**MEMORANDUM**

**DATE:** **December 30, 2008**

**TO:** **Mayor and City Council**

**FROM:** **Ken Gibb, Community Development Director**

**RE:** **Brooklane Heights Public Hearing**

Staff has learned that the applicant has not placed a public notice on the site for the full 20 days prior to the scheduled January 5, 2009 public hearing as required by LDC 2.0.50.04 f.. Notices to surrounding property owners and residents have been mailed consistent with LDC requirements.

To address this procedural issue, Staff, in consultation with the City Attorneys Office, is recommending that the Council proceed in the following manner:

1. Conduct the hearing on January 5 as planned.

2. Continue the hearing until the evening Council meeting on January 20, 2009 and receive oral testimony and/or written at that time.

3. Close the public hearing after receiving any testimony at that time and move ahead using standard procedures.

Review and Concur:

Jon S. Nelson, City Manager

Scott Fewel, City Attorney

# MEMORANDUM

To: Mayor and City Council

From: Ken Gibb, Community Development Director

Copy: Jon Nelson, City Manager
Ellen Volmert, Assistant City Manager

Date: December 24, 2008

Subject: LUBA Remand - Brooklane Heights (PLD06-00018, SUB06-00006)

## ISSUE

The Brooklane Heights Planned Development and Subdivision proposals were approved by the City Council on September 17, 2007 **(Exhibit II)**. On May 30, 2008, the Oregon Land Use Board of Appeals (LUBA) remanded to the City its decision approving the Brooklane Heights Planned Development and Subdivision **(Exhibit VI)**.

On December 1, 2008, City Council decided to hold a public hearing to consider the LUBA remand of the City Council's approval of the Brooklane Heights development, limited to specific issues (assignments and subassignments of error) sustained in the LUBA order dated May 30, 2008.

## BACKGROUND AND RECENT APPLICATION HISTORY

The applicant is seeking approval of a Conceptual and Detailed Development Plan and a Tentative Subdivision Plat that would allow the phased creation of 45 lots and 4 common tracts, and the construction of streets and public facilities within the subject site. The 25.88 acre site is located northwest of Brooklane Drive and northeast of Agate Avenue, east of Fairmont Drive, and south of Whiteside Drive. The site consists of one parcel which is identified on Benton County Assessor's Map 12-5-01 C as Tax Lot 1000 **(Exhibits I and III)**.

The subject site is vacant and has not been developed, except for a short gravel road near the south side of the site that connects to Brooklane Drive. The site is surrounded by land designated by the Comprehensive Plan as Low Density Residential. All abutting properties are zoned RS-3.5 Low Density Residential, except for an undeveloped parcel east of Brooklane Drive and near the northeast portion of the site that is zoned RS-6 Low Density Residential **(Exhibit I)**.

Adjacent lots to the west of the site are generally a quarter of an acre to a third of an acre in size. Lots to the north are larger, ranging from approximately 1.25 acres to over 2.5 acres. The lots southeast of the site were developed as part of the 1994 Brooklane Park

Estates Conceptual and Detailed Development Plan approval. The adjacent developed lots in Brooklane Park Estates are approximately 0.6 acres each. The area northeast of the subject site is currently referred to as the Oakmont Addition site. This 10.72 acre site was recently logged, and is currently vacant. In 2007, the owner of this property received approval of a Tentative Subdivision Plat for a 24 lot subdivision on the site. The Oakmont Addition site was zoned RS-3.5 Low Density Residential at the time the application was submitted, which was prior to the implementation of the 2006 LDC. The RS-3.5 zone was changed to RS-5 Low Density Residential on December 31, 2006, when the 2006 LDC took effect. Similarly, the subject site, which was zoned PD(RS-3.5) at the time of application, was rezoned to PD(RS-5) with the implementation of the 2006 LDC. Unless otherwise specified through approval of the application, all development on the subject site will be required to comply with standards in the 2006 LDC.

The subject site is characterized by hill slopes that range from 10% to greater than 35%. The site is covered by wooded areas that contain nearly 450 white oaks that meet the LDC Significant Tree definition. The white oaks account for 98% of the significant trees on the site. Most trees on the site are located in areas that the applicant has identified as Tracts A, B, C and D. These tracts account for nearly 11 acres of the 25.88 acre site. Tract A is in the southwest corner of the site, Tract B runs along the south boundary, just north of Brooklane Park Estates, and Tract C contains an area in the center of the site that runs northeast towards the nearby cemetery. Tract D is the smallest tract located in the northeast corner of the site and is proposed to be developed with a street stub connecting to the adjacent Oakmont Addition site. The northwest portion of the site is a primarily open, grass covered area with occasional significant trees, as well as open areas with grasses and low lying vegetation **(Exhibit III)**.

2007

On June, 22, 2007, the Planning Commission denied the subject application, via Order 2007-075.

On July 5, 2007, the applicant's appealed the Planning Commission decision, and submitted an addendum to the appeal letter on July 16, 2007 **(Exhibit IV)**.

On September 17, 2007, the City Council approved the application, with Conditions, and adopted Formal Findings **(Exhibit II)**.

On October 9, 2007, the City received notice of petitioners intent to appeal the City Council decision to the Oregon Land Use Board of Appeals (LUBA).

2008

On May 30, 2008, LUBA issued its Final Order and Opinion, remanding the City Council's decision **(Exhibit VI)**.

## ISSUES ON REMAND

The appeal of this case to LUBA cited seven assignments of error **(Exhibit VII)**. The fifth assignment of error contained four "subassignments," and the sixth contained two. LUBA determined that the City had not made adequate findings in support of the proposal with respect to two of the assignments of error raised by appellants and portions of two others. In its request for the City Council to respond to the remand, the applicant has provided new information that it believes responds to the remanded topics. In summary, the remanded topics include:

- Fourth Assignment of Error– findings were inadequate for determining if the code and compatibility requirements are met without "typical building elevations" having been submitted.

- Fifth Assignment of Error (Subassignment B)– findings were inadequate for determining if the provisions of Comprehensive Plan policy 4.6.7 are met, based on the imposition of Condition 27, which requires individual lots to be developed consistent with the hillside development provisions of Chapter 4.5 and the pedestrian-oriented design standards in Chapter 4.10 from the 2006 LDC.

- Sixth Assignment of Error (Subassignment B)– findings were inadequate for determining if the drainage plan adequately addresses Comprehensive Plan policy 4.11.12.

- Seventh Assignment of Error– findings were inadequate for determining if protections of environmentally significant resources are consistent with Comprehensive Plan policies.

The remainder of this report will address each of the assignments of error, and will conclude with a summary of findings and recommendation to City Council.

### Fourth Assignment of Error

In their fourth assignment of error petitioners argue that the City's findings regarding visual and neighborhood compatibility were inadequate because the City did not require the applicant to submit typical building elevations. Rather, as a condition of approval, the applicant was required to comply with building design standards in the 2006 LDC, Chapter 4.10 - Pedestrian Oriented Design Standards **(Exhibits II and VII)**. LUBA sustained the fourth assignment of error stating

> "...the city's reliance on the applicant's agreement to comply in the future with inapplicable 2006 LDC design standards is insufficient to show that the development currently meets the applicable code and Comprehensive Plan requirements regarding compatibility with neighborhood characteristics....On remand, the city must either require submission of the typical building elevations, or in their absence identify a sufficient evidentiary basis to conclude that the development complies with applicable criteria."

***Applicable Standards and Review Criteria***

The LUBA Final Opinion and Order references 1993 LDC Chapter 2.5 - Planned Development, Sections 2.5.40.04 and 2.5.50.01.a.3, and Comprehensive Plan policies 4.6.7(G), 9.2.1, and 9.2.5 **(Exhibit VI)**. Also relevant are certain development standards in 2006 LDC Chapter - (RS-5) Low Density Zone. These standards and criteria are addressed below with respect to the fourth assignment of error.

**Section 2.5.50 - DETAILED DEVELOPMENT PLAN REVIEW PROCEDURES**

**2.5.50.01 - Application Requirements**

**An application filed for a Detailed Development Plan shall follow the requirements specified for a Conceptual Development Plan in Section 2.5.40 above and include the following:**

**a. Graphic Requirements**

**In addition to the graphic requirements specified for a Conceptual Development Plan in 2.5.40.01, a Detailed Development Plan shall include:**

**3. Typical elevations of buildings and structures (which may be submitted on additional sheets) sufficient to indicate the architectural intent and character of the proposed development;**

**Section 2.5.40 - CONCEPTUAL DEVELOPMENT PLAN REVIEW PROCEDURES**

**An application filed for a Conceptual Development Plan shall be reviewed in accordance with the following procedures.**

**The Director may waive any of the above requirements when determined the information required by this section is unnecessary to properly evaluate the proposed Planned Development. The Director may also require additional information to evaluate the proposal.**

Land Development Code Section 2.5.50.01.a.3 states that typical building elevation drawings shall be included in Detailed Development Plan applications. The applicant proposed to build custom homes on 42 individual lots (45 lots were proposed by the appellant on appeal and approved by Council). Because the applicant did not know how homes would be designed, typical building elevations were not submitted. Typical building elevations were not required for two reasons. One is that LDC 2.5.40 states that the Director may waive any application requirement when it is unnecessary to evaluate the proposed Planned Development. A second reason is that prior to the Planning Commission decision on the application, the 2006 LDC took effect. As a result, any homes proposed to be constructed on the subject site would be required to comply with 2006 LDC development standards unless other standards, e.g. building designs, were approved. The 2006 LDC contains clear and objective standards for the design of houses. Of particular relevance are the standards in 2006 LDC Chapter 3.2 - Low Density Zone (RS-5), which require compliance with LDC Chapter 4.10 - Pedestrian Oriented Design Standards **(Exhibit IX)**.

2006 LDC Chapter 3.2 contains clear and objective standards governing the development aspects such as building height, setbacks, and lot coverage. 2006 LDC Chapter 4.10 contains standards that, among other purposes, are to provide diversity and architectural variety in residential areas. In the absence of typical building elevations, which would

become standards *de jure* if approved, development on the site would be governed by rules in place at the time of building permits. Those rules, or development standards, are in the 2006 LDC. In part to foster visual and neighborhood compatibility, the City Council applied LDC Chapter 4.10 standards as conditions of approval **(Condition 27)**. While this may not have been absolutely necessary, it set clear parameters for building design that the Council believed resulted in visual and neighborhood compatibility. Section 3.2.70 of the 2006 LDC requires compliance with these standards, unless modified through a Lot Development Option, or Planned Development process. To ensure that any proposed variation from these standards is considered through a public hearing, Staff recommend modifying Condition 27 to remove the option of varying standards through the Lot Development Option and Minor Modification processes, both of which require administrative review, only.

Staff also recommend revising Condition 27 to require new home construction to comply with the Development Standards in 2006 LDC Section 3.2.30, and Green Area Requirements in LDC Section 3.2.40, but not Section 3.2.50 - Mix of Housing Types. At the time of application the site was zoned RS-3.5 and only detached, single-family homes were permitted. The proposed tentative subdivision plat was designed to accommodate this building type, and to be consistent with CCP 9.5.13, provided below.

**9.5.13 New subdivisions and planned developments of more than 5 acres in low density districts shall incorporate two or more of the following elements in at least 10% of the total acreage:**

**A. Zero lot line or attached dwellings (where allowed);**

**B. Minimum allowed lot area; or**

**C. Dwelling size less than 1,200 square feet.**

To conform with 9.5.13, the applicant proposed 11 lots slightly less than the minimum 8,000 sq. ft. required by the 1993 RS-3.5 standards, and Condition 22 restricted dwelling unit size to 1,200 sq. ft. or less for the same eleven lots. To permit other than residential uses, or to permit or require the mix of housing types permitted in 2006 LDC Chapter 3.2, would be inconsistent with the applicant's proposal and the City Council's previous decision.

LUBA did not find fault with applying 2006 LDC development standards as conditions of approval, but did find that the City erred in not making sufficient findings that the 2006 LDC standards would result in compliance with LDC criteria and Comprehensive Plan policies effective at the time of application regarding visual and neighborhood compatibility. The specific applicable code and Comprehensive Plan policies referenced by petitioners and LUBA were 1993 LDC 2.5.50.01.a.3, and Comprehensive Plan policies 4.6.7(G), 9.2.1, and 9.2.5.

**2.5.40.04 - Review Criteria**

**Requests for approval of a Conceptual Development Plan shall be reviewed to assure consistency with the purposes of this chapter, policies and density requirements of the**

Comprehensive Plan, and any other applicable policies and standards adopted by the City Council. In addition, the following compatibility factors shall be considered:

- Basic site design (the organization of uses on a site);
- Visual elements (scale, structural design and form, materials, and so forth);
- Noise attenuation;
- Noxious odors;
- Lighting;
- Signage;
- Landscaping for buffering and screening;
- Traffic;
- Effects on off-site parking;
- Effects on air and water quality.

3.2.2 Within a land use district, primary uses and accessory uses permitted outright shall be considered compatible with each other when conforming to all standards of the district.

4.6.7 In areas where development is permitted, standards in the Land Development Code for hillside areas will achieve the following:

G. Demonstrate a concern for the view of the hills as well as the view from the hills.

9.2.1 City land use decisions shall protect and maintain neighborhood characteristics (as defined in 9.2.5) in existing residential areas.

9.2.5 Development shall reflect neighborhood characteristics appropriate to the site and area. New and existing residential, commercial, and employment areas may not have all of these neighborhood characteristics, but these characteristics shall be used to plan the development, redevelopment, or infill that may occur in these areas. These neighborhood characteristics are as follows:

A. Comprehensive neighborhoods have a neighborhood center to provide services within walking distance of homes. Locations of comprehensive neighborhood centers are determined by proximity to major streets, transit corridors, and higher density housing. Comprehensive neighborhoods use topography, open space, or major streets to form their edges.

B. Comprehensive neighborhoods support effective transit and neighborhood services and have a wide range of densities. Higher densities generally are located close to the focus of essential services and transit.

C. Comprehensive neighborhoods have a variety of types and sizes of public parks and open spaces to give structure and form to the neighborhood and compensate for smaller lot sizes and increased densities.

D. Neighborhood development provides for compatible building transitions in terms of scale, mass, and orientation.

E. Neighborhoods have a mix of densities, lot sizes, and housing types.

F. Neighborhoods have an interconnecting street network with small blocks to help disperse traffic and provide convenient and direct routes for pedestrians and cyclists. In neighborhoods where full street connections cannot be made, access and connectivity are provided with pedestrian and bicycle ways. These pedestrian and bicycle ways have the same considerations as public

**streets, including building orientation, security-enhancing design, enclosure, and street trees.**

**G. Neighborhoods have a layout that makes it easy for people to understand where they are and how to get to where they want to go. Public, civic, and cultural buildings are prominently sited. The street pattern is roughly rectilinear. The use and enhancement of views and natural features reinforces the neighborhood connection to the immediate and larger landscape.**

**H. Neighborhoods have buildings (residential, commercial, and institutional) that are close to the street, with their main entrances oriented to the public areas.**

**I. Neighborhoods have public areas that are designed to encourage the attention and presence of people at all hours of the day and night. Security is enhanced with a mix of uses and building openings and windows that overlook public areas.**

**J. Neighborhoods have automobile parking and storage that does not adversely affect the pedestrian environment. Domestic garages are behind houses or otherwise minimized (e.g., by setting them back from the front facade of the residential structure.) Parking lots and structures are located at the rear or side of buildings. On-street parking may be an appropriate location for a portion of commercial, institutional, and domestic capacity. Curb cuts for driveways are limited, and alleys are encouraged.**

**K. Neighborhoods incorporate a narrow street standard for internal streets which slows and diffuses traffic.**

**L. Neighborhood building and street proportions relate to one another in a way that provides a sense of enclosure.**

**M. Neighborhoods have street trees in planting strips in the public right-of-way.**

**9.5.13 New subdivisions and planned developments of more than 5 acres in low density districts shall incorporate two or more of the following elements in at least 10% of the total acreage:**

**A. Zero lot line or attached dwellings (where allowed);**

**B. Minimum allowed lot area; or**

**C. Dwelling size less than 1,200 square feet.**

***Consistency with CCP 9.2.1 and 9.2.5***

Land Development Code (LDC) 2.5.40.04 lists several compatibility criteria. Of those, Basic Site Design (the organization of uses on the site) and Visual Elements (scale, structural design and form, materials, and so forth) are applicable to the fourth assignment of error. One way to determine if a proposed development is compatible with respect to basic site design and visual elements is to evaluate it for consistency with Corvallis Comprehensive Plan policies 9.2.1 and 9.2.5.

Policy 9.2.1 states, "City land use decisions shall protect and maintain neighborhood characteristics (as defined in 9.2.5) in existing residential areas." Adjacent neighborhoods are developed on the hillsides abutting the north and west sides of the subject site, as well

as below it. Areas to the north and west are zoned RS-3.5 Low Density Residential, and the homes south of the site are zoned RS-3.5 Low Density Residential with a Planned Development Overlay. The applicant's response to City Council regarding the LUBA remand notes that neighborhoods surrounding the subject site consist of low-density residential development on lots ranging in size from approximately 10,000 sq. ft. to larger than one acre. Surrounding homes have a wide variety of building designs, and range from one-story ranch style homes to two-story homes, some with daylight basements.

The majority of proposed lots range in size between 10,000 and 12,000 sq. ft. Like homes in adjacent neighborhoods, houses on the subject site would be custom built, resulting in a variety of building designs. To be consistent with CCP 9.5.13, lots 19 -29 are slightly less than the minimum required lot size, and per Condition 22, homes on these lots may be no larger than 1,200 sq. ft **(Exhibits II and III)**. The proposed lot sizes, and expected variety in single-detached housing designs, would result in a mix of lot sizes and development similar to existing neighborhoods. Therefore, the proposal would protect and maintain the characteristics of the existing neighborhoods, consistent with CCP 9.2.1.

Policy 9.2.5 describes characteristics of comprehensive neighborhoods. CCP 9.2.5 does not require new neighborhoods to include all characteristics of a comprehensive neighborhood, but the characteristics should be used to guide development. Each set of characteristics identified in CCP 9.2.5 will be discussed below with respect to the subject proposal.

A. **Comprehensive neighborhoods have a neighborhood center to provide services within walking distance of homes. Locations of comprehensive neighborhood centers are determined by proximity to major streets, transit corridors, and higher density housing. Comprehensive neighborhoods use topography, open space, or major streets to form their edges.**

B. **Comprehensive neighborhoods support effective transit and neighborhood services and have a wide range of densities. Higher densities generally are located close to the focus of essential services and transit.**

C. **Comprehensive neighborhoods have a variety of types and sizes of public parks and open spaces to give structure and form to the neighborhood and compensate for smaller lot sizes and increased densities.**

E. **Neighborhoods have a mix of densities, lot sizes, and housing types.**

Neighborhood Center zones have been established throughout the City based on such factors as proximity to major streets, transit corridors, and high density housing. When the application was submitted, the site was zoned Low Density Residential (RS-3.5). The primary intent of this zone is to permit low density family residential areas, comprised of single-detached homes. Consequently, many of the elements of a comprehensive neighborhood contemplated in CCP 9.2.5.A - C cannot be incorporated into the subject site. Such elements include a mix of housing types, high density residential construction, and commercial use types. The site has not been identified in the Parks and Recreation Facilities Plan as a required location for a public park, none have been proposed or are

required. Additionally, the City Council has found that the site is not a suitable location for a park **(Exhibit II.25, Finding III.A.4)**.

However, the proposed open-space tracts throughout the site, and the Marys River Natural Area south of the site are private and public open spaces that will give structure and define edges of the neighborhood, consistent with "A" and "B", above. Also consistent with "A" and "B", above, transit service is provided at the intersection of SW 35th Street and Country Club Drive, and Condition 15 requires the applicant to provide a bus-shelter easement, and flat-graded pad for a bus shelter adjacent to the Brooklane Drive right-of-way.

While the subject site is not permitted by the underlying zone to have a mix of densities or housing types, variety will be achieved through custom built homes, and the mix of lot and house sizes required by Condition 22. As such the proposal is consistent with CCP 9.2.5.E.

F. **Neighborhoods have an interconnecting street network with small blocks to help disperse traffic and provide convenient and direct routes for pedestrians and cyclists. In neighborhoods where full street connections cannot be made, access and connectivity are provided with pedestrian and bicycle ways. These pedestrian and bicycle ways have the same considerations as public streets, including building orientation, security-enhancing design, enclosure, and street trees.**

G. **Neighborhoods have a layout that makes it easy for people to understand where they are and how to get to where they want to go. Public, civic, and cultural buildings are prominently sited. The street pattern is roughly rectilinear. The use and enhancement of views and natural features reinforces the neighborhood connection to the immediate and larger landscape.**

M. **Neighborhoods have street trees in planting strips in the public right-of-way.**

K. **Neighborhoods incorporate a narrow street standard for internal streets which slows and diffuses traffic.**

As proposed, the subject site would be developed with local streets connecting to SW Brooklane Drive on the west and east sides of the subject site. The street pattern is roughly rectilinear but has been designed to fit the topography of the site and avoid tree groves. All proposed streets are classified as "local" and would be 28 feet wide, except in three areas where the street width is reduced to 20-feet to avoid trees or to respond to the topography of the site. The street contains only two turns, which are into cul-de-sacs, creating an understandable layout. All new streets are proposed to include 5 foot wide sidewalks and planter areas for street trees in the public right-of-way. Given the simple street network that connects to existing abutting streets and development sites, provision of sidewalks and street trees, and avoidance of groves of Significant Trees, the proposal is consistent with CCP 9.2.5. F, G, M and K.

D. **Neighborhood development provides for compatible building transitions in terms of scale, mass, and orientation.**

H. **Neighborhoods have buildings (residential, commercial, and institutional) that are close to the street, with their main entrances oriented to the public areas.**

I. **Neighborhoods have public areas that are designed to encourage the attention and presence of people at all hours of the day and night. Security is enhanced with a mix of uses and building openings and windows that overlook public areas.**

J. **Neighborhoods have automobile parking and storage that does not adversely affect the pedestrian environment. Domestic garages are behind houses or otherwise minimized (e.g., by setting them back from the front facade of the residential structure.) Parking lots and structures are located at the rear or side of buildings. On-street parking may be an appropriate location for a portion of commercial, institutional, and domestic capacity. Curb cuts for driveways are limited, and alleys are encouraged.**

L. **Neighborhood building and street proportions relate to one another in a way that provides a sense of enclosure.**

Condition 27 of Order 2007-111 requires all development on the subject site to comply with applicable standards in 2006 LDC Chapter 4.10 - Pedestrian Oriented Design Standards (PODS) **(Exhibits II and IX)**. As discussed below, these standards implement the goals of CCP 9.2.5 and CCP 9.2.1.

Comprehensive Plan policy 9.2.5.h encourages buildings to be close to the street, with main entrances oriented to public areas. Corvallis Comprehensive Plan 9.2.5.i encourages neighborhoods to have public areas designed to encourage the attention and presence of people at all hours and to enhance security by placing building openings and windows to overlook public areas. These policies are achieved by 2006 LDC Sections 4.10.50.01.a and "c". Section 4.10.50.01.a requires all dwellings to be oriented toward existing or proposed public or private streets. To satisfy this LDC standard, primary building entrances must face streets or be directly accessed by a sidewalk or multi-use path less than 100 ft long; and primary dwelling entrances must open directly to the outside and without passage through a garage or carport. Section 4.10.50.01.c implements CCP 9.2.5.h and "l" by requiring any facade facing streets or sidewalks to contain a minimum area of 15% windows and/or doors **(Exhibit IX)**.

Comprehensive Plan policy 9.2.5.j encourages domestic garages to be located behind houses or to be set-back from the front facade so that automobile parking and storage does not adversely affect the pedestrian environment. This policy is achieved by LDC Section 4.10.50.02 which provides measurable maximum widths for street facing garages/carports, sets clear standards for the placement and orientation of garages/carports, and requires garage/carports to be constructed of materials to match the primary structure.

Policy 9.2.5 does not specifically address the design of individual homes. It only requires development to reflect neighborhood characteristics appropriate to the site and area. As discussed above, the proposed lot and house sizes would be similar to surrounding neighborhoods. Land Development Section 4.10.50.03 provides a menu of pedestrian features and design elements that must be included in new construction. Pedestrian features include elevating the finished floor above grade near sidewalks, incorporating a front porch, and installing a sidewalk to the front door. New homes would be required to include at least one of these features. These features, in concert with other LDC - 4.10 standards, lead to an enhanced pedestrian environment, and buildings that relate to

streets, provide a sense of enclosure (raised elevations, front porches near streets), and provide for compatible transitions in terms of scale, mass, and orientation, consistent with CCP 9.2.5 in general, and CCP 9.2.5.D, and "I" in specific.

The building design variety menu in LDC Section 4.10.50.03 requires roof forms to have at least a 4:12 pitch, and buildings must incorporate three of seven design features. Design features include an increased roof pitch, eaves with an 18-inch overhang, use of multiple exterior building materials, trim at least 2.25 inches wide, increased window coverage, incorporation of at least one architectural feature, and consistent use of architectural details. Incorporation of three of these required design features will ensure visually interesting buildings appropriate to the site and surrounding residential neighborhoods.

As explained above, PODS standards in the 2006 Land Development Code implement CCP 9.2.1 and 9.2.5. Therefore, development to LDC 4.10 standards will be consistent with CCPs 9.2.1 and 9.2.5, and compatible with surrounding uses in terms of visual elements and neighborhood characteristics. Development consistent with CCP 9.2.1 and 9.2.5 will also be consistent with the Basic Site Design and Visual Elements criteria in 1993 LDC 2.5.40.04. Consequently, application of the 2006 LDC Pedestrian Oriented Design Standards will result in development consistent with CCP 9.2.1 and 9.2.5, making it unnecessary for the applicant to submit typical building elevations to demonstrate that development will be compatible with surrounding uses. Similarly, CCP 3.2.2 states that when in compliance with development standards of the district, primary and accessory uses are considered compatible.

The standards in LDC Chapter 4.10 are also clear, objective, and in some instances measurable. There would be no Staff discretion required to determine if a proposed building complied with these standards, and no future review proceeding would be required. Further, Staff recommend that Condition 27 be revised such that any variation requested from Pedestrian Oriented Design Standards be considered through a public hearing process. Revising Condition 27 in this way would disallow a variance through the Lot Development Option process as provided in LDC Section 4.10.30.b, and would eliminate the need for any discretion to find consistency with LDC Section 4.10.60.01.d - Grading (Cuts and Fills). In the case of LDC Section 4.10.60.01.d, this standard must be eliminated because it requires "consistency" with other LDC chapters. To determine consistency with other chapters would require staff level analysis and/or discretion.

***Consistency with CCP 4.6.7.G***

Petitioners also assert in the fourth assignment of error that CCP 4.6.7.G requires development to demonstrate a "concern for the view of the hills as well as the view from the hills." The first sentence in CCP 4.6.7 reads, *"in areas where development is permitted, standards in the Land Development Code for hillside areas will achieve the following:"* The plain language of CCP 4.6.7 is that it is not a development standard, but an aspirational policy that directs future iterations of the LDC to achieve certain goals. The 2006 LDC implements CCP 4.6.7, as evident by the similarities between the purposes of the LDC 2006, Section 4.5.80.01 Hillside Development standards and CCP 4.6.7. This is fully addressed on the fifth assignment of error. With this understanding, the Council approved the applicant's proposed grading plan, which called for some of the site to be

mass graded, and other areas to have lots individually graded. The Council also required all lots to be developed in accordance with 2006 LDC Chapter 4.5 - Natural Hazard and Hillside Development Standards as part of Condition of Approval 27 (Order 2007-111). In applying Condition 27, the Council ensured the proposal was consistent with CCP 4.6.7. Staff believe that this finding is strengthened based on proposed revisions to Condition 27, which specify applicable standards that apply to non-mass graded areas.

Even without Condition 27, the proposal has demonstrated conformance with 4.6.7.g. The most distinct features of the hill when viewed from below are the oak groves and large canopy trees. The applicant proposes to leave most of the trees in open space tracts, and development would occur in existing open areas. There is no doubt that the views of the hill will change if 45 new homes are constructed on it. However, the visual impact of these homes will be mitigated by the retention of the tree groves, installation of approximately 170 street trees, and other private landscaping. The nearest house on lots above the subject site is approximately 200 feet away, and approximately 30 feet higher in elevation. Therefore, the development is not expected to negatively impact views from the hills for neighbors to the north of the site. Proposed lots would abut existing developed lots to the west. Construction of homes on the proposed lots would affect views to the east and southeast from the back yards of these abutting residences.

However, because the area abutting the lots to the west is open and contains relatively few trees, it is a more appropriate location for development compared to areas on the lower slopes of the hill that contain a large tree grove. Considering the fact that the site has been zoned for low density residential development, when balancing the desire to "demonstrate a concern" for views from the hill and the desire to protect significant natural features, tree covered hillsides, and tree groves, Staff believe that tree protection is the greater priority.

For the reasons given above, the proposal is consistent with CCPS 4.6.7.g.

***Conclusion - Fourth Assignment of Error***

In the fourth assignment of error, petitioners argue that because typical building elevations were not submitted/required, it was not possible to demonstrate that the proposed development would be compatible with visual elements and neighborhood characteristics of surrounding neighborhoods based on CCPS 9.2.1, 9.2.5 and 4.6.7.g. Petitioners also argued that compliance with standards applied as conditions of approval would require a future review proceeding. On remand, LUBA stated that the "city must either require submission of the typical building elevations, or in their absence identify a sufficient evidentiary basis to conclude that the development complies with applicable criteria."

The City Council did not require submission of typical building elevations, but through Condition of Approval 27, required new development to comply with standards in LDC Chapter 4.10 - Pedestrian Oriented Design Standards, and LDC Chapter 4.5 - Natural Hazard and Hillside Development Standards. As discussed above, the proposal is either consistent with CCP 9.2.1 and 9.2.5, or would be through compliance with applicable standards in LDC Chapter 4.10. Development that conforms to LDC 4.10 standards and

is consistent with CCPS 9.2.1 and 9.2.5, will also result in compatibility with the basic site design and visual elements of surrounding neighborhoods, consistent with LDC 2.5.40.04.

Policy 4.6.7.g directs the LDC to provide standards that address visual impacts of development on hillsides. CCP 4.6.7 is not a review criterion and development is not required to comply with it. However, Condition 27, as revised, requires areas not proposed to be mass graded to comply with 2006 LDC Chapter 4.5.80 standards regarding hillside development **(Exhibit IX)**. These standards limit cuts and fills to eight feet, resulting in site development that is visually compatible with surrounding neighborhoods. Further, the location of the development and the preservation of most significant trees mitigates impacts to views of the hillside, and compensates for negative effects to views from the hillside.

Given the above, the development standards applied through Condition 27 will result in development that complies with the criteria applicable at the time of application without the need for typical building elevations. Because the standards instituted through Condition 27 are clear and objective, and because discretion is not required to apply these standards, future review by a public hearing body is not required.

**Fifth Assignment of Error**

In the decision to approve the subject application, the City Council applied Condition of Approval 27 which requires, in part, lots to be developed in accordance with LDC Chapter 4.5 - Natural Hazard and Hillside Development Provisions. Council findings, particularly Findings III.A.14, clarify that Condition 27 permits mass grading to occur as proposed, and all lots not mass graded would be subject to 2006 LDC Chapter 4.5 standards **(Exhibit II)**.

In general, petitioners argue that the City did not make adequate findings that the proposed development satisfied applicable hillside development criteria. LUBA sustained sub-assignment of error "b" and in part, sub-assignment of error "d" of petitioners fifth assignment of error. Regarding sub-assignment of error "b", in their Final Order and Opinion, LUBA stated,

> "...the city's adopted findings do not address compliance with each of the provisions of CCPS 4.6.7. Instead, the city appears to have concluded that compliance with the 2006 LDC hillside development provisions in a future review process will suffice to demonstrate compliance with CCPS 4.6.7. However, even assuming that is the case, the city cannot defer such a demonstration of compliance with CCPS 4.6.7 to a future review process that does not provide notice or opportunity for public participation."

LUBA also stated that even if the city addressed the LDC 2006 hillside development standards during the publically noticed review process "it is not clear why the city believes that compliance with the 2006 LDC will suffice to demonstrate compliance with CCP 4.6.7." In conclusion, LUBA found that, "because the city's findings do not specifically address the Comprehensive Plan policies and do not explain how compliance with 2006 LDC hillside development standards is sufficient to demonstrate compliance with those policies, the city's findings are inadequate" **(Exhibit VI)**.

Regarding sub-assignment of error "d", LUBA required the city to "adopt new findings on remand that either explain how the 2006 LDC hillside grading standards implement each of the CCP 4.6.7 provisions or find compliance with each of the provisions of CCP 4.6.7." As discussed previously, CCP 4.6.7 is not a development standard; however, in review of proposed hillside development, the City has used CCP 4.6.7 to guide decisions regarding questions of compatibility.

In sum, LUBA found that to approve the proposal, City Council must make findings demonstrating how the standards in 2006 LDC Chapter 4.5, applied by Condition 27, fully implement CCP 4.6.7; or make findings that the proposal, is otherwise consistent with CCP 4.6.7. Staff believe that both findings can be made, as explained below.

Staff also believe it is important to consider CCP 4.6.7 within the context of CCP 4.6.1.

**4.6.1 The City shall update the current hillside inventory. Until that time the City shall utilize the Open Space - Hillside Report (1983) and the Open Space Plan - Corvallis Planning Area (1979) to identify areas of significance during the review of annexations and developments.**

Policy 4.6.1 indicates that significant hills and hillsides are those identified in the 1983 Open Space Hillside Report **(Exhibit XI)**. The subject site is on a hillside of Country Club hill, which is developed with a private golf club, a cemetery, and single family, detached homes. The Open Space Hillside Report, section 11.B recommends that the "...City's inventory be modified to recognize the cemetery and the portion of the golf course currently designated Open Space / Conservation as the only significant hillside open space resources." This recommendation is congruous with earlier land use decisions to zone the site RS-3.5 Low Density Residential, rather than as Open Space - Conservation or other zone that would prohibit residential development. The clear reference in the Open Space Hillside Report and the zoning on the site indicate that the site is not on a significant hillside as identified in CCP 4.6.1. The applicability of CCP 4.6.7 is not necessarily limited to significant hillsides as identified in the Open Space Hillside Report, but the report does recognize some hills and hillsides as more important than others. Policy 4.6.7 is useful for evaluating the compatibility of the proposed development in the absence of clear and object LDC standards. However, consideration of CCP 4.6.7 does not suggest that the hillside is one of the significant hillsides in the Open Space Hillside Report.

***2006 LDC Chapter 4.5 Implements CCP 4.6.7***

Article 50 of the Corvallis Comprehensive Plan defines a policy as a "decision making guideline for actions to be taken in achieving goals and the community's vision." Article 50 defines the LDC as "a set of ordinances and regulations that implements the policies contained in the Comprehensive Plan." Given these definitions, and as discussed above, CCP 4.6.7 is not a review criterion or standard that development must comply with, it is a policy implemented by the Land Development Code. Policy 4.6.7 directed the 2006 LDC to contain standards that would achieve the goals of CCP 4.6.7. The 2006 LDC accomplished this task, in part, through Chapter 4.5 - Natural Hazards and Hillside Development Provisions, and in particular, in Section 4.5.80 - Hillside Development Standards. This becomes clear by comparing CCP 4.6.7 to the purposes of hillside development standards outlined in LDC Section 4.5.80.01. Both CCP 4.6.7 and LDC 4.5.80.01 are provided below.

**Policy – A decision-making guideline for actions to be taken in achieving goals and the community's vision.**

**Land Development Code - A set of ordinances and regulations that implement the policies contained in the Comprehensive Plan.**

4.6.7 **In areas where development is permitted, standards in the Land Development Code for hillside areas will achieve the following:**

A. **Plan development to fit the topography, soil, geology, and hydrology of hillsides and to ensure hillside stability both during and after development.**

B. **Preserve the most visually significant slopes and ridgelines in their natural state by utilizing techniques such as cluster development and reduced densities.**

C. **Preserve significant natural features such as tree groves, woodlands, the tree-meadow interface, and specimen trees.**

D. **Align the built surface infrastructure, such as roads and waterways, with the natural contours of terrain and minimize cutting and filling in developments.**

E. **Minimize soil disturbances and the removal of native vegetation and avoid these activities during winter months unless impacts can be mitigated.**

F. **Design developments and utilize construction techniques that minimize erosion and surface water runoff.**

G. **Demonstrate a concern for the view of the hills as well as the view from the hills.**

H. **Provide landscaping that enhances the identified open space resources.**

I. **Design developments that consider landscaping management that will minimize the threat of fire on improved property spreading to wildland habitat.**

**Section 4.5.80 - HILLSIDE DEVELOPMENT STANDARDS**

**4.5.80.01 - Purposes -**

**Hillside Development standards have been developed for the following purposes:**

a. **To plan development to fit the topography, soil, geology, and hydrology of hillsides;**

b. **To align the built surface infrastructure, such as streets and waterways, with the natural contours of terrain; and to minimize cutting and filling in developments;**

c. **To minimize soil disturbances and the removal of native vegetation, and to avoid these activities during winter months, unless impacts can be mitigated;**

d. **To encourage the design of developments and the utilization of construction techniques that minimize erosion and surface water runoff;**

e. **To balance a view of the hills with the view from the hills;**

f. **To provide or maintain landscaping that enhances the identified open space resources; and**

g. **To design developments that consider landscaping management that will minimize the threat of fire on improved property and the spreading of fire to wildland habitat.**

As shown above, LDC Section 4.5.80.01 purpose "a" corresponds with CCP 4.6.7.a and "d"; purpose "b" corresponds with CCP 4.6.7.d; purpose "c" corresponds with CCP 4.6.7.e, purpose "d" corresponds with CCP 4.6.7.f; purpose "e" corresponds with 4.6.7.g; purpose "f" corresponds with CCP 4.6.7.h; and purpose "g" corresponds with CCP 4.6.7.i.

The 2006 LDC hillside development standards (Section 4.5.80) were established for the purposes listed above. The similarities between the purposes of the hillside development standards and the goals in CCP 4.6.7 make clear that the 2006 LDC standards implement CCP 4.6.7. While development is not required to comply with CCP 4.6.7 because it is not a standard, development is required to be compatible with the site and surrounding uses. The City Council found that if development on lots proposed to be individually graded (not mass graded) followed the standards in LDC Chapter 4.5 it would be compatible, and because the purposes of hillside development standards are nearly identical to CCP 4.6.7, development to these standards demonstrates consistency with CCP 4.6.7.

The 2006 LDC standards for hillside development are clear and objective. If lot grading or home construction cannot comply with these standards it will not be permitted unless the applicant seeks to vary them. To vary from standards would require approval of Major Modification to the approved Planned Development. A Major Modification application is subject to notification requirements, requires a public hearing, and provides opportunity for public participation.

To best respond to the remanded issues in the Fifth Assignment of Error, and clarify the intent of Condition 27, staff recommend it be revised as follows (the original version is provided on pages 38 and 39 and in Exhibit II):

Lot Grading and Structures - Mass grading shall be limited to the areas shown on the grading plan identified as Attachments I.7 and I.8 of the August 10, 2007, Staff Memorandum to the City Council. Cuts and fills in the areas permitted to be mass graded shall not exceed the measurements shown in Attachment I.8. All mass graded areas, as shown in Attachment I.8, shall be engineered and constructed such that retaining walls are neither required nor used. Grading and excavation activities in areas not approved for mass grading as shown in Attachment I.8 shall comply with Section 4.5.80 - Hillside Development Standards of the 2006 LDC Chapter 4.5 - Natural Hazards and Hillside Development Provisions. Regardless of the presence of extenuating circumstances, cuts and fills in areas not mass-graded shall comply with the eight-foot standard as defined in LDC Section 4.5.80.03 - Definitions. Exceptions or alterations to these standards shall only be permitted through the Planned Development process, including any modifications to streets that would occur through the Capital Improvements Program. Additionally, development on all lots shall comply with 2006 LDC Chapter 4.10 - Pedestrian Oriented Design Standards.

Lots shall only be developed with single-family, detached homes and Accessory Structures consistent with conditions of approval and 2006 LDC Sections 3.2.30, 3.2.40, and Sections 4.3.30

and 4.3.40 for Accessory Structures. Development on all lots shall comply with 2006 LDC Chapter 4.10 - Pedestrian Oriented Design Standards.

Modifications to applicable LDC standards, or standards established through this approval may only occur through a public hearing process.

***Proposal is Consistent with CCP 4.6.7***

Areas proposed to be mass graded and cuts and fills associated streets were not required through Condition 27 to comply with 2006 LDC Chapter 4.5 standards. Nonetheless, mass graded areas must be compatible with surrounding uses and sensitive to the natural topography of the site. At the time of application there were no clear standards that limited the extent of mass grading, or criteria to evaluate compatibility of such grading. In the absence of standards and criteria, the City referred to CCP 4.6.7. As noted in Council finding III.A.11, cuts and fills eight feet or less have been found in past Corvallis land use decisions, to be consistent with CCP policies regarding hillside development, including CCP 4.6.7. However, limiting cuts and fills to eight feet was not a standard at the time of application and development with cuts and fills greater than eight feet could be found (and has previously been found) compatible with surrounding uses, the natural topography, and consistent with policies such as CCP 4.6.7.

As indicated in the revised Condition 27, above, mass graded areas may exceed 8 foot cuts and fills, but individually graded areas would be restricted to the eight-foot cut/fill standard, regardless of extenuating circumstances. The applicant's cut/fill analysis **(Exhibit III)** shows that the majority of the area proposed to be mass graded would have cuts and fills between 0 and 10 feet, while portions of lots 8-10 would have 10-20 foot cuts, and portions of lots 15, 16, 27, 28, and 38, 39 would have 10-20 feet of fill. If the Staff revised Condition 27 is approved, the remainder of the developable portions of the site would be limited to cuts and fills of 8 feet as defined by the Eight-ft Standard in LDC Section 4.5.80.03, below.

**d. Eight-ft. Standard - Restricts grade changes (cuts or fills) in excess of eight ft. on an individual lot or development site. Cut and fill is measured vertically from Natural Grade. In no case shall a combination of cut and fill in the same location exceed 16 ft.**

The applicant's response to LUBA's Final Order and Opinion discusses how the proposed site and grading plans are consistent with CCP 4.6.7 **(Exhibit III)**. Each goal of CCP 4.6.7 is listed below followed by a brief Staff analysis of the proposal's consistency with it.

**CCP 4.6.7.A - Plan development to fit the topography, soil, geology, and hydrology of hillsides and to ensure hillside stability both during and after development.**

To demonstrate that the proposed development would be consistent with CCP 4.6.7.A, the applicant performed multiple geotechnical investigations, the results of which are included in three geotechnical reports. Findings of the first investigation are contained in a report dated January 25, 2006. Regarding hillside stability, this Preliminary Geotechnical Report stated, "there is a low potential for landslides or instability with the existing slope conditions due to the absence of identifiable landslide features, the lack of seeps or springs except for existing drainage, and the presence of relatively stiff residual soil and shallow bedrock

beneath mature slopes." Subsequent reports dated March 16, 2007, and May 20, 2008, provide greater detail regarding site conditions and specific recommendations for developing on the subject site **(Exhibit III - May 20, 2008 report)**. The later geotechnical reports do not conflict with the original geotechnical report findings that there is a low potential for landslides or soil instability.

Regarding drainage patterns of site, the applicant states **(Attachment III)**,

> To further enhance the compatibility of the site and maintain existing stormwater routing, drainage corridors have been maintained and utilized for stormwater routing. The main drainage corridor on the west side of the property is utilized for a detention and water quality treatment area. By maintaining the open drainage corridor with large scale roughness (i.e. grass) the potential for removing suspended sediment is maximized.

Considering the information and recommendations contained within the three geotechnical reports, and the use of natural drainage corridors to convey stormwater, the proposed development is consistent with CCP 4.6.7.A.

**CCP 4.6.7.B - Preserve the most visually significant slopes and ridgelines in their natural state by utilizing techniques such as cluster development and reduced densities.**

**CCP 4.6.7.C - Preserve significant natural features such as tree groves, woodlands, the tree-meadow interface, and specimen trees.**

Consistent with CCP 4.6.7.B, the proposed development has reduced densities, minimizing visual impacts of the site's hillside. Reduced density was achieved by placing lots in relatively open areas, and setting aside common tracts that contained oak groves. By placing approximately 11 acres of the site in tracts, the minimum density requirement was based on the remaining 14.88 acres, reducing the minimum number or homes required to meet density standards. For example, 52 homes would be required to meet the minimum density requirement of two dwelling units per acre on the whole 25.88 acre site. The applicant proposes 45 dwelling units, which is within the permitted density range based on 14.88 acres of land outside of the proposed four tracts. Use of tracts to protect the site's large oak groves preserves a tree-covered appearance and minimizes visual impacts that would be caused by the development.

Inherent in CCP 4.6.7.B is a conflict between the desire to preserve slopes in their natural state and develop the site. This policy also does not give guidance on how to determine which slopes are the most visually significant. At the time of application the subject site was zoned Low Density Residential with a Planned Development Overlay, or (PD)RS-3.5. This zone permits residential development on the subject site, and is consistent with the 1983 Open Space Hillside Report, which also identified the subject site as appropriate for low density residential development **(Exhibit XI)**. Given that the site has been zoned for residential development, and the Open Space Hillside Report identifies it as appropriate for development, it is reasonable to conclude that the site may be developed, despite the fact that this would alter its natural state. It can also be argued that, based on the 1983

Open Space Hillside Report, the visually significant part of the hill is the cemetery, which is not part of the development proposal.

The site is located on a hillside that slopes to the south and southeast. The lowest point on the site is at an elevation of 250 feet, and the highest point is 420 feet. The highest point on the hill is 460 feet, and areas directly above and to the west of the subject site are developed with residential homes. Consistent with CCP 4.6.7.B proposed development would not occur on the ridgeline.

The site contains roughly 454 significant trees, most of which are growing in groves. The largest grove is in the southwest corner of the site, while others are located near the center of the site. As shown in the applicant's tree preservation plan, streets and homes would be located to avoid impacts to tree groves, and 11 acres, or 42% of the site, would be within open space tracts to protect the groves. The proposed site layout is expected to result in the removal of 48-58 significant trees, or roughly 12% of significant trees. Approximately 172 street trees would be installed with development. While these trees do not meet the LDC definition for significant, they will benefit the site, and will compensate for the 48 - 58 trees that would be removed. Preserving the site's tree groves and 88% of significant trees is consistent with CCP 4.6.7.B and CCP 4.6.7.C. Setting-aside 11 acres in open space tracts reduces the developable portion of the site to 14.88 acres. Forty-five lots/homes are proposed to be built on the 14.88 acres, equaling a density of 3 units per acre. This is near the bottom of the permitted RS-3.5 zone density range of 2-6 units per acre. If the applicant had not placed 11 acres in open space tract, that amount of area would need to be counted in the density calculations, and a minimum of 52 lots/homes would be required. By providing the open space tracts, the applicant protected most of the site's significant trees, consistent with CCP 4.6.7.C, and reduced the developable area and density requirements, consistent with CCP 4.6.7.B.

For reasons given above, the proposal is consistent with CCP 4.6.7.B and CCP 4.6.7.C.

**CCP 4.6.7.D - Align the built surface infrastructure, such as roads and waterways, with the natural contours of terrain and minimize cutting and filling in development.**

The site is located on a hillside with slopes in some areas greater than 35%. The southern portion of the site is largely bordered by an alley, leaving only the southwest and northeast corners of the site accessible for street connections. Land Development Code Section 4.0.70.I limits the grades on local streets to a maximum of 15%, and other criteria and Comprehensive Plan policies encourage development to avoid impacts to significant trees, tree groves, and natural features. Limited access to the site, a maximum permitted street grade of 15%, and the desire to minimize impacts to tree groves, limits the possible location for streets within the site.

To balance these competing issues, the applicant designed the street to access the site at the southwest and northeast corners. As shown in the applicant's tree preservation plan, the local street (Wolverine Drive), beginning at the southwest corner runs up-slope along the outer edge of a large oak grove. Two cul-de-sacs (Badger Pl. and Buckeye Pl.) run easterly from this street into areas where there are relatively few significant trees. Given the direction of other Comprehensive Plan policies which encourage the protection of

significant trees, tree covered hillsides, and woodlands, the most appropriate locations to develop on the subject site are those areas with no or relatively few trees. These areas are in the northwest and middle of the subject site, and the proposed street layout reaches these areas with minimal impacts to trees and tree groves while limiting the street grade to 15%.

The applicant has also placed proposed drainage facilities within natural drainage corridors as shown in **Exhibit III**. Considering the various constraints and competing policies, the proposed street layout, which accesses open areas with relatively few trees, complies with LDC maximum local street grade standards, and locates drainage facilities to take advantage of natural contours and drainage patterns, is consistent with CCP 4.6.7.D.

**CCP 4.6.7.E - Minimize soil disturbances and the removal of native vegetation and avoid these activities during winter months unless impacts can be mitigated.**

The applicant has stated that no grading will be done during winter months, but would occur between the months of June through October. The proposal would preserve approximately 88% of the site's 454 significant trees, the majority of which are native oak trees. Most preserved trees would be within open space tracts that could not be developed as residential lots. The four proposed open space tracts account for 11 acres of the 25.88 acre site. Any native vegetation within these tracts would be preserved along with the trees. While the site does contain native vegetation, the letter from the ODF&W biologist states that the majority of grasses on the site are not native. For these reasons, the proposal is consistent with CCP 4.6.7.E.

As the applicant notes in the response to the LUBA Final Order and Opinion, the Council-approved grading plan limits soil disturbance through this application, primarily to areas necessary to build roads and utilities to support the development **(Exhibit III)**. As shown in the applicant's cut/fill analysis **(Exhibit III)**, the majority of the proposed mass-graded would have cuts and fills between 0 and 10 feet. Areas on the upslope portions of lots 8-10 would have cuts between 10 and 20 feet, and lots 15, 16, 27, 28, 38, and 39 would have 10 to 20 feet of fill. As discussed above, at the time of application there was no standard in place limiting cuts and fills, though precedent decisions generally found that cuts/fills that did not exceed 8 feet were consistent with CCP 4.6.7 and related policies. Because the area proposed to be developed avoids most significant trees, and most of the mass graded area would limit cuts and fills to 10 feet or less, the proposed mass grading is consistent with CCP 4.6.7.E. Areas not mass graded as shown in the applicant's cut/fill analysis, would not be permitted to exceed eight foot cuts and fills as defined in the Eight-ft Standard (Condition 27). Restricting cuts and fills to less than eight feet on non-mass graded areas is also consistent with CCP 4.6.7.E.

In determining if the proposed grading plan and overall development minimizes soil disturbances the Council may consider other Comprehensive Plan policies and LDC standards. For example, the subject site has been designed for low density development per 1993 LDC Chapter 3.1, and CCP 4.6.5 states, "On tree covered hillsides, development shall be designed to preserve as many trees as possible and tree removal shall be consistent with the approved development plan." Balancing the fact that the site has been zoned for development and the desire to preserve trees and tree covered hillsides, the

applicant proposed lot grading and streets in open areas where impacts to trees would be minimized. Cuts and fills would be limited to between 0 and10 feet on most of the mass graded area, and to 8 feet or less on all other areas proposed for development. Consequently, the proposal minimizes soil disturbances, consistent with CCP 4.6.7.E.

**CCP 4.6.7.F - Design developments and utilize construction techniques that minimize erosion and surface water runoff.**

As stated in the applicant's response to the LUBA Final Order and Opinion, the "primary surface water drainage corridor is proposed to remain in place and provide a natural filtering system for the majority of storm water runoff"**(Exhibit III)**. In approving the proposal, City Council applied three conditions related to surface water run-off. Condition 19 requires storm drain facilities to match pre and post- development flows based on the 2-year, 5-year, and 10-year storm events. Condition 20 requires water quality facilities to comply with criteria outlined in Appendix F of the Storm Water Master Plan , and in the King County, Washington, Surface Water Design Manual. Condition 26, requires a storm water drainage plan that ensures site surface drainage is captured in area drains before crossing the Brooklane Park Estates alleyway **(Exhibits II and X)**.

City Council applied Condition of Approval 4 which requires the applicant to obtain erosion control permits prior to issuance of excavation and grading permits **(Exhibit II)**. The Condition also states that, where required by Development Services Division staff, the applicant shall install an erosion control and re-vegetation product capable of functioning on a 2:1 slope, and resulting in 90% vegetation within 3 years without the use of irrigation. This condition is important because it requires erosion control to city standards, and also because it limits the use of irrigation. Irrigation in certain areas of the site during summer months *could* lead to an increase in surface water that may harm oak trees. This condition would prevent damage to trees from irrigation run-off. Also, as noted in Development Related Concern C of the City Council Notice of Disposition, a National Pollutant Discharge Elimination System permit is required because construction activity will disturb more than one acre of land.

Given the proposed design and conditions of approval which require erosion control and NPDES permits, and require storm water facilities to comply with City standards, the development would minimize surface water run-off and control erosion consistent with LDC Standards, the Storm Water Master Plan, and CCP 4.6.7.F.

**CCP 4.6.7.G - Demonstrate a concern for the view of the hills as well as the view from the hills**

Consistency with CCP 4.6.7.G was discussed above, under the fourth assignment of error. Findings in that section are incorporated here by reference.

***Conclusion - Fifth Assignment of Error***

In the Final Order and Opinion, LUBA concluded that the City did not make adequate findings that the LDC Chapter 4.5 - Natural Hazard and Hillside Development Provisions would result in compliance with CCP 4.6.7, and also that compliance with these standards was being postponed to a future review processes. As explained above CCP 4.6.7 is not a review criterion or standard that development must conform to; it is a goal or guideline

that directed the 2006 LDC to include standards that would achieve CCP 4.6.7. The Grading Regulations in LDC Section 4.5.80.04 were designed to implement the purposes in LDC Section 4.5.80.01. The hillside development purposes are nearly identical to the goals in CCP 4.6.7. Consequently, the standards, or grading regulations, that implement the hillside development purposes implement the goals of CCP 4.6.7. Condition of Approval 27, as revised, requires earth-disturbing activities in areas not mass graded to comply with the Hillside Development Standards in LDC Section 4.5.80, and requires grading to comply with the Eight-foot standard in LDC Section 4.5.80.03.d, regardless of the presence of extenuating circumstances. No future review process is required if development meets these standards. If development cannot achieve these standards (which are consistent with CCP 4.6.7 goals) it cannot occur, or the standards as they apply to the subject site must be modified through a public hearing process. The above analysis also finds that, in the act of balancing multiple and sometimes competing Comprehensive Plan policies and LDC standards, the proposed development is compatible with surrounding uses and the natural topography of the site, and consistent with CCP 4.6.7.

**Sixth Assignment of Error**

Petitioners argue that the City's findings of compliance with CCP 4.11.12 are inadequate and not supported by substantial evidence. CCP 4.11.12 states,

**4.11.12 Development upslope of wetlands shall minimize interference with water patterns discharging to wetlands, and shall minimize detrimental changes in water quality for waters discharging to wetlands.**

LUBA remanded this issue to the City stating it was unclear which City Council findings concerned CCP 4.11.12, and because it appears that the City "deferred consideration of proposed drainage plans and facilities to a subsequent review process that does not provide for notice or opportunity for public input.

In response to the sixth assignment of error, it should be noted the Policy 4.11.12 is not a measurable development standard, it is a review criterion used to evaluate the compatibility of proposed development with surrounding uses, and potential impacts to wetlands. The City has adopted clear and objective stormwater quality and quantity standards that must be met for development to occur (Attachment X), and these standards implement CCP 4.11.12. Each goal in CCP 4.11.12, is considered in turn, below, along with relevant development standards.

The City's Stormwater Master Plan has established clear and objective standards regarding storm drainage facilities. Storm drainage facilities are to be designed based on accepted engineering practices to achieve objective, measurable results. Run-off rates are calculated based on 2-year, 5-year, and 10-year "design storm events". These rates must be determined so post-development run-off rates do not exceed pre-development run-off rates based on the design storm events. Water quality is to be maintained by the removal of 70% of Total Suspended Solids during design storm events. These standards apply to all new development in Corvallis, and are the standards that were applied to the Brooklane Heights proposal.

***Water Discharge Patterns***

The City's surface water run-off standards limit post-development run-off rates so they do not exceed pre-development run-off rates for the 2, 5 and 10-year storm events. To maintain historical run-off rates, the applicant proposes to construct two detention ponds. New public storm drain pipes will be installed in streets to collect and convey water to the detention ponds. For homes that would not directly drain into a public street, water will be drained overland through areas with drainage easements, to the detention facilities. The detention ponds will temporarily store and release water at pre-development rates. The ponds are planned to be located within the existing drainage corridor as shown in attachment N of the applicant's response **(Exhibit III)**. The use of detention ponds in these areas to maintain pre-development drainage volumes minimizes impacts to water discharge patterns entering the downslope wetland.

Water from the subject site currently drains into an existing public storm drainage system located along the north side of the Brooklane Estates alley **(Exhibit IV)**. After development, water will drain from the new on-site public facilities into these existing facilities. Once in the existing off-site public storm drainage system, water is routed under Brooklane Drive to several outfalls within a drainage ditch along the Marys River Natural Park. Because the locations of storm water entering the wetland downslope of the subject site will not change, pre-development flows will be maintained and the proposed development would not interfere with water patterns discharging into the wetlands, consistent with CCP 4.11.12. In fact, the water patterns discharging into wetlands would remain the same.

***Water Quality***

Policy 4.11.12 calls for development to minimize detrimental changes in water quality for waters discharging to wetlands. This Policy does not provide a measurable standard by which to evaluate consistency with the Policy. Lacking such a measurable standard, stormwater quality is considered acceptable, and consistent with CCP 4.11.12, if it meets water quality standards in the Stormwater Master Plan, which requires removal of 70% of Total Suspended Solids (TSS) from stormwater during the design storm. The applicant proposes to achieve this standard through the use of proprietary manhole-based water quality facilities, which traps pollutants until removed by routine maintenance. The use of manhole based water quality facilities is typically not allowed through the King County standards. However, the slopes associated with this site are too steep to feasibly implement the King County Facilities. In situations like this the City allows the use of proprietary water quality facilities, as long as they meet the City's performance standards. The applicant has submitted results from testing conducted by the University of Minnesota's St. Anthony Falls Laboratory and a Conditional Use Designation from the Washington State Department of Ecology for a BaySaver Technologies BaySeparator water quality facility as an example of a proprietary water quality facility. Staff have reviewed the submitted information and concluded that a facility such as the one submitted as an example will meet the City's standard of removing 70% of TSS during the water quality design storm. Staff also note there are manufacturers and products available, other than what was submitted, that will meet the City's water quality requirements.

***Conclusion - Sixth Assignment of Error***

The City has clear and objective water quantity standards that require detention of post-development flows to historical pre-development flows for 2, 5, and 10-year storm events. The City also has clear and objective water quality standards that require removal of 70% of Total Suspended Solids during the water quality design storm. Proposed detention ponds will temporarily store, and release stormwater into the wetlands through existing public facilities at the same locations and in the same rates as pre-development scenarios. Water quality standards will be met through the use of the proprietary water quality facilities. By complying with City water quality and water quantity standards, the development will minimize interference with water patterns draining into wetlands, and will minimize detrimental impacts to the water quality in wetlands, consistent with CCP 4.11.12. Because the City's water quality and quantity standards are clear and objective, no future public review process is required. Development must comply with these standards or it will not be permitted.

**Seventh Assignment of Error**

The petitioners argue in the seventh assignment of error, that the City's findings regarding the protection of natural resources such as upland prairie and habitat, tree preservation, wetlands, and pond turtles, are insufficient and not supported by evidence. LUBA found the City did not clearly link findings with applicable review criteria concerning natural features, and also found that incorporated findings from staff reports and minutes were ineffective. To respond to this assignment of error the applicant has addressed Comprehensive Plan policies related to natural features **(Exhibit III)**. Policies addressed by the applicant, and several other pertinent policies are considered, below, with respect to the proposed development. Policies are grouped into four categories to respond to specific natural features identified by petitioners: upland prairie, significant trees, wetlands, pond turtles.

***Upland Prairie & Habitat***

Concerning upland prairie and habitat, petitioners seventh assignment of error states,

> "As discussed above, the challenged decision does not adequately address the impacts of the increase in water flow over the property–to the stability of the slopes on the subject property, to downhill properties that would be the most likely to experience adverse impacts, and on significant resources such as the significant wetland just below the subject property. The findings do not anywhere address how the proposal will comply with the above-cite relevant criterion regarding the wildlife and habitat identified in the biologists' letters. Accordingly, the findings are inadequate to demonstrate compliance with CCP 4.2.2, CCP 4.10.9 and other relevant criteria."

Comprehensive Plan Policies 4.2.2 and 4.10.9 are provided below.

**4.2.2 Natural features and areas determined to be significant shall be preserved, or have their losses mitigated, and/or reclaimed. The City may use conditions placed upon development of such lands, private nonprofit efforts, and City, State, and Federal government programs to achieve this objective.**

**4.10.9 Negative impacts on habitat and migration corridors for birds, wildlife, aquatic life, and on open space and the recreation qualities of significant drainageways shall be minimized.**

To respond to the seventh assignment of error with respect to upland prairie and habitat, the council should make findings that address the consistency of the proposed development with the above policies. Petitioners did not list any "other relevant criteria" for the Council to address.

The petitioners' language indicates that they view Comprehensive Plan policies as standards that must be complied with. Comprehensive Plan Policies are not standards that must be adhered to, they are decision making guidelines. Decision makers are required to balance applicable policies to ensure that development is consistent with the broad goals and values of the community as expressed through the Comprehensive Plan and other planning documents. Because Comprehensive Plan policies are not standards, the Council is not required to find that CCP 4.2.2 and 4.10.9 have been "met". However, in evaluating the compatibility of the subject project, the Council should consider CCP 4.2.2 and 4.10.9, and the fact that the site has been zoned for low density residential development. Comprehensive Plan policy 4.2.2 requires significant natural features to be preserved "or have their losses mitigated." This phrase anticipates that some significant features will be lost through development. Policy 4.10.9 requires impacts to be minimized. Neither policy prohibits development. It should also be noted that the term "upland prairie" does not appear anywhere in the Comprehensive Plan.

**Waterflow Impacts**

As stated above in response to the sixth assignment of error, the City has clear and objective water quantity standards that require detention of post-development flows to historical pre-development flows for 2, 5, and 10-year storm events. The City also has clear and objective water quality standards that require removal of 70% of Total Suspended Solids from stormwater run-off entering public facilities **(Exhibit X)**. Proposed detention ponds will temporarily store, and release stormwater into the wetlands through existing public facilities at the same locations and in the same volumes as pre-development scenarios. Water quality standards will be met through the use of a manhole-based water quality system. By complying with City water quality and water quantity standards, the development will minimize interference with water patterns draining into wetlands, and will minimize detrimental impacts to the water quality in wetlands, consistent with CCP 4.11.12. Because the water quality and quantity standards are clear and objective, no future public review process is required. Development must comply with these standards or it will not be permitted.

These findings also directly respond to petitioners concerns in the seventh assignment of error that increases in water flow will negatively affect the stability of slopes on the site and the wetland downslope of the site. Given that stormwater will be conveyed through pipes or existing natural drainage areas, slope stability will not be affected by run-off. The May 2006 Geotechnical Report also states on page 5 that there is a "low potential for landslides or instability of natural slopes due to the absence of identifiable landslide features, the lack of seeps or springs (except for existing drainage), and the presence of relatively stiff residual soil and shallow bedrock beneath mature slopes." Because water will leave the site at pre-development rates, will meet City water quality standards, and will enter the

nearby wetland in the same locations as at present, adverse impacts to the wetland habitat would not occur, or would be minimized consistent with CCP 4.10.9.

**Wildlife and Habitat in Biologists' Letter**

The biologists' letter referenced by petitioners is found in (**Exhibit XII**) of the City Council Staff Report. At the request of City Staff, through normal application review processes, a biologist from Oregon Department of Fish and Wildlife, and a botanist from the Institute of Applied Ecology visited the site. Their report states, "no listed plant species were documented but the site provides exceptional habitat value on numerous scales." A pair of bald eagles was noted flying over the site, and a neighboring resident informed the biologists that they had once seen a pileated woodpecker on the site. The biologists' letter states that some native plants are found on the site, but the majority of grasses are not native. It also stated that the Oregon white oak stands are significant and oak woodlands benefit a variety of species.

While the biologists inventory of the site was not exhaustive, the only sensitive animal species documented was a pair of bald eagles flying over the site, and no sensitive plant species were identified. It is clear from the biologists' letter, that the oak groves provide important habitat to a wide variety of species. The subject proposal retains oak groves through the use of open-space tracts that cannot be developed.

Policy 4.2.2 states in part, "Natural features and areas determined to be significant shall be preserved, or have their losses mitigated, and/or reclaimed." Habitat areas do not have easily distinguishable boundaries, and development of any kind, and of any scale, will impact the natural habitat of the site. If the Council were to consider the entire site as a significant natural area, any loss of the area may be deserving of mitigation or reclamation in some form. Considering the findings in the biologists' letter, the true significant natural features or areas are the oak groves proposed to be preserved in tracts that account for approximately 42% of the total site. Preserving the oak groves is consistent with CCP 4.2.2, and also with CCP 4.10.9 because the habitat within the oak groves would also be preserved. In addition to habitat areas, CCP 4.10.9 refers to migration corridors for birds, wildlife, aquatic life, and on open space and recreation qualities of significant drainageways. There is no information in the record suggesting that the site is a migration corridor for birds or other wildlife. Negative impacts on open space have been minimized through the provision of large un-buildable tracts over 42% of the site, and there are no significant drainageways on this site which could provide recreational opportunities. For these reasons, the proposal is consistent with CCP 4.10.9.

The biologists' letter states that if the site cannot be conserved, measures should be taken to eliminate erosion, sedimentation, and siltation to watershed resources, and also that a biologist monitor the clearing phase of development to avoid unnecessary disturbance of the oak habitat. In approving the application, City Council applied Condition 4, which requires erosion control permits prior to grading and excavation. Council also applied Condition 5, which requires a 5 foot high, metal chainlink tree protection fence to be placed 5 feet outside the dripline for all trees to be preserved. Through these conditions, as well as stormwater quality/quantity standards, negative impacts to watershed resources and

trees to be preserved would be minimized. Applying these Conditions is consistent with the Oregon Department of Fish and Wildlife recommendations and CCP 4.2.2.

The applicant's response to the LUBA Final Opinion and Order also provides information regarding the presence of an upland prairie on the subject site. The applicant states on page 20 of the submittal **(Exhibit III)** that upland prairies are "dynamic environments" that were historically maintained by natural fires, or intentional fires set by Native Americans. Without episodic fires, which are prevented in urban areas, upland prairie areas succumb to the natural succession of shrubs and then trees.

The applicant included a photograph of the site in 1948 with a caption noting that at that time the site was being farmed. There were far fewer trees on the site in 1948, compared to today, supporting the idea that in the absence of fire, or farming, what is considered by petitioners to be upland prairie has naturally and increasingly become covered with trees. Without ongoing management, trees will continue to expand across the site, and the current landscape would be altered.

The record does not contain sufficient information to determine how the site came to be covered with a mix of native and non-native plants. Once removed from a site, some type of disturbance (fire, landslide, tilling, etc.) is typically needed for native plants to be re-established. Soil disturbed from farming could have supported the re-growth of native plants once farming was discontinued. Conversely, if the site had never been farmed, non-native grasses and other invasive species could grow among the native species and eventually dominate the site. If the site were never developed, continual management would be required to re-establish native plant species and minimize competition from non-native species. The applicant does not propose to manage the site in this way, and is not required to because it is zoned for low density residential development. However, the proposal does protect the majority of significant trees and only 14.88 acres of the 25.88 acre site are proposed for development. As such, nearly 42% of the site will be retained in tracts, protecting the habitat created, primarily, by the preserved oak groves. Protection of this habitat area is consistent with CCP 4.2.2 and 4.10.9.

