximum shall be 50 feet.

Comment: No curb cuts are proposed that will exceed 36 feet in width.

C. No curb cuts shall be allowed any closer to an intersecting street right-of-way line than the following:

1. *On an arterial when intersected by another arterial, 150 feet.*
2. *On an arterial when intersected by a collector, 100 feet.*
3. *On an arterial when intersected by a local street, 100 feet.*
4. *On a collector when intersecting an arterial street, 100 feet.*
5. *On a collector when intersected by another collector or local street, 35 feet.*
6. *On a local street when intersecting any other street, 35 feet.*

Comment: There are no intersecting streets in this vicinity of Mapleton Drive.

D. There shall be a minimum distance between any two adjacent curb cuts on the same side of a public street, except for one-way entrances and exits, as follows:

1. *On an arterial street, 150 feet.*

2. On a collector street, 75 feet.

3. Between any two curb cuts on the same lot or parcel on a local street, 30 feet.

Comment: Mapleton Drive is designated as a local street by the West Linn Transportation Systems Plan. As shown on the Preliminary Street Plan, the driveways onto Mapleton Drive from Lots 1 and 6, as well as the shared private accessway, will maintain the required minimum separation distance of 30 feet.

E. A rolled curb may be installed in lieu of curb cuts and access separation requirements.

Comment: A standard curb and curb cuts are proposed.

F. Curb cuts shall be kept to the minimum, particularly on Highway 43. Consolidation of driveways is preferred. The standard on Highway 43 is one curb cut per business if consolidation of driveways is not possible.

Comment: The shared accessway combines the access to four homes into a single curb cut. This is the maximum number allowed pursuant to the standards of CDC 85.200 and 48.030B2

G. Adequate line of sight pursuant to engineering standards should be afforded at each driveway or accessway.

Comment: There is ample sight distance at all proposed curb cuts to comply with sight distance requirements.

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 determined that 38 of these trees are 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. <u>Relationship to the natural and physical environment</u>.

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 slopes that are consistent with 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: Much of the site is wooded and, as shown on the Tree Plan submitted with this application, Significant Trees impact every lot in the subdivision (with the exception of Lot 6), as well as the proposed street. This

makes full compliance with the 20 percent aspirational standard impracticable while maintaining reasonable building sites. A total of 7,597 sq. ft. of the site is proposed to be placed in tree preservation easement, as shown on the tree plan. This amounts to approximately 9% of site area. This does not mean that all of the Significant Trees located outside of these tree protection areas will be removed; rather it means that it will be necessary to build closer to some of these trees than the dripline-plus-10 standard. Where Significant Trees are located on lot lines or rear yard areas and it is practicable to save the trees, they will be retained.

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. Because surrounding properties are fully developed, there is no need for street stubs.

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 maximum density for this site would be seven lots. In order to meet the minimum density standard of 70%, a total of five lots must be provided. The proposed density is six lots, which meets bot the maximum and minimum density standards.

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: Not applicable. The site does not abut an arterial or collector street.

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: Trees located in the protected portions of the site will not be impacted by site grading.

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: Mapleton Drive will be improved to City local street 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 requirement will be met.

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 an existing line in an easement that crosses the subject property. This 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: No new city water lines are proposed. Individual water meters and private laterals will be provided to all lots from the existing water line in Mapleton Drive.

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: The applicant will comply with City standards. However, it should be noted that there was strong sentiment expressed at the neighborhood meeting for an alternate design of simply widening the asphalt section of Mapleton Drive to provide for pedestrian circulation. The applicant is willing to consider this option if the Planning Commission should approve this modification.

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: The applicant will both develop the site and build the homes. Sidewalk construction will be coordinated with the Public Works Department.

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 unless an alternate design is approved by the Planning Commission to allow for a wider paved street section to accommodate pedestrian traffic.

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: Not applicable. The site does not abut an arterial or collector street.

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 would only be required along the project's frontage on Mapleton Drive.

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: No bicycle 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 street stubs 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: Not applicable. No public dedications are proposed.

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.

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

28.030 APPLICABILITY

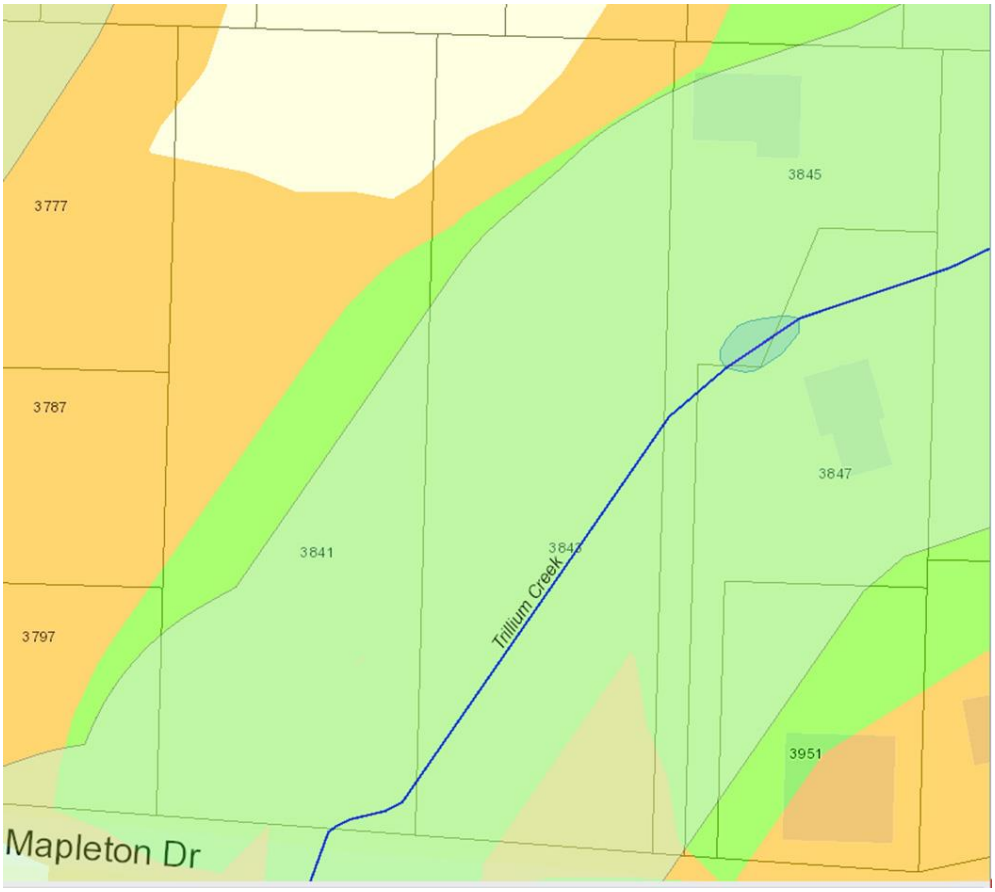
A. The Willamette and Tualatin River Protection Area is an overlay zone. The zone boundaries are identified on the City's zoning map, and include:

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 Willamette River or Tualatin River Greenway. As shown on the map below, City and Metro mapping assumed that the Trillium Creek stream corridor was an open channel through the subject property and, as a result, mapped it as HCA. Additionally, the wooded areas of the property are noted as HCA.



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.

Comment: The areas that are designated HCA due strictly to forested tree canopy are shown in tan on the HCA map. 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

tan are not subject to the provisions of Chapter 28. Please see discussion of this provision under section 28.070, below, relative to the stream corridor.

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 HCA map shown above in this report shows the location of the HCA per the City of West Linn GIS mapping system. The tan areas are only associated with areas of the site having tree canopy. This area is protected via the City's tree preservation criteria of Chapter 55.

The green shaded area identifies the riparian buffer associated with Trillium Creek. The map depicts the standard 100 foot buffer deemed to be needed to protect riparian habitat along such creeks as well as to minimize erosion and sedimentation from development of adjacent lands. As discussed in the attached memorandum from Schott & Associates, the drainage corridor does not exist in its natural state, having been piped years ago prior to the existence of stream corridor protections. Because of this, the HCA depicted in green does not provide any of the functional values typically associated with riparian areas and, therefore, the mapping of that area is incorrect and should be deleted. Please refer to the Schott and Associates memorandum submitted with this application for more details.

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: As discussed in the Schott letter, there are no water-related HCA resources on the subject property and, therefore, the stream corridor designation should not be applied to this property.

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 required notice will be provided.

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: If approved, this requirement will be met by the City.

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

Comment: The applicant recognizes that the determination is appealable.

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 tan are exempt due to this provision as there are no habitat resources in those areas 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:

Comment: Upon approval of a change in designation, these provisions will no longer apply.

Chapter 32
WATER RESOURCE AREA PROTECTION

Comment: As discussed above, Trillium Creek drainage is presently underground in a culvert from Mapleton Drive to the east border of the subject property. The applicant proposes to regrade the site to reestablish an on-grade channel for the creek, as shown on the Grading Plan submitted with this application. The provisions of CDC 32.070 allow the use of lesser setbacks than would normally be required in instances such as this where drainageways are reestablished. Please see the analysis by Schott & Associates addressing this section of Code.

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11.8.18

MEMO

With reference to October 25, 2018 letter of incompleteness for SUB18-03/WAP-18-04/WRG-18-03 please find the following information responding to items 2-5 of that letter.

2. CDC Chapter 28.070(B) Please identify the application Metro criteria and provide findings to address the criteria and the proposed removal of all HCA areas from the property.

32.070B. *If a WRA is already significantly degraded (e.g., native forest and ground cover have been removed or the site dominated by invasive plants, debris, or development), the approval authority may allow a reduced WRA in exchange for mitigation, if:*

1. The proposed reduction in WRA width, coupled with the proposed mitigation, would result in better performance of functions than the standard WRA without such mitigation. The approval authority shall make this determination based on the applicant's proposed mitigation plan and a comparative analysis of ecological functions under existing and enhanced conditions (see Table 32-4).

The WRA is already significantly degraded and the proposed reduction in WRA width, coupled with the proposed mitigation, will result in better performance of functions than the standard WRA without such mitigation as shown below.

Undisturbed WRA Conditions

The site has been disturbed historically. The driveway, as well as where the house used to be located was graded and flattened. In addition, the area where the culvert is located is not natural topography. This area appears to have been filled, probably when the culvert was first installed. In addition, the lot to the east is significantly lower than this site, again suggesting the historical filling.

The WRA for the short section of waterway at the south property boundary was mostly existing gravel driveway with no vegetation. The adjacent undeveloped area was composed of non-native grasses and Himalayan blackberry. The condition of the WRA was degraded and performs minimal vegetated corridor functions at this location.

The WRA in the east portion of the property was dominated by Himalayan blackberry which extended into the forested area. Low canopy cover was present from a couple of big leaf maple trees. This WRA was in degraded condition. Existing functions of the resource are low and will remain low without the proposed mitigation as described below.

Proposed WRA Conditions

The WRA area to remain shall be enhanced through removal of invasive species and planting with a mix of native trees, shrubs and understory species. Proposed enhancement will increase diversity of species and structure, providing greater habitat functions including nesting, escape and forage as well as a contiguous habitat corridor along an open channel through the entire site.

Creating an open channel will improve ecological and water quality functions onsite as described below and in Table 1 which compares Ecological Functions per Table 32-4 of Existing and proposed WRA functions.

The applicant proposes mitigating for the WRA width reduction amount of 1,868sf through daylighting the onsite piped drainage and enhancement of 8,438sf of adjacent Riparian Corridor (Table 1). The pipe will be removed and replaced with an open channel lined with river cobble to slow water flows and improve habitat value. The daylighted channel will have a 15' planted WRA adjacent to both sides. Adjacent riparian enhancement will include the removal of Himalayan blackberry and other non-native species within the existing and proposed WRA followed by planting with native plant material greatly enhancing otherwise low quality functions than the existing WRA now has.

Proposed WRA will be planted with native trees, shrubs and groundcover consistent with CDC 32.100, and exceeding the standards of CDC 32.090(C) as described in the Mitigation/Enhancement Plan (Table 1) to extend the total area of native forested/scrub-shrub community and provide a diverse community adjacent to the onsite water resource. This criterion is clearly met.

Table 1. Ecological Functions per Table 32-4		
Ecological Functions	***WRA existing conditions***	***WRA enhanced conditions***
Stream flow moderation and/or water storage	*Stream flow moderation low, creek primarily piped with two sections of open channel with no complexity.*	*Stream flow functions will be increased by removal of pipe, increased in open stream length, addition cobble substrate in channel and denser and more diverse vegetation adjacent increase in roughness/complexity in WRA to further slow flow for better storage capacity.*
Sediment or pollution control	*Vegetation minimal within 100' of south open channel (gravel drive). To the east adjacent vegetation is predominantly blackberry. Only forested canopy mainly to the north of WRA.*	*Increased vegetation and tree canopy adjacent to created stream channel as well as within existing WRA will increase functions by providing more filtration and surface runoff.*
Bank stabilization	*Some large trees along stream bank but there is minimal bank*	*Increased native vegetation will help bank stabilization.*
Large wood recruitment for a fish bearing section of stream	*Stream is likely not fish bearing. Few large trees along stream.*	*Additional trees will increase tree canopy cover and diversity providing greater quantity of woody debris within stream and adjacent upland habitat.*
Organic material sources	*Minimal as most of channel is piped and open section has little adjacent tree canopy.*	*Increased vegetation and tree canopy will provide greater organic material.*
Shade (water temperature moderation) and microclimate	*Minimal as most of channel is piped and open section has little adjacent tree canopy.*	*Increased vegetation and tree canopy will provide greater shade and thermoregulation.*

2. The mitigation project shall include all of the following components as applicable. It may also include other forms of enhancement (mitigation) deemed appropriate by the approval authority.

a. Removal of invasive vegetation.

Included as described above and in Mitigation Plan.

b. Planting native, non-invasive plants (at minimum, consistent with CDC 32.100) that provide improved filtration of sediment, excess nutrients, and pollutants. The amount of enhancement (mitigation) shall meet or exceed the standards of CDC 32.090(C).

Proposed WRA will be planted with native trees, shrubs and groundcover consistent with CDC 32.100, and exceeding the standards of CDC 32.090(C) as described in the Mitigation/Enhancement Plan (Table 2) to extend the total area of native forested/scrub-shrub community and provide a diverse community adjacent to the onsite water resource. This criteria is clearly met.

c. Providing permanent improvements to the site hydrology that would improve water resource functions.

Daylighting the channel will help slow water movement through the site. The proposed channel will be longer than the existing culvert, which will result in water taking longer moving through the site. In addition, water moves faster through a culvert than it does through an open channel since the culvert is smoother than an open channel. An open channel will also help improve water quality. Most urban streams tend to have excess nutrients and other pollutants. The plants growing in and adjacent to the stream will help remove some of these pollutants.

d. Substantial improvements to the aquatic and/or terrestrial habitat of the WRA.

An open channel will provide habitat for amphibians and other wildlife species that is not currently accessible via the culvert. Additionally, plantings adjacent to the new and existing open channel will increase organic material within the stream, provide shade and structure within the channel and increase nesting, food and escape functions within the adjacent terrestrial habitat.

3. CDC Chapter 32.060(H). Daylighting Piped Streams.
Please list the approval criteria and submit findings for each.

32.060(H) *1. As part of any application, covered or piped stream sections shown on the WRA Map are encouraged to be "daylighted" or opened. Once it is daylighted, the WRA will be limited to 15 feet on either side of the stream. Within that WRA, water quality measures are required which may include a storm water treatment system (e.g., vegetated bioswales), continuous vegetative ground cover (e.g., native grasses) at least 15 feet in width that provides year round efficacy, or a combination thereof.*

2. The re-opened stream does not have to align with the original piped route but may take a different route on the subject property so long as it makes the appropriate upstream and downstream connections and meet the standards of subsections (H)(3) and (4) of this section.

The re-opened stream will angle through the site providing some natural curve to the channel and creating additional length. The opened channel will connect to existing upstream and downstream connections. Standards of subsections (H)(3) and (4) will be met as shown below.

3. A re-aligned stream must not create WRAs on adjacent properties not owned by the applicant unless the applicant provides a notarized letter signed by the adjacent property owner(s) stating that the encroachment of the WRA is permitted.

No WRA shall be created on adjacent property.

4. The evaluation of proposed alignment and design of the reopened stream shall consider the following factors:

a. The ability of the reopened stream to safely carry storm drainage through the area without causing significant erosion.

Stream channel has been designed to safely carry storm drainage through the area without causing significant erosion. Cobble will be placed on the bottom of the channel and channel will be curved to allow maximum roughness to slow water through the site.

b. Continuity with natural contours on adjacent properties, slope on site and drainage patterns.

Channel has been aligned to follow natural contours and connected to existing open channel at both ends.

c. Continuity of adjacent vegetation and habitat values.

Existing vegetation along the piped section of the stream is disturbed. Vegetation will be planted to provide a continuous corridor of native vegetation along the stream through the site.

d. The ability of the existing and proposed vegetation to filter sediment and pollutants and enhance water quality.

Existing vegetation does not filter sediment and pollutants as it is growing on top of the piped channel. Proposed plantings adjacent to both sides of the opened channel will filter sediment and pollutants and enhance water quality.

e. Provision of water temperature conducive to fish habitat.

The onsite waterway does not provide fish habitat. The riparian corridor adjacent to both sides of the opened channel will be planted with native trees and shrubs to provide canopy over the stream, regulating water temperature for downstream fish habitat.

5. Any upstream or downstream WRAs or riparian corridors shall not apply to, or overlap, the daylighted stream channel.

The adjacent 65' WRA will not apply to the new stream channel. The channel will be bordered by a 15' riparian corridor along both sides.

6. When a stream is daylighted the applicant shall prepare and record a legal document describing the reduced WRA required by subsections (H)(1) and (5) of this section. The document will be signed by a representative of the City and recorded at the applicant's expense to better ensure long term recognition of the reduced WRA and reduced restrictions for the daylighted stream section.

Required document shall be prepared.

4. CDC Chapter 32.080 – Approval Criteria (Alternate Review Process)
Please list the approval criteria and submit findings for each.

32.080. *Applications reviewed under the alternate review process shall meet the following approval criteria:*

A. The proposed WRA shall be, at minimum, qualitatively equal, in terms of maintaining the level of functions allowed by the WRA standards of CDC 32.060(D).

The proposed WRA shall extend from 15' along the newly created channel up to 65' feet in width at the north end of the existing channel. The proposed WRA shall be equal to or exceed the existing level of functions allowed by the WRA standards. At the south edge of the site the existing functions are negligible as the existing WRA is gravel driveway and invasive grass species. A 15' native riparian corridor will be planted, significantly improving the function in this area. To the north the width of the WRA will be minimally reduced and will continue to provide existing and enhanced native cover to equal the level of function allowed by the WRA standards.

B. If a WRA is already significantly degraded (e.g., native forest and ground cover have been removed or the site dominated by invasive plants, debris, or development), the approval authority may allow a reduced WRA in exchange for mitigation, if:

1. The proposed reduction in WRA width, coupled with the proposed mitigation, would result in better performance of functions than the standard WRA without such mitigation. The approval authority shall make this determination based on the applicant's proposed mitigation plan and a comparative analysis of ecological functions under existing and enhanced conditions (see Table 32-4).

Addressed above under 32.070(B) and in the Table 1.

2. The mitigation project shall include all of the following components as applicable. It may also include other forms of enhancement (mitigation) deemed appropriate by the approval authority.

a. Removal of invasive vegetation.

b. Planting native, non-invasive plants (at minimum, consistent with CDC 32.100) that provide improved filtration of sediment, excess nutrients, and pollutants. The amount of enhancement (mitigation) shall meet or exceed the standards of CDC 32.090(C).

c. Providing permanent improvements to the site hydrology that would improve water resource functions.

d. Substantial improvements to the aquatic and/or terrestrial habitat of the WRA.

Items a-d have been addressed above in 32.070(B).

C. Identify and discuss site design and methods of development as they relate to WRA functions.

Site has been designed to avoid impact to the WRA to the extent possible with impacts proposed for the yard and deck for a single lot. Impacts are in already degraded WRA and will not significantly degrade WRA functions. The restoration of the onsite channel will provide significant improvements in WRA functions including hydrologic function, water quality function and wildlife habitat value as described above.

D. Address the approval criteria of CDC 32.060, with the exception of CDC 32.060(D).

See below under CDC 32.060

CDC 32.060

A. WRA protection/minimizing impacts.

1. Development shall be conducted in a manner that will avoid or, if avoidance is not possible, minimize adverse impact on WRAs.

Development has been designed to minimize impact to WRA and to avoid adverse impact to the function of the WRA. The development will avoid the existing WRA with the exception of the proposed impacts for lawn and deck for Lot 5.

2. Mitigation and re-vegetation of disturbed WRAs shall be completed per CDC 32.090 and 32.100, respectively.

Mitigation and re-vegetation shall be completed as required.

B. Storm water and storm water facilities.

1. Proposed developments shall be designed to maintain the existing WRAs and utilize them as the primary method of storm water conveyance through the project site unless:

The proposed development shall maintain the existing WRA and expand the onsite WRA by daylighting the piped portion of the onsite drainage and allowing it to function as a natural stormwater conveyance.

a. The surface water management plan calls for alternate configurations (culverts, piping, etc.); or

N/A

b. Under CDC 32.070, the applicant demonstrates that the relocation of the water resource will not adversely impact the function of the WRA including, but not limited to, circumstances where the WRA is poorly defined or not clearly channelized.

N/A

Re-vegetation, enhancement and/or mitigation of the re-aligned water resource shall be required as applicable.

N/A

2. Public and private storm water detention, storm water treatment facilities and storm water outfall or energy dissipaters (e.g., rip rap) may encroach into the WRA if:

a. Accepted engineering practice requires it;

b. Encroachment on significant trees shall be avoided when possible, and any tree loss shall be consistent with the City's Tree Technical Manual and mitigated per CDC 32.090;

c. There shall be no direct outfall into the water resource, and any resulting outfall shall not have an erosive effect on the WRA or diminish the stability of slopes; and

d. There are no reasonable alternatives available.

N/A. Underground detention under the private drive is proposed, with filter catch basins or a rain garden for water quality.

A geotechnical report may be required to make the determination regarding slope stability.

3. Roadside storm water conveyance swales and ditches may be extended within rights-of-way located in a WRA. When possible, they shall be located along the side of the road furthest from the water resource. If the conveyance facility must be located along the side of the road closest to the water resource, it shall be located as close to the road/sidewalk as possible and include habitat friendly design features (treatment train, rain gardens, etc.).

N/A

4. Storm water detention and/or treatment facilities in the WRA shall be designed without permanent perimeter fencing and shall be landscaped with native vegetation.

N/A

5. Access to public storm water detention and/or treatment facilities shall be provided for maintenance purposes. Maintenance driveways shall be constructed to minimum width and use water permeable paving materials. Significant trees, including roots, shall not be disturbed to the degree possible. The encroachment and any tree loss shall be mitigated per CDC 32.090. There shall also be no adverse impacts upon the hydrologic conditions of the site.

N/A.

6. Storm detention and treatment and geologic hazards. Per the submittals required by CDC 32.050(F)(3) and 92.010(E), all proposed storm detention and treatment facilities must comply with the standards for the improvement of public and private drainage systems located in the West Linn Public Works Design Standards, there will be no adverse off-site impacts caused by the development (including impacts from increased intensity of runoff downstream or constrictions causing ponding upstream), and the applicant must provide sufficient factual data to support the conclusions of the submitted plan.

No adverse offsite impacts are anticipated from the proposed development. Stormwater treatment and detention is to be via underground detention under the private drive with filter catch basins or rain garden for water quality. Daylighting of the onsite channel will slow water and reduce intensity of downstream runoff. Additional details can be obtained from the Stormwater Plan provided by the engineer.

C. Repealed by Ord. 1647.

E. Per the submittals required by CDC 32.050(F)(4), the applicant must demonstrate that the proposed methods of rendering known or potential hazard sites safe for development, including proposed geotechnical remediation, are feasible and adequate to prevent landslides or other damage to property and safety. The review authority may impose conditions, including limits on type or

intensity of land use, which it determines are necessary to mitigate known risks of landslides or property damage.

N/A. No known or potential hazard sites.

F. Roads, driveways and utilities.

1. New roads, driveways, or utilities shall avoid WRAs unless the applicant demonstrates that no other practical alternative exists. In that case, road design and construction techniques shall minimize impacts and disturbance to the WRA by the following methods:

Proposed driveway shall avoid existing WRA. Driveway shall be constructed concurrently with removal of existing pipe and creation of open channel. New WRA shall be provided adjacent to the new channel on both sides of the driveway.

a. New roads and utilities crossing riparian habitat areas or streams shall be aligned as close to perpendicular to the channel as possible.

N/A. New road/driveway shall cross the newly created open channel. No existing channel.

b. Roads and driveways traversing WRAs shall be of the minimum width possible to comply with applicable road standards and protect public safety. The footprint of grading and site clearing to accommodate the road shall be minimized.

N/A. No existing WRA at proposed driveway crossing.

c. Road and utility crossings shall avoid, where possible:

1) Salmonid spawning or rearing areas;

2) Stands of mature conifer trees in riparian areas;

3) Highly erodible soils;

4) Landslide prone areas;

5) Damage to, and fragmentation of, habitat; and

6) Wetlands identified on the WRA Map.

Proposed crossing is throughout an open grass field containing a piped portion of Trillium Creek. None of the above will be impacted by the proposed driveway.

2. Crossing of fish bearing streams and riparian corridors shall use bridges or arch-bottomless culverts or the equivalent that provides comparable fish protection, to allow passage of wildlife and fish and to retain the natural stream bed.

N/A. No crossing of fish bearing stream or riparian corridors.

3. New utilities spanning fish bearing stream sections, riparian corridors, and wetlands shall be located on existing roads/bridges, elevated walkways, conduit, or other existing structures or installed underground via tunneling or boring at a depth that avoids tree roots and does not alter the hydrology sustaining the water resource, unless the applicant demonstrates that it is not physically possible or it is cost prohibitive. Bore pits associated with the crossings shall be restored upon project completion. Dry, intermittent streams may be crossed with open cuts during a time period approved by the City and any agency with jurisdiction.

N/A

4. No fill or excavation is allowed within the ordinary high water mark of a water resource, unless all necessary permits are obtained from the City, U.S. Army Corps of Engineers and Oregon Department of State Lands (DSL).

No existing water resource will be affected. A GA will be provided to DSL for removal of the culvert.

5. Crossings of fish bearing streams shall be aligned, whenever possible, to serve multiple properties and be designed to accommodate conduit for utility lines. The applicant shall, to the extent legally permissible, work with the City to provide for a street layout and crossing location that will minimize the need for additional stream crossings in the future to serve surrounding properties.

N/A. No fish bearing stream.

G. Passive recreation. Low impact or passive outdoor recreation facilities for public use including, but not limited to, multi-use paths and trails, not exempted per CDC 32.040(B)(2), viewing platforms, historical or natural interpretive markers, and benches in the WRA, are subject to the following standards:

1. Trails shall be constructed using non-hazardous, water permeable materials with a maximum width of four feet or the recommended width under the applicable American Association of State Highway and Transportation Officials (AASHTO) standards for the expected type and use, whichever is greater.

2. Paved trails are limited to the area within 20 feet of the outer boundary of the WRA, and such trails must comply with the storm water provisions of this chapter.

3. All trails in the WRA shall be set back from the water resource at least 30 feet except at stream crossing points or at points where the topography forces the trail closer to the water resource.

4. Trails shall be designed to minimize disturbance to existing vegetation, work with natural contours, avoid the fall line on slopes where possible, avoid areas with evidence of slope failure and ensure that trail runoff does not create channels in the WRA.

5. Foot bridge crossings shall be kept to a minimum. When the stream bank adjacent to the foot bridge is accessible (e.g., due to limited vegetation or topography), where possible, fences or railings shall be installed from the foot bridge and extend 15 feet beyond the terminus of the foot bridge to discourage trail users and pets from accessing the stream bank, disturbing wildlife and habitat areas, and causing vegetation loss, stream bank erosion and stream turbidity. Bridges shall not be made of continuous impervious materials or be treated with toxic substances that could leach into the WRA.

6. Interpretive facilities (including viewpoints) shall be at least 10 feet from the top of the water resource's bankfull flow/OHW or delineated wetland edge and constructed with a fence between users and the resource. Interpretive signs may be installed on footbridges.

N/A. None Proposed.

I. The following habitat friendly development practices shall be incorporated into the design of any improvements or projects in the WRA to the degree possible:

Proposed practices to be incorporated indicated below.

1. Restore disturbed soils to original or higher level of porosity to regain infiltration and storm water storage capacity.

2. Apply a treatment train or series of storm water treatment measures to provide multiple opportunities for storm water treatment and reduce the possibility of system failure.

3. Incorporate storm water management in road rights-of-way.

Stormwater management shall be incorporated in road right of way.

4. Landscape with rain gardens to provide on-lot detention, filtering of rainwater, and groundwater recharge.

Filtering shall be provided with rain gardens.

5. Use multi-functional open drainage systems in lieu of conventional curb-and-gutter systems.

6. Use green roofs for runoff reduction, energy savings, improved air quality, and enhanced aesthetics.

7. Retain rooftop runoff in a rain barrel for later on-lot use in lawn and garden watering.

8. Disconnect downspouts from roofs and direct the flow to vegetated infiltration/filtration areas such as rain gardens.

9. Use pervious paving materials for driveways, parking lots, sidewalks, patios, and walkways.

10. Reduce sidewalk width to a minimum four feet. Grade the sidewalk so it drains to the front yard of a residential lot or retention area instead of towards the street.

No sidewalks proposed.

11. Use shared driveways.

Common driveway provided to serve all lots.

12. Reduce width of residential streets and driveways, especially at WRA crossings.

No crossing within in existing WRA. Hammerhead to be constructed at minimum width to meet emergency requirements.

13. Reduce street length, primarily in residential areas, by encouraging clustering.

14. Reduce cul-de-sac radii and use pervious and/or vegetated islands in center to minimize impervious surfaces.

Use of a hammerhead turnaround is proposed to minimize impervious area.

15. Use previously developed areas (PDAs) when given an option of developing PDA versus non-PDA land.

16. Minimize the building, hardscape and disturbance footprint.

17. Consider multi-story construction over a bigger footprint. (Ord. 1623 § 1, 2014; Ord. 1635 § 19, 2014; Ord. 1647 § 5, 2016; Ord. 1662 § 7, 2017)

5. CDC Chapter 32.090(E). A mitigation plan shall contain the following information:

2. A map showing where the specific adverse impacts will occur and where the mitigation activities will occur.

Appendix A of this response provides a development plan showing proposed impact areas and proposed mitigation area to consist of daylighted channel and adjacent 15' buffer. Appendix B provides a typical planting detail for the mitigation area.

3. A re-vegetation plan for the area(s) to be mitigated that meets the standards of CDC 32.100.

Re-vegetation of the WRA will be planted with native trees, shrubs and groundcover consistent with CDC 32.100 and exceeding the standards of CDC 32.090(C) as described below and in the Mitigation/Enhancement Plan. Total area of native forested/scrub-shrub community shall extend along the new and existing WRA and provide a diverse community through the entire site adjacent to the onsite water resource.