***Significant Trees***

Petitioners argue that the City made inadequate findings regarding several Comprehensive Plan policies related to significant trees. In addition to CCP 4.2.2, listed above, petitioners cite:

**4.6.2 Development on hillsides shall not endanger life and property nor land and aquatic resources determined to be environmentally significant.**

**4.6.3 Tree-covered hillsides within the City Limits shall retain a tree-covered appearance prior to development review. Selective logging could be permitted with a City-approved plan that assures hillsides within the City Limits retain a tree-covered appearance. On these hillsides, clear-cuts and other significant tree removal should not be permitted prior to development.**

**4.6.5 On tree-covered hillsides, development shall be designed to preserve as many trees as possible and tree removal shall be consistent with the approved development plan.**

**4.6.6 On tree-covered hills, the design of dwellings and their placement shall be planned to retain a sufficient number of trees to preserve a green, tree-covered hillside appearance. If a proposed development pattern would result in the loss of a tree-covered hillside appearance, assuming the development plan has been designed to minimize the loss of existing trees to the extent that it is safe and practicable, the development may proceed, provided the following provisions are met: 1) the loss of trees is further minimized by development techniques such as clustering; and 2) a sufficient number of new trees are planted to recreate (at maturity) a green, tree-covered hillside appearance.**

**4.6.7 In areas where development is permitted, standards in the Land Development Code for hillside areas will achieve the following:**

**B. Preserve the most visually significant slopes and ridgelines in their natural state by utilizing techniques such as cluster development and reduced densities.**

**C. Preserve significant natural features such as tree groves, woodlands, the tree-meadow interface, and specimen trees.**

**E. Minimize soil disturbances and the removal of native vegetation and avoid these activities during winter months unless impacts can be mitigated.**

**G. Demonstrate a concern for the view of the hills as well as the view from the hills.**

**4.6.9 Where development of hillsides occurs, removal of vegetation will be minimized to control erosion. Vegetation disturbed during development shall be replaced or enhanced through landscaping.**

Significant trees are defined in 1993 LDC Section 4.2.20 as trees greater than 8-inches in diameter measured at a height of four feet above grade. Per LDC Section 4.2.20, significant trees *should* be preserved to the greatest *extent practicable*.

**LDC Section 4.2.20 - GENERAL PROVISIONS**

**c. Significant plant and tree specimens should be preserved to the greatest extent practicable and integrated into the design of a development. Trees of 8-in. or greater diameter measured at a height of 4 ft above grade and shrubs (excluding blackberries, poison oak, and similar noxious vegetation) over 3 ft in height are considered significant. Plants to be saved and methods of protection shall be indicated on the detailed planting plan submitted for approval. Existing trees may be considered preserved only if no cutting, filling, or compaction of the soil takes place between the trunk of the tree and the area 5 ft outside the tree's dripline. In addition, the tree shall be protected from damage during construction by a construction fence located 5 ft outside the dropline.**

Land Development Code Section 4.2.20 is the standard for tree preservation, and this standard uses the words "should" and "extent practicable" to explain the degree to preserve significant trees. This standard permits Significant Tree removal, and decision making bodies are given discretion to determine what the "greatest extent practicable" means, on a case-by-case basis. The Comprehensive Plan policies, are, again, not standards but decision making guidelines. Even if the Comprehensive Plan policies cited by petitioners were standards, none require the preservation of all significant trees. Petitioners, citing CCP 4.6.2, argue that removing significant trees endangers an

environmentally significant land resource, and state that the oak trees are "entitled to even stricter protections." Petitioners do not propose stricter protections, and also do not seem to suggest that removal of significant trees should be prohibited. With regard to CCP 4.6.2, the Council should determine the environmentally significant land resources on the site. As discussed under the preceding Upland Prairie and Habitat section, Staff believe the significant resources on the site are the oak groves, and that these groves would not be endangered by the proposed development. Staff also believe that Significant Trees outside of the groves should be preserved to the greatest extent practicable, per LDC Section 4.2.20. The proposal would preserve oak groves by placing them within four tracts, and removing between 48-58 of 454 significant trees (88-90% of all Significant Trees would be preserved). Staff recommend revising **Condition of Approval 5** to prohibit the removal of trees within the four tracts unless a certified arborist determines that a tree is a hazard tree, or that trees need to be removed to improve the health and longevity of Oregon White Oaks.

Considering that, based on both Comprehensive Plan policies and LDC standards, significant trees may be removed, preserving 88-90% of trees in groves and on tracts that account for 42% of the site area, the proposed development would not endanger the site's environmentally significant land resources (oak groves), consistent with CCP 4.6.2. Preserving approximately 90% of the site's trees also complies with LDC Section 4.2.20 that requires trees to be preserved to the maximum extent practicable.

Petitioners also argue that removed Significant Trees, must be mitigated for per CCP 4.2.2, which calls for natural features to be preserved, or have their loss mitigated. Mitigation for tree removal is typically achieved by planting replacement trees. Approximately 172 street trees would be planted if the project is developed. Compared to the trees to be removed, the street trees would be smaller, of a different species, and planted in a more urban environment. However, adding three times the number of trees to be removed is a sufficient mitigating benefit.

**4.6.5 On tree-covered hillsides, development shall be designed to preserve as many trees as possible and tree removal shall be consistent with the approved development plan.**

**4.6.6 On tree-covered hills, the design of dwellings and their placement shall be planned to retain a sufficient number of trees to preserve a green, tree-covered hillside appearance. If a proposed development pattern would result in the loss of a tree-covered hillside appearance, assuming the development plan has been designed to minimize the loss of existing trees to the extent that it is safe and practicable, the development may proceed, provided the following provisions are met: 1) the loss of trees is further minimized by development techniques such as clustering; and 2) a sufficient number of new trees are planted to recreate (at maturity) a green, tree-covered hillside appearance.**

As discussed previously, and shown in the Revised Grading and Tree Preservation Plan **(Exhibits III and IV)**, the site layout was designed to preserve as many trees as possible. This was achieved by placing lots in relatively open areas, and setting aside common tracts that contained oak groves. By placing approximately 11 acres of the site in tracts, the minimum density requirement was based on the remaining 14.88 acres, reducing the minimum number or homes required to meet density standards. For example, 52 homes would be required to meet the minimum density requirement of two dwelling units per acre

on the whole 25.88 acre site. The applicant proposes to cluster 45 homes on the remaining 14.88 acres. This is within the permitted density range based on 14.88 acres of land outside of the proposed four tracts.

By placing lots in relatively open areas, and building below minimum density for the whole site, the proposal is consistent with CCP 4.6.5 and 4.6.6 which directs development to preserve as many trees as possible, and preserve a tree-covered hillside appearance. Also consistent with CCP 4.6.5, the applicant has prepared a detailed Grading and Tree Preservation Plan, and has submitted an arborists report that includes recommendations for both the removal and preservation of Significant Trees. City Council also applied Condition of Approval 5, which requires a second arborist report to identify Significant Trees approved to be removed, and preserved. Development consistent with approved plans and conditions of approval is consistent with 4.6.5, which requires the same. Consistent with CCP 4.6.7, a tree covered hillside appearance will be retained as only approximately 58 out of 454 Significant Trees will be removed, and the prominent oak groves will be preserved. The removal of approximately 58 trees will be compensated for by the required planting of approximately 172 street trees, and any trees planted on private lots.

**4.6.3 Tree-covered hillsides within the City Limits shall retain a tree-covered appearance prior to development review. Selective logging could be permitted with a City-approved plan that assures hillsides within the City Limits retain a tree-covered appearance. On these hillsides, clear-cuts and other significant tree removal should not be permitted prior to development.**

Comprehensive Plan Policy 4.6.3 states, in part that "tree covered hillsides within the City Limits shall retain a tree-covered appearance *prior to development review*" (emphasis added). The tree-covered appearance is not required by this policy to be maintained following development. Council may find that the development is under review, and between the time the application was submitted to the present, development has not occurred on the site that has substantially diminished its tree-covered appearance (Approximately 14 trees were removed during the construction of the short gravel road into the site. These 14 trees are included in the 58 trees proposed to be removed.)

**4.6.7 In areas where development is permitted, standards in the Land Development Code for hillside areas will achieve the following:**

**B. Preserve the most visually significant slopes and ridgelines in their natural state by utilizing techniques such as cluster development and reduced densities.**

**C. Preserve significant natural features such as tree groves, woodlands, the tree-meadow interface, and specimen trees.**

**E. Minimize soil disturbances and the removal of native vegetation and avoid these activities during winter months unless impacts can be mitigated.**

**G. Demonstrate a concern for the view of the hills as well as the view from the hills.**

Findings relative to CCP 4.6.7. B; C; E; and G are made previously under the Fifth Assignment of Error. Those findings are incorporated here by reference. In summary, the proposal is consistent with CCP 4.6.7.B because it has reduced densities, minimizing visual impacts of the site's hillside. Reduced density was achieved by clustering lots in relatively open areas, and setting aside common tracts that contained oak groves. By placing approximately 11 acres of the site in tracts, the minimum density requirement was based on the remaining 14.88 acres, reducing the minimum number or homes required to meet density standards. Use of tracts to protect the site's large oak groves preserves a tree-covered appearance and minimizes visual impacts that would be caused by the development. Additionally, the site is downslope of the ridgeline of the hill, hence, the proposed development would not occur on the ridgeline, minimizing potential visual impacts to it.

Consistent with CCP 4.6.7.C, the proposed development will protect nearly 90% of the site's Significant Trees, primarily through the creation of four common tracts. The common tracts equal approximately 11 acres of the total site and will contain the site's largest tree groves. Consistent with CCP 4.6.7.E, the applicant has stated that no grading will be done during winter months, but would occur between the months of June through October. Most of the preserved Significant Trees are Oregon White Oak trees. Any native vegetation within these tracts would be preserved along with the trees.

In determining if the proposed grading plan and overall development minimizes soil disturbances, the Council may consider the fact that the site has been zoned for development. Weighing this fact against the desire to preserve trees and a tree covered hillside, the applicant proposed lot grading and streets on 14.88 acres of the site, consisting mostly of open areas where impacts to trees would be minimized. Cuts and fills associated with mass grading would be 10 feet or less on approximately 95% of the 14.88 acres proposed to be developed, and between 10 and 20 feet on the remainder of the developed portion of the site to be mass graded **(Exhibits III and IV)**. At the time of application there was no standard in place limiting cuts and fills, though precedent decisions generally found that cuts/fills that did not exceed 8 feet were consistent with CCP 4.6.7 and related policies. Precedent decisions also permitted cuts/fills greater than 8-feet in some situations. On balance, the proposal minimizes soil disturbances, consistent with CCP 4.6.7.E.

Comprehensive Plan policy 4.6.7 directs development to demonstrate a concern for views to and from hills. The most distinct features of the hill when viewed from below are the oak groves and large canopy trees. The applicant proposes to leave most of the trees in open space tracts, and approximately 172 street trees would be planted. The combination of retaining most of the existing trees, and planting new trees will visually buffer development on the site. Development would occur downslope of adjacent lots to the north, and views from existing homes on these lots would not be significantly affected. Views from existing homes and lots west of the site would be more affected than homes north of the site. However, because the area abutting the lots to the west is open and contains relatively few trees, it is a more appropriate location for development compared to areas on the lower slopes of the hill that contain a large oak grove and several other Significant Trees. Considering the fact that the site has been zoned for low density residential development,

when balancing the desire to "demonstrate a concern" for views from the hill and the desire to protect significant natural features, tree covered hillsides, and tree groves, Staff believe that tree protection is the greater priority.

**4.6.9 Where development of hillsides occurs, removal of vegetation will be minimized to control erosion. Vegetation disturbed during development shall be replaced or enhanced through landscaping.**

Policy 4.6.9 does not define the term "minimize" with respect to vegetation removal. The applicant submitted a grading and excavation plan that was approved by Council, and as discussed previously in this report, the plan is consistent with applicable Comprehensive Plan policies. To implement the grading and excavation plan, removal of vegetation will occur. In approving the application, the City Council applied Condition 4, which requires the applicant to obtain erosion control permits prior to grading and excavation. Consonant with CCP 4.6.9, City standards governing erosion control encourage removal of vegetation to be minimized. Areas proposed to be disturbed during development are primarily the location of proposed streets and lots. Vegetation cannot be replaced where streets and homes will be constructed; however, development on lots will be subject to 2006 LDC Section 3.2.40 - Green Area Requirements (see below). This LDC provision requires at least 50% of the gross lot area be retained as green area, of which 15% must consist of landscaping or naturally preserved vegetation. As a result, vegetation disturbed during development will be replaced with landscaping, consistent with CCP 4.6.9.

**Section 3.2.40 - GREEN AREA REQUIREMENTS**

**a. A minimum of 50 percent of the gross lot area, and a minimum of 30 percent for center-unit townhouses on interior lots, shall be retained and improved or maintained as permanent Green Area, as defined in Chapter 1.6 - Definitions. A minimum of 15 percent of the gross lot area shall consist of vegetation consisting of landscaping or naturally preserved vegetation.**

Given that City erosion control standards encourage vegetation removal to be minimized, and green area must comprise at least 50% of developed lots, the site will be developed according to CCP 4.6.9 guidelines.

***Wetlands***

Petitioners argue the City did not make sufficient findings regarding impacts to wetlands based on the Comprehensive Plan policies listed below.

**4.6.2 Development on hillsides shall not endanger life and property nor land and aquatic resources determined to be environmentally significant.**

**4.10.7 To minimize the negative impacts of development, stormwater runoff after development should be managed to produce no significant reduction of water quality than prior to development unless more appropriate provisions are identified in adopted comprehensive storm water management plans.**

**4.10.8 Grading and filling in drainageways shall be regulated to prevent negative impact on the channel, floodway and flood plain, riparian habitat, wetlands, and other properties. Where drainageways are disturbed through development, the developer shall return the drainageway to its natural state, to the extent practicable.**

**4.10.19 The Corvallis stormwater utility shall incorporate existing natural features such as streams and wetlands as a means of managing urban run-off. When using these natural features for urban stormwater needs, stormwater management shall follow the guiding principle of minimizing harm to these natural systems, maintaining the natural functions, and over time, repair any damage associated with past practices. (GP-1)**

**4.11.3 Lakes, wetlands, floodway, drainageways and other urban streams are part of the hydrological system and should be managed comprehensively.**

**4.11.11 Regarding significant wetlands downstream of development sites, the cumulative unavoidable losses of significant wetland acreage and function attributable to upstream development should be mitigated by the City. Such mitigation can be achieved, in part, through dedication of open space, drainageways, and related natural infrastructure.**

**4.11.12 Development upslope of wetlands shall minimize interference with water patterns discharging to wetlands, and shall minimize detrimental changes in water quality for waters discharging to wetlands.**

Regarding consistency with some of the above policies, Council made the following finding,

> The Council finds that the proposed detention ponds, drainage swales, and water quality manholes will remove pollutants and protect the quality of water entering the Marys River Natural Area, in compliance with CCP 4.10.7, 4.10.8, 4.10.19, 4.11.12, and 4.13.7, and provisions of the Corvallis Stormwater Master Plan."

Petitioners argue that this finding is not supported by substantial evidence in the record, and state, with respect to Condition of Approval 19, that "it is difficult to fathom how, without the information to be provided through this condition of approval, the applicant or the city has any idea whether the proposed detention ponds, drainage swales, and water quality manholes will adequately remove pollutants and protect the quality of water entering the Marys River Natural Area" **(Exhibit VII)**.

In response to petitioners argument, it should be noted that CCP 4.6.2 refers specifically to hillside development, and there are no wetlands on the hillside or subject site that would be affected. The Marys River Natural Area, which does contain wetlands is located south and downslope of the site, and is an environmentally significant area. As discussed above regarding the sixth assignment of error, the City has clear and objective water quantity standards that require detention of post-development rates to historical pre-development run-off rates for 2, 5, and 10-year storm events. Proposed detention ponds will temporarily store, and release stormwater into the wetlands through existing public facilities at the same locations and in the rates as pre-development scenarios. The application includes a Utility Plan illustrating how the stormwater facilities would function, and historical and post-development rates were determined using the standard TR-55 method with localized rainfall data **(Exhibit III)**. This is a City-accepted run-off prediction method. Based on this prediction method, the detention ponds must be able to detain approximately 30,000 cubic feet of water. The applicant submitted geotechnical reports that contained recommendations for detention pond construction, and the applicant is required through City Council Condition of Approval 19 to comply with those recommendations. Water quality standards require removal of 70% of total suspended solids from stormwater run-off

during the water quality design storm. The applicant proposes to meet this standard through the use of proprietary water quality facilities. The standards to be met are clear and objective. The designs for meeting these standards are produced using current, accepted professional engineering practices and are stamped by a Professional Engineer.

Policy 4.11.12 calls for development to minimize detrimental changes in water quality for waters discharging to wetlands. This Policy does not provide a measurable standard by which to evaluate consistency with the Policy. Lacking such a measurable standard, stormwater quality is considered acceptable, and consistent with CCP 4.11.12, if it meets water quality standards in the Stormwater Master Plan, which requires removal of 70% of Total Suspended Solids (TSS) from stormwater during the design storm. The applicant proposes to achieve this standard through the use of proprietary manhole based water quality facilities which traps pollutants until removed by routine maintenance. The use of manhole based water quality facilities is typically not allowed through the King County standards. However, the slopes associated with this site are too steep to feasibly implement the King County Facilities. In situations like this the City allows the use of proprietary water quality facilities, as long as they meet the City's performance standards. The applicant has submitted results from testing conducted by the University of Minnesota's St. Anthony Falls Laboratory and a Conditional Use Designation from the Washington State Department of Ecology for a BaySaver Technologies BaySeparator water quality facility as an example of a proprietary water quality facility. Staff have reviewed the submitted information and concluded that a facility such as the one submitted as an example will meet the City's standard of removing 70% of TSS during the water quality design storm. Staff also note there are manufacturers and products available, other than what was submitted, that will meet the City's water quality requirements.

Given that the applicant proposes to comply with City water quality and quantity standards, and compliance with these standards is required through **Conditions of Approval 18-20 and 26**, the rate and quality of water entering the wetland from the subject site will be handled such that the wetland will be protected. Petitioners argue that additional studies are necessary to prove the referenced Comprehensive Plan policies are satisfied. The referenced Comprehensive Plan policies contain no standards by which to measure compliance. Absent measurable standards in the Comprehensive Plan, the Council may concur with City staff and find that the proposed water detention and quality facilities comply with applicable City standards in the Stormwater Master Plan and King County Surface Water Design Manual. Council may also find that compliance with these standards is sufficient to prevent and minimize negative impacts to adjoining wetlands caused by post-development surface water run-off, consistent with policies 4.6.2, 4.10.7, 4.10.8, 4.10.19, 4.11.11, and 4.11.12. By preventing or minimizing negative impacts to adjacent wetlands consistent with the noted policies, the proposal is also consistent with 4.11.3, which states that "Lakes, wetlands, floodway, drainageways and other urban streams are part of the hydrological system and should be managed comprehensively."

***Western Pond Turtles***

Western pond turtles are listed as an Oregon Sensitive Species, and may be in the wetland areas south of the subject site. City Council found (Finding III-C-6) that the proposed development will not negatively impact the turtles breeding and nesting habitat or result in

significant changes in water volume or quality **(Exhibit II)**. Petitioners argue that City findings that stormwater runoff will not impact pond turtles is "pure conjecture." Petitioners assume an increase in water run-off from the site that may negatively impact turtle populations, and assert that the proposal is not consistent with CCP 4.10.9, below.

**4.10.9 Negative impacts on habitat and migration corridors for birds, wildlife, aquatic life, and on open space and the recreation qualities of significant drainageways shall be minimized.**

The record contains a document produced by ODFW that lists the most important habitat qualities for western pond turtles **(Exhibit XIII)**. They are:

- Permanent water bodies with slow moving waters for foraging;
- Shallow, near-shore waters with aquatic vegetation for hatchlings to hide from predators;
- Nearby, accessible, undisturbed upland sites with sparse vegetation and south-facing slopes for nests;
- Aquatic basking sites for temperature regulation;
- Corridors such as streams, rivers, and riparian areas that allow movement between populations.

The document identifies several causes for declining turtle populations, including:

- Loss of nesting and hatchling habitat;
- Predation on hatchlings from bullfrogs, opossums, and large mouth bass;
- Wetland draining;
- Urban development;
- Intensive agriculture;
- Spread of exotic species such as Himalayan blackberry and reed canary grass;
- Fewer floods and fires resulting in reduced quality and quantity of suitable habitat.

The applicant provided information taken from a western pond turtle recovery plan created by the Washington Department of Wildlife **(Exhibit III)**. The applicant notes that this report identifies primary concerns for turtles' protection include the control of predation by bullfrogs, racoons and opossums, and reduction of human impacts that inhibit basking.

Even assuming petitioners are correct, and there would be an increase in water in the wetlands caused by the proposed development, this would appear to improve turtle habitat by providing a more permanent supply of slow moving water. Other than conveying water to them, the proposed development would have no affect on the wetlands, and therefore, no affect on turtle habitat. However, as discussed above, the proposed development is required to comply with water quality and quantity standards in the Stormwater Master Plan. Compliance with City water quality and quantity standards is sufficient to minimize potential negative impacts to wetlands and wetland habitat, caused by draining the site's surface water to adjacent wetlands.

## SUMMARY AND RECOMMENDATIONS

In the Final Opinion and Order LUBA remanded the City Council's decision to approve the Brooklane Heights Conceptual and Detailed Development Plan and Tentative Subdivision Plat to address four of petitioners assignments of error. Briefly, the sustained assignments of error are:

- Fourth Assignment of Error– findings were inadequate for determining if the code and compatibility requirements are met without "typical building elevations" having been submitted.

- Fifth Assignment of Error (Subassignment B)– findings were inadequate for determining if the provisions of Comprehensive Plan policy 4.6.7 are met based on the imposition of Condition 27, which requires individual lots to be developed consistent with the hillside development provisions of Chapter 4.5 and the pedestrian-oriented design standards in Chapter 4.10 from the 2006 LDC.

- Sixth Assignment of Error (Subassignment B)– findings were inadequate for determining if the drainage plan adequately addresses Comprehensive Plan policy 4.11.12.

- Seventh Assignment of Error– findings were inadequate for determining if environmentally significant resource protections are consistent with Comprehensive Plan policies.

The applicant provided additional information to respond to the sustained assignments of error. Based in part on new information provided by the applicant, more robust preliminary findings were made demonstrating how the proposal, as conditioned by City Council, was consistent with applicable Comprehensive Plan policies. In reaching these preliminary findings Staff suggest revising Condition 27 to clarify that 2006 LDC Chapter 4.5 only applies to areas not approved to be mass graded and cuts and fill on these areas will be limited to 8-feet. Staff also recommend revising Condition 5 to clarify that trees in the four open space tracts are to be preserved unless they pose a hazard to abutting private property or should be removed to protect the health of existing Oregon White Oaks (Condition 5).

### Staff Recommendations

The City Council has three options with regard to the remanded issues.

Option 1: Reverse the original City Council decision to approve the application, thereby denying the application;

Option 2: Uphold the original City Council decision, including conditions of approval;

Option 3: Uphold the original City Council decision, with revised conditions of approval.

Staff recommend that the City Council pursue Option #3. This recommendation is based on the facts presented in this report and specific references to facts and findings contained

in City Council Order 2001-111, and the August 10, 2007, Memorandum from the Community Development Director to City Council, which includes the May 25, 2007, Staff Report to the Planning Commission

## Staff Revised Conditions of Approval

***Revised Condition 5***

Tree Preservation and Planting – Prior to issuance of any permits, the applicant shall submit a report by a certified arborist that identifies all significant trees proposed to be removed in this application. Identified trees shall include, those identified in the arborist report submitted with the subject application **(Attachments S and R.55 of the May 25, 2007, staff report to the Planning Commission),** trees impacted by construction of the pedestrian path between Badger Place and Wolverine Drive, trees impacted by construction of the stormwater swale in the north portion of the site, and trees potentially impacted by construction and use of the detention ponds in Tracts B and C.

Trees in Tracts A, B, C, and D, as identified in the approved Revised Tentative Subdivision Plat shall be preserved unless a tree is determined to be a hazard tree, or its removal is necessary to protect the health and longevity of an Oregon White Oak tree. Prior to removal of any tree a certified arborist's report shall be submitted to the Community Development Department for review, and trees shall only be removed if the City's Urban Forester concurs with the report's analysis and recommendations.

Regarding the pedestrian path, stormwater swale, and ponds, the arborist's report shall detail methods to preserve as many significant trees as possible in or adjacent to these site components. The applicant shall follow tree preservation methods outlined by the arborist. Unless already approved for removal, (any) significant trees may be removed only if a certified arborist recommends removal and the City Forester concurs with the arborist's recommendation.

The arborist's report shall also illustrate all trees approved/proposed to be preserved. To ensure protection of trees, there shall be no cutting, filling, trenching, nor compaction of the soil under tree canopies and to a minimum distance of 5 feet outside the canopy's dripline, consistent with Section 4.2.20.c of the Land Development Code. To assure this protection, a minimum 5-foot high construction fence (constructed of metal chain link, and supported by metal posts sunk into the ground) shall be installed 5 feet outside the canopy's dripline for all trees to be preserved, prior to any excavation and grading of the development site. An exception may occur upon inspection and a recommendation by a certified arborist.

Existing trees, including trees on adjacent properties with driplines within 10 feet of the subject site, and construction protection fences shall be illustrated on all site plans submitted for excavation, erosion control, PIPC, and building permits. Tree protection plans shall be submitted to the City for review and approval, and tree preservation fencing shall be installed and inspected, prior to issuance of any excavation and grading, erosion control, PIPC, or building permits.

***Original Condition 5, With Redline/Strike-out***

Tree Preservation and Planting – Prior to issuance of any permits, the applicant shall submit a report by a certified arborist that identifies all significant trees proposed to be removed in this application. Identified trees shall include, those identified in the arborist report submitted with the subject application **(Attachments S and R.55 of the May 25, 2007, staff report to the Planning Commission),** ~~and~~ trees impacted by construction of the pedestrian path between Badger Place and Wolverine Drive, ~~and~~ trees impacted by construction of the stormwater swale in the north

portion of the site, and trees potentially impacted by construction and use of the detention ponds in Tracts B and C.

Trees in Tracts A, B, C, and D, as identified in the approved Revised Tentative Subdivision Plat shall be preserved unless a tree is determined to be a hazard tree, or its removal is necessary to protect the health and longevity of an Oregon White Oak tree. Prior to removal of any tree a certified arborist's report shall be submitted to the Community Development Department for review, and trees shall only be removed if the City's Urban Forester concurs with the report's analysis and recommendations.

Regarding the pedestrian path, stormwater swale, and ponds, the arborist's report shall detail methods to preserve as many significant trees as possible in or adjacent to these site components. The applicant shall follow tree preservation methods outlined by the arborist. Unless already approved for removal, (any) significant trees may be removed only if a certified arborist recommends removal and the City Forester concurs with the arborist's recommendation.

The arborist's report shall also illustrate all trees approved/proposed to be preserved. To ensure protection of trees, there shall be no cutting, filling, trenching, nor compaction of the soil under tree canopies and to a minimum distance of 5 feet outside the canopy's dripline, consistent with Section 4.2.20.c of the Land Development Code. To assure this protection, a minimum 5-foot high construction fence (constructed of metal chain link, and supported by metal posts sunk into the ground) shall be installed 5 feet outside the canopy's dripline for all trees to be preserved, prior to any excavation and grading of the development site. An exception may occur upon inspection and a recommendation by a certified arborist.

Existing trees, including trees on adjacent properties with driplines within 10 feet of the subject site, and construction protection fences shall be illustrated on all site plans submitted for excavation, erosion control, PIPC, and building permits. Tree protection plans shall be submitted to the City for review and approval, and tree preservation fencing shall be installed and inspected, prior to issuance of any excavation and grading, erosion control, PIPC, or building permits.

***Revised Condition 27***

Lot Grading and Structures - Mass grading shall be limited to the areas shown on the grading plan identified as Attachments I.7 and I.8 of the August 10, 2007, Staff Memorandum to the City Council. Cuts and fills in the areas permitted to be mass graded shall not exceed the measurements shown in Attachment I.8. All mass graded areas, as shown in Attachment I.8, shall be engineered and constructed such that retaining walls are neither required nor used. Grading and excavation activities in areas not approved for mass grading as shown in Attachment I.8 shall comply with Section 4.5.80 - Hillside Development Standards of the 2006 LDC Chapter 4.5 - Natural Hazards and Hillside Development Provisions. Regardless of the presence of extenuating circumstances, cuts and fills in areas not mass-graded shall comply with the eight-foot standard as defined in LDC Section 4.5.80.03 - Definitions. Exceptions or alterations to these standards shall only be permitted through the Planned Development process, including any modifications to streets that would occur through the Capital Improvements Program.

Lots shall only be developed with single-family, detached homes and Accessory Structures consistent with conditions of approval and 2006 LDC Sections 3.2.30, 3.2.40, and Sections 4.3.30 and 4.3.40 for Accessory Structures. Development on all lots shall comply with 2006 LDC Chapter 4.10 - Pedestrian Oriented Design Standards.

Modifications to applicable LDC standards, or standards established through this approval may only occur through a public hearing process.

***Original Condition 27***

Lot Grading and Structures - All cuts and fills shown on the grading plan identified as Attachments I.7 and I.8 of the August 10, 2007, Staff Memorandum to the City Council shall be engineered and constructed such that retaining walls are not required. All lots shall be developed in accordance with Chapter 4.5 - Natural Hazards and Hillside Development Provisions and Chapter 4.10 - Pedestrian Oriented Design Standards from the December 31, 2006 Land Development Code.

## EXHIBITS

I. Comprehensive Plan, Zoning, and Vicinity Maps *(CC Exhibits IX.85 - 89)*

II. City Council Notice of Disposition and Findings (Order 2007-111)

III. Applicant's Response to LUBA Final Opinion and Order, includes:

- Tentative Subdivision Plat
- Utility Plan
- Grading and Tree Preservation Plan
- Cut / Fill Analysis
- Existing Drainage Patterns
- Information regarding proposed proprietary water quality facilities
- May 20, 2008, Geotechnical Report

IV. Applicant's Appeal letter to City Council

V. Applicant Submitted Arborist Report

VI. LUBA Final Opinion and Order

VII. Petition for Review (Petitioners Assignments of Error reviewed by LUBA)

VIII. 1993 LDC Chapter 3.1 Development Standards for RS-3.5 Zone

IX. Excerpt of Applicable and Referenced 2006 LDC Standards and Criteria

- LDC Chapter 3.2 - Low Density (RS-5) Zone
- LDC Chapter 4.5 - Natural Hazard and Hillside Development Provisions
- LDC Chapter 4.10 - Pedestrian Oriented Design Standards

X. Staff Identified Water Quality Standards, includes Appendix F of the Corvallis Stormwater Master Plan

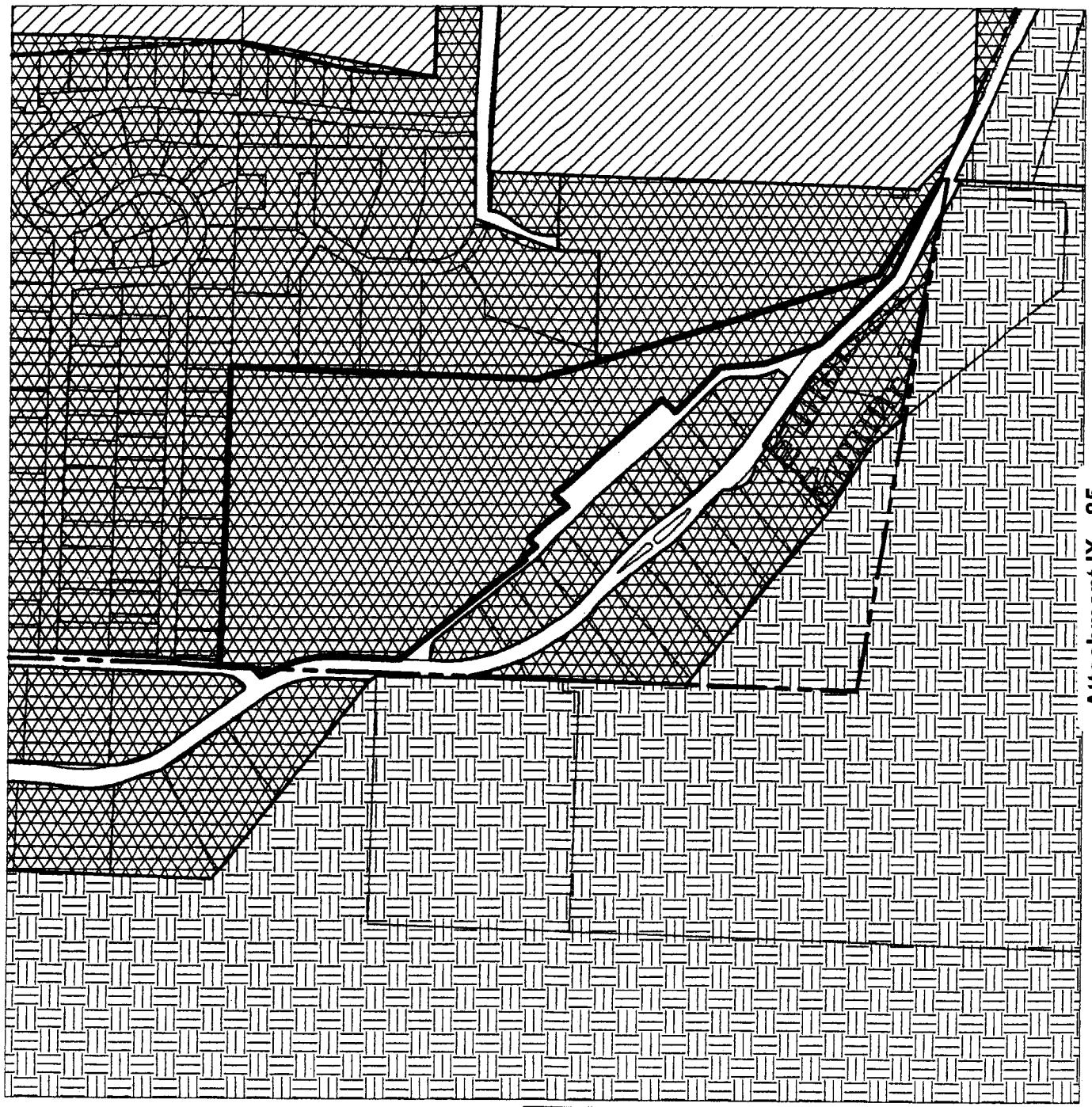
XI. Excerpt of 1983 Open Space Hillside Report

XII. Correspondence with ODF&W

XIII. ODF&W Document Regarding Western Pond Turtles

**Review and Concur:**
Ellen Volmert, Assistant City Manager

# EXISTING COMPREHENSIVE PLAN DESIGNATIONS



Residential-Low Density

Agricultural Open-Space

Open Space - Conservation

Subject Site

City Limits

N

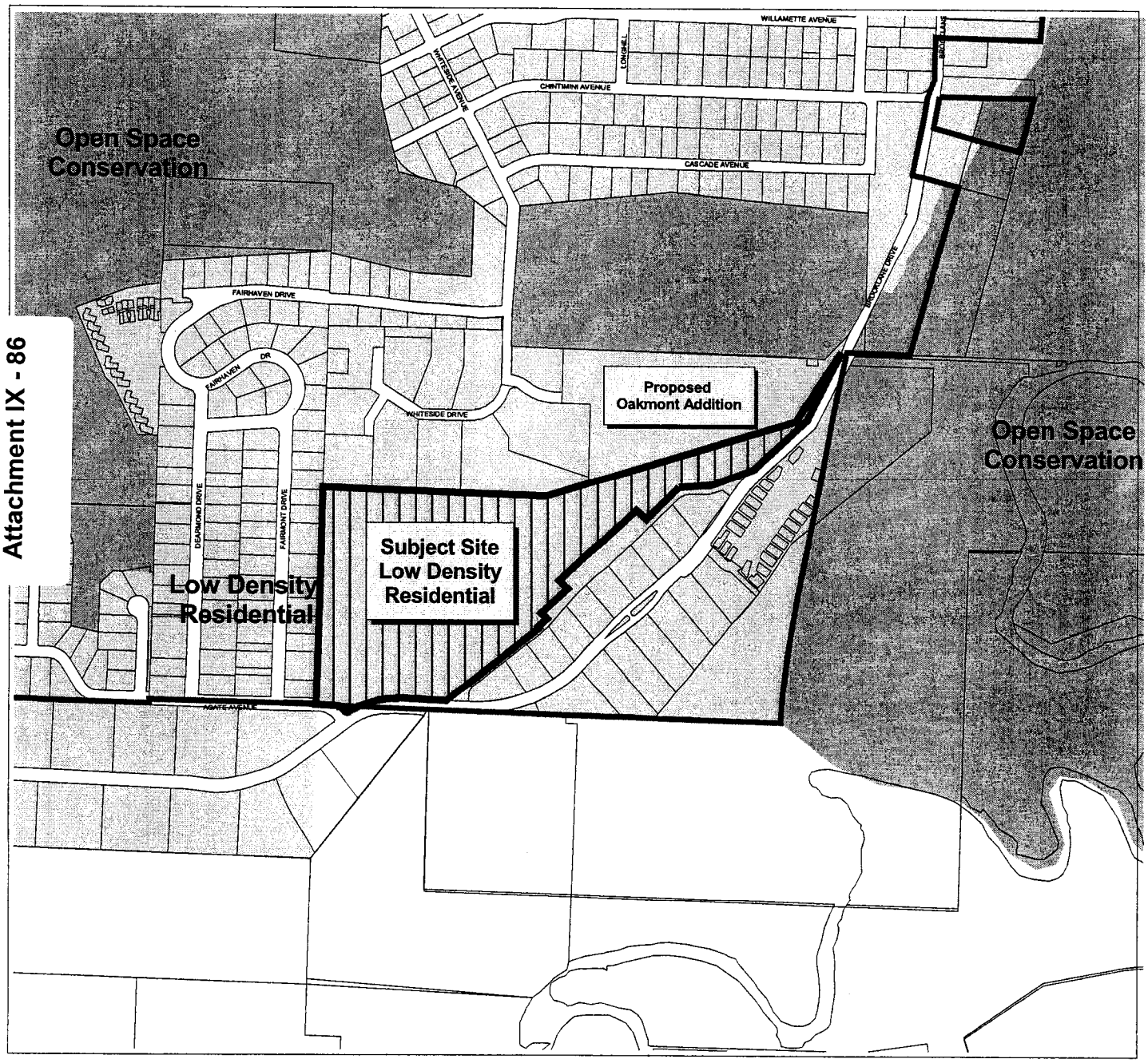
0 500 1000

Scale: 1" = 500'

**EXHIBIT I.1**
**LUBA REMAND**

Brooklane PLD06-00018
Attachment C

# Comprehensive Plan Map Designations
# 2007



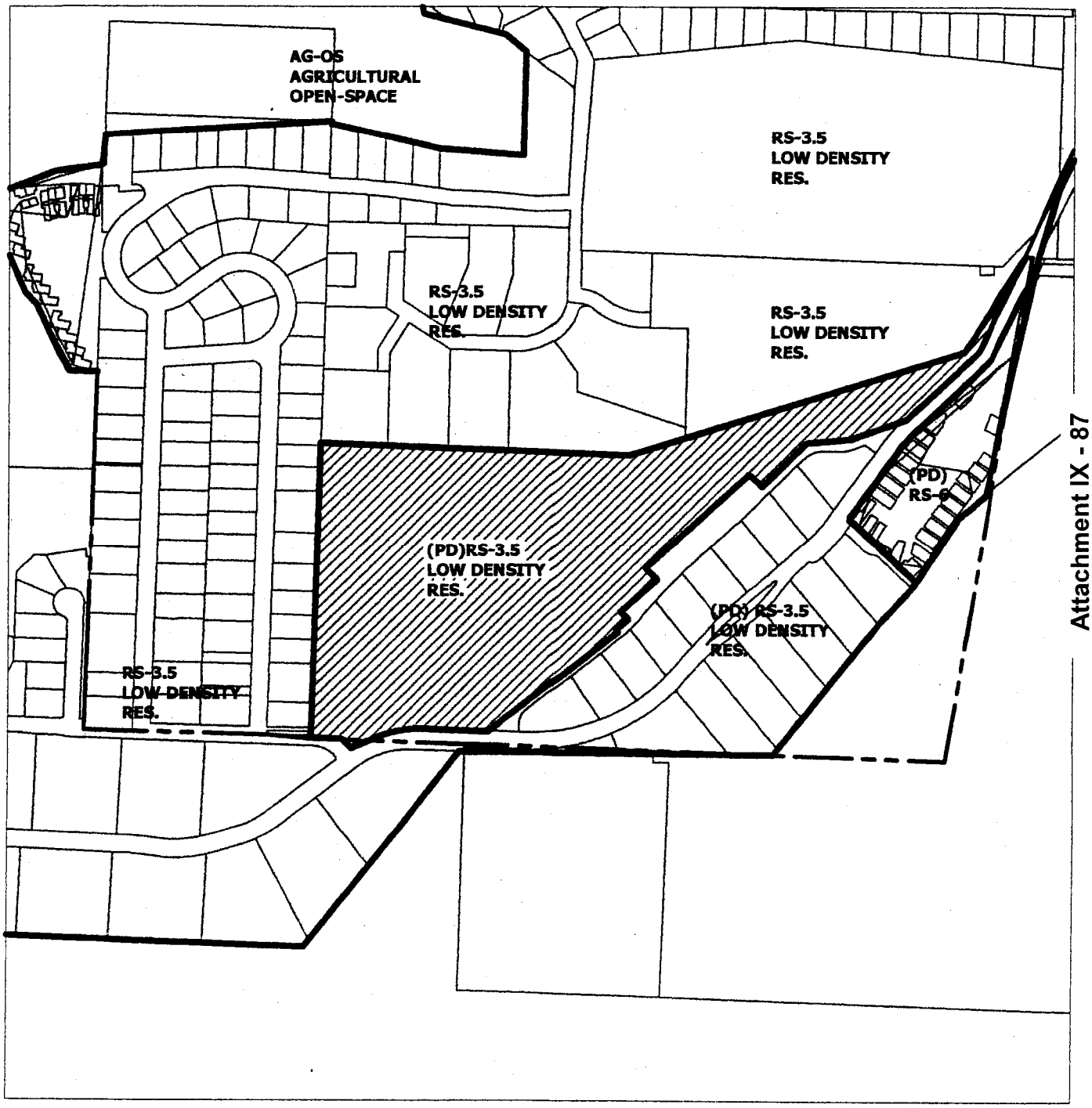

N

**EXHIBIT I.2**
**LUBA REMAND**

500 0 500 Feet

Brooklane PLD06-00018
Attachment D

# EXISTING ZONING DESIGNATIONS




Attachment IX - 87

Subject Property

City Limits

EXHIBIT I.3
LUBA REMAND

Brooklane PLD06-00018
Attachment E

N

0 500 1000

Scale: 1" = 500'

# Zoning Map - 2007



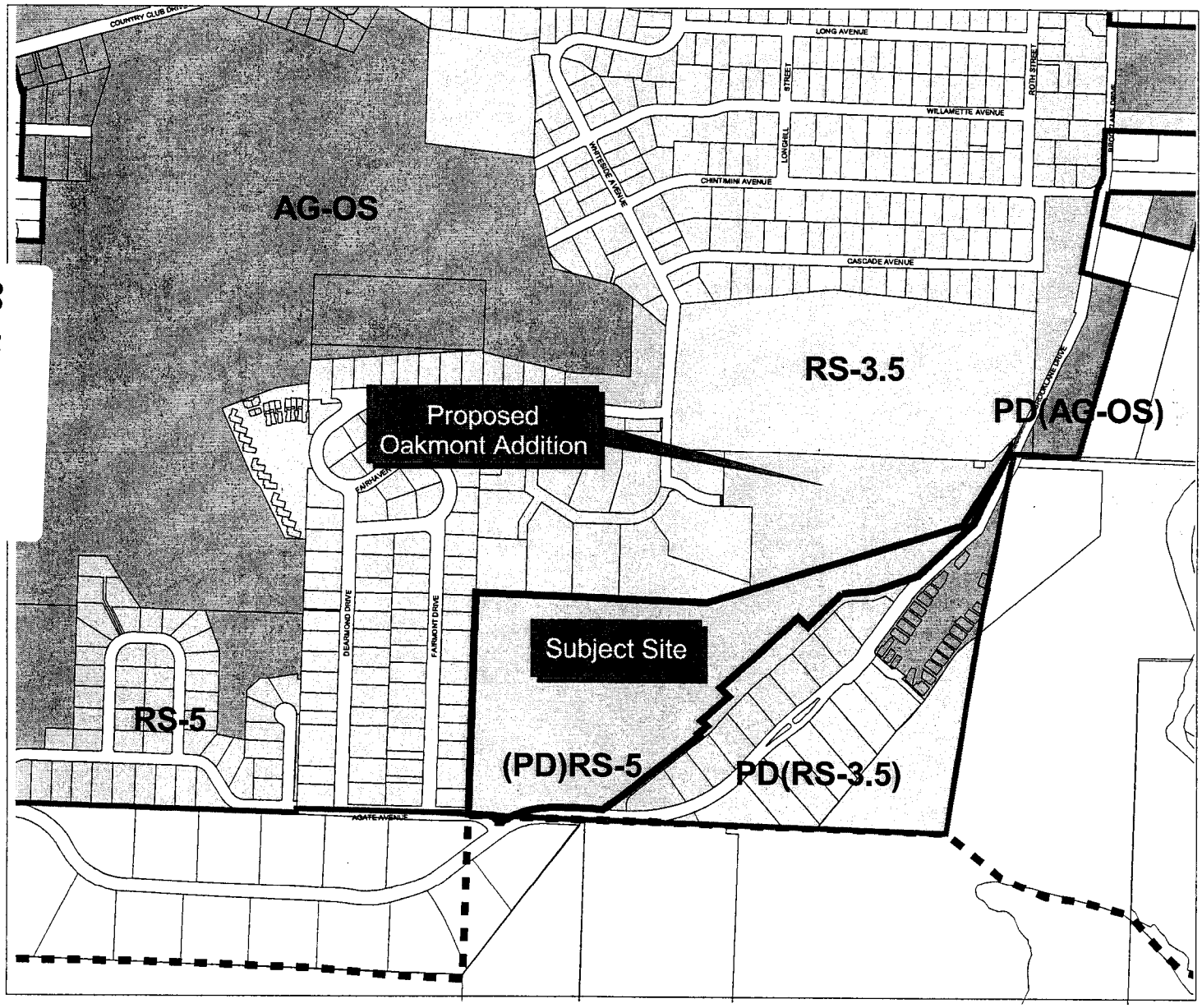
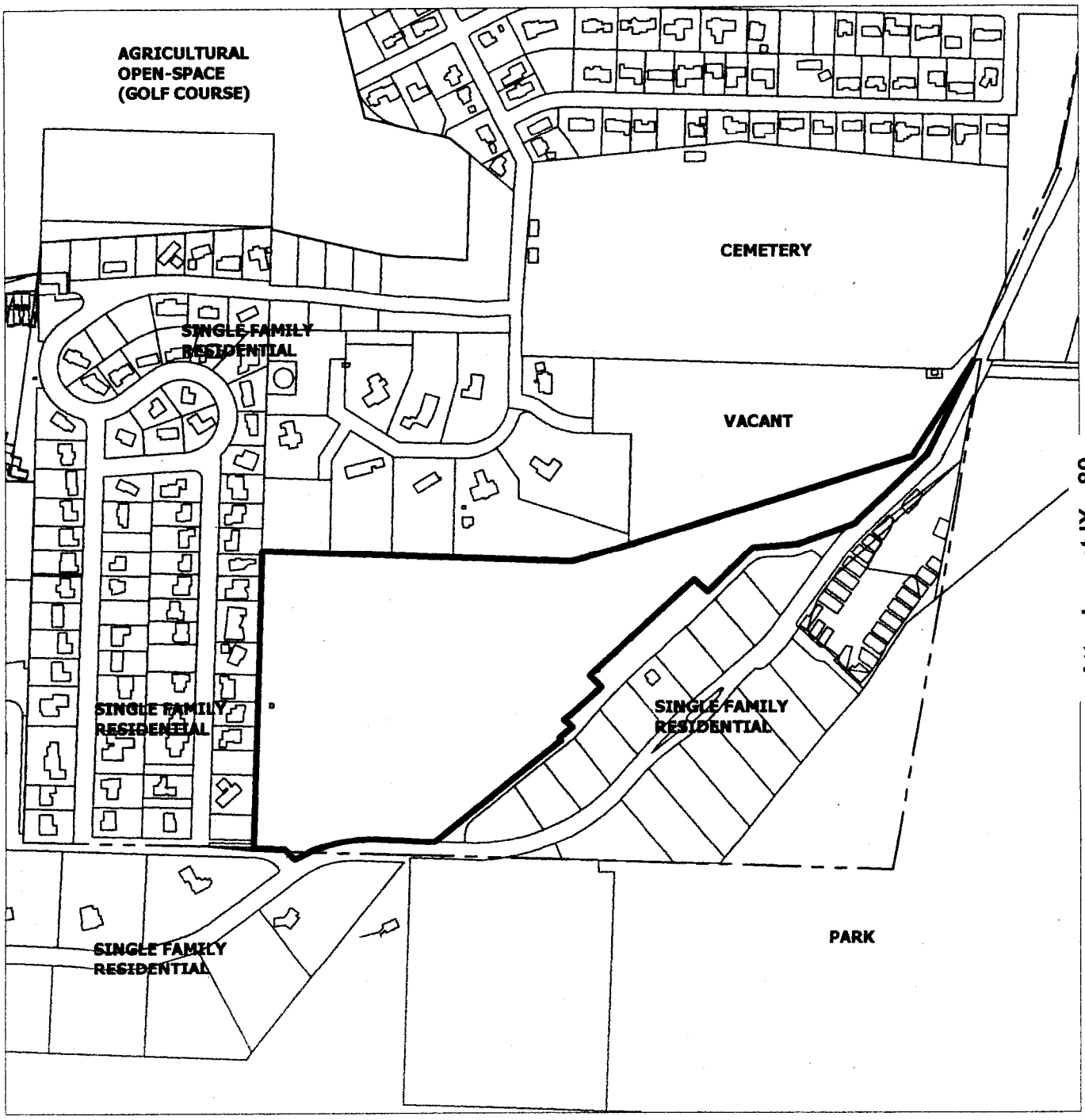



**EXHIBIT I.4**
**LUBA REMAND**

**Brooklane PLD06-00018**
**Attachment F**

# SURROUNDING USES




Attachment IX - 89

Subject Property

City Limits

EXHIBIT 4.5
LUBA REMAND

Brooklane PLD06-00018
Attachment G

N

0 500 1000

Scale: 1" = 500'

CORVALLIS
ENHANCING COMMUNITY LIVABILITY

# CITY COUNCIL
# NOTICE OF DISPOSITION

**ORDER: 2007-111**

**CASE:** **Brooklane Heights Planned Development**
(PLD06-00018, SUB06-00006)

**REQUEST:** An appeal of a Planning Commission decision to deny a Conceptual and Detailed Development Plan and Tentative Subdivision Plat to create 42 residential lots and 4 common tracts on 25.88 acres of land zoned PD(RS-3.5) at the time the application was submitted. The site was zoned PD(RS-5) as part of a legislative action implementing the 2006 Corvallis LDC. As part of the Planned Development request, the applicant is requesting to vary from a number of Land Development Code standards, mostly related to street design. The Conceptual and Detailed Development Plan proposes to develop lots for the construction of custom built single family detached homes on approximately 14.9 acres of the subject site. The remaining approximately 10.98 acres are proposed to be set aside as open space tracts that also incorporate public utilities. The tracts are proposed to be maintained by a Homeowners Association.

**APPLICANT/OWNER:** Stephen Schaberg
2535 SW Whiteside Drive
Corvallis, Oregon 97333

**LOCATION:** The 25.88 acre site is located northwest of Brooklane Drive and north of Agate Avenue, east of Fairmont Drive, and south of Whiteside Drive. The site consists of one parcel which is identified on Benton County Assessor's Map 12-5-01 C as Tax Lot 1000.

The City Council held a duly-advertised *de novo* public hearing on the appeal on August 20, 2007. The hearing was closed, and the City Council deliberated and reached a decision on the appeal on September 4, 2007. After consideration of all the testimony and evidence, the City Council voted to reverse the Planning Commission's decision to deny the request, and approved the Conceptual and Detailed Development Plan and Tentative Subdivision Plat requests, with conditions.

If you wish to appeal these decisions, an appeal must be filed with the State Land Use Board of Appeals within 21 days from the date of the decision.

The proposal, staff report, hearing minutes, memoranda to City Council, and findings and conclusions may be reviewed at the Community Development Department, Planning Division, City Hall, 501 SW Madison Avenue.

**EXHIBIT II.1**
**LUBA REMAND**

Hal Brauner
Acting Mayor, City of Corvallis

**Signed:** September 17, 2007
**Appeal Deadline:** October 8, 2007

Expiration Date(s) (If Not Appealed): October 8, 2010
(Conceptual and Detailed Development Plan)

October 8, 2009
(Tentative Subdivision Plat)

If no appeal is filed by the appeal deadline, the Conceptual and Detailed Development Plan shall be valid for three years. If the applicant has not begun construction of the development or its phases within this period, the approval shall expire on October 8, 2010. At its discretion, and without a public hearing, the Planning Commission may extend the approval one time for up to two additional years if it finds that conditions have not changed. If an extension is desired, the applicant is required to file a written request for the extension with the City's Planning Division prior to the expiration date.

If no appeal is filed by the appeal deadline, the Tentative Subdivision Plat shall be valid for two years. If the applicant has not submitted a final subdivision plat within two years (with appropriate assurances for improvements, if applicable), the approval shall expire on October 8, 2009. At its discretion, and without a public hearing, the Planning Commission may extend the approval one time for up to one additional year if it finds that conditions have not changed. If an extension is desired, the applicant is required to file a written request for the extension with the City's Planning Division prior to the expiration date.

**Attachments:** Conditions of Approval and City Council Adopted Formal Findings

**EXHIBIT II.2**
**LUBA REMAND**

**Conditions of Approval**
**Brooklane Heights (PLD06-00018, SUB06-00006)**

The page numbers in the table below reference pages where discussion relating to the Condition of Approvals occur in the May 25, 2007, Staff Report to the Planning Commission (Attachment VIII of the August 10, 2007, Staff Memorandum to Council).

| Page No. | Condition No. | Condition Language |
|---|---|---|
| **All** | **1** | **Consistency with Plans** – Development shall comply with the narrative and plans identified in or referenced in **Attachment IX** of the August 10, 2007, Memorandum to the City Council from Community Development Director, Ken Gibb, except as modified by the conditions below or unless a requested modification otherwise meets the criteria for a Planned Development Modification and/or a Tentative Plat Modification. Such changes may be processed in accordance with Chapters 2.4 and 2.5 of the Land Development Code. |
| **20** | **2** | **Secondary Access** - Per LDC section 4.0.70.c.3, development of lots shall be limited to Lot 1, and 18 additional lots on a street segment not to exceed 600 feet, or 150 feet beyond an emergency turn-around until secondary access, as proposed, is achieved. If development occurs on the 600 foot street segment, prior to development of secondary access, the street terminus shall be constructed with turn-arounds to accommodate emergency vehicles. The turn-around area shall comply with applicable Oregon Uniform Fire Codes, or as specified by the Corvallis Fire Marshall. |
| **23** | **3** | **Landscaping Construction and Maintenance** – The following landscaping provisions shall apply to overall development of the site:<br><br>Landscape Construction Documents – Prior to issuance of PIPC permits, the applicant shall submit to the Community Development Director, a Detailed Landscape Plan for this site that contains a specific planting plan (including correct plant names in the Latin format), construction plans, irrigation plans, details, and specifications for all required landscaped areas on the site in sufficient detail to show the |



**EXHIBIT II.3**
**LUBA REMAND**

| Page No. | Condition No. | Condition Language |
|---|---|---|
| | | relationship between required landscaping and public utilities, franchise utilities, driveways, and other streetscape elements such as light poles, signs and mailboxes. Where conflicts arise between landscaping and streetscape elements and public facilities, flexibility in the location of trees may be permitted. However, a reduction in the number of required streets trees shall not be permitted unless modified through a Planned Development Modification approval.<br><br>Plantings shall comply with LDC Section 4.2 and other conditions of this approval. Required street trees shall have at least a 1½-inch trunk diameter at the time of installation and shall be chosen from the list of species provided in LDC Section 4.2.60, or as approved by the Community Development Director. The plans must have been reviewed and approved prior to installation of landscape materials.<br><br>The landscape plans shall address the following additional requirements:<br><br><u>Landscape Installation and Maintenance</u> – Street trees and ground cover in planter strips in Brooklane Drive shall be installed with PIPC improvements, except for street trees adjacent to Lot 1. Street trees and ground cover in planter strips fronting Lot 1 shall be installed prior to issuance of Final Inspection for Lot 1. Street trees and ground cover in planter strips in other proposed local streets shall be installed on lot frontages as individual lots are developed, and shall be installed prior to Final Inspection for homes on the associated lot. Street trees on Wolverine Drive northeast of lot 13 shall be installed prior to Final Inspection for lot 45.<br><br>The locations of all required trees will be shown on all site plans submitted for public improvement design. A maintenance plan for all plantings shall be provided prior to the City's on-site approval of the landscape installation. This plan shall provide measures to assure all new plantings attain the minimum 90 percent ground cover |



**EXHIBIT II.4**
**LUBA REMAND**

| Page No. | Condition No. | Condition Language |
|---|---|---|
| | | required by LDC Section 4.2.20 within three years from the date of installation approval.<br><br>Security for Landscape Installation and Maintenance – Prior to the approval of the landscaping plan, a Performance Bond (or other LDC-approved financial security) will be provided to the City to secure installation of all required landscaping along new local streets and within Tracts. Prior to Final Plat approval, A 3-year maintenance Bond (or other LDC-approved financial security) shall be provided to the City to cover 50 percent of the costs for landscape materials and labor (plus costs for administration) associated with landscaping installed along all new local streets and Tracts.<br><br>Home Owners' Association Landscape Maintenance Responsibilities – After completion of the required three-year maintenance period, the Home Owners' Association created for this subdivision will be responsible for the perpetual maintenance of any landscaping and management of wooded areas within in Tracts. Prior to final plat approval, the applicant shall submit for approval by the Community Development Director, the Home Owners' Association's Codes, Covenants and Restrictions (CC&Rs) and or bylaws. The Homeowners' Association's CC&R's or bylaws shall include all language from this Condition of Approval. |
| **30** | **4** | **Erosion Control** - Prior to issuance of excavation and grading permits, the applicant shall obtain erosion control permits. Where required by Development Services staff, the applicant shall install an erosion control and re-vegetation product capable of functioning on a 2:1 slope, that will result in 90% vegetation coverage within 3 years, without using irrigation. |
| **35** | **5** | **Tree Preservation and Planting** – Prior to issuance of any permits, the applicant shall submit a report by a certified arborist that identifies all significant trees proposed to be removed in this application, including those identified in the arborist report submitted with the subject application (**Attachments S** and **R.55** of the May 25, 2007, staff report |

| Page No. | Condition No. | Condition Language |
|---|---|---|
| | | to the Planning Commission) and trees impacted by construction of the pedestrian path between Badger Place and Wolverine Drive, and trees impacted by construction of the stormwater swale in the north portion of the site, and trees potentially impacted by construction and use of the detention ponds in Tracts B and C.<br><br>Regarding the pedestrian path, stormwater swale, and ponds, the arborist's report shall detail methods to preserve as many significant trees as possible in or adjacent to these site components. The applicant shall follow tree preservation methods outlined by the arborist. Unless already approved for removal, (any) significant trees may be removed only if a certified arborist recommends removal and the City Forester concurs with the arborist's recommendation.<br><br>The arborist's report shall also illustrate all trees approved/proposed to be preserved. To ensure protection of trees, there shall be no cutting, filling, trenching, nor compaction of the soil under tree canopies and to a minimum distance of 5 feet outside the canopy's dripline, consistent with Section 4.2.20.c of the Land Development Code. To assure this protection, a minimum 5-foot high construction fence (constructed of metal chain link, and supported by metal posts sunk into the ground) shall be installed 5 feet outside the canopy's dripline for all trees to be preserved, prior to any excavation and grading of the development site. An exception may occur upon inspection and a recommendation by a certified arborist.<br><br>Existing trees, including trees on adjacent properties with driplines within 10 feet of the subject site, and construction protection fences shall be illustrated on all site plans submitted for excavation, erosion control, PIPC, and building permits. Tree protection plans shall be submitted to the City for review and approval, and tree preservation fencing shall be installed and inspected, prior to issuance of any excavation and grading, erosion control, PIPC, or building permits. |

| Page No. | Condition No. | Condition Language |
|---|---|---|
| 42 | 6 | **Wetland Determination** - Prior to issuance of PIPC permits, the applicant shall submit a wetland determination report indicating the presence of wetlands. If wetlands are found to be present on the site, prior to issuance of excavation and grading permits, the applicant shall submit documentation from the Department of State Lands verifying that the site development and wetland mitigation plans comply with all applicable local, state, and federal wetland regulations. |
| 46 | 7 | **Archaeological Resources** - Prior to issuance of excavation and grading permits, the applicant shall have the site surveyed by a State Historic Preservation Office (SHPO) qualified archaeologist to determine the presence of archaeological resources on the site, in addition to those identified as site 35-BE-67. The archaeologist shall submit findings and recommendations regarding site development to the applicant/developer, Corvallis Development Services Division, and SHPO for review. The applicant shall comply with all State and Federal regulations pertaining to archaeological, cultural, and historic materials. Prior to issuance of grading and excavation permits and any earth disturbing activities the applicant shall submit a letter from the SHPO verifying that the proposed development complies with applicable State and Federal regulations relative to archaeological, cultural, and historic materials. During construction of the site, the applicant shall continue to comply with applicable regulations. |
| 50, 61 | 8 | **Public Improvement Plans** - Any plans for public improvements referenced within the application or this staff report shall not be considered final engineered public improvement plans. Prior to issuance of any structural or site utility construction permits, the applicant shall obtain approval of, and permits for, engineered plans for public improvements from the City's Engineering Division. The applicant shall submit necessary engineered plans and studies for public utility and transportation systems to ensure that adequate street, water, sewer, storm drainage and street lighting improvements are provided. Final utility alignments (including locations for detention facilities) that maximize separation from adjacent utilities and street trees |



**EXHIBIT II.7**
**LUBA REMAND**

| Page No. | Condition No. | Condition Language |
|---|---|---|
| | | shall be engineered with the plans for public improvements in accordance with all applicable LDC criteria and City, DEQ and Oregon Health Division requirements for utility separations Public improvement plan submittals will be reviewed and approved by the City Engineer under the procedures outlined in Land Development Code Section 4.0.90. **Note:** Land Development Code Section 4.0.70 has been amended to establish street lights as public utilities. Under the revised Code Section, developers shall provide an engineered design for street light installation; obtain appropriate electrical permits from the Development Services Division; and install the street light system concurrent with public improvements. |
| **50, 51** | **9** | **Right-of-Way Dedication** - As part of Phase I, additional ROW shall be dedicated along SW Brooklane Drive in order to achieve the minimum half street standard width of 33 ft from the original ROW centerline.<br><br>Also as part of Phase I, 50 ft of ROW shall be dedicated in Tract D to allow the proposed Oakmont Addition to construct Hawkeye Avenue between the Oakmont Addition subdivision and SW Brooklane Drive.<br><br>In addition, an environmental assessment for all land to be dedicated must be completed in accordance with LDC Section 4.0.110.h. |
| **55** | **10** | **Frontage Improvements** - At the time of development, curbside sidewalk shall be installed along the north side of SW Brooklane Drive between SW Agate Avenue and the private alley located along the northwest portion of Brooklane Park Estates. The sidewalk will connect to existing sidewalk located at SW Agate Avenue to the west. Curb cuts will be provided on both sides of SW Brooklane Drive just west of the private alley described above. New and existing curb cuts shall be constructed or re-constructed to meet current ADA standards. |
| **52** | **11** | **Public Improvements** - Prior to Final Plat approval the applicant shall construct or secure all public improvements within the subject site. |



**EXHIBIT II.8**
**LUBA REMAND**

| Page No. | Condition No. | Condition Language |
|---|---|---|
| 51 | 12 | **Vision Clearance** - The City's Off-Street Parking and Access Standards require a vision clearance triangle be maintained between an elevation of 2 feet and 8 feet above the roadway height for all intersecting streets. The legs of the vision clearance triangle shall be determined from table 3 of the City of Corvallis Off-Street Parking and Access Standards. Site plans showing an unobstructed vision clearance triangle as outlined shall be submitted concurrent with application for public improvement permits. |
| 52 | 13 | **Construction Traffic Plan** - Prior to issuance of excavation and grading permits, the applicant shall prepare a detailed construction traffic plan that outlines proposed hours of operation, route maps, and direction of travel for loaded and empty trucks. This plan shall prohibit construction traffic from using Local Streets as classified in the 1996 Corvallis Transportation Plan. Additionally, construction traffic on the new section of SW Brooklane Drive shall be limited to vehicles of less than 12,000 lbs loaded weight. The construction traffic plan shall be submitted to the City of Corvallis, Development Review for review and approval. |
| 56 | 14 | **Public Sidewalk/Landscape Strip Improvements** - At the time of development, park strips and setback sidewalks shall be constructed adjacent to Tracts A, B, and C. All other park strips and setback sidewalks will be constructed when individual lots are developed as specified in the LDC 4.0.40.a.3.b. |
| 57 | 15 | **Transit Improvements** - The applicant shall place a bus shelter easement and provide a flat, graded pad, adjacent to the Brooklane Drive ROW. The location should be selected in cooperation with City of Corvallis, Transportation Division. |
| 59 | 16 | **Looped Waterline** - City standards are to loop all waterlines to eliminate dead-end runs. The waterline in Buckeye Place shall be looped. When the waterline leaves the ROW, it shall installed in an utility easement. A 15 ft utility easement will be required with a single utility, and a |

| Page No. | Condition No. | Condition Language |
|---|---|---|
| | | 20 ft utility easement will be required if two utilities run parallel to each other. |
| 60 | 17 | **Deed Restrictions for Pressure Reducing Valves** - In order to ensure that future owners of lots 33 thru 36 are aware of the need to install pressure reducing valves (PRV), and as part of the building permit process, the developer shall record deed restrictions outlining this need against lots 33 thru 36 concurrent with the final plat. All costs related to PRV installation and maintenance shall be borne by the property owners. |
| 43, 60, 62 | 18 | **Public Drainage** - All public storm drainage facilities located outside of ROW shall be placed in public drainage easements. This includes pipes, water quality manholes, drainageways, swales, and detention ponds. The minimum required easement width is 15 ft for a single utility and 20 ft for two utilities, or, for drainageways, the 1.5X + 5 LDC 4.5.80 (d)(3) formula. The easement must fully encompass drainageways, swales, and detention ponds. All weather accesses must also be provided to the water detention facilities. |
| 62 | 19 | **Public Detention Facility Design & Maintenance Agreement** - The design of the storm water detention facilities shall incorporate all recommendations of the March 16, 2007, Geotechnical report that was conducted by Foundation Engineering, Inc. The geomembrane liner recommended in the Geotechnical report shall be placed on a slope of 3(h):1(v), or flatter and it shall be covered with at least 12 inches of soil. The detention pond shall remain in the same location and footprint as shown on the submitted Utility Plan. Any alteration to the placement of the pond and its associated structural features may require a Planned Development Modification.<br><br>As part of the plans for public improvements the applicant shall provide engineered calculations for pre-development and post-development peak storm water run-off flows, and demonstrate that the storm drainage facilities are designed to match pre and post development flows based on the 2- |



**EXHIBIT II.10**
**LUBA REMAND**

| Page No. | Condition No. | Condition Language |
|---|---|---|
| | | year, 5-year, and 10-year storm events. The detention facilities shall be designed consistent with both criteria outlined in Appendix F of the Storm Water Master Plan, and criteria outlined in the King County, Washington, Surface Water Design Manual. Infiltration facilities are a recommended means of meeting detention requirements where soil and slope conditions (not more that 10%) permit the use of infiltration facilities and where the facilities will not have an adverse impact on the subject site or adjacent or downhill properties. The detention analysis shall contain a discussion on the feasibility of implementing infiltration during both wet and dry seasons.<br><br>The design for the public detention facilities shall include a landscape plan that details all landscaping essential to ensure the proper function of the detention facilities. This functional landscape plan shall be submitted as part of the plans for public improvements. All associated functional landscaping shall be installed and well established prior to any paving activity on the development site.<br><br>All detention facilities that are part of the public storm drainage system shall be dedicated to the public and shall be subject to a maintenance agreement requiring the developer to maintain the facilities for one year after build-out of all portions of the site that drain to the facilities. The maintenance agreement shall be executed prior to acceptance of public improvements and shall incorporate a maintenance plan and a maintenance bond. The maintenance plan shall be submitted as part of the plans for public improvements and shall be consistent with maintenance requirements for stormwater facilities identified in the King County, Washington, Surface Water Design Manual. The maintenance bond shall be submitted with the maintenance agreement and shall reference the maintenance plan. The maintenance bond shall remain in effect until the detention facilities are accepted by the City. |



**EXHIBIT II.11**
**LUBA REMAND**

| Page No. | Condition No. | Condition Language |
|---|---|---|
| 62 | 20 | **Public Water Quality Facility Design & Maintenance** - As part of the plans for public improvements the applicant shall provide engineered calculations for storm water quality facilities demonstrating compliance with both criteria outlined in Appendix F of the Storm Water Master Plan, and criteria outlined in the King County, Washington, Surface Water Design Manual. Infiltration facilities are a recommended means of meeting water quality requirements where soil and slope conditions (not more that 10%) permit the use of infiltration facilities and where the facilities will not have an adverse impact on the subject site or adjacent or downhill properties. The water quality analysis shall contain a discussion on the feasibility of implementing infiltration during both wet and dry seasons.<br><br>All water quality facilities that are part of the public storm drainage system shall be dedicated to the public and shall be subject to a maintenance agreement requiring the developer to maintain the facilities for one year after build-out of all portions of the site that drain to the facilities. The maintenance agreement shall be executed prior to acceptance of public improvements and shall incorporate a maintenance plan and a maintenance bond. The maintenance plan shall be submitted as part of the plans for public improvements and shall be consistent with maintenance requirements for stormwater facilities identified in the King County, Washington Surface Water Design Manual. The maintenance bond shall be submitted with the maintenance agreement and shall reference the maintenance plan. The maintenance bond shall remain in effect until the water quality facilities are accepted by the City.<br><br>The design for the public water quality facilities shall include a landscape plan that details all landscaping essential to ensure the proper function of the water quality facilities. This functional landscape plan shall be submitted as part of the plans for public improvements. All associated functional landscaping shall be installed and well established prior to any paving activity on the development site. |

| Page No. | Condition No. | Condition Language |
|---|---|---|
| | | |
| | 21 | **Tree Protection on Private Lots** - Homes on lots 1, 2, 5, 13, 24, and 43 shall be designed to minimize impacts to trees. Prior to issuance of permits for excavation and grading for home construction, a minimum 5-foot high, metal, chain-link construction fence, supported by metal poles sunk into the ground, shall be installed 5-feet outside the tree canopy driplines. If an alteration proposed by a certified arborist is reviewed and approved by City staff, an exception to this fencing location standard may occur. |
| 9 -14 | 22 | **House Size Deed Restrictions** - Concurrent with final plat approval, the applicant shall record a deed restriction on lots 19-29 that restricts dwelling size to 1,200 square feet or less. |
| All | 23 | **Tentative Subdivision Plat and Grading Plans** - The approved Tentative Subdivision Plat shall be the revised Plat submitted with the July 5, 2007, appeal letter (Attachment I.6 of the August 10, 2007, Staff Memorandum to the City Council). The approved grading plan shall be the revised grading plan submitted with the July 5, 2007, appeal letter (Attachments I.7, 8 of the August 10, 2007, Staff Memorandum to the City Council). |
| 19 - 51 | 24 | **Cul-de-Sac Length** - As reflected in the revised Tentative Subdivision Plat submitted on July 5, 2007, the length of cul-de-sacs shall be limited to 600 feet. |
| 53 - 56 | 25 | **Trail Width** - The width of the paved portion of the pedestrian and bicycle trail between Badger Place and Wolverine Drive shall be 8 feet. |
| 38- 45 | 26 | **Off-Site Drainage** - Prior to final plat approval, the applicant shall develop a storm water drainage plan that ensures site surface drainage is captured in area drains before it crosses the Brooklane Park Estates alleyway. If new off-site area drains are required above the alleyway, the applicant will utilize the existing utility easements, which were specifically designed for storm drainage and sanitary sewer, and will construct such facilities to discourage storm water from crossing the alleyway. |



**EXHIBIT II.13**
**LUBA REMAND**

| Page No. | Condition No. | Condition Language |
|---|---|---|
| 26-47 | 27 | Lot Grading and Structures - All cuts and fills shown on the grading plan identified as Attachments I.7 and I.8 of the August 10, 2007, Staff Memorandum to the City Council shall be engineered and constructed such that retaining walls are not required. All lots shall be developed in accordance with Chapter 4.5 - Natural Hazards and Hillside Development Provisions and Chapter 4.10 - Pedestrian Oriented Design Standards from the December 31, 2006 Land Development Code. |

**DEVELOPMENT RELATED CONCERNS**

A. **Mailbox Locations** - Mailbox locations shall be coordinated between the developer and the Post Office as part of the public improvements construction process.

B. **Excavation and Grading Plans** - Prior to issuance of any construction permits, the applicant shall submit an excavation and grading plan, including erosion control methods, to the City's Development Services Department for review and approval.

C. **Other Permits** - Prior to issuance of any construction permits, the applicant shall be required to obtain a National Pollutant Discharge Elimination System (NPDES) permit if construction activity will disturb, through clearing, grading, and/or excavation, one acre of the site. Additionally, any permits required by other agencies such as the Division of State Lands; Army Corps of Engineers; Railroads; County; or Oregon Department of Transportation, shall be approved and submitted to the City prior to issuance of any City permits.

D. **Infrastructure Cost Recovery** - Where it is determined that there will be Infrastructure Cost Recovery payments from past public improvements the developer shall pay their required share of the costs prior to receiving any building permits in accordance with Corvallis Municipal Code 2.18.040.

E. **Franchise Utility Plans** - Prior to issuance of public improvement permits, the applicant shall submit, as part of the public improvement plan set, an overall site utility plan that shows existing and proposed franchise utility locations, including vaults, poles, and pedestals. The proposed franchise utilities shall conform to

requirements outlined in Land Development Code Section 4.0.100 - Franchise Utility Installations, including provision of appropriate public utility easements.

F. **Streetscape Plan** - As part of the public improvement plans, the applicant shall include a "streetscape" plan that incorporates the following features: composite utility plan; street lights; proposed driveway locations; vision clearance triangles for each intersection; street striping and signing (in conformance with the MUTCD); and proposed street tree locations.

G. **Development Standards** - Construction of homes on the site will be subject to the development standards of the 2006 LDC, including, but not limited RS-5 Development Standards and development standards in Article IV, to, Chapter 4.10-Pedestrian Oriented Design Standards, Chapter 4.11-Minimum Assured Development Area, and Chapter 4.12-Significant Vegetation Provisions

H. **Spring** - Application materials reference a spring that is believed to be located in the East Drainage. Development on the site should be designed with consideration given to the spring and its potential impacts to future buildings and infrastructure.



**EXHIBIT II.15**
**LUBA REMAND**

**BEFORE THE CITY COUNCIL**

**OF THE CITY OF CORVALLIS**

**FINDINGS – BROOKLANE HEIGHTS CONCEPTUAL AND DETAILED DEVELOPMENT PLAN / TENTATIVE SUBDIVISION PLAT**

| | | |
|---|---|---|
| In the matter of a City Council decision to **approve a Conceptual and Detailed Development Plan / Tentative Subdivision Plat**; and to overturn the Planning Commission's decision, and upholding the appeal. | ) ) ) ) ) ) ) | PLD06-00018/ SUB06-00006 |

PREAMBLE

This matter before the Corvallis City Council is a decision regarding an appeal of the Planning Commission's denial of a Conceptual and Detailed Development Plan and Tentative Subdivision Plat to create 45 residential lots and 4 common tracts within 25.88 acres of land zoned PD(RS-3.5) (Low Density Residential with a Planned Development Overlay). Approximately 10.98 acres of the site (42%) would be retained as open space and set aside in 4 common tracts. The Detailed Development Plan proposes to construct single family homes within the portions of the site identified for development. Certain Land Development Code standards, such as for street designs, are proposed to be modified through the Detailed Development Plan.

The subject 25.88 acre property is currently undeveloped, except for an underground sanitary sewer line that runs along the western and southwestern boundary. The site is located northwest of Brooklane Drive, northeast of Agate Avenue, east of Fairmont Drive, and south of Whiteside Drive. The site is composed of Tax Lot 1000 from Benton County Assessor's Map 12-5-10C. The current owner of the property is Stephen J. Schaberg.

The Corvallis Planning Commission conducted a review of the above referenced Conceptual and Detailed Development Plan / Tentative Subdivision Plat on June 6, 2007. On June 20, 2007, the Planning Commission deliberated and voted to deny the Conceptual and Detailed Development Plan / Tentative Subdivision Plat. A notice of decision was signed on June 22, 2007 (Order #2007-075).



**EXHIBIT II.16**
**LUBA REMAND**

On July 5, 2007, Mr. Stephen J. Schaberg and his representative, David J. Dodson of Willamette Valley Planning (hereinafter referred to as "Appellants") jointly filed an appeal of the Planning Commission's decision to deny the Conceptual and Detailed Development Plan and Tentative Subdivision Plat. The Land Development Code ("LDC") specifies that the City Council hear appeals of Planning Commission decisions regarding these land use applications.

The City Council held a duly-advertised *de novo* public hearing on the application on August 20, 2007. The public hearing was closed; however the written record was held open for seven additional days, and the City Council deliberated and reached a tentative decision on the appeal on September 4, 2007. After consideration of all the testimony and evidence, the City Council voted to overturn the Planning Commission's decision, denying the request and upholding the appeal, thereby approving the Conceptual and Detailed Development Plan and Tentative Subdivision Plat requests with conditions.

**Applicable Criteria**

All applicable legal criteria governing review of this application are identified in the public notices for the June 6 and August 20 public hearings, the staff report to the Planning Commission dated May 25, 2007, the minutes of the Planning Commission hearing and deliberations dated June 6 and June 20, 2007, the staff memo to the City Council dated August 10, 2007, and the minutes of the City Council hearing and deliberations dated August 20 and September 4, 2007.

## FINDINGS AND CONCLUSIONS RELATING TO THE APPEAL OF BROOKLANE HEIGHTS CONCEPTUAL AND DETAILED DEVELOPMENT PLAN / TENTATIVE SUBDIVISION PLAT (PLD06-00018 / SUB06-00006)

**1.** The City Council accepts and adopts those findings made in the staff report to the Planning Commission, dated May 25, 2007, that support approval of the Conceptual and Detailed Development Plan / Tentative Subdivision Plat. The City Council adopts as findings those portions of the Minutes of the Planning Commission meetings, dated June 6 and June 20, 2007, that demonstrate support for approving the Conceptual and Detailed Development Plan / Tentative Subdivision Plat. The City Council accepts and adopts those findings made in the August 10, 2007, staff memorandum to the City Council, that support approving the Conceptual and Detailed Development Plan / Tentative Subdivision Plat, as conditioned. The City Council also adopts as findings those portions of the Minutes of the City Council hearings dated August 20 and September 4, 2007, that demonstrate support for approving the Conceptual and Detailed Development Plan / Tentative Subdivision Plat. The City Council specifically accepts and adopts as findings the rationale given during



**EXHIBIT II.17**
**LUBA REMAND**

deliberations in the September 4, 2007, meeting by Council Members expressing their support for approving the Conceptual and Detailed Development Plan / Tentative Subdivision Plat. The City Council rejects statements made during deliberations in the September 4, 2007, meeting by Council Members expressing opposition to the proposed Conceptual and Detailed Development Plan and Tentative Subdivision Plat. All of the above-referenced documents shall be referred to in these findings as the "Incorporated Findings." The findings below, (the "supplemental findings") supplement and elaborate on the findings contained in the materials noted above, all of which are incorporated herein, by reference. When there is a conflict between the supplemental findings and the Incorporated Findings, the supplemental findings shall prevail.

**2.** The City Council notes that the August 10, 2007, staff memorandum to Council presents information on Attachments VIII-1 through VIII-13 regarding the need for imposing Conditions of Approval 1 through 26. Additionally, the Council notes that the Minutes from the September 4, 2007, City Council deliberations on the subject application contain the rationale for modifying condition 13 and imposing Condition of Approval 27. The Council finds that all of the approved Conditions of Approval are reasonable conditions that are necessary to satisfy the applicable criteria presented through the August 10, 2007, staff memorandum to Council, and through the supplemental findings presented below. The Council notes that COA 21 – 27 have been applied by the City Council, and are illustrated in Attachments I.6 – I.9 of the August 10, 2007, staff memorandum to Council.

**3.** The City Council notes that the record contains all information needed to evaluate the Conceptual and Detailed Development Plan / Tentative Subdivision Plat decision for compliance with the relevant criteria.

**4.** The City Council notes that the Council considered the grounds of the appeal and other issues raised through public testimony.

**5.** To approve a Conceptual and Detailed Development Plan, LDC Sections 2.5.20 and 2.5.40.04 require that the proposal be consistent with the applicable provisions of the Corvallis Comprehensive Plan ("CCP"), LDC, and other polices and standards adopted by the City Council. The Incorporated Findings list all of the applicable approval criteria, and demonstrate compliance with these approval criteria. These supplemental findings elaborate upon and clarify the Incorporated Findings, and primarily address issues raised on appeal. These supplemental findings, like the Incorporated Findings, are grouped into nine categories, which facilitate a comprehensive and cohesive review of the applicable criteria. The categories include Land Use, Compatibility, Natural Features, Circulation, Public Facilities and Services, Franchise Utilities, Solar Access, and Tentative Subdivision Plat. Additionally, some categories include sub-categories. For example, Compatibility includes Basic Site Design & Visual Elements, and



**EXHIBIT II.18**
**LUBA REMAND**

Landscaping for Buffering and Screening etc. The issue categories are identified with a roman numeral, sub-categories are identified by letter, and findings are assigned chronological numbers.

## I. Land Use

Applicable Criteria (CCP and LDC): CCP 3.2.1; 4.13.6; 9.3.2; 9.3.5; 9.3.6; 9.5.1; 9.5.2; and 9.5.13. LDC 3.1.10; 3.1.20.01.

Relevant Conditions of Approval ("COA"): COA 22.

1. The City Council notes that findings in response to the applicable criteria cited above are presented on Attachments IX-9 through IX-14 and Page 14 and 15 of the August 10, 2007, staff memorandum to the City Council.

2. The City Council notes that at the time the application was submitted, the subject site was designated on the Corvallis Comprehensive Plan Map for Low Density Residential Development. The Council notes that the site was zoned PD(RS-3.5), Low Density Residential with a Planned Development Overlay. Council notes that as of December 31, 2006, the subject site was rezoned to PD(RS-5), low density residential with a Planned Development Overlay, through a legislative action as part of the implementation of the 2006 Land Development Code.

3. The Council finds that the subject site may be developed with low density residential uses per the Comprehensive Plan Map and Zoning Map designations.

4. The City Council notes that, as presented to the Planning Commission, the application did not comply with any portion of CCP 9.5.13. Corvallis Comprehensive Plan Policy 9.5.13 requires new subdivisions and planned developments of more than 5 acres in low density districts to incorporate two or more of the following elements in at least 10% of the total acreage:

    - Zero lot line or attached dwellings (where allowed);
    - Minimum allowed lot area; or
    - Dwelling size less than 1,200 square feet.

5. The City Council notes that one reason the Planning Commission denied the application was because it failed to comply with CCP 9.5.13. The City Council notes that during the Planning Commission hearing, the applicant offered to make 11 lots along Buckeye Place comply with the 8,000 sq ft minimum lot size and limit the house size to 1,200 square feet to comply with Policy 9.5.13. The City Council notes that because plans reflecting this change were not provided by the applicant, the Planning Commission was not comfortable imposing such a condition.



**EXHIBIT II.19**
**LUBA REMAND**

6. The City Council notes that, on appeal, the appellants provided plan modifications associated with conditions of approval 22 and 23 to ensure that 10% of the developed area would have the minimum allowed lot area (8,000 square feet) and dwellings on these lots would be less than 1,200 square feet, per CCP 9.5.13. The City Council notes that the appellant's traffic engineer submitted a supplemental letter in support of the conditions of approval indicating the three additional lots, created as a result of providing smaller lots, would not affect the findings of the original traffic impact analysis. This traffic impact analysis concluded that the existing public vehicular circulation network can accommodate the proposed development consistent with applicable criteria.

7. The City Council finds that the appellants adequately addressed CCP 9.5.13 by ensuring 10% of the developed area would have lots less than or equal to, the minimum allowed lot area and that dwellings on these lots would be less than 1,200 square feet. The City Council finds that as conditioned, and as illustrated in graphics on Attachments I.6 and I.7 of the August 10, 2007, staff memorandum to Council, the proposal is consistent with the criteria applicable to the Land Use category given the conclusions in the Incorporated Findings and the supplemental findings.

## II. Compatibility

A. Basic Site Design & Visual Elements

Applicable Criteria (CCP and LDC): CCP 3.2.2; 3.2.3; 3.2.4; 3.2.7; 9.2.1; 9.2.2; 9.2.4; 9.2.5; 11.6.3; 11.6.4; 11.6.6; and 11.6.7. LDC 2.5.40.04; 3.1.30; 4.0.70; and 4.2.30.

Relevant Condition(s) of Approval ("COA"): COA 2, 24, and 27.

1. The City Council notes that findings in response to the applicable criteria cited above are presented on Attachments IX-15 through IX-21 and Pages 5, 6, 15, and 16 of the August 10, 2007, staff memorandum to the City Council.

2. The City Council notes that during public hearings and through public testimony in opposition to the proposed Conceptual and Detailed Development Plan and Tentative Subdivision Plat application, concerns were raised that the proposal did not comply with LDC 4.0.70.3. The Council notes that LDC 4.0.70.3 states that cul-de-sacs should not exceed 600 feet nor serve more than 18 dwelling units. The Council notes that the application reviewed by the Planning Commission proposed a cul-de-sac that was 630 feet in length. The City Council notes that the Planning Commission was unwilling to impose a condition of approval requiring the 630 foot cul-de-sac to be shortened because the Planning



**EXHIBIT II.20**
**LUBA REMAND**

Commission was not provided with a site plan that would illustrate the change and potential impacts to the overall site design resulting from reducing the street length.

3. The City Council notes that on appeal, the appellant suggested reducing the length of the subject cul-de-sac to 600 feet, and provided a revised site plan illustrating the proposed change.

4. The Council finds that applying a condition of approval requiring cul-de-sacs to be a maximum of 600 feet in length would have no negative impacts to the site or site design, as illustrated by the appellant's graphics submitted on appeal. The Council finds that requiring cul-de-sacs to be less than 600 feet as shown in the appellant's graphics submitted on appeal would bring the proposal into compliance with LDC 4.0.70.3. The City Council finds that COA 23 and COA 24 in Attachment VIII of the August 10, 2007, Memorandum to City Council sufficiently address concerns regarding the length of proposed cul-de-sacs.

5. The City Council notes that CCP 9.2.5 describes neighborhood characteristics that should guide the planning of development, which includes both the decision-making process for zoning a site and the development form that implements the zoning. The City Council notes that CCP 9.2.5 recognizes that not every neighborhood characteristic is appropriate for each site or area. Regarding the Brooklane Heights development site, the City Council notes the following site characteristics are most relevant: the site's topography (which includes some steep areas), patterns of existing low density residential development in the area, and the preservation of natural features.

6. The Council notes that the application does not propose typical building elevations, floor plans, or building footprints to demonstrate compliance with the neighborhood characteristics outlined in CCP 9.2.5. The Council notes that the absence of typical building elevations, floor plans, and building footprints was raised as a concern by the Planning Commission and in public testimony. The Council notes that as stated in Development Related Concern G of the Council approved conditions of approval, construction of homes on the site will be subject to development standards in the 2006 LDC, including LDC Chapter 4.10 - Pedestrian Oriented Design Standards. Council notes that LDC Chapter 4.10 provides a menu of Code permitted design options that development will be required to adhere to. Council notes that Condition of Approval 27, which was proposed by the appellant, also requires compliance with the building design standards in 2006 LDC Chapter 4.10 – Pedestrian Oriented Design Standards and 2006 LDC Chapter 4.5 Natural Hazard and Hillside Development Provisions.

7. The Council finds that the proposed site design responds to the prevalent site characteristics noted above, and to the desired neighborhood characteristics



**EXHIBIT II.21**
**LUBA REMAND**

specified in CCP 9.2.5 through the use of new separated sidewalks, and a multi-use trail. The City Council also finds that when homes are constructed per the standards in LDC Chapters 4.10 and 4.5, the development will be pedestrian oriented, will conform to the natural topography of the site, and will provide the desired neighborhood characteristics outlined in CCP 9.2.5. Given these findings, and the similarity of the proposed development to adjacent developments relative to housing type and density, the City Council finds that the Brooklane Heights development is compatible with the housing types in the surrounding neighborhood, including adjacent one and two-story detached single family housing to the north, south, and west.

8. The City Council notes that concerns were raised through public testimony that building heights would be excessive and would negatively impact views from and of the hillside of the proposed development. Council notes that the application does not seek to vary from LDC standards for building heights. The City Council notes that nearly 90% of the trees on the site will be preserved, most in open space tracts.

9. The City Council finds that building to permitted heights of the underlying low density residential zone will not result in negative visual impacts and will protect views from the hill to the maximum extent practicable given the desire to locate development outside of tree groves. The Council finds that the preservation of the majority of the site's trees, and the installation of street trees will buffer views of development when looking at the site from points off the subject site.

10. As discussed in the Incorporated Findings and the supplemental findings, the City Council finds that the proposal, as conditioned, is consistent with the criteria applicable to the Basic Site Design and Visual Elements subcategory.

B. Noise Attenuation, Odors & Emissions, Lighting and Signage

Applicable Criteria (CCP and LDC): LDC 7.2.6.

Relevant Condition(s) of Approval ("COA"):

1. The City Council notes that findings in response to the applicable criteria cited above are presented on Attachment IX-21 of the August 10, 2007, staff memorandum to the City Council. The City Council notes that the analysis in this Attachment concluded that relative to Noise Attenuation, Odors and Emissions, Lighting, and Signage, the proposal is consistent with applicable CCP policies and LDC criteria. The City Council notes that the Planning Commission did not express any compatibility concerns regarding the ability of the proposal to comply with the above criteria. The City Council notes that at least one person expressed



**EXHIBIT II.22**
**LUBA REMAND**

concerns regarding an increase in noise should the site be developed as proposed.

2. As discussed in the Incorporated Findings, the City Council finds that as conditioned, the proposal is consistent with the criteria applicable to Noise Attenuation, Odors and Emissions, and the Lighting and Signage subcategory.

C. Landscaping for Buffering and Screening

Applicable Criteria (CCP and LDC): CCP 3.2.2; 9.2.5; and 4.6.7. LDC 4.2.20; 4.2.40; and 4.2.50.

Relevant Condition(s) of Approval ("COA"): COA 3.

1. The City Council notes that findings in response to the applicable criteria cited above are presented on Attachments IX-22 through IX-23 of the August 10, 2007, staff memorandum to the City Council. The Council notes that analysis presented in these Attachments concludes that, as conditioned, the proposal satisfies applicable CCP policies and LDC criteria regarding Landscaping for Buffering and Screening.

2. In support of its decision to approve the proposed Conceptual and Detailed Development Plan and Tentative Subdivision Plat, the Council finds that the conclusions presented in the May 25, 2007, staff report to the Planning Commission demonstrate how the proposal, as conditioned, is consistent with the criteria applicable to the Landscaping for Buffering and Screening subcategory.

D. Off-Site Parking Impacts

Applicable Criteria (CCP and LDC): LDC 4.1.30(a).

Relevant Condition(s) of Approval ("COA"): none.

1. The City Council notes that findings in response to the applicable criteria cited above are presented on Attachments IX-23 through IX-24 of the August 10, 2007, staff memorandum to the City Council. The City Council notes that analysis in the referenced Attachments concludes that, as conditioned, the proposal is consistent with applicable CCP policies and LDC criteria regarding off-site parking impacts.

2. In support of its decision to approve the proposed Conceptual and Detailed Development Plan and Tentative Subdivision Plat, the Council finds that the conclusions presented in the May 25, 2007, staff report to the Planning



**EXHIBIT II.23**
**LUBA REMAND**

Commission demonstrate how the proposal is consistent with the applicable criteria cited above.

3. As discussed in the Incorporated Findings, the City Council finds that the proposal, as conditioned, is consistent with the criteria applicable to the Off-Site Parking Impacts subcategory.

E. Effects on Air and Water Quality

Applicable Criteria (CCP and LDC): CCP 4.6.2; 4.10.7; 4.11.12; and 7.2.6(A).

Relevant Condition(s) of Approval ("COA"): none.

1. The City Council notes that findings in response to the applicable criteria cited above are presented on pages 12 and 13, and Attachments IX-24 through IX-26 of the August 10, 2007, staff memorandum to the City Council. The City Council notes that analysis in the referenced Attachments concludes that, as conditioned, the proposal is consistent with applicable CCP policies and LDC criteria.

2. In support of its decision to approve the proposed Conceptual and Detailed Development Plan and Tentative Subdivision Plat, the Council finds that the analysis presented in the May 25, 2007, staff report to the Planning Commission demonstrates how the proposal is consistent with the applicable criteria cited above, or is conditioned to that effect.

3. As discussed in the Incorporated Findings, the City Council finds that the proposal is consistent with the criteria applicable to the Effects on Air and Water Quality subcategory.

4. As discussed in the Incorporated Findings and the supplemental findings provided above, with the associated COA, the City Council finds that the proposal, as conditioned, is consistent with the criteria applicable to the Compatibility category.

## III. Natural Features

A. Hillside Development and Tree Preservation

Applicable Criteria (CCP and LDC): CCP 4.2.2; 4.6.1; 4.6.2; 4.6.3; 4.6.5; 4.6.6; 4.6.7; 4.6.9; 51.5(a). LDC 2.15.10; 4.2.20(c).

Applicable Planning Documents: Corvallis Stormwater Master Plan



**EXHIBIT II.24**
**LUBA REMAND**

Relevant Condition(s) of Approval ("COA"): COA 4, 5, 21, 23, and 27.

1. The City Council notes that findings in response to the applicable criteria cited above are presented in Attachments IX-26 through IX-47 and Pages 6 through 12 of the August 10, 2007, staff memorandum to the City Council.

2. The Council notes that public testimony raised concerns regarding impacts to natural features on the site. Council notes that of specific concern were impacts to the oak savanna and upland prairie habitat. Council notes that public testimony recommended that the City of Corvallis purchase the subject site for the purposes of habitat and open space preservation, and park and recreation uses.

3. The City Council finds that the subject site is privately owned and has been designated for low density residential development on current and previous Comprehensive Plan Maps, Zoning Maps, and Planning documents such as the 1983 Hillsides Report. The Council finds that, given the potential for development to occur on the subject site, the most appropriate location for development is outside of the oak groves and tree covered areas. The Council finds that the proposal would build at a lower density than the maximum permitted in the underlying zone, and avoids to the maximum extent practicable, impacts to the existing oak groves and tree covered areas. The Council finds that the common tracts where the oak groves and tree covered areas are located will be maintained by a Homeowners Association, except for public utilities in the tracts, which will be maintained by the City of Corvallis. Given the above, the Council finds that short of not developing at all, the proposed development protects the site's most significant natural features and associated habitat to the maximum extent practicable.

4. The Council finds consideration was given to the potential need for a new neighborhood park in southwest Corvallis, but that the subject site was not a suitable location for a neighborhood park. The Council finds that there are no applicable review criteria to evaluate the proposal with regards to public testimony that recommended the City offer to purchase the property for open space preservation.

5. The Council notes that concerns regarding impacts to identified archeological resources on the site were raised in testimony and during public hearings on the subject application. The Council notes that the State Historic Preservation Office (SHPO) has identified an archeological site on the subject site, and the applicants are aware of the archeological site as evidenced by reference to it in the application. The City Council also notes that SHPO staff are aware of the proposed development and its relationship to the identified archeological site.



**EXHIBIT II.25**
**LUBA REMAND**

6. The City Council notes that COA 7 in Attachment VIII of the August 10, 2007, Memorandum to City Council requires the subject site to be surveyed by a SHPO qualified archeologist to determine the presence of archeological resources. The City Council notes that COA 7 notifies the developer of the need to comply with all State and Federal regulations pertaining to archaeological, cultural, and historic materials.

7. The City Council finds that as conditioned, archeological resources on the site will be protected by state and federal regulations. As such, Council finds the proposal complies with applicable CCP policies governing historic and archeological resources.

8. The Council notes that concerns regarding the extent of grading were raised during public hearings and in public testimony regarding the subject proposal. Specific concerns were raised regarding impacts to slope stability and erosion. The Council notes that three grading plans were submitted for review and consideration. The three plans consisted of the Grading and Tree Preservation Plan, the Alternative Grading and Utility Plan, and the Revised Grading and Tree Preservation Plan, which was submitted on appeal to illustrate the appellant's suggested methods for resolving some concerns raised during the Planning Commission public hearing. The City Council notes that the latter plans and COA 21, 23, and 27 were not presented to the Planning Commission, but were proposed suggested on appeal by the appellant.

9. The Council finds that the plans and graphics submitted on appeal were submitted to illustrate appellant proposed conditions of approval and to address concerns raised during the Planning Commission public hearing and deliberations regarding the extent of grading.

10. The City Council notes that City Staff and the Planning Commission emphasized the relevance and importance of CCP Policy 4.6.7 to the proposed development. The City Council notes that analysis in the May 25, 2007, staff report to the Planning Commission indicated that the applicant's preferred site design and grading plan complied with CCP Policies 4.6.3, 4.6.5, and 4.6.7, with regards to tree preservation and protection of tree covered hillsides.

11. The City Council notes cuts and fills eight feet or less have been found, in past Corvallis land use decisions, to comply with CCP policies regarding hillside development, such as CCP Policy 4.6.7. The City Council notes that analysis in the May 25, 2007, staff report to the Planning Commission indicated that neither of the applicant's grading plans submitted to the Planning Commission satisfied CCP 4.6.7 relative to designing development to minimize cuts and fills and align with the natural contours and topography of the site. This determination was



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based on the fact that significant portions of the site would require cuts or fills greater than eight feet.

12. The City Council notes that the Planned Development process may allow for flexibility with LDC standards and CCP policies. The City Council notes that the Planning Commission did not believe the applicants provided compelling reasons for exceeding eight foot cuts and fills to the degree proposed, and did not believe the application articulated off-setting benefits to compensate for any negative impacts caused by cuts and fills greater than eight feet. The Council notes that the Planning Commission found that the proposed plans did not comply with applicable CCP policies directing development to minimize cuts and fills and soil disturbances on hillsides.

13. The City Council notes that on appeal, the appellants submitted a revised grading plan to limit grading activities to only areas necessary for construction of roads and for lots that are lower than roadways. The Council notes that the plans submitted on appeal minimize cuts and fills compared to the plans submitted to the Planning Commission. The City Council notes that in their final written response to public testimony presented to the City Council, the appellants suggested COA 27, which requires all lots to be developed in accordance with standards for hillside development, found in the 2006 LDC Chapter 4.5 – Natural Hazards and Hillside Development Provisions. The City Council notes that provisions in LDC Chapter 4.5 limit cuts and fills to eight feet unless extenuating circumstances are present, in which case cuts and fills may be as great as twelve feet. The Council notes that the appellant proposed COA 27 corresponds to the graphics and plans submitted on appeal.

14. The Council finds that COA 27 permits mass grading to occur according to the plans identified as Attachments I.7 and I.8 of the August 10, 2007, Memorandum to the City Council. The Council finds that following the grading of the site based on the Revised Grading and Tree Preservation Plan and Cut / Fill Analysis in the just noted Attachments, all lots will be subject to the provisions in LDC Chapters 4.5 and 4.10 and other applicable development standards.

15. The City Council notes that the appellants' final written response states there are a number of compensating benefits that result from the Revised Grading & Tree Preservation Plan. The Council notes that the proposed site plan and grading plan preserve the majority of significant trees and places them in separate tracts and not within individual lots. The City Council notes that grading and developed areas avoid the steepest slopes on the site to the maximum extent practicable. The Council notes the project has been designed with considerably fewer lots than the maximum allowed, preserving over 42% of the site as open space tracts. The Council notes the grading plan associated with COA 27 in Attachments I.6 – I.8 of the August 10, 2007, staff memorandum to City Council,



**EXHIBIT II.27**
**LUBA REMAND**

minimizes rear yard utility easements. Council finds rear yard utility easements may be more costly and difficult for the City and property owners to maintain as opposed to grading pads which allow sewer and storm water lines to flow directly into the public utilities in the streets. The Council finds that COA 27 as illustrated in the referenced plans satisfies applicable LDC criteria and CCP policies.

16. The City Council finds that that after grading the site based on the Revised Grading and Tree Preservation Plan, COA 27 will generally limit cuts and fills to eight feet. Therefore, the Council finds that the proposal complies with CCP Policy 4.6.7, which directs development to minimize cuts and fills and soil disturbances on hillsides.

17. In balancing the planned urbanization of the property and minimization of impacts to the tree-covered hillside, the Council finds that the Revised Grading and Tree Preservation Plan demonstrates how the proposal is consistent with the applicable criteria cited above, or is conditioned to that effect. The Council finds that the Revised Grading and Tree Preservation Plan also removes fewer trees than the other two plans, and minimizes the amount of cut and fill required to construct the proposed roads and lots.

18. As discussed in the Incorporated Findings and the supplemental findings provided above, the City Council finds that the proposal, as conditioned, is consistent with the criteria applicable to the Hillside Development and Tree Preservation subcategory.

B. Natural Hazards

Applicable Criteria (CCP and LDC): CCP 4.7.1; 4.7.3.

Relevant Condition(s) of Approval ("COA"): COA 19.

1. The City Council notes that findings in response to the applicable criteria cited above are presented on Attachments IX-36 through IX-38 of the August 10, 2007, staff memorandum to the City Council.

2. The Council notes concerns were raised during public hearings and in submitted public testimony regarding negative impacts to slope stability and erosion as a result of the proposed development.

3. The City Council notes that the preliminary geotechnical investigation found that the site has low landslide hazard risk and also found that the "high landslide risk" area identified on the City's Natural Hazard Map consists of natural drainages with no visible movement or instability, (see Attachment IX-446 of the August 10, 2007 staff memorandum to the City Council). The Council notes it was the



**EXHIBIT II.28**
**LUBA REMAND**

geotechnical engineers opinion that it was possible to mitigate any risks associated with slope instability by constructing subsurface drainage elements and that the risk of rapid soil erosion was relatively low, (see Attachment IX-447 of the August 10, 2007 staff memorandum to the City Council). The Council notes that the geotechnical engineers provided a standard bench detail showing how benches and toe drains are typically constructed on hillsides to address these concerns, (see Attachment IX-478 of the August 10, 2007 staff memorandum to the City Council).

4. The City Council finds that the geotechnical data demonstrates that the proposed development can be constructed consistent with the applicable LDC criteria and CCP policies.

5. As discussed in the Incorporated Findings and the supplemental findings provided above, the City Council finds that the proposal, as conditioned, is consistent with the criteria applicable to the Natural Hazards subcategory.

C. Drainages, Springs, Wetlands and Hydric Soils

Applicable Criteria (CCP and LDC): CCP 4.10.3; 4.10.4; 4.10.7; 4.10.8; 4.10.9; 4.10.19; 4.11.3; 4.11.11; 4.11.12; 4.13.7; 5.4.7. LDC 1.6.30; 4.0.110(a); 4.5.80; 4.5.110; 4.5.120.

Applicable Planning Documents: Corvallis Stormwater Master Plan

Relevant Condition(s) of Approval ("COA"): COA 6, 7, 18, and 26.

1. The City Council notes that findings in response to the applicable criteria cited above are presented on Attachments IX-38 through IX-47 and pages 17 through 20 of the August 10, 2007, staff memorandum to the City Council.

2. The Council notes that concerns were raised during public hearings and through public testimony that natural springs and subsurface water would adversely impact site development and would cause negative off-site impacts. Council notes that concerns were also raised that the proposed development would alter surface water runoff quantity and quality, adversely affecting western pond turtles and natural features downslope of the subject site.

3. The Council notes that other than the reported observation that surface water was present in the area identified by the Geotechnical report as the east drainage, there is no City documentation indicating that the site contains natural drainageways. However, because the east drainage contains a spring and will



**EXHIBIT II.29**
**LUBA REMAND**

be used to convey stormwater runoff, the Council notes that a drainageway dedication will be required, consistent with LDC 4.5.80.

4. The Council notes that springs are not considered by the LDC, CCP or other Corvallis planning documents as wetlands or streams. The Council finds that springs are not specifically regulated by LDC 4.5. The Council finds that, to the extent that springs contribute to wetlands and riparian areas, the springs on the property were considered in the evaluation of the criteria related to wetlands and riparian areas. The Council finds that the spring referenced in the application materials was adequately addressed in the geotechnical report, and as discussed in the Natural Hazards findings, above, the City Council finds that standard engineering practices will be able to address the presence of subsurface water in accordance with applicable City standards.

5. The Council notes that no portion of the proposed development is within the 100 or 500 year flood plain, and no wetlands or riparian corridors are present on the site. The Council notes that hydric soils are present on the northeast corner of the site. The Council notes that as a COA, a wetland determination will be required in compliance with applicable local, state, and federal wetland regulations.

6. The City Council notes that the Oregon Department of Fish and Wildlife has indicated Western Pond Turtles (listed on the Oregon Sensitive Species List) may be present in the ponds within the Marys River Natural Area, downstream from the proposed development. The Council finds that the proposed detention ponds, drainage swales, and water quality manholes will remove pollutants and protect the quality of water entering the Marys River Natural Area, in compliance with CPP 4.10.7, 4.10.8, 4.10.19, 4.11.12, and 4.13.7, and provisions of the Corvallis Stormwater Master Plan. The Council finds that the proposed development will not negatively impact the turtles breeding and nesting habitat or result in significant changes in water volume or quality.

7. As discussed in the Incorporated Findings and the supplemental findings, the City Council finds that the proposal, as conditioned, is consistent with the criteria applicable to the Drainages, Springs, Wetlands, and Hydric Soils subcategory.

8. As discussed in the Incorporated Findings and the supplemental findings, the City Council finds that the proposal, as conditioned, is consistent with the criteria applicable to the Natural Features category.

## IV. Circulation

### A. Vehicular Circulation



**EXHIBIT II.30**
**LUBA REMAND**

Applicable Criteria (CCP and LDC): CCP 11.2.1; 11.2.2; 11.3.4; 11.3.9; 11.7.4 LDC 4.0.70(a), (c)-(d), (i), and (l); 4.0.110(e)-(f), and (h).

Relevant Conditions of Approval ("COA"): COA 8, 9, 11, 12, 13, and 24.

1. The City Council notes that findings in response to the applicable criteria cited above are presented on Attachments IX-48 through IX-53 and Pages 15 and 16 of the August 10, 2007, staff memorandum to the City Council.

2. The City Council notes that concerns regarding traffic impacts of the proposed development were raised in public hearings and public testimony. The Council notes that specific concerns were related to street and intersection capacity, street grades, speed bumps along Brooklane Drive, and construction traffic should the development be approved. The Council notes that concerns regarding the length of cul-de-sacs were addressed in the Compatibility section of this document. The Council finds that Findings in the Compatibility section regarding street lengths are incorporated here by reference.

3. The Council notes that all street grades are proposed to be less than or equal to a 15% grade in compliance with LDC section 4.0.70.i. The Council notes that the applicant submitted a Traffic Impact Analysis that considered cumulative impacts of the proposed Brooklane Heights development and two other proposed developments along Brooklane Drive. The Council notes that speed bumps are not proposed to be added or removed from Brooklane Drive as part of the subject development. The Council notes that to minimize impacts to surrounding neighborhoods as a result of construction traffic, COA 13 prohibits construction traffic from using local streets.

4. The Council finds that the proposed street design satisfied applicable LDC standards and CCP policies, including provisions that limit street grades on local streets to 15%. The Council finds that the Traffic Impact Analysis provided calculations indicating that the public vehicular circulation network can accommodate traffic generated by the Brooklane Heights development. The Council finds that based on data in the Traffic Impact Analysis, intersections will continue to operate at an acceptable level of service after build out of the Brooklane Heights site. The Council finds that the proposed development will have no effect on the existence or functionality of the speed bumps on portions of Brooklane Drive. The Council finds that COA 13 minimizes impacts from construction traffic to adjacent neighborhoods to the maximum extent practicable.

5. As discussed in the Incorporated Findings and the supplemental findings the Council finds that the proposal, as conditioned, is consistent with the criteria applicable to the Vehicular Circulation subcategory.



**EXHIBIT II.31**
**LUBA REMAND**

B. Bicycle and Pedestrian Circulation

Applicable Criteria (CCP and LDC): CCP 11.5.2. LDC 4.0.40(a)-(b); and 4.0.50 (a)-(b).

Relevant Condition(s) of Approval ("COA"): COA 10, 14, and 25.

1. The City Council notes that findings in response to the applicable criteria cited above are presented in Attachments IX-53 through IX-56 and Page 16 and 17 of the August 10, 2007, staff memorandum to the City Council.

2. The City Council notes that a concern raised during the Planning Commission public hearing and in public testimony, was that the proposed multi-use trail connecting the Badger Place cul-de-sac to Wolverine Drive was five feet wide rather than the LDC standard eight feet for this type of trail. The Council notes that, on appeal, the appellants submitted a revised Tentative Subdivision Plat to be applied as a COA that provided an eight foot wide trail. The Council notes that a concern raised in public testimony was that the proposed street grades were too steep to accommodate bicycle traffic, and concerns were raised that adjacent neighborhoods were not developed with pedestrian sidewalks.

3. The City Council finds that on appeal, the applicant proposed to provide an eight foot wide multi-use trail as shown in the revised Tentative Subdivision Plat, Attachment I.6 of the August 10, 2007, staff report to City Council. The Council finds that COA 25 ensures the multi-use path is eight feet wide per LDC standards. The Council finds that, as conditioned, the trail complies with applicable LDC standards, specifically LDC 4.0.50.c.1.

4. The Council finds that the proposed development will incorporate streets with a maximum grade of 15%, in compliance with LDC 4.0.70.i. The Council finds that pedestrian sidewalks will be provided along all streets to provide pedestrian connections within the subject site and to connecting street sidewalks.

5. As discussed in the Incorporated Findings and supplemental findings, the City Council finds that the proposal, as conditioned, is consistent with the criteria applicable to the Bicycle and Pedestrian Circulation subcategory.

C. Transit

Applicable Criteria (CCP and LDC): CCP 11.7.1. LDC 4.0.60(a)-(b).



**EXHIBIT II.32**
**LUBA REMAND**

Relevant Conditions of Approval ("COA"): COA 15.

1. The City Council notes that findings in response to the applicable criteria cited above are presented on Attachments IX-56 and IX-57 of the August 10, 2007, staff memorandum to the City Council.

2. In support of its decision to approve the proposed Conceptual and Detailed Development Plan and Tentative Subdivision Plat, the Council notes that the analysis and conclusions presented in the May 25, 2007, staff report to the Planning Commission demonstrate how the proposal, as conditioned, is consistent with the applicable criteria cited above.

3. As discussed in the Incorporated Findings, the City Council finds that the proposal, as conditioned, is consistent with the criteria applicable to the Transit subcategory.

4. As discussed in the Incorporated Findings and the supplemental findings provided above, the City Council finds that the proposal, as conditioned, is consistent with the criteria applicable to the Circulation category.

## V. Public Facilities and Services

### A. Water

Applicable Criteria (CCP and LDC): CCP 10.2.4; 10.2.6; 10.2.12. LDC 4.0.80; 4.0.110(a); 4.2.30.

Relevant Conditions of Approval ("COA"): COA 16, and 17.

1. The City Council notes that findings in response to the applicable criteria cited above are presented on Attachments IX-59 and IX-60 of the August 10, 2007, staff memorandum to the City Council.

2. In support of its decision to approve the proposed Conceptual and Detailed Development Plan and Tentative Subdivision Plat, the Council notes that the analysis and conclusions presented in the May 25, 2007, staff report to the Planning Commission demonstrate how the proposal, as conditioned, is consistent with the applicable criteria cited above.

3. As discussed in the Incorporated Findings, the City Council finds that the proposal, as conditioned, is consistent with the criteria applicable to the Water subcategory.



**EXHIBIT II.33**
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B. Sanitary Sewer

Applicable Criteria (CCP and LDC): CCP 10.2.4; 10.2.6; 10.2.12. LDC 4.0.80; 4.0.110(a); 4.2.30.

Relevant Conditions of Approval ("COA"): none.

1. The City Council notes that findings in response to the applicable criteria cited above are presented on Attachments IX-60 and IX-61 of the August 10, 2007, staff memorandum to the City Council.

2. In support of its decision to approve the proposed Conceptual and Detailed Development Plan and Tentative Subdivision Plat, the Council notes that analysis and conclusions presented in the May 25, 2007, staff report to the Planning Commission demonstrate how the proposal, as conditioned, is consistent with the applicable criteria cited above.

3. As discussed in the Incorporated Findings, the City Council finds that the proposal, as conditioned, is consistent with the criteria applicable to the Sanitary Sewer subcategory.

C. Storm Drainage

Applicable Criteria (CCP and LDC): CCP 10.2.4; 10.2.6; 10.2.12. LDC 4.0.80; 4.0.110(a); 4.2.30; 4.5.90.

Relevant Conditions of Approval ("COA"): COA 8, 18, 19, and 20.

1. The City Council notes that findings in response to the applicable criteria cited above are presented on Attachments IX-61 through IX-63 and Page 12 and 13 of the August 10, 2007, staff memorandum to the City Council.

2. The City Council notes that concerns regarding the proposed detention ponds and impacts to, and from drainages, springs and wetlands, were raised during public hearings and in written testimony. The Council notes that specific concerns were related to the discrepancies between the detention pond design recommended by the applicant's geotechnical engineer and the proposed pond design. Other specific concerns include potential increased volumes of surface and stormwater runoff and the impacts of runoff to downslope properties and to the Mary's River Natural Area.



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**LUBA REMAND**

3. The City Council notes that the Planning Commission found the 2:1 detention pond side slopes to be in conflict with the recommendations of the geotechnical report, which called for 3:1 side slopes. The Council notes that in response to the apparent conflict between the detention pond design and the recommendation contained within the geotechnical site investigation by Foundation Engineering, the appellant proposed to revise COA 19 according to the geotechnical report, which called for a geomembrane to be placed on a slope of 3(h):1(v), or flatter and covered with at least 12 inches of soil.

4. The Council finds the proposed detention ponds can be constructed to the specifications recommended by the geotechnical engineer. The City Council finds that if constructed to the specifications recommended by the geotechnical engineer as required by COA 19, the proposal will comply with applicable LDC standards, CCP policies and the Corvallis Stormwater Master Plan.

5. The City Council notes that concerns were raised during the Planning Commission and City Council public hearings regarding impacts of stormwater runoff on downhill properties. The Council notes documentation provided by the appellants with their final written response illustrates the existence of stormwater easements downhill and adjacent to the subject site, which were intentionally installed below the proposed development to accommodate anticipated runoff. The Council notes that the proposal, as conditioned, would provide public storm drainage facilities, including pipes, water quality manholes, drainageways, swales and detention ponds.

6. The Council finds that the proposed detention ponds, drainage swales, and water quality manholes will remove pollutants and protect the quality of water entering the Marys River Natural Area, in compliance with CPP 4.10.7, 4.10.8, 4.10.19, 4.11.12, and 4.13.7, and provisions of the Corvallis Stormwater Master Plan. The Council finds that water levels in the Marys River Natural Area and adjacent wetlands are not expected to change significantly as a result of the proposed development. Therefore, the Council finds that flooding and damage to private property caused by flooding in the Marys River Natural Area would not be caused by the development as proposed.

7. The Council finds that, as conditioned, the proposed storm drainage facilities satisfy criteria outlined in the Corvallis Stormwater Master Plan, and will be designed to capture runoff so that runoff rates from the site after development will not exceed the pre-developed conditions based on 2-year, 5-year, 10-year, and 24-hour storm events. The Council finds that analysis and conclusions in the August 10, 2007, staff report to the City Council and its Attachments, and the documentation presented to the City Council by the appellants regarding the existence of downslope easments, ensure downhill properties will not be negatively impacted by stormwater runoff.



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8. As discussed in the Incorporated Findings, the City Council finds that the proposal, as conditioned, is consistent with the criteria applicable to the Storm Drainage subcategory.

9. As discussed in the Incorporated Findings and the supplemental findings provided above, the City Council finds that the proposal, as conditioned, is consistent with the criteria applicable to the Public Facilities and Services category.

## VI. Franchise Utilities

Applicable Criteria (CCP and LDC): LDC 4.0.100(a) and (b); and 4.0.110(b).

Relevant Conditions of Approval ("COA"): none.

1. The City Council notes that findings in response to the applicable criteria cited above are presented on Attachments IX-63 and IX-64 of the August 10, 2007, staff memorandum to the City Council.

2. In support of its decision to approve the proposed Conceptual and Detailed Development Plan and Tentative Subdivision Plat, the Council notes that the analysis and conclusions presented in the May 25, 2007, staff report to the Planning Commission demonstrate how the proposal is consistent with the applicable criteria cited above, or is conditioned to that effect.

3. As discussed in the Incorporated Findings, the City Council finds that the proposal, as conditioned, is consistent with the criteria applicable to the Franchise Utilities category.

## VII. Solar Access

Applicable Criteria (CCP and LDC): CCP 12.2.3. LDC 4.6.20.

Relevant Conditions of Approval ("COA"): none.

1. The City Council notes that findings in response to the applicable criteria cited above are presented on Attachments IX-64 and IX-65 of the August 10, 2007, staff memorandum to the City Council.

2. In support of its decision to approve the proposed Conceptual and Detailed Development Plan and Tentative Subdivision Plat, the Council notes that the analysis and conclusions presented in the May 25, 2007, staff report to the



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Planning Commission demonstrate how the proposal is consistent with the applicable criteria cited above, or is conditioned to that effect.

3. As discussed in the Incorporated Findings, the City Council finds that the proposal is consistent with the criteria applicable to the Solar Access category.

4. As discussed in the Incorporated Findings and the supplemental findings, the City Council finds that the proposal, as conditioned, complies with the criteria applicable to the Conceptual and Detailed Development Plan.

## VIII. Tentative Subdivision Plat

Applicable Criteria (LDC): LDC 2.4.20; 2.4.30.04; and Chapters 2.5, 3.1, 4.0, 4.1, 4.2, 4.5, 4.6, and 4.7.

Relevant Conditions of Approval ("COA"): 23

A. Consistency with the LDC Chapter 2.4 – Subdivisions and Major Replats

1. The City Council notes that findings in response to the applicable criteria cited above are presented on Attachment IX-66 and IX-67 of the August 10, 2007, staff memorandum to the City Council.

2. The City Council notes that the Planning Commission denied the proposed Conceptual and Detailed Development Plan because the Commission found it did not satisfy applicable CCP policies and LDC criteria. The Council notes that the Planning Commission also denied the Tentative Subdivision Plat because the Plat was predicated on approval of the Conceptual and Detailed Development Plan.

3. The City Council finds that on appeal and through proposed conditions of approval, reasons stated by the Planning Commission for denying the Conceptual and Detailed Development Plan and Tentative Subdivision Plat were resolved, and concerns raised in public testimony were addressed.

4. The City Council notes that in resolving the reasons for denying the Conceptual and Detailed Development Plan, the Tentative Subdivision Plat was revised to illustrate appellant proposed conditions of approval.

5. The City Council finds that as revised and as discussed in the Incorporated Findings, the proposal is consistent with the purposes of LDC Chapter 2.4 and applicable LDC standards for Tentative Subdivision Plats.



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B. Consistency with LDC Chapter 4.4 – Land Division Standards

Applicable Criteria (LDC): LDC 4.4.10; 4.4.20.

Relevant Conditions of Approval ("COA"): none.

1. The City Council notes that findings in response to the applicable criteria cited above are presented on Attachments IX-67 through IX-69 of the August 10, 2007, staff memorandum to the City Council. The City Council finds that the proposal is consistent with the LDC Chapter 4.4.

2. Considering the findings in the Incorporated Findings and the supplemental findings herein, the City Council finds that the proposed tentative subdivision plat is consistent with the applicable LDC criteria.

**SUMMARY CONCLUSION**

As the body charged with hearing appeals of a Conceptual and Detailed Development Plan / Tentative Subdivision Plat decision, the City Council having reviewed the record associated with the Conceptual and Detailed Development Plan / Tentative Subdivision Plat application, considered evidence supporting and opposing the application, finds that the proposal, as conditioned, adequately addresses the review criteria and is found to be consistent with the City's Comprehensive Plan, applicable sections of the Land Development Code, and other applicable approval criteria. The City Council finds that Conditions of Approval are necessary to achieve compliance with the applicable criteria, and the conditions adequately address impacts related to the development. Therefore, the appeal is APPROVED, and the City Council overturns the Planning Commission decision to deny the Conceptual and Detailed Development Plan / Tentative Subdivision Plat application (PLD06-00018/SUB06-00006).

DATED: September 17, 2007

Hal Brauner, ACTING MAYOR

**ATTACHMENTS**

**City Council Notice of Disposition**

**Conditions of Approval**



**EXHIBIT II.38**
**LUBA REMAND**

METOLIUS
CONSULTING

*"Natural solutions in a changing environment"*

November 24, 2008

Fred Towne
City of Corvallis
Planning Department
PO Box 1083
Corvallis, Oregon 97339

**SUBJECT: Response to LUBA remand of Brooklane Heights (PLD06-00018, SUB06-0006).**

Mr. Towne,

To facilitate both your department and City Council in reviewing the Brooklane Heights remand issues, we have prepared a brief overview of the application process we have followed since the onset of the project. Also included are copies of the site plans and drawings that were approved by City Council last year.

**PROJECT GOALS**

The proposed Brooklane Heights development is an in-fill project designed with an emphasis on preserving significant white oak trees and creating home lots in areas without significant trees. This development pattern is consistent with surrounding development and helps the project "fit into" the surrounding area. Most of the trees on the site were identified on the City's 2004 Natural Features Inventory as highly protected significant vegetation. There are a total of 454 significant trees currently on the property, of which 98% are white oaks. The Applicants plan calls for the removal of 34 trees in order to develop the proposed roads and lots. A certified arborist has evaluated the health and safety of the trees and provided guidance as to which ones should be removed. This results in the project having more than 42% of the site set aside as permanent open space in private tracts. The high degree of sensitivity towards these trees ensure the project is in compliance with the hillside and tree preservation provisions found in Comprehensive Plan Policies 4.2.2, 4.6.2, 4.6.3, 4.6.5, 4.6.6, 4.6.9, and 4.6.12.

One of the more challenging aspects of designing this project was providing vehicular access. There is only one location at the southwest corner of the property where vehicles can access the property from Brooklane Drive. At the same time, the only viable location for the required secondary point of access is off-site through the adjacent property to the north. The main road (Wolverine Drive) extends from the southwest corner of the property, winds up the ravine along the eastern edge of the oak stand, and eventually heads east above the oak stand in the middle of the site and eventually connects with a new road that is proposed with the adjacent subdivision (Oakmont Addition). The road layout and lot layout was designed to fit with the existing topography and proposed open spaces. Therefore, roads follow the natural grades, storm water drainage is

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**LUBA REMAND**

provided in existing drainage corridors, tree canopies are preserved and provide a natural corridor throughout the development, and the streets are primarily rectilinear.

The Tentative Plat includes two phases, the first of which is development of Tract D which contains a short segment of roadway between Brooklane Drive and Oakmont Addition Subdivision. Wolverine Drive has been designed with a maximum grade of 15%, in compliance with the City's maximum allowable road grade. Two new cul-de-sacs extend east from Wolverine Drive to provide additional access to the remaining developable portions of the site that are generally void of significant trees. The roadway and lot layout pattern allows for development of the homes in compliance with the 2006 LDC while minimizing impacts to the existing trees. An 8-foot wide trail has been extended from Badger Place to Wolverine Drive in order to enhance pedestrian connectivity. A minimum 50-foot wide vegetative buffer has been retained along the southern project boundary (between the new lots and the alley below) to provide a buffer to the existing homes in Brooklane Park Estates.

When developed, each lot and home will have to comply with the 2006 Land Development Code. This code outlines pedestrian oriented design standards (PODS) that necessitate compliance with this policy of keeping building close to the street with an orientation that is conducive to pedestrians.

**APPLICATION HISTORY**

The following section contains an overview of the past applications and current state of the application. The 25-acre site has had two previous projects approved:

> **1980** - The Planning Commission approved Secret Gardens, a 101-lot conceptual development plan.
>
> **1997** - The Planning Commission approved Oakmont Subdivision, a 69-lot detailed development plan and tentative subdivision plat.

Neither of the prior approvals moved forward with construction of the approved projects. Since these prior approvals had expired a new application was submitted in 2007. The following timeline summarizes the various actions since submittal of the application currently under remand to the City of Corvallis:

> **April 10, 2007** – Steve Schaberg (Applicant) requests approval from the Planning Commission (PC) of a conceptual and detailed development plan for a 42 lot tentative subdivision plat, Brooklane Heights, on 25.9 acres. This application is submitted at the same time as the Oakmont Subdivision that is adjacent to the property on 10.7 acres and was designed and planned with the Brooklane Heights Subdivision. The 24-lot Oakmont Subdivision (SUB06-00007) is approved by the PC on June 22, 2007 and is not appealed; thus, making way for necessary road connections and utilities for the Brooklane Heights project.
>
> **June 22, 2007** – Planning Commission denies the Brooklane Heights application (order 2007-075) based on several items that they felt needed more clarification to help determine whether the application met development standards.

**July 5, 2007** – Applicant appeals the Planning Commission's decision to the City Council based on the fact that the PC could have imposed conditions of approval to address their outstanding concerns. The applicant submits updated drawings to further clarify recommended plan modifications including lot size reductions to meet affordable housing standards and thus make 45 lots in the plan.

**September 17, 2007** – After consideration of all the testimony and evidence, the City Council voted to overturn the Planning Commission's decision, denying the request and upholding the appeal, thereby approving the Conceptual and Detailed Development Plan and Tentative Subdivision Plat requests with conditions.

**September 2007** – A group of citizens appeal the City Council's decision to the state Land Use Board of Appeals (LUBA). LUBA reviews seven "assignment of errors" brought about by the appellants. After reviewing, LUBA denies three assignment of errors and remands portions of the other four assignment of errors back to the City of Corvallis for clarification and a final decision. The assignments of errors are summarized below:

- *Fourth Assignment of Error - This assignment of error primarily deals with a lack of typical building elevations and their absence to identify a sufficient basis to conclude that the development complies with applicable 1993 Corvallis Land Development Code (LDC) 2.5.40.04 criteria for compatibility.*

- *Fifth Assignment of Error - In summary, this assignment of error was **partially** remanded due to the lack of evidence supporting compliance with the 2000 Comprehensive Plan Policy 4.6.7 (hillside development).*

- *Sixth Assignment of Error - This assignment of error was **partially** remanded due to the apparent lack of drainage plan and compliance with Corvallis Comprehensive Plan 4.11.12. The 2000 Comprehensive Plan Policy states that "development upslope of wetlands shall minimize interference with water patterns discharging to wetlands, and shall minimize detrimental changes in water quality for waters discharging to wetlands."*

- *Seventh Assignment of Error - This assignment of error was remanded due to the lack of minimizing negative impacts on environmentally significant resources that are dealt with in various comprehensive plan policies. This overarching generalization was specifically applied to protection of upland prairie, trees, wetlands and pond turtles.*

**CURRENT STATUS**

The Brooklane Heights council-approved plan was remanded by LUBA back to the City of Corvallis for clarification. The City Council must make a decision on the four remanded issues to enable the project to move forward. The Applicant has provided specific responses to each of the Assignment of Errors at the end of this letter to provide further

clarity. Likewise, the approved planning drawings and project layout are attached to help summarize the current approved plan. The next step in the process will be to hold a public hearing that deals specifically with these four remanded issues to make a final decision for the project.

If you would like additional information or have questions please feel free to contact Scott Wright or Steve Schaberg at your convenience.

Respectfully,

Scott Wright, P.E.
Project Manager

**Fourth Assignment of Error (pg. 6)**

*This assignment of error primarily deals with a lack of typical building elevations and their absence to identify a sufficient basis to conclude that the development complies with applicable 1993 Corvallis Land Development Code (LDC) 2.5.40.04 criteria for compatibility.*

The 1993 LDC requires specific responses to various compatibility criteria to ensure that a Detailed Development meets the intent of the LDC and is compatible with surrounding development. The primary concern from LUBA's remand was compatibility with visual elements and neighborhood characteristics. The following discussion is provided to help elaborate on visual elements (scale, structural design and form, materials, and so forth) of the proposed design to ensure that basic site design is compatible with surrounding development.

Existing land use surrounding Brooklane Heights consists of low-density residential on all sides. The lots sizes range from approximately 10,000 square feet to larger than 1 acre on the northern boundary. All of the land to the north, west, and south is fully developed with existing residential homes that range from 1-story ranch style homes to 2-story homes and 2-story homes with a third floor daylight basement. The surrounding homes have square footage ranges on the order of 1,900 to 5,600 square feet. Land to the east has an approved subdivision that will be built in conjunction with this project.

When looking at the overall scale and magnitude of the Brooklane Heights Subdivision it is almost identical with the surrounding land uses. The majority of proposed lots in the Brooklane Heights Subdivision range between 10,000 and 12,000 square feet. Surrounding homes are very diverse in size and character and the only observation that can be made is that homes are varied in size and shape. The existing homes utilize various outside exteriors such as wood, brick and rock as well as a range of roof pitches. Figure 1 illustrates examples of the varied roof slopes, structure heights, architectural styles and materials used in existing homes that abut the western project boundary. Likewise, most of the surround roads in the existing development are sub-standard with no curbs or sidewalks and road widths of 15' to 20'.


**Figure 1.** House on left has a roof peak over 30 feet with no windows on the main wall. House on right illustrates a flatter roof pitch and mostly single level home with large windows. These homes are located next door to each other.

Condition 27 and Development Related Concern G from the Conditions of Approval require that all lots be developed in accordance with the 2006 Land Development Code. Specifically, development of the lots are subject to chapters 4.5 (Natural Hazards and Hillside Development), 4.10 (Pedestrian Oriented Design Standards), 4.11 (Minimum Assured Development Area, 4.12 (Significant Vegetation Provisions) and RS-5 (Lot Development Standards). These development standards have very specific requirements that ensure sound development of the site with new homes.

Homes on the site will require custom designs to fit the existing topography and natural features. Figures 2, 3, 4 and 5 illustrate some typical building elevations that could be built on the lots and meet the 2006 LDC requirements. These are good examples that show how the garages and floor levels can be laid out to meet the 2006 LDC.

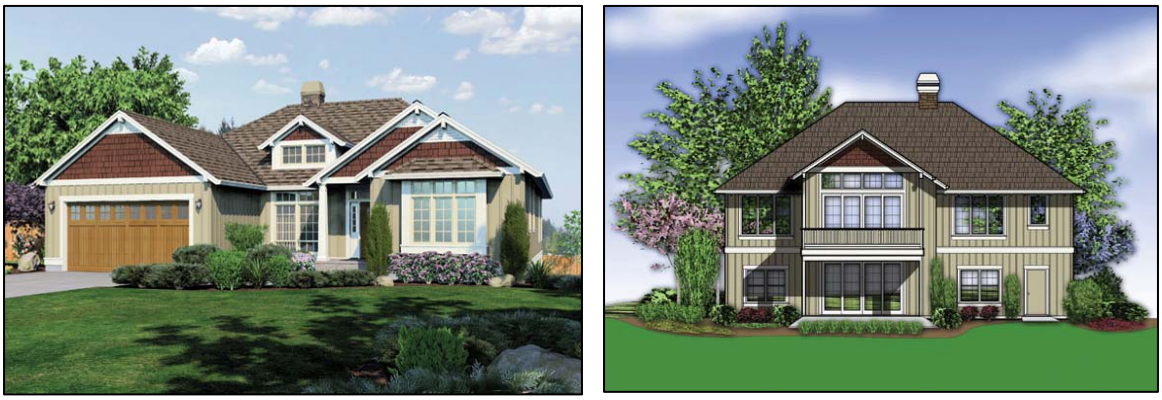


**Figure 2.** Alan Mascord design for downhill sloping lot showing (left) front elevation and (right) rear elevation with a daylight basement/living room on downhill side of lot.

**Figure 3.** Example plan for garage on bottom level and main living floor on top level primarily used for uphill sloping lots (Northwest Home Designs, Inc.).

**Figure 4.** Both pictures are of the same house and show an example daylight basement concept in the recently developed Timberhill area that abuts public roads on two sides.


**Figure 5.** Recent home built in the Timberhill area that meets 2006 LDC and has a daylight basement / living area on a lot similar to the proposed Brooklane Heights.

The 2000 CCP Section 9.2.5 states that "development shall reflect neighborhood characteristics appropriate to the site and area." In particular, the following responses are provided for each item in 2000 CCP Section 9.2.5:

*CCP9.2.5.A "Comprehensive neighborhoods have a neighborhood center to provide services within walking distance of homes."*
The proposed project is an infill development that has already been zoned by past city planning decisions. No zone change is being requested and the development is utilizing the existing city planning strategy for the area.

*CCP9.2.5.B "Comprehensive neighborhoods support effective transit and neighborhood services and have a wide range of densities."*
The project is located along and connects directly to Brooklane Drive which is designated as a neighborhood collector street. All other roads associated with the development are local roads that connect directly to the existing neighborhood collector. The project also proposes to provide a wide range of densities throughout with some small lots less than 8,000 square feet with house size restrictions of 1,200 square feet and large lots that exceed 15,000 square feet.

*CCP9.2.5.C "Comprehensive neighborhoods have a variety of types and sizes of public parks and open spaces to give structure and form to the neighborhood and compensate for smaller lot sizes and increased densities."*
Over 40% of the project area is dedicated open space with the majority of open space containing mature oak trees. This open space creates significant diversity in land use and breaks up long tracts of single family homes. This type of planning will also promote better views of the hillside from a distance and create a clear structure for the neighborhood.

*CCP9.2.5.D "Neighborhood development provides for compatible building transitions in terms of scale, mass, and orientation."*
As previously stated, surrounding development and homes are very diverse in size and character and the only observation that can be made is that homes are varied in size and shape. When looking at the overall scale and magnitude of the Brooklane Heights Subdivision it is almost identical with the surrounding land uses. The majority of proposed lots in the Brooklane Heights Subdivision range between 10,000 and 12,000 square feet and are similar in form to existing neighborhood development.

*CCP9.2.5.E "Neighborhoods have a mix of densities, lot sizes, and housing types."*
Lot sizes range from less than 8,000 square feet to more than 16,000 square feet. Inherent to this large variability in lot sizes are the variability of future homes that will be built on the lots. Since all new homes will comply with the low density lot development requirements, simple compliance will dictate that homes are variable in size and scale. Likewise, each lot will have a custom home built on it that must comply with newer development standards as set forth in the 2006 land development code.

*CCP9.2.5.F "Neighborhoods have an interconnecting street network with small blocks to help disperse traffic and provide convenient and direct routes for pedestrians and cyclists. In neighborhoods where full street connections cannot be made, access and connectivity are provided with pedestrian and bicycle ways."*

The neighborhood to the west, Fairmont Drive, has block lengths of 1,200 feet with no pedestrian or bicycle facilities. The neighborhood to the north, Whiteside Drive, has a cul-de-sac length of 1,200 feet with no pedestrian or bicycle facilities. The neighborhood to the south has a private drive that is over 1,500 feet and has no pedestrian or bicycle facilities. The surrounding neighborhoods have no bicycle or pedestrian facilities with the exception of Brooklane Drive that has both bike lanes and sidewalks. The proposed project will provide a direct connection to Brooklane Drive and will provide full pedestrian facilities throughout the project to ensure pedestrian connectivity. A multi-use path is proposed at the end of the longest cul-de-sac to shorten the block size and ensure bicycle and pedestrian ways. Cul-de-sacs meet the city's length requirements.