32.100A Re-Vegetation Plan Requirements

1. All trees and shrubs shall be native species selected from the Portland Plant List
2. Trees will be an averaged minimum of ½ inch caliper and shrubs shall be a minimum of 12" in height and 1 gallon or equivalent.
3. a. Number of trees and shrubs to be planted are based on the requirement of 5 trees and 25 shrubs per 500sf of disturbance. Any remaining bare ground will be seeded with native grass seed.
   b. Trees shall be planted 12' on center and shrubs shall be planted between 4 and 5' on center or in clusters of no more than four plants with each cluster between 8 and 10' on center.
4. Shrubs must consist of at least two different species. Five different shrubs species are proposed. More than 10 trees are proposed to be planted. Three different genuses are proposed with the number of each to be less than 50%.
5. All invasive non-native or noxious vegetation shall be removed prior to planting mitigation area.
6. A minimum survival rate of 80% planted trees and shrubs shall be ensured.
7. Monitoring, maintenance and reporting shall be provided.
8. The following practices shall be implemented to enhance survival of planted species.
   a. Mulching. New plantings shall be mulched a minimum of three inches in depth and 18 inches in diameter to retain moisture and discourage weed growth.
   b. Irrigation. New plantings shall be watered one inch per week between the dates of June 15th to October 15th, for the three years following planting.
   c. Weed control. Non-native or noxious vegetation shall be removed, or throughout maintenance period.
   d. Planting season. Bare root trees shall be planted between December 1st and February 28th, and potted plants between October 15th and April 30th.
   e. Wildlife protection. Plant sleeves or fencing shall be used to protect trees and shrubs against wildlife browsing and resulting damage to plants.

As required by code,

32.100B. When weather or other conditions prohibit planting according to schedule, the applicant shall ensure that disturbed areas are correctly protected with erosion control measures and shall provide the City with funds in the amount of 125 percent of a bid from a recognized landscaper or nursery which will cover the cost of the plant materials, installation and any follow up maintenance. Once the planting conditions are favorable the applicant shall proceed with the plantings and receive the funds back from the City upon completion, or the City will complete the plantings using those funds. (Ord. 1623 § 1, 2014)
The mitigation area boundaries are shown in Appendix A. A typical planting plan following the above requirements is provided in Appendix B. The planting table is provided in Table 1.

4. An implementation schedule, including timeline for construction, mitigation, mitigation maintenance, monitoring, and reporting. All in-stream work in fish bearing streams shall be done in accordance with the Oregon Department of Fish and Wildlife.

The proposed mitigation shall be constructed concurrently with the rest of the proposed development with construction activities anticipated to commence in spring/summer of 2019. Channel construction shall be completed first, during the dry season with cobble substrate to be placed along the bottom. Adjacent slopes shall be graded and seeded immediately after grading is complete with a native grass seed mix. Trees and shrubs shall be planted in the following winter after the rainy season has commenced as per 32.100(8)d.

As per City of West Linn WRA protection requirements 32.100 (6) A minimum survival rate of 80% of the trees and shrubs planted is expected by the third anniversary of the date that the mitigation planting is completed. Plants that die must be replaced in kind (32.100(7). The mitigation site will be monitored and maintained for three years. Monitoring of planted trees and shrubs shall be conducted annually during the middle of the growing season (July) for three years following the initial planting. New plantings shall be watered weekly between June 15th to October 15th for the duration for the 3 year monitoring period.

Mortality will be assessed each year. If, after each year monitoring period, 80% survival has not been met, dead plants will be replaced up to the 100% success required. Additional maintenance shall be conducted as needed including invasive species removal and irrigation for the initial growing season.

5. Assurances shall be established to rectify any mitigation actions that are not successful within the first three years. This may include bonding or other surety. (Ord. 1623 § 1, 2014)

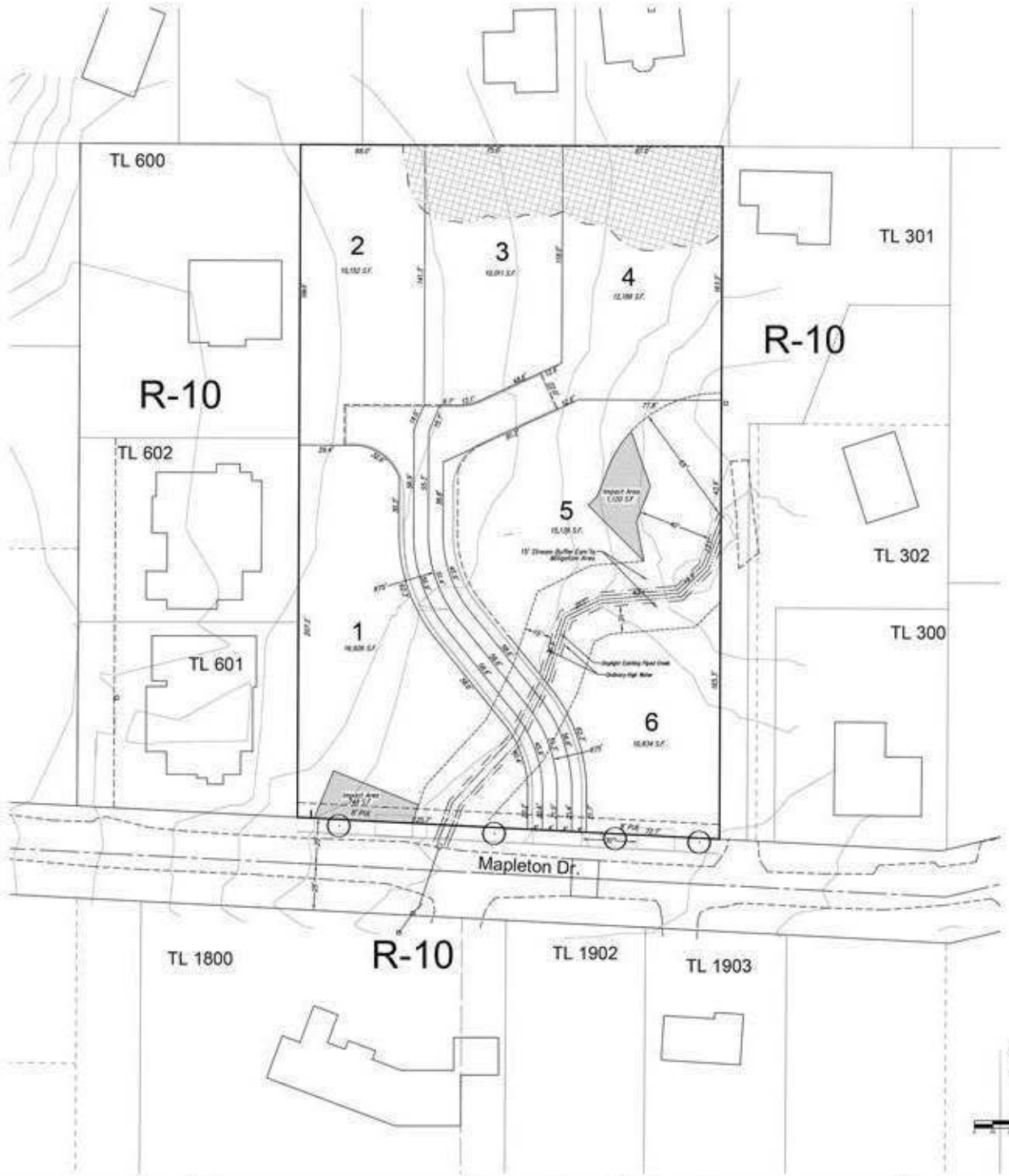
Required assurance shall be provided.

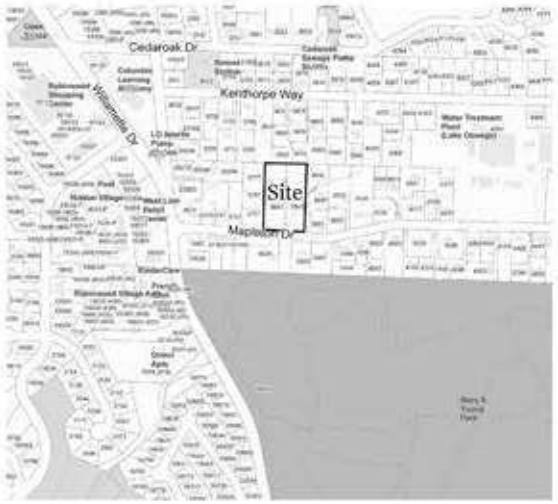
TABLE 1. WRA ENHANCEMENT PLANTING PLAN (8,438SF)

	Plant Type	Water Require-ments	Light Require-ments	Min. Size	Min. Height	Spacing	Qty
Douglas fir (*Pseudotsuga menziesii*)	Tree	Dry	Sun	2 gal	3’	Single	15
Big leaf maple (*Acer macrophyllum*)	Tree	Dry	Sun	2 gal	3’	Single	23
Red alder (*Alnus Rubra*)	Tree	Moist	Sun	2 gal	3’		20
Red flowering currant (*Ribes sanguineum*)	Shrub	Dry	Sun	1 gal.	1.5’	Cluster	50
Tall Oregon grape (*Mahonia aquifolium*)	Shrub	Dry	Sun	1 gal.	12”	Single	50
Cascade Oregon grape (*Mahonia nervosa*)	Shrub	Moist	Shade	1 gal.	12”	Cluster	50
Snowberry (*Symphoricarpos albus*)	Shrub	Dry	Part	1 gal.	1.5’	Cluster	100
Serviceberry (*Amelanchier alnifolia*)	Shrub	Dry	Part	1 gal.	1.5’	Single	25
Sword fern (*Polystichum munitum*)	Forb	Moist	Shade	2 gal.	n/a	Cluster	25
Native California brome (*Bromus carinatus*)	Grass	Dry	Part	Seed	n/a	10lbs. pls	
Blue Wildrye (*Elymus glaucus*)	Grass	Dry	Part	Seed	n/a	10lbs. pls	

- Grass seed to be planted in any bare areas.

APPENDIX A. Proposed Development Plan with Mitigation Location





Owner:
John William DeCosta Profit Sharing Plan
John William DeCosta, Trustee
16365 Boones Ferry Rd
Lake Oswego, OR 97035
PH: 503-702-0856

Engineer:
Theta Engineering
PO Box 1345
Lake Oswego, OR 97035
PH: (503) 481-8822

Legal: 2S 1E 24BC TL 400 & 500

Zoning: R-10

Water: City of West Linn

Sewer: City of West Linn

Contours: CESNW

Site Area: 85,367 S.F.

Street Tree.
Red Sunset Maple

DENSITY CALCULATIONS:

Gross Site Area: 85,367 square feet.

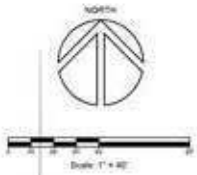
Type I & II Lands: 1,946 square feet.

Access Easement: 10,094 sq. ft.

Net Site Type III & IV Area: 73,327 sq. ft.

Maximum Density @ 1 Unit Per 10,000 sq. ft. = 7 lots.

Minimum Density @ 75%: 5 Units. 6 Lots are proposed.



EXPIRES: 06/30/2019
SIGNATURE DATE: 9/9/18

DESIGNED: REG	10-5-18	1	Revised layout to provide better building envelope on Lot 4.	
DRAWN: REG				
SCALE: 1" = 40'				
DATE: September 2018				
FILE: 18-ADN-103	DATE	NO.	REVISION	

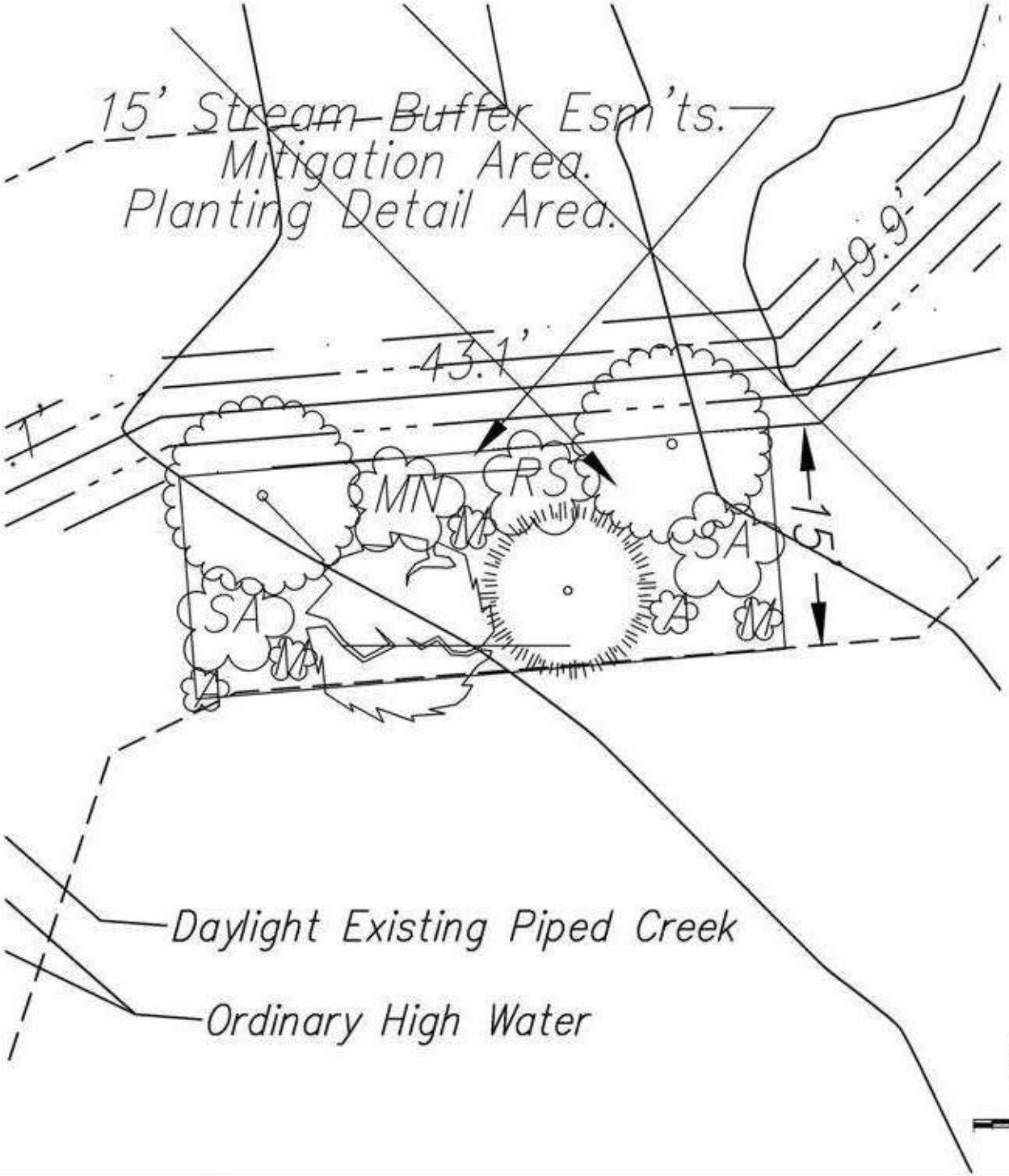
Richard E. Givens, Planning Consultant
18680 Sunblaze Dr.
Oregon City, OR 97045
PH: (503) 479-0097

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

Trillium Creek
Tentative Plan

SHEET: 1/3

APPENDIX B. Typical Planting Plan



LEGEND

- Red Alder (Alnus rubra)
- Big leaf maple (Acer Macrophyllum)
- Douglas fir (Pseudotuga menziesii)
- Serviceberry (Amalanchier alnifolia) - single
- Tall Oregon grape (Mahonia aquifolium) - single
- SA Snowberry (Symphoricarpos albus) - cluster of 4
- RS Red flowering currant (Ribes sanguineum) - cluster of 4
- MN Dwarf Oregon grape (Mahonia nervosa)

Sword fern (Polystichum munitum) to be planted in open spaces throughout.

Native grass seed to be scattered in any remaining bare areas

NORTH

Scale: 1" = 5'

DESIGNED: REG	10-8-18	1	Revised layout to provide better buyding envelope on Lot 4
DRAWN: REG			
SCALE: 1" = 40'			
DATE: September 2018			
FILE: 18-009-103	DATE	NO.	REVISION

Richard E. Givens, Planning Consultant
18680 Sunblaze Dr.
Oregon City, OR 97045
PH: (503) 479-0097

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

Trillium Creek
Mitigation Plan - Typical Planting Detail

Preliminary Storm Report

Trillium Subdivision

West Linn, Oregon

DRAINAGE REPORT

November 2018

EXPIRES: 06/30/2019

SIGNATURE DATE: 11/6/18

Prepared By:

Bruce D. Goldson, PE

Theta, llc

PO Box 1345, Lake Oswego, Oregon 97035

2014-129T

INDEX

NARRATIVE ASSUMPTIONS

Existing Conditions:

The subject property is currently vacant with a culvert conveying a drainage basin through the center of the property. Infiltration tests were conducted @ 3797, 3787, & 3777Mapleton Drive for the three new parcels this year. This property is adjacent to the subject property with similar soils. There is no indication of a high water table and the USDA finds the soil to be 1B Aloha silt loam with a hydrological soil group C/D. The soils on the adjacent property were found to be a light brown stiff clay silt/loam with no with rocks. The infiltration rates were found be between 1-2 inches per hour.

Developed Conditions:

Six residential lots accessed by a private drive is proposed. The existing culvert would be removed and the drainage way reestablished except for a culvert crossing for the new access drive. Storm water from the access drive would be collected at the low point in cartage catch basins for water quality and collected in an oversized pipe for detention and discharged in the drainage corridor. The individual lot would have individual infiltration facilities for the impervious areas.

Summary of storm water flow

	2-YEAR	5-YEAR	10-YEAR	25-YEAR
PRE-DEVELOP	0.06CFS	0.09 CFS	0.10 CFS	0.13 CFS
POST-DEVELOP	0.13 CFS	0.16 CFS	0.19 CFS	0.21CFS

REGULATORY DESIGN CRITERIA

The storm water quantity management requirements of the City of West Linn.

References

1. King County Department of Public Works, Surface Water Management Division, Hydrographic Programs, Version 4.21B

Water Quality Facility

Design Parameters

The design storm is a 24 hour standard SCS Type 1A

- 2-year.....2.5 inches
- 5-year.....3.0 inches
- 10-year.....3.4 inches
- 25-year..... 3.9 inches
- 100-year.....4.5 inches

SOIL TYPES

Willamette Silt Loam – type C soil

FOR PRIVATE DRIVE

Time of Concentration

$T = (0.42)[(nL)^{.8}/(p_2)^{.5}(s_0)^{.4}$

Pre-development: $T = (0.42)[(0.24)(140)]^{.8}/(2.5)^{.5}(.11)^{.4} = 10.0$ min (pre)

Assume 5-minutes developed

HYDROGRAPH RESULTS

KING COUNTY DEPARTMENT OF PUBLIC WORKS
Surface Water Management Division
HYDROGRAPH PROGRAMS
Version 4.21B
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:
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
Xxxxxxxxxxxxxxxxxxxxx S.C.S.TYPE-1A DISTRIBUTION xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
XXXXXXXXXXXX 2-YEAR 24-HOUR STORM xxxx 2.50 "TOTAL PRECIP Xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx/

ENTER: A(PERV),CN(PERV),A(IMPERV),CN(IMPERV),TC FOR BASIN NO. 1
0.21,86,0.0,98,10.0
DATA PRINT OUT:

AREA(ACRES)	PERVIOUS		IMPERVIOUS		TC(MINUTES)
	A	CN	A	CN	
.2	.2	86	.0	98	10.0
PEAK-Q(CFS)	T-PEAK(HRS)		VOL(CU-FT)		
.06	7.83		947		

ENTER [d:][path]filename[.ext] FOR STORAGE OF COMPUTED HYDROGRAPH:
C:t2P
SPECIFY: C - CONTINUE, N - NEWSTORM, P -PRINT, S - STOP
C

ENTER: A(PERV),CN(PERV),A(IMPERV),CN(IMPERV),TC FOR BASIN NO. 1
0.00,86,0.21,98,5

DATA PRINT OUT:

AREA(ACRES)	PERVIOUS		IMPERVIOUS		TC(MINUTES)
	A	CN	A	CN	
.2	.0	86	.2	98	5.0
PEAK-Q(CFS)	T-PEAK(HRS)		VOL(CU-FT)		
.13	7.67		1730		

ENTER [d:][path]filename[.ext] FOR STORAGE OF COMPUTED HYDROGRAPH:
C:T2D
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
ENTER; FREQ(YEAR), DURATION(HOUR), PRECIP(INCHES)
5,24,3.0

Xxxxxxxxxxxxxxxxxxxxx S.C.S.TYPE-1A DISTRIBUTION xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
XXXXXXXXXXXX 5-YEAR 24-HOUR STORM xxxx 3.00" TOTAL PRECIP Xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

---

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

0.21,86,0.00,98,10.0
DATA PRINT OUT:

AREA(ACRES)	PERVIOUS		IMPERVIOUS		TC(MINUTES)
	A	CN	A	CN	
.2	.2	86	.0	98	10.0
PEAK-Q(CFS)	T-PEAK(HRS)		VOL(CU-FT)		
.09	7.83		1266		

ENTER [d:][path]filename[.ext] FOR STORAGE OF COMPUTED HYDROGRAPH:
C:t5p
SPECIFY: C - CONTINUE, N - NEWSTORM, P - PRINT, S – STOP
c
0.0,86,0.21,98,5
DATA PRINT OUT:

AREA(ACRES)	PERVIOUS		IMPERVIOUS		TC(MINUTES)
	A	CN	A	CN	
.2	.0	86	.2	98	5.0
PEAK-Q(CFS)	T-PEAK(HRS)		VOL(CU-FT)		
.16	7.67		2110		

ENTER [d:][path]filename[.ext] FOR STORAGE OF COMPUTED HYDROGRAPH:
C:t5D
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
ENTER; FREQ(YEAR), DURATION(HOUR), PRECIP(INCHES)
10,24,3.4
Xxxxxxxxxxxxxxxxxxxxxx S.C.S.TYPE-1A DISTRIBUTION xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
XXXXXXXXXXXX 10-YEAR 24-HOUR STORM xxxx 3.40" TOTAL PRECIP Xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

---

ENTER: A(PERV),CN(PERV),A(IMPERV),CN(IMPERV),TC FOR BASIN NO. 1
0.28,86,06,98,7.0
DATA PRINT OUT:

AREA(ACRES)	PERVIOUS		IMPERVIOUS		TC(MINUTES)
	A	CN	A	CN	
.2	.2	86	.0	98	10.0
PEAK-Q(CFS)	T-PEAK(HRS)		VOL(CU-FT)		
.10	7.83		1531		

ENTER [d:][path]filename[.ext] FOR STORAGE OF COMPUTED HYDROGRAPH:
C:t10P
SPECIFY: C - CONTINUE, N - NEWSTORM, P - DATA PRINT OUT:
C
ENTER: A(PERV),CN(PERV),A(IMPERV),CN(IMPERV),TC FOR BASIN NO. 1
0.00,86,0.21,98,5

AREA(ACRES)	PERVIOUS	IMPERVIOUS	TC(MINUTES)

	A	CN	A	CN	
.2	.0	86	.2	98	5.0
PEAK-Q(CFS)	T-PEAK(HRS)		VOL(CU-FT)		
.19	7.67		2414		

ENTER [d:][path]filename[.ext] FOR STORAGE OF COMPUTED HYDROGRAPH:
C:t10D
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
ENTER; FREQ(YEAR), DURATION(HOUR), PRECIP(INCHES)
25,24,3.9
Xxxxxxxxxxxxxxxxxxxxxx S.C.S.TYPE-1A DISTRIBUTION xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
XXXXXXXXXXXX 25-YEAR 24-HOUR STORM xxxx 3.90" TOTAL PRECIP Xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

---

ENTER: A(PERV),CN(PERV),A(IMPERV),CN(IMPERV),TC FOR BASIN NO. 1
0.21,86,00,98,10.0
DATA PRINT OUT:

AREA(ACRES)	PERVIOUS		IMPERVIOUS		TC(MINUTES)
	A	CN	A	CN	
.2	.2	86	.0	98	10.0
PEAK-Q(CFS)	T-PEAK(HRS)		VOL(CU-FT)		
.13	7.83		1870		

ENTER [d:][path]filename[.ext] FOR STORAGE OF COMPUTED HYDROGRAPH:
C:t25P
SPECIFY: C - CONTINUE, N - NEWSTORM, P - DATA PRINT OUT:
C
ENTER: A(PERV),CN(PERV),A(IMPERV),CN(IMPERV),TC FOR BASIN NO. 1
0.00,86,0.21,98,5

AREA(ACRES)	PERVIOUS		IMPERVIOUS		TC(MINUTES)
	A	CN	A	CN	
.2	.0	86	.2	98	5.0
PEAK-Q(CFS)	T-PEAK(HRS)		VOL(CU-FT)		
.21	7.67		2794		

ENTER [d:][path]filename[.ext] FOR STORAGE OF COMPUTED HYDROGRAPH:
C:t25D

j
DETENTION SIZING
ENTER OPTION
10
R/D FACILITY DESIGN ROUTINE
SPEFICY TYPE OF R/D FACILTY

1 - POND 4 - INFILTRATION POND
2 - TANK 5 - INFILTRATION TANK
3 -VAULT 6 - GRAVEL TRENCH/BED
2
ENTER: POND SIDE SLOPE (HORIZ. COMPOENT)
3
ENTER: TANK DIAMETER (ft). EFFECTIVE STORAGE DEPTH (ft)
4,4
ENTER: [d:][[atj]filename[.ext] OF PRIMARY DESIGN INFLOW HYDROGRAPH:
C:T25D
PRELIMINARY DESIGN INFLOW PEAK = .21 CFS
ENTER PRIMARY DESIGN RELEASE RATE(cfs)
0.13
ENTER NUMBER OF INFLOW HYDROGRAPHS TO BE TESTED FOR PERFORMANCE (5 MAXIMUM)
3
ENTER [d:][path]filename[.ext] OF HYDROGRAPH 1:
C:T10D
ENTER TARGET RELEASE RATE (cfs)
0.10
ENTER [d:][path]filename[.ext] OF HYDROGRAPH 2:
C:T5D
ENTER TARGET RELEASE RATE (cfs)
0.09
0. ENTER [d:][path]filename[.ext] OF HYDROGRAPH 3:
C:T2D
ENTER TARGET RELEASE RATE (cfs)
0.06
ENTER: NUMBER OF ORIFICES, RISER-HEAD (ft), RISER-DIAMETER(in)
2.4.10
RISER OVERFLOW DEPTH FOR PRIMARY PEAK INFLOW= 0.12 FT
SPECIFY ITERATION DISPLAY: Y -YES, N - NO
N
SPECIFY: R - REVIEW/REVISE INPUT, C - CONTINUE
C
INITIAL STORAGE VALUE FOR ITERATION PURPOSES: 1170 CU-FT
BOTTOM ORIFICE: ENTER Q-MAX(cfs)
0.08
DIA. = 1.21 INCHES
TOP ORIFICE: ENTER HEIGHT(ft)
2.70
DIA. = 1.27 INCHES

PERFORMANCE:	INFLOW	TARGET-OUTFLOW	ACTUAL-OUTFLOW	PK-STAGE	STORAGE
DESIGN HYD:	.21	.13	.13	3.99	312
TEST HYD 1:	.19	.10	.10	3.25	270
TEST HYD 2:	.16	.09	.07	2.76	220

TEST HYD 3: .13 .06 .06 2.14 170

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

For the individual lots:

Roof = 5072 SF = 0.116acres

PROPOSED:

2- StormTech SC-740-infiltration units - & 15 LF 48" drywell.

Footprint = (17.56 X 6) + (10 X 8) = 185.4 Square feet

Xxxxxxxxxxxxxxxxxxxxxx S.C.S.TYPE-1A DISTRIBUTION xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
XXXXXXXXXXXX 10-YEAR 24-HOUR STORM xxxx 3.20" TOTAL PRECIP. Xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

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ENTER: A(PERV),CN(PERV),A(IMPERV),CN(IMPERV),TC FOR BASIN NO. 1
0.0,86,0.116,98,5
DATA PRINT OUT:

AREA(ACRES)	PERVIOUS		IMPERVIOUS		TC(MINUTES)
	A	CN	A	CN	
.1	.0	86.0	.1	98.0	5.0

PEAK-Q(CFS)	T-PEAK(HRS)	VOL(CU-FT)
.10	7.67	1249

ENTER [d:][path]filename[.ext] FOR STORAGE OF COMPUTED HYDROGRAPH:
C:1maple
SPECIFY: C - CONTINUE, N - NEWSTORM, P - PRINT, S – STOP
S

ENTER OPTION
RESERVOIR ROUTING INFLOW/OUTFLOW ROUTINE
SPECIFY [d:][path]filename[.ext] OF ROUTINE DATA)
C:m1data
DISPLAY ROUTING DATA (Y or N)
Y
ROUTING DATA:

STAGE (FT)	DISCHARGE (CFS)	STORAGE (CU-FT)	PERN-AREA(SQ-FT)
.00	.00	.0	.0
11.50	.00	520.7	276.0
12.00	.00	575.8	276.0
12.50	.00	662.2	276.0
13.00	.00	746.1	276.0
13.50	.00	826.2	276.0
14.00	.00	900.2	276.0
14.50	.00	962.4	276.0
15.00	.00	1017.6	276.0

AVERAGE PERM-RATE: 56.4 MINUTES/INCH
SATURATED PERM-RATE: 56.4 MINUTES/INCH
GROUND STORAGE BEFORE SATURATION: .00 CU-FT/SQ-FT
ENTER [d:][path]filename[.ext] OF COMPUTED HYDROGRAPH:
C:maple
INFLOW/OUTFLOW ANALYSIS:

PEAK-INFLOW(CFS)	PEAK-OUTFLOW(CFS)	OUTFLOW-VOL (CU-FT)
.10	.00	0
INITIAL-STAGE (FT)	TIME-OF-PEAK(HRS)	PEAK-STAGE-ELEV(FT)
.00	23.83	13.58