*CCP9.2.5.G "Neighborhoods have a layout that makes it easy for people to understand where they are and how to get to where they want to go. The street pattern is rectilinear. The use and enhancement of views and natural features reinforces the neighborhood connection to the immediate and larger landscape."*

The road layout and lot layout was designed to fit with the existing topography and proposed open spaces. Therefore, roads follow the natural grades, storm water drainage is provided in existing drainage corridors, tree canopies are preserved and provide a natural corridor throughout the development, and the streets are primarily rectilinear.

*CCP9.2.5.H "Neighborhoods have buildings that are close to the street, with their main entrances oriented to the public areas."*

When developed, each lot and home will have to comply with the 2006 Land Development Code. This code outlines pedestrian oriented design standards (PODS) that necessitate compliance with this policy of keeping building close to the street with an orientation that is conducive to pedestrians.

*CCP9.2.5.I "Neighborhoods have public areas that are designed to encourage the attention and presence of people at all hours of the day and night."*

When developed, each lot and home will have to comply with the 2006 Land Development Code. This code outlines pedestrian oriented design standards (PODS) that necessitate compliance with this policy by creating homes that are directed towards the street.

*CCP9.2.5.J "Neighborhoods have automobile parking and storage that does not adversely affect the pedestrian environment. Domestic garages are behind houses or otherwise minimized."*

When developed, each lot and home will have to comply with the 2006 Land Development Code. This code outlines pedestrian oriented design standards (PODS) that are established to do the following: foster human-scale development that emphasizes pedestrian rather than vehicular features, promote pedestrian oriented buildings, pedestrian amenities, and landscaping that contribute positively to an appealing streetscape, promote an environment where developed areas, recreational areas, and multi-use paths are accessible to all, promote pedestrian safety by increasing the visibility and vitality of pedestrian areas, ensure direct and convenient access and connections for pedestrians and bicyclists, augment the sidewalk and multi-use path system for pedestrians, provide a connected network of sidewalks and multi-use paths, encourage street activity to support livable neighborhoods and vital commercial areas, ensure that developments contribute to the logical continuation of the City's street and block form

and/or establish block patterns in parts of the City where they do not exist, provide a sense of diversity and architectural variety, especially in residential areas, through the use of varied site design layouts and building types and varied densities, sizes, styles, and materials, encourage development and building designs that promote crime prevention and personal and community safety, and encourage development and building designs that maintain some level of privacy for individual dwelling units. Therefore, necessary compliance with Section 4.10 of the 2006 land development code will ensure compliance with this comprehensive plan policy .

*CCP9.2.5.K "Neighborhoods incorporate a narrow street standard for internal streets which slows and diffuses traffic."*
The proposed development is consistent with City of Corvallis street standards and no variance is requested. The proposed street with for all the local streets is 28 feet and is typical of narrow street standards.

*CCP9.2.5.L "Neighborhood building and street proportions relate to one another in a way that provides a sense of enclosure."*
The development is similar to the surrounding areas and provides a similar scale to the existing development.

*CCP9.2.5.M "Neighborhoods have street trees in planting strips in the public right-of-way."*
The proposed project complies with current development standards that require street trees planted in a public right-of-way. Typical street sections are shown on the drawings submitted with the application and a landscaping plan is provided.

In addition to specific responses to section 9.2.5 above, CCP 3.2.2 states that primary uses permitted outright are considered compatible with each other when conforming to all standards of the district. Since the project is not asking for modifications to district requirements, the future homes built on the site will comply with the district and be compatible with surrounding land uses according to the comprehensive plan policy. A summary of development standards is included in the table below:

| Criteria | 2006 RS – 5 Standard | Proposed Project Standard |
|---|---|---|
| Minimum Lot Area<br>Single Family House | 8,000 sq. ft. minimum | 7,600 sq. ft. minimum |
| Min Avg Lot Width<br>Single Detached | 65' | 65' |
| Setbacks<br>Front Yard | 15' minimum | 15' minimum |
| Rear Yard | 15' minimum | 15' minimum |
| Side Yard | 5' minimum | 5' minimum |
| Garage/Carport Entrance | 19' entrance parallel to street<br>15' entrance perp. to street | 19' entrance parallel to street<br>15' entrance perp. To street |
| Structure Height | 30' maximum | 30' maximum |
| Lot Coverage | 50% | 50% |

In addition to meeting the Comprehensive Plan Policy guidance, the project design must take into account Section 2.5.40.04 of the LDC. This section requires that the following compatibility factors be considered for approval of the plan:

- **Basic site design (the organization of uses on a site);**

This project has been designed with an emphasis on preserving the majority of the significant white oak trees on the site. This development pattern is consistent with surrounding development and helps the project "fit into" the surrounding area. Most of the trees on the site were identified on the City's 2004 Natural Features Inventory as highly protected significant vegetation. There are a total of 454 significant trees currently on the property, of which 98% are white oaks. The applicants plan calls for the removal of 34 trees in order to develop the proposed roads and lots. A certified arborist has evaluated the health and safety of the trees and provided guidance as to which ones should be removed. This results in the project having more than 42% of the site set aside as permanent open space in private tracts. The high degree of sensitivity towards these trees ensure the project is in compliance with the hillside and tree preservation provisions found in Comp Plan Policies 4.2.2, 4.6.2, 4.6.3, 4.6.5, 4.6.6, 4.6.9, and 4.6.12.

One of the more challenging aspects of designing this project was providing vehicular access. There is only one location at the southwest corner of the property where vehicles can access the property from Brooklane Drive. At the same time, the only viable location for the required secondary point of access is off-site through the adjacent property to the north. The main road (Wolverine Drive) extends from the southwest corner of the property, winds up the ravine along the eastern edge of the oak stand, and eventually heads east above the oak stand in the middle of the site and eventually connects with a new road that is proposed with the adjacent subdivision (Oakmont Addition). The Tentative Plat includes two phases, the first of which is development of Tract D which contains a short segment of roadway between Brooklane Drive and Oakmont Addition Subdivision. Wolverine Drive has been designed with a maximum grade of 15%, in compliance with the City's maximum allowable road grade. Two new cul-de-sacs extend east from Wolverine Drive to provide additional access to the remaining developable portions of the site that are generally void of significant trees. The roadway and lot layout pattern allows for development of the homes in compliance with the 2006 LDC while minimizing impacts to the existing trees. An 8-foot wide trail has been extended from Badger Place to Wolverine Drive in order to enhance pedestrian connectivity. A minimum 50-foot wide vegetative buffer has been retained along the southern project boundary (between the new lots and the alley below) to provide a buffer to the existing homes in Brooklane Park Estates.

- **Visual elements (scale, structural design and form, materials, and so forth)**

The new lots will accommodate small to large single family homes. The homes will be designed and placed on the lots similar to the homes in Fairway View Subdivision, just west of this site. The predominant landscape feature will be the existing white oaks, most of which are slated for preservation. Approximately 23 of the 42 lots (55%) will be adjacent to or across from an open space tract, where the trees have been preserved. Those portions of the street that are not covered by an oak tree canopy will be planted with new street trees as shown on Attachment K.

- **Noise attenuation, noxious odors, lighting and signage**

Noise and odors on the site are anticipated to be similar to those permitted on adjacent residential lands. The proposed homes will have garbage cans for their refuse and recyclables within their individual garages or behind a screen wall or fenced within the side yard. Therefore, no noxious odors are anticipated.

Exterior lighting on the buildings will be provided near the front entry of each house and for patios or decks. No other exterior lighting is proposed. All exterior lighting will be shielded so as not to produce glare onto adjacent properties. Lighting will provide added safety and security for both residents and visitors.

Signage will be typical street signs that will have street names and traffic control devices in accordance with the Manual on Uniform Traffic Control and city standards. Signs will be the same as surrounding neighborhoods.

- **Landscaping for buffering and screening**

New 1.5-inch caliper street trees will be installed within new park strips, unless the existing tree canopy will be impacted, (Attachment K). Where existing tree canopy exists, no new street trees will be provided. Street trees will also be installed 5-feet behind a portion of the new sidewalk along Brooklane Drive, where the existing tree canopy does not exist. The new street trees will be installed or financially guaranteed prior to the issuance of a Certificate of Occupancy and will be designed to ensure 90% coverage within a 3-year period. Landscaping of home sites will be in accordance with the 2006 LDC.

- **Traffic**

The applicant has submitted a traffic impact analysis for the proposed development to determine the traffic impacts that will result from this development as well as the other two Brooklane subdivisions currently under consideration, (Oakmont Addition and Cascade Crest). The study evaluated the new vehicle trips that would be generated by the Brooklane Heights Subdivision and the impacts to nearby intersections. The results of the study found that when the site is developed, all three study area intersections would operate at acceptable levels of service and no adverse effects will be created.

- **Effects on off-site parking**

The proposed development will have no effect on off-site parking since there is no off-site parking around the development. The proposed project will have adequate garage, driveway, and street parking along the new local roads for typical residential use and gathering events.

- **Effects on air and water quality**

The City has clear and objective water quantity and water quality standards as described below in the Sixth Assignment of Error. It has been demonstrated through standard engineering calculations and product performance standards that the proposed drainage and water quality plan meets the City's stormwater detention and water quality standards for new development. By meeting these standards, the project minimizes detrimental changes in water quality for waters discharging into the

public storm drainage system and further minimizes detrimental changes in water quality downstream of the site. Effects on air quality will be typical of residential development and nothing is proposed that would have an abnormal effect.

In conclusion, the proposed grading plan (Exhibit X) submitted in our July 5, 2007 response puts forth a grading plan that is compatible with the 2006 LDC home development requirements and reduces grading limits to primarily the roads and utilities necessary to support the development. The physical nature of the site will ensure homes are varied and designed to the existing topography similar to surrounding homes. The grading plan, mix of proposed lot sizes (~7,600 – 21,000 square feet), preservation of 42% open space, preservation of most mature trees with tree canopies, and City's Conditions to meet 2006 LDC provisions (sections 4.5, 4.10, 4.11, and 4.12) for the homes will ensure that the site and homes are compatible with surrounding development.

**Fifth Assignment of Error (pg. 9)**

*In summary, this assignment of error was **partially** remanded due to the lack of evidence supporting compliance with the 2000 CCP 4.6.7 (hillside development).*

*CCP4.6.7.A "Plan development to fit the topography, soil, geology, and hydrology of hillsides and to ensure hillside stability both during and after development."*

Multiple geotechnical investigations have been performed on the site that included several on-site visits, laboratory soil sampling and slope stability analyses. Eighteen on-site test pits were excavated throughout the site in key locations to determine soil properties and characteristics. Based on the geotechnical properties of the soils and the site characteristics, there is a low potential for landslides or instability of the area and development of the site will not change this scenario. A more detailed geotechnical investigation was performed in May 2008 and a copy of that geotechnical report is attached to this letter that outlines their recommendations to ensure the creation of a stable site during and after development. This geotechnical report already meets the intent of the 2006 LDC Section 4.5 – Hillside Development as described below.

The Site Assessment (**2006 LDC Section 4.5.60.04.b)** is an overview of site conditions, as well as a professional evaluation of whether or not additional studies are needed prior to development on a property. The Site Assessment shall be completed and stamped by either a Certified Engineering Geologist or by a Licensed Civil Engineer, licensed in the Specialty of Geotechnical Engineering. At a minimum, the Site Assessment shall include the following elements:

1. A field investigation of the site and vicinity;
2. A discussion of geologic hazards, if any;
3. Suitability of the site for proposed development, from a geologic standpoint; If applicable, discussion of any unusual or extreme geologic processes at work on the site, such as rapid erosion, Landslide Hazard, flood hazard, rockfall, subsidence, debris run-out, or other features;
5. A list of any geologic hazards that may affect the proposed land use, including slope stability, debris flow, flooding, topography, erosion hazard, shallow groundwater, springs, expansive soils, subsidence, fault rupture, or any other geologic hazard discovered by the investigation;

6. If applicable, an identification of any areas of the site recommended to be avoided for human-occupied structures;
7. If necessary, identification of mitigation measures needed to address any anticipated geologic problems;
8. A discussion regarding the need for follow-up studies that should be conducted, such as engineering geotechnical reports, additional subsurface exploration, or more extensive soil reports; and
9. Feasibility of the site for the proposed development.

The geotechnical reports and field exploration of the site have addressed the site assessment requirements in the 2006 LDC Section 4.5.60.04 as well as Section 4.5.60.05 that requires a geotechnical engineering report for the site. These field exploration efforts and geotechnical studies provide specific details and recommendations that create a safe and stable development pattern for the proposed project.

To further enhance the compatibility of the site and maintain existing stormwater routing, drainage corridors have been maintained and utilized for stormwater routing. The main drainage corridor on the west side of the property is utilized for a detention and water quality treatment area. By maintaining the open drainage corridor with large scale roughness (i.e. grass) the potential for removing suspended sediment is maximized.

*CCP4.6.7.B "Preserve the most visually significant slopes and ridgelines in their natural state by utilizing techniques such as cluster development and reduced densities."*
The proposed development has no impacts to the ridgeline as there is already development upslope and around the area. The upslope development consists of residential homes on large lots that exceed 1-acre.

*CCP4.6.7.C "Preserve significant natural features such as tree groves, woodlands, the tree-meadow interface, and specimen trees."*
The existing site is approximately 26 acres and of that area over 42% (11 acres) is set aside as open space to protect existing natural features that include tree groves and existing oak woodlands. There is over 3 acres provided for public right-of-way. The remaining developed area for residential development is 11 acres, which is less than half of the 26 acre parcel. This policy also **emphasizes the priority** for hillside development to preserve and protect trees to enhance variability in home development and provide contrast for the view looking at the hillside.

The proposed development pattern utilizes existing open areas, that don't have trees, to cluster the new home lots. These existing open areas have been referred to as upland prairies. Actual upland prairies are dynamic environments that do not remain static and require regular maintenance to be maintained in prairie habitat. Upland prairies were historically maintained by natural fires or intentional human caused fires. In the absence of these episodic events, the succession of upland prairie is shrubs and then trees. This has already happened at the project site based on historical photos (Figure 8) and eyewitness accounts of neighbors. Therefore, preservation of the existing tree groves and developing the open areas is the best alternative from the standpoint of long-term maintenance and

sustainability. This type of development pattern is also consistent with CCP 4.6.3, 4.6.5, 4.6.6, and 4.6.7.

*CCP4.6.7.D "Align the built surface infrastructure, such as roads and waterways, with the natural contours of terrain and minimize cutting and filling in developments."*
The site has several competing issues that require balancing improvements with preserving natural resources. It has been decided that the natural oak woodlands are the primary area to be preserved with the majority of development taking place in open areas that do not have trees and only have degraded meadows. Likewise, it was decided to maintain natural drainage patterns as much as possible; therefore, drainage facilities were located in the areas of natural drainage corridors where detention and water quality could be created.

Roads were designed to minimize impacts to existing oak woodlands and at the same time meet the City's criteria for maximum slopes and maximum cul-de-sac lengths. The primary road entrance to the site is located on the west side in an area that minimizes disturbance and grading of the existing slopes. The road is run upslope at the maximum allowable 15% grade to access the northwest portion of the site where the lots are clustered in an area that has no trees. Two cul-de-sacs were utilized to minimize the use of roads while still accessing isolated areas that were created while trying to minimize impacts to oak woodlands.

The July 5, 2007 grading plan (Drawing X and Y) for the site was approved with the City Council's decision. The grading plan nearly eliminates grading on the lots and grades only the areas necessary to build roads and utilities to support the development. Likewise, sidewalks are curbside in areas near trees and at drainage corridors to help reduce impacts and minimize the overall footprint of the cuts and fills.

Although there is no cut and fill standard in the 2000 LDC that this project is reviewed under, the design for public infrastructure tries to minimize cuts and fills. A precedence standard for prior projects has moved towards a maximum cut and fill of 8 feet and the majority of the approved grading plan meets this standard. Likewise, the approved grading plan promotes compliance with the 2006 LDC Section 4.5.80.04.d - Individual Lot Grading Standards. These standards apply to lots which contain slopes equal to or greater than 10 percent, as mapped on the Natural Hazards Map. The maximum cut and fill height is 8 feet for circumstances with no extenuating conditions. It is anticipated that some of the lots will qualify for one extenuating circumstance based on the desire to protect significant trees and in this case the cut and fill height would be limited to 10 feet around the tree.

*CCP4.6.7.E "Minimize soil disturbances and the removal of native vegetation and avoid these activities during winter months unless impacts can be mitigated."*
Soil disturbances are minimized by providing over 40% open space areas that will not be impacted by ground disturbances. Likewise, no grading will be done during winter months to help reduce erosion and soil impacts. Grading for the streets and utilities would take place during summer months, likely during June through October.

*CCP4.6.7.F "Design developments and utilize construction techniques that minimize erosion and surface water runoff."*

The primary surface water drainage corridor is proposed to remain in place and provide a natural filtering system for the majority of storm water runoff. This drainageway will be improved with a detention pond and water quality facilities that utilizes above ground detention and vegetation to improve water quality by removing suspended sediment. Construction will be required to comply with city and state erosion control standards through the NPDES 1200-C construction permit. Under this permit, erosion control measures must be designed and installed to ensure sediment and sediment laden waters do not leave the site during and after construction. Erosion control measures would include silt fences, silt screens around drainage structures, vegetated buffer strips to filter stormwater runoff, seeding and mulching disturbed slopes and similar erosion control practices approved by the city and state.

*CCP4.6.7.G "Demonstrate a concern for the view of the hills as well as the view from the hills."*

Looking at the hill from the south the most distinct feature is the canopy of oak trees in and around the site. The development plan protects the tree canopy by providing over 40% open space primarily protecting trees and developing the space where no trees are present. The existing grass area is severely degraded as a meadow due to the fact that it is mowed on a regular basis during summer months and the City's Municipal Code requires that grass and weeds be kept under 10 inches in height from June 1 through September 30.

The tree canopy provides contrast when looking at the hillside. The proposed development aims to protect the existing trees to the maximum extent possible by locating roads, homes, and infrastructure outside the treed areas. This will ensure that distant views looking at the hillside will see a break up of homes and patches of tree cover that are existing, mature trees. The development will create lots that require custom homes that are contoured to the existing terrain. This will be created by meeting the requirements of the 2006 LDC for home construction.

**Sixth Assignment of Error (pg. 14)**

*This assignment of error was partially remanded due to the apparent lack of drainage plan and compliance with CCP 4.11.12. The 2000 CCP policy states that "development upslope of wetlands shall minimize interference with water patterns discharging to wetlands, and shall minimize detrimental changes in water quality for waters discharging to wetlands."*

The existing drainage patterns for the project site are illustrated in Drawing 1.9. This drawing shows the predominant overland drainage pattern is downhill into an existing public storm drainage system along the north side of an existing private road. From this public storm drainage system the water is routed under Brooklane Drive and has several outfalls into a historic drainage ditch along the Marys River Natural Park. The historic drainage ditch has been documented as a wetland and restoration around the drainage ditch has focused on creating wet prairie that is most sensitive to water levels and not water quality.

With regards to the first part of the comprehensive plan policy that requires development upslope of wetlands to minimize interference with water patterns discharging to wetlands, the proposed project does not interfere with the existing drainage patterns. **The proposed development utilizes the existing public storm drain system and maintains existing storm drain outfalls to the wetland area.**

The 2000 CCP also requires the project to minimize detrimental changes in water quality for waters discharging into wetlands. In order to meet this requirement, the City of Corvallis has developed a Stormwater Master Plan. The City's plan requires that storm water be treated for quantity (i.e. detention) and quality based on a combination of the King County Surface Water Design Requirements and the City's Stormwater Master Plan.

Drainage plans were developed for the project and are contained in exhibit N (Brooklane Heights Utility Plan) of the original application. The City's surface water runoff criteria requires that post-development runoff from the entire site be limited to pre-developed conditions for the 2, 5 and 10-year rainfall events. In order to maintain historical runoff rates the site must incorporate detention facilities that will allow the excess runoff to be temporarily stored and metered out at historical rates. Historical and post-development rates were determined using the standard TR-55 method with localized rainfall data, an acceptable runoff prediction method accepted by the City of Corvallis. The required detention for the site is approximately ±30,000 cubic feet with minor variability based on final configuration of the detention storage pond. The inflow and outflow hydrograph were generated and are illustrated in Figure 6.

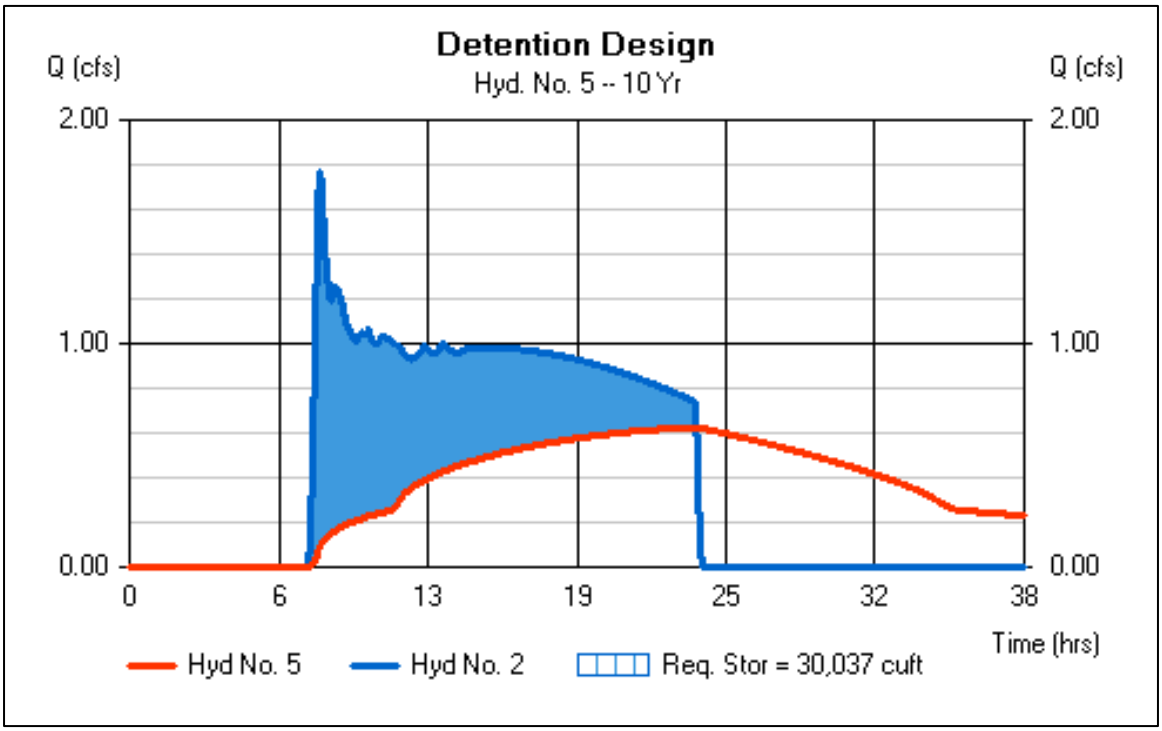



**Figure 6.** Pre and post-development hydrographs for the 10-year storm event showing how the detention facility will limit outfall to historical rates. Hyd No. 2 is the developed conditions inflow hydrograph and Hyd No. 5 is the controlled flow rate that leaves the detention system.

The proposed detention facilities consist of at-grade detention ponds located in the existing drainage corridor on the west side of the development as illustrated in exhibit N. These detention facilities will be built in accordance with geotechnical requirements and will include a pond liner to ensure long-term structural stability and safety.

In order to collect stormwater runoff and direct it into the detention ponds, new public storm drain pipes will be installed in the streets. For homes that do not directly drain into the public street and storm drain pipes, private easements will be provided to drain them directly to the open spaces and overland flow into the detention facilities. For homes below the detention facilities they will be piped to the nearest public storm drain system below the site. Off-site public storm drain systems will be upsized to provide adequate carrying capacity for the 25-year runoff event as recommended in the City's design criteria. In addition, a 100-year runoff event will be routed through the system to ensure no structural damage is done to downstream development.

The basic water quality requirement from the 2005 King County Storm Design Manual is 80% removal of Total Suspended Solids (TSS) for flows up to the water quality design flow; however, the City of Corvallis water quality criteria requires 70% removal of TSS. For fairly flat sites that have less than 5% slopes, at-grade bioswales and similar water quality treatment facilities are appropriate. In contrast, steep sites with slopes greater than 5% are not conducive to typical "open-swale" type water quality facilities because the runoff moves too rapidly and suspended solids are not able to settle out of the flow. One alternative to provide removal of suspended solids that has been used successfully in the City of Corvallis is hydrodynamic separators. Hydrodynamic separators rely on density differences and gravity to remove suspended solids and floatables (hydrocarbons, floating debris, etc.) from stormwater runoff to improve water quality.

We are proposing the trademarked BaySeparator system be installed for the project as illustrated in Figure 7. The BaySeparator has been used in Corvallis on similar development projects for water quality. The proposed BaySeparator system splits water between two different manholes for optimal removal efficiency, responding to changes in the influent flow rate. Pollutants are trapped in the two manholes until they are removed by routine maintenance. BaySeparator systems are designed as a stand alone, full treatment (80% annual aggregate removal efficiency) systems that meet the TSS removal requirments.

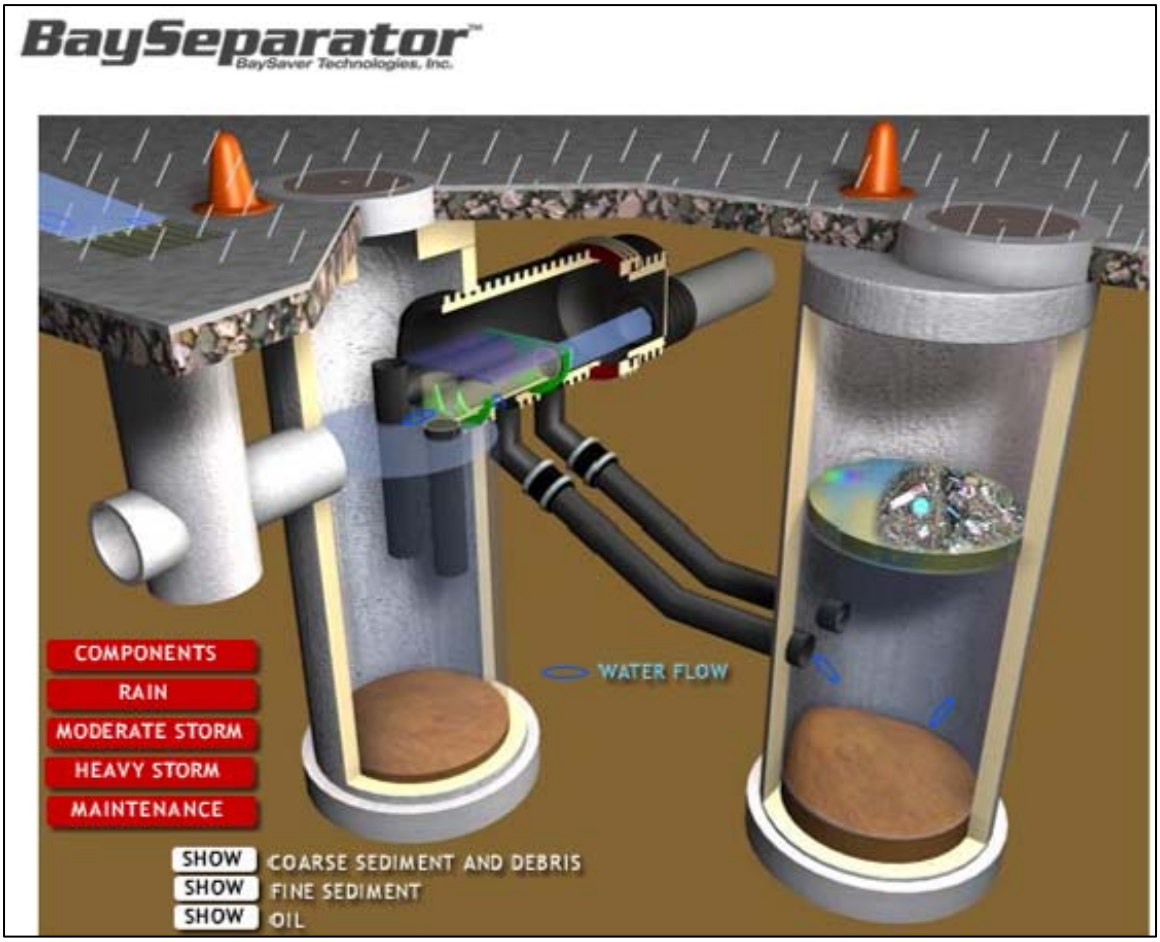



**Figure 7**. Example of BaySeparator proposed for water quality requirements on the site.

In summary, the City has clear and objective water quantity standards that require detention of post-development flows to historical pre-developed runoff rates for the 2, 5, and 10-year storm events. Likewise, the City has a clear water quality standard that requires removal of 70% TSS for the water quality storm event. It has been demonstrated through standard engineering calculations and product performance standards that the proposed drainage and water quality plan meets the City's stormwater detention and water quality standards for new development. By meeting these standards, the project minimizes detrimental changes in water quality for waters discharging into the public storm drainage system and further minimizes detrimental changes in water quality downstream of the site. Hence, it can be concluded that the project meets the intent of the 2000 CCP 4.11.12.

**Seventh Assignment of Error (pg. 16)**

*This assignment of error was remanded due to the lack of minimizing negative impacts on environmentally significant resources that are dealt with in various comprehensive plan policies. This* ***overarching generalization*** *was specifically applied to protection of upland prairie, trees, wetlands and pond turtles.*

The 2000 Comprehensive Plan has several policies that deal with trees, specifically:

> *CCP4.6.3 "Tree-covered hillsides within the City Limits shall retain a tree-covered appearance prior to development review."*
> *CCP4.6.5 "On tree-covered hillsides, development shall be designed to preserve as many trees as possible and tree removal shall be consistent with the approved development plan."*
> *CCP4.6.6 "On tree-covered hillsides, the design of dwellings and their placement shall be planned to retain a sufficient number of trees to preserve a green, tree-covered hillside appearance."*
> *CCP4.6.7.C "Preserve significant natural features such as tree groves, woodlands, the tree-meadow interface, and specimen trees."*

The Comprehensive Plan clearly puts an emphasis on maintaining trees and tree-covered hillsides when development is allowed. The proposed development undoubtedly saves the large treed areas by creating protected open space areas around the existing tree groves (42% of the property).

On the other hand, the Comprehensive Plan has little to say about upland prairies. Upland prairies are dynamic environments that do not remain static and require regular maintenance to be maintained in prairie habitat. Upland prairie sites are difficult to maintain in a natural setting let alone in an urban environment. For instance, upland prairies were historically maintained by natural fires or intentional human caused fires created by Native Americans. In the absence of these episodic events, the succession of upland prairie is shrubs and then trees. This has already happened at the project site as the historical photos (Figure 8) and eyewitness accounts of neighbors describe the continual advancement of shrubs and oak trees into the prairie area.

**Figure 8.** Left photos shows the site in1948 with predominantly open meadow area that was being farmed. Right photo shows current condition with significant encroachment of shrubs and expansion of oak trees in the southern portion of the site reducing the upland prairie and creating an isolated patch of meadow (Google Earth 2005).

Without fire, plant litter accumulates on the soil surface, which alters nutrient and water availability, disease and herbivory incidence, and patterns of seedling establishment (Facelli and Pickett 1991). In addition, the entire site is surrounded by fully developed land with residential homes that will not allow for natural fires and natural processes to remain in place. Therefore, the existing meadow area will simply succeed into shrub and tree environment if left alone.

Tree protection and open space areas that protect trees have been the primary focus for the development pattern being proposed. This development pattern was chosen based on the overall emphasis on tree protection that has been established in the City of Corvallis and specifically in the 2000 CCP policy 4.6.7.C that emphasizes the protection of tree groves and woodlands. Likewise, the natural features committee identified oak woodlands as a primary resource to be preserved. By carefully designing the roads and lot layouts, we have been able to minimize the number of trees to be removed and preserve over 40% of the area that consists primarily of trees. It can be concluded that the development pattern of the proposed project meets the intent of the Comprehensive Plan by protecting the existing tree groves to the maximum extent possible.

In addition to upland prairie and tree concerns, western pond turtles were brought up as a concern due to perceived water quality degradation as a result of the residential development. The following Comprehensive Plan Policies address aquatic species such as pond turtles.

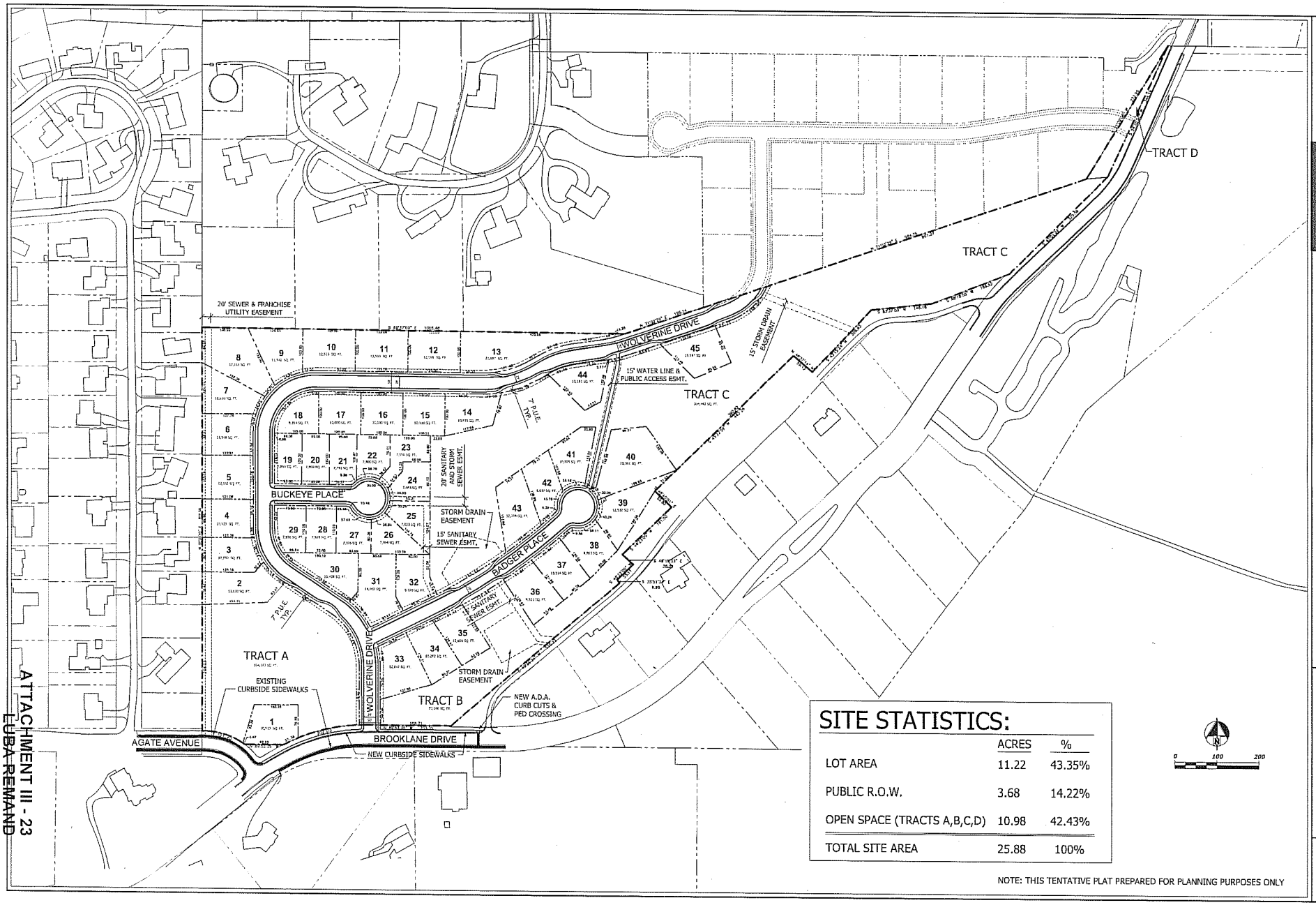
> *CCP4.2.2 "Natural features and areas determined to be significant shall be preserved, or have their losses mitigated, and/or reclaimed."*
> *CCP4.10.8 "Negative impacts on habitat and migration corridors for birds, wildlife, aquatic life, and open space and the recreation qualities of significant drainageways shall be minimized."*
> *CCP4.11.3 "Lakes, wetlands, floodway, drainageways and other urban streams are part of the hydrological system and should be managed comprehensively."*

The City and protesters do not have specific information for limiting factors, existing populations, and quality of existing habitat for pond turtles in the area. Hence, there is no baseline data to evaluate potential impacts of upstream development. Therefore, the best approach to minimizing impacts to downstream water quality consists of Best Management Practices (BMP) and on-site practices like the BaySeparator system being proposed. BMP's consist of erosion control plans during construction of the new roads and homes. In accordance with the Oregon Department of Environmental Quality and the City of Corvallis requirements, erosion control plans will be prepared and submitted for permits. This will ensure that erosion and sediment laden waters are minimized and closely regulated through permits. It has been demonstrated through standard engineering calculations and product performance standards that the proposed drainage and water quality plan meets the City's stormwater detention and water quality standards for new development. By meeting these standards, the project minimizes detrimental changes in water quality for waters discharging into the public storm drainage system and further minimizes detrimental changes in water quality downstream of the site.

The Washington Department of Wildlife created a recovery plan for the Western pond turtle in 1999 (WDFW 1999). In this recovery plan they point out the main concerns for

turtles include 1) control of predation by bullfrogs to increase survival of turtle hatchlings, 2) control nest predation by raccoons and opossums and other predators and 3) reduce human impacts that inhibit basking. Turtles usually nest in open areas with good sun exposure that are dominated by grasses and herbaceous vegetation, with few shrubs or trees nearby. In addition, pond turtles are adaptable to their surroundings and are dietary generalists (WDFW 1999). The existing pond/drainageway where turtles are located include walking paths and an existing sidewalk that directly conflicts with recommended recovery recommendations. Water quality does not appear to be a significant concern or limiting factor for turtle protection and production. Since the proposed project meets the City's requirements for water quality and the plan includes BMP's with on-site treatment of stormwater runoff there will be no significant impacts to downstream water quality.

In summary, the proposed project layout and methods of construction meet the intent of the Comprehensive Plan for resource preservation and environmental impacts. By complying with state and local erosion control measures, short-term impacts to water quality will be minimized. Long-term water quality will be achieved by providing stormwater treatment facilities and maintaining tree canopies and natural drainage patterns. Likewise, aquatic species and off-site wetland habitat will be preserved by implementing water quality measures. Since the project clearly meets City stormwater and water quality standards, no off-site disturbance or impacts to existing pond turtle habitat will take place.




## SITE STATISTICS:

| | ACRES | % |
|---|---|---|
| LOT AREA | 11.22 | 43.35% |
| PUBLIC R.O.W. | 3.68 | 14.22% |
| OPEN SPACE (TRACTS A,B,C,D) | 10.98 | 42.43% |
| TOTAL SITE AREA | 25.88 | 100% |

NOTE: THIS TENTATIVE PLAT PREPARED FOR PLANNING PURPOSES ONLY

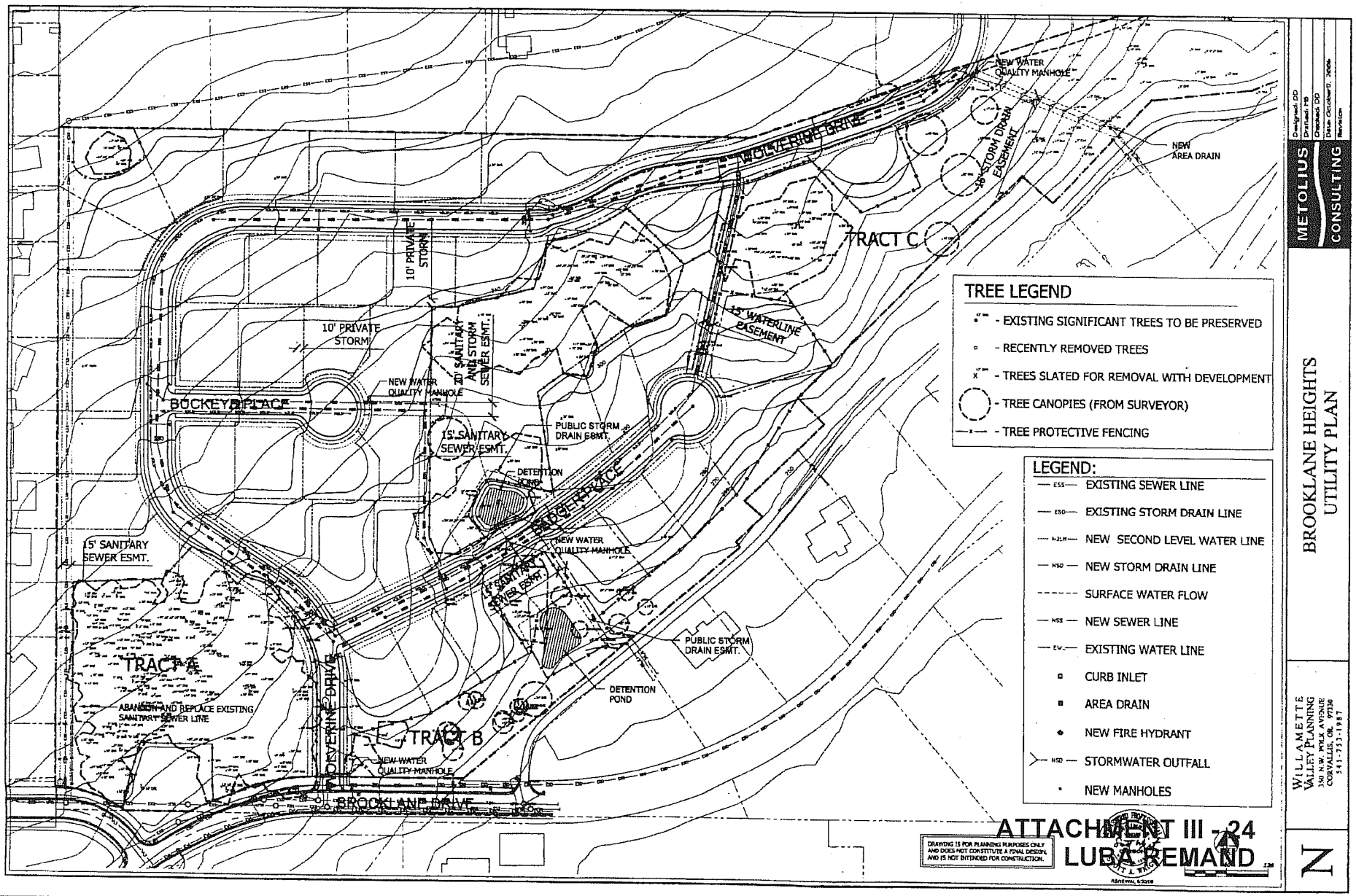
# BROOKLANE HEIGHTS
# REVISED TENTATIVE SUBDIVISION PLAT

Designed: DD
Drafted: HS
Checked: DD
Date: June 21, 2007
Revision:

METOLIUS CONSULTING

WILLAMETTE VALLEY PLANNING
330 N.W. POLK AVENUE
CORVALLIS, OR. 97330
541-753-1987

ATTACHMENT III - 23
LUBA REMAND


WOLVERINE DRIVE
BUCKEYE PLACE
BUCKEYE PLACE
BROOKLANE DRIVE
10' PRIVATE STORM
10' PRIVATE STORM
20' SANITARY AND STORM SEWER ESMT.
15' SANITARY SEWER ESMT.
15' SANITARY SEWER ESMT.
5' SANITARY SEWER ESMT.
15' WATERLINE EASEMENT
38' STORM DRAIN EASEMENT
NEW WATER QUALITY MANHOLE
NEW WATER QUALITY MANHOLE
NEW WATER QUALITY MANHOLE
NEW AREA DRAIN
PUBLIC STORM DRAIN ESMT.
PUBLIC STORM DRAIN ESMT.
DETENTION POND
DETENTION POND
TRACT A
TRACT B
TRACT C
ABANDON AND REPLACE EXISTING SANITARY SEWER LINE
TREE LEGEND
- EXISTING SIGNIFICANT TREES TO BE PRESERVED
- RECENTLY REMOVED TREES
- TREES SLATED FOR REMOVAL WITH DEVELOPMENT
- TREE CANOPIES (FROM SURVEYOR)
- TREE PROTECTIVE FENCING
LEGEND:
ESS — EXISTING SEWER LINE
ESD — EXISTING STORM DRAIN LINE
NSW — NEW SECOND LEVEL WATER LINE
NSD — NEW STORM DRAIN LINE
SURFACE WATER FLOW
NSS — NEW SEWER LINE
EW — EXISTING WATER LINE
CURB INLET
AREA DRAIN
NEW FIRE HYDRANT
NSD — STORMWATER OUTFALL
NEW MANHOLES
DRAWING IS FOR PLANNING PURPOSES ONLY AND DOES NOT CONSTITUTE A FINAL DESIGN, AND IS NOT INTENDED FOR CONSTRUCTION.
ATTACHMENT III -24
LUBA REMAND
METOLIUS CONSULTING
BROOKLANE HEIGHTS
UTILITY PLAN
WILLAMETTE VALLEY PLANNING
330 N.W. POLK AVENUE
CORVALLIS, OR. 97330
541-753-1987
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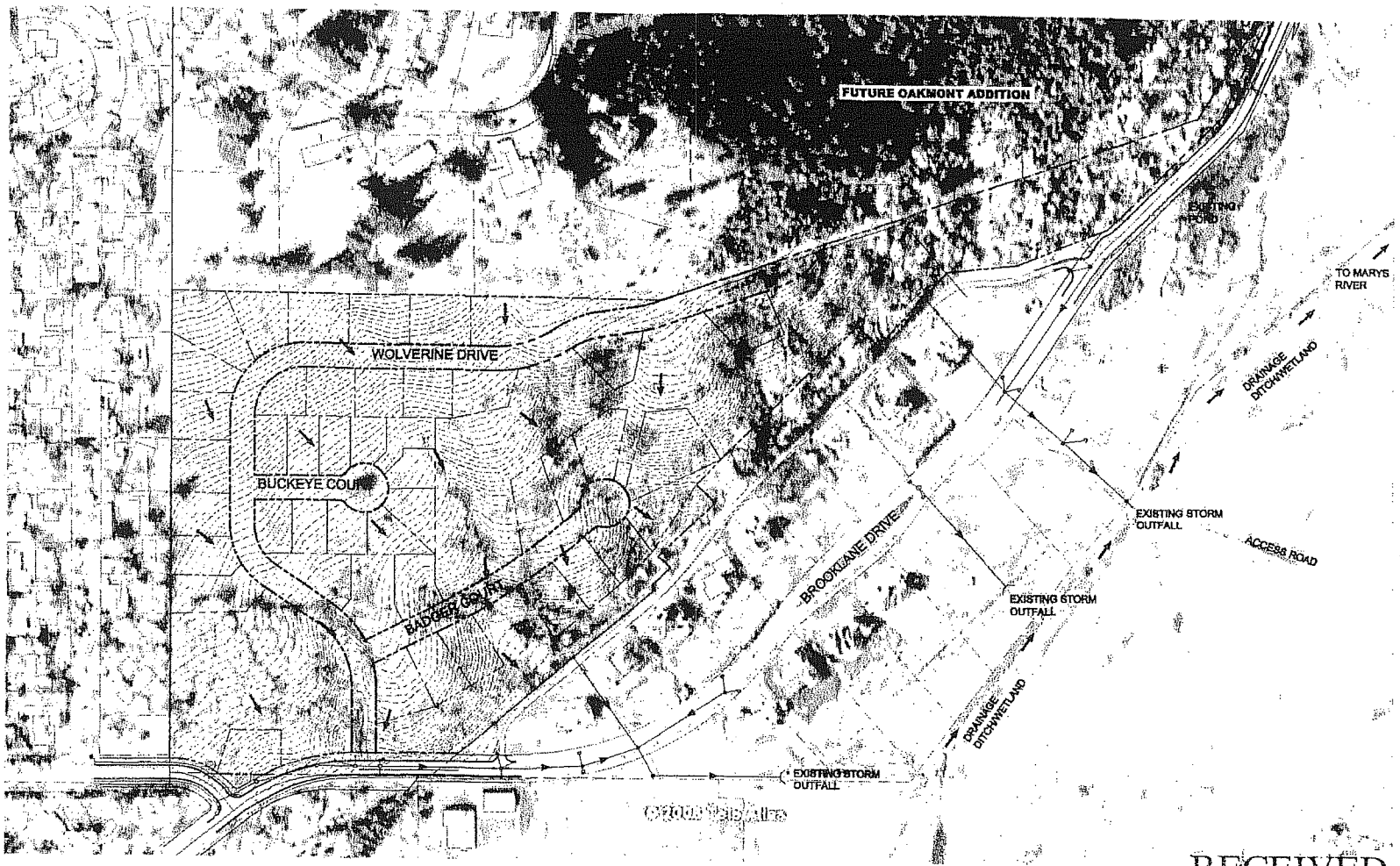
ATTACHMENT III - 25
LUBA REMAND

ATTACHMENT III - 26
LUBA REMAND




1/1.5 **EXISTING DRAINAGE PATTERNS**
*Scale: 1" = 100'*

RECEIVED
OCT - 3 2009
Community Development
Planning Division

ATTACHMENT
LUBA RE

METOLIUS CONSULTING

**EXISTING DRAINAGE PATTERNS**
BROOKLANE HEIGHTS
BROOKLANE DEVELOPMENT, CORVALLIS, OREGON

REGISTERED PROFESSIONAL ENGINEER
OREGON
SCOTT A. WYATT
RENEWAL 6/30/10

REVISION 0 DATE 7/21/08
DRAWING NUMBER **1.9**
Drawing 10 of 20

# BaySeparator™ System:
# F-95 Sediment Removal Efficiency Data

During 2004, BaySaver Technologies, Inc. began a thorough series of laboratory tests with the University of Minnesota's St. Anthony Falls Laboratory (SAFL). SAFL is an internationally known hydraulics laboratory that has extensive experience in academic-industrial partnerships. The project was conducted by Dr. Omid Mohseni, the laboratory's Associate Director of Applied Research.

SAFL researchers began testing the standard BaySaver system using an F-95 sediment gradation in August, 2004. At the same time, researchers created an empirical model of the system based on experimental data. This model was used to quantify the flow rates through the different system components under varying flow conditions. After the model and initial testing were completed, research was focused on optimizing the design. After two years of work with SAFL, BaySaver is introducing the BaySeparator™ System

The BaySeparator™ system is based on the same principles and protected by the same patent as the original BaySaver Separation System. However, modifications to the separator unit have improved both the flow capacities and the sediment removal efficiencies of the system. The system has been extensively modeled and tested in the laboratory, and this research program has resulted in a superior product.

A 24″ system was constructed in the laboratory. This system comprised the 24″ separator unit as well as two fiberglass manholes. The system was tested with both 48″ and 60″ manholes. Tests were run at varying flow rates to establish the efficiency under a range of operating conditions. Once flow began, the system was run until steady state conditions (verified with a salt tracer) were established. After steady state was reached, sediment was introduced into the inlet pipe by a metered sediment feeder. The target influent concentration was 200 mg/l, and this concentration was confirmed by grab samples taken from the influent water. The system was allowed to run for a given length of time before the flow was cut off. Following the test run, the manholes were dewatered and the mass of collected sediment was measured. This mass was compared to the total influent sediment load to calculate removal efficiency.

F-95 sediment is a commercially available mix that contains sediments ranging in size from 53 microns to 425 microns. The bulk of the sediment (87%) is between 75 microns and 212 microns in diameter. Table 1 shows the sediment grain size distribution for F-95 mix used during the tests. The F-95 sediment gradation has a $d_{50}$ of 125 microns.

| Sediment Size (μm) | % by Mass |
|---|---|
| 300 – 425 | 1 |
| 212 - 300 | 9 |
| 150 - 212 | 30 |
| 106 - 150 | 42 |
| 75 - 106 | 15 |
| 53 – 75 | 3 |
| 0 - 53 | 0 |

**TABLE 1: F95 SEDIMENT GRADATION**

A number of tests were run on the 24″ laboratory installation. The first of these series of tests was run on the 24″ BaySeparator™ system with two 72″ manholes. Six tests were conducted on this configuration: two tests at 100% of the unit's maximum treatment rate (MTR); two tests at 50% MTR; and two tests at 25% MTR. MTR is defined as the maximum flow the unit can treat without bypassing any water during high intensity storm events. The influent concentration of all tests was set at about 200mg/l with the F-95 gradation.

The second series of tests featured the same 24″ Separator Unit and 72″ Storage Manhole, but with a 48" Primary Manhole. Four tests were conducted in this configuration, two at 100% MTR and two at 15% MTR. Each test again had an influent concentration of approximately 200 mg/l of F-95 sediment gradation.

For each test run, three removal values were calculated: the fraction of sediment removed by the Primary Manhole; the fraction of sediment removed by the Storage Manhole; and the overall removal efficiency of the system. The fraction of sediment removed in each manhole is calculated by dividing the total mass of sediment introduced by the mass of sediment retained in each manhole. The overall efficiency of the system is calculated by dividing the total mass of sediment introduced by the total mass of sediment collected in *both* manholes. A brief summary of the test results can be found in Table 2.

| Q/Qmax | Primary MH (inches) | Storage MH (inches) | System Efficiency (percent) |
|---|---|---|---|
| 0.25 | 72 | 72 | 84 |
| 0.50 | 72 | 72 | 70 |
| 1.00 | 72 | 72 | 55 |
| 0.15 | 48 | 72 | 94 |
| 1.00 | 48 | 72 | 46 |
| 0.15 | 48 | 72 | 95 |
| 0.25 | 48 | 72 | 90 |
| 0.50 | 48 | 72 | 76 |
| 0.75 | 48 | 7 | 64 |
| 1.00 | 48 | 72 | 53 |

**TABLE 2: TEST DATA SUMMARY**

Calculating these numbers using mass balances rather than grab samples or composite samples provides a much more robust and accurate dataset and reduces to a large extent the potential for sampling errors common in stormwater sampling projects.

SAFL researchers established a relationship between the sediment removal in each manhole and the Peclet Number in that structure. The Peclet Number is a dimensionless characteristic number of fluid flow that represents the ratio of advection to diffusion within a fluid system. In the case of the BaySeparator™ system, advection is the settling of sediment particles, while diffusion is measured with a turbulence factor [1]. The Peclet Number for a manhole is a function of the manhole dimensions (depth and diameter), the settling velocity of the target sediment particle, and the flow rate through the manhole. Note that, for a given flow rate, each manhole in the BaySeparator™ system will have a different Peclet Number.

Separate sediment removal functions were developed for each manhole. The sediment removal in each manhole is expressed as a function of the Peclet Number, which is in turn a function of the flow rate through the manhole. These functions can be combined with the hydraulic model developed by SAFL to determine the removal efficiency of a given system over a range of flow rates. Because of the variability of manhole sizes and flow rates, each configuration has a slightly different flow rate vs. efficiency function. However, all of the functions are of the form shown in Equation 1 and Figure 2 below.

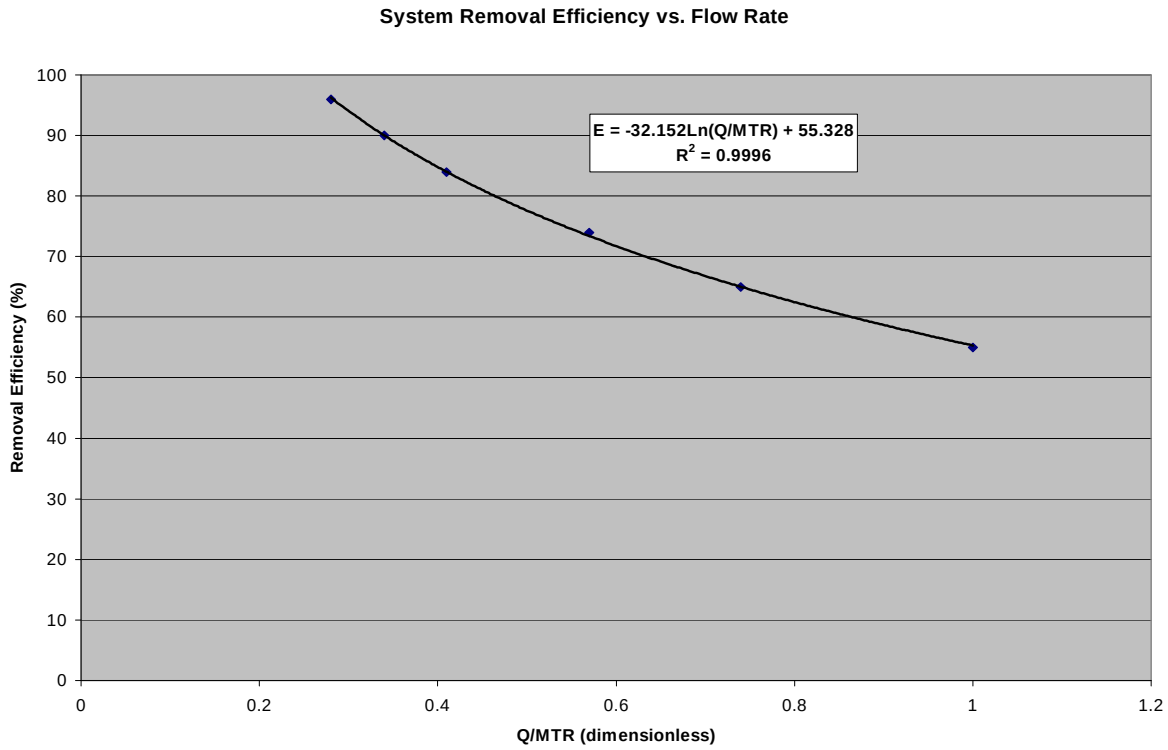



**FIGURE 2: TYPICAL BAYSEPARATOR™ FUNCTION**

In Equation 1, *E* is the removal efficiency of the system, *Q* is the flow rate through the system, *MTR* is the maximum treatment rate of the BaySeparator™ unit, and *m* and *b* are constants that depend on the configuration of the BaySeparator™ system. The value of *m* varies between -0.261 and -0.386 while *b* falls between -0.105 and 0.825. For each BaySeparator™ configuration, this function describes the performance of the system over the range of design flows. A typical function is shown above in Figure 2.

As expected, the function indicates that the BaySeparator™ system's sediment removal efficiency increases as the flow rate through the system decreases. Low flow rates typically correspond to the more frequent, low intensity storms on the site. As the flow rate through the system increases, the system's performance decreases. At the same time, low intensity storms represent 90% or more of the storm events on a site. To quantify the rainfall patterns on a site, BaySaver uses precipitation databases going back more than 45 years. These databases have been reviewed for integrity and consistency by BaySaver Technologies' engineers. This distribution of storm events is

the basis for BaySaver Technologies' recommended Annual Aggregate Removal Efficiency sizing methodology.

Cost-effective BaySeparator™ systems can be designed for most sites by taking advantage of the frequency of low-intensity storms. In most jurisdictions, BaySeparator™ systems are designed to remove 80% of the suspended sediment load on an annual aggregate basis. In addition to the 80% annual aggregate removal, the system must also be capable of conveying the peak design flow rate during bypass, and the head loss through the system must be low enough to avoid backing up the flow upstream.

The peak design capacity of the BaySeparator™ determines the minimum separator size. Each separator unit has a maximum treatment rate (MTR) associated with it as well. Using the Rational Method, this MTR flow can be translated into rainfall intensity on the design site. The Rational Method, show below in Equation 2, is a hydrologic computation used to relate

$$Q = ciA \qquad \textit{Equation 2}$$

runoff flow rate to rainfall intensity and the characteristics of the site. In Equation 2, $Q$ is the runoff flow rate; $c$ is the runoff coefficient (a constant between 0 and 1 that represents the fraction of total precipitation that runs off the site); $i$ is the rainfall intensity on the site, and $A$ is the drainage area of the site. Given $Q$ (the MTR of the selected BaySeparator™), $c$, and $A$, we can rearrange Equation 2 and solve for i, as shown in Example 1.

Example 1

Site Description:
A 3.8 acre site in Nashville, Tennessee
$c$ = 0.85
Peak design flow (bypass) = 12.6 cfs

The 12.6 cfs bypass flow requires a BaySeparator SA30, since the BaySeparator SA24 cannot handle flows greater than 9.4 cfs. The BaySeparator SA30 has an MTR of 2.32 cfs. Substituting $Q$=2.32 cfs, $c$=0.85, and $A$=3.8 acres into Equation 2 returns a rainfall intensity $i$ of 0.71 inches per hour. This rainfall intensity corresponds to the MTR of the BaySeparator unit.

On a typical site, the vast majority of precipitation comes at intensities far below the calculated intensity of 1.01 inches per hour. Figure 3, for example, shows the precipitation distribution for Nashville, Tennessee. As that plot demonstrates, approximately 90% of the total precipitation in Nashville falls at an hourly intensity below 0.71 inches per hour.

To include the distribution of precipitation in the sizing methodology, it is necessary to determine the fraction of precipitation falling at incremental intensities between 0 and the intensity associated with the MTR of the BaySeparator™. Example 2 shows this calculation, using the rainfall data from Nashville shown in Figure 3. The total amount of precipitation falling on the site is divided into 10 intensity increments. The lowest intensity increment, which corresponds to rainfalls between 0.01 and 0.10 inches per hour, contains more than 30% of the total precipitation that falls on the site. The second increment, rainfalls between 0.11 and 0.20 inches per hour, contains over 20% of the total precipitation, and subsequent increments contain less. For each increment, the fraction of total precipitation falling at that intensity is determined from the rainfall record.

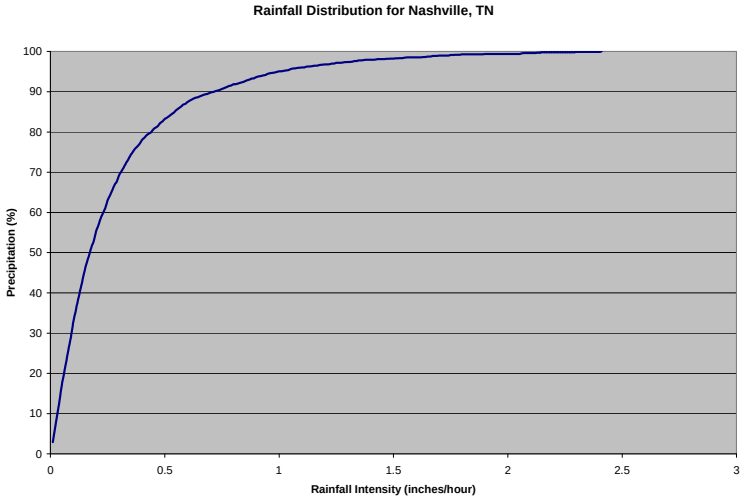



**FIGURE 3: PRECIPITATION DISTRIBUTION FOR NASHVILLE, TN**

The removal efficiency of the system is determined for the flow rate associated with each particular increment, and the percent of the sediment load for that increment is calculated by multiplying the fraction of precipitation by the incremental removal efficiency. In Example 2, 23.2% of the total precipitation falls within the intensity range between 0.01 and 0.10 inches per hour. According to the efficiency function for a BaySeparator SA30457.0 system, runoff generated by precipitation in this intensity range is treated at an efficiency of 99%. Therefore,

Example 2

| Q/MTR | i(Q/MTR) | % of Precip. | E(Q/MTR) | Incremental Efficiency |
|---|---|---|---|---|
| 0.10 | 0.07 | 23.2 | 99.0 | 22.9 |
| 0.20 | 0.14 | 19.7 | 99.0 | 19.5 |
| 0.30 | 0.21 | 13.8 | 97.1 | 13.3 |
| 0.40 | 0.28 | 9.9 | 87.7 | 8.6 |
| 0.50 | 0.36 | 7.4 | 80.5 | 5.9 |
| 0.60 | 0.43 | 4.9 | 74.6 | 3.6 |
| 0.70 | 0.50 | 3.4 | 69.6 | 2.3 |
| 0.80 | 0.57 | 3.2 | 65.3 | 2.0 |
| 0.90 | 0.64 | 2.7 | 61.5 | 1.6 |
| 1.00 | 0.71 | 1.3 | 58.1 | 0.7 |
| | | **Annual Aggregate Removal Efficiency:** | | **80.4** |

22.9% of the total sediment load (23.2% * 99%) is removed from these flows. The annual aggregate removal efficiency of the system is calculated by adding together the ten incremental load reductions.

For sites in ecologically sensitive areas or those with particular runoff concerns, the BaySeparator™ system may be designed to remove a given fraction of the sediment load at a specified flow rate. This methodology is usually reserved for sites that discharge into wetland watersheds, fish spawning areas, or other critically sensitive drainages.

*Dhamotharan, S., Gulliver, J., Stephan, H., Unsteady One-Dimensional Settling of Suspended Sediment, Water Resources Research, Vol. 17 (4), pp 1125-1132 (1981)*

WASHINGTON STATE DEPARTMENT OF ECOLOGY

**April 2008**

**CONDITIONAL USE LEVEL DESIGNATION FOR PRETREATMENT (TSS)**
**For**
**BaySaver Technologies™ BaySeparator**

**Ecology's Decision:**

**Based on BaySaver Technologies™ application submissions and recommendations by the Technical Review Committee (TRC), Ecology hereby issues the following use level designation for the BaySaver Technologies™ BaySeparator units:**

1. **Conditional Use Level Designation (CULD) for pretreatment, as defined in the Ecology Manual Volume I, (a) ahead of infiltration treatment, or (b) to protect and extend the maintenance cycle of a basic or enhanced treatment device (e.g., sand or media filter). This CULD applies to BaySeparator units sized at an operating rate of no more than 0.82 gpm/ft$^2$ of manhole area (primary plus storage) at the water quality design flow rate as determined using the Western Washington Hydrology Model (WWHM).**

**This CULD expires on October 1, 2010 unless extended by Ecology.**

**All designations are subject to the conditions specified below.**

**Properly designed and operated BaySeparator systems may also have applicability in other situations (example: low-head situations such as bridges or ferry docks), for TSS and oil/grease removal where, on a case-by-case basis, it is found to be infeasible or impracticable to use any other approved practice. Jurisdictions covered under the Phase I or Phase II municipal stormwater permits should use variance/exception procedures and criteria as required by their NPDES permit.**

**Ecology finds that the BaySaver system could also provide water quality benefits in retrofit situations.**

**Ecology's Conditions of Use:**

**BaySeparators shall be designed, installed, and maintained to comply with these conditions:**

1. **BaySeparators must be designed, assembled, installed, operated, and maintained in accordance with BaySaver Technologies™ applicable manuals and documents and the Ecology decision and conditions specified herein.**

2. **On or before October 1, 2008, BaySaver Technologies™ shall submit a Quality Assurance Project Plan (QAPP) that meets the TAPE requirements for attaining a general use level designation (GULD) for pretreatment.**

3. **Discharges from the BaySeparator unit shall not cause or contribute to water quality standards violations in receiving waters.**

4. **BaySaver Technologies™ shall complete all required testing and submit a TEER for pretreatment for TRC and Ecology review by April 1, 2010.**

5. **BaySaver Technologies™ may request Ecology to grant deadline or expiration date extensions, upon showing cause for such extensions.**

**Applicant:** BaySaver Technologies™, Inc.

**Applicant's Address:** 1302 Rising Ridge Road, Suite 1
Mount Airy, Maryland, 21771

**Application Documents:**

- "Baysaver Technologies, Inc. Technical Evaluation Engineering Report", Baysaver Technologies Inc., Revised 2008
- "Baysaver Technologies, Inc. Technical Evaluation Engineering Report", Baysaver Technologies Inc., August 2006
- "Baysaver Technologies, Inc. Technical Evaluation Engineering Report", Baysaver Technologies Inc., June 2005
- "Baysaver Technologies™ Separation System Technical and Design Manual", Baysaver Technologies Inc.", March 2004
- "Estimating the Maximum Treatment Rate and the Maximum Hydraulic Rate of the Baysaver Units", Omid Mohensi, September 2005
- List of Units Sold and Units Installed in Washington State, June, 2005

A CD-ROM of the submittal reports may be requested from BaySaver Technologies™.