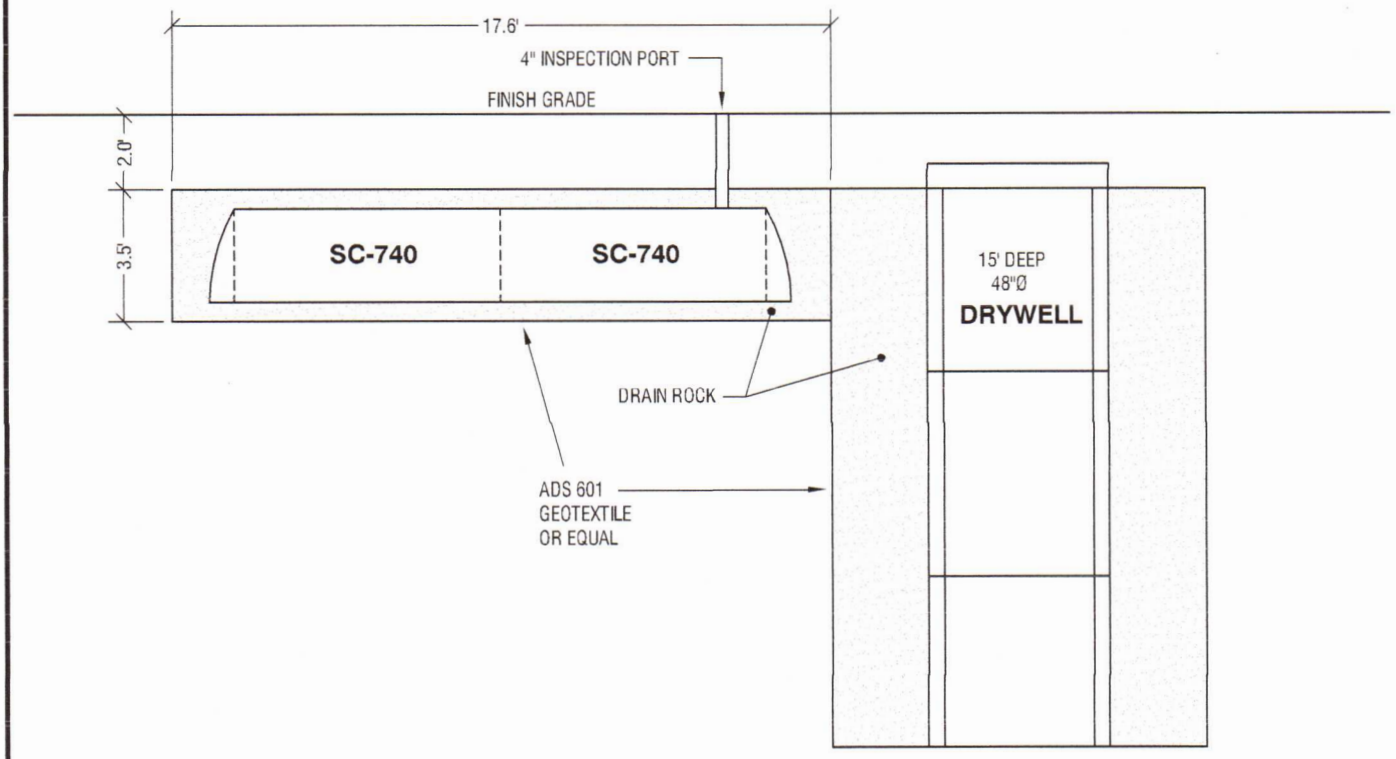
PEAK STORAGE: 830 CU-FT
INFILTRATED VOLUME: 889 CU-FT
ENTER [d] [path] filename [.ext] FOR STORAGE OF COMPUTED HYDROGRAPH:

DESIGN SUMMARY:

A 48" diameter detention tank (20.0 LF) with 24" diameter section (4.0 LF) and 48" control manhole equates to a total volume of 313 CF. meets the requirements of the calculations and the storm water would be metered out with two orifices at the pre-developed rate for the 2, 5 10 & 25 year events. Water quality for the drive would be provided by cartage catch basins at the low point. Discharge from the control manhole would be to the drainage culvert.

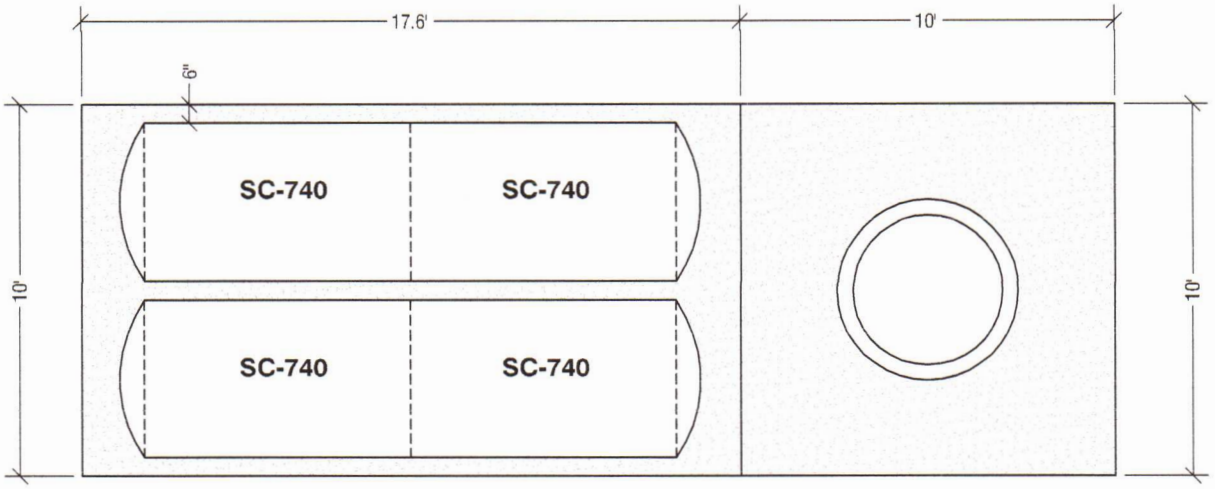
The individual lots would have infiltration facilities sized to the impervious area.

Appendix



ELEVATION

SCALE: 1" = 5'



PLAN

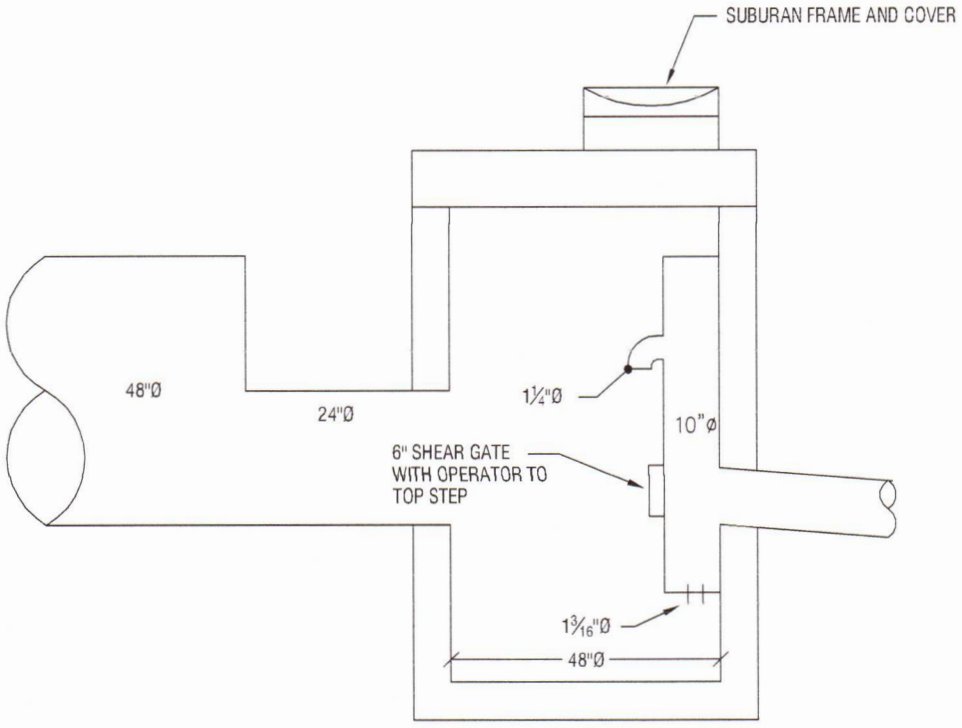
SCALE: 1" = 5'

2014-129T

PRELIMINARY STORM

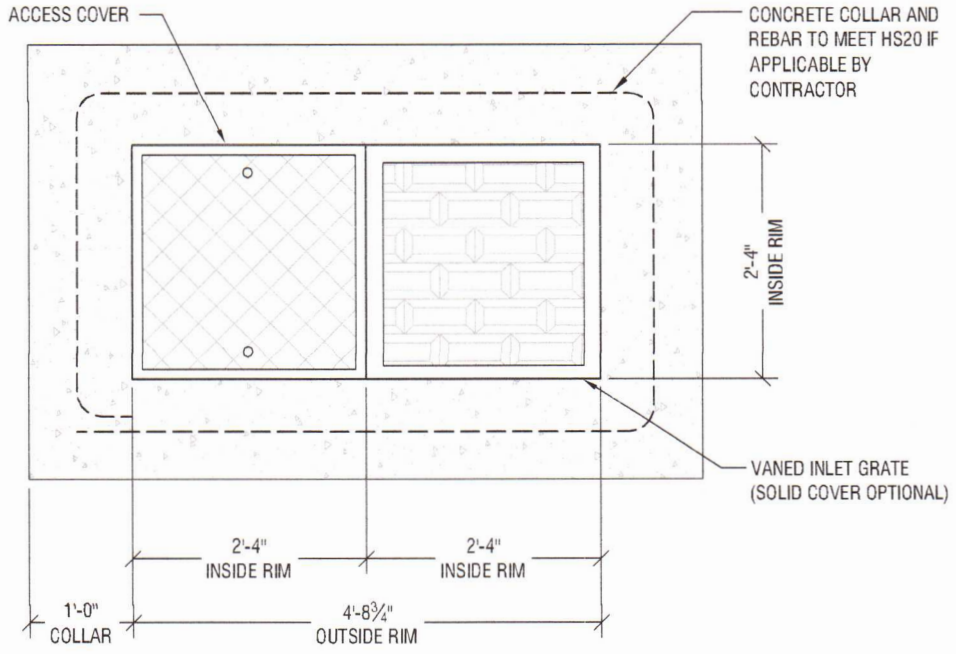
Theta, llc
ENGINEERING - SURVEYING - PLANNING
PO Box 1345
Lake Oswego, Oregon 97035
503/481-8822
email: thetaeng@comcast.net

Trillium Creek



CONTROL MANHOLE

SCALE: NTS



CATCH BASIN

SCALE: NTS

2014-129T

PRELIMINARY STORM

Theta, llc
ENGINEERING - SURVEYING - PLANNING
PO Box 1345
Lake Oswego, Oregon 97035
503/481-8822
email: thetaeng@comcast.net

Trillium Creek

Clackamas County Official Records 2017-015532
Sherry Hall, County Clerk
03/07/2017 02:19:00 PM
D-D Cnt=1 Stn=0 KARLYN
$22.00 $25.00 $10.00 $16.00 $73.00

RECORDING COVER SHEET
ALL TRANSACTIONS, PER ORS 205.234

THIS COVER SHEET HAS BEEN PREPARED BY THE PERSON PRESENTING THE ATTACHED INSTRUMENT FOR RECORDING ANY ERRORS IN THIS COVER SHEET DO NOT AFFECT THE TRANSACTION(S) CONTAINED IN THE INSTRUMENT ITSELF.

This Space For County recording Use Only

AFTER RECORDING RETURN TO
(Name and address of the person authorized to receive the Instrument after recording, as required by ORS 205.180(4) and ORS 205.238)

John William DeCosta, Profit Sharing Plan
120 Cabana Pointe
Lake Oswego, OR 97034

1. **NAME(S) OF THE TRANSACTION(S),** *described in the attached instrument and required by ORS 205.234(a). (i.e Warranty Deed)*
   ***Note:** Transaction as defined by ORS 205.010 " means any action required or permitted by state law or rule or federal law or regulation to be recorded including, but not limited to, any transfer, encumbrance or release affecting title to or an interest in real property."*

   Personal Representative's Deed

2. **DIRECT PARTY,** *name(s) of the person(s) described in ORS 205.125(l)(b) or* **GRANTOR,** *as described in ORS 205.160.*

   Rebecca Bell Macom, personal representative of the estate of Amy Elizabeth Cox, Deceased

3. **INDIRECT PARTY,** *name(s) of the person(s) described in ORS 205.125(1)(a) or* **GRANTEE,** *as described in ORS 205.160.*

   John William DeCosta, Trustee of the John William DeCosta Profit Sharing Plan

4. **TRUE AND ACTUAL CONSIDERATION PAID** *for instruments conveying or contracting to convey fee title to any real-estate and all memoranda of such instruments, reference ORS 93.030.*

   $0.00

5. **UNTIL A CHANGE IS REQUESTED, ALL TAX STATEMENTS SHALL BE SENT TO THE FOLLOWING ADDRESS** *for instruments conveying or contracting to convey fee title to any real estate, reference ORS 93.260.*

   Same as above

6. **RERECORDED AT THE REQUEST OF** Lawyers Title **TO CORRECT** Personal Representative's Deed **PREVIOUSLY RECORDED IN BOOK AND PAGE OR FEE NUMBER** 2016-014247, to correct scrivener's error in legal description as shown on attached Exhibit B.

LAWYERS 8717003553

Clackamas County Official Records	2016-014247
Sherry Hall, County Clerk	03/01/2016 11:58:49 AM
D-D Cnt=1 Stn=2 LESLIE	
$10.00 $16.00 $10.00 $22.00	$58.00

RECORDING REQUESTED BY:
Fidelity National Title
Company of Oregon

12809 SE 93rd Avenue
Clackamas, OR 97015

GRANTOR'S NAME:
Estate of Amy Elizabeth Cox

GRANTEE'S NAME:
John William DeCosta, Profit Sharing Plan

AFTER RECORDING RETURN TO:
John William DeCosta, Profit Sharing Plan
120 Cabana Pointe
Lake Oswego, OR 97034

SEND TAX STATEMENTS TO:
John William DeCosta, Profit Sharing Plan
120 Cabana Pointe
Lake Oswego, OR 97034

3841 Mapleton Drive, West Linn, OR 97068

Fidelity National Title of Oregon 45141603750-07

SPACE ABOVE THIS LINE FOR RECORDER'S USE

PERSONAL REPRESENTATIVE'S DEED

Rebecca Bell Macom, the duly appointed, qualified and acting personal representative of the estate of Amy Elizabeth Cox, deceased, pursuant to proceedings filed in Circuit Court for Clackamas County, Oregon, Case No. P1507071, Grantor, conveys to John William DeCosta, Trustee of the John William DeCosta Profit Sharing Plan, Grantee, all the estate, right and interest of the above named deceased at the time of the deceased's death, and all the right, title and interest that the above named estate of the deceased by operation of law or otherwise may have acquired afterwards, in and to the following described real property:

SEE EXHIBIT "A" ATTACHED HERETO AND MADE A PART HEREOF

The true consideration for this conveyance is No Dollars And No/100 Dollars ($0.00).

BEFORE SIGNING OR ACCEPTING THIS INSTRUMENT, THE PERSON TRANSFERRING FEE TITLE SHOULD INQUIRE ABOUT THE PERSON'S RIGHTS, IF ANY, UNDER ORS 195.300, 195.301 AND 195.305 TO 195.336 AND SECTIONS 5 TO 11, CHAPTER 424, OREGON LAWS 2007, SECTIONS 2 TO 9 AND 17, CHAPTER 855, OREGON LAWS 2009, AND SECTIONS 2 TO 7, CHAPTER 8, OREGON LAWS 2010. THIS INSTRUMENT DOES NOT ALLOW USE OF THE PROPERTY DESCRIBED IN THIS INSTRUMENT IN VIOLATION OF APPLICABLE LAND USE LAWS AND REGULATIONS. BEFORE SIGNING OR ACCEPTING THIS INSTRUMENT, THE PERSON ACQUIRING FEE TITLE TO THE PROPERTY SHOULD CHECK WITH THE APPROPRIATE CITY OR COUNTY PLANNING DEPARTMENT TO VERIFY THAT THE UNIT OF LAND BEING TRANSFERRED IS A LAWFULLY ESTABLISHED LOT OR PARCEL, AS DEFINED IN ORS 92.010 OR 215.010, TO VERIFY THE APPROVED USES OF THE LOT OR PARCEL, TO DETERMINE ANY LIMITS ON LAWSUITS AGAINST FARMING OR FOREST PRACTICES, AS DEFINED IN ORS 30.930, AND TO INQUIRE ABOUT THE RIGHTS OF NEIGHBORING PROPERTY OWNERS, IF ANY, UNDER ORS 195.300, 195.301 AND 195.305 TO 195.336 AND SECTIONS 5 TO 11, CHAPTER 424, OREGON LAWS 2007, SECTIONS 2 TO 9 AND 17, CHAPTER 855, OREGON LAWS 2009, AND SECTIONS 2 TO 7, CHAPTER 8, OREGON LAWS 2010.

IN WITNESS WHEREOF, the undersigned have executed this document on the date(s) set forth below.