**Applicant's Use Level Requests:**

- General use level designation (GULD) for pretreatment.

**Applicant's Performance Claims:**

BaySeparator units can be designed and sized such that they remove 125 micron particles at an efficiency of 80%. Specifically, BaySeparator units: remove and retain sediment particles from stormwater runoff.

- Achieve an instantaneous removal efficiency if 80% or greater when properly sized for a selected design flowrate.
- Retain material through intense storms and do not resuspend previously-trapped pollutants.
- Are easily maintained.

**Technical Review Committee Recommendations:** The TRC, based on the weight of the evidence and using its best professional judgment, finds that:

- The BaySaver units, sized according to this designation document can achieve, at a minimum, equivalent performance to a presettling basin as defined in the most recent *Stormwater Management Manual for Western Washington, Volume V, Chapter 6.*

**Findings of Fact:**

- Full-scale laboratory test have been conducted on three series of tests. The first series of tests were conducted on a 24" separator unit with two 72" manholes. On average at 25% of the maximum treatment rate the unit can achieve 84% TSS removal of F-95 sand. The second series of tests were conducted on a 24" separator unit with a 48" primary manhole and a 72" storage manhole. On average at 15% of the maximum treatment rate the unit can achieve 94% removal of F-95 sand. The third series of tests were conducted on a 24" separator unit with a 48" primary manhole and a 72" storage manhole with water at 20° Celsius (the first two series were conducted with water at near-freezing temperatures). On average at 25% of the maximum treatment rate the unit can achieve 89.5% removal of F-95 sand.

**Technology Description:**

Design Manual and technical bulletins can be downloaded from company's web site.

**Recommended Research and Development:**

Ecology encourages BaySaver Technologies™ to pursue continuous improvements to the BaySeparator unit. To that end, the following actions are recommended:

- Conduct field-testing to reliably ascertain the BaySaver's ability to remove the finer particles (based on the TAPE) comprising TSS found on local highways, parking lots, and other high-use areas.

- Conduct field testing to verify that maintenance practices are appropriate.

- Conduct testing on various sized BaySeparator units to verify the sizing technique is appropriate.

- Conduct testing to determine the flowrates that trigger maximum treatment operation and bypass operation.

- Conduct testing to determine the flowrate at which resuspension occurs.

**Contact Information:**

| | |
|---|---|
| Applicant: | Mr. Brad Gianotti<br>BaySaver Technologies<br>(301) 829-6470<br>BGianotti@baysaver.com |
| Applicant website: | http://www.baysaver.com |

Ecology web link: http://www.ecy.wa.gov/programs/wq/stormwater/newtech/index.html

| | |
|---|---|
| Ecology Contact: | Mieke Hoppin<br>Water Quality Program<br>mhop461@ecy.wa.gov<br>(360) 407-6435 |
| Technical Review Committee: | Dave Tucker, P.E.<br>Kitsap County<br>dtucker@co.kitsap.wa.us<br>(360) 337-7292 |

# DRAFT - Geotechnical Investigation



**Brooklane Heights and Oakmont Addition**

**Corvallis, Oregon**

**Prepared for:**

**TC2 Investments, LLC**
**Corvallis, Oregon**

**May 20, 2008**

Scott Sanders
TC2 Investments, LLC
4411 SW Golf View Drive
Corvallis, Oregon 97333

May 20, 2006

**Brooklane Heights and Oakmont Addition**
**Geotechnical Investigation - DRAFT**
**Corvallis, Oregon**

Project 2081024

Dear Mr. Sanders:

We have completed the requested geotechnical investigation for the above-referenced project. Our report includes a description of our work, a discussion of the site conditions, a summary of laboratory testing and a discussion of engineering analyses. Recommendations for site preparation, foundation design and construction, and pavement construction are enclosed.

It has been a pleasure assisting you with this phase of your project. Please do not hesitate to contact us if you have any questions or if you require further assistance.

Sincerely,

FOUNDATION ENGINEERING, INC.

David L. Running, P.E., G.E.
Project Manager

DLR/jd
enclosure

*GEOTECHNICAL INVESTIGATION - DRAFT*
*BROOKLANE HEIGHTS AND OAKMONT ADDITION*
*CORVALLIS, OREGON*

## BACKGROUND

Two residential subdivisions are planned for a ±36.3-acre parcel in Corvallis, Oregon. The site is located in steeply (10 to 30%) sloping terrain on the northwest side of Brooklane Drive. The location is shown on Figure 1A (Appendix A). The proposed site layout for Brooklane Heights and Oakmont Addition are shown on Figures 2A and 3A (Appendix A), respectively.

The proposed grading plans indicate cuts and fills up to ±23 feet are planned for Brooklane Heights. Cuts up to ±20 feet and fills up to ±6 feet are planned for Oakmont Addition. Retaining walls will be constructed at several locations. We understand most retaining structures will be rockery walls 4 feet or less in height. A storm water detention pond will be constructed at the northeast corner of Oakmont Addition, next to the existing City of Corvallis pump station. A second pond will be constructed within an existing drainage in the southwest portion of Brooklane Heights.

Foundation Engineering, Inc. (FEI) completed a preliminary geotechnical investigation for the project in 2005. The focus of that investigation was to record the depth of practical (digging) refusal in the bedrock and provide information for others to assess the feasibility of deep cuts at the site. A reconnaissance-level geologic hazard study of the site was also completed to address the City of Corvallis standards for development on steeply-sloped areas. The findings of that work were summarized in a report dated January 25, 2006.

FEI completed a supplemental geotechnical investigation at the site in 2007 to evaluate the subsurface conditions for proposed improvements in existing drainages in the southwest portion of Brooklane Heights. The findings of that work were summarized in a letter report dated March 16, 2007.

FEI's current scope of work is to provide design and construction recommendations for site-grading, pavements, residential foundations, retaining walls, and storm water detention ponds. This work scope is consistent with the recommendations for additional work in our 2006 report. Information from our previous site investigations is included in this report. References to our previous reports are made where appropriate.

TC2 Investments, LLC (TC2) is the project developer. Metolius Consulting (Metolius) is providing civil engineering services for the project. FEI was retained by TC2 to provide geotechnical services for the project. Our scope of work for this phase was outlined in a proposal dated March 31, 2008, and was authorized by a signed Professional/Technical Services agreement dated April 1, 2008.

## FIELD EXPLORATION

A summary of the field explorations for our various phases of work is provided below. The test pit locations are shown on Figures 2A and 3A (Appendix A). These locations were determined by pacing and are approximate only.

### *Preliminary Geotechnical Investigation - 2006*

Twelve exploratory test pits (TP-1 through TP-12) were dug at the site on November 15, 2005, using a John Deere 490E tracked excavator. The purpose of the exploration was to determine the subsurface profile and examine the soil and rock variability.

The test pits extended to maximum depths ranging from ±2 to 15 feet. Torvane measurements were made on the test pit sidewalls, where practical to estimate the shear strength of the soils. All of the explorations terminated in bedrock. The John Deere 490E excavator encountered practical digging refusal on sandstone at several locations at ±1 to 4.5 feet below the bedrock surface. The subsurface profiles, sampling depths and strength measurements are summarized on the appended test pit logs (Appendix B).

### *Supplemental Geotechnical Investigation - 2007*

Six exploratory test pits (TP-1A through TP-6A) were dug at the site on February 23, 2007, using a CAT 312C tracked excavator. Five of the explorations were completed to better characterize the subsurface profile within the East Drainage, where detention ponds and the Badger Place road embankment were planned. One test pit was dug in the West Drainage near the proposed alignment of Wolverine Drive.

The test pits extended to maximum depths ranging from ±1.5 to 11 feet. Torvane measurements were made on the test pit sidewalls where practical to estimate the shear strength of the soils. All of the explorations terminated in bedrock. The CAT 312C excavator encountered practical digging refusal in TP-5A and TP-6A at ±1 to 3.5 feet below the bedrock surface. The subsurface profiles, sampling depths and strength measurements are summarized on the appended test pit logs (Appendix B).

### *Supplemental Geotechnical Investigation - 2008*

Six exploratory test pits (TP-1B through TP-6B) were dug at the site on April 3, 2008, using a Komatsu PC150LC tracked excavator. The explorations were completed to supplement the previous subsurface investigations and obtain samples for laboratory testing.

The test pits extended to maximum depths ranging from ±4 to 19 feet. Torvane measurements were made on the test pit sidewalls to estimate the shear strength of the soils. Most of the test pits extended to bedrock. The Komatsu PC150LC excavator encountered practical digging refusal in TP-3B and TP-4B at ±5 to 7 feet below the bedrock surface. Samples were retained for possible laboratory testing. The subsurface profiles, sampling depths and strength measurements are summarized on the appended test pit logs (Appendix B).

Three additional test pits and two borings were planned as part of the supplemental investigation. However, the fieldwork was halted prior to completion due to possible archeological conflicts. It is assumed this work will be completed at a later date.

## SITE CONDITIONS

### *Topography and Vegetation*

The parcel contains a south to southeast-facing, steep to moderate slope. According to the provided topographic map, the elevation ranges from ±El. 230 at the northeast corner to ±El. 410 at the northwest property corner. Two drainages are located in the southwest portion of the property. These features are illustrated by the topographic contours on Figure 2A (Appendix A) and are referenced as the West Drainage and East Drainage in this report.

The northwest portion of the property is the most open and contains tall grass with few scattered trees. The central portion of the property contains steeper slopes with several sandstone outcrops, trees (oak and fir), scotch broom, blackberry bushes, and low-ground scrub vegetation including poison oak. Similar vegetation was observed in the Oakmont Addition during our investigations in 2006 and 2007. This portion of the property was cleared prior to our 2008 investigation.

### *Subsurface Conditions*

A general description of the soil and rock conditions encountered in the test pits is provided below. More detailed descriptions of conditions encountered in individual test pits are summarized on the logs (Appendix B).

*Brooklane Heights*. TP-1, TP-2, TP-3, TP-5, TP-6, TP-3B, TP-4B and TP-5B were dug in the western uphill portion of Brooklane Heights. The explorations typically encountered ±2.5 to greater than 16 feet of residual soil underlain by sandstone. The residual soil consists of brown to orange-brown, medium stiff to stiff, medium plasticity, clayey silt. The sandstone is decomposed to moderately weathered, and iron and manganese-stained. TP-1 and TP-3 were terminated in extremely weak (R0) sandstone at depths of ±15 feet, the maximum reach of the excavator. TP-2, TP-5 and TP-6 were terminated in extremely weak to very weak (R0 to R1) sandstone at ±6.5 to 9.5 feet. TP-5B encountered residual soil to ±16 feet (the limit of the exploration).

TP-4, TP-7, TP-8 and TP-9 were dug along the southeast portion of the site, in the area of steep slopes and/or rock outcrops. The test pits encountered ±0.5 to 4.0 feet of residual soil underlain by sandstone. The test pits were terminated in very weak to weak (R1 to R2), moderately to slightly weathered sandstone at ±2 to 7 feet.

TP-1A was dug in the West Drainage, near the proposed Wolverine Drive, and encountered a few inches of roots and sod underlain by extremely weak to very weak (R0 to R1) sandstone. The sandstone is grey to orange-brown and moderately weathered to decomposed.

TP-3A, TP-4A and TP-5A were dug in the East Drainage along the planned alignment of the proposed Badger Place embankment. TP-3A and TP-5A were dug on the side slopes of the drainage swale at the west and east ends of the planned embankment, respectively. TP-3A encountered medium stiff to stiff, brown, medium plasticity, clayey silt to ±3 feet, followed by stiff silt with trace sand to ±4 feet. Sandstone was encountered below ±4 feet, extending to ±4.5 feet (the limits of the exploration). TP-5A encountered ±6 inches of medium stiff, brown, clayey silt (topsoil) followed by sandstone.

TP-4A was dug near the bottom of the East Drainage, towards the center of the planned embankment. TP-4A encountered ±6 feet of brown, medium plasticity, clayey silt. The silt is soft to a depth of 3 feet and then becomes stiff. Stiff, brown to grey, low to medium plasticity clay with trace rock fragments was encountered from ±6 to 8 feet. Sandstone was encountered from ±8 to 10 feet (the limits of the exploration).

TP-2A was dug within the lower-lying portion of the East Drainage. Soft to medium stiff, dark brown, medium plasticity, clayey silt was encountered to a depth of ±2.5 feet, followed by soft, light brown, medium plasticity, silty clay to ±7 feet. Stiff, brown to grey clay with trace rock fragments extended from ±7 to 10 feet and was underlain by extremely weak (R0) sandstone that extended to the bottom of the test pit (±11 feet).

TP-6A was dug within the East Drainage, in the vicinity of the proposed detention pond. The test pit encountered ±6 inches of medium stiff, brown, clayey silt (topsoil) followed by sandstone.

TP-6B was excavated near a spring in upper portion of the East Drainage. The test pit encountered ±2 feet of medium plasticity silt topsoil followed by extremely weak to very weak (R0 to R1) sandstone. The excavation was terminated in extremely weak (R0) sandstone at ±4 feet due to possible archaeological conflicts.

*Oakmont Addition*. TP-1B and TP-2B were excavated in the northwest portion of the site near the proposed roadway alignment. TP-1B encountered residual soil to a depth of ±19 feet (the limit of the exploration). TP-2B encountered ±3.5 feet of residual soil followed by extremely weak to very weak (R0 to R1) sandstone. TP-2B was also terminated at a depth of ±19 feet.

TP-10 through TP-12 were dug along the southeast portion of the site, in the area of steep slopes and/or rock outcrops. The test pits encountered ±0.5 to 4.0 feet of residual soil underlain by sandstone. The test pits were terminated in very weak to weak (R1 to R2), moderately to slightly weathered sandstone at depths of ±2 to 7 feet.

***Ground Water***

No ground water infiltration or seepage was encountered in any of the test pits dug on November 15, 2005. However, the residual soils were damp to moist and some of the joints in the sandstone also appeared to be moist. During our December 6, 2005, reconnaissance, we observed an active spring, wet conditions, and/or standing water at various locations in the East Drainage. The West Drainage appeared moist to wet with no visible surface water or flowing water.

On February 23, 2007, we noted water flowing in the East Drainage and relatively wet ground conditions in the low-lying area adjacent to the drainage. TP-2A and TP-4A, dug near the bottom of the drainage, encountered infiltration at depths of ±1.5 feet and ±3 feet, respectively. The infiltration rate in those test pits ranged from moderate to rapid. Slow seepage was also noted at ±5.5 feet in TP-1A.

During our April 3, 2008 exploration, rapid seepage was observed in TP-1B at ±16 feet. Slow seepage was observed in TP-5B at ±2 feet and in TP-6B between ±3 and 4 feet. No infiltration was observed in any of the other test pits. Wet conditions and/or standing water was noted at various locations in the East Drainage.

## LABORATORY TESTING

The laboratory work included natural water content and Atterberg limits tests to classify the foundation soils and estimate their overall engineering properties. Results of these tests are summarized on Table 1C (Appendix C). Moisture-density (ASTM D698) and California Bearing Ratio (CBR) tests were also completed on bulk samples from TP-5B to establish compaction characteristics of the pavement subgrade. The results of these tests are summarized in Figures 1C and 2C (Appendix C).

## DISCUSSION OF GEOTECHNICAL ISSUES

### *Slope Stability*

A brief discussion of slope stability is provided below. More detailed discussions are provided in our 2006 and 2007 reports.

Our subsurface investigation suggests the site is typically mantled with a thin layer of topsoil underlain by medium stiff to stiff residual soil that grades to bedrock at relatively shallow depths. The presence of a thin soil mantle and shallow bedrock typically precludes the formation of large-scale, deep rotational failures. Failures in these slope conditions are generally limited to shallow, surficial events known as debris flows.

The Corvallis Natural Hazards Map designates two locations on the site as "high landslide risk" areas. However, during our site reconnaissance, we determined that these mapped hazard areas represent natural drainages. Our reconnaissance noted no visible movement, instability or existing scarps within the drainages or elsewhere on the property. The ground surface along the drainages is vegetated, and tree trunks within the property were generally straight. The drainage swales were predominantly moist to wet at the time of our site investigation, with flowing water and standing water at some locations in the East Drainage. No other seeps or springs were observed on the site.

Based on our observations, we have concluded there is a low potential for landslides or instability of natural slopes due to the absence of identifiable landslide features, the lack of seeps or springs (except for existing drainages), and the presence of relatively stiff residual soil and shallow bedrock beneath mature slopes.

*Cuts and Fills*

Cuts will likely expose residual soil underlain by decomposed to highly weathered sandstone. Relatively deep utility trenching will be required in some areas. Trenching through extremely weak to very weak (RO to R1) sandstone should be anticipated. Weak (R2) rock may also be encountered in some areas.

The strength and weathering of the bedrock varies with location and depth. Consequently, difficulty excavating the rock should be expected to vary with location. Three different excavators were used in our field explorations. A John Deere JD490E excavator encountered practical digging refusal at ±1 to 4.5 feet below the bedrock surface. A CAT 312C excavator encountered practical digging refusal at ±1 to 3.5 feet below the bedrock surface. A Komatsu PC150LC excavator encountered practical digging refusal at ±5 to 7 feet below the bedrock surface.

Deep cuts and utility excavations made in very weak to weak (R1 to R2), shallow sandstone will either require heavier equipment than the excavators used for our explorations, pre-drilling and splitting or use of a hydraulic ram. We anticipate blasting is not a feasible option due to nearby residences. Contractors bidding on the work should be provided a copy of this report to qualitatively evaluate the difficulty of the excavations for their own estimates and to select the most appropriate method of excavation.

Fill material for embankment construction may be generated from cuts. Fill that includes high plasticity clay or silt should not be used as subgrade for roads or placed beneath structures. Fill should be placed on terrain that is properly stripped. Fill placement in areas steeper than 5:1 (H:V) will require benching and a key trench into stiff residual soil or bedrock. A standard benching detail for embankment construction is shown on Figure 4A (Appendix A). We recommend overbuilding the slopes and subsequently trimming the fill to allow adequate compaction at the face of the finish slope. Fill should be density tested frequently to verify the required compaction.

The proposed grading will require building an embankment across the East Drainage. At that location it will be necessary to add a drain to the toe of the embankment to intercept seepage. A benching detail including a toe drain is shown on Figure 5A (Appendix A).

It is possible that concentrated seepage or springs may develop in cut slopes at isolated locations. If so, a slope drain may be required to collect the moisture and reduce the risk of localized slope instability. The need for slope drains and details for their construction should be established by FEI once the cuts are exposed.

*Site Drainage*

The observed iron-staining of the surficial soils suggests that rainfall perches within a few feet of the ground surface during the wet portion of the year. It is difficult to predict where seepage may be encountered during construction. However, ground water infiltration should be anticipated in deep cuts and excavations.

Permanent mitigation of seeps and springs, which daylight along the face of cut slopes may be required as they are encountered during construction to reduce the risk of localized slope instability. Run-off from streets should be directed to the nearest storm drain or drainage swale. We recommend perimeter-footing drains be placed around the homes to reduce the risk of weakening the foundation soils due to repeated wetting and drying.

Shallow ground water can accumulate in granular trench backfill. In long segments of trenches extending down sloping terrain, the water can develop significant pressure that can be detrimental to pavements. Therefore, drainage should be provided for utility trenches extending down slope roadways. Drainage may consist of filter-fabric wrapped sections of perforated drain pipe placed at appropriate intervals and discharging into manholes.

### *Topsoil*

The topsoil is typically ±6 inches to 2 feet thick and is comprised of blocky-structured, soft to medium stiff, medium plasticity, clayey silt. Topsoil that is relatively free of organic debris may be moisture-conditioned and reused as subgrade beneath the proposed roads. However, this recommendation is predicated on dry-weather construction.

### *Plastic Soils*

The plasticity of the residual soil varies with location and depth. Our test pits encountered predominantly low to medium plasticity soils. However, medium to high plasticity soils may also be encountered at some locations. Such soils typically have moderate to high potential to shrink and swell with seasonal changes in moisture content. Shrinkage or swelling of the subgrade could cause cracking and distress in slabs, foundations and structures if not properly mitigated.

Satisfactory performance of the residential foundations will depend on proper mitigation of any high plasticity soils and foundation drainage to reduce fluctuations in the moisture content of the foundation soils. High plasticity soils encountered beneath foundations and slabs should be completely removed if practical. We recommend that a representative of FEI be present during the initial site grading to identify high plasticity soils. We should also observe the foundation subgrade for individual residences to help identify if expansive soils are present and determine the limits of the required overexcavation.

## ENGINEERING ANALYSIS

### *Bearing Capacity for Residential Foundations*

Torvane measurements in the residual soils indicated undrained shear strengths ranging from ±0.3 tsf to >1.0 tsf and we noted that the residual soil was typically medium stiff to stiff at the time of our explorations. An allowable bearing pressure was calculated assuming an undrained soil shear strength of 0.35 tsf. The calculations suggest an allowable bearing pressure of 1,500 psf with a typical factor of safety of 3. This analysis assumes that foundations will be placed at

least 24 inches below the ground surface. In addition, we assumed the footings will bear on a minimum of 6 inches of compacted crushed rock (Select Fill) extending a minimum of 6 inches outside the footprint of the footing. Foundations should not be constructed on soft soils or high plasticity soils.

***Settlement***

Based on the stiffness of the soil, the shallow depth to rock and the assumed footing loads, we anticipate that settlement due to consolidation of the foundation soils will be relatively small (i.e., ½-inch or less). Larger foundation movements may occur due to shrinking and swelling if high plasticity soils are left beneath foundations and slabs.

***Basement Walls***

Lateral earth pressures for basement retaining walls were estimated assuming at-rest ($K_o$) conditions. An equivalent fluid density of 55 pcf is recommended for wall design based on the assumed rigidity of the wall and the method of backfill compaction. We recommend that temporary cuts for wall construction be no steeper than ½:1 (H:V). However, this recommendation will have to be verified at the time of construction based on the soil conditions exposed on the cut slopes. In some cases, flatter slopes may be required.

Recommendations assume the walls will be backfilled with compacted Select Fill. Additionally, it is assumed that an appropriate drainage system will be installed behind the wall to alleviate the build up of hydrostatic pressure. Figure 6A (Appendix A) provides a schematic of the assumed basement wall construction.

***Rockery Retaining Walls***

We understand rockery walls (typically 4 feet tall or shorter) may be constructed associated with the site grading work. The actual heights and locations were not established at the time this report was prepared. Therefore, we have limited our work to providing general recommendations. We assume the actual design of rockery walls will be by others.

Figure 7A (Appendix A) provides a typical wall section of the major wall elements. The base of the rock wall should be embedded a minimum of 12 inches below the finish grade for walls at the toe of a slope. For walls constructed on a slope, where the ground in front of the wall is sloping away, the embedment depth should be increased to 24 inches and, where practical, extend to weathered bedrock. Walls should be designed and constructed with a batter no steeper than 1:6 (H:V). The walls should be backfilled with open-graded, angular, crushed rock (typically 4 to 6-inch rock is used). A filter fabric should be provided on the cut slope behind the backfill and a foundation drain should be provided near the base of the wall as shown on Figure 7A.

Site fill that will be retained by the rockery wall should be constructed by placing the material in lifts (<8 inches loose thickness) adjusting the moisture content to near optimum values and compacting the material to a minimum of 95% relative

compaction as defined by ASTM D 698. The fill at the wall location should initially be overbuilt at a 1.5:1 (H:V) slope extending ±3 feet beyond the top of the wall and trimmed back at the time of wall construction. Table 1 summarizes the recommended distance from the face of the wall to the toe of the temporary fill slope for a range of wall heights.

**Table 1. Distance from Wall Facing to the Toe of the Temporary Fill Slope.**

| Wall Height (ft) | Toe of Wall to Toe of Fill Slope (ft) |
|---|---|
| 4 | 9 |
| 6 | 12 |
| 8 | 15 |

We recommend designing walls using an allowable bearing pressure of 1,500 psf. This bearing pressure assumes a typical factor of safety of 3. Settlement of the wall facing is expected to be less than ½ inch.

Appropriate lateral earth pressures for rockery walls will depend upon the height of the walls and the materials they support. We understand the rockery walls may be tiered to construct slopes with a series of benches. Surcharge loads from upslope walls should be considered where tiered walls are constructed closer than ±6 feet apart. FEI is available to provide additional recommendations for these walls if needed as the design progresses. We assume that information would be provided as an addendum to this report.

***Pavement Analysis and Design***

Detailed traffic information was not available for the development at the time this report was prepared. Therefore, pavement design was completed with assumed traffic. Based on the proposed number of lots (i.e., 42 lots at Brooklane Heights and 24 lots at Oakmont Addition), we assumed a daily traffic of ±360 cars and light pickup trucks, ±5 medium size delivery trucks and/or service vehicles and up to 1 heavy truck per day. We also included construction traffic at the beginning of the development including 5 concrete trucks, 10 dump trucks, and 10 material delivery trucks per lot. A total of 3 moving vans were assumed per lot over the 20-year design period. We assumed that traffic would be divided evenly between the two ingress/egress points. Our calculations suggest a total of 72,000 equivalent single (18-kip) axle loadings (ESAL's) is appropriate for a 20-year design life.

We assumed a reliability of 85%, a standard deviation of 0.45, and initial and terminal serviceability ratings of 4.2 and 2.0, respectively. The minimum AC thickness was established based on the AASHTO 1993 method using the assumed traffic and a resilient modulus ($M_r$) of 20,000 psi for the base course. A laboratory CBR value of 1.8 was calculated for a bulk sample from TP-5B. A resilient

modulus ($M_r$) value of 3,000 psi was selected for our pavement analysis based on available correlations and an assumed CBR value of 2. We calculated a required structural number ($S_N$) of 2.96 for the overall pavement section.

A structural strength coefficient of 0.42 and a drainage coefficient of 1.0 was assumed for the AC. A structural strength coefficient of 0.14 and a drainage coefficient of 0.8 was assumed for the base rock. Our analysis indicates the new streets should have a minimum flexible pavement section consisting of a nominal 3.5 inches of AC over 13.5 inches of base rock consisting of Select Fill. The minimum pavement section assumes the streets will be built on a firm, non-yielding subgrade prepared as recommended herein and any high plasticity, expansive soils encountered at the subgrade level will be removed.

A 20-year design life was assumed for the analysis. However, grinding and a nominal 2-inch overlay should be planned at about 12 years. The Asphalt Institute (TAI) recommends overlaying flexible pavements when 60% of the structure life is used. Research has shown that overlaying pavements at that time is more cost-effective than a full-depth repair after the pavement has failed. The pavement should be inspected by an experienced engineer every 5 to 7 years to determine its condition and need for rehabilitation.

The subgrade soils are sensitive to moisture, will soften when wet, and pump under construction traffic. Wet weather construction will likely require subgrade stabilization in the form of additional base rock (or granular subbase) and a geotextile. We should be contacted to provide wet weather construction recommendations if the earthwork and roadway construction is delayed into the winter months.

## RECOMMENDATIONS

The following recommendations assume the earthwork will be completed during dry weather. Excavations will be difficult during wet weather due to water infiltration and stabilization of the subgrade. In addition, compaction of the on-site soils will be impractical during wet weather and may require substitution with a higher quality imported material. The contractor may still experience pumping problems in the summer if the surficial soils have not adequately dried. Therefore, we recommend an on-site conference with the contractor prior to the grading work to review the site conditions.

### *Material and Compaction Recommendations*

1. Select Fill as defined in this report should consist of 1 or ¾-inch minus, clean (i.e., less than 5% passing the #200 U.S. Sieve), well-graded, crushed gravel or rock. We should be provided a sample of the intended fill for approval, prior to delivery to the site.

2. On-Site Fill should consist of low to medium plasticity silt, clay, rock, or mixtures of the above that are free of high plasticity clay, organics or construction debris. Unless approved by FEI, silts or clays should not be placed under foundation areas or under settlement-sensitive structures.

16. Subgrade stabilization (where required) should include placement of a Separation Geotextile over relatively undisturbed subgrade. An initial ±12 to 18-inch thick lift of Stabilization Rock should be spread over the geotextile prior to any compaction of the fill.

17. Construct permanent cut and fill slopes no steeper than 2:1 (H:V).

18. Periods of wet weather or isolated showers may prevent adequate compaction of the fine-grained On-Site Fill. Therefore, if showers occur, the work may have to be delayed or a higher quality material may be required to allow the work to continue in these conditions. In addition, surficial fill that softens due to exposure to wet weather may have to be aerated and recompacted or excavated and replaced.

19. The finished grades should be seeded, watered and maintained as soon as possible following earthwork to provide mature vegetation prior to the onset of wet weather and reduce the risk of erosion.

***Site Preparation for Foundation Construction***

It is assumed that daylight basements or stepped foundations will be typical for residential construction within the development. We recommend that FEI be present to confirm the minimum embedment depth of footings, in particular those on the downhill portion of the site, where basement excavations will "daylight". Individual home sites should be evaluated by FEI to confirm the absence of expansive soils or unexpected ground water, and the need for subslab drainage.

We recommend that the foundation area under new residences be prepared during dry weather as follows:

20. Strip the existing ground ±3 to 6 inches, or as required to remove roots and sod. Deeper excavations may be required to remove larger tree roots. Dispose of all strippings outside of construction areas.

21. Site grading for residential construction should be limited to full cut or fill benches to provide uniform foundation support. Constructing residences on combination cut and fill benches should be avoided. The appropriate set back for residential foundations from fill slopes depends on the height of the embankments and quality of the fill material. We recommend that all foundation setbacks for new residences be confirmed in the field by FEI.

22. Appropriate temporary cut slopes for basements will have to be evaluated at the time of construction. Temporary cuts should be no steeper than ½:1 (H:V). Concentrated seepage from the slope will tend to destabilize the slope. Therefore, grading should direct surface water away from the slopes.

23. Excavate to the planned grades for slabs and footings using a hoe equipped with a smooth bucket to reduce subgrade disturbance. The excavations should be deep enough to accommodate a ±6-inch granular leveling pad of compacted Select Fill beneath the footings and

slabs. The Select Fill should extend at least 6 inches outside the edges of the footings. The Select Fill may be eliminated if the footings bear on weathered bedrock.

24. High plasticity soils may be encountered in some areas. If practical, foundation excavations should extend deep enough to bypass the plastic soils. Where deep deposits of plastic soils are encountered, these materials should be overexcavated as required to provide at least 24 inches of Select Fill between the bottom of the footing and the subgrade. The excavations should be backfilled with compacted Select Fill. The footing excavations should be evaluated by an FEI representative prior to backfilling.

25. Compact building pad Select Fill as specified in Item 7. Staging construction traffic on the completed pad will increase the risk of subgrade disturbance and is not recommended.

26. Design all continuous wall footings and isolated column footings using an allowable bearing pressure of 1,500 psf. This value assumes that all footing excavations will terminate in medium stiff, residual soil or in decomposed to highly weathered bedrock.

27. Assume the walls could experience maximum total and differential settlements of ½ inch and ¼ inch, respectively. These values assume the foundations would be designed and constructed as recommended herein.

28. Provide a minimum footing width of 18 inches for continuous wall footings and isolated column footings. Place the base of all exterior footings at least 24 inches below the finished grade or paved surface. Shallower embedment may be used for interior footings that are poured monolithically with the slab. Construct footings along slopes with a minimum 5 feet of horizontal distance between the edge of the footing and the face of the slope as shown on Figure 5A (to be confirmed in the field by FEI).

29. Use Select Fill for backfill behind basement walls. Wall backfill should be compacted using a light, hand-operated compactor. Use an equivalent fluid density of 55 pcf to represent lateral earth pressure for the design of basement walls.

30. Grade the ground surface surrounding all buildings to promote runoff away from the foundations.

***Rockery Wall Construction***

We anticipate that rockery walls will be constructed using large diameter boulders individually selected and placed to create steep rock-faced slopes. Wall locations, sizes and lengths are not currently known. General recommendations for wall design and construction are summarized below. These recommendations are

provided for general planning and preliminary layout of rockery walls. It is assumed that others will provide the actual design of the walls.

31. Design and construct the walls as shown in Figure 7A (Appendix A). Batter the walls no steeper than 1:6 (H:V).

32. In areas where rockery walls will retain fill, the fill slopes should be overbuilt to 1.5:1 (H:V) at least 3 feet beyond the facing at the top of the wall and subsequently trimmed back prior to constructing the rockery walls. Recommended distances between the toe of the wall and the toe of the temporary cut slope are shown on Table 1.

33. Use appropriate sized boulders to construct the walls. The size of the boulders will depend upon the wall height. Use relatively clean, open-graded, angular crushed rock to backfill the walls. Line the cut slope with Filter Fabric prior to backfilling as shown on Figure 7A.

34. Embed the base of the rock wall a minimum of 12 inches below the finish grade for the walls at the toe of the slope. Increase the minimum embedment depth to 24 inches for walls constructed with a slope below the toe of the wall.

35. Excavate for the wall foundation using a hoe equipped with a smooth bucket to reduce subgrade disturbance. The excavations should be deep enough to accommodate a ±6-inch granular leveling pad of compacted Select Fill beneath the wall.

36. Design the walls using an allowable bearing pressure of 1,500 psf. This value assumes that all footing excavations will terminate in medium stiff, residual soil or in decomposed to highly weathered bedrock.

***Foundation and Wall Drainage***

We recommend that drainage for the site be constructed as follows.

37. Install foundation drains along the perimeter of the buildings as shown on Figure 6A. The drains should consist of 3 or 4-inch diameter, perforated or slotted, PVC pipe. The flowline of the pipe should be set near the bottom of the foundation at least 18 inches below the ground surface. The pipe should be bedded in at least 4 inches of Drain Rock. The entire mass of Drain Rock should be wrapped in a filter fabric that laps at least 12 inches at the top.

38. Install drains behind the rockery walls. The drain should consist of a 4-inch diameter, perforated or slotted PVC pipe. The flowline of the pipe should be set near the base of the wall. The pipe should be bedded in at least 4 inches of Drain Rock and the wall should be backfilled with open-graded, angular crushed rock. A filter fabric should be placed over the cut slope (as shown on Figure 7A) to reduce the risk of fine-grained soils intruding into the granular backfill.

39. Provide clean-outs at appropriate locations for future maintenance of the drainage systems.

40. Discharge the drains by gravity flow into the nearest storm drain, if practical. Otherwise, discharge the water into the nearest natural drainage. Roof drains may be discharged onto the property at least ±15 feet away from the foundations. If roof drains discharge onto sloping ground, provide an energy dissipater at the outlet to reduce surface erosion. Roof drains should not be connected to foundation drains.

***Pavement Construction***

41. Strip the ground surface as required to remove roots and sod. Dispose of all strippings outside of construction areas.

42. Prepare, compact and density test the subgrade as specified in Item 7. Compaction should be verified for both native soils and embankment fill.

43. Proof-roll the completed subgrade to identify any soft or pumping areas. Overexcavate and replace any pumping subgrade with compacted Select Fill. High plasticity soils should also be overexcavated and replaced with compacted Select Fill or Granular Site Fill to a minimum depth of 24 inches below the finished grade.

44. Maintain the moisture in the compacted subgrade to prevent excessive drying and cracking. Immediately cover the subgrade with compacted Select Fill.

45. Provide a minimum flexible pavement section of 3.5 inches of AC over 13.5 inches of base rock (Select Fill). Compact the base rock as specified in Item 7.

46. Compact the AC to a minimum of 91% relative compaction according to the theoretical maximum density calculated from the Rice specific gravity.

**DESIGN REVIEW/CONSTRUCTION OBSERVATION/TESTING**

We should be provided the opportunity to review all drawings and specifications that pertain to site preparation, foundation construction and pavements. Site preparation will require field confirmation of foundation soils and road subgrade, as well as proper mitigation of high plasticity soils or unexpected ground water, where present. Mitigation of any subgrade pumping will also require engineering review and judgment. That judgment should be provided by one of our representatives. Frequent field density tests should be run on all engineered fill, subgrade and base rock. We recommend that we be retained to provide the necessary construction observations.

## VARIATION OF SUBSURFACE CONDITIONS, USE OF THIS REPORT AND WARRANTY

The analysis, conclusions and recommendations contained herein are based on the assumption that the soil profiles and the ground water levels encountered in the test pits are representative of the overall site conditions. The above recommendations assume that we will have the opportunity to review final drawings and be present during construction to confirm assumed foundation conditions. No changes in the enclosed recommendations should be made without our approval. We will assume no responsibility or liability for any engineering judgment, inspection or testing performed by others.

This report was prepared for the exclusive use of TC2 Investments, LLC, Metolius Consulting and their design consultants for Brooklane Heights and Oakmont Addition in Corvallis, Oregon. Information contained herein should not be used for other sites or for unanticipated construction without our written consent. This report is intended for planning and design purposes. Contractors using this information to estimate construction quantities or costs do so at their own risk. Our services do not include any survey or assessment of potential surface contamination or contamination of the soil or ground water by hazardous or toxic materials. We assume that those services, if needed, have been completed by others.

Climate conditions in western Oregon typically consist of wet weather for almost half of the year (typically between mid-October and late May). The recommendations for site preparation and foundation drainage are not intended to represent any warranty (expressed or implied) against the growth of mold, mildew or other organisms that grow in a humid or moist environment.

Our work was done in accordance with generally accepted soil and foundation engineering practices. No other warranty, expressed or implied, is made.

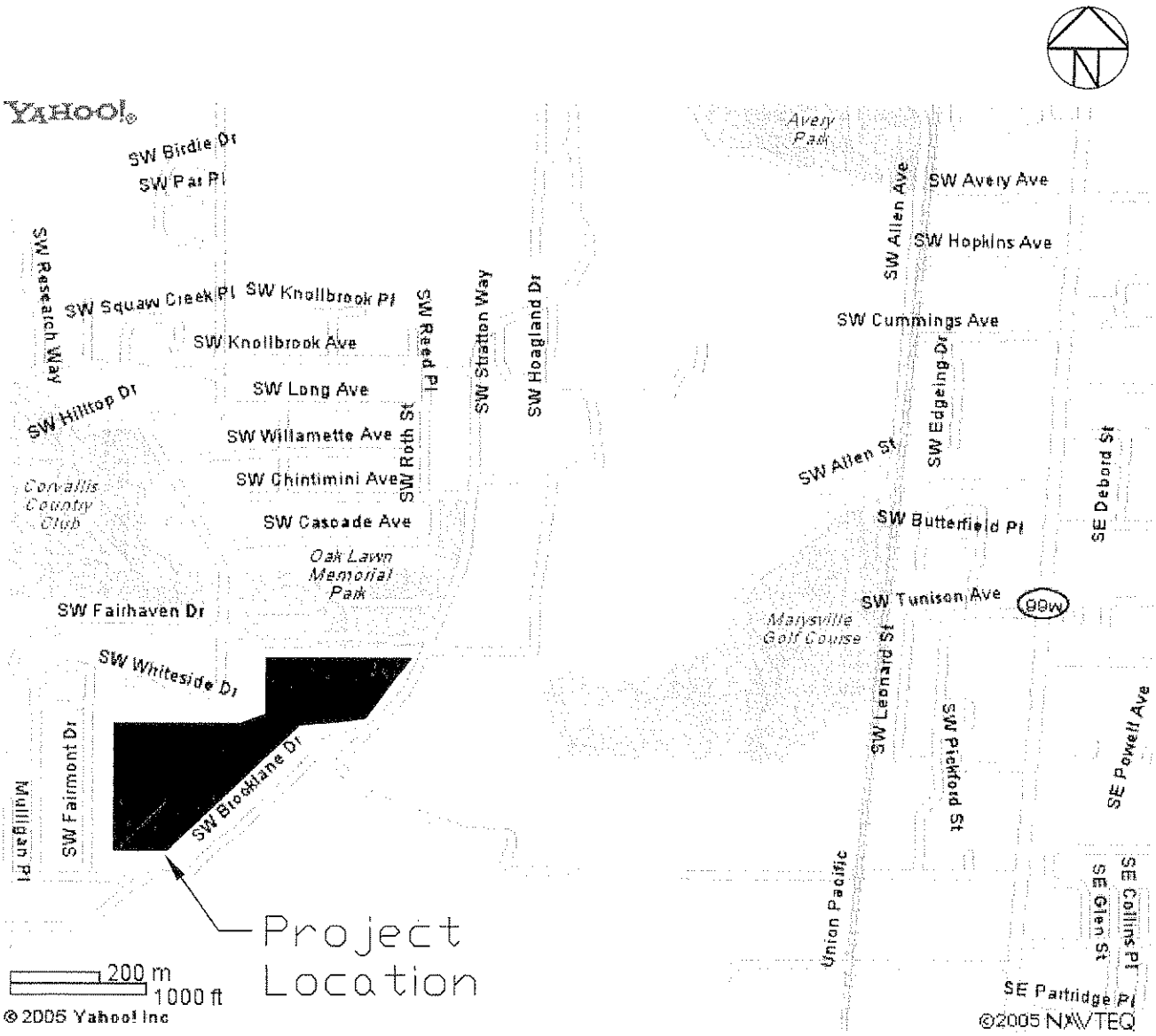
# Appendix A

## *Figures*

*Professional*
*Geotechnical*
*Services*

Foundation Engineering, Inc.

**ATTACHMENT III - 55**
**LUBA REMAND**




| | |
|---|---|
| DATE | MAY 2008 |
| DWN. | DLR |
| APPR. | |
| REVIS. | |
| PROJECT NO. | 2081024 |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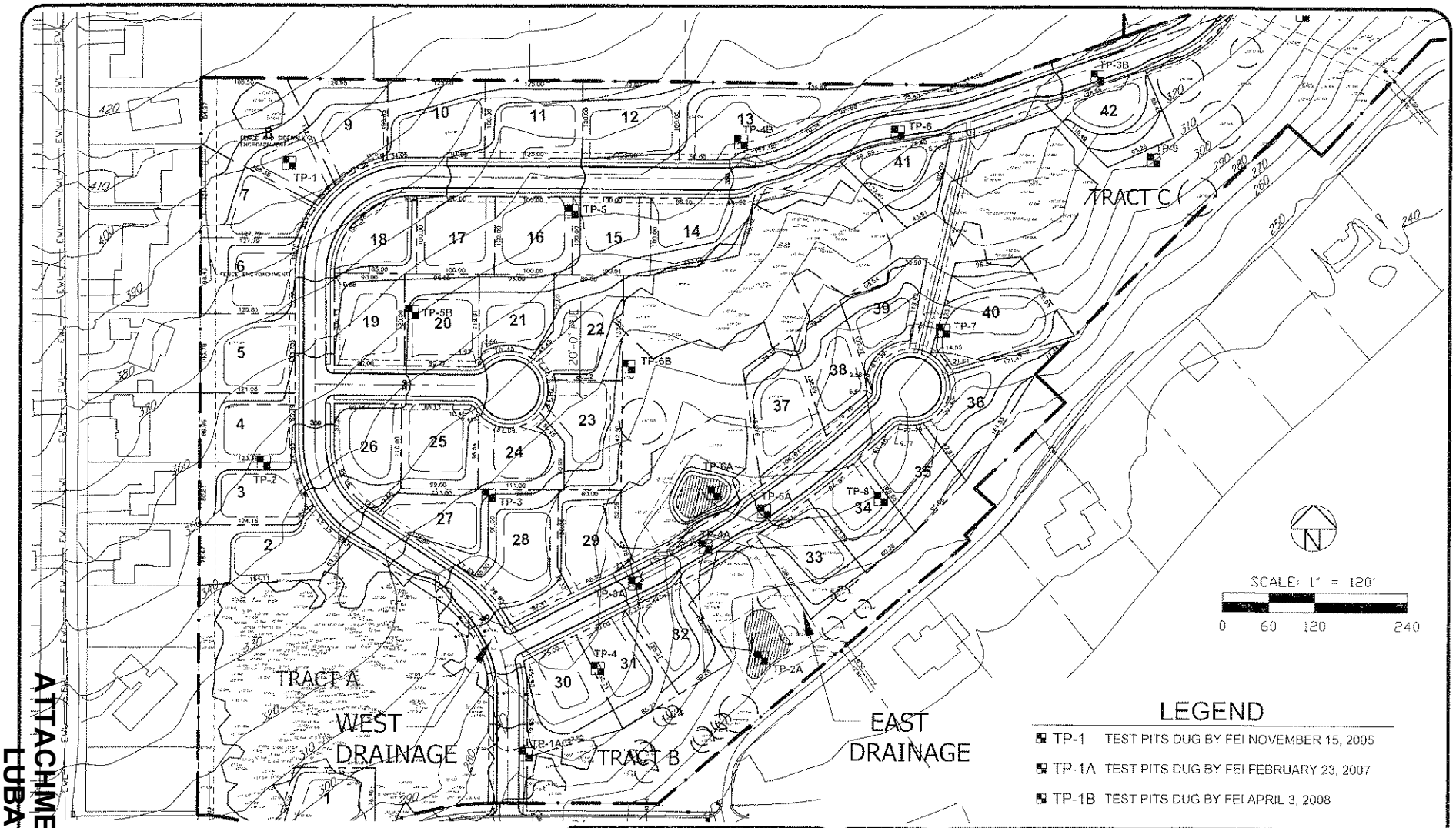
**VICINITY MAP**

BROOKLANE HEIGHTS AND OAKMONT ADDITION
CORVALLIS, OREGON

FIGURE NO.
**1A**




NOTES:
1. TEST PIT LOCATIONS WERE ESTABLISHED BY PACING AND VISUAL REFERENCE AND ARE APPROXIMATE ONLY.
2. SEE REPORT FOR A DISCUSSION OF SUBSURFACE CONDITIONS.
3. BASE MAP WAS PROVIDED BY METOLIUS CONSULTING.

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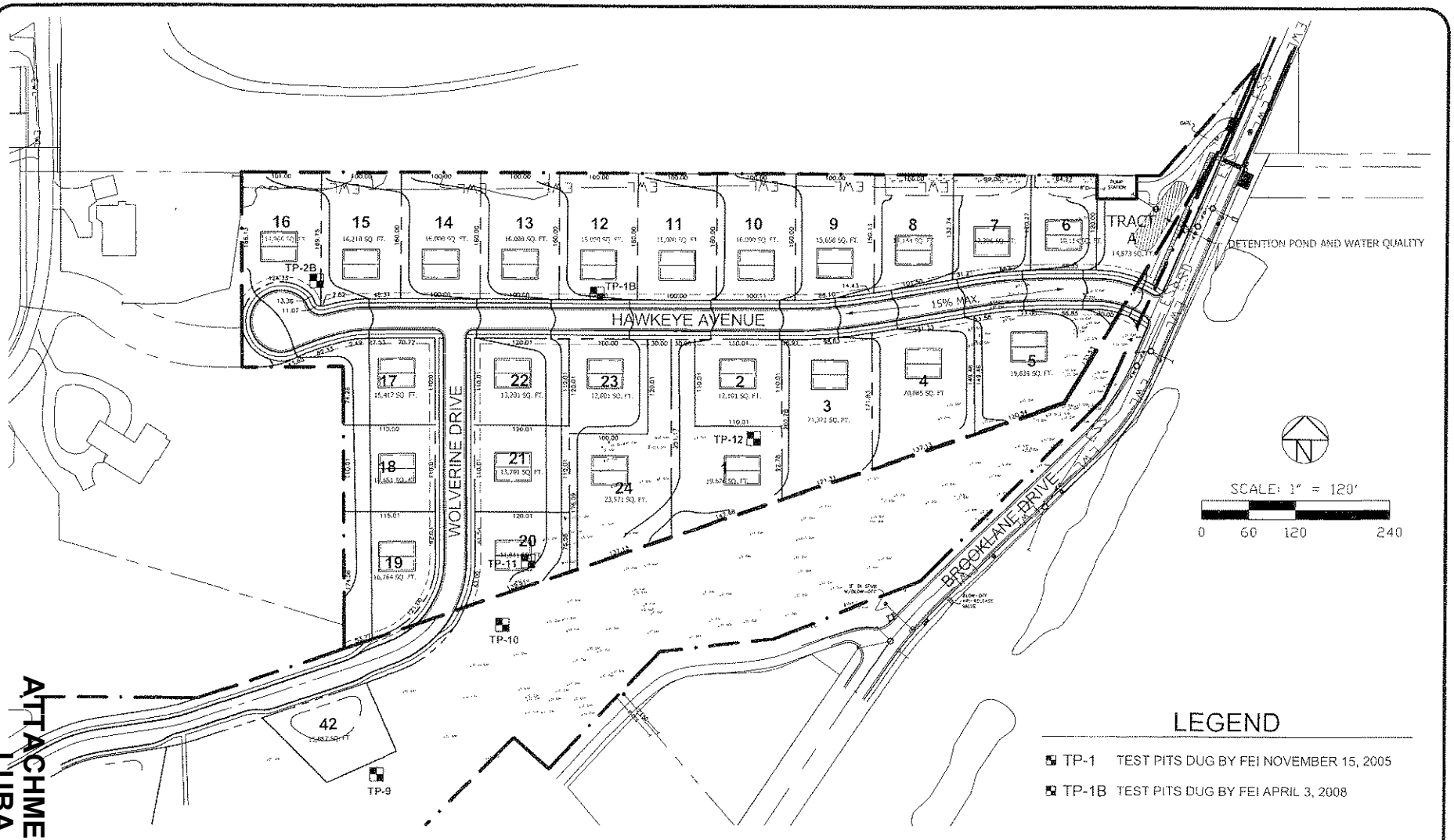
**SITE LAYOUT & TEST PIT LOCATIONS**
**BROOKLANE HEIGHTS**
BROOKLANE HEIGHTS AND OAKMONT ADDITION
CORVALLIS, OREGON

FIGURE NO.
2A

**ATTACHMENT III - 57**
**LUBA REMAND**




## LEGEND

- TP-1 TEST PITS DUG BY FEI NOVEMBER 15, 2005
- TP-1B TEST PITS DUG BY FEI APRIL 3, 2008

NOTES:
1. TEST PIT LOCATIONS WERE ESTABLISHED BY PACING AND VISUAL REFERENCE AND ARE APPROXIMATE ONLY.
2. SEE REPORT FOR A DISCUSSION OF SUBSURFACE CONDITIONS.
3. BASE MAP WAS PROVIDED BY METOLIUS CONSULTING.

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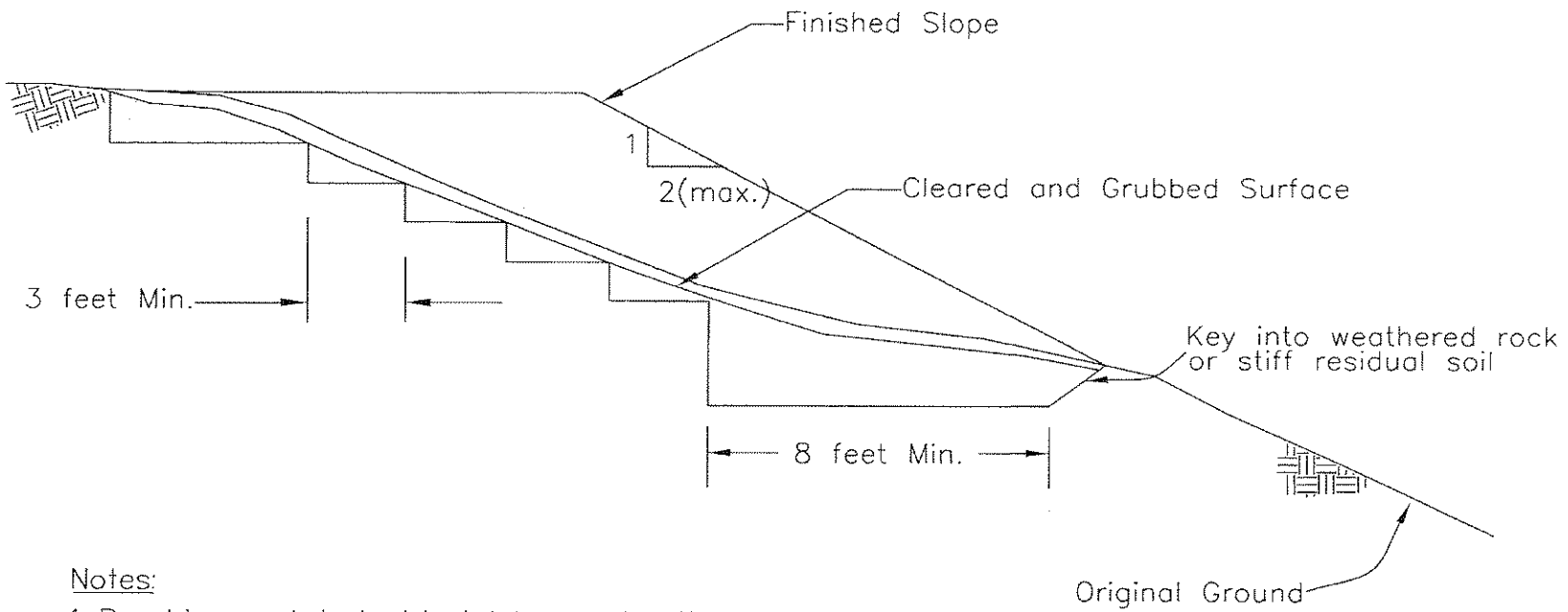
**SITE LAYOUT & TEST PIT LOCATIONS**
**OAKMONT ADDITION**
BROOKLANE HEIGHTS AND OAKMONT ADDITION
CORVALLIS, OREGON

FIGURE NO. 3A

ATTACHMENT III - 58
LUBA REMAND




Notes:

1. Benching work is incidental to construction.
2. Bench all new fill into existing ground.
3. Individual lifts should be constructed at slopes 10(h):1(v) or flatter.
4. See report for discussion of embankment soils.

Not to Scale

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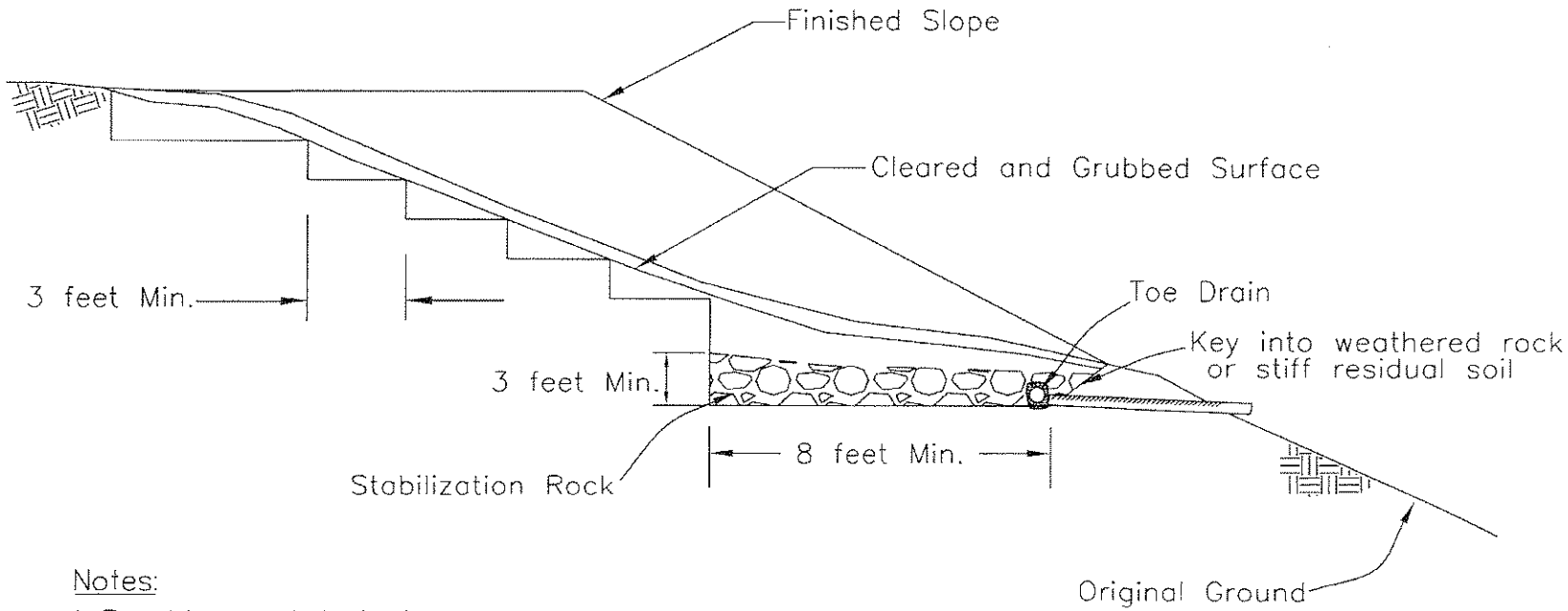
**STANDARD BENCHING DETAIL**

BROOKLANE HEIGHTS AND OAKMONT ADDITION
CORVALLIS, OREGON

FIGURE NO.
**4A**




Notes:

1. Benching work is incidental to construction.
2. Bench all new fill into existing ground.
3. Individual lifts should be constructed at slopes 10(h):1(v) or flatter.
4. See report for discussion of embankment soils, Stabilization Rock and toe drain.

Not to Scale

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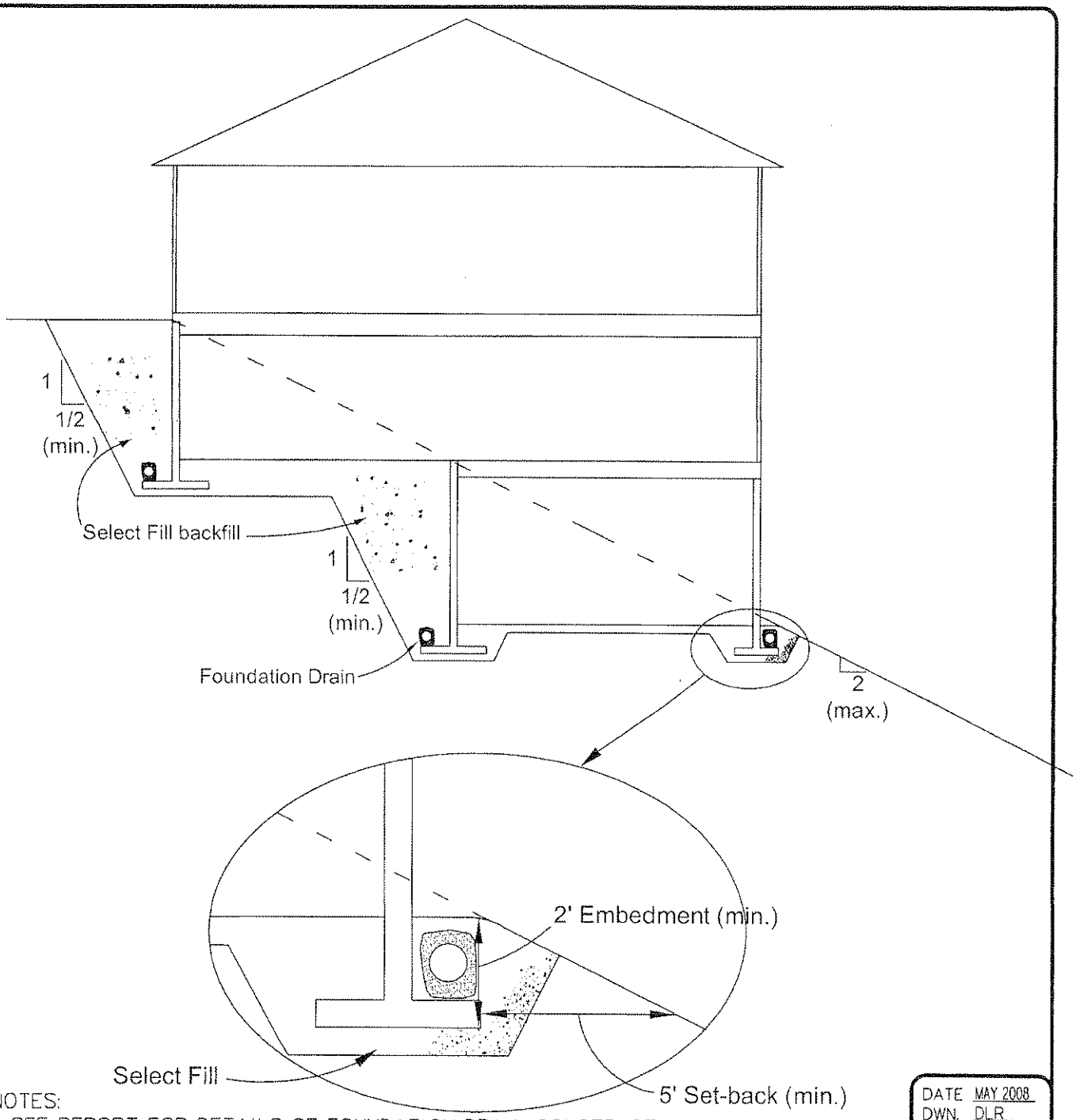
**BENCHING DETAIL WITH TOE DRAIN**

BROOKLANE HEIGHTS AND OAKMONT ADDITION
CORVALLIS, OREGON

FIGURE NO.
5A

ATTACHMENT III -80
LUBA REMAND




NOTES:
1. SEE REPORT FOR DETAILS OF FOUNDATION DRAIN CONSTRUCTION AND MATERIAL SPECIFICATIONS.
2. MAXIMUM CUT SLOPES WILL NEED TO BE VERIFIED IN THE FIELD.

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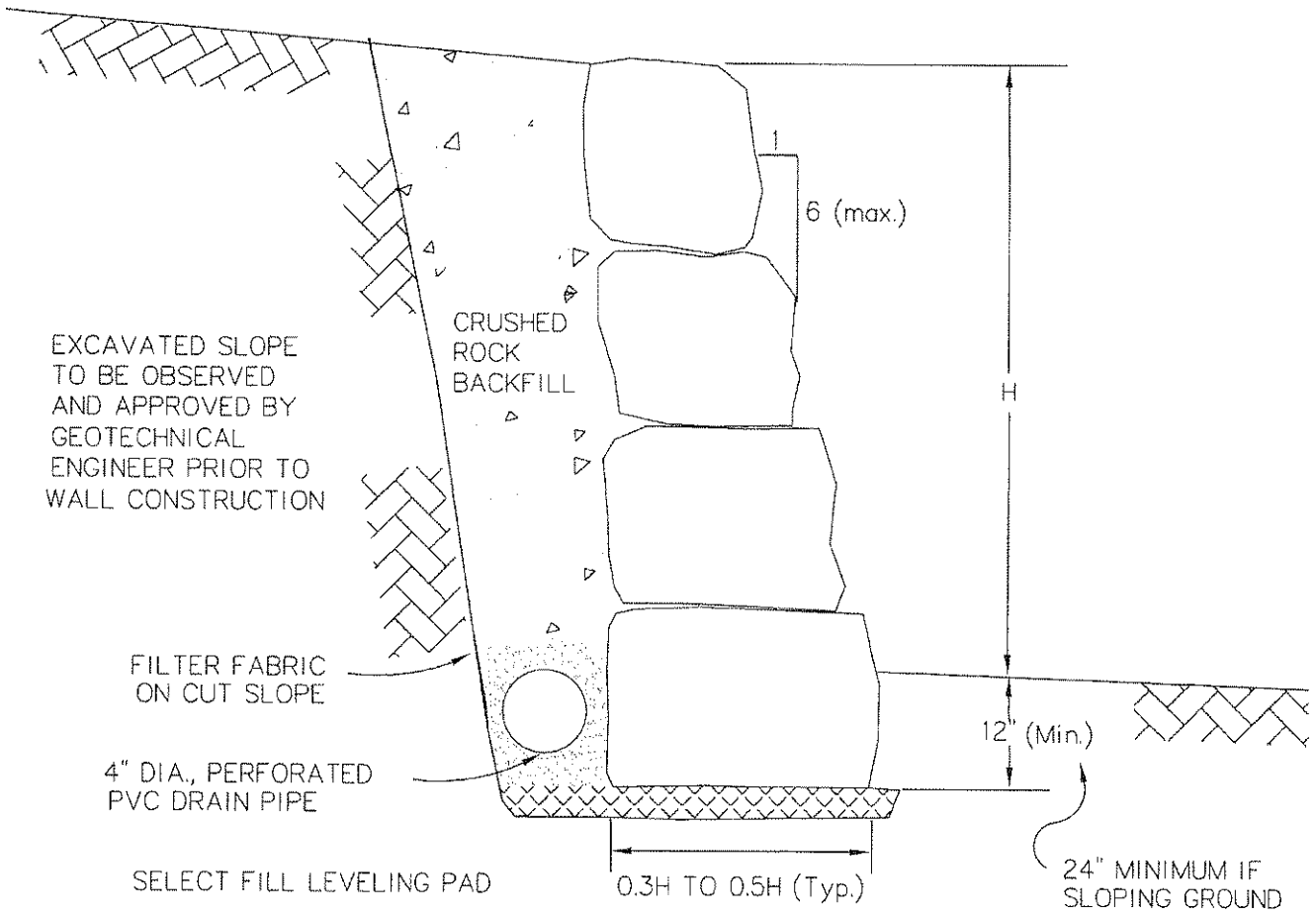
**TYP. FOOTING DETAIL/SLOPE EXCAVATION**

BROOKLANE HEIGHTS AND OAKMONT ADDITION
CORVALLIS, OREGON

FIGURE NO.
6A

**ATTACHMENT III - 61**
**LUBA REMAND**




NOTES:

1. DRAWING IS SCHEMATIC ONLY AND IS NOT TO SCALE.
2. REQUIRED ROCK SIZES WILL DEPEND UPON THE WALL HEIGHT.
3. ACTUAL DESIGN BY OTHERS.

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**TYPICAL ROCKERY WALL DETAIL**

BROOKLANE HEIGHTS AND OAKMONT ADDITION
CORVALLIS, OREGON

FIGURE NO.
7A

# Appendix B

## *Test Pit Logs*

*Professional*
*Geotechnical*
*Services*

Foundation Engineering, Inc.

## DISTINCTION BETWEEN FIELD LOGS AND FINAL LOGS

A field log is prepared for each boring or test pit by our field representative. The log contains information concerning sampling depths and the presence of various materials such as gravel, cobbles, and fill, and observations of ground water. It also contains our interpretation of the soil conditions between samples. The final logs presented in this report represent our interpretation of the contents of the field logs and the results of the laboratory examinations and tests. Our recommendations are based on the contents of the final logs and the information contained therein and not on the field logs.

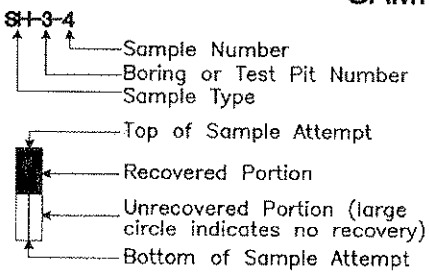
## VARIATION IN SOILS BETWEEN TEST PITS AND BORINGS

The final log and related information depict subsurface conditions only at the specific location and on the date indicated. Those using the information contained herein should be aware that soil conditions at other locations or on other dates may differ. Actual foundation or subgrade conditions should be confirmed by us during construction.

## TRANSITION BETWEEN SOIL OR ROCK TYPES

The lines designating the interface between soil, fill or rock on the final logs and on subsurface profiles presented in the report are determined by interpolation and are therefore approximate. The transition between the materials may be abrupt or gradual. Only at boring or test pit locations should profiles be considered as reasonably accurate and then only to the degree implied by the notes thereon.

## SAMPLE OR TEST SYMBOLS




S – Grab Samples
SS – Standard Penetration Test Sample (split–spoon)
SH – Thin–walled Shelby Tube Sample
C – Core Sample
CS – Continuous Sample

▲ Standard Penetration Test Resistance equals the number of blows a 140 lb. weight falling 30 in. is required to drive a standard split–spoon sampler 1 ft. Practical refusal is equal to 50 or more blows per 6 in. of sampler penetration.

● Water Content (%).

### UNIFIED SOIL CLASSIFICATION SYMBOLS

| | |
|---|---|
| G – Gravel | W – Well Graded |
| S – Sand | P – Poorly Graded |
| M – Silt | L – Low Plasticity |
| C – Clay | H – High Plasticity |
| Pt – Peat | O – Organic |

### FIELD SHEAR STRENGTH TEST

Shear strength measurements on test pit side walls, blocks of soil or Shelby tube samples are typically made with Torvane or pocket penetrometer devices.

### TYPICAL SOIL/ROCK SYMBOLS

Sand
Silt
Clay
Gravel
Basalt
Siltstone

### WATER TABLE

Water Table Location

(1/31/00) Date of Measurement

Piezometer Tip Location (if used)

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**SYMBOL KEY**

**BORING AND TEST PIT LOGS**

# Explanation of Common Terms Used in Soil Descriptions

| Field Identification | Cohesive Soils | | | Granular Soils | |
|---|---|---|---|---|---|
| | SPT | $S_u$* (tsf) | Term | SPT | Term |
| Easily penetrated several inches by fist. | 0 – 1 | < 0.125 | Very Soft | 0 – 4 | Very Loose |
| Easily penetrated several inches by thumb. | 2 – 4 | 0.125–0.25 | Soft | 5 – 10 | Loose |
| Can be penetrated several inches by thumb with moderate effort. | 5 – 8 | 0.25 – 0.50 | Medium Stiff (Firm) | 11 – 30 | Medium Dense |
| Readily indented by thumb but penetrated only with great effort. | 9 – 15 | 0.50 – 1.0 | Stiff | 31 – 50 | Dense |
| Readily indented by thumbnail. | 16 – 30 | 1.0 – 2.0 | Very Stiff | > 50 | Very Dense |
| Indented with difficulty by thumbnail. | 31 – 60 | > 2.0 | Hard | | |

* Undrained shear strength

| Term | Soil Moisture Field Description |
|---|---|
| Dry | Absence of moisture. Dusty. Dry to the touch. |
| Damp | Soil has moisture. Cohesive soils are below plastic limit and usually moldable. |
| Moist | Grains appear darkened, but no visible water. Silt/clay will clump. Sand will bulk. Soils are often at or near plastic limit. |
| Wet | Visible water on larger grain surfaces. Sand and cohesionless silt exhibit dilatancy. Cohesive silt/clay can be readily remolded. Soil leaves wetness on the hand when squeezed. "Wet" indicates that the soil is wetter than the optimum moisture content and above the plastic limit. |

| Term | PI | Plasticity Field Test |
|---|---|---|
| Nonplastic | 0 – 3 | Cannot be rolled into a thread. |
| Low Plasticity | 3 – 15 | Can be rolled into a thread with some difficulty. |
| Medium Plasticity | 15 – 30 | Easily rolled into thread. |
| High Plasticity | > 30 | Easily rolled and rerolled into thread. |

| Term | Soil Structure Criteria |
|---|---|
| Stratified | Alternating layers at least 1 inch thick – describe variation. |
| Laminated | Alternating layers at less than 1 inch thick – describe variation. |
| Fissured | Contains shears and partings along planes of weakness. |
| Slickensides | Partings appear glossy or striated. |
| Blocky | Breaks into lumps – crumbly. |
| Lensed | Contains pockets of different soils – describe variation. |

| Term | Soil Cementation Criteria |
|---|---|
| Weak | Breaks under light finger pressure. |
| Moderate | Breaks under hard finger pressure. |
| Strong | Will not break with finger pressure. |

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COMMON TERMS
SOIL DESCRIPTIONS

# Explanation of Common Terms Used in Rock Descriptions

| Field Identification | | UCS (psi) | UCS (MPa) | Strength (Hardness) |
|---|---|---|---|---|
| Indented by thumbnail. | R0 | < 100 | 0.25–1.0 | Extremely Weak (Extremely Soft) |
| Crumbles under firm blows with geological hammer, can be peeled by a pocket knife. | R1 | 100–1000 | 1.0–5.0 | Very Weak (Very Soft) |
| Can be peeled by a pocket knife with difficulty, shallow indentations made by firm blow with geological hammer. | R2 | 1000–4000 | 5.0–25 | Weak (Soft) |
| Cannot be scraped or peeled with a pocket knife, specimen can be fractured with a single blow of geological hammer. | R3 | 4000–8000 | 25–50 | Medium Strong (Medium Hard) |
| Specimen requires more than one blow of geological hammer to fracture it. | R4 | 8000–16000 | 50–100 | Strong (Hard) |
| Specimen requires many blows of geological hammer to fracture it. | R5 | 16000–36000 | 100–250 | Very Strong (Very Hard) |
| Specimen can only be chipped with geological hammer. | R6 | > 36000 | > 250 | Extremely Strong (Extremely Hard) |

| Term | Weathering Field Identification |
|---|---|
| Fresh | Crystals are bright. Discontinuities may show some minor surface staining. No discoloration in rock fabric. |
| Slightly Weathered | Rock mass is generally fresh. Discontinuities are stained and may contain clay. Some discoloration in rock fabric. |
| Moderately Weathered | Significant portions of rock show discoloration and weathering effects. Crystals are dull and show visible chemical alteration. Discontinuities are stained and may contain secondary mineral deposits. |
| Highly Weathered | Rock can be excavated with geologist's pick. All dicontinuities exhibit secondary mineralization. Complete discoloration of rock fabric. Surface of core is friable and usually pitted due to washing out of highly altered minerals by drilling water. |
| Decomposed | Rock mass is completely decomposed. Original rock "fabric" may be evident. May be reduced to soil with hand pressure. |

| Spacing (meters) | Spacing (feet) | Spacing Term | Bedding/Foliation |
|---|---|---|---|
| < 0.06 | < 2 in. | Very Close | Very Thin |
| 0.06 – 0.30 | 2 in. – 1 ft. | Close | Thin |
| 0.30 – 0.90 | 1 ft. – 3 ft. | Moderately Close | Medium |
| 0.90 – 3.0 | 3 ft. – 10 ft. | Wide | Thick |
| > 3.0 | > 10 ft. | Very Wide | Very Thick (Massive) |

| Vesicle Term | Volume |
|---|---|
| Some | 3 – 20% |
| Highly | 20 – 50% |
| Scoria | > 50% |

| Stratification Term | Description |
|---|---|
| Lamination | < 1 cm thick beds |
| Fissile | Preferred break along laminations |
| Parting | Preferred break direction |
| Foliation | Metamorphic layering of minerals |

| RQD % | Designation | RQD % | Designation |
|---|---|---|---|
| 0 – 25 | Very Poor | 75 – 90 | Good |
| 25 – 50 | Poor | 90 – 100 | Excellent |
| 50 – 75 | Fair | | |

Rock Quality Designation (RQD) is the percent of a core run with intact lengths greater than 0.1 m excluding breaks caused by drilling.

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COMMON TERMS
ROCK DESCRIPTIONS

| Comments | Depth, Feet | Sample # | Location | Class Symbol | Water Table | C, TSF | Symbol | Soil and Rock Description |
|---|---|---|---|---|---|---|---|---|
| Surface: grass and weeds.<br>Fine roots extend to ±1.5 feet. | 1-<br>2-<br>3-<br>4-<br>5-<br>6-<br>7-<br>8-<br>9-<br>10-<br>11-<br>12-<br>13-<br>14-<br>15-<br>16- | | | | | 0.50<br>0.60 | | Medium stiff, clayey SILT; light brown, damp to moist, medium plasticity, semi-blocky structure, (topsoil/residual soil).<br>Medium stiff to stiff, clayey SILT; light brown to orange-brown, iron and manganese-stained, damp to moist, medium plasticity, relict structure, (residual soil).<br>Gravel-sized sandstone corestones noted below ±6 feet.<br>Cobble to boulder-sized sandstone corestones noted below ±9 feet.<br>Extremely weak (R0) SANDSTONE; light brown to orange-brown, iron and manganese-stained, decomposed to highly weathered, fine sand, (Spencer Formation).<br>BOTTOM OF TEST PIT |
| Slightly harder digging noted below ±9 feet.<br>No ground water encountered to the limit of excavation. | | | | | | | | |

Project No.: 2051129

Surface Elevation: N/A (Approx.)

Date of Test Pit: November 15, 2005

**Test Pit Log: TP- 1**

**Brooklane Heights**

**Corvallis, Oregon**

| Comments | Depth, Feet | Sample # | Location | Class Symbol | Water Table | C, TSF | Symbol | Soil and Rock Description |
|---|---|---|---|---|---|---|---|---|
| Surface: grass and weeds.<br>Fine roots extend to ±1 foot and along bedrock contact. | 1-<br>2-<br>3-<br>4-<br>5-<br>6-<br>7-<br>8-<br>9-<br>10-<br>11-<br>12-<br>13-<br>14-<br>15-<br>16- | S-2-1 | | | | | | Medium stiff, clayey SILT; light brown to orange-brown, damp to moist, medium plasticity, semi-blocky structure, (topsoil/residual soil).<br>Extremely weak to very weak (R0 to R1) SANDSTONE; light brown, highly weathered, fine sand, micaceous, very close to close joints. Joints are irregular, rough, closed with some iron and manganese-staining, (Spencer Formation).<br>BOTTOM OF TEST PIT |
| Digging refusal encountered at ±7 feet.<br>No ground water encountered to the limit of excavation. | | | | | | | | |

Project No.: 2051129

Surface Elevation: N/A (Approx.)

Date of Test Pit: November 15, 2005

**Test Pit Log: TP- 2**

**Brooklane Heights**

**Corvallis, Oregon**

| Comments | Depth, Feet | Sample # | Location | Class Symbol | Water Table | C, TSF | Symbol | Soil and Rock Description |
|---|---|---|---|---|---|---|---|---|
| Surface: grass and weeds.<br>Fine roots extend to ±6 inches. | 1 | | | | | | | Medium stiff SILT, trace to some clay; brown, damp, low to medium plasticity, (topsoil). |
| | 2 | | | | | 0.65 | | Stiff, clayey SILT, scattered roots; light brown to orange-brown, damp to moist, medium plasticity, (residual soil).<br>Becomes very stiff and grey mottled orange below ±2.7 feet. |
| | 3 | | | | | | | |
| | 4 | | | | | | | |
| | 5 | | | | | >1.0 | | Relict structure noted below ±5 feet. |
| | 6 | | | | | | | |
| | 7 | | | | | | | |
| | 8 | | | | | | | |
| | 9 | | | | | | | |
| | 10 | S-3-1 | | | | | | Extremely weak (R0) SANDSTONE; light brown, iron and manganese-stained, close joints, fine sand, silty and micaceous, (Spencer Formation). |
| | 11 | | | | | | | |
| | 12 | | | | | | | |
| | 13 | | | | | | | Less staining and becomes light brown-grey, moderately weathered below ±12.5 feet. |
| | 14 | S-3-2 | | | | | | |
| No ground water encountered to the limit of excavation. | 15 | | | | | | | |
| | 16 | | | | | | | BOTTOM OF TEST PIT |

Project No.: 2051129

Surface Elevation: N/A (Approx.)

Date of Test Pit: November 15, 2005

**Test Pit Log: TP- 3**

**Brooklane Heights**

**Corvallis, Oregon**

| Comments | Depth, Feet | Sample # | Location | Class Symbol | Water Table | C, TSF | Symbol | Soil and Rock Description |
|---|---|---|---|---|---|---|---|---|
| Surface: grass, scotch broom, blackberries and wild rose. | 1 | | | | | | | Medium stiff SILT, trace to some clay, scattered roots; brown, damp, medium plasticity, (topsoil/residual soil). |
| | 2 | | | | | 0.85 | | Medium stiff to stiff to stiff SILT, some clay; orange-brown, iron-stained, damp, low to medium plasticity, relict structure, (residual soil to decomposed rock). |
| | 3 | | | | | | | Extremely weak to very weak (R0 to R1) SANDSTONE; light brown to orange, iron stained, highly weathered, fine sand, close joints. Joints are irregular, rough, closed with some manganese-staining, (Spencer Formation). |
| | 4 | | | | | | | |
| | 5 | | | | | | | |
| | 6 | | | | | | | |
| Digging refusal encountered at ±7 feet. | 7 | S-4-1 | | | | | | Becomes very weak (R1), orange-grey with iron and manganese-staining and highly to moderately weathered below ±6 feet. |
| No ground water encountered to the limit of excavation. | 8 | | | | | | | |
| | 9 | | | | | | | |
| | 10 | | | | | | | BOTTOM OF TEST PIT |
| | 11 | | | | | | | |
| | 12 | | | | | | | |
| | 13 | | | | | | | |
| | 14 | | | | | | | |
| | 15 | | | | | | | |
| | 16 | | | | | | | |

Project No.: 2051129

Surface Elevation: N/A (Approx.)

Date of Test Pit: November 15, 2005

**Test Pit Log: TP- 4**

**Brooklane Heights**

**Corvallis, Oregon**

| Comments | Depth, Feet | Sample # | Location | Class Symbol | Water Table | C, TSF | Symbol | Soil and Rock Description |
|---|---|---|---|---|---|---|---|---|
| Surface: grass. | 1- | | | | | 0.30 | | Medium stiff SILT, some to trace clay, scattered roots; dark brown to brown, damp, medium plasticity, (topsoil/residual soil). |
| | 2- | | | | | | | Stiff to very stiff SILT, some clay; light brown, damp, low plasticity, relict structure, (residual soil). |
| | 3- | | | | | | | |
| | 4- | | | | | | | Extremely weak (R0) SANDSTONE; light brown, damp, iron-stained, decomposed to highly weathered, very close to close joints. Joints are irregular, rough, closed, (Spencer Formation). |
| | 5- | | | | | | | |
| Digging refusal encountered at ±6.5 feet. | 6- | | | | | | | |
| No ground water encountered to the limit of excavation. | 7- | | | | | | | Becomes very weak (R1), grey and moderately weathered below ±5 feet. |
| | 8- | | | | | | | BOTTOM OF TEST PIT |
| | 9- | | | | | | | |
| | 10- | | | | | | | |
| | 11- | | | | | | | |
| | 12- | | | | | | | |
| | 13- | | | | | | | |
| | 14- | | | | | | | |
| | 15- | | | | | | | |
| | 16- | | | | | | | |

Project No.: 2051129

Surface Elevation: N/A (Approx.)

Date of Test Pit: November 15, 2005

**Test Pit Log: TP- 5**

**Brooklane Heights**

**Corvallis, Oregon**

| Comments | Depth, Feet | Sample # | Location | Class Symbol | Water Table | C, TSF | Symbol | Soil and Rock Description |
|---|---|---|---|---|---|---|---|---|
| Surface: grass. | 1- | | | | | | | Medium stiff SILT, trace clay; brown, damp to moist, medium plasticity, (topsoil). |
| Fine roots extend to ±6 inches. | 2- | | | | | 0.35 | | |
| | 3- | S-6-1 | | | | | | Medium stiff SILT, trace to some clay, scattered roots; brown, dry to moist, low to medium plasticity, (residual soil). |
| | 4- | | | | | | | |
| | 5- | | | | | | | Stiff to very stiff SILT, some clay; brown, damp to moist, medium plasticity, relict structure, (residual soil). |
| | 6- | | | | | | | |
| | 7- | | | | | | | |
| Digging refusal encountered at ±8.5 feet. | 8- | S-6-2 | | | | | | Extremely weak to very weak (R0 to R1) SANDSTONE; orange-brown to grey, iron and manganese-stained, highly to moderately weathered, manganese-stained joints, fine sand, (Spencer Formation). |
| No ground water encountered to the limit of excavation. | 9- | | | | | | | |
| | 10- | | | | | | | BOTTOM OF TEST PIT |
| | 11- | | | | | | | |
| | 12- | | | | | | | |
| | 13- | | | | | | | |
| | 14- | | | | | | | |
| | 15- | | | | | | | |
| | 16- | | | | | | | |

Project No.: 2051129

Surface Elevation: N/A (Approx.)

Date of Test Pit: November 15, 2005

**Test Pit Log: TP- 6**

**Brooklane Heights**

**Corvallis, Oregon**

| Comments | Depth, Feet | Sample # | Location | Class Symbol | Water Table | C, TSF | Symbol | Soil and Rock Description |
|---|---|---|---|---|---|---|---|---|
| Surface: grass and oak leaves.<br>Fine roots extend to ±1 foot.<br>Digging refusal encountered at ±2 feet.<br>No ground water encountered to the limit of excavation. | 1<br>2<br>3<br>4<br>5<br>6<br>7<br>8<br>9<br>10<br>11<br>12<br>13<br>14<br>15<br>16 | S-7-1<br>S-7-2 | | | | | | Soft to medium stiff SILT, some to trace clay; dark brown, medium plasticity, (topsoil).<br>Very weak to weak (R1 to R2) SANDSTONE; green-grey, moderately to slightly weathered, fine sand, close joints. Joints are irregular, smooth to rough, closed, (Spencer Formation).<br>BOTTOM OF TEST PIT |

Project No.: 2051129

Surface Elevation: N/A (Approx.)

Date of Test Pit: November 15, 2005

**Test Pit Log: TP- 7**

**Brooklane Heights**

**Corvallis, Oregon**

| Comments | Depth, Feet | Sample # | Location | Class Symbol | Water Table | C, TSF | Symbol | Soil and Rock Description |
|---|---|---|---|---|---|---|---|---|
| Surface: grass and weeds.<br>Digging refusal encountered at ±3 feet.<br>No ground water encountered to the limit of excavation. | 1<br>2<br>3<br>4<br>5<br>6<br>7<br>8<br>9<br>10<br>11<br>12<br>13<br>14<br>15<br>16 | S-8-1 | | | | | | Soft to medium stiff SILT, some clay, scattered roots; dark brown, damp to moist, medium plasticity, (topsoil).<br>Very weak to weak (R1 to R2) SANDSTONE; dark grey moderately to slightly weathered, fine to medium sand, close joints. Joints are irregular to planar, smooth to rough, closed with some manganese-staining, (Spencer Formation).<br>BOTTOM OF TEST PIT |

Project No.: 2051129

Surface Elevation: N/A (Approx.)

Date of Test Pit: November 15, 2005

**Test Pit Log: TP- 8**

**Brooklane Heights**

**Corvallis, Oregon**

| Comments | Depth, Feet | Sample # | Location | Class Symbol | Water Table | C, TSF | Symbol | Soil and Rock Description |
|---|---|---|---|---|---|---|---|---|
| Surface: grass, scotch broom and blackberries.<br><br>Digging refusal encountered at ±3.5 feet.<br>No ground water encountered to the limit of excavation. | 1-<br>2-<br>3-<br>4-<br>5-<br>6-<br>7-<br>8-<br>9-<br>10-<br>11-<br>12-<br>13-<br>14-<br>15-<br>16- | S-9-1 | | | | | | Soft to medium stiff SILT, abundant fine roots; brown to dark brown, damp, medium plasticity, (topsoil).<br>Very weak to weak (R1 to R2) SANDSTONE; light brown, moderately weathered, fine sand, close joints. Joints are irregular to planar, smooth to rough, closed with some manganese-staining, (Spencer Formation).<br>BOTTOM OF TEST PIT |

Project No.: 2051129

Surface Elevation: N/A (Approx.)

Date of Test Pit: November 15, 2005

**Test Pit Log: TP- 9**

**Brooklane Heights**

**Corvallis, Oregon**

| Comments | Depth, Feet | Sample # | Location | Class Symbol | Water Table | C, TSF | Symbol | Soil and Rock Description |
|---|---|---|---|---|---|---|---|---|
| Surface: scotch broom and wild rose.<br><br>Digging refusal encountered at ±5.5 feet.<br>No ground water encountered to the limit of excavation. | 1-<br>2-<br>3-<br>4-<br>5-<br>6-<br>7-<br>8-<br>9-<br>10-<br>11-<br>12-<br>13-<br>14-<br>15-<br>16- | S-10-1 | | | | | | Medium stiff SILT, trace to some clay, scattered roots; brown to orange-brown, damp to moist, low to medium plasticity, (topsoil/residual soil).<br>Very weak (R1) SANDSTONE; light brown, moderately weathered, fine sand, very close to close joints. Joints are irregular, rough, closed with some manganese-staining, (Spencer Formation).<br>BOTTOM OF TEST PIT |

Project No.: 2051129

Surface Elevation: N/A (Approx.)

Date of Test Pit: November 15, 2005

**Test Pit Log: TP-10**

**Brooklane Heights**

**Corvallis, Oregon**

| Comments | Depth, Feet | Sample # | Location | Class Symbol | Water Table | C, TSF | Symbol | Soil and Rock Description |
|---|---|---|---|---|---|---|---|---|
| Surface: blackberries and scotch broom.<br>Digging refusal encountered at ±2 feet.<br>No ground water encountered to the limit of excavation. | 1-<br>2-<br>3-<br>4-<br>5-<br>6-<br>7-<br>8-<br>9-<br>10-<br>11-<br>12-<br>13-<br>14-<br>15-<br>16- | | | | | | | Medium stiff SILT, some clay, scattered roots; orange-brown, damp to moist, medium plasticity, (topsoil).<br>Very weak to weak (R1 to R2) SANDSTONE; green-grey, moderately to slightly weathered, fine sand, close to moderately close joints. Joints are irregular, rough, closed with some manganese-staining, (Spencer Formation).<br>BOTTOM OF TEST PIT |

Project No.: 2051129

Surface Elevation: N/A (Approx.)

Date of Test Pit: November 15, 2005

**Test Pit Log: TP-11**

**Brooklane Heights**

**Corvallis, Oregon**

| Comments | Depth, Feet | Sample # | Location | Class Symbol | Water Table | C, TSF | Symbol | Soil and Rock Description |
|---|---|---|---|---|---|---|---|---|
| Surface: scotch broom, blackberries.<br><br><br><br><br><br>Digging refusal encountered at ±7 feet.<br>No ground water encountered to the limit of excavation. | 1-<br>2-<br>3-<br>4-<br>5-<br>6-<br>7-<br>8-<br>9-<br>10-<br>11-<br>12-<br>13-<br>14-<br>15-<br>16- | | | | | | | Soft to medium stiff SILT, some clay, scattered roots; dark brown, moist, medium plasticity, (topsoil).<br>Stiff to very stiff SILT, some clay; light brown, dry to damp, low to medium plasticity, relict structure, (residual soil).<br>Extremely weak (R0) SANDSTONE; light brown, trace iron and manganese-staining, highly to moderately weathered, fine sand, close joints. Joints are irregular, rough, closed with manganese-staining, (Spencer Formation).<br>Becomes very weak (R1) below ±5.5 feet.<br>BOTTOM OF TEST PIT |

Project No.: 2051129

Surface Elevation: N/A (Approx.)

Date of Test Pit: November 15, 2005

**Test Pit Log: TP-12**

**Brooklane Heights**

**Corvallis, Oregon**

| Comments | Depth, Feet | Sample # | Location | Class Symbol | Water Table | C, TSF | Symbol | Soil and Rock Description |
|---|---|---|---|---|---|---|---|---|
| Surface: short grass, blackberry bushes and rock fragments. | 1 | | | | | | | ROOTS and SOD. |
| | 2 | | | | | | | Extremely weak to very weak (R0 to R1) SANDSTONE; grey to orange-brown, moderately weathered to decomposed, highly fractured, (Spencer Formation). |
| | 3 | | | | | | | |
| | 4 | | | | | | | |
| Slow seepage noted at ±5.5 feet. | 5 | | | | | | | |
| | 6 | | | | | | | BOTTOM OF TEST PIT |
| | 7 | | | | | | | |
| | 8 | | | | | | | |
| | 9 | | | | | | | |
| | 10 | | | | | | | |
| | 11 | | | | | | | |
| | 12 | | | | | | | |

Project No.: 2051129-101

Surface Elevation: N/A (Approx.)

Date of Test Pit: February 23, 2007

**Test Pit Log: TP-1A**

**Brooklane Heights**

**Corvallis, Oregon**

| Comments | Depth, Feet | Sample # | Location | Class Symbol | Water Table | C, TSF | Symbol | Soil and Rock Description |
|---|---|---|---|---|---|---|---|---|
| Surface: tall grass and blackberry bushes. | 1 | | | | | | | Soft to medium stiff, clayey SILT; dark brown, moist, medium plasticity, blocky structure, (topsoil/alluvium). |
| | 2 | | | | | | | |
| Moderate seepage noted at ±3 feet. | 3 | S-2A-1 | | | | 0.25 | | Soft, silty CLAY; light brown, trace iron-staining, wet, medium plasticity, micaceous, (alluvium). |
| | 4 | | | | | | | |
| | 5 | | | | | | | |
| | 6 | | | | | | | |
| | 7 | | | | | | | Stiff CLAY, some gravel-sized rock fragments; brown to grey, trace iron-staining, moist to wet, medium plasticity, (residual soil). |
| | 8 | | | | | | | |
| | 9 | | | | | | | |
| | 10 | | | | | | | Extremely weak (R0) SANDSTONE; brown to grey, decomposed to highly weathered, highly fractured, (Spencer Formation). |
| | 11 | | | | | | | BOTTOM OF TEST PIT |
| | 12 | | | | | | | |

Project No.: 2051129-101

Surface Elevation: N/A (Approx.)

Date of Test Pit: February 23, 2007

**Test Pit Log: TP-2A**

**Brooklane Heights**

**Corvallis, Oregon**

| Comments | Depth, Feet | Sample # | Location | Class Symbol | Water Table | C, TSF | Symbol | Soil and Rock Description |
|---|---|---|---|---|---|---|---|---|
| Surface: grass and tall shrubs.<br><br>No ground water encountered to the limit of excavation. | 1<br>2<br>3<br>4<br>5<br>6<br>7<br>8<br>9<br>10<br>11<br>12 | | | | | | | Medium stiff to stiff, clayey SILT; brown, moist, medium plasticity, micaceous, (possible alluvium).<br>Stiff SILT, trace fine sand; orange, dry to damp, low plasticity, (residual soil).<br>Very weak (R1) SANDSTONE; grey-brown, moderately weathered, very close to moderately close joints, (Spencer Formation).<br>BOTTOM OF TEST PIT |

Project No.: 2051129-101

Surface Elevation: N/A (Approx.)

Date of Test Pit: February 23, 2007

**Test Pit Log: TP-3A**

**Brooklane Heights**

**Corvallis, Oregon**

| Comments | Depth, Feet | Sample # | Location | Class Symbol | Water Table | C, TSF | Symbol | Soil and Rock Description |
|---|---|---|---|---|---|---|---|---|
| Surface: grass and short brush.<br><br>Rapid seepage noted at ±1.5 feet. | 1<br>2<br>3<br>4<br>5<br>6<br>7<br>8<br>9<br>10<br>11<br>12 | | | | | | | Soft, clayey SILT; brown, wet, medium plasticity, (alluvium).<br>Stiff, clayey SILT; brown, wet, medium plasticity, (alluvium).<br>Stiff CLAY, some gravel-sized rock fragments; brown to grey, wet, low to medium plasticity, (residual soil).<br>Extremely weak (R0) SANDSTONE; orange-brown, decomposed to highly weathered, highly fractured, (Spencer Formation).<br>BOTTOM OF TEST PIT |

Project No.: 2051129-101

Surface Elevation: N/A (Approx.)

Date of Test Pit: February 23, 2007

**Test Pit Log: TP-4A**

**Brooklane Heights**

**Corvallis, Oregon**

| Comments | Depth, Feet | Sample # | Location | Class Symbol | Water Table | C, TSF | Symbol | Soil and Rock Description |
|---|---|---|---|---|---|---|---|---|
| Surface: grass and shrubs.<br><br>Practical refusal encountered at ±1.5 feet.<br>No ground water encountered to the limit of excavation. | 1<br>2<br>3<br>4<br>5<br>6<br>7<br>8<br>9<br>10<br>11<br>12 | | | | | | | Medium stiff, clayey SILT, some organics; brown, damp, low plasticity, blocky structure, (topsoil).<br>Weak (R2) SANDSTONE; light brown, moderately to highly weathered, very close to moderately close joints, (Spencer Formation).<br>BOTTOM OF TEST PIT |

Project No.: 2051129-101

Surface Elevation: N/A (Approx.)

Date of Test Pit: February 23, 2007

**Test Pit Log: TP-5A**

**Brooklane Heights**

**Corvallis, Oregon**

| Comments | Depth, Feet | Sample # | Location | Class Symbol | Water Table | C, TSF | Symbol | Soil and Rock Description |
|---|---|---|---|---|---|---|---|---|
| Surface:<br><br>Practical refusal encountered at ±4 feet.<br>No ground water encountered to the limit of excavation. | 1<br>2<br>3<br>4<br>5<br>6<br>7<br>8<br>9<br>10<br>11<br>12 | | | | | | | Medium stiff, clayey SILT, some organics; brown, iron-stained, damp, low plasticity, blocky structure, (topsoil).<br>Extremely weak (R0) grading to moderately strong (R2) SANDSTONE; grey to brown, decomposed to slightly weathered, very close to moderately close joints, (Spencer Formation).<br>BOTTOM OF TEST PIT |

Project No.: 2051129-101

Surface Elevation: N/A (Approx.)

Date of Test Pit: February 23, 2007

**Test Pit Log: TP-6A**

**Brooklane Heights**

**Corvallis, Oregon**

| Comments | Depth, Feet | Sample # | Location | Class Symbol | Water Table | C, TSF | Symbol | Soil and Rock Description |
|---|---|---|---|---|---|---|---|---|
| | 1 | | | | | | | Soft to medium stiff SILT, some clay; brown, wet, medium plasticity, (topsoil). |
| | 2 | S-1B-1 | | | | 0.43 | | Soft to stiff SILT, some clay; brown, iron and manganese-stained, moist, medium plasticity, (residual soil). |
| | 3 | | | | | | | |
| | 4 | | | | | 0.65 | | |
| Bulk samples taken at ±5 to 6 feet. | 5 | S-1B-2 | | | | | | Becomes light brown, iron and manganese-stained and relict structure at ±4.5 feet. |
| | 6 | S-1B-3 | | | | | | |
| | 7 | | | | | | | Very stiff, clayey SILT; red-brown, iron and manganese-stained, moist to wet, medium plasticity, relict structure, (residual soil). |
| | 8 | S-1B-4 | | | | | | |
| | 9 | | | | | | | |
| | 10 | S-1B-5 | | | | | | |
| | 11 | | | | | | | |
| | 12 | | | | | | | |
| | 13 | S-1B-6 | | | | | | |
| | 14 | | | | | | | |
| | 15 | | | | | | | |
| | 16 | | | | | | | |
| Rapid seepage noted at ±16 feet. | 17 | S-1B-7 | | | | 0.40 | | Becomes medium stiff to stiff, light brown, iron and manganese-stained, and wet at ±16 feet. |
| | 18 | | | | | | | |
| | 19 | | | | | | | |
| | 20 | | | | | | | BOTTOM OF TEST PIT |

Project No.: 2081024

Surface Elevation: N/A (Approx.)

Date of Test Pit: April 3, 2008

**Test Pit Log: TP-1B**

**Brooklane Heights and Oakmont Addition**

**Corvallis, Oregon**

| Comments | Depth, Feet | Sample # | Location | Class Symbol | Water Table | C, TSF | Symbol | Soil and Rock Description |
|---|---|---|---|---|---|---|---|---|
| | 1 | | | | | 0.40 | | Soft to medium stiff SILT, some clay; brown, moist, medium plasticity, (topsoil). |
| | 2 | S-2B-1 | | | | 0.40 | | Medium stiff to stiff SILT, some clay; brown, moist, medium plasticity, (residual soil). |
| | 3 | S-2B-2 | | | | | | |
| | 4 | S-2B-3 | | | | 0.40 | | |
| | 5 | | | | | 0.55 | | Becomes iron and manganese-stained below ±2 feet. |
| | 6 | | | | | | | Relict structure noted below ±2.5 feet. |
| Moderate to difficult digging encountered below ±6 feet. | 7 | S-2B-4 | | | | | | Extremely weak (R0) SANDSTONE; light grey to orange, iron-stained, highly weathered to decomposed, fine sand. Becomes manganese-stained below ±5 feet. |
| | 8 | | | | | | | |
| | 9 | | | | | | | |
| | 10 | | | | | | | |
| | 11 | | | | | | | |
| | 12 | | | | | | | |
| Komatsu PC150LC excavator encountered hard digging below ±12.5 feet. | 13 | S-2B-5 | | | | | | |
| | 14 | | | | | | | |
| | 15 | | | | | | | |
| | 16 | | | | | | | |
| | 17 | S-2B-6 | | | | | | Becomes extremely weak to very weak (R0 to R1) and highly weathered below ±16 feet. |
| | 18 | | | | | | | |
| No ground water encountered to the limit of excavation. | 19 | S-2B-7 | | | | | | Becomes extremely weak (R0) and decomposed at ±18 feet. |
| | 20 | | | | | | | BOTTOM OF TEST PIT |

Project No.: 2081024

Surface Elevation: N/A (Approx.)

Date of Test Pit: April 3, 2008

**Test Pit Log: TP-2B**

**Brooklane Heights and Oakmont Addition**

**Corvallis, Oregon**

| Comments | Depth, Feet | Sample # | Location | Class Symbol | Water Table | C, TSF | Symbol | Soil and Rock Description |
|---|---|---|---|---|---|---|---|---|
| Trace fine roots extend to ±18 inches. | 1- | | | | | | | Medium stiff SILT, some clay and organics; brown, moist, medium plasticity, (topsoil). |
| | 2- | S-3B-1 | | | | 0.40 | | Medium stiff to stiff, clayey SILT/silty CLAY; brown, moist, medium plasticity, (residual soil). |
| | 3- | | | | | | | |
| | 4- | S-3B-2 | | | | | | Extremely weak to very weak (R0 to R1) SANDSTONE; grey, manganese-stained, highly weathered, fine sand. |
| | 5- | | | | | | | |
| | 6- | | | | | | | |
| Komatsu PC150LC excavator encountered practical digging refusal at ±8 feet. | 7- | | | | | | | |
| No seepage or ground water encountered to the limit of excavation. | 8- | | | | | | | |
| | 9- | | | | | | | BOTTOM OF TEST PIT |
| | 10— | | | | | | | |
| | 11- | | | | | | | |
| | 12- | | | | | | | |
| | 13- | | | | | | | |
| | 14- | | | | | | | |
| | 15- | | | | | | | |
| | 16- | | | | | | | |
| | 17- | | | | | | | |
| | 18- | | | | | | | |
| | 19- | | | | | | | |
| | 20— | | | | | | | |

Project No.: 2081024

Surface Elevation: N/A (Approx.)

Date of Test Pit: April 3, 2008

**Test Pit Log: TP-3B**

**Brooklane Heights and Oakmont Addition**

**Corvallis, Oregon**

| Comments | Depth, Feet | Sample # | Location | Class Symbol | Water Table | C, TSF | Symbol | Soil and Rock Description |
|---|---|---|---|---|---|---|---|---|
| | 1- | S-4B-1 | | | | | | Stiff SILT, some clay; brown, moist, medium plasticity, (topsoil/residual soil). |
| | 2- | | | | | | | |
| Fine roots extend to ±2.5 feet. | 3- | S-4B-2 | | | | | | Stiff to very stiff, clayey SILT; brown, iron-stained, moist, medium plasticity, (residual soil). |
| | 4- | S-4B-3 | | | | | | Extremely weak to very weak (R0 to R1) SANDSTONE; brown, iron and manganese-stained, highly weathered, fine sand. Becomes very weak (R1) below ±5 feet. |
| | 5- | | | | | | | |
| | 6- | | | | | | | |
| | 7- | | | | | | | |
| | 8- | | | | | | | |
| Komatsu PC150LC excavator encountered practical digging refusal at ±9.5 feet. | 9- | | | | | | | |
| No seepage or ground water encountered to the limit of excavation. | 10— | | | | | | | BOTTOM OF TEST PIT |
| | 11- | | | | | | | |
| | 12- | | | | | | | |
| | 13- | | | | | | | |
| | 14- | | | | | | | |
| | 15- | | | | | | | |
| | 16- | | | | | | | |
| | 17- | | | | | | | |
| | 18- | | | | | | | |
| | 19- | | | | | | | |
| | 20— | | | | | | | |

Project No.: 2081024

Surface Elevation: N/A (Approx.)

Date of Test Pit: April 3, 2008

**Test Pit Log: TP-4B**

**Brooklane Heights and Oakmont Addition**

**Corvallis, Oregon**

| Comments | Depth, Feet | Sample # | Location | Class Symbol | Water Table | C, TSF | Symbol | Soil and Rock Description |
|---|---|---|---|---|---|---|---|---|
| Slow seepage noted at ±2 feet.<br>Bulk samples taken at ±3.5 to 4.5 feet. | 1-<br>2-<br>3-<br>4-<br>5-<br>6-<br>7-<br>8-<br>9-<br>10-<br>11-<br>12-<br>13-<br>14-<br>15-<br>16-<br>17-<br>18-<br>19-<br>20- | S-5B-1<br>S-5B-2<br>S-5B-3 | | | | 0.50<br>0.43<br>0.38 | | Soft to medium stiff, clayey SILT; brown, moist, medium plasticity, slightly blocky structure, (topsoil).<br>Medium stiff, clayey SILT; brown, moist, medium plasticity, (residual soil).<br>Becomes iron and manganese-stained below ±2 feet.<br>Medium stiff to stiff, clayey SILT; light brown, iron-stained, moist, medium to high plasticity, relict structure, (residual soil).<br>Plasticity decreses with depth.<br>Becomes iron and manganese-stained below ±13 feet.<br>BOTTOM OF TEST PIT |

Project No.: 2081024

Surface Elevation: N/A (Approx.)

Date of Test Pit: April 3, 2008

**Test Pit Log: TP-5B**

**Brooklane Heights and Oakmont Addition**

**Corvallis, Oregon**

| Comments | Depth, Feet | Sample # | Location | Class Symbol | Water Table | C, TSF | Symbol | Soil and Rock Description |
|---|---|---|---|---|---|---|---|---|
| Trace roots extend to ±2 feet.<br>Slow seepage encountered from ±3 to 4 feet. | 1-<br>2-<br>3-<br>4-<br>5-<br>6-<br>7-<br>8-<br>9-<br>10-<br>11-<br>12-<br>13-<br>14-<br>15-<br>16-<br>17-<br>18-<br>19-<br>20- | S-6B-1<br>S-6B-2 | | | | | | Stiff SILT, some clay; brown, moist, medium plasticity, blocky structure, (topsoil).<br>Extremely weak to very weak (R0 to R1), silty SANDSTONE; grey-light brown, iron and manganese-stained, medium plasticity, highly weathered, fine sand.<br>Extremely weak (R0) SANDSTONE; light grey, iron and manganese-stained, highly weathered to decomposed, fine sand.<br>BOTTOM OF TEST PIT |

Project No.: 2081024

Surface Elevation: N/A (Approx.)

Date of Test Pit: April 3, 2008

**Test Pit Log: TP-6B**

**Brooklane Heights and Oakmont Addition**

**Corvallis, Oregon**

# Appendix C

## *Laboratory Test Results*

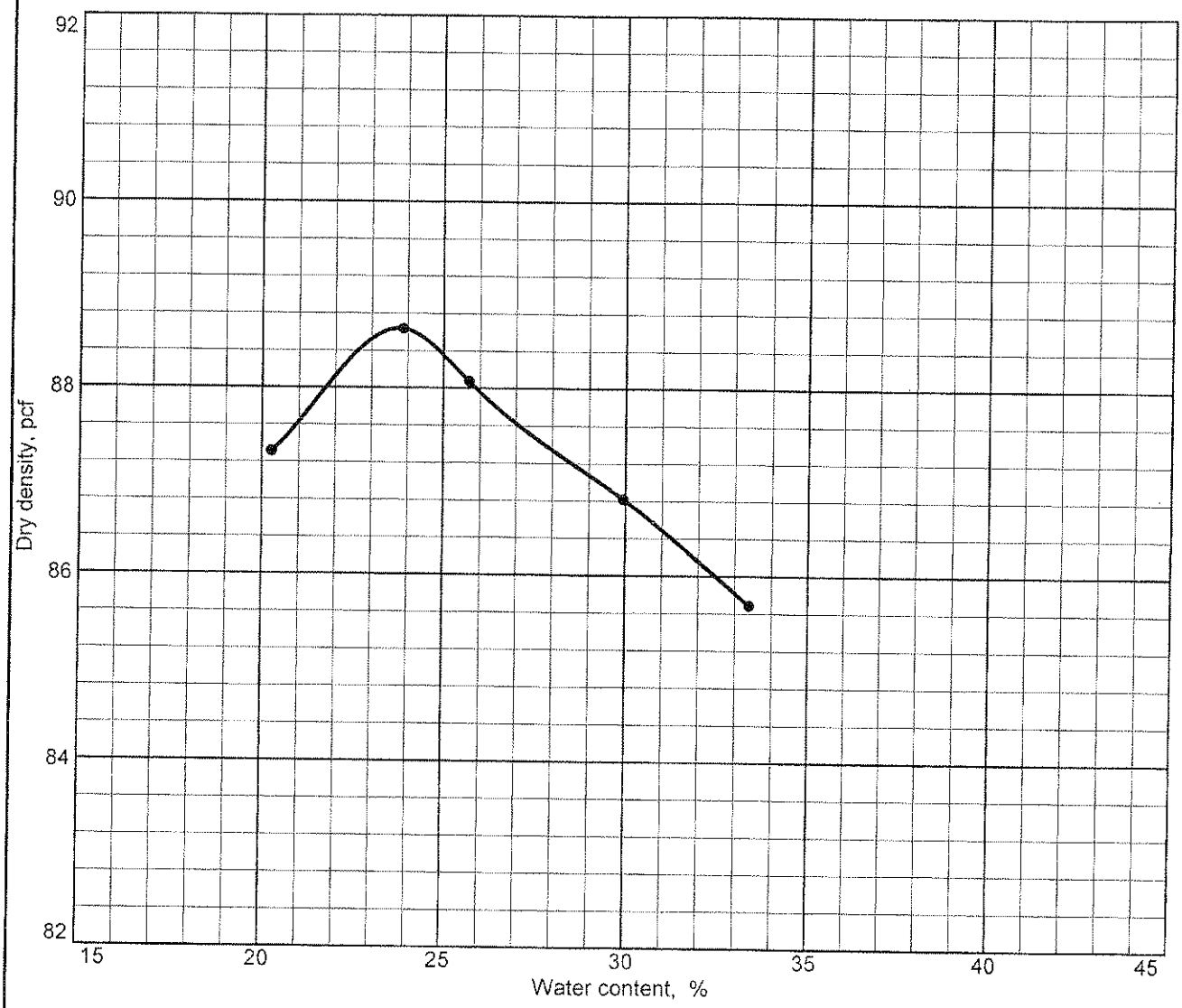
*Professional*
*Geotechnical*
*Services*

**Foundation Engineering, Inc.**

## Table 1C. Natural Water Contents and Atterberg Limits

| Sample Number | Sample Depth (ft) | Natural Water Content (percent) | LL | PL | PI | USCS Classification |
|---|---|---|---|---|---|---|
| S-1B-1 | 1½ - 2 | 23.1 | | | | |
| S-1B-3 | 5 - 6 | 36.0 | 48 | 34 | 14 | ML |
| S-2B-1 | 1 - 1½ | 23.8 | | | | |
| S-2B-2 | 2½ - 3 | 34.7 | | | | |
| S-3B-1 | 1½ - 2 | 19.8 | 28 | 19 | 9 | CL |
| S-4B-1 | ½ - 1 | 22.5 | | | | |
| S-5B-2 | 3½ - 4½ | 37.7 | 79 | 36 | 43 | MH |

# MOISTURE - DENSITY RELATIONSHIP TEST




Test specification: ASTM D 698-00a Method A Standard

| Elev/ Depth | Classification | | Nat. Moist. | Sp.G. | LL | PI | % > No.4 | % < No.200 |
|---|---|---|---|---|---|---|---|---|
| | USCS | AASHTO | | | | | | |
| 3.5-4.5' | MH | | 37.7% | | 79 | 43 | 0.5 | |

| TEST RESULTS | MATERIAL DESCRIPTION |
|---|---|
| Maximum dry density = 88.6 pcf<br>Optimum moisture = 23.8 % | Light Brown Clayey SILT |

**Project No.** 2086001-520 **Client:** Foundation Engineering Inc.; Project# 208-1-024

**Project:** Brooklane Heights & Oakmont Addition Corvallis, Oregon

**Remarks:**

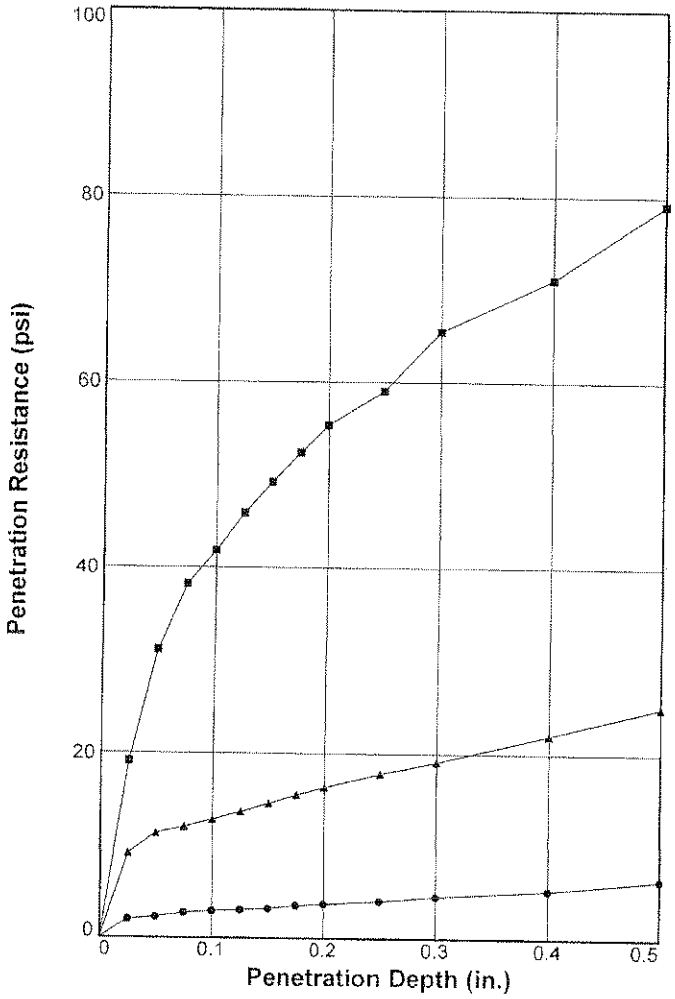
Date: 4-17-2008

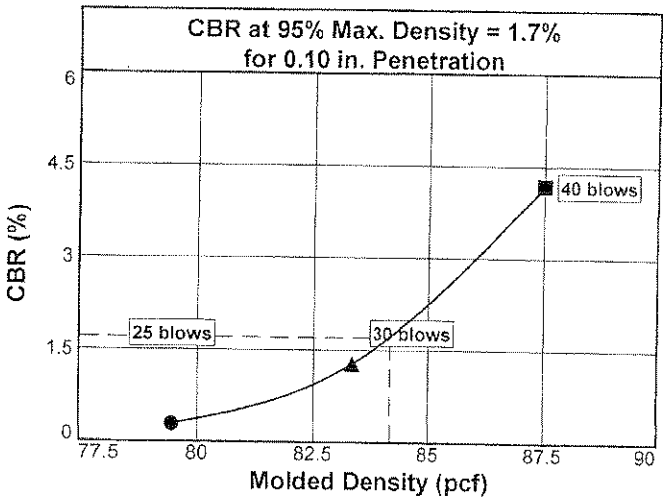
● **Source:** 3880 **Sample No.:** S-5 B-2 **Elev./Depth:** 3.5-4.5'

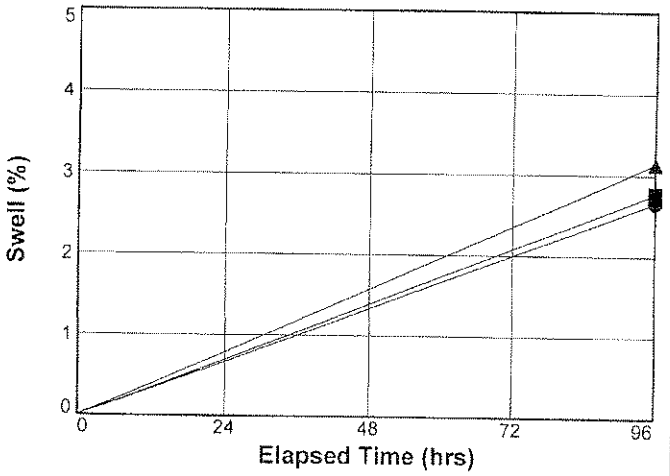
MOISTURE - DENSITY RELATIONSHIP TEST

**FEI Testing & Inspection, Inc.**
Corvallis, OR

# BEARING RATIO TEST REPORT
## ASTM D 1883-05




| | Molded | | | Soaked | | | CBR (%) | | Linearity Correction (in.) | Surcharge (lbs.) | Max. Swell (%) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Density (pcf) | Percent of Max. Dens. | Moisture (%) | Density (pcf) | Percent of Max. Dens. | Moisture (%) | 0.10 in. | 0.20 in. | | | |
| 1 ○ | 79.5 | 89.7 | 24.4 | 77.4 | 87.4 | 47.0 | 0.3 | 0.2 | 0.000 | 27 | 2.7 |
| 2 △ | 83.3 | 94 | 25.4 | 80.8 | 91.2 | 41.9 | 1.3 | 1.1 | 0.000 | 27 | 3.1 |
| 3 □ | 87.5 | 98.8 | 25.2 | 85.1 | 96.1 | 37.8 | 4.2 | 3.7 | 0.000 | 27 | 2.8 |

| Material Description | USCS | Max. Dens. (pcf) | Optimum Moisture (%) | LL | PI |
|---|---|---|---|---|---|
| Light Brown Clayey SILT | MH | 88.6 | 23.8 | 79 | 43 |

**Project No:** 2086001-520

**Project:** Brooklane Heights & Oakmont Addition Corvallis, Oregon

**Source of Sample:** 3880 **Depth:** 3.5-4.5'

**Sample Number:** S-5 B-2

**Date:** 4/23/08

**Test Description/Remarks:**

BEARING RATIO TEST REPORT
FEI Testing & Inspection, Inc.
Corvallis, OR

WILLAMETTE VALLEY PLANNING

RECEIVED

July 5, 2007

RECEIVED
JUL - 5 2007
Community Development
Planning Division

RECEIVED
JUL 05 2007
TIME 4 pm
CITY RECORDER'S OFFICE

Ms. Kathy Louie, City Recorder
Corvallis City Managers Office
501 SW Madison Avenue
Corvallis, OR 97333

**Subject: Appeal of Brooklane Heights (PLD06-00018, SUB06-00006)**

Dear Ms. Louie:

On behalf of Stephen Schaberg, we wish to appeal the Planning Commissions June 20th decision on the Brooklane Heights Conceptual and Detailed Development Plan and Tentative Subdivision Plat. As a participant in the public hearing, Stephen Schaberg and I are affected parties with standing.

The grounds for this appeal are as follows:

1. The Planning Commission erred in denying the Phase 1 improvements, considering this phase of the project was entirely in compliance with the City's approval criteria.

2. The Planning Commission erred by not imposing conditions of approval to address their outstanding concerns. Included with this appeal are recommended plan modifications and additional conditions of approval that would be consistent with the City's approval criteria.

Attachment I-1

Attached to this letter is the $240 appeal fee. We would appreciate your thoughtful consideration of the additional testimony contained within this letter.

Respectfully Submitted,

David j. Dodson, AICP
President

cc: Bob Richardson

Appellants Names and Addresses:

David j. Dodson
350 NW Polk Avenue
Corvallis, OR 97330
541-753-1987

Stephen Schaberg
2535 SW Whiteside Drive
Corvallis, OR 97333
541-754-8179

LUBA 2007-200
EXHIBIT IV - 1
LUBA REMAND



350 N.W. Polk Avenue • Corvallis, Oregon 97330 • 541.753.1987 • fax 541.738.9468

PHASE 1 IMPROVEMENTS

Phase 1 improvements consist of a 30-foot street segment at the northern end of the property that would allow the Oakmont Addition Subdivision access to Brooklane Drive as shown on Attachment J2. The proposed road is a standard local street (see street section on Attachment J2) and has less than 15% grade as required by the City's approval criteria. Tract D would be dedicated to the City along with the adjacent pump station tract for detention and water quality purposes.

GRADING

The Planning Commission made findings that the proposal was not in compliance with Policy 4.6.7. Specifically, the development did not fit the topography (A), and did not minimize cuts and fills (D).

*4.6.7 In areas where development is permitted, standards in the Land Development Code for hillside areas will achieve the following:*

*A. Plan development to fit the topography, soil, geology, and hydrology of hillsides and to ensure hillside stability both during and after development.*
*B. Preserve the most visually significant slopes and ridgelines in their natural state by utilizing techniques such as cluster development and reduced densities.*
*C. Preserve significant natural features such as tree groves, woodlands, the tree-meadow interface, and specimen trees.*
*D. Align the built surface infrastructure, such as roads and waterways, with the natural contours of terrain and minimize cutting and filling in developments.*
*E. Minimize soil disturbances and the removal of native vegetation and avoid these activities during winter months unless impacts can be mitigated.*
*F. Design developments and utilize construction techniques that minimize erosion and surface water runoff.*
*G. Demonstrate a concern for the view of the hills as well as the view from the hills.*
*H. Provide landscaping that enhances the identified open space resources.*
*I. Design developments that consider landscaping management that will minimize the threat of fire on improved property spreading to wildland habitat.*

Attachment I-3

The appellant has revised the grading plan to limit grading activities to only those areas necessary for construction of the roads and for lots that are lower than the roadway, (Attachment X). A colored cut/fill analysis has been prepared to show that 95% of the site will have cuts and fills less than 10-feet, (Attachment Y). This ensures that gravity fed sewer and storm drain lines can be located in the street and not within a separate rear yard easement. Therefore, 25 lots will remain undisturbed, while the remaining 20 will be graded or partially graded. These grading provisions will allow 8 additional trees to be preserved on lots 1, 2, 5, 13, 24, and 43. Most of the lots along the western boundary will be left undisturbed. Lots 7-10 have been graded into the hillside as it's the only way they can be built on, otherwise they will have a 10 to 15-foot 2:1 slope bank adjacent to the road as shown in Section "CA" from Attachment P. Lowering the grade for lots 7 and 8 will preserve views for the neighbors to the west. To address preservation of the 8 existing significant trees on private lots, the appellant recommends the following condition of approval be imposed:

**21. Tree Protection on Private Lots** – Homes on lots 1, 2, 5, 13, 24, and 43 shall be designed to minimize impacts to trees. Prior to issuance of permits for excavation and grading for home construction, a minimum 5-foot high, metal, chain-link construction fence, supported by metal poles sunk into the ground, shall be installed 5-feet outside the tree canopy driplines. If an alteration proposed by a certified arborist is reviewed and approved by City staff, an exception to this fencing location standard may occur.

GEOTECHNICAL CONSISTENCY

During Planning Commission deliberations, staff was asked if they could develop a condition of approval to address the geotechnical concerns associated with the proposed detention ponds. Staff implied they could, however such a condition was never formulated for consideration.

In response to the apparent conflict between the detention pond design and the recommendation contained within the geotechnical site investigation by Foundation Engineering, the appellant recommends the following additional language be added to condition of approval #19:

**19. Public Detention Facility Design & Maintenance Agreement** - The design of the stormwater detention facilities shall incorporate all recommendations of the March 16, 2007 Geotechnical report that was conducted by Foundation Engineering, Inc. The geomembrane liner recommended in the Geotechnical report shall be placed on a slope of 3(h):1(v), or flatter and it must be covered with at least 12 inches of soil. The detention pond shall remain in the same location and footprint as shown on the submitted Utility Plan. Any alteration to the placement of the pond and its associated structural features may require a Planned Development Modification.

Attachment I-4

DIVERSITY IN HOUSING TYPES

During the Planning Commission hearing, the applicant offered to make 11 lots along Buckeye Place comply with the minimum lot size and limit the house size to 1,200 square feet in order to comply with Policy 9.5.13. Since plans reflecting this change were not provided by the applicant, the Planning Commission felt uncomfortable imposing such a condition.

*9.5.13 New subdivisions and planned developments of more than 5 acres in low density districts shall incorporate two or more of the following elements in at least 10% of the total acreage:*

*A. Zero lot line or attached dwellings (where allowed);*
*B. Minimum allowed lot area; or*
*C. Dwelling size less than 1,200 square feet.*

As shown on Attachment W, the appellant has revised the Tentative Subdivision Plat so that lots 19-29 are less than the minimum lot size of 8,000 square feet. The traffic engineer has submitted a supplemental letter indicating the three additional lots will not affect the findings of their traffic impact analysis. We ask that the City Council impose the following condition of approval to ensure dwellings on these lots are less than 1,200 square feet.

**22. House Size Deed Restriction** – Concurrent with final plat approval, the applicant shall record a deed restriction on lots 19 through 29 that restricts dwelling size to 1,200 square feet or less.

CUL-DE-SAC LENGTH

The Planning Commission found that the cul-de-sac exceeded the standard length by 30-feet and that the applicant did not provide sufficient justification for why the standard should be modified.

Section 4.0.70.c - STREET REQUIREMENTS

3. Cul-de-sacs should not exceed 600 ft nor serve more than 18 dwelling units.

The appellant has modified the Tentative Subdivision Plat and shortened the cul-de-sac to 600-feet as shown on Attachment W, in compliance with Section 4.0.70.c.3 above.

TRAIL WIDTH

The Planning Commission found that the pedestrian/bicycle trail connecting the Badger Place cul-de-sac to Wolverine Drive was 3-feet narrower than the 8-foot standard and that the applicant did not provide sufficient justification for why the standard should be modified.

Section 4.0.50 - BICYCLE REQUIREMENTS

c. Adequate widths for pedestrian/bicycle facilities shall be provided in accordance with the following standards:

1. 8 ft bikepaths should be used where long term bicycle and pedestrian usage is expected to be relatively low (a neighborhood facility rather than a community-wide facility) and with proper alignment to ensure adequate sight distance.

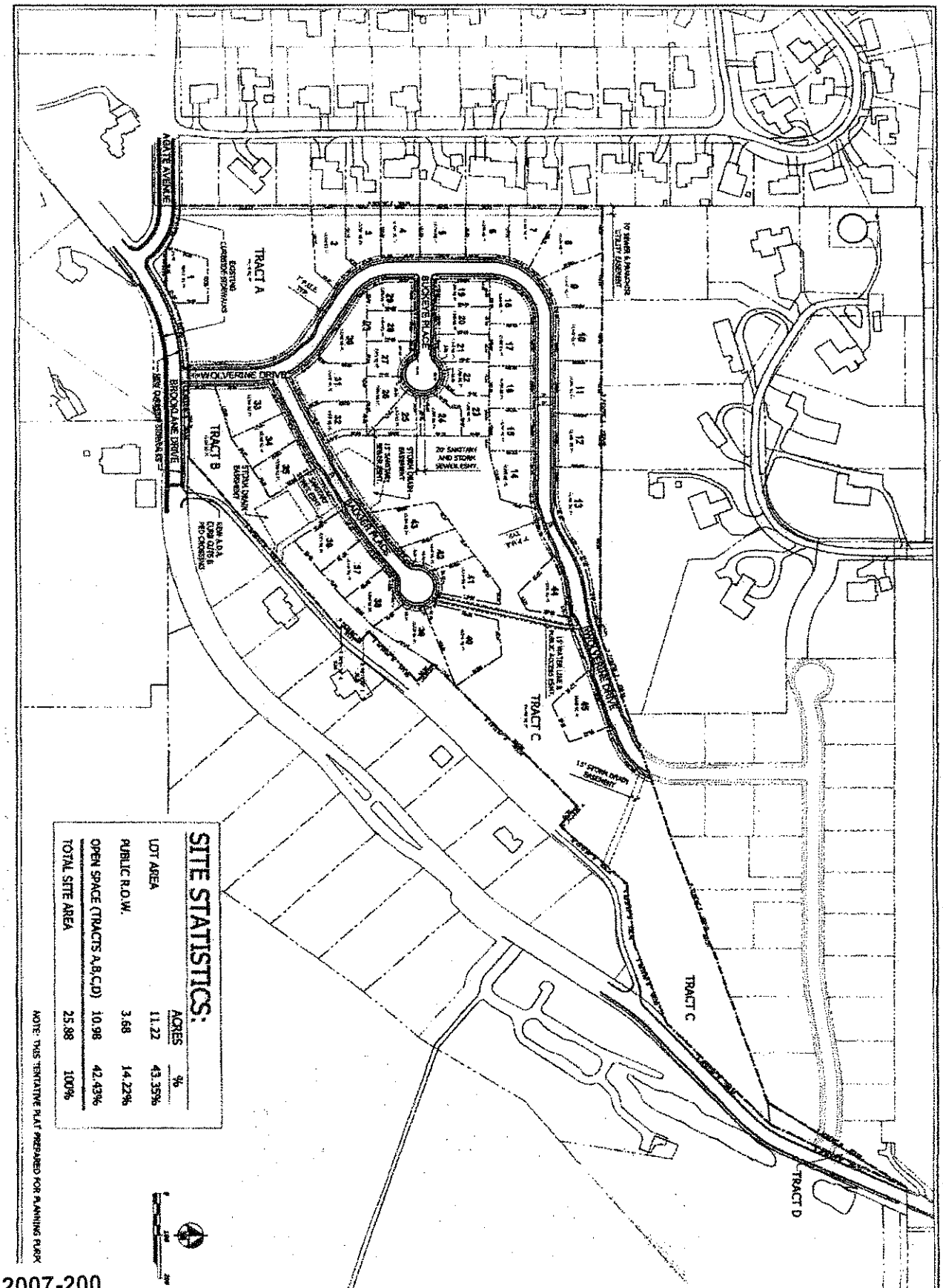
The appellant has modified the Tentative Subdivision Plat and widened the trail to 8-feet as shown on Attachment W, in compliance with Section 4.0.50.c.1 above.

HILLSIDE DRAINAGE CONCERNS

The Planning Commission found that the applicant did not adequately address existing drainage problems that exist for Brooklane Park Estates residents who live along the alleyway. When Brooklane Park Estates Phase I was platted, six 10-foot utility easements were established between lots 1-10 to accommodate uphill storm drainage and sewer lines. In response to this concern, the appellant recommends the following condition of approval be imposed:

**23. Off-Site Drainage** – Prior to final plat approval, the applicant shall develop a stormwater drainage plan that ensures site surface drainage is captured in area drains before it crosses the Brooklane Park Estates alleyway. If new off-site area drains are required above the alleyway, the applicant will utilize the existing utility easements, which were specifically designed for storm drainage and sanitary sewer, and will construct such facilities to discourage stormwater from crossing the alleyway.

Attachment I-5




Attachment I-6

LUBA 2007-200

Page -282-

EXHIBIT IV - 6

REMAND

WILLAMETTE VALLEY PLANNING
180 N.W. POLK AVENUE
CORVALLIS, OR. 97330
541-753-7067

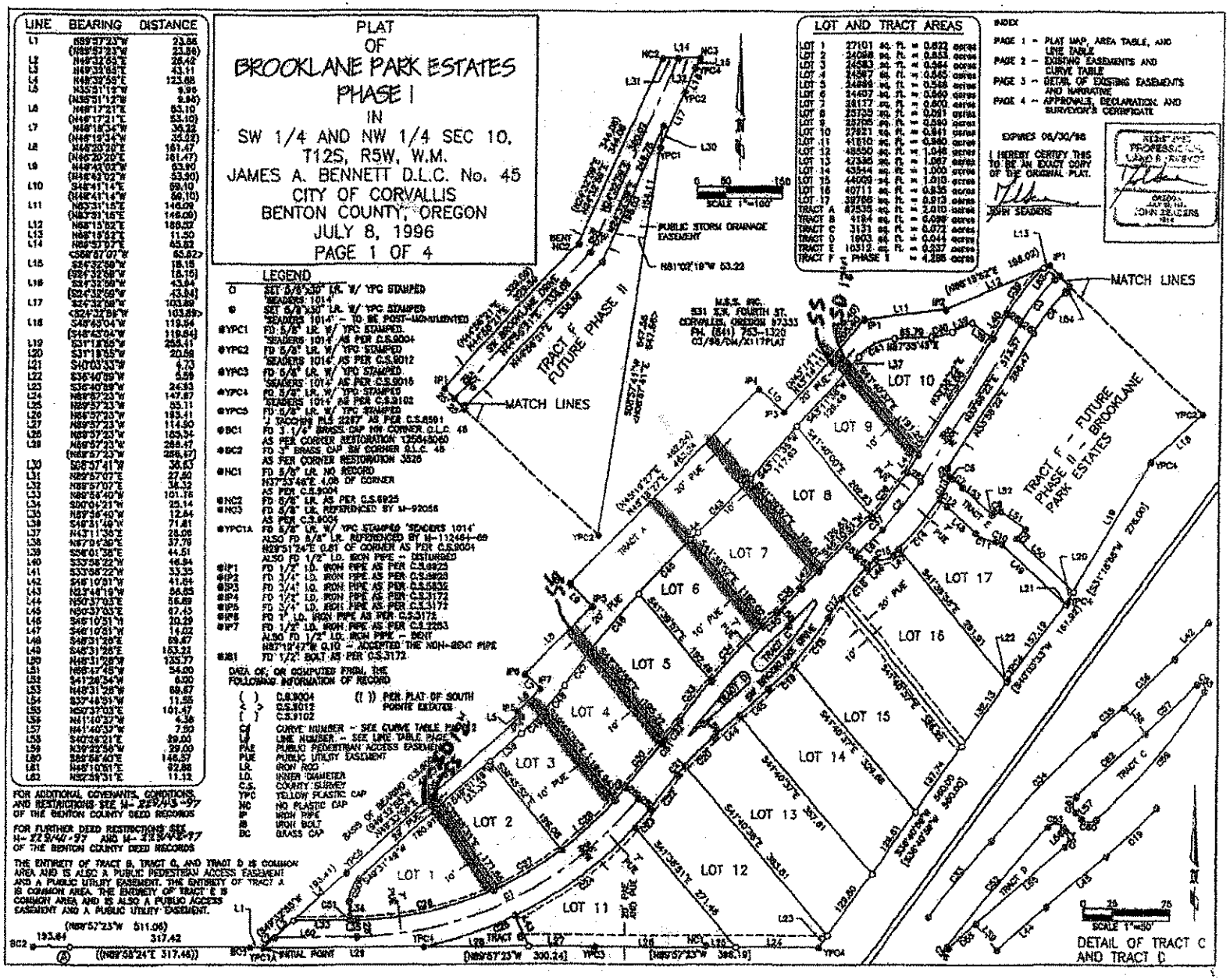
BROOKLANE HEIGHTS
REVISED TENTATIVE SUBDIVISION PLAT

METOLIUS CONSULTING

EXHIBIT IV-7
REMAND
METOLIUS CONSULT
BROOKLANE HEIGHTS
REVISED GRADING & TREE PRESERVATION PLAN
WILLAMETTE VALLEY PLANNING
TREE LEGEND
- EXISTING SIGNIFICANT TREES TO BE PRESERVED
- RECENTLY REMOVED TREES
- TREES SLATED FOR REMOVAL WITH DEVELOPMENT
- TREE CANOPIES (FROM SURVEYOR)
- TREE PROTECTIVE FENCING
BROOKLANE DRIVE
VISION CLEARANCE TRIANGLE

EXHIBIT IV - 8
LUBA 2007-200
BROOKLANE HEIGHTS
CUT/FILL ANALYSIS
Page -284-
CUT/FILL LEGEND
0' - 10' CUT
10' - 20' CUT
0' - 10' FILL
10' - 20' FILL
BROOKLANE DRIVE
ARCHEOLOGICAL SITE 35-68-61
VISION CLEARANCE TRIANGLE

ATTACHMENT Z



**Planning Commission/Land Development Hearings Board Meetings - Tentative**
(Updated 7/20/07)

| PC Meetings | Planner | Case Name | Subject |
|---|---|---|---|
| Aug. 1, 2007 | Kevin | Palazzo | Delibs. |
| Aug. 15, 2007 | | | |
| Sept. 5, 2007 | Kevin | 26th St. Commons | Hearing |
| Sept. 19, 2007 | Kevin<br>Kevin | CHS Master Plan<br>26th St. Commons | Hearing<br>Delibs? |
| Oct. 3, 2007 | Kevin | CHS Master Plan | Delibs? |
| Oct. 17, 2007 | Bob | Evanite | Hearing |
| Nov. 7, 2007 | Bob | Evanite | Delibs? |
| Nov. 21, 2007 | | | |

Land Use Applications/Major Work Assignments:

| Eric | Sarah | Bob | Kevin |
|---|---|---|---|
| Witham Oaks Appeal<br>Will. Ldg. Min. Mod.<br>LDIR<br>Landscape/GIS/Web | CCI<br>DCA/EID<br>Cascade Crest<br>MLPs, counter help for Dev. Svs. | Wilson Woods at CC<br>Brooklane Heights<br>Whiteside @ LUBA<br>Historic | 26th St. Commons<br>CHS Master Plan<br>Palazzo<br>Supervision |

Attachment I-10

July 16, 2007

Ms. Kathy Louie, City Recorder
Corvallis City Managers Office
501 SW Madison Avenue
Corvallis, OR 97333

**Subject: Additional Testimony on the Brooklane Heights Appeal (PLD06-00018, SUB06-00006)**

Dear Ms. Louie:

The attached updated table from the original application narrative should accompany our appeal letter dated July 5, 2007. The Revised Grading & Tree Preservation Plan, (Attachment X) and the Cut / Fill Analysis, (Attachment Y) shows that the maximum fill slope has been reduced from 21-feet to 13-feet. This is only one foot above the maximum fill slope on the Alternative Plan where the roadway was graded and the lots were left at natural grade. The maximum cut slope on the revised plan is only two feet above the maximum cut proposed with the minimal grading alternative, (14' compared to 12'). In addition, the revised plan preserves the greatest amount of trees when compared to the other plans.