Estate of Amy Elizabeth Cox

BY: Rebecca Bell Macom P.R
Rebecca Bell Macom, Personal Representative

State of OREGON
County of CLACKAMAS

This instrument was acknowledged before me on Feb. 29, 2016 by Rebecca Bell Macom as Personal Representative for the Estate of Amy Elizabeth Cox.

M Harbaugh
Notary Public - State of Oregon

My Commission Expires: 4/22/19

OFFICIAL STAMP
MARGARET ANN HARBAUGH
NOTARY PUBLIC-OREGON
COMMISSION NO. 938273
MY COMMISSION EXPIRES APRIL 22, 2019

EXHIBIT "A"
Legal Description

Lot 5 and the West 100 of Lot 6, divided by a line parallel with the West line of said Lot 6, MAPLE GROVE, in the City of West Linn, County of Clakamas and State of Oregon

STATE OF OREGON
COUNTY OF CLACKAMAS } ss.

I, SHERRY HALL, County Clerk of the State of Oregon for the County of Clackamas, do hereby certify that the foregoing copy of

Deed Record

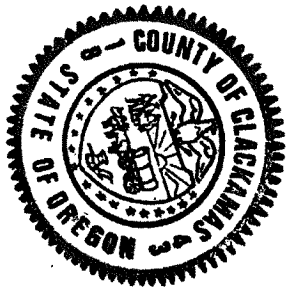
2016-014247 2 pgs

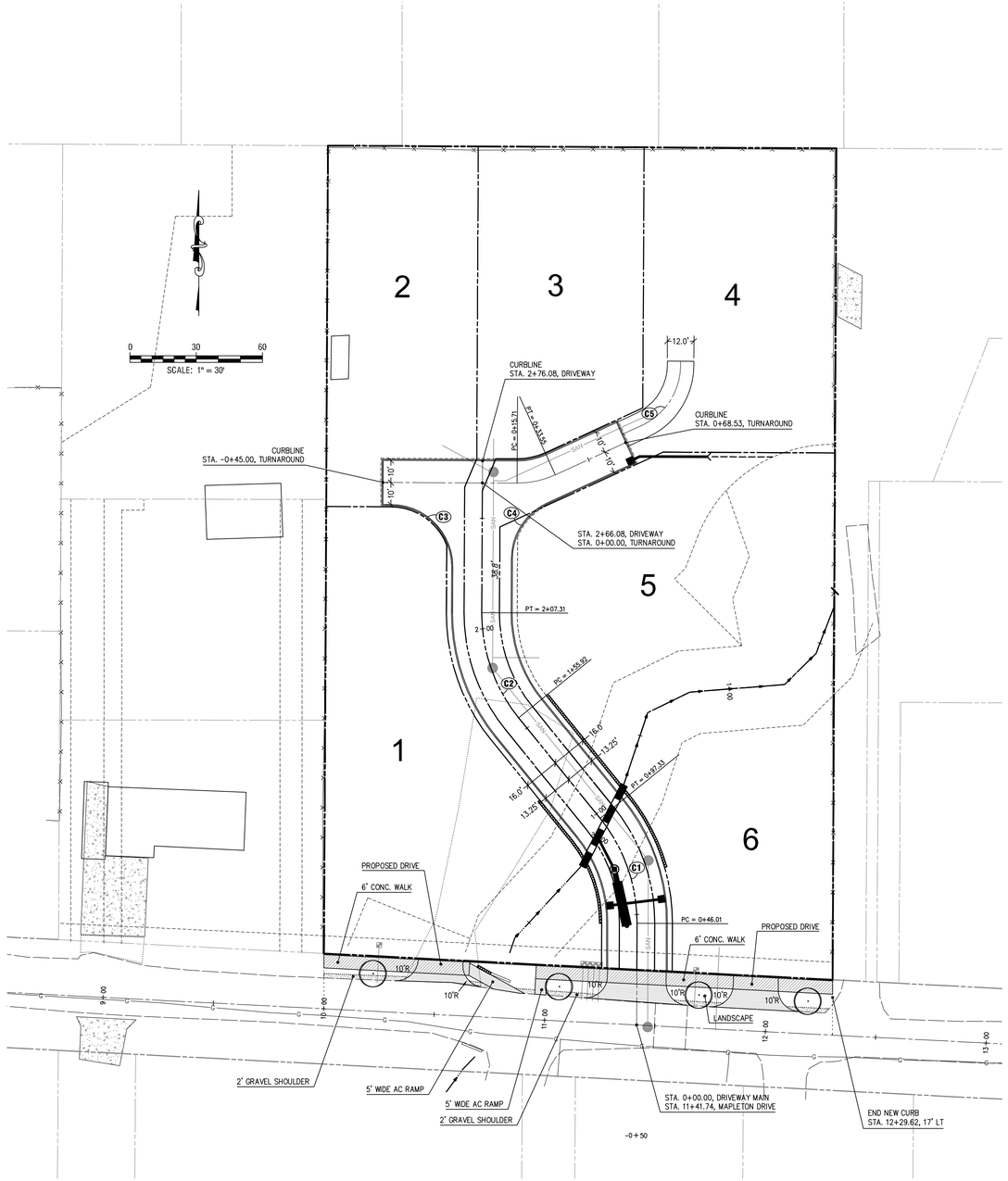
has been by me compared with the original, and that it is a correct transcript therefrom, and the whole of such original, as the name appears on file and of record in my office and in my care and custody.

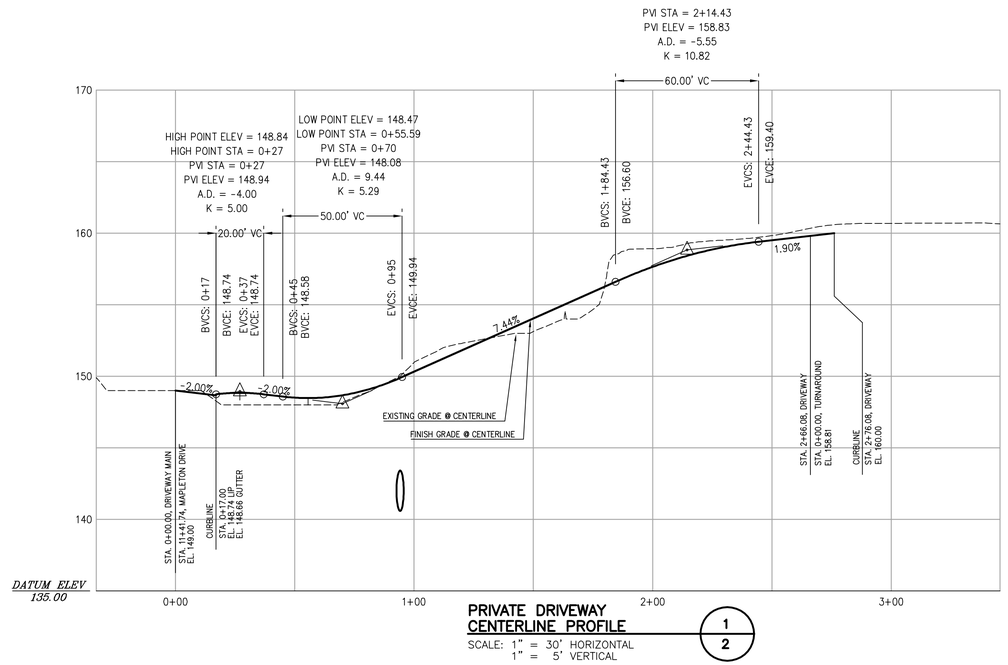
IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my official seal this 1 day of March, 2017.

SHERRY HALL, Clerk

By: _____
Deputy



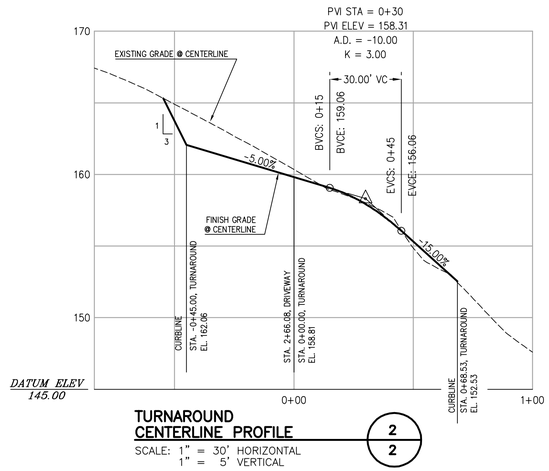




PRIVATE DRIVEWAY CENTERLINE PROFILE

SCALE: 1" = 30' HORIZONTAL
1" = 5' VERTICAL

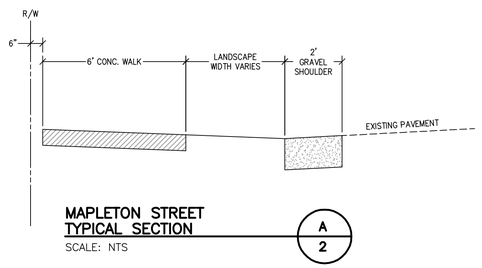
1/2



TURNAROUND CENTERLINE PROFILE

SCALE: 1" = 30' HORIZONTAL
1" = 5' VERTICAL

2/2



MAPLETON STREET TYPICAL SECTION

SCALE: NTS

A/2

CURVE TABLE						
CURVE	RADIUS	LENGTH	TANGENT	CHORD	BEARING	DELTA
C1	75.00	51.33	26.71	50.33	N19° 22' 09"W	39° 12' 34"
C2	75.00	51.38	26.75	50.38	S19° 20' 52"E	39° 15' 10"
C3	28.00	43.99	28.01	39.60	N44° 43' 47"W	90° 01' 02"
C4	28.00	31.79	17.85	30.11	S32° 47' 59"W	65° 02' 31"
C5	30.00	34.06	19.13	32.26	N32° 47' 59"E	65° 02' 31"

REGISTERED PROFESSIONAL ENGINEER
71126
OREGON
July 16, 1977
BRUCE D. GOLDSON

EXPIRES: 06/30/2019
SIGNATURE DATE: 11/17/2018

PRELIMINARY STREET PLAN AND PROFILES

2014-129T

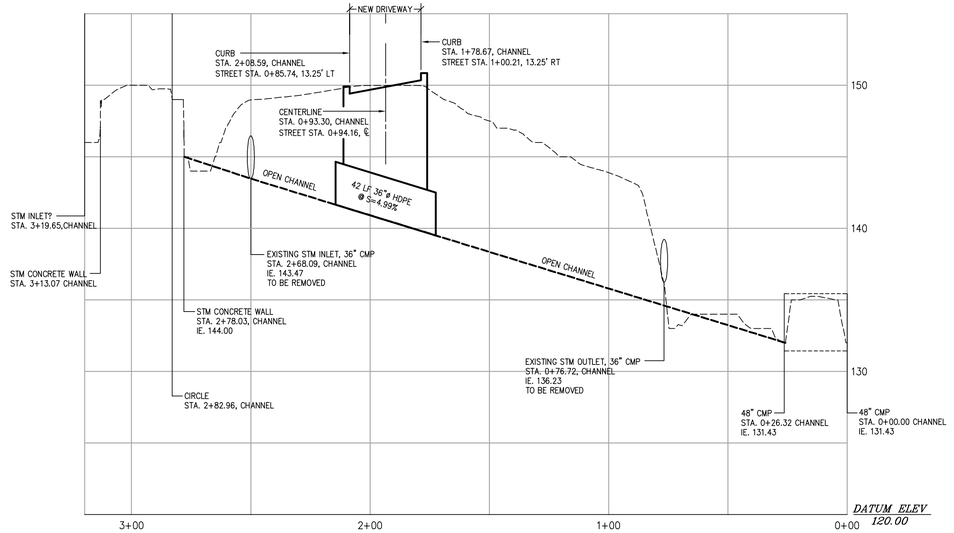
DESIGNED:	BDG			
DRAWN:	BJS			
SCALE:	1" = 30'			
DATE:	August, 2018			
FILE:	Trillium Creek Prelim5	DATE	NO.	REVISION

Theta, llc
ENGINEERING - SURVEYING - PLANNING
PO Box 1345
Lake Oswego, Oregon 97035
503/481-8822
email: thetaeng@comcast.net

Icon Construction and Developement
1380 Willamette Falls Drive, No. 200
West Linn, Oregon 97068