We appreciate your thoughtful consideration as you evaluate the concessions that Steven Schaberg has offered in order to comply with the City's Comprehensive Plan policies.

Respectfully Submitted,

David j. Dodson, AICP
President

cc: Bob Richardson

RECEIVED

JUL 16 2007

Community Development
Planning Division

Attachment I-11

**EXHIBIT IV - 11**
**LUBA REMAND**

# Revised Table Comparing Meadowridge and the Brooklane Heights Plans

| | Meadowridge at Timberhill (Road Grading Only) | Brooklane Heights Alternative (Road Grading Only) | Brooklane Heights Proposed (Grades Road and Pads) | Brooklane Heights Revised Plan (Grades Roads and Downslope Pads) |
|---|---|---|---|---|
| Project Acreage | 72.6 | 25.88 | 25.88 | 25.88 |
| Total Lots | 93 | 60 | 42 | 45 |
| Max Cut | 16' | 12' | 14' | 14' |
| Max Fill | 20' | 12' | 21' | 13' |
| Max Dev. Slopes | 29% | 27% | 27% | 27% |
| % Open Space | 25%[1] | 22% | 42% | 42% |
| Significant Trees Removed | 185[2] | 131 | 48 | 40 |

[1] Includes through lot landscape tracts with no significant trees.

[2] Estimate based on OTAK plans showing trees in the roadway and the 5 tree rule.

# Tree Preservation Plan

This tree protection plan is written to provide the developers with a proactive attempt at preserving the trees that merit preservation on or around their development. Most trees in this report are Oregon White Oaks. We used some abbreviations in this report you need to be familiar with, for example, TPF (Tree protection fence) and TPZ (Tree protection zone). The tree protection fence is the fence that is installed to protect each tree or grove of trees for preservation. The tree protection zone is the entire area of preservation; not just one individual tree, but the entire restricted area. Restrictions enforced within both areas. We also use reference to hazard tree evaluation; this is a guide and standard set forth by the International Society of Arboriculture and adopted by consulting arborists.

Any tree that the drip line was encroached on, we recommend Mycholrzea inoculations. This is a root stimulant proven to be beneficial to the Oregon white oaks. At least one application of summer watering is necessary in July, August, and September. Additional watering may be recommended by the consulting arborist during the duration of the project. Moreover, wood chips may be recommended as mulch under some of the trees that will be impacted.

TREE PROTECTION ZONE

Most of these trees are located within large oak groves, which in most cases will be protected by a single TPF around the perimeter of each grove. The fence is established 5' beyond the tree's drip line, unless otherwise stated by the consulting arborist (see measurements below in the tree inventory.)

TREE PROTECTION FENCE

1. Chain link/metal fence with T posts is the standard tree protection fencing for Buena Vista Arbor Care Co., Inc. preservation projects. The traditional orange plastic safety fence will not suffice.
2. Once the tree protection zone is established, no machinery, construction, storage, or grade change is allowed.
3. The fence is not to be moved or tampered with. Unless approved by the projects consulting arborist.
4. If there is no measurement for the TPF, it is to be 5' outside the tree's drip line.

RESTRICTIONS

1. No dumping of any materials where it could saturate the soil within the tree protection zone(s).
2. No admittance of any kind into the tree protection zone(s).
3. No removing the fence for any reason without the consulting arborist prior permission.
4. Consulting arborist needs to be notified immediately if there is a violation, accidental or otherwise. He can be reached on his cell @541-990-1773 or office 541-757-TREE, M-F 7:00am-3:00pm. The phone numbers are also available on the tree protection signs.

PRUNING

Some trees have pruning requirements due to equipment access issues. (These are identified above.) These cuts need to be done by a certified arborist and approved by the consulting arborist handling the preservation. Many of these trees could use tip weight reduction to further improve preservation. This would reduce the likelihood of breakages; thinning and large deadwood would also help with preservation. No root pruning at this point is necessary.

ARBORIST MONITORING

If the project's consulting arborist is not installing the tree protection fence, the consulting arborist must inspect the fence before any work begins. The consulting arborist will randomly inspect the site for violations and the progress of tree preservation throughout the duration of the project. If any violations are found, depending on the severity, the consulting arborist will work with the contractor to find solutions. If the contractor is found grossly negligent or incorporative, the consulting arborist will then turn the violations over to the City of Corvallis.

TREE INVENTORY

In the tree inventory you'll find the minimum requirements in feet for the tree protection fence. Where there is no measurement, it is encompassed in a grove protected by the proposed tree protection zone. The N, E, S, W, stands for the direction of the measurement.

TREE INVENTORY

| TREE # | N | E | S | W | Recommendations |
|---|---|---|---|---|---|
| 1 | | 18 | 8 | | No grading done on oak from the top of existing bank to the trunk of the tree. Hand dig if grade changes need to occur. These specifications should encompass the entire length of Brooklane Drive from Wolverine Drive to Eagle Street. Approx. 5 trees. Arborist should be on site for evaluation along Brooklane. Tree merits preservation. |
| 2 | | | | 16 | |
| 3 | | | | | Three stemmed oak tree. Could be preserved. Cable for preservation. Hazardous in present condition. Cabling won't guarantee any failures, but will help prevent them. |
| 4 | | No >10 | | | |
| 5 | | 15 | 15 | | |
| *Trees # 4-5 On the current plans submitted, the tree preservation fencing needs to be moved East to the stated minimum. *Needs to be revised on the plan. | | | | | |
| 6 | | | | 10 | Within tree protection zone. |
| 7 | | 12 | 15 | | Within tree protection zone. |
| 8 | | | | | Large Oregon White Oak needs further investigation. I need to know exact grade to determine acts of preservation. This tree is typical for its age and species. Merits preservation. |
| The designers have narrowed and moved the street and sidewalk in attempt to preserve this tree. There is to be no construction at this tree without the consulting arborist present. The TPF should be erected at the drip line first, and then can be moved after the arborist has had a chance to review preservation tactics and grading. The fence can only be moved by the consulting arborist. | | | | | |
| 9 | | 20 | | | |
| 10 | X | X | X | X | Remove. Will not pass a hazard tree evaluation. Large buttress wounds. |
| 11 | | | | No >15' | This tree needs to be revisited after the plot staking happens. I need to know specifics for trenching and sidewalk provisions. |
| 12 | | | | 15 | Signs of armillaria. |
| 13 | X | X | X | X | Remove. Severe lean. A typical. Would not pass a hazard tree evaluation. |
| 14 | X | X | X | X | Remove. Will not pass a hazard tree evaluation. Large basil wounds. Rot. |
| 15 | | | | | If a target is present, this tree will not pass a hazard tree evaluation. According to the plans, no target is present. |
| 16 | 18 | 18 | 18 | 18 | Remove two limbs. |
| 17 | 23 | 23 | 23 | 23 | |
| 18 | X | X | X | X | Remove. A typical shape. |
| 19 | X | X | X | X | Remove. Does not merit preservation. |
| 20 | X | X | X | X | Remove. Hazardous.- |
| **Trees # 18-20 Recommend removal to preserve the stand to the East.** | | | | | |
| 21 | | | | | Hazardous if target is present. Could be preserved if no target is present. |
| 22 | | | | | Structural issues. Structural cabling and pruning necessary. Need to extend TPF to 20'. "Neat Old Tree" |
| 23 | X | X | X | X | Remove. Dead center stem. Would not pass hazard tree evaluation. |
| 24 | X | X | X | X | Remove. Would not pass hazard tree evaluation. Susceptible to wind through. Half of the tree is already split out. |
| 25 | X | X | X | X | Remove. Would not pass hazard tree evaluation. Low attachment. Lost one significant stem already. |
| 26 | | | | | This tree is growing in a small moving creek. This is not typical for this species; generally this tree would die in this habitat. I am interested to learn how long the tree has been growing this way and am interested in learning the more about it. This tree merits preservation. |

| | | | | | |
|---|---|---|---|---|---|
| | | | | | *This TPZ still needs to be adjus *Needs to be revised on the plan. |
| 28 | X | X | X | X | Remove. This tree is a stump sprout. Poor attachment. MAPLE TREE. |

Attachment IX - 234

**EXHIBIT V - 4**
**LUBA REMAND**

BEFORE THE LAND USE BOARD OF APPEALS

OF THE STATE OF OREGON

AUTHUR BOUCOT, BARBARA BOUCOT,
LANCE CADDY, JOE CASPROWIAK,
PAM CASPROWIAK, LAURI CHILDERS,
THERESA HANOVER, WILLIAM KOENITZER,
SUSAN MORRE, JEFF MORRE, ROBERT SMYTHE,
JUSTIN SOARES, LINA SOARES,
GEORGE TAYLOR, LUCINDA TAYLOR
and CAROLYN ver LINDEN,
*Petitioners,*

vs.

CITY OF CORVALLIS,
*Respondent.*

LUBA No. 2007-200

FINAL OPINION
AND ORDER

Appeal from City of Corvallis.

Anne C. Davies, Eugene, filed the petition for review and argued on behalf of petitioners.

David E. Coulombe, Corvallis, filed the response brief and argued on behalf of respondent. With him on the brief was Fewel, Brewer & Coulombe.

RYAN, Board Chair; BASSHAM, Board Member, participated in the decision.

HOLSTUN, Board Member, did not participate in the decision.

REMANDED 05/30/2008

You are entitled to judicial review of this Order. Judicial review is governed by the provisions of ORS 197.850.



**EXHIBIT VI - 1**
**LUBA REMAND**

Opinion by Ryan.

**NATURE OF THE DECISION**

Petitioners appeal a city decision approving conceptual and detailed development plans and a tentative subdivision plat for a 45-lot subdivision.

**FACTS**

The subject property is an approximately 26-acre parcel located on the southeast slope of Country Club Hill in southwest Corvallis near the confluence of the Marys River and Willamette River. The property is zoned Low Density Residential with a Planned Development Overlay (PD RS 3.5). The property is currently vacant except for gravel roads. The applicant originally proposed to create 42 residential lots and four common tracts. The planning commission denied the application, and the applicant appealed to the city council. After filing the local appeal, the applicant revised the application to include three additional residential lots as well as revised plot, grading/excavation, and tree preservation plans. The city council overturned the planning commission decision and approved the application with conditions. This appeal followed.

**MOTION TO FILE REPLY BRIEF AND MOTION TO STRIKE**

Petitioners move to file a reply brief to respond to new matters raised in the response brief. The city objects to the reply brief and moves that portions of the reply be stricken. The reply brief contains three sections (A, B, and C) that respectively address: (1) the statement of facts in the petition for review, (2) whether comprehensive plan policies are approval criteria, and (3) whether issues were waived because they were not raised below.

In the statement of facts in the petition for review, petitioners stated that the subject property was located on a significant hillside under the city code. In the response brief, the city argues that the subject property is not located on a significant hillside. In the reply brief, petitioners respond to that argument. We agree with the city that that is not a new matter as

required under OAR 661-010-0039 to file a reply brief. We will not consider section A of the reply brief.

In the petition for review, petitioners treated certain comprehensive plan policies as applicable approval criteria because they were listed as applicable criteria in the city's notice. In the response brief, the city argues that while the policies may be "applicable criteria" they are not "approval" criteria. This is a new matter that petitioners may respond to in a reply brief. We will consider section B.

Section C replies to waiver arguments raised in the response brief. The city argues that portions of section C should be stricken because petitioners should have anticipated a waiver challenge. We do not agree. The reply to the waiver challenge properly responds to a new matter. We will consider section C.

**FIRST ASSIGNMENT OF ERROR**

Prior to the planning commission hearings, planning staff prepared a staff report recommending denial of the application. The planning commission adopted that staff report as its final decision. After the applicant appealed the planning commission decision to the city council, planning staff prepared a second staff report that again recommended denial. In approving the application, the city council adopted the findings from both staff reports that support the application, but not the findings in the staff reports adverse to the application. The city also adopted as findings the minutes of the two planning commission hearings and two city council hearings that support the application, but not the portions adverse to the application. Petitioners argue that the city improperly attempted to adopt and incorporate portions of the staff reports and minutes in approving the application. The city responds that it has adequately identified the documents that were adopted.

**A. Staff Reports**

In *Ellis v. City of Bend*, 28 Or LUBA 332, 333 (1994), we held that the city's denial of an application was not supported by adequate findings, where the city council

incorporated as findings a hearings officer's decision *approving* the application, purporting to reject any findings in the hearings officer's decision inconsistent with the city's denial. We remanded because we could not tell which portions of the hearings officer's decision had been incorporated and which rejected, and concluded that the incorporation failed and the city's decision was not supported by adequate findings. Similarly, in the present case, both staff reports recommended denial of the application, but the city council approved the application based on the staff reports, without identifying which portions of those staff reports are incorporated and which are rejected. We agree with petitioners that incorporation of the staff reports fails and the findings are inadequate.

**B. Minutes**

Petitioners also argue that the city erred in incorporating those portions of the minutes that support the application. This case is similar to *Soares v. City of Corvallis*, ___ Or LUBA ___ (LUBA No. 2007-232, May 8, 2008), in that the city council attempted to incorporate the portions of the minutes that support the application as findings while rejecting those adverse to the application, without adequately identifying which portions are incorporated and which are rejected. As we explained in *Soares*, the limitation to those portions of the minutes that support the application is too imprecise and is therefore ineffective. *Id*. at slip op 5.

In *Soares*, however, we also explained that an ineffective incorporation of documents or minutes is not necessarily an independent basis for reversal or remand. If there are other findings that are adequate to demonstrate compliance with applicable approval criteria, the ineffective incorporation of other findings may be harmless error. In the first assignment of error, petitioners' only reference to applicable approval criteria concerns solar access standards. That reference is insufficiently developed to constitute an argument in support of the first assignment of error, and is insufficient for our review.

We address petitioners' challenges to other adopted findings below, and sustain some of those challenges. However, petitioners' arguments under the first assignment of error do not add anything to those bases for remand or provide an independent basis for remand. Therefore, the first assignment of error provides no independent basis for reversal or remand.

The first assignment of error is denied.

**SECOND ASSIGNMENT OF ERROR**

Petitioners argue that the city erred in failing to provide proper notice of the amended proposal for a 45-lot subdivision. According to petitioners, the city violated ORS 197.830(5) because the change from a 42-lot subdivision to a 45-lot subdivision occurred after the appeal from the planning commission and that fact was not provided in the notice for the city council hearing.[1]

Even assuming petitioners are correct that the notice was inadequate, the remedy under ORS 197.830(5) is a tolling of the usual 21-day deadline for appealing final limited land use decisions to LUBA. There is no issue regarding the timeliness of petitioners' appeal. ORS 197.830(5) does not provide a basis for reversal or remand, and petitioners do not provide any other authority for reversal or remand for inadequate notice.

The second assignment of error is denied.

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[1] ORS 197.830(5) provides:

> "If a local government makes a limited land use decision which is different from the proposal described in the notice to such a degree that the notice of the proposed action did not reasonably describe the local government's final actions, a person adversely affected by the decision may appeal the decision to the board under this section:
>
> "(a) Within 21 days of actual notice where notice is required; or
>
> "(b) Within 21 days of the date a person knew or should have known of the decision where no notice is required."

**THIRD ASSIGNMENT OF ERROR**

Petitioners argue that that the city's findings are inadequate because the city organized the findings into general categories and failed to specifically address individual approval criteria. Although petitioners reference in this assignment of error their later challenges to findings of compliance with individual approval criteria under separate assignments of error, an allegation of improper organization of the findings is not in itself an independent basis for reversal or remand.

The third assignment or error is denied.

**FOURTH ASSIGNMENT OF ERROR**

The applicant filed applications for both Conceptual Development Plan (CDP) and Detailed Development Plan (DDP) approvals. Corvallis Land Development Code (LDC) 2.5.50.01.a.3 requires the applicant to provide as part of DDP application "[ty]pical elevations of buildings and structures (which may be submitted on additional sheets) sufficient to indicate the architectural intent and character of the proposed development[.]" Under LDC 2.5.50.04, a DDP is deemed to conform to the CDP provided the DDP complies with the review standards for CDP approval, at LDC 2.5.40.04.

LDC 2.5.40.04 requires that a CDP must be consistent with the city's comprehensive plan.[2] Corvallis Comprehensive Plan (CCP) 4.6.7(G) requires in relevant part that development "demonstrate a concern" for views from and to the hillside. CCP 9.2.5

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[2] LDC 2.5.40.04 provides in relevant part:

> "Requests for approval of a Conceptual Development Plan shall be reviewed to assure consistency with the purposes of this chapter, policies and density requirements of the Comprehensive Plan, and any other applicable policies and standards adopted by the City Council. In addition, the following compatibility factors shall be considered:
>
> "* * * * *
>
> "Visual elements (scale, structural design and form, materials, and so forth)
>
> " * * * * *"

requires development to "reflect neighborhood characteristics." CCP 9.2.5 provides that "[d]evelopment shall reflect neighborhood characteristics appropriate to the site and area," and CCP 9.2.1 provides that land use decisions "protect and maintain" these neighborhood characteristics.

In their fourth assignment of error, petitioners argue that the city's findings regarding the applications' compliance with visual compatibility and neighborhood characteristics compatibility criteria found in the CCP are not supported by substantial evidence because the applicant was required to but did not provide a graphic of typical elevations for the proposed houses. Absent that graphic, petitioners argue, the city could not find that the development complies with code and comprehensive plan visual and neighborhood compatibility requirements. Petitioners also argue that the city's findings regarding visual and neighborhood compatibility are inadequate because the findings rely in part on the applicant's agreement to comply with inapplicable 2006 LDC provisions. We address each argument in turn.

In supplemental findings adopted by the city council, the city found in relevant part:

> "The Council notes that the application does not propose typical building elevations, floor plans, or building footprints to demonstrate compliance with the neighborhood characteristics outlined in CCP 9.2.5. The Council notes that the absence of typical building elevations, floor plans, and building footprints was raised as a concern by the Planning Commission and in public testimony. The Council notes that * * * construction of homes on the site will be subject to development standards in the 2006 LDC. * * * Council notes that LDC 4.10 provides a menu of Code permitted design options that development will be required to adhere to. * * *
>
> "The Council finds that the proposed site design responds to the prevalent site characteristics noted above, and to the desired neighborhood characteristics specified in CCP 9.2.5 * * * Given these findings, * * * the City Council finds that the * * * development is compatible with the housing types in the surrounding neighborhood, including one and two-story detached single family housing to the north, south and west.
>
> "The City Council notes that concerns were raised through public testimony that building heights would be excessive and would negatively impact views from and of the hillside of the proposed development. Council notes that the

> application does not seek to vary from LDC standards for building heights. The City Council notes that nearly 90% of the trees on the site will be preserved, most in open space tracts.
>
> "The City Council finds that building to permitted heights of the underlying low density residential zone will not result in negative impacts and will protect views from the hill to the maximum extent practicable given the desire to locate development outside of tree groves. The Council finds that the preservation of the majority of the site's trees, and the installation of the street trees will buffer views of development when looking at the site from points off the subject site." Record 29-30.

The city does not dispute that the required typical building elevation drawings are intended to help demonstrate compliance with the criteria at LDC 2.5.40.04, including consistency with the cited CCP policies regarding neighborhood characteristics. However, the city relies in large part on the applicant's agreement to demonstrate, in a future review proceeding, compliance with Section 4.10 of the 2006 LDC standards governing design to conclude that the development complies with LDC 2.5.40.04, including the requirements for compatible visual elements and compatibility with neighborhood characteristics. *See* n 4, *infra*. As we explain below in our discussion of the fifth assignment of error, the city's reliance on the applicant's agreement to comply in the future with inapplicable 2006 LDC design standards is insufficient to show that the development currently meets the applicable code and comprehensive plan requirements regarding compatibility with neighborhood characteristics.

The city's remaining findings do not demonstrate a basis to conclude that the proposed development complies with the code and plan compatibility requirements, in the absence of the required typical building elevations. On remand, the city must either require submission of the typical building elevations, or in their absence identify a sufficient evidentiary basis to conclude that the development complies with applicable criteria. *See Save Oregon's Cape Kiwanda v. Tillamook Cty.*, 177 Or App 347, 362, 34 P3d 745 (2001) (failure to submit required application materials may be a basis to remand a permit approval

if the record as a whole does not contain information sufficient to support a finding of compliance with applicable approval criteria).

The fourth assignment of error is sustained.

**FIFTH ASSIGNMENT OF ERROR**

Petitioners argue that the city misapplied the applicable criteria relevant to hillside development and that the findings addressing those criteria are inadequate and not supported by substantial evidence. The applicant submitted two possible grading and excavation plans before the planning commission. The planning commission found neither plan was adequate to demonstrate compliance with CCP 4.6.7.[3] After filing its local appeal with the city council, the applicant submitted a revised grading plan that staff again recommended denying for failure to comply with CCP 4.6.7. The city council approved the revised grading plan

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[3] CCP 4.6.7 provides:

> "In areas where development is permitted, standards in the Land Development Code for hillside areas will achieve the following:
>
> "A. Plan development to fit the topography, soil, geology, and hydrology of hillsides and to ensure hillside stability both during and after development.
>
> "B. Preserve the most visually significant slopes and ridgelines in their natural state by utilizing techniques such as cluster development and reduced densities.
>
> "C. Preserve significant natural features such as tree groves, woodlands, the tree-meadow interface, and specimen trees.
>
> "D. Align the built surface infrastructure, such as roads and waterways, with the natural contours of terrain and minimize cutting and filling in developments.
>
> "E. Minimize soil disturbances and the removal of native vegetation and avoid these activities during winter months unless impacts can be mitigated.
>
> "F. Design developments and utilize construction techniques that minimize erosion and surface water runoff.
>
> "G. Demonstrate a concern for the view of the hills as well as the view from the hills.
>
> "H. Provide landscaping that enhances the identified open space resources.
>
> "I. Design developments that consider landscaping management that will minimize the threat of fire on improved property spreading to wildland habitat."

with conditions, in particular, condition 27. We address each of petitioners' subassignments of error in turn.

**A. Whether City Applied the Correct Standard**

Petitioners argue that the city applied the wrong standard to evaluate whether the revised grading plan complied with the applicable CCP provisions. According to petitioners, the city council found that the revised plan was acceptable because it minimized cuts and fills "compared to the plans submitted to the Planning Commission." Record 35.

If that were the only finding made by the city council, we would agree with petitioners that the city failed to apply the correct approval criteria, the CCP policies. As petitioners recognize, however, the city also adopted other findings explaining why it believed the applicable CCP provisions were satisfied. Petitioners state that those findings are conclusory and not supported by substantial evidence and challenge them in a separate subassignment of error. We address those findings in turn. The city's finding regarding the difference between the revised and original plans is surplusage, however, and does not provide an independent basis for reversal or remand.

This subassignment of error is denied.

**B. Adequacy of Condition 27**

The 2006 LDC hillside development standards are not applicable to the challenged decision. Rather, CCP 4.6.7 is applicable.[4] After the planning commission denied the application for noncompliance with CCP policies including CCP 4.6.7, the applicant proposed what became condition 27, requiring the lots to be developed in accordance with

[4] The 2006 version of the LDC was adopted to implement the policies of the 1998 CCP, but the challenged decision was deemed complete before the 2006 LDC went into effect. Thus the 2006 LDC is not directly applicable. The city explains that the 1998 CCP is applicable to the challenged decision, and that CCP anticipated that there would be a period of time between the effective date of the CCP and the effective date of the 2006 LDC where the CCP policies to be implemented by the 2006 LDC would be directly applicable.

2006 LDC Chapter 4.5 – Natural Hazards and Hillside Development Provisions and 2006 LDC Chapter 4.10 – Pedestrian Oriented Design Standards. Record 21. The city council accepted that condition, and based on the condition and a future demonstration of compliance with the 2006 LDC hillside development standards found that the proposed grading plan complies with applicable criteria, including CCP 4.6.7.

According to petitioners, the city cannot demonstrate that CCP 4.6.7 is satisfied by imposing a condition that the 2006 LDC hillside provisions will be complied with in the future, for two reasons. First, petitioners argue, that condition amounts to an unlawful deferral of a finding of compliance with an applicable approval criterion under *Rhyne v. Multnomah County*, 23 Or LUBA 442 (1992). Second, petitioners argue, even if such a condition did not amount to an unlawful deferral of a finding of compliance with an applicable approval criterion, the revised grading plan does not and cannot comply with the 2006 LDC hillside development standards.

We need not address the numerous challenges that petitioners raise regarding whether the application can satisfy all the requirements of the 2006 LDC hillside development provisions, because we agree with petitioners that the city's findings regarding whether the provisions of CCP 4.6.7 are satisfied are inadequate. First, the city's adopted findings do not address compliance with each of the provisions of CCP 4.6.7. Instead, the city appears to have concluded that compliance with the 2006 LDC hillside development provisions in a future review process will suffice to demonstrate compliance with CCP 4.6.7. However, even assuming that is the case, the city cannot defer such a demonstration of compliance with CCP 4.6.7 to a future review process that does not provide notice or opportunity for public participation. *Rhyne*, 23 Or LUBA at 447-48.[5] If the city is going to

[5] In *Rhyne*, we stated:

> "Where the evidence presented during the first stage approval proceedings raises questions concerning whether a particular approval criterion is satisfied, a local government essentially

rely on compliance with the 2006 hillside development standards to demonstrate compliance with CCP 4.6.7, it must address those 2006 standards in a process that provides notice and opportunity for public participation.

Second, even if the city had addressed the 2006 hillside development standards in this proceeding or required that those standards be addressed as part of a review process that provides notice and opportunity for public participation, it is not clear why the city believes that compliance with the 2006 LDC will suffice to demonstrate compliance with CCP 4.6.7. The city states in its brief that the 2006 LDC hillside development provisions implement CCP 4.6.7. However, the findings do not state that position, and the relationship between the CCP policy and the 2006 code standards is not clear to us. Because the city's findings do not specifically address the CCP policies and do not explain how compliance with 2006 LDC hillside development standards is sufficient to demonstrate compliance with those policies, the city's findings are inadequate.

This subassignment of error is sustained.

**C. DOGAMI or Department of Forestry Review**

Petitioners argue that the city failed to comply with ORS 195.260(1)(b), which provides that a local government:

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has three options potentially available. First, it may find that although the evidence is conflicting, the evidence nevertheless is sufficient to support a finding that the standard is satisfied or that feasible solutions to identified problems exist, and impose conditions if necessary. Second, if the local government determines there is insufficient evidence to determine the feasibility of compliance with the standard, it could on that basis deny the application. Third, if the local government determines that there is insufficient evidence to determine the feasibility of compliance with the standard, instead of finding the standard is not met, it may defer a determination concerning compliance with the standard to the second stage. In selecting this third option, the local government is not finding all applicable approval standards are complied with, or that it is feasible to do so, as part of the first stage approval (as it does under the first option described above). Therefore, the local government must assure that the second stage approval process to which the decision making is deferred provides the statutorily required notice and hearing, even though the local code may not require such notice and hearing for second stage decisions in other circumstances. *Holland v. Lane County*, 16 Or LUBA 583, 596-97 (1988)." (footnotes omitted).

> "May require a geotechnical report and, if a report is required, shall provide for a coordinated review of the geotechnical report by the State Department of Geology and Mineral Industries [DOGAMI] or the State Forestry Department, as appropriate, before issuing a building permit for a site in a further review area."

Petitioners argue that the subject property is identified as having high landslide risks. According to petitioners, because the city required a geotechnical report and that report was not reviewed by DOGAMI, the city violated ORS 195.260(1)(b).

While it is true that the city required a geotechnical report and that DOGAMI did not review that report, petitioners do not contend and it does not appear to be the case that the subject property is a "site in a further review area." OAR 632-007-0010(1) provides the definition for a "further review area":

> "'Further review area' for the purpose of this division, means an area of land that may be subject to rapidly moving landslides as specifically mapped by [DOGAMI] for the purpose of implementing ORS 195.260(4)(a)."

While petitioners' experts testified that the subject property is in a high landslide risk area, there is no dispute that DOGAMI has not identified the subject property as a further review area pursuant to ORS 195.260. Because the subject property is not in a "further review area" the city was not required to have DOGAMI review the geotechnical report and the city did not violate ORS 195.260(1)(b).[6]

This subassignment of error is denied.

**D. Whether Grading Will Exceed Eight Feet**

In order to demonstrate compliance with CCP 4.6.7(D), the city found that the revised grading plan "will generally limit cuts and fills to eight feet." Record 36. Petitioners argue that that finding is not supported by substantial evidence. While petitioners appear to be correct, the city will need to adopt new findings on remand that either explain how the 2006

[6] We also agree with the city that ORS 195.260(1)(b) applies to the issuance of building permits, not the issuance of land use permits. Because the challenged decision does not issue any building permits, it would not violate ORS 195.260 even if the statute were applicable.

LDC hillside grading standards implement each of the CCP 4.6.7 provisions or find compliance with each of the provisions of CCP 4.6.7. Because the city will have to adopt new findings, it would serve no purpose to address petitioners' substantial evidence challenge to the current findings.

We do not reach this subassignment of error.

The fifth assignment of error is sustained, in part.

**SIXTH ASSIGNMENT OF ERROR**

Petitioners argue that the city misapplied the criteria applicable to stormwater drainage and that the findings addressing those criteria are not supported by substantial evidence.

**A. Whether the City Erred in Allowing Activities Within Natural Drainageways**

The applicant's geotechnical report identified two potential "drainages" on the subject property – the east drainage and the west drainage. The city found that the east drainage met the LDC definition of natural drainageway and therefore certain restrictions apply to development in the drainageway. The city found that the west drainage did not meet the LDC definition of natural drainageway and thus development in that area was not subject to the same restrictions. Petitioners first argue that the city erred in determining that the west drainage was not a natural drainageway.

The city responds that this issue is waived under ORS 197.763(1) and 197.835(3) because the issue was not raised below with sufficient specificity for the city to address the issue. Petitioners respond that there were substantial discussions regarding development in drainageways and that the city itself specifically raised the issue of whether the west drainage was a natural drainageway. We have reviewed the record citations provided by petitioners regarding where they argue they raised the issue below. While petitioners are correct that the issue of development in drainageways was discussed, we see nothing indicating that the issue of whether the west drainage met the definition of a natural drainageway under the LDC was

ever raised. We have also reviewed the record citation where petitioners argue the city raised the issue. In the staff report to the planning commission, staff discusses the applicable criteria and explains why the east drainage is a natural drainageway and why the west drainage is not a natural drainageway. The staff report does not consider alternative points of view or conflicting evidence in making the determination that the west drainage is not a natural drainageway. As far as we are directed, the only position taken by the applicant, staff, or opponents below was that the west drainageway was not a natural drainageway. That is not sufficient to raise the issue below. The issue is waived.

Petitioners also argue that the city misapplied LDC 4.5.110(b), which prohibits most activities in drainageways and wetlands, and LDC 4.5.120, which requires mitigation for disturbances to drainageways and wetlands. The city allowed crossings to be constructed in drainageways when the drainageways must be crossed to allow appropriate development of the property. The city interpreted the LDC to allow such crossings when necessary despite the restrictions of LDC 4.5.110(b), as long as mitigation occurred pursuant to LDC 4.5.120. While we are inclined to agree with the city's interpretation, we also agree with the city that the issue was not raised below with sufficient specificity to preserve the issue at LUBA. ORS 19.763(1); ORS 197.835(3).

This subassignment of error is denied.

**B. Compliance With Drainage Criteria**

Petitioners argue that the city's findings of compliance with CCP 4.11.12 are inadequate and are not supported by substantial evidence. CCP 4.11.12 provides:

> "Development upslope of wetlands shall minimize interference with water patterns discharging to wetlands, and shall minimize detrimental changes in water quality for waters discharging to wetlands."

According to petitioners, due to the steep slopes on the subject property, drainage is especially important due to the potential for flooding on downslope properties. Because the applicant did not submit a drainage plan, petitioners argue there is no way to demonstrate

that CCP 4.11.12 is satisfied. The city relies on the supplemental findings at Record 42-44 and conditions of approval imposed regarding drainage, including conditions 8, 18, 19, and 20. In particular, condition 19 requires that the applicant submit engineered calculations demonstrating that the storm drainage facilities will match pre-and post-development flows.

The problems with the city's findings are similar to the problems identified by petitioners in the first and third assignments of error. While there are a page and a half of supplemental findings regarding drainage, it is difficult to tell which findings concern CCP 4.11.12. A greater problem is that the supplemental findings also repeatedly reference the "incorporated findings" in which the city attempted to incorporate the portions of staff reports and minutes that were favorable to the application. As we discussed in the first assignment of error, that purported incorporation was ineffective. Further, the city appears to have completely deferred consideration of proposed drainage plans and facilities to a subsequent review process that does not provide for notice or opportunity for public input. As we explained above in our resolution of the fifth assignment of error, such a deferral is inadequate to justify a finding of compliance with an applicable criterion.

Because the supplemental findings themselves do not adequately demonstrate that CCP 4.11.12 is satisfied, and the purportedly incorporated findings cannot bolster the city's determination, the city's finding that CCP 4.11.12 is satisfied is inadequate. This subassignment of error is sustained.

The sixth assignment of error is sustained, in part.

**SEVENTH ASSIGNMENT OF ERROR**

Petitioners argue that the city's findings regarding protection of environmentally significant resources, including upland prairie and habitat, tree preservation, wetlands, and pond turtles, are inadequate and not supported by substantial evidence.

A number of CCP policies cited by petitioners require that city minimize negative impacts on environmentally significant resources. As in the second subassignment of the

sixth assignment of error, the findings addressing these CCP policies lump numerous approval criteria together in a manner that makes it difficult to determine which findings are applicable to which approval criteria. An even greater problem is that the city relies on purportedly incorporated findings from staff reports and minutes. As discussed earlier, those purported incorporations were ineffective, and because the findings rely on those ineffective incorporations, the findings are inadequate.

The seventh assignment of error is sustained.

The city's decision is remanded.

BEFORE THE LAND USE BOARD OF APPEALS

OF THE STATE OF OREGON



| | | |
|---|---|---|
| ARTHUR BOUCOT, BARBARA BOUCOT, LANCE CADDY, JOE CASPROWIAK, PAM CASPROWIAK, LAURIE CHILDERS, THERESA HANOVER, WILLIAM KOENITZER, SUSAN MORRÉ, JEFF MORRÉ, ROBERT SMYTHE, JUSTIN SOARES, LINA SOARES, GEORGE TAYLOR, LUCINDA TAYLOR AND CAROLYN VER LINDEN, | ) | |
| Petitioners, | ) | LUBA No. 2007-200 |
| vs. | ) | |
| CITY OF CORVALLIS, | ) | |
| Respondent. | ) | |

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PETITION FOR REVIEW

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ADDENDUM TO PETITION FOR REVIEW (LUBA No. 2007-200)

**Compatibility:**

LDC2.5.20.h Provide greater compatibility with surrounding land uses than what may occur with a conventional project.(This proposed development lies between an existing neighborhood of homes built with low rooflines in harmony with the topography and the Marys River Natural Area wetland reserve, both of which will be negatively impacted by this development.)

LDC2.5.40.04 Compatibility factors (Basic site design fails to preserve site amenities; scale and structural design of homes not provided to demonstrate neighborhood compatibility; effects on water quality not addressed—this area has seeps and springs that are hydrologically connected to the preserved wetland below, and this project fails to demonstrate how it will avoid negatively impacting that area.)

LDC 4.0.40.b Safe and convenient pedestrian facilities that strive to minimize travel distance to the greatest extent practicable shall be provided with new development within and between new....(no provision for existing neighborhood to have minimized travel distance is made)

CCP 3.2.1.F neighborhoods with a mix of uses, diversity of housing types, pedestrian scale, a defined center, and shared public areas (No provisions included for any shared public area for the surrounding neighborhood or any pedestrian access for homes )

CCP 7.2.6 Avoid significant negative impacts on air and water quality, noise or light pollution (How will 42 lots on a steep slope avoid these negative impacts? In addition to the Marys River Natural Area below, there are two other preserved riparian and wetland parcels just across the Marys River from this hill—the Caldwell Property and the Herbert Property. How will this lowland preserve be impacted by development of the only nearby upland?)

**Cuts and fills/grading:**

LDC 4.0.70.1.2 grades not to exceed 15% on local streets (many portions of the site have grades over 30%)LDC 4.6.7 cut and fill thresholds (limit is 8 ft., but this project proposes up to 20 ft. cut and fill)

CCP4.2.2 Natural features and areas determined to be significant shall be preserved, or have their losses mitigated or reclaimed. The City may use conditions placed on development, private nonprofit efforts, and City, State, and Federal government programs to achieve this objective. (Note significance already established by Natural Features Inventory and the Hillside Report (1983).

**EXHIBIT VII - 2**
**LUBA REMAND**

**Drainageways:**

LDC 4.5.80 lead paragraph and 4.5.80.a Drainageway "The drainageways within the City are intended to function as a holistic natural system....to ensure that unnecessary negative impacts to this system are minimized...new development proposed on land containing an open, natural drainageway shall require granting of an easement over lands suitable for conveying storm waters and for maintaining and operating an effective open drainageway system.

LDC 4.5.80.b easement restrictions on use (prohibits alteration of existing vegetative cover, regrading, filling, structural improvements) and 4.5.110 limitations within drainageways (prohibits vegetation removal, building, paving, or grading)

CCP 4.11.12 Development upslope of wetlands shall minimize interference with water patterns and detrimental changes in water quality discharging to wetlands. (Many of the other portions of section 4.1 of the Comp Plan are ignored in this proposal, relating to keeping drainageways in a natural state, minimizing negative impacts on wildlife habitat and migration corridors, open space, wetlands below site; fails to address protecting the springs, only mentions them as a threat to new houses that must be minimized.)

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**EXHIBIT VII - 4**
**LUBA REMAND**

**APPENDIX**

## I. STANDING OF PETITIONERS

Petitioners have standing to appeal this land use decision under ORS 197.830(2).

## II. STATEMENT OF THE CASE

### A. Nature of the Land Use Decision and Relief Sought

Petitioners seek review of the approval by the City of Corvallis (the "city") of an application for Conceptual and Detailed Development Plan and Tentative Subdivision Plat. Petitioners seek reversal or remand of the challenged decision. See also Relief Sought section infra.

### B. Summary of Arguments

1. The challenged decision purports to approve a 45-lot subdivision. The challenged decision incorporates the substance of two staff reports, the minutes of two planning commission hearings and two city council hearings. The decision, however, purports only to incorporate the portions of those reports and minutes that support approval of the application; it does not incorporate any portions of those documents that do not support approval. Because much of the incorporated material addresses a 42-lot subdivision, instead of the 45-lot one that was approved, and because it is impossible to determine which of the documents are actually incorporated, the decision must be remanded.

2. The findings fail to specifically address each criterion. They make general conclusions that groups of criteria are satisfied. Accordingly, the findings are inadequate.

3. The applicant failed to submit typical elevations of the proposed development, as is required by the Land Development Code (LDC). Accordingly, there was not substantial evidence in the record that would enable the city to conclude that compatibility criteria related to hillside views and neighborhood compatibility were satisfied.

4. The subject property lies on the southeast side a very steep hill. Accordingly, the slopes on the subject property are exceedingly steep. In order to build houses on the property, the applicant would be required to conduct excessive cutting and filling, just to create flat areas on which to build. The challenged decision imposed a condition of approval that the applicant would be required to comply with recently adopted hillside development standards. However, the city fails to determine that under the revised grading plan submitted by the applicant, those standards can be complied with. To the extent it does make that finding, it is unsupported by substantial evidence. The development standards would prohibit mass grading on many of the lots that the revised grading plan proposes to mass grade.

The city failed to require that applicant's geotechnical report be reviewed by DOGAMI, as required by ORS 195.253.

5. In order to justify construction of a roadway on a piece of the property that serves as a natural drainageway on the west side of the property, the city concluded that the drainage was not a "drainageway" as defined by the LDC. The Code prohibits construction activities, including cut and fill, within drainageways, and without the construction of the road in the existing drainage, the applicant would not be able to obtain approval of his development. Accordingly, the city adopted a finding, unsupported by substantial evidence, that this West Drainage was not a drainageway.

Even with regard to the other drainage, East Drainage, which the city concluded was a "drainageway," the city approved building, paving and grading activities to be conducted within that drainageway, in violation of LDC 4.5.110(b).

The applicant did not hire a hydrogeologist or hydrologist to provide information on the extent of stormwater runoff that would occur as a result of the development.

Accordingly, its findings of compliance with numerous drainage- and stormwater-related criteria are unsupported by substantial evidence.

6. The city's findings of compliance with criteria applicable to preservation of environmentally significant resources; upland prairie habitat, significant oak woodland, wetlands and western pond turtles, are inadequate and unsupported by substantial evidence.

**C. Summary of Material Facts**

The subject property is a single 25.88-acre parcel on the southeast slope of Country Club Hill in southwest Corvallis. Rec. 529. It is the largest hill in south Corvallis, is located near the confluence of the Marys and Willamette Rivers, and its eastern slope is highly visible to all who enter the southern gateway to the city on Highway 99. It lies just above the 74-acre Marys River Natural Area, designated by the City of Corvallis as a highly significant wetland reserve jointly managed by the USDA Natural Resources Conservation Service, City of Corvallis, and Benton County. Three previously identified seeps and springs are located in two drainageways that are hydrologically connected to the wetland below, Rec. 321, and over four dozen species of birds, wild turkeys, deer, western pond turtles, frogs, field mice, and other wildlife use both the wetland and upland portions of this connected ecosystem for their habitat. Rec. 529-33.

Country Club Hill has been identified by the City of Corvallis as a significant hillside (Comprehensive Plan map). Ten years ago, this hill had only a small amount of residential development, concentrated on the north side. Most of the houses are of unique designs custom-built from the late 1950's to early 1970's, and nestled among the existing oak trees. Rec. 529. The natural slope of the hill was preserved as well through the use of daylight basement-style construction methods instead of large-scale cut and fill. Rec. 530. Most of

the east, south, and west sides of the hill were open space composed of Oregon oak and Douglas-fir woodlands and open grasslands (upland prairies). Rec. 530. However, over the past six years several new subdivisions have been built on the south, west, and north sides of the hill and along its base, using a heavy-handed mass grading construction method that removed almost all native trees and understory vegetation. Rec. 530.

The subject property has very steep slopes, much of them between 20% and 35% slope and some over 35%.[1] Portions of the property are identified as high landslide risks. *See* App-39-41.[2] The only remaining undeveloped open space on the hill, the steepest portion of the hill, is the southeast quadrant, the location of this proposed subdivision, where a large proportion of the site has slopes of 15 to 35%. Rec. 424.

The original application sought approval of a Conceptual and Detailed Development Plan and Tentative Subdivision approval for a 42-lot subdivision. Rec. 601. The existing topography of the hillside would have been altered by the original proposal. Rec. 393. In order to allow residential development of the site, the applicant proposed to mass grade the individual lots and other areas for roadways in order to create flat building areas for roads and homes. Rec. 393. The proposed maximum cut was originally 21 feet, and the proposed maximum fill was also 21 feet. Rec. 393.

The Planning Commission considered the application and conducted a public hearing on June 6, 2007 and June 20, 2007. The planning commission denied the request. The bases for denial that are relevant to this appeal include: 1) failure to comply with policies related to

[1] OAR 660-008-0005 defines slopes of 25% or greater as "unbuildable." The 1983 Open Space – Hillsides Report defines steep slopes as 20% and greater. The Soil Survey of Benton County (USDA SCS 1972) associates slopes of 20% or greater with "severe" limitations for building construction. Rec. 83.

hillside development, 2) failure to comply with applicable drainage and stormwater criteria, and 3) failure to provide typical elevations sufficient to indicate the architectural intent and character of the proposed development, thus limiting the planning commission's ability to evaluate compatibility impacts, specifically those related to hillside views and hillside development. Rec. 256. The applicant appealed the planning commission denial to the city council. Rec. 277.

After it filed its local appeal, the applicant submitted a revised plot plan and a revised grading/excavation and tree preservation plan. Rec. 282-84. The revised plot plan, in order to comply with a lot size requirement that is not relevant to this appeal, added three more lots around the cul-de-sac of Buckeye Place. Rec. 282. The applicant also submitted a revised cut/fill analysis. Rec. 284.

The city council conducted a *de novo* public hearing, dated August 20, 2007 and September 4, 2007, and on September 14, 2007 deliberated on the matter. On September 17, 2007, the city council adopted findings approving the proposed application. This appeal followed.

## III. JURISDICTION

LUBA has jurisdiction under ORS 197.015(10)(a)(A) and ORS 197.825(1).

## IV. ASSIGNMENTS OF ERROR

### A. FIRST ASSIGNMENT OF ERROR

[2] Attached to this brief as App-39-45 are maps from the Corvallis Comprehensive Plan. App-41, 43, and 45 are blown up versions of the other maps showing a more detailed view of the subject property. Petitioners move that LUBA take official notice of these maps, which were adopted as part of the Corvallis Comprehensive Plan.

**Respondent erred in attempting to adopt as findings deliberations of one of its meeting and findings from a staff report that addressed a different proposal**

## ARGUMENT

Prior to the planning commission hearings on this application, city staff prepared a staff report, dated May 25, 2007. Rec. 389 et seq. The findings in that staff report recommended denial based on a number of inadequacies in the application. The planning commission adopted those findings as its final decision. Rec. 903. After applicant filed its local appeal, and after staff had reviewed the revised plans, it prepared a staff report for city council consideration (the August 10, 2007 memo). Rec. 253. That memo also recommended denial based, in part, on the application's failure to satisfy applicable hillside requirements. The city council purports to adopt only those findings from the staff reports dated May 25, 2007 (Rec. 389 et seq.) and August 10, 2007 (Rec. 253 et seq.) that support approving the challenged decision.[3] The city council also purported to adopt as findings those portions of

[3] The challenged decision provides:

> "The City Council accepts and adopts those findings made in the staff report to the Planning Commission, dated May 25, 2007, that support approval of the Conceptual and Detailed Development Plan/Tentative Subdivision Plat. The City Council adopts as findings those portions of the Minutes of the Planning Commission meetings, dated June 6 and June 20, 2007, that demonstrate support for approving the Conceptual and Detailed Development Plan/Tentative Subdivision Plat. The City Council accepts and adopts those findings made in the August 10, 2007, staff memorandum to the City Council, that support approving the Conceptual and Detailed Development Plan/Tentative Subdivision Plat, as conditioned. The City Council also adopts as findings those portions of the Minutes of the City Council hearings dated August 20 and September 4, 2007, that demonstrate support for approving the Conceptual and Detailed Development Plan/Tentative Subdivision Plat. The City Council specifically accepts and adopts as findings the rationale given during deliberations in the September 4, 2007, meeting by Council Members expressing their support for approving the Conceptual and Detailed Development Plan/Tentative Subdivision Plat. The City Council rejects statements made during deliberations in the September 4, 2007 meeting by Council Members expressing opposition to the proposed Conceptual and Detailed Development Plan/Tentative Subdivision Plat. All of the above-referenced documents shall be referred to in these findings as the 'Incorporated Findings.' The findings below, (the 'supplemental findings') supplement and elaborate on the findings contained in the materials noted above, all of which are incorporated herein, by reference. When there is a conflict between the supplemental findings and the Incorporated Findings, the supplemental findings shall prevail." Rec. 25-26.

minutes of two planning commission meetings and two city council meetings that support approval of the Conceptual and Detailed Development Plan and Tentative Subdivision Plat application. *See* n 3.

Local governments often incorporate other documents as findings supporting the challenged decision. *See Holladay Investors, Ltd. v. City of Portland*, 18 Or LUBA 271, 275 (1989), *aff'd* 100 Or App 551 (1990). The best example of this is the local government's decision to incorporate findings from a staff report. Such incorporation is generally appropriate. However, the city's purported attempt to incorporate portions of findings from two staff reports in this case is not appropriate. This Board has previously determined that it is not sufficient to adopt findings consistent with approval and reject findings that are not consistent with approval. *Ellis v. City of Bend*, 28 Or LUBA 332, 333 (1994). That is exactly what the city council did in this case in adopting only the staff findings that supported the challenged decision and rejecting the staff findings that were contrary to it. The local government must more clearly identify which incorporated findings are adopted and which are not.

Regarding the attempted incorporation of minutes, where the local government starts incorporating minutes or broad descriptions of testimony, there is often a problem. *See, e.g., Cecil v. City of Jacksonville*, 19 Or LUBA 446, 455 (1990). Here, the city council not only attempted to incorporate minutes of public meetings--it also attempted to incorporate ONLY those minutes that supported approval of the subject application. *See* n 3.

The combined minutes of those deliberations are multiple single-spaced pages of print. Rec. 301-311 (minutes of June 6, 2007 planning commission meeting); Rec. 296-300 (minutes of June 20, 2007 planning commission meeting); Rec. 197-210 (minutes of August

20, 2007 city council meeting); Rec. 55-63 (minutes of September 4, 2007 city council meeting).. It would be a Herculean task to sift through those pages to pick out the rationale that could or might have been adopted as findings in support of the city's decision. *See Gonzales v. Lane County*, 24 Or LUBA 251, 259 (1992); *DLCD v. Tillamook County*, 33 Or LUBA 604 (1997) (the incorporation may not leave parties guessing as to which findings are incorporated); *see also Ellis v. City of Bend*, 28 Or LUBA 332, 333 (1994), cited above.

Finally, the incorporated findings in the May 25, 2007 staff report are findings in response to an entirely different proposal. Those findings address a plot plan for 42 instead of 45 lots and two alternative grading plans that were different than the grading plan that was ultimately the basis for the city council's decision. Where the application changes in the significant ways that this proposal did between the time of the incorporated findings and the final decision, such incorporation is not appropriate.

A clear example demonstrating why this incorporation is inadequate is found in the findings on compliance with the solar access standards. LDC 4.6.20.c requires that planned developments on parcels of more than one acre be designed to provide solar access protection to a minimum of 80% of the buildings with sufficient east/west dimension to allow the long axis of the building to utilize solar energy. The applicant submitted a solar study, Rec. 610, to demonstrate compliance with the solar standard for the original 42-lot subdivision. Staff concluded that the proposal complied with the standard. Rec. 452.

However, the applicant subsequently revised the plot plan and added three additional lots and three additional houses. The supplemental findings rely exclusively on the incorporated findings:

"1. The City Council notes that findings in response to the applicable criteria cited above are presented on Attachments IX-64 and IX-65 of the August 10, 2007, staff memorandum to the City Council.

"2. In support of its decision to approve the proposed Conceptual and Detailed Development Plan and Tentative Subdivision Plat, the Council notes that the analysis and conclusions presented in the May 25, 2007, staff report to the Planning Commission demonstrate how the proposal is consistent with the applicable criteria cited above, or is conditioned to that effect.

"3. As discussed in the Incorporated Findings, the City Council finds that the proposal is consistent with the criteria applicable to the Solar Access category.

"4. As discussed in the Incorporated Findings and the supplemental findings, the City Council finds that the proposal, as conditioned, complies with the criteria applicable to the Conceptual and Detailed Development Plan." Rec. 44-45.

The incorporated solar access findings, however, address the original 42-lot subdivision, not the revised 45-lot development. There is therefore not substantial evidence in the record to support a conclusion that the development as revised satisfies the applicable criteria. *See also* discussion under fifth and sixth assignments of error for further support that this incorporation constitutes error that requires remand.

## B. SECOND ASSIGNMENT OF ERROR

**The county erred in failing to provide notice of the 45-lot subdivision**

ORS 197.830(5) provides that where a local government makes a decision that differs from the proposal described in the notice to such a degree that the notice of the proposed action did not reasonably describe the local government's final action, then a person adversely affected by the decision may appeal the decision to LUBA.[4] The purpose of the

[4] ORS 197.830(5) provides:

"If a local government makes a limited land use decision which is different from the proposal described in the notice to such a degree that the notice of the proposed action did not reasonably describe the local government's final actions, a person adversely affected by the decision may appeal the decision to the board under this section:

statute is to protect the statutory rights of an individual to receive adequate notice of a public hearing in order to be able to fully participate. *Kevedy, Inc. v. City of Portland*, 28 Or LUBA 227, 232 (1994). In this case, the decision adopted by the city council, approval of a 45-lot subdivision, differs from the proposal described in the notice to such a degree that it did not reasonably describe the local government's action. *See* notice of city council hearing, Rec. 881.[5] *See also* challenged decision, Rec. 3, 4.[6] ORS 197.763(3) requires the notice to "[e]xplain the nature of the application and the proposed use or uses which could be authorized." The use that was approved is different than the use described in the notice. Accordingly, the matter must be remanded.

### C. THIRD ASSIGNMENT OF ERROR

**The Findings are Inadequate to Demonstrate Compliance with Applicable Approval Criteria Because the City Lumped Them into General Subject Matters and Failed to Specifically Address Each Criterion and How it Was Satisfied**

The challenged findings are divided into general subject matters; e.g., Natural Resources, Compatibility, etc. The approval criteria applicable to each particular general subject are set forth at the beginning of each section, followed by general

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"(a) Within 21 days of actual notice where notice is required; or

"(b) Within 21 days of the date a person knew or should have known of the decision where no notice is required."

[5] The notice provides, in relevant part:

"The applicant is requesting approval of a Conceptual and Detailed Development Plan and Tentative Subdivision Plat to create a 42-lot subdivision on the subject site." Rec. 881

[6] The challenged decision itself is actually confusing regarding the proposal being approved. The only indication in the Notice of Disposition is that the proposal is for a 42-lot subdivision. *See* Rec. 9-10. The supplemental findings erroneously describe the matter as an appeal of the planning commission's denial of "a Conceptual and Detailed Development Plan and Tentative Subdivision Plat to create 45 residential lots * * *." Rec. 24. The planning commission's denial was of the 42-lot proposal.

findings addressing the subject matter at issue. In many instances, as set forth below, the findings fail to specifically address particular criteria, fail to explain the applicable criteria, and then conclude that all applicable criteria are satisfied. While the division of the findings by subject matter is appropriate and, in some instances, beneficial, the approach taken by the city is, in many instances, inadequate to demonstrate compliance with the applicable criteria. *See* discussion under the next assignment of error; see also

## D. FOURTH ASSIGNMENT OF ERROR

**The challenged findings addressing compatibility are inadequate and unsupported by substantial evidence**

The Planning Commission denied the proposal in part because the application did not include a graphic of the "typical elevations" as required by LDC 2.5.50.01.a.3.[7] The supplemental findings provide:

> "6. The Council notes that the application does not propose typical building elevations, floor plans, or building footprints to demonstrate compliance with the neighborhood characteristics outlined in CCP 9.2.5. The Council notes that the absence of typical building elevations, floor plans, and building

[7] LDC 2.5.50.01 provides the information required for the Detailed Development Plan.:

> "**a. Graphic Requirements**
>
> "In addition to the graphic requirements specified for a Conceptual Development Plan in .5.40.01, a Detailed Development Plan shall include:
>
> "1. Topographic contours at 2-ft intervals for slopes under 20 percent and at 5-ft intervals for slopes at or greater than 20 percent. Where the grade exceeds 10 percent or where the development site abuts existing developed lots, the Director may require a grading plan. If a grading plan is required, it shall show how runoff or surface water from the subject property will be managed, including ultimate disposal of surface waters;
>
> "2. Location and floor area of existing and proposed structures and other improvements, including maximum heights, building types, and gross density per acre (for residential developments) and location of fire hydrants, overhead lines in the abutting right of way, easements and walkways;
>
> "3. Typical elevations of buildings and structures (which may be submitted on additional sheets) sufficient to indicate the architectural intent and character of the proposed development[.]"

footprints was raised as a concern by the Planning Commission and in public testimony. The Council notes that as stated in Development Rated Concern G of the Council approved conditions of approval, construction of homes on the site will be subject to development standards in the 2006 LDC, include LDC Chapter 4.10 – Pedestrian Oriented Design Standards. Council notes that LDC Chapter 4.10 provides a menu of Code permitted design options that development will be required to adhere to. Council notes that Condition of Approval 27, which was proposed by the appellant, also requires compliance with the building design standards in 2006 LDC Chapter 4.10 – Pedestrian Oriented Design Standards and 2006 LDC Chapter 4.5 Natural Hazard and Hillside Development Provisions.

"7. The Council finds that the proposed site design responds to the prevalent site characteristics noted above, and to the desired neighborhood characteristics specified in CCP 9.2.5 through the use of new separated sidewalks, and a multi-use trail. The City Council also finds that when homes are constructed per the standards in LDC Chapters 4.10 and 4.5, the development will be pedestrian oriented, will conform to the natural topography of the site, and will provide the desired neighborhood characteristics outlined in CCP 9.2.5. Given these findings, and the similarity of the proposed development to adjacent developments relative to housing type and density, the City Council finds that the Brooklane Heights development is compatible with the housing types in the surrounding neighborhood, including adjacent one and two-story detached single family housing to the north, south and west.

8. The City Council notes that concerns were raised through public testimony that building heights would be excessive and would negatively impact views from and of the hillside of the proposed development. Council notes that the application does not seek to vary from LDC standards for building heights. The City Council notes that nearly 90% of the trees on the site will be preserved, most in open space tracts.

9. The City Council finds that building to permitted heights of the underlying low density residential zone will not result in negative visual impacts and will protect views from the hill to the maximum extent practicable given the desire to locate development outside of tree groves. The Council finds that the preservation of the majority of the site's trees, and the installation of the street trees will buffer views of development when looking at the site from points off the subject site." Rec. 29-30.

In reviewing a Conceptual Development Plan, the city is required to address numerous compatibility factors:

a. Basic site design (the organization of uses on a site);

b. Visual elements (scale, structural design and form, materials, and so forth);
c. Noise attenuation;
d. Noxious odors;
e. Lighting;
f. Signage;
g. Landscaping for buffering and screening;
h. Traffic;
i. Effects on off-site parking;
j. Effects on air and water quality. LDC 2.5.40.04.

Two key compatibility issues raised by petitioners below were the issue of views to and from the hill (Visual Elements) and compatibility of housing type. Each issue will be discussed separately below.

Views

The planning commission review of the 42-lot subdivision included extensive discussion of the applicant's failure to supply sample elevations, as required by LDC 2.5.50.01.a.3, and the resulting inadequacy of information necessary to make a determination whether views to and from the hill would be adversely impacted. *See* CCP 4.6.7[8]. The August 10, 2007 memo describes the planning commission's determination on this issue as follows:

> "Failure to provide typical elevations sufficient to indicate the architectural intent and character of the proposed development per LDC section 2.5.50.a, thereby limiting the ability of the Planning Commission to evaluate compatibility impacts, especially those related to hillside views and hillside development. Rec. 256.

In short, it found that, without the required elevations, it could not determine whether the views would be impacted to such a degree that the development could not be considered

[8] CCP 4.6.7.G provides:

> "In areas where development is permitted, standards in the Land Development Code for hillside areas will achieve the following: * * * G. Demonstrate a concern for the view of the hills as well as a view from the hills."

compatible. The city council declined to require those elevations and determined that a condition of approval requiring the applicant to comply with development standards in the 2006 LDC was sufficient to address this criterion. *See* findings set forth in full above.

The challenged findings do not explain, and petitioners do not understand, how the imposition of Condition 27 requiring construction to comply with development standards in the 2006 LDC is adequate to address compatibility impacts, specifically related to hillside views. The 2006 LDC maximum height limitation in both the RS-3.5 and RS-5 zones is 30 feet. LDC (2006) 3.1.30.[9] That development standard does not insure that the compatibility criterion are satisfied with regard to hillside views. When combined with the proposed 14-20 foot fills, houses could rise 50 feet above the existing grade, totally blocking the view of existing neighbors and making these houses dominate the view of the hill from the 99 S gateway into the city.

There is a reason that the code requires, as part of a detailed development plan, submittal of elevations. LDC 2.5.50.01.a.3. Without that information, it is impossible to determine the impact of proposed construction on views from the hills. Accordingly, the city's decision to waive that requirement resulted in a determination of compliance with compatibility criteria that is unsupported by substantial evidence. The decision must be remanded to allow the applicant to prepare the documentation necessary for a determination on the impact on views.

Compatibility of Housing Types

[9] The subject application was submitted before the 2006 LDC was adopted. Accordingly, many citations in this brief are to the previous version of the LDC.

CCP 9.2.5 provides, in general, "Development shall reflect neighborhood characteristics appropriate to the site and area."[10] CCP 9.2.1 requires land use decisions to

[10] CCP 9.2.5 provides, in full:

> "Development shall reflect neighborhood characteristics appropriate to the site and area. New and existing residential, commercial, and employment areas may not have all of these neighborhood characteristics, but these characteristics shall be used to plan the development, redevelopment, or infill that may occur in these areas. These neighborhood characteristics are as follows:
>
> "A. Comprehensive neighborhoods have a neighborhood center to provide services within walking distance of homes. Locations of comprehensive neighborhood centers are City Council Approved Corvallis Comprehensive Plan December 21, 1998 125 determined by proximity to major streets, transit corridors, and higher density housing. Comprehensive neighborhoods use topography, open space, or major streets to form their edges.
>
> "B. Comprehensive neighborhoods support effective transit and neighborhood services and have a wide range of densities. Higher densities generally are located close to the focus of essential services and transit.
>
> "C. Comprehensive neighborhoods have a variety of types and sizes of public parks and open spaces to give structure and form to the neighborhood and compensate for smaller lot sizes and increased densities.
>
> "D. Neighborhood development provides for compatible building transitions in terms of scale, mass, and orientation.
>
> "E. Neighborhoods have a mix of densities, lot sizes, and housing types.
>
> "F. Neighborhoods have an interconnecting street network with small blocks to help disperse traffic and provide convenient and direct routes for pedestrians and cyclists. In neighborhoods where full street connections cannot be made, access and connectivity are provided with pedestrian and bicycle ways. These pedestrian and bicycle ways have the same considerations as public streets, including building orientation, security-enhancing design, enclosure, and street trees.
>
> "G. Neighborhoods have a layout that makes it easy for people to understand where they are and how to get to where they want to go. Public, civic, and cultural buildings are prominently sited. The street pattern is roughly rectilinear. The use and enhancement of views and natural features reinforces the neighborhood connection to the immediate and larger landscape.
>
> "H. Neighborhoods have buildings (residential, commercial, and institutional) that are close to the street, with their main entrances oriented to the public areas. I. Neighborhoods have public areas that are designed to encourage the attention and presence of people at all hours of the day and night. Security is enhanced with a mix of uses and building openings and windows that overlook public areas.
>
> "J. Neighborhoods have automobile parking and storage that does not adversely affect the pedestrian environment. Domestic garages are behind houses or otherwise minimized (e.g., by setting them back from the front facade of the residential structure.) Parking lots and structures are located at the rear or side of buildings. On-street parking may be an appropriate location for a portion of commercial, institutional, and domestic capacity. Curb cuts for driveways are limited, and alleys are encouraged.

"protect and maintain" these neighborhood characteristics. Rec. 404. The challenged findings note that CCP 9.2.5 recognizes that not all neighborhood characteristics are appropriate for each site. Rec. 29. The findings identify the site's topography, patterns of existing low density residential development and the preservation of natural features as the site's relevant characteristics. Rec. 29.

Once again, the planning commission denied the proposal because the applicant's failure to supply typical elevations indicating the architectural intent and character of the proposed development made it impossible to determine whether the proposal was compatible. Rec. 256. As opponents testified below, other development in the neighborhood includes predominantly daylight-basement homes with shallow roof pitches. Rec. 530. The challenged findings in this regard are wholly conclusory and unsupported by substantial evidence in large part because the city lacked the required typical elevations.[11]

Compliance with the provisions of LDC 4.5 and 4.10 will not alone assure that the development conforms to the natural topography of the site. It is clear from a quick review of

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"K. Neighborhoods incorporate a narrow street standard for internal streets which slows and diffuses traffic.

"L. Neighborhood building and street proportions relate to one another in a way that provides a sense of enclosure.

"M. Neighborhoods have street trees in planting strips in the public right-of-way."

[11] The challenged findings state:

"The Council finds that the proposed site design responds to the prevalent site characteristics noted above, and to the desired neighborhood characteristics specified in CCP 9.2.5 through the use of new separated sidewalks, and multi-use trail. The City Council also finds that when homes are constructed per the standards in LDC Chapters 4.10 and 4.5, the development will be pedestrian oriented, will conform to the natural topography of the site, and will provide the desired neighborhood characteristics outlined in CCP 9.2.5. Given these findings, and the similarity of the proposed development to adjacent developments relative to housing type and density, the City Council finds that the Brooklane Heights development is compatible with the housing types in the surrounding neighborhood, including adjacent one and two-story detached single-family housing to the north, south, and west." Rec. 29-30.

the hillside development standards that they have more to do with erosion control and minimizing grading and impacts of grading during construction. They do not assure that *the structure* conforms to the natural topography. For instance, it contains no restrictions on the height of buildings. More importantly, though, the city does not explain how it believes those code provisions assure such conformity.

## E. FIFTH ASSIGNMENT OF ERROR

**The city misapplied applicable criteria relevant to hillside development, and the findings addressing them are inadequate and not supported by substantial evidence**

### ARGUMENT

The subject property is a 25.88-acre parcel with very steep slopes, much of them between 20% and 35% slope and some over 35%.[12] Before the planning commission, applicant submitted two grading and excavation plans: the preferred grading plan and the alternative grading plan. Rec. 417-18. The preferred plan proposed mass grading on the site to create flat areas for building roads and flat building sites for houses. The alternate plan proposed 55 instead of 42 lots, and individual lot grading for those 55 lots. Rec. 607. It apparently did not propose mass grading, but proposed structures covering a more significant portion of the site, leaving it failing to comply with the tree preservation and other applicable criteria. The city staff and the planning commission concluded that neither plan was adequate to demonstrate compliance with CCP 4.6.7(A), (D) and (E). *See* Rec. 418-24. In summary, the May 25, 2007 staff report concluded that the preferred plan

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[12] OAR 660-008-0005 defines slopes of 25% or greater as "unbuildable." The 1983 Open Space – Hillsides Report defines steep slopes as 20% and greater. The Soil Survey of Benton County (USDA SCS 1972) associates slopes of 20% or greater with "severe" limitations for building construction. Rec. 83.

> "results in maximum cuts and fills of approximately 20 feet, and multiple cuts and fills that exceed 8 feet. Given the size and extent of the cuts and fills in the applicant's preferred grading plan, and the lack of off-setting benefits of the cuts and fills, staff believe this grading plan does not comply with Policy 4.6.7 sections (A), (D), and (E)." Rec. 424.