Trillium Creek

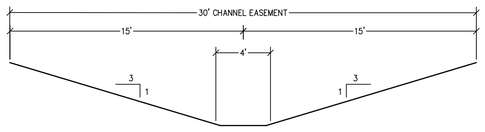
SHEET: 1/4



CHANNEL CENTERLINE PROFILE

SCALE: 1" = 30' HORIZONTAL
1" = 5' VERTICAL

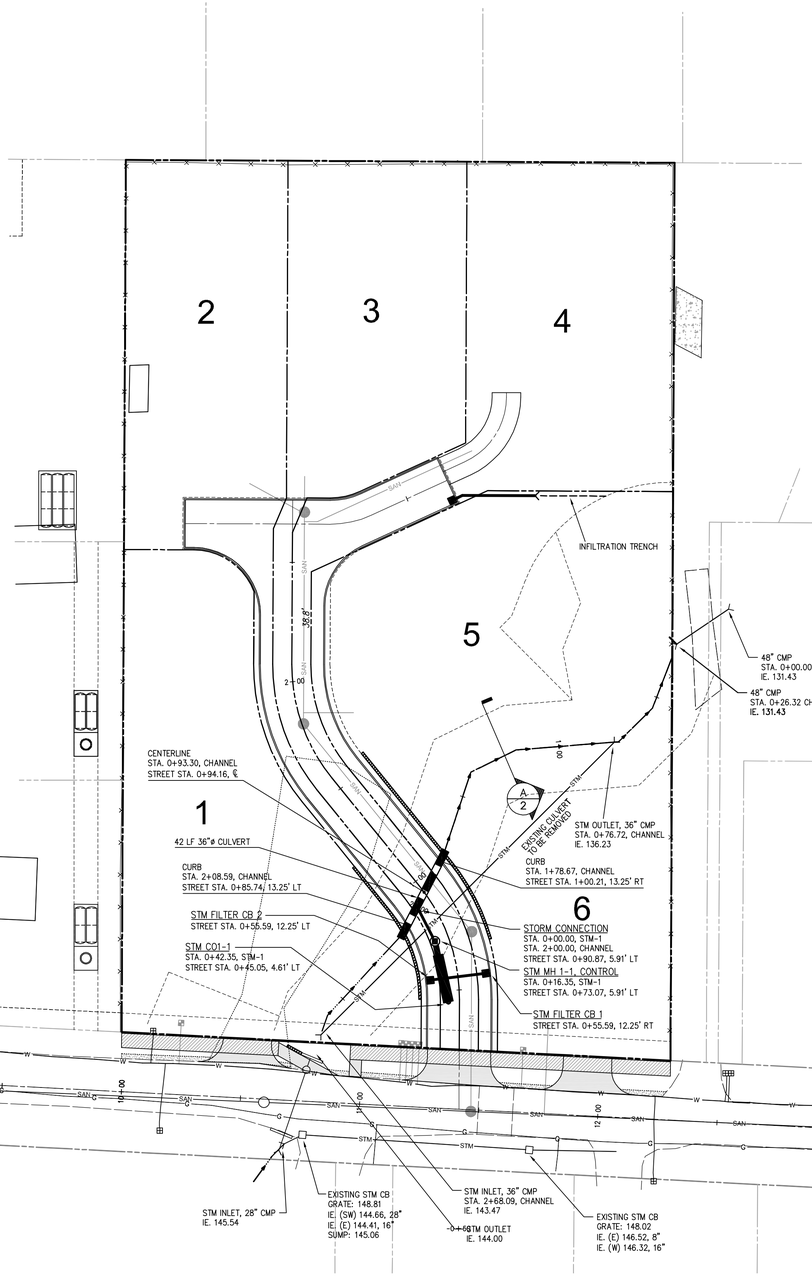
2/2

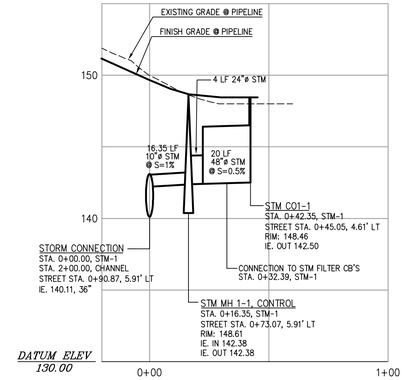


RECONSTRUCTED DRAINAGE CHANNEL

SCALE: NTS

A/2





STM-1 STORM SEWER PROFILE

SCALE: 1" = 30' HORIZONTAL
1" = 5' VERTICAL

2/2

REGISTERED PROFESSIONAL ENGINEER
7129
OREGON
July 16, 1971
BRUCE D GOLDSON

EXPIRES: 06/30/2019
SIGNATURE DATE: 11/17/2018

2014-129T

PRELIMINARY STORM DRAINAGE PLAN

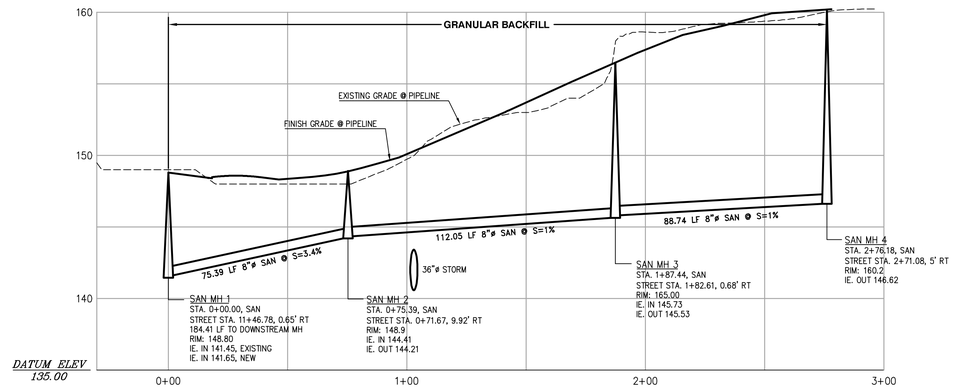
DESIGNED:	BDG			
DRAWN:	BJS			
SCALE:	1" = 30'			
DATE:	August, 2018			
FILE:	Trillium Creek Prelim5	DATE	NO.	REVISION

Theta, llc
ENGINEERING - SURVEYING - PLANNING
PO Box 1345
Lake Oswego, Oregon 97035
503/481-8822
email: thetaeng@comcast.net

Icon Construction and Developement
1380 Willamette Falls Drive, No. 200
West Linn, Oregon 97068

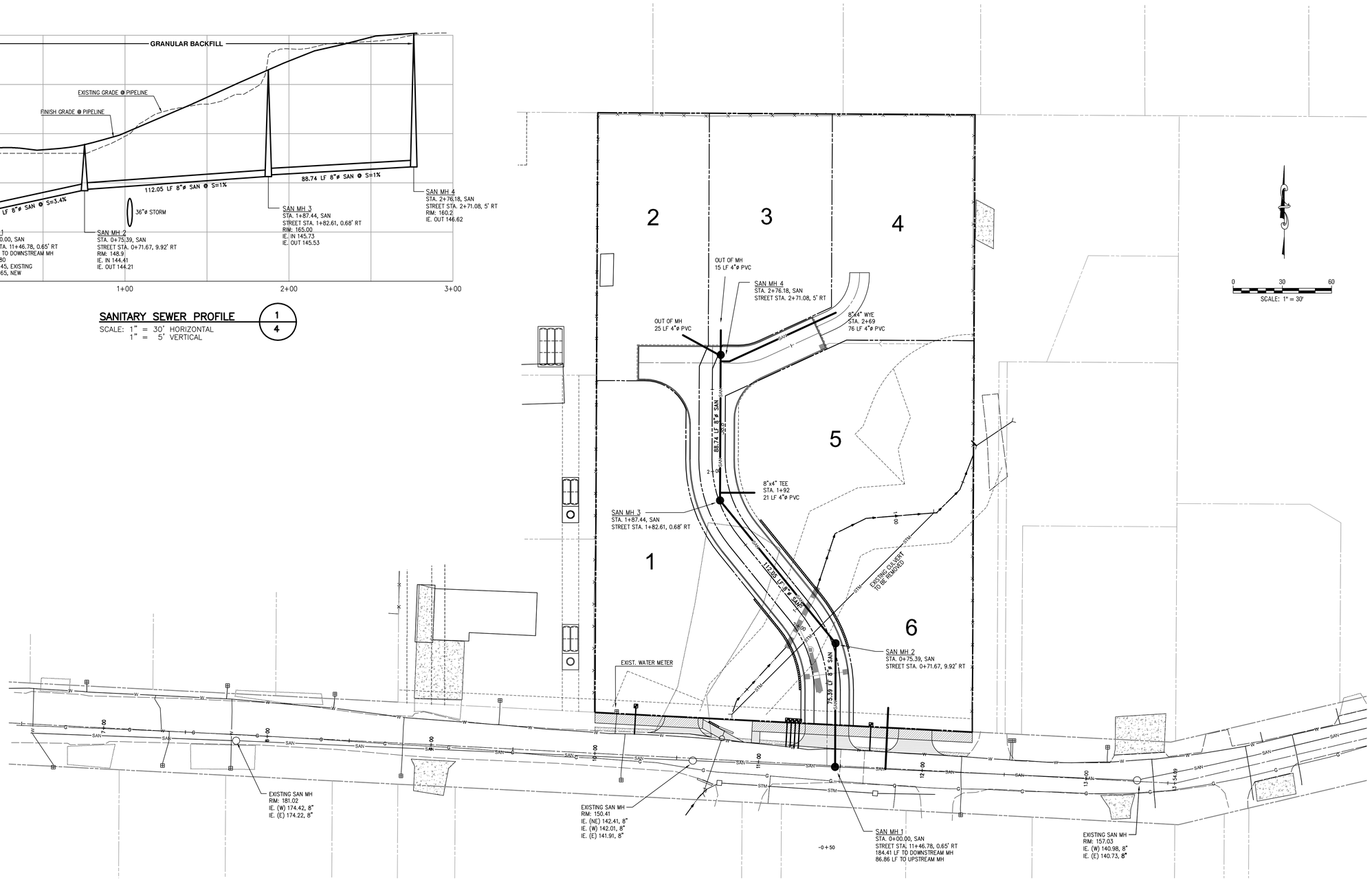
Trillium Creek

SHEET: 2/4



SANITARY SEWER PROFILE (1/4)

SCALE: 1" = 30' HORIZONTAL
1" = 5' VERTICAL



REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 16, 1971
BRUCE D. GOLDSON
7129

EXPIRES: 06/30/2019
SIGNATURE DATE: 11/17/2018

PRELIMINARY SANITARY SEWER AND WATER PLAN

2014-129T

DESIGNED:	BDG			
DRAWN:	BJS			
SCALE:	1" = 30'			
DATE:	August, 2018			
FILE:	Trillium Creek Prelim5	DATE	NO.	REVISION

Theta, llc
ENGINEERING - SURVEYING - PLANNING
PO Box 1345
Lake Oswego, Oregon 97035
503/481-8822
email: thetaeng@comcast.net

Icon Construction and Developement
1380 Willamette Falls Drive, No. 200
West Linn, Oregon 97068

Trillium Creek

SHEET: 3/4

REGISTERED PROFESSIONAL ENGINEER
7128
OREGON
July 16, 1971
BRUCE D. GOLOSON

EXPIRES: 06/30/2019

SIGNATURE DATE: 11/17/2018

2014-129T

PRELIMINARY GRADING PLAN

DESIGNED:	BDG			
DRAWN:	BJS			
SCALE:	1" = 30'			
DATE:	August, 2018			
FILE:	Trillium Creek Prelim5	DATE	NO.	REVISION

Theta,llc
ENGINEERING - SURVEYING - PLANNING
PO Box 1345
Lake Oswego, Oregon 97035
503/481-8822
email: thetaeng@comcast.net

Icon Construction and Developement
1380 Willamette Falls Drive, No. 200
West Linn, Oregon 97068

Trillium Creek

SHEET: 4/4

REGISTERED PROFESSIONAL ENGINEER
7128
OREGON
JULY 16, 1971
BRUCE D. GOLDSON

EXPIRES: 06/30/2019
SIGNATURE DATE: 11/17/2018

2014-129T

TREE REMOVAL PLAN

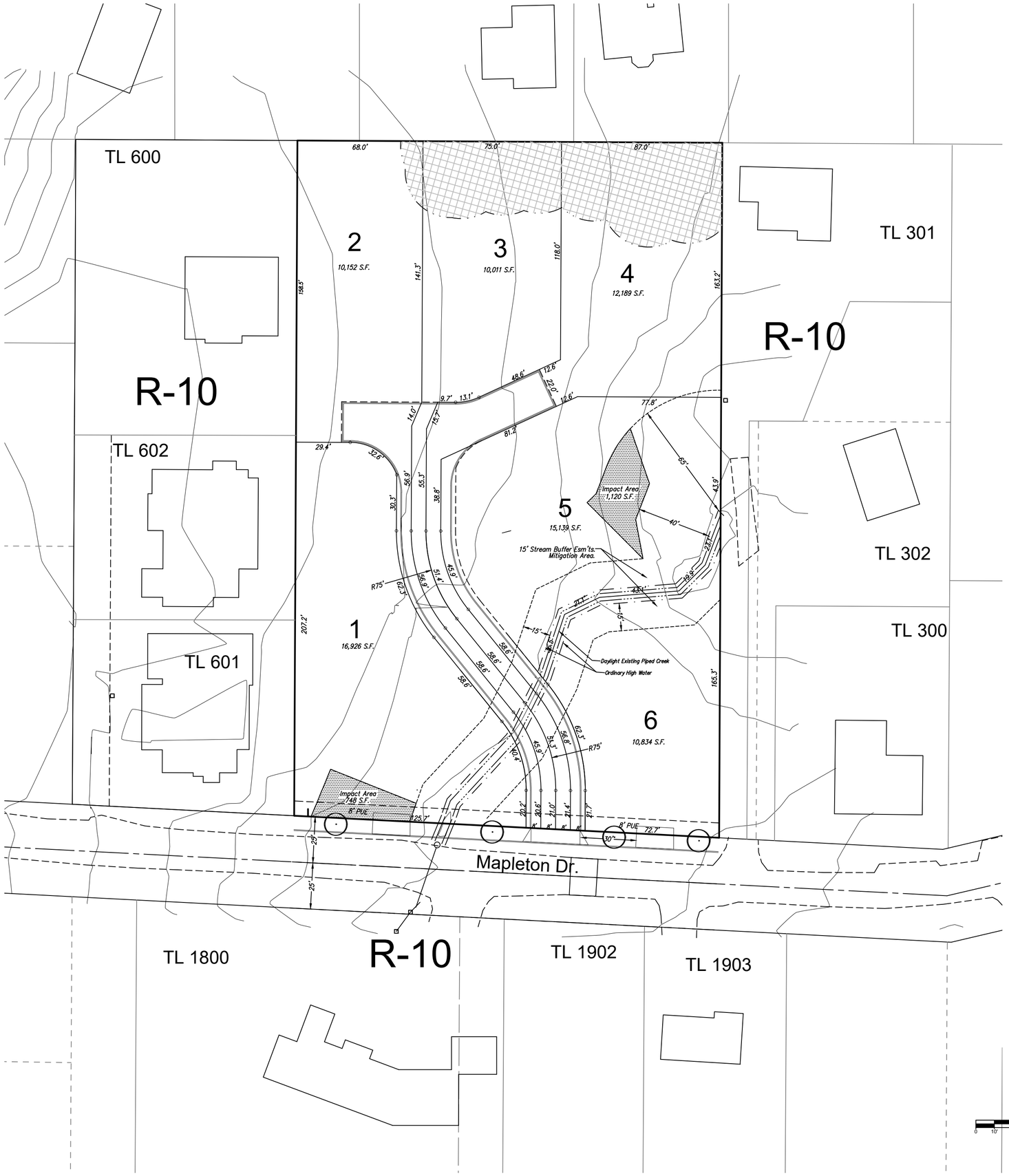
DESIGNED:	BDG			
DRAWN:	BJS			
SCALE:	1" = 30'			
DATE:	August, 2018			
FILE:	Trillium Creek Prelim5	DATE	NO.	REVISION

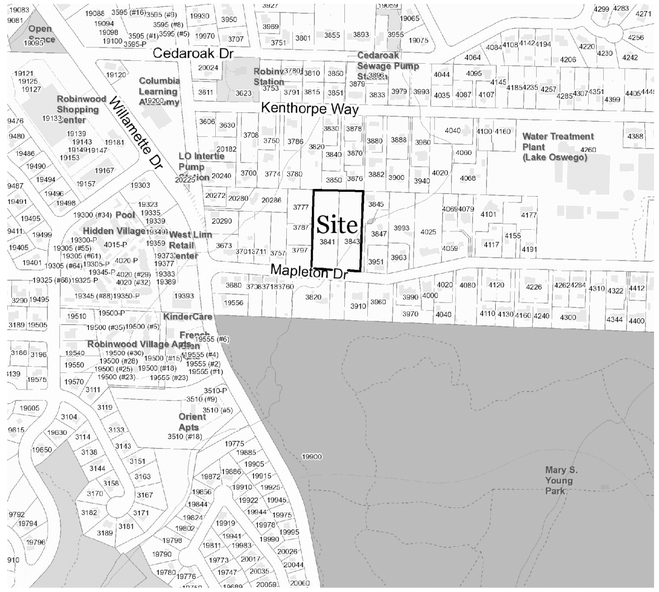
Theta, llc
ENGINEERING - SURVEYING - PLANNING
PO Box 1345
Lake Oswego, Oregon 97035
503/481-8822
email: thetaeng@comcast.net

Icon Construction and Developement
1380 Willamette Falls Drive, No. 200
West Linn, Oregon 97068

Trillium Creek

SHEET: 5/5





Owner:
John William DeCosta Profit Sharing Plan
John William DeCosta, Trustee
16365 Boones Ferry Rd
Lake Oswego, OR 97035
PH: 503-702-0856

Engineer:
Theta Engineering
PO Box 1345
Lake Oswego, OR 97035
PH: (503) 481-8822

Legal: 2S 1E 24BC TL 400 & 500

Zoning: R-10

Water: City of West Linn

Sewer: City of West Linn

Contours: CESNW

Site Area: 85,367 S.F.

Street Tree.
Red Sunset Maple

DENSITY CALCULATIONS:

Gross Site Area: 85,367 square feet.

Type I & II Lands: 1,946 square feet.

Access Easement 10,094 sq. ft.

Net Site Type III & IV Area: 73,327 sq. ft.

Maximum Density @ 1 Unit Per 10,000 sq. ft. = 7 lots.

Minimum Density @ 75%: 5 Units. 6 Lots are proposed.

NORTH

0 10' 20' 30' 40' 80'

Scale: 1" = 40'

REGISTERED PROFESSIONAL ENGINEER
7120
OREGON
July 16, 1971
BRUCE D. GOLDSON

EXPIRES: 06/30/2019

SIGNATURE DATE: 9/8/18

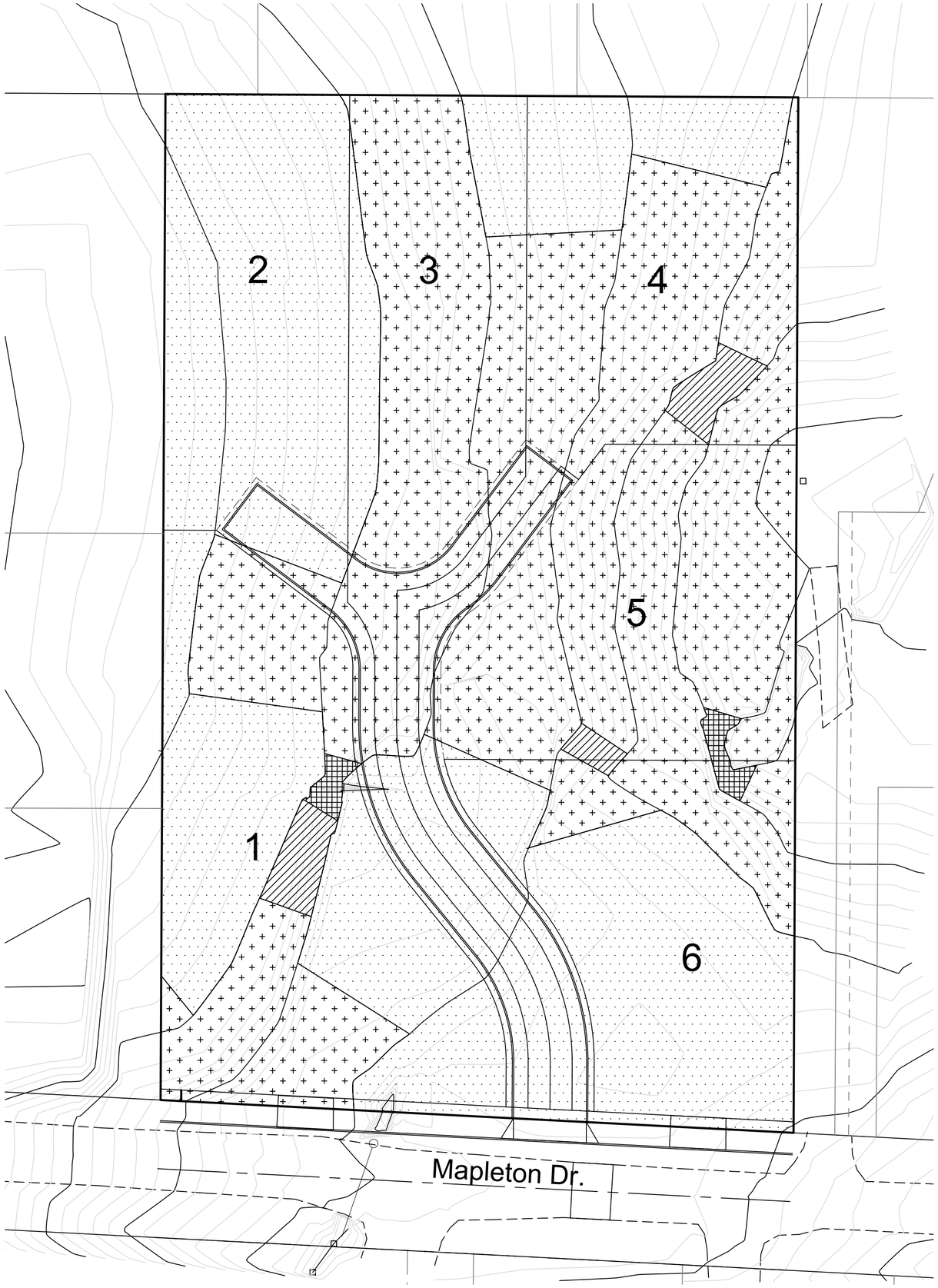
DESIGNED:	REG	10-5-18	1	Revised layout to provide better building envelope on Lot 4.
DRAWN:	REG			
SCALE:	1" = 40'			
DATE:	September 2018			
FILE:	16-ICN-103	DATE	NO.	REVISION

Richard E. Givens, Planning Consultant
18680 Sunblaze Dr.
Oregon City, OR 97045
PH: (503) 479-0097

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

Trillium Creek
Tentative Plan

SHEET: 1/3



NORTH

scale: 1" = 30'

0 15 30 60

Slopes 0-10% (Type IV Land)
40,701 sq. ft. (47.7% of site)
- sq. ft. of this is within street.

Slopes 10-25% (Type III Land)
42,715 sq. ft. (50% of site)
- sq. ft. of this is within street.

Slopes 25-35% (Type II Land)
1,436 sq. ft. (1.7% of site)
0 sq. ft. of this is within street.

Slopes 35% Plus (Type I Land
510 sq. ft. (0.6% of site)
0 sq. ft. of this is within street.

DESIGNED:	REG			
DRAWN:	REG			
SCALE:	1" = 30'			
DATE:	September 2018			
FILE:	16-ICN-103	DATE	NO.	REVISION

Richard E. Givens, Planning Consultant
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Oregon City, OR 97045
PH: (503) 479-0097

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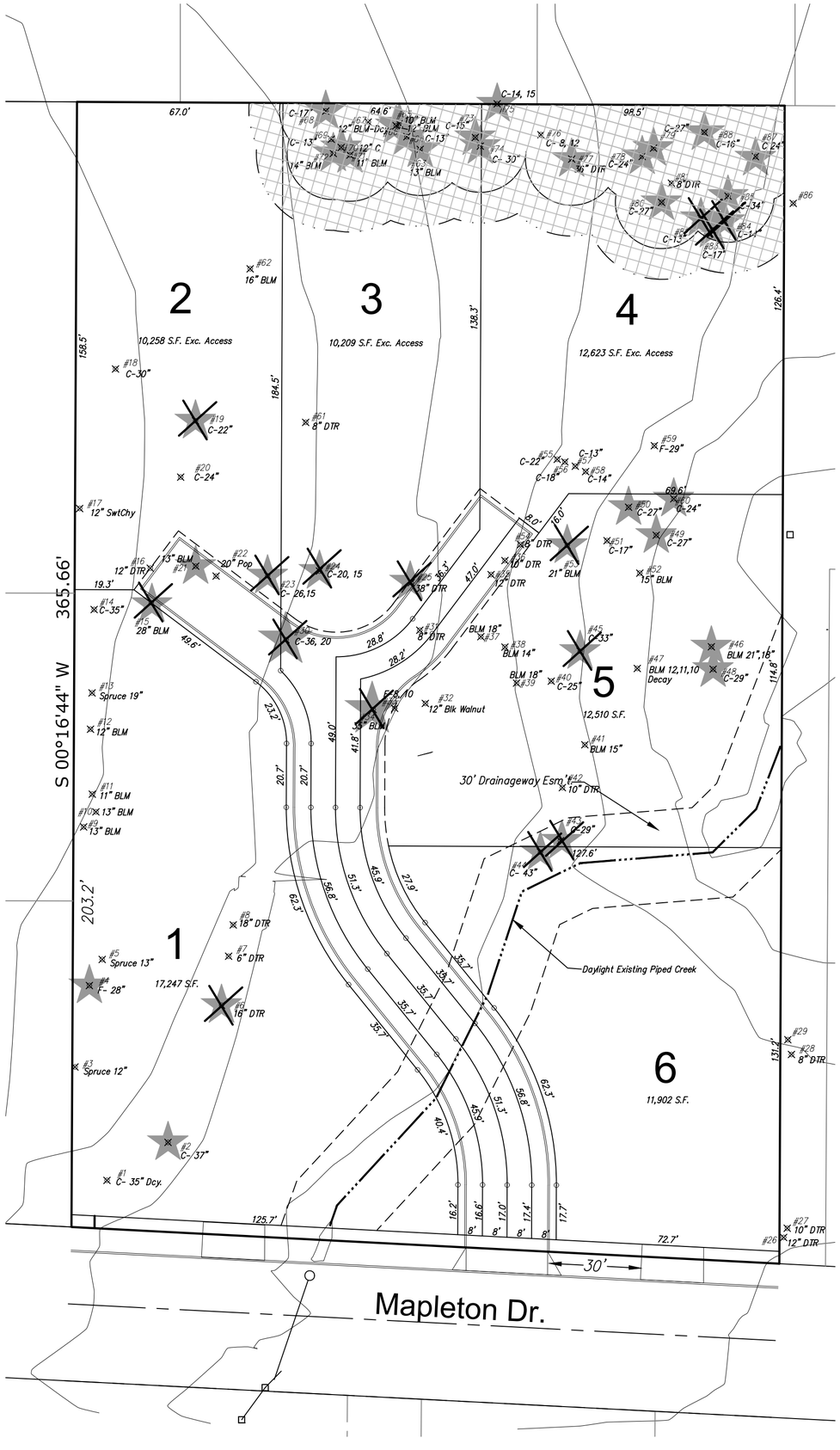
West Linn, OR 97068
PH: (503) 657-0406

Trillium Creek
Slope Analysis

SHEET: 2/3



3843 Mapleton, West Linn — West Linn — Trees are 12-inch diameter. Pac. Dog, madrone, Garry oak are 6-inch diameter.

Tag	Species	Diameter	Rating	Condition
1	western redcedar	35	1	low trunk and base is hollow; nestin activity in trunk; clorotic; Biltmore stick
2	western redcedar	37	2	viable; dead branches; Biltmore stick
3	Sitka spruce	12	2	viable; dead branches
4	Douglas fir	28	2	viable; dead branches
5	Sitka spruce	13	2	viable; dead branches
6	bigleaf maple	22	2	viable; dead branches; Biltmore stick
7	English hawthorn	12	2	nuisance species; Biltmore stick
8	bigleaf maple	24	1	chlorotic; low vigor; wound on trunk; trunk decay; Biltmore stick
9	bigleaf maple	13	1	terminal decline
10	bigleaf maple	13	1	chlorotic; low vigor
11	bigleaf maple	12	1	chlorotic; low vigor
12	bigleaf maple	12	1	chlorotic;low vigor
13	Sitka spruce	19	2	viable; dead branches
14	western redcedar	35	2	viable; ivy
15	bigleaf maple	28	2	viable; ivy
16	sweet cherry	15	2	nuisance species
17	sweet cherry	14	1	nuisance species; terminal decline
18	western redcedar	30	2	viable; 100% live crown ration
19	western redcedar	22	2	viable; 100% live crown ration; Biltmore stick
20	western redcedar	24	2	codominant stems at 4'
21	bigleaf maple	13	1	shedding bark on main stem; ivy; Biltmore stick
22	tulip poplar	20	2	codominant stems at 3; Biltmore stick
23	western redcedar	32	2	mechanical damage to buttress roots
24	western redcedar	32	2	mechanical damage to buttress roots
25	dead	43	2	dead

Field work done on 7/26/2018 and 7/27/2018 by Ryan Neumann-PN-5539A, TRAQ certified — 0/dead or hazard 1/decline 2/average 3/excellent

3843 Mapleton, West Linn — West Linn — Trees are 12-inch diameter. Pac. Dog, madrone, Garry oak are 6-inch diameter.

26	bigleaf maple	19	2	offsite; pruned for high-voltage
27	bigleaf maple	15	2	offsite
28	red alder	8	1	undersize; offsite; decline
29	red alder	8	1	undersize; offsite; decline
30	western redcedar	41	2	mechanical damage to one root flare
31	bigleaf maple	13	2	viable; minor wound on trunk
32	black walnut	12	2	viable
33	grand fir	16	2	viable
34	bigleaf maple	35	2	viable; ivy
35	bigleaf maple	17	1	top of tree is dying
36	bigleaf maple	13	1	cavity; trunk decay; excessive lean
37	bigleaf maple	18	2	viable
38	bigleaf maple	14	2	viable
39	bigleaf maple	18	2	viable
40	western redcedar	25	1	codominant 15" stem broke; tree is compromised
41	bigleaf maple	15	2	viable
42	bigleaf maple	15,13	2	clump; mutiple stems from base
43	western redcedar	29	2	viable; phototropism; leans to south
44	western redcedar	43	2	viable; phototropism; leans to south; grows out of slope; Biltmore stick
45	western redcedar	33	2	viable
46	bigleaf maple	21,18	2	viable; ivy
47	bigleaf maple	12,11,10	1	basal decay
48	western redcedar	29	2	viable
49	western redcedar	27	1	fell over due to soil failure; corrected and still alive; vertical trunk is 16' from base; Biltmore stick
50	western redcedar	27	2	viable; ivy; Biltmore stick
51	western redcedar	17	2	viable; Biltmore stick

Field work done on 7/26/2018 and 7/27/2018 by Ryan Neumann-PN-5539A, TRAQ certified — 0/dead or hazard 1/decline 2/average 3/excellent

3843 Mapleton, West Linn — West Linn — Trees are 12-inch diameter. Pac. Dog, madrone, Garry oak are 6-inch diameter.

52	bigleaf maple	15	1	grew from fallen tree after soil failure; Biltmore stick
53	bigleaf maple	21	2	viable; dead branches; broken cedar hung up in crown; Biltmore stick
54	bigleaf maple	10,10	2	viable; codominant from base; Biltmore stick
55	western redcedar	22	2	viable; hedgerow; Biltmore stick
56	western redcedar	18	2	viable; hedgerow; Biltmore stick
57	western redcedar	13	2	viable; hedgerow; Biltmore stick
58	western redcedar	14	2	viable; hedgerow; Biltmore stick
59	grand fir	29	2	viable
60	western redcedar	24	2	viable
61	black cottonwood	20	2	viable; Biltmore stick
62	bigleaf maple	16	2	viable; Biltmore stick; added
63	bigleaf maple	13	2	viable; Biltmore stick; ivy
64	western redcedar	13	2	viable
65	bigleaf maple	13	2	viable
66	bigleaf maple	12	2	viable
67	bigleaf maple	13	0	advanced trunk decay
68	western redcedar	17	2	viable
69	western redcedar	13	0	dead
70	western redcedar	12	2	viable; added
71	bigleaf maple	11	2	viable; added
72	bigleaf maple	14	2	viable; added
73	western redcedar	15	2	viable; added
74	western redcedar	30	2	viable; Biltmore stick
75	western redcedar	29	2	viable; on property line on neighbor's side of fence; Biltmore stick
76	western redcedar	11	2	undersize
77	bigleaf maple	36	1	ivy infestation

Field work done on 7/26/2018 and 7/27/2018 by Ryan Neumann-PN-5539A, TRAQ certified — 0/dead or hazard 1/decline 2/average 3/excellent

3843 Mapleton, West Linn — West Linn — Trees are 12-inch diameter. Pac. Dog, madrone, Garry oak are 6-inch diameter.

78	western redcedar	24	2	viable
79	western redcedar	27	2	viable
80	western redcedar	27	2	viable
81	bigleaf maple	13	0	advanced stem decay
82	western redcedar	13	2	viable
83	western redcedar	17	2	viable
84	western redcedar	14	2	viable
85	western redcedar	34	2	viable; ivy
86	grand fir	38	2	viable; approximately 3' offsite in neighbor's yard; added
87	western redcedar	24	2	viable; ivy
88	western redcedar	16	2	viable; ivy; added

Species

bigleaf maple- Acer macrophyllum	English hawthorn- Crataegus laevigata
black cottonwood- Populus trichocarpa	grand fir- Abies grandis
black walnut- Juglans nigra	red alder- Alnus rubra
Douglas fir- Pseudotsuga menziesii	Sitka spruce- Picea sitchensis
western redcedar- Thuja plicata	sweet cherry- Prunus avium
	tulip poplar- Liriodendron tulipifera

NORTH

scale: 1" = 30'

0 15 30 60

Significant Trees to be protected.
Drip Line
Drip Line Plus 10'

Significant Trees to be retained where feasible.

Significant Trees to be removed.

DESIGNED:	REG			
DRAWN:	REG			
SCALE:	1" = 30'			
DATE:	September 2018			
FILE:	16-ICN-103	DATE	NO.	REVISION

Richard E. Givens, Planning Consultant
18680 Sunblaze Dr.
Oregon City, OR 97045
PH: (503) 479-0097

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

Trillium Creek
Tree Plan

SHEET: 3/3