It also found that the alternative plan did not satisfy relevant approval criteria relative to tree protection and that the application narrative did not explain how the alternative plan satisfied the approval criteria. Rec. 424.

The planning commission adopted the staff's analysis and denied the proposal, based in large part on the failure to comply with the applicable hillside development approval criteria—specifically, CCP 4.6.7(A), (D) and (E), which provide:

> "Plan development to fit the topography, soil, geology, and hydrology of hillsides and to ensure hillside stability both during and after development." CCP 4.6.7(A).
>
> "Align the built surface infrastructure, such as roads and waterways, with the natural contours of terrain and minimize cutting and filling in developments." CCP 4.6.7(D).
>
> "Minimize soil disturbances and the removal of natural vegetation and avoid these activities during winter months unless impacts can be mitigated." CCP 4.6.7(E).[13]

After filing its local appeal, the applicant submitted a revised plot plan and a revised grading plan. Rec. 284. The revised grading plan proposed mass grading, as did the original preferred plan. The August 10, 2007 staff report to the city council recommended denial of the application, based on the inadequacy of the revised grading plan:

> "As noted previously in this Memorandum, previous land use decisions have determined that one way to demonstrate compliance with Policy 4.6.7(A),(D) and (E) is to limit cuts and fills to a maximum of 8 feet. Cuts and fills that exceed 8 feet may be permitted, and may be found to comply with Policy 4.6.7, if the applicant demonstrates that physical

[13] While the challenged decision does not set forth the language of the applicable comprehensive plan and code provisions, it does cite the applicable plan and code numbers. The full language of those policies and provisions are set forth in full in the staff memorandum dated May 25, 2007. Rec. 389-470. The comprehensive plan and code provisions specifically applicable to hillside development are set forth at Rec. 415-17.

characteristics of the site warrant greater cuts and fills and would result in benefits that would off-set negative impacts of increased hillside disturbance.

"The appellant's July 5, 2007, appeal letter states that 95% of the site will have cuts and fills less than 10 feet. This is illustrated in the revised grading plan **(Attachment I.8)**. The revised plan does not show where cuts and fills will be greater than 8-feet, or indicate how many cuts and fills will be greater than 8-feet. Staff analysis of the revised grading plan found that approximately 16 of the 45 lots, or just over a third of lots where grading is proposed in the revised plan, would require cuts and fills greater than 8-feet. This includes lots 15 and 16, which would require more than 10 feet of fill, though the revised plan indicates it would require less than 10 feet. Information provided by the appellant in **Attachment I.12**, states that the maximum cut in the revised plan is 14 feet, and the maximum fill is 13 feet. It is difficult to more precisely know the range of cuts and fills because the appellant's plans use 10-foot contours rather than 2-foot contours."

"* * *

"* * * the appellant has not provided new standards, or set parameters for lot grading on the 25 lots not proposed for mass grading, sufficient to demonstrate impacts to the hillside. Therefore, it is impossible to know if grading on these lots would require cuts and fills greater than 8 feet, the circumstances that would necessitate 8 foot cuts or fills, or how much of each lot would need to be graded to develop each lot.

"* * *

"* * * in this case, where the appellant is proposing to exceed 8 foot cuts and fills on 16 lots, and the extent of necessary cuts and fills on remaining lots is not known, it is important to provide specific techniques or designs to demonstrate how development will respect the topography of the hillside and minimize impacts to it.

"The appellant has not proposed such techniques or designs and it is clear that cuts and fills will exceed 8 feet on one third of the lots and the street. Also, the degree to which lots not mass graded would need to be graded to later be developed is unknown. It is possible that lots proposed for individual grading may not comply with applicable hillside development standards of the 2006 LDC, or with other building design standards in place to ensure compatibility with surrounding uses. For these reasons, Staff does not believe the appellant's revised grading plan complies with applicable

> Comprehensive Plan policies regarding hillside development, and Staff recommend that the City Council deny the appeal." Rec. 262-64.[14]

One of the main reasons the planning commission denied the application and staff recommended denial was the conclusion that the application did not demonstrate compliance with the criteria applicable to Hillside Development. The first finding in the challenged decision applicable to the hillside development criteria references the staff findings in both the May 25, 2007 and August 10, 2007 staff reports:

> "The City Council notes that findings in response to the applicable criteria cited above are presented in Attachments IX-26 through IX-47 [the findings from the May 25, 2007 staff report] and Pages 6 through 12 of the August 10, 2007, staff memorandum to the City Council." Rec. 33.

As explained above under the First Assignment of Error, it is unclear which of those findings the city council adopts as its own findings. One would assume that if the city council meant not to adopt any of those findings, and only intended to adopt the "supplemental findings" as pertains to the hillside standards, it could have easily said so. The confusion regarding what findings are incorporated with regard to hillside development criteria demonstrates why the city's purported incorporation is erroneous.

### 1. First Subassignment of Error

**The City used wrong standard**

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[14] In the Conclusion to staff's May 25, 2007 memo, staff finds:

> "Staff does not believe the proposed Conditions of Approval as reflected in the revised grading plan satisfy the hillside development criteria of the Comprehensive Plan Policy 4.6.7. Further, insufficient detail regarding the extent of grading that will be necessary on the non-mass-graded lots, and insufficient detail regarding building design on all lots, lead Staff to believe the Conceptual and Detailed Development Plan proposal does not comply with applicable hillside development standards. This also results in uncertainty regarding the compatibility of future development including impacts to surrounding properties' views. For these reasons, Staff recommend that the City Council deny the appeal and the proposed Conceptual and Detailed Development Plans. Because the proposed Tentative Subdivision Plan Plat is predicated on

Of utmost importance among the above-cited applicable comprehensive plan provisions is the provision that requires minimizing cut and fill. CCP 4.6.7(D). The city used the wrong standard and compared the grading plan to the previous grading plans to support its conclusion that the development minimizes cut and fill: "The Council notes that the plans submitted on appeal minimize cuts and fills *compared to* the plans submitted to the Planning Commission." Rec. 35 (emphasis added). The proper standard does not call for a comparison to other plans that the city staff and planning commission already determined failed to satisfy the standard. The supplemental findings do go on to conclude that the proposal minimizes cut and fill, generally. However, those findings are conclusory or otherwise not supported by substantial evidence, as is explained further below.

**2. Second Subassignment of Error**

**Condition 27 is not adequate to insure compliance with applicable criteria**

In 2006, the city adopted what it refers to as its Hillside Development Standards. LDC 4.5. Those standards do not apply directly to this application because the application was deemed complete prior to the date those provisions became effective. In an attempt to demonstrate compliance with the applicable hillside development comprehensive plan provisions, the applicant proposed, and the city council adopted, Condition #27:

> "All cuts and fills shown on the grading plan identified as Attachments I.7 and I.8 of the August 10, 2007, Staff Memorandum to the City Council shall be engineered and constructed such that retaining walls are not required. All lots shall be developed in accordance with Chapter 4.5 – Natural Hazards and Hillside Development Provisions and Chapter 4.10 – Pedestrian Oriented Design Standards from the December 31, 2006 Land Development Code." Rec. 21.

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approval of the proposed Conceptual and Detailed Development Plan, it is also recommended that the City Council deny the proposed Tentative Subdivision Plat." Rec. 274.

The applicant, and apparently the city council, are of the belief that imposing a condition that the Hillside Development Standards *will be complied with in the future* somehow gets them off the hook for determining compliance with the applicable hillside development approval criteria from the comprehensive plan. It does not.

First, in general the 2006 hillside development standards apply at the time of tentative subdivision approval; i.e., now. *See* 4.5.40. Section 4.5.40.b sets forth information that is required for all "development applications." "Development applications" include "Excavation and Grading Permits, Building Permits, Public Improvements by Private Contract Permits (PIPC), and any land use application identified in Chapter 2.1 – Comprehensive Plan Amendment through Chapter 2.14 – Partitions, Minor Replats, and Lot Line Adjustments." 4.5.40.a. Chapter 2.4 is entitled Subdivisions and Major Replats. Accordingly, under the 2006 hillside development standards, compliance is required PRIOR to tentative subdivision approval. A mere imposition of a condition that the hillside development standards will be complied with in the future is not sufficient to demonstrate compliance with the applicable criteria now.

Second, the city has failed to make a demonstration that compliance with the 2006 hillside development standards is even feasible. *See Rhyne v. Multnomah County*, 23 Or LUBA 442, 447-47 (1992). The 2006 hillside standards are extremely detailed and complex. There is no reason to believe that the grading plan that was rejected by planning staff under the comprehensive plan provisions would pass muster under the more detailed code-based hillside development standards. In fact, a brief review of those provisions demonstrates that the revised grading plan does not comply with those standards, and that the grading plan is

not sufficient to demonstrate that compliance with applicable comprehensive plan criteria is feasible.

- LDC 4.5.60.03 requires, for properties containing areas of 15% slope or greater, a topographic map showing 2-foot contours. *See also* LDC 4.5.40.b.7. The applicant's materials only show 10-foot contours. Rec. 283.
- LDC 4.5.80.04.c.3 prohibits mass grading on lots that are greater than or equal to 10,000 sq. ft. Many of the proposed lots exceed 10,000 sq. ft. Rec. 282, 602. The grading plan does not make clear where the mass grading will occur. It is not clear that the development can be completed as proposed in the revised grading plan and still comply with the hillside development standards
- LDC 4.5.80.04.d sets forth the maximum cut and fill standards on individual lots. It adopts an 8-foot limitation unless there are extenuating conditions, in which case larger cuts and fills may be justified. The subject application does not appear to satisfy any of the extenuating conditions listed.[15]

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[15] LDC 45..80.04.d(1)(a) lists the extenuating conditions that may be considered:

"Extenuating Conditions - Exceptions to the Eight-ft. Standard for Individual Lot Grading shall be based on the following specific extenuating conditions:

"1) Street/Pedestrian Alignment - Additional Cut/Fill provides for the alignment of a necessary street or pedestrian connection. A necessary street or pedestrian connection is one which is needed to create a block perimeter of approximately 1,600 ft., or which is identified in an adopted City Master Plan document.

"2) Significant Natural Feature: Additional cut/fill is necessary to protect a Significant Natural Feature, which is defined as a feature subject to a Natural Hazards (except slopes) and/or Natural Resource 4.5 - 38 LDC December 31, 2006; revised June 18, 2007 Overlay on the Comprehensive Plan Map; or a Significant Tree, as defined in Chapter 1.6 - Definitions. In the case of a preserved tree, a Certified Arborist must find that the proposed cut/fill exception would preserve the viability of a Significant Tree that would otherwise have been damaged by the application of the Cut and Fill Standards.

"3) Maintain Driveway Slope - Additional Cut/Fill is necessary to allow for the construction of a driveway at a slope of 15 percent or less. It must be demonstrated, to the satisfaction of the

Further, while the supplemental findings state that Condition 27 "corresponds to the graphics and plans submitted on appeal," Rec. 35, that statement is not supported by substantial evidence. First, the supplemental findings note that the hillside standards allow cut and fill as great as 12 feet if there are extenuating circumstances. Rec. 35, LDC 4.5.80.04.d.1. However, the revised grading plan itself proposes maximum cuts of 14 feet and maximum fills of 13 feet. Rec. 288. Second, the condition prohibits retaining walls, yet the proposal calls for retaining walls. Rec. .

Finally, the applicant's grading cut and fill analysis appears to depict only the mass grading that is proposed. That analysis depicts broad ranges of cut and fill depths: 0 – 10' cuts and fills, and 10' – 20' cuts and fills. It also proposes mass grading on individual lots, some of which are in excess of 10,000 sq. ft. Rec. 602. The hillside development standards do not allow mass grading in those circumstances. LDC 4.5.80.04.c.3. Even where lots are less than 10,000 sq. ft., the hillside standards only allow grading on a portion of the property; i.e., 6,500 sq. ft. The proposed grading cut and fill analysis proposes mass grading of all of at least 14 of the proposed lots. *See* Grading and Cut and Fill Analysis.

As is clear from a brief review of the hillside standards, the proposed grading plan most certainly does not comply with those standards. Accordingly, it is not possible for the applicant to both comply with its revised grading plan while simultaneously complying with the hillside development standards, as is required by Condition 27. The condition is inadequate and the city's findings that it is adequate are not supported by substantial evidence.

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Building Official, that other driveway alignments have been considered and are not feasible before additional Cut/Fill is authorized."

Under *Rhyne*, a local government may defer a finding of compliance with an applicable criterion if it imposes a condition and determines that it is feasible to satisfy the applicable criterion. Otherwise, a local government may defer a finding of compliance to a later stage only if, at that later stage, the local government provides the same opportunity for public participation. The city has not determined that it is feasible to comply with the applicable criteria, and there is nothing in the challenged decision that insures that there will later be the same requisite public comment provided that is available at this stage.

Finally, the city does not explain how compliance with the hillside development standards demonstrates compliance with the applicable CCP approval criteria. For example, CCP 4.6.7(A) requires that proposed development "fit the topography, soil, geology and hydrology of hillsides." Further, CCP 4.6.7(E) requires minimization of soil disturbances and the requirement of mitigation if the activities must be done during winter months. The findings do not specifically address these criteria and do not explain how compliance with the hillside development standards is adequate to demonstrate compliance with these criteria.

### 3. Third Subassignment of Error

**The city failed to require a coordinated review of the applicant's geotechnical report by DOGAMI or the State Forestry Department, as required by ORS 195.260.**

ORS 195.250 is entitled Landslide Hazard Areas. ORS 195.253(1) provides:

> "Each property owner, each highway user and all federal, state and local governments share the responsibility for making sound decisions regarding activities that may affect landslide hazards and the associated risks of property damage or personal injury."

The legislature found:

> "Activities that require sound decisions to mitigate rapidly moving landslide hazards and risks include but are not limited to * * * siting or constructing

> homes or other structures in areas prone to rapidly moving landslides." ORS 195.256(4)(a).

In furtherance of that state policy on landslide areas, ORS 195.260(1)(b) requires that where a local government requires a geotechnical report, it "**shall** provide for a coordinated review of the geotechnical report by the [DOGAMI] or the State Forestry Department, as appropriate, **before** issuing a building permit for a site in a further review area."

Petitioners raised this issue before the city council, and the issue was ignored. The purpose of the requirement for coordinated review is obvious—the risk of serious bodily injury or death resulting from landslides is too grave a matter to leave in the hands of a scientist who is being paid by the developer to conduct a study on the potential hazards of development. A portion of the property is identified as having high landslide risks. Rec. 88. While the applicant submitted a geotechnical report, that report was not reviewed by DOGAMI, as required by ORS 195.260(1)(b). The challenged decision should be remanded to allow DOGAMI to conduct the requisite review. At the very least, the city must impose a condition that would require such review prior to issuance of a building permit.[16]

### 4. Fourth Subassignment of Error

**The City's finding that grading will generally not exceed eight feet is not supported by substantial evidence**

In order to demonstrate compliance with CCP 4.6.7(D), the city found that "**after grading the site based on the Revised Grading and Tree Preservation Plan,** COA 27 will generally limit cuts and fills to eight feet." Rec. 36, Finding 16 (emphasis added). It appears the city is not considering the complete cuts and fills. The city determines that **once the**

[16] If, for some reason, the city believes that ORS 195.260 does not apply, it must adopt findings explaining the basis for such a position.

**mass grading is complete**, the grading of individual lots will generally not create cuts or fills greater than eight feet. Given the massive mass grade proposed, the combined cuts and fills (mass grading and individual lot grading) will obviously far exceed eight feet. The city erred in ignoring the mass grading when it determined that the cuts and fills would generally not exceed 8 feet.

## F. SIXTH ASSIGNMENT OF ERROR

**The city misapplied the criteria applicable to stormwater drainage, the findings addressing the criteria are inadequate and are unsupported by substantial evidence**

The criteria applicable to the stormwater drainage issue include criteria addressing both public facilities, Rec. 446-51, and drainageways under the Natural Features section of the staff's May 25, 2007 staff report, Rec. 426-33.[17]

### 1. First Subassignment of Error

**The city erred in allowing certain activities within natural drainageways, in violation of LDC 4.5.110**

a. Finding that West Drainage is not a "drainageway" is not supported by substantial evidence

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[17] Specifically relevant to drainage are the following applicable criteria:

> CCP 4.10.3— "Significant drainageways shall be kept in a natural state to protect tree lines, maintain their natural functions, and enhance native plant species, to the maximum extent practicable."
>
> CCP 4.10.7—"To minimize the negative impacts of development, stormwater runoff after development should be managed to produce no significant reduction of water quality than prior to development unless more appropriate provisions are identified in adopted comprehensive storm water management plans."
>
> CCP 4.10.8—"Grading and filling in drainageways shall be regulated to prevent negative impact on the channel, floodway and flood plain, riparian habitat, wetlands, and other properties. Where drainageways are disturbed through development, the developer shall return the drainageway to its natural state, to the extent practicable."

The applicant's geotechnical report identified two "Drainages" on the property—the East Drainage and the West Drainage. Rec. 853. The report states:

> "Our previous investigation identified two mapped hazard areas (designated in The Corvallis Natural Hazards Map) as existing drainage in the south half of the Brooklane Heights portion of the development. We distinguished these features as the West Drainage and East Drainage." Rec. 853.

The West Drainage coincides with the westernmost high-risk landslide area. Rec. 431. The application proposes to locate the southernmost portion of Wolverine Drive and portions of lots 1 and 33[18] in this area. However, because the city erroneously concluded that the West Drainage is not a "drainageway," it failed to apply LDC Chapter 4.5. *See* Rec. 431.[19] The code defines a "drainageway" as a "natural or artificial watercourse, including adjacent riparian vegetation, that transmits natural stream or stormwater runoff from a higher elevation to a lower elevation." LDC 1.6.30. To the extent the findings conclude that the West Drainage is not a "drainageway," any such finding is unsupported by substantial evidence.

The applicant urged the city not to treat these drainages as drainageways, and thus not subject to LDC Chapter 4.5 because they have no defined banks or channels. Rec. 430. The

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[18] The findings reference lots 1 and 30; however that reference related to the original plot plan. What was identified as lot 30 is now lot 33. Rec. 431.

[19] The findings provide:

> "The application narrative refers to these drainages as ravines that should not be subject to the provisions in LDC Chapter 4.5 that regulate drainageways, because the subject drainages have no defined banks or channels. Staff concurs with the applicant that the drainages do not have well defined banks or channels. Despite the observation of flowing water in the East Drainage on December 6, 2006, reported in the Preliminary Geotechnical report, it is not clear if LDC defined drainageways exist on the site. The drainages identified in the Geotechnical reports are not identified on any City maps as streams, fish bearing or otherwise, and are not identified as riparian corridors. However, because overland water flow was observed in the East Drainage, and because sotrmwater would be conveyed through the East Drainage from, and to, the public stormwater system after development, the East Drainage would, after development, transmit "natural stream or stormwater runoff from a higher elevation to a lower elevation" consistent with the definition of 'drainageway' in LDC Chapter 1.6. Because the East Drainage will carry public stormwater, a drainageway easement is necessary, consistent with the provisions of LDC Chapter 4.5. Because the 'West Drainage' has not been

city identified the East Drainage as a drainageway, but declined to identify the West Drainage as such because it "has not been identified with flowing water." Rec 431. The definition of "drainageway" is broader than the applicant proposed, as staff noted. However, the definition is also broader than acknowledged by staff in the above finding. The mere fact that applicant's geotechnical expert failed to observe water flowing in the West Drainage on a particular day is not substantial evidence to support of finding that the West Drainage does not qualify as a "drainageway." If the West Drainage carries stormwater runoff from a higher elevation to a lower elevation, then it is a drainageway. The applicant's expert identified it as an existing drainageway, and it coincides with a high risk landslide area. Rec. 853. The identification as a drainage is also supported by a cultural resource survey that was conducted for a previously proposed subdivision on the subject property. *See* Rec. 106 ("The [archeological] site is situated on a small north-south knoll with two spring-fed intermittent drainages lying to the east and west."). *See also* Rec. 107 (map from cultural resource survey that identifies springs in both the East and West drainages).

Substantial evidence exists to support a finding of fact when the record, viewed as a whole, would permit a reasonable person to make that finding. *Dodd v. Hood River County*, 317 Or 172, 179, 855 P2d 608 (1993). Even if there is some supporting evidence, that evidence may not be substantial when viewed together with the countervailing evidence in the whole record. *Canfield v. Yamhill County*, 142 Or App 12, 17-18, 920 P2d 558 (1996). Given the identification by two separate experts that two separate drainageways that carry water exist on the property, the city's conclusion that the West Drainage is not a drainageway is not supported by substantial evidence.

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identified with flowing water, it is not be [sic] considered a drainageway that is subject to LDC Chapter

b. The city misapplied LDC 4.5.110(b)

LDC 4.5.110(b) provides:

> "Building, Paving, and Grading Activities: Within drainageway and wetland areas, the placement of structures or impervious surfaces, including grading, excavation, and the placement of fill, is **prohibited** except as stated below. Exceptions to the drainageway and wetland restrictions may be made for the purposes identified in items 1-6 [sic] of this section, provided they are designed and constructed to minimize adverse impacts to the riparian or wetland area, In the case of wetlands, no development shall be permitted until the City has received verification of DSL approval for development on the subject site, or written indication from DSL that the department is not concerned with the development.
>
> 1. Replacement of existing structures with structures located on the original building footprint, provided replacement does not disturb additional riparian surface area;
> 2. Construction of streets, roads, and pedestrian connections that are included in the City of Corvallis Transportation Plan;
> 3. Development of water-related and water-dependent uses, including associated drainage facilities, water and sewer utilities, flood control projects, and drainage pumps;
> 4. In-channel erosion control or flood control measures that have been approved by the Oregon Division of State Lands (DSL), the U.S. Army Corps of Engineers, or other state or federal regulatory agency, and that utilize bio-engineering methods (rather than rip rap)."

Clearly, except as specifically provided by the four exceptions set forth above, "placement of structures or impervious surfaces, including grading, excavation, and the placement of fill," is expressly **prohibited** in drainageways. The staff findings acknowledge that none of the four exceptions applies in this case. Rec. 431-32. However, it then goes on to allow exactly that. The findings seem to interpret 4.5.120 to completely eviscerate the prohibition set forth in LDC 4.5.110(b). LDC 4.5.120, entitled Mitigation for Disturbances to Drainageways and Wetlands, provides:

> "Developers are encouraged to avoid impacts to drainageways and wetland areas. Where impacts cannot be avoided, mitigation of impacts shall be required. Mitigation

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4.5 regulations. * * *."

shall be done in accordance with local, state, and federal wetland laws and the following provisions:

a. Where a drainageway must be crossed or otherwise encroached upon to allow appropriate development of property, crossings shall be constructed in accordance with engineering standards adopted by the City."

The only reasonable interpretation of those two provisions, and the only one that gives any meaning to LDC 4.5.110(b), is that 4.5.120 does not relate to actual development or cut and fill in drainageways. It merely references impacts to drainageways during construction. Impacts associated with activities during construction should be avoided and must be mitigated. This provision in no way provides an exemption to the prohibition set forth in LDC 4.5.110(b). Accordingly, the city's conclusion allowing building paving and grading activities within the natural drainageways on the property is contrary to the code. The city erred in allowing such activities, which violate LDC 4.5.110(b).[20]

**2. Second Subassignment of Error**

**The city's findings of compliance with relevant drainage criteria are not supported by substantial evidence because the applicant's geotechnical report does not address drainage**

CCP 4.11.12 provides:

"Development upslope of wetlands shall minimize interference with water patterns discharging to wetlands, and shall minimize detrimental changes in water quality for waters discharging to wetlands."

As discussed below, the city's findings of compliance with this criterion are inadequate and unsupported by substantial evidence in the record.

The applicant's geotechnical report identified two "Drainages" on the property—the East Drainage and the West Drainage. Rec. 853. The subject property is located within the

[20] The city did not adopt an explicit interpretation of LDC 4.5.110(b) and 4.5.120. LUBA can provide its own interpretation or remand to the city to provide an interpretation.

Marys River Storm Drainage Basin. Water from the subject property flows southeast down the hill and eventually drains into the Marys River Natural Area and the designated wetland found there. In describing the proposed drainage improvements, the city found:

> "The site is located within the Marys River Storm Drainage Basin. The applicant is proposing to install curb inlets and a 12 inch water pipe in the northern section of Wolverine Drive. This will direct water to a water quality manhole located near where Wolverine Drive turns north to connect with Oakmont Addition. The water quality manhole will outlet next to the road and allow the water to flow overland to an existing field inlet located near the property line with Brooklane Park Estates, near the northeast end of the private alley. This is connected to a 12 inch public storm drain that is located in an easement through a portion of Brooklane Park Estates. The applicant has proposed to excavate a channel or swale in order to direct the storm water from the water quality manhole to the existing field drain (Attachment R.50) **(City Council Attachment IX.61)**.
>
> "* * *
>
> "Additional curb inlets will be placed in Wolverine Drive between Badger Place and Buckeye Place, and in Badger Place. These will direct water to a new 12 inch public storm drain line in Wolverine Drive and Badger Place. The storm drain line will then direct the water to the second water quality manhole as outlined in the above paragraph.
>
> "Curb inlet catch basins will also be installed at the south end of Wolverine Drive, at the intersection with SW Brooklane Drive. The water will be directed to a water quality manhole and then into the existing 12 inch public storm drain line located in SW Brooklane Drive." Rec. 269-70.

Due to the steep slopes and high landslide potential on the property, drainage is a critical concern, especially because there are homes downslope from the property that are at risk of landslides and flooding.

The revised site plan proposes two detention ponds, located as shown on the cut and fill analysis at Rec. 284. However, the applicant has not as yet supplied a drainage plan. Condition 19 references the geotechnical report and requires that the stormwater detention

facilities incorporate all recommendations of that report. Rec. 17. That report, however, is not a drainage plan.[21] As the scope of work language makes clear:

> "The focus of this investigation was to record the depth of practical (digging) refusal in the bedrock and provide information for others to assess the feasibility of deep cuts at the site. We also completed a reconnaissance-level geologic hazard study of the site to address the City of Corvallis standards for development on steeply sloped areas." Scope of work description for January 25, 2006 study, Rec. 831.

> "The focus of this investigation was to evaluate the feasibility of proposed improvements (i.e., roadways and water detention basins) within the existing site drainages. * * * Our current work focused on identifying geotechnical issues related to embankment construction within the East Drainage, as well as design and construction of the proposed detention ponds." Scope of work description for March 16, 2007 supplemental study, Rec. 853.

The geotechnical study is limited in scope, as described above. What is missing from this report and from the entire record is a study of the drainage patterns on the property. Nowhere in the record is there a discussion of the estimated impacts of the increased run-off resulting from the proposed development. Accordingly, the following finding is unsupported by substantial evidence:

> "As discussed in more detail in the Public Facilities section of this report, storm water from the subject site is proposed to be conveyed into the Marys River Natural Area, and per the Corvallis Stormwater Master Plan and criteria in the King County, Washington, Surface Water Design Manual, the volume of water entering the Marys River Natural Area will approximate pre-development volumes." Rec. 433.

The finding that water entering the Mary's River natural area will approximate pre-development volumes is entirely unsupported by the record because the estimations required to make such a determination have not yet been conducted.

[21] Nor is it prepared by a hydrologist who is familiar with the hydrological components of the proposal.

The applicant's and the city's solution to the very real threat of increased flooding to downhill properties and negative impacts to natural resources in the wetland below was the imposition of Condition 19. Condition of approval 19 provides, in part:

> "As part of the plans for public improvements the applicant shall provide engineered calculations for pre-development and post-development peak storm water run-off flows, and demonstrate that the storm drainage facilities are designed to match pre and post development flows based on the 2-year, 5-year, and 10-year storm events." Rec. 17-18.

The city's findings and imposition of Condition 19 fail to demonstrate compliance with CCP 4.11.12 or CCP 4.10.7 and 4.10.8. *See* n 17. While the challenged findings state that the post development flows will approximate the pre development flows, that finding in not supported by substantial evidence. The applicant does not yet have the numbers necessary to the make a determination of compliance. Neighbors to the south submitted testimony explaining the potential impacts of increased run-off from the property and the potential impacts of the increase in water run-off on properties to the south. Rec. 79-81, 314, 320, 343.

Imposing a condition of approval that requires applicant to obtain the required numbers necessary to refute the neighbors' testimony at some later date, when there is no opportunity for public comment, is not permissible. *See Rhyne v. Multnomah County*, 23 Or LUBA 442, 447-48 (1992). The condition that city imposed, requiring a future study, in no way assures compliance with the applicable approval citeria. There is no determination that it is feasible to comply with the applicable criteria. In fact, the findings concede that it may not be feasible: "The detention analysis shall contain a discussion on the feasibility of implementing infiltration during both the wet and dry seasons." Rec. 18.

The condition of approval is not adequate to demonstrate compliance with the applicable criteria or even that it is feasible to comply. Accordingly, remand is appropriate.

## G. SEVENTH ASSIGNMENT OF ERROR

**The city failed to demonstrate compliance with criteria applicable to protection of environmentally significant resources, findings addressing those criteria are inadequate and unsupported by substantial evidence**

It is the applicant's burden to demonstrate compliance with all criteria that are applicable to the proposed development. There are several environmentally significant resources on and near the subject property that must be addressed and a determination made that the proposed development will not endanger them. Generally, CCP 4.2.2 provides:

> "Natural features and areas determined to be significant shall be preserved, or have their losses mitigated, and/or reclaimed. The City may use conditions placed upon development of such lands, private nonprofit efforts, and City, State, and Federal government programs to achieve this objective."

### 1. Upland Prairie and Habitat

CCP 4.10.9 provides:

> "Negative impacts on habitat and migration corridors for birds, wildlife, aquatic life, and on open space and the recreation qualities of significant drainageways shall be minimized."

Before the planning commission and city council, opponents of the proposed subdivision provided testimony regarding the significance of the upland prairie habitat located on the subject property. Rec. 517; 328, 321, 313, 308. The challenged findings provide:

> "On May 2, 2007, Ann Kreager, a Habitat Conservation Biologist for the Oregon Department of Fish and Wildlife (ODF&W) and Carolyn Menke from the Institute for Applied Ecology surveyed the Brooklane Heights site. Ms. Kreager submitted an email to Planning staff on May 4, 2007, that summarized the survey findings and provided additional information regarding the flora and fauna of the site. During their visit, Ms. Kreager and Ms. Menke documented a pair of bald

> eagles, and noted that a resident in the adjacent neighborhood had identified pileated woodpeckers on site. Both bird species were identified as 'sensitive animal species' in Ms. Kreager's email comments and in a phone conversation, Ms. Kreager stated that the eagles were not nesting on the site. Ms. Kreager also stated in her correspondence, that the site has 'experienced relatively little disturbance historically, as evidenced by the presence of native strawberry, buttercup, oatgrass and Roemer's fescue'. Ms. Kreager also noted that While Oak stands, similar to those on the site, provide benefit to a number of species including, western gray squirrel, California mytosis (bat), Kindcaid's lupine, Willamette daisy, and Fender's blue butterfly. To address these issues, Ms. Kreager recommended that measures to eliminate erosion, sedimentation, and siltation to watershed resources be taken. Should the application be approved, the developer would be required to obtain an erosion control permit which would minimize erosion and prevent negative impacts to adjacent properties." Rec. 414-15.

As discussed above, the challenged decision does not adequately address the impacts of the increase in water flow over the property--to the stability of the slopes on the subject property, to downhill properties that would be the most likely to experience adverse impacts, and on significant resources such as the significant wetland just below the subject property. The findings do not anywhere address how the proposal will comply with the above-cited relevant criterion regarding the wildlife and habitat identified in the biologists' letters. Accordingly, the findings are inadequate to demonstrate compliance with CCP 4.2.2, CCP 4.10.9 and other relevant criteria.

**2. Tree Preservation**

The city's findings regarding tree preservation are lumped in with the findings addressing hillside development. The criteria applicable to tree preservation include CCP 4.6.3, (Rec. 415), CCP 4.6.5 (Rec. 416), CCP 4.6.6, CCP 4.6.7B, C, E, G, CCP 4.6.9, LDC 4.2.20.c (Rec. 417). The general applicable criterion quoted above, CCP 4.2.2, also must be complied with regarding tree preservation.

The site is covered by wooded areas that contain approximately 450 white oaks that meet the LDC Significant Tree definition. Rec 584. The city's conclusion that the revised plans comply with the applicable criteria listed above relating to preservation of trees on hillsides is not supported by substantial evidence. The tree preservation plan is not legible. Rec. 283. It is not just a matter of a legible copy of the document in the LUBA record. The city council did not have before them an enlarged copy of the tree preservation plan. See Record Objection. City staff and the applicant's representative presented the revised plans to the city council via a powerpoint presentation. There was no legible tree preservation plan before them on which they could base the decision they made regarding the tree preservation criteria. Accordingly, the decision is not supported by substantial evidence.

CCP 4.6.2 provides:

> "Development on hillsides shall not endanger life and property nor land and aquatic resources determined to be environmentally significant."

This provision protects environmentally significant land resources from being endangered. Unlike the criteria quoted above, this criterion does not allow a balancing of harm done to significant resources. It does not allow for "minimization" of impacts or for mitigation of such impacts. It provides that significant resources shall not be endangered. The trees on the subject hillside are not merely entitled the protection afforded run-of-the-mill trees on hillside. The oak trees are a "significant" resource and, pursuant to CCP 4.6.2, are entitled to even stricter protections.

Even if significant resources can be disturbed, CCP 4.2.2 requires that where a significant resource is not preserved, the losses must be mitigated. The findings do not demonstrate how the loss of in excess of 48 significant trees has been mitigated. If the

applicant believes that the open space that is set aside is mitigation, it is wrong. The open space that applicant so generously provided is a result of the inability to build on significant portions of the site, not of some set-aside as mitigation for removing 48 significant trees. Furthermore, the applicant's choice to spare the remainder of the trees cannot be considered a mitigation of the loss of those that will be, and already have been, removed.

**3. Wetlands**

Applicable criteria:

CCP 4.6.2--"Development on hillsides shall not endanger life and property nor land and aquatic resources determined to be environmentally significant.

CCP 4.10.7—"To minimize the negative impacts of development, stormwater runoff after development should be managed to produce no significant reduction of water quality than prior to development unless more appropriate provisions are identified in adopted comprehensive storm water management plans."

CCP 4.10.8—"Grading and filling in drainageways shall be regulated to prevent negative impact on the channel, floodway and flood plain, riparian habitat, wetlands, and other properties. Where drainageways are disturbed through development, the developer shall return the drainageway to its natural state, to the extent practicable."

CCP 4.10.19—"The Corvallis stormwater utility shall incorporate existing natural features such as streams and wetlands as a means of managing urban run-off. When using these natural features for urban stormwater needs, stormwater management shall follow the guiding principle of minimizing harm to these natural systems, maintaining the natural functions, and over time, repair any damage associated with past practices."

CCP 4.11.3—"Lakes, wetlands, floodway, drainageways and other urban streams are part of the hydrological system and should be managed comprehensively."

CCP 4.11.11—"Regarding significant wetlands downstream of development sites, the cumulative unavoidable losses of significant wetland acreage and function attributable to upstream development should be mitigated by the City. Such mitigation can be achieved, in part, through dedication of open space, drainageways, and related natural infrastructure."

CCP 4.11.12—"Development upslope of wetlands shall minimize interference with water

> patterns discharging to wetlands, and shall minimize detrimental changes in water quality for waters discharging to wetlands."

The findings addressing the applicable criteria as they relate to wetlands and specifically the applicable criteria listed above are exceedingly scarce. The findings do acknowledge, however, that the Marys River Natural Area park is located southeast of the site. Rec. 433. The park is identified as a significant wetland. *See* Rec. 86, 89; *see also* App-42-43. Accordingly, the applicant must demonstrate that the proposed development will "minimize interference with water patterns discharging to wetlands" and will "minimize detrimental changes in water quality for waters discharging to wetlands." CCP 4.11.12. The findings state that "stormwater entering the public utility system on the Brooklane Heights property will be treated to remove pollutants prior to its conveyance into the Marys River Natural Area." Rec. The supplemental findings conclude:

> "The Council finds that the proposed detention ponds, drainage swales, and water quality manholes will remove pollutants and protect the quality of water entering the Marys River Natural Area, in compliance with CCP 4.10.7, 4.10.8, 4.10.19, 4.11.12, and 4.13.7, and provisions of the Corvallis Stormwater Master Plan." Rec. 38.[22]

That conclusion, however, is not supported by substantial evidence in the record. It relies, at least in part on the finding that the post-development flows will approximate the pre-development flows. Rec. 433. As explained above, that finding is not based on any evidence in the record. Rather, Condition 19 requires that AFTER tentative subdivision approval, applicant will provide "engineered calculations for pre-development and post-development peak storm water run-off flows, and demonstrate that the storm drainage facilities are designed to match pre and post development flows based on the 2-year, 5-year, and 10-year

[22] Although the city purports to apply provisions in the Corvallis Stormwater Master Plan, it is a mystery what the provisions provide, as the findings do not cite to a specific provision from that master plan.

storm events." Rec. 17-18. It is difficult to fathom how, without the information to be provided through this condition of approval, the applicant or the city has any idea whether the proposed detention ponds, drainage swales, and water quality manholes will adequately remove pollutants and protect the quality of water entering the Marys River Natural Area. The only testimony provided by an expert was the geotechnical report that, as discussed above is limited to certain issues, and does not address the issue of the quality of water discharged to the significant wetlands located south and downslope from the proposed development. The city's finding is merely conjecture or wishful thinking that the proposed drainage improvements will adequately preserve the quality of the Marys River Natural Area. Accordingly, the decision must be remanded to the city to do the studies necessary to obtain the factual information required in order to make a determination that the above-listed criteria are satisfied.

**4. Pond Turtles**

Approval criteria:

> "Negative impacts on habitat and migration corridors for birds, wildlife, aquatic life, and on open space and the recreation qualities of significant drainageways shall be minimized." CCP 1.10.9.

Similarly, the city's conclusion that the stormwater runoff will not impact the pond turtles located south of the site is pure conjecture. Testimony from ODFW confirms that the Western Pond Turtle may be present in private ponds on property south of the subject property, and in the Marys River Natural Area. Rec. 433; Rec. 111.

The challenged findings provide: "Given the above, the proposed development is not expected to negatively impact turtle or other wildlife habitat through water reduction." Rec. 434. What is needed in order to assure that the increase flows will not impact the pond

turtles is qualified information upon which a reasonable person could rely in making such a determination, not a conclusory and conjectural statement that the proposed development is not "expected" to negatively impact the turtle.[23]

**RELIEF SOUGHT**

Where a decision violates a provision of applicable law and is prohibited as a matter of law, the Board must reverse the decision. OAR 661-010-0071(1)(c). The Board must remand a decision under any of the following situations: (a) the findings are insufficient to support the decision, except as provided in ORS 197.835(9)(b); (b) the decision is not supported by substantial evidence in the whole record; (c) the decision is flawed by procedural errors that prejudice the substantial rights of the petitioner; or (d) the decision improperly construes the applicable law. OAR 661-010-0071(2). Petitioners request that the challenged decision be remanded based on all of the reasons set forth in OAR 661-010-0071(2) and the arguments set forth above.

**CONCLUSION**

The subject property is undoubtedly a jewel of Corvallis. It is a significant hillside, it contains significant vegetation, it drains into a significant wetland, virtually everything about it is significant. While the property is zoned for low density residential use, it is this process, the Conceptual and Detailed Development Plan and Tentative Subdivision Plan process, that is designed to determine whether the constraints on the property actually make it unsuitable for development. If the property is suitable, the applicant and the city have not made the requisite inquiries to determine that it is. It remains unclear whether the steep slopes on the

[23] One of the petitioners included criterion by criterion analysis demonstrating why the proposed development fails to comply with applicable criteria. Rec. 145-47. That analysis is hereby incorporated as part of this petition for review.

property can safely permit the level of development that is proposed. It also remains unclear whether the applicant will be able to assure that the stormwater runoff from the hillside will make the slopes unstable and/or negatively impact the wetland and habitat that lies below. Of utmost importance is the city's failure to identify a drainageway on the property, thus allowing development in a natural drainageway, in violation of the city regulations.

For all of the reasons discussed above, petitioners request that LUBA remand the challenged decision.

DATED this 31st day of January, 2008.

Respectfully submitted,

Anne C. Davies, OSB 91014
Attorney for Petitioners

# CHAPTER 3.1
# RS-3.5 (LOW DENSITY) DISTRICT

## Section 3.1.10 - PURPOSE

This district implements the Low Density Comprehensive Plan designation, which allows a range of 2-6 dwelling units per acre. It is intended to provide low density family residential areas together with a full range of urban services in order to maintain stable residential neighborhoods.

## Section 3.1.20 - PERMITTED USES

### 3.1.20.01 - General Development

**a. Primary Uses Permitted Outright**

1. (a) Residential Use Types:
   - Family

   (b) Residential Building Types
   - Single Detached

2. Civic Use Types:
   - Community Recreation
   - Public Safety Services

**b. Accessory Uses Permitted Outright**

1. Essential Services
2. Family Day Care, as defined in Chapter 1.6
3. Home Business, as defined in Chapter 1.6
4. Horticulture (personal use)
5. Model Dwelling Units (to be reviewed and approved at time of project approval)
6. Sports and Recreation (personal use)
7. Tree, Row, and Field Crops (personal use)
8. Required off-street parking for uses permitted in this district in accordance with Chapter 4.1
9. Other development customarily incidental to the primary use in accordance with Chapter 4.3
10. Accessory Dwelling Units subject to provisions in Chapter 4.9.40.
11. Colocated/attached wireless telecommunication facilities on nonresidential structures that do not increase the height of the existing structures, subject to the standards in Chapter 4.9

**EXHIBIT VIII - 1**
**LUBA REMAND**

### 3.1.20.02 - Special Development - Uses Allowed through Discretionary Review

**a.** **Type I: Conditional Development** - Subject to review in accordance with Chapter 2.3 and all other applicable provisions of this Code.

1. Cultural Exhibits and Library Services
2. Funeral and Interment Services (interring and cemeteries only)
3. Lodges, Fraternal and Civil Assembly
4. Major Services and Utilities
5. Minor Utilities subject to standards in Chapter 4.9
6. Planned Developments in accordance with Chapter 2.5
7. Religious Assembly
8. Sports and Recreation (Participant and Spectator - General)
9. Colocated/attached wireless telecommunication facilities on nonresidential structures that increase the height of the existing structures, subject to the standards in Chapter 4.9.
10. Freestanding wireless telecommunication facilities, subject to the standards in Chapter 4.9.

**b.** **Type II: Plan Compatibility Review** - Subject to review in accordance with Chapter 2.13 and other applicable provisions of this Code.

1. Projections, such as chimneys, spires, domes and towers not used for human occupancy exceeding 75 ft in height, in accordance with Section 4.9.50. *Note: Flagpoles are subject to height requirements of Section 4.7.70.b.*

### Section 3.1.30 - RS-3.5 DEVELOPMENT STANDARDS

| | **Standard** |
|---|---|
| a. Lot Area | 8,000 sq. ft (minimum) |
| b. Lot Width | 65 ft - (minimum average) |
| c. Setbacks<br>Front yard<br>Rear yard<br>Side yard (interior)<br>Corner Lot | <br>25 ft minimum<br>25 ft minimum<br>8 ft minimum<br>20 ft on side abutting the street |
| d. Structure Height | 30 ft maximum - nor shall it exceed a solar envelope approved under Chapter 2.18 or 4.6 |
| e. Building Site Coverage | No maximum |
| f. Off-Street Parking | See Chapter 4.1 |

**EXHIBIT VIII - 2**
**LUBA REMAND**

# CHAPTER 3.2
# LOW DENSITY (RS-5) ZONE

## Section 3.2.10 - PURPOSE

This zone implements the Low Density Residential Comprehensive Plan designation, which allows from two to six dwelling units per acre. The RS-5 Zone is retained to provide land use and development standards for areas of the City that were zoned RS-5 and platted to urban densities as of December 31, 2006. Additionally, the RS-5 Zone is retained for areas of the City that were zoned RS-5 as of December 31, 2006, and are less than or equal to one acre in size.

The RS-5 Zone also applies to single-family residential areas greater than one acre in size and that were zoned RS-3.5 at the time of adoption of this Code. The RS-5 Zone is intended to provide opportunities for a broader range of lot sizes and Housing Types, consistent with Comprehensive Plan policies that support comprehensive neighborhoods and affordable housing.

## Section 3.2.20 - PERMITTED USES

### 3.2.20.01 - Ministerial Development

### a. Primary Uses Permitted Outright

1. Residential Use Types - Family

2. Residential Building Types -

   a) Single Detached

   b) Single Detached - Zero Lot Line

   c) Single Attached - Zero Lot Line, two units

   d) Attached - Townhouse, three units

   e) Duplex

   f) Multi-dwelling - Triplex only

3. Civic Use Types -

a) Community Recreation

b) Postal Services - Customer

c) Public Safety Services

**b. Accessory Uses Permitted Outright**

1. Accessory Dwelling Units subject to provisions in Section 4.9.40 of Chapter 4.9 - Additional Provisions

2. Colocated/attached Wireless Telecommunication Facilities on nonresidential structures that do not increase the height of the existing structures, subject to the standards in Chapter 4.9 - Additional Provisions

3. Essential Services

4. Day Care, Family, as defined in Chapter 1.6 - Definitions

5. Home Business, as defined in Chapter 1.6 - Definitions

6. Horticulture - personal use

7. Model Dwelling Units

8. Other development customarily incidental to the Primary Use in accordance with Chapter 4.3 - Accessory Development Regulations

9. Required off-street parking for Uses permitted in this zone in accordance with Chapter 4.1 - Parking, Loading, and Access Requirements

10. Sports and Recreation - personal use

11. Tree, Row, and Field Crops - personal use

### 3.2.20.02 - Special Development

**Conditional Development** - Subject to review in accordance with Chapter 2.3 - Conditional Development and all other applicable provisions of this Code.

**a.** Colocated/attached Wireless Telecommunication Facilities on nonresidential structures that increase the height of the existing structures, subject to the standards in Chapter 4.9 - Additional Provisions

**b.** Day Care, Commercial Facility, as defined in Chapter 1.6 - Definitions

**c.** Cultural Exhibits and Library Services

**d.** Freestanding Wireless Telecommunication Facilities, subject to the standards in Chapter 4.9 - Additional Provisions

**e.** Funeral and Interment Services - Interring and Cemeteries

**f.** Group Residential

**g.** Group Residential/Group Care

**h.** Lodges, Fraternal and Civic Assembly

**i.** Major Services and Utilities

**j.** Minor Utilities subject to standards in Chapter 4.9 - Additional Provisions

**k.** Participant Sports and Recreation - Indoor and Outdoor

**l.** Religious Assembly

**m.** Residential Care Facilities

**n.** Schools

### 3.2.20.03 - General Development

**Plan Compatibility Review** - Subject to review in accordance with Chapter 2.13 - Plan Compatibility Review and other applicable provisions of this Code.

Projections such as chimneys, spires, domes, and towers not used for human occupancy and exceeding 20 ft. over the height of the structure or 40 ft. in height, whichever is less, in accordance with Section 4.9.50 of Chapter 4.9 - Additional Provisions. Note: Flagpoles are subject to height requirements in Section 4.7.70.b of Chapter 4.7 - Sign Regulations.

## Section 3.2.30 - RS-5 DEVELOPMENT STANDARDS

**Table 3.2-1**

| | | Standard |
|---|---|---|
| **a.** | Minimum Density | 2 units per acre for existing platted lots as of December 31, 2006; however, all new Residential Subdivisions and Planned Developments in this zone shall achieve a minimum density of 3 units per dwelling acre. |
| **b.** | Maximum Density | 6 units per acre |
| **c.** | Minimum Lot Area | |
| | 1. Single Detached and Attached | 6,000 sq. ft. |
| | 2. Duplex | 8,000 sq. ft. |
| | 3. Triplex | 12,000 sq. ft. |
| **d.** | Minimum Lot Width | |
| | 1. Single Detached and Attached | 60 ft. |
| | 2. Duplex | 80 ft. |
| | 3. Triplex | 120 ft. |



EXHIBIT IX - 4

| | | Standard |
|---|---|---|
| **e.** | Minimum Setbacks (all Building Types) | |
| | 1. Front yard | 15 ft. Also, unenclosed porches may encroach into front yards up to a maximum of 6 ft. |
| | 2. Rear yard | 15 ft. |
| | 3. Side yard | |
| | a) Single Detached | 5 ft. minimum each side yard |
| | b) Single Attached and Zero Lot Line Detached | 0 ft. one side; 8 ft. minimum on opposite side[1] |
| | c) Duplex and Triplex | 10 ft. minimum each side<br><br>Also, interior attached townhouses exempt from interior side yard setbacks. |
| | 4. Corner lot<br><br>See also "k," and "l," below. | 15 ft. on side abutting the street and vision clearance in accordance with Section 4.1.40.c of Chapter 4.1 - Parking, Loading, and Access Requirements. |
| **f.** | Minimum Garage/Carport Setbacks | |
| | 1. Garage/carport entrance parallel to street | 19 ft. |
| | 2. Garage/carport entrance sideways/perpendicular to street<br><br>See also "k," and "l," below. | 15 ft.<br><br>Setbacks from alleys in accordance with Section 4.0.60.j of Chapter 4.0 - Improvements Required with Development.<br><br>Garages/carports are also subject to the provisions in Chapter 4.10 - Pedestrian Oriented Design Standards. |

[1] For Detached Zero Lot Line dwelling units, prior to Building Permit approval, the applicant shall submit a recorded easement between the subject property and abutting lot next to the yard having the zero setback. This easement shall be sufficient to guarantee rights for maintenance purposes of structures and yard, but in no case shall it be less than five ft. in width.

| | | Standard |
|---|---|---|
| **g**. | Minimum Setbacks and Buffering from Actively Farmed Open Space-Agricultural (OS-AG) Land<br><br>See also "k," and "l," below. | When residential development is proposed abutting Actively Farmed OS-AG Land, a minimum 50 ft.-wide continuous plant or plant/berm buffer is required. It is the applicant's responsibility to provide this buffer.<br><br>The minimum setback for lands adjacent to Actively Farmed OS-AG Land is 100 ft. Any intervening right-of-way may be included in the 100-ft. setback measurement.<br><br>Structures that existed on December 31, 2006, and that would fall within the 100-ft setback from Actively Farmed OS-AG Land shall not be considered as non-conforming structures and no additional buffering is required to maintain the existing development. |
| **h.** | Maximum Structure Height | 30 ft., not to exceed a solar envelope approved under Chapter 2.18 - Solar Access Permits, or Chapter 4.6 - Solar Access. |
| **i.** | Maximum Lot Coverage | 50 percent of lot area maximum; interior attached townhouses exempt from this provision |
| **j.** | Off-street Parking | See Chapter 4.1 - Parking, Loading, and Access Requirements. |
| **k.** | Outdoor Components Associated with Heat Pumps and Similar Equipment for Residential Structures | Shall not be placed within any required setback area.<br><br>When located outside a setback area, but within five to 10 ft. of a property line, such equipment shall be screened on all sides with a solid fence or wall at least one ft. higher than the equipment.<br><br>When located outside a setback area, but greater than 10 ft. from a property line, such equipment requires no screening. |
| **l.** | Outdoor Components Associated with Heat Pumps and Similar Equipment for Nonresidential Structures | Shall be in accordance with Chapter 4.2 - Landscaping, Buffering, Screening, and Lighting. |
| **m.** | Minimum Assured Development Area (MADA) | See Chapter 4.11 - Minimum Assured Development Area (MADA). |
| **n.** | Natural Hazards and Hillsides | See Chapter 4.5 - Natural Hazard and Hillside Development Provisions. |
| **o.** | Significant Vegetation | See Chapter 4.2 - Landscaping, Buffering, Screening, and Lighting and Chapter 4.12 - Significant Vegetation Protection Provisions. |



**EXHIBIT IX - 6**

| | | Standard |
|---|---|---|
| **p.** | Riparian Corridors & Locally Protected Wetlands | See Chapter 4.13 - Riparian Corridor and Wetland Provisions. |
| **q.** | Landscaping | See Section 3.2.40, below, and Chapter 4.2 - Landscaping, Buffering, Screening, and Lighting. |
| **r.** | Required Green Area and Private Outdoor Space | See Section 3.2.40, below. |

## Section 3.2.40 - GREEN AREA REQUIREMENTS

**a.** A minimum of 50 percent of the gross lot area, and a minimum of 30 percent for center-unit townhouses on interior lots, shall be retained and improved or maintained as permanent Green Area, as defined in Chapter 1.6 - Definitions. A minimum of 15 percent of the gross lot area shall consist of vegetation consisting of landscaping or naturally preserved vegetation.

**b.** Landscaping within the required Green Area shall be permanently maintained in accordance with Chapter 4.2 - Landscaping, Buffering, Screening, and Lighting. Landscaping shall primarily consist of ground cover, ferns, trees, shrubs, or other living plants with sufficient irrigation to properly maintain all vegetation. Drought-tolerant plant materials are encouraged. Design elements such as internal sidewalks, pedestrian seating areas, fountains, pools, sculptures, planters, and similar amenities may also be placed within the permanent Green Areas.

**c.** Within the required Green Area for single-family dwellings (attached and detached) and duplexes, a Private Outdoor Space equal to at least 10 percent of the total lot area per dwelling unit shall be designed to be viewable and accessed by the interior space via doors and windows. Within the required Green Area for Multi-dwellings, a Private Outdoor Space equal to at least 48 sq. ft. per dwelling unit shall be designed to be viewable and accessed by the interior space via doors and windows. These Private Outdoor Space requirements may be met by providing private side or rear yard areas, patios, and/or balconies for dwelling units.

## Section 3.2.50 - MIX OF HOUSING TYPES

A mix of permitted Housing Types is encouraged in the RS-5 Zone and shall be required for larger development projects in the zone. To promote such a mix, developments greater than five acres in size shall comply with the variety of Housing Types requirements outlined in Chapter 4.9 - Additional Provisions.

## Section 3.2.60 - COMPLIANCE WITH CHAPTER 4.10 - PEDESTRIAN ORIENTED DESIGN STANDARDS

The requirements in Chapter 4.10 - Pedestrian Oriented Design Standards shall apply to the following types of development in the RS-5 Zone:

**a.** All new buildings or structures for which a valid permit application has been submitted after December 31, 2006;

**b.** Developments subject to Conditional Development and/or Planned Development approval, as required by a Condition(s) of Approval(s); and

**c.** Independent or cumulative expansion of a nonresidential structure in existence and in compliance with the Code on December 31, 2006, or constructed after December 31, 2006 pursuant to a valid Conceptual or Detailed Development Plan approved on or before December 31, 2006, shall comply with the pedestrian requirements of Chapter 4.10 - Pedestrian Oriented Design Standards as outlined in Section 4.10.70.01.

## Section 3.2.70 - VARIATIONS

Except as limited by provisions within the chapters listed in Section 3.2.30 “m” through “q”, variations from development and design standards, such as standards in this Chapter and in other chapters of this Code that discuss parking, landscaping, public improvements, and Pedestrian Oriented Design Standards, may be allowed through the processes outlined in Chapter 2.5 - Planned Development and Chapter 2.12 - Lot Development Option.

## Section 4.5.80 - HILLSIDE DEVELOPMENT STANDARDS

### 4.5.80.01 - Purposes -

Hillside Development standards have been developed for the following purposes:

**a.** To plan development to fit the topography, soil, geology, and hydrology of hillsides;

**b.** To align the built surface infrastructure, such as streets and waterways, with the natural contours of terrain; and to minimize cutting and filling in developments;

**c.** To minimize soil disturbances and the removal of native vegetation, and to avoid these activities during winter months, unless impacts can be mitigated;

**d.** To encourage the design of developments and the utilization of construction techniques that minimize erosion and surface water runoff;

**e.** To balance a view of the hills with the view from the hills;

**f.** To provide or maintain landscaping that enhances the identified open space resources; and

**g.** To design developments that consider landscaping management that will minimize the threat of fire on improved property and the spreading of fire to wildland habitat.

**d.** **Individual Lot Grading Standards** - These standards are in addition to Section 4.5.80.04.c, above, and apply to lots which contain slopes equal to or greater than 10 percent, as mapped on the Natural Hazards Map.

1. Maximum Allowed Cut Depth and Fill Height - The following standards govern the maximum cut depth and fill height:

| Extenuating Conditions | Maximum Cut and Fill Height |
|---|---|
| No Extenuating Conditions | Eight-ft. Standard |
| One Extenuating Condition | 10-ft. Standard only where allowed to work around extenuating condition |

| Extenuating Conditions | Maximum Cut and Fill Height |
|---|---|
| Two Extenuating Conditions | 12-ft. Standard only where allowed to work around extenuating conditions |
| If lot would otherwise be unbuildable | The least extensive cut and fill necessary, not to exceed the 12-ft. Standard, to reach the Minimum Assured Development Area, as defined by Chapter 4.11 - Minimum Assured Development Area (MADA). |

a) Extenuating Conditions - Exceptions to the Eight-ft. Standard for Individual Lot Grading shall be based on the following specific extenuating conditions:

1) Street/Pedestrian Alignment - Additional Cut/Fill provides for the alignment of a necessary street or pedestrian connection. A necessary street or pedestrian connection is one which is needed to create a block perimeter of approximately 1,600 ft., or which is identified in an adopted City Master Plan document.

2) Significant Natural Feature: Additional cut/fill is necessary to protect a Significant Natural Feature, which is defined as a feature subject to a Natural Hazards (except slopes) and/or Natural Resource Overlay on the Comprehensive Plan Map; or a Significant Tree, as defined in Chapter 1.6 - Definitions. In the case of a preserved tree, a Certified Arborist must find that the proposed cut/fill exception would preserve the viability of a Significant Tree that would otherwise have been damaged by the application of the Cut and Fill Standards.

3) Maintain Driveway Slope - Additional Cut/Fill is necessary to allow for the construction of a driveway at a slope of 15 percent or less. It must be demonstrated, to the satisfaction of the Building Official, that other driveway alignments have been considered and are not feasible before additional

Cut/Fill is authorized.

b) Locational Standards -

1) Within the portion of each lot within 50 ft. of the edge of public right-of-way, the combination of cuts and fills may not exceed 16 ft. from Natural Grade, as measured within a linear distance perpendicular from the edge of right-of-way to the 50-ft. boundary; and

2) All retaining walls must be located at least four ft. from any property line or easement line.

# CHAPTER 4.10
# PEDESTRIAN ORIENTED DESIGN STANDARDS

## Section 4.10.50 - STANDARDS FOR DETACHED SINGLE-FAMILY, TWO-UNIT ATTACHED SINGLE-FAMILY, AND DUPLEX RESIDENTIAL BUILDING TYPES

### 4.10.50.01 - Building Orientation, Privacy, and Facades Adjacent to Pedestrian Areas

**a. Orientation of Dwellings** - All dwellings shall be oriented to existing or proposed public or private streets, as outlined in this provision and in Chapter 4.4 - Land Division Standards, with the exception that Accessory Dwelling Units constructed in accordance with Chapter 4.9 - Additional Provisions may be accessed from an alley. Private streets used to meet this standard must include the elements in Chapter 4.0 - Improvements Required with Development. See Chapter 4.0 for public and private street standards.

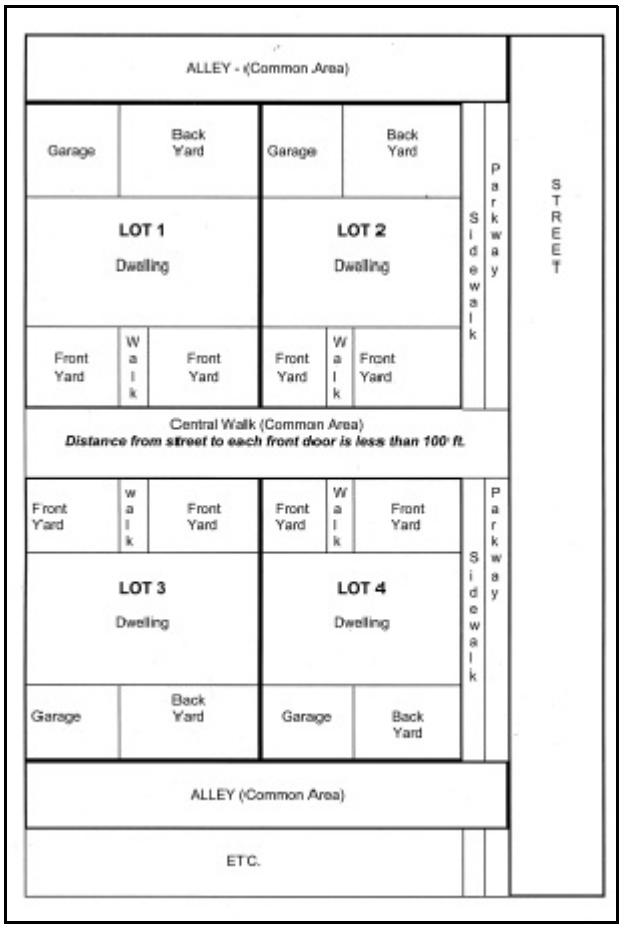



Figure 4.10-1 - Allowed Access to Single-family Development When Lots Do Not Front Directly on a Street

The orientation standard of this Section is satisfied when the provisions in "1," and "2," below, are met. See Figure 4.10-1 - Allowed Access to Single-family Development When Lots Do Not Front Directly on a Street.

1. Primary building entrances face the streets or are directly accessed by a sidewalk or multi-use path less than 100 ft. long; and

2. Primary dwelling unit entrances open directly to the outside and do not require passage through a garage or carport to gain access to the dwelling.

**b. Privacy** - If the side wall of a dwelling or accessory dwelling is on or within three ft. of the property line, ground floor

windows or other openings that allow for visibility into the side yard of the adjacent lot shall not be allowed. Windows that do not allow visibility into the side yard of the adjacent lot, such as a clerestory window or a translucent window, are allowed.

**c. Windows and Doors** - Any facade facing streets, sidewalks, and multi-use paths shall contain a minimum area of 15 percent windows and/or doors. Facades referenced in this provision include garage facades. Gabled areas need not be included in the base wall calculation when determining this minimum 15 percent requirement.

**d. Grading (Cuts and Fills)** - Structures and on-site improvements shall be designed to fit the natural contours of the site and be consistent with the Natural Hazards and Natural Resource Provisions of Chapter 4.2 - Landscaping, Buffering, Screening, and Lighting, Chapter 4.5 - Natural Hazard and Hillside Development Provisions, Chapter 4.11 - Minimum Assured Development Area (MADA), Chapter 4.12 - Significant Vegetation Protection Provisions, and Chapter 4.13 - Riparian Corridor and Wetland Provisions.

### 4.10.50.02 - Maximum Widths of Street-facing Garages/Carports, Placement, and Materials

**a. Maximum Widths of Street-facing Garages/Carports**

1. Lots ≥ 50 Ft. in Width - For dwellings with front-loaded garages/carports, the width of the garage wall or carport facing the street shall be no more than 50 percent of the width of the dwelling's street-facing facade. Front-loaded garages/carports are attached garages/carports with entrances facing the same street as the dwelling's entrance. Additionally, the term garage wall pertains to the whole wall and not just the doors. See Figure 4.10-2A - Unacceptable Width of Street-facing Garage on a Lot ≥50 ft. and Figure 4.10-2B - Acceptable Width of Street-facing Garage on a Lot ≥50 ft.

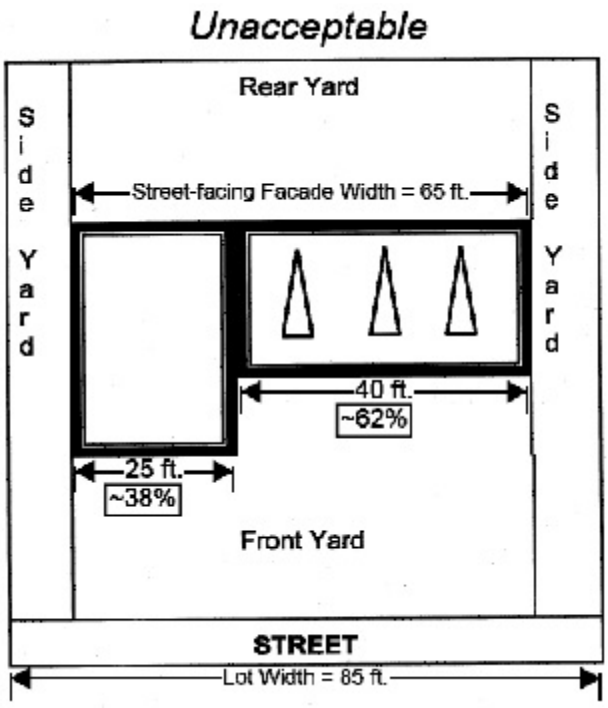



Figure 4.10-2A - Unacceptable Width of Street-facing Garage on a Lot ≻50 ft. Wide

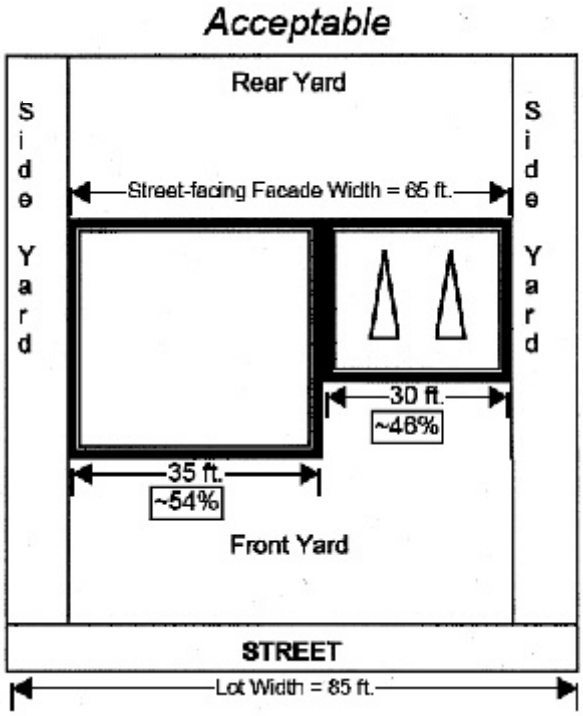
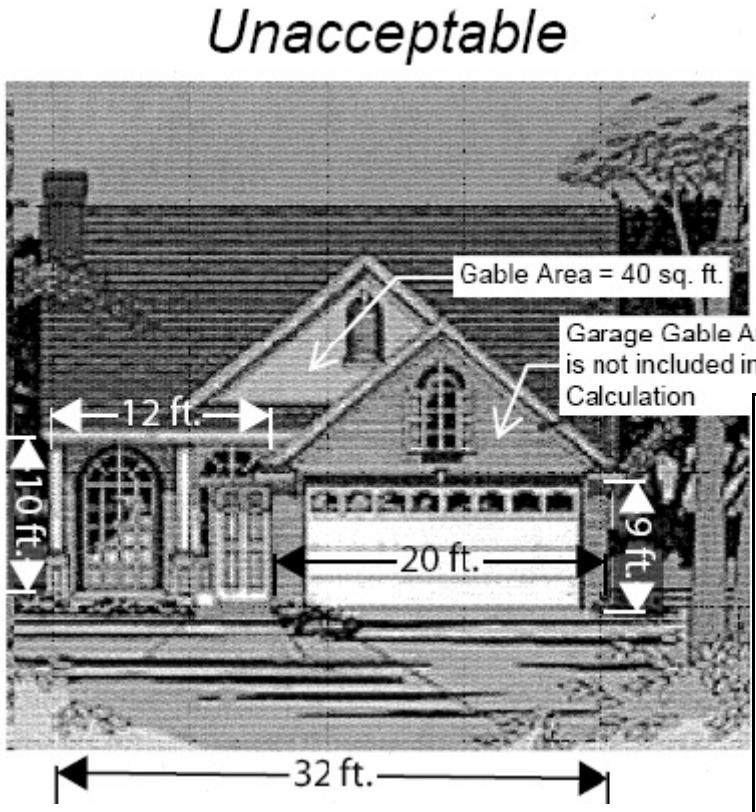



Figure 4.10-2B - Acceptable Width of Street-facing Garage on a Lot ≻50 ft. Wide

2. Lots < 50 Ft. in Width - For dwellings with front-loaded garages, the area of the garage wall facing the street shall be no more than 50 percent of the area of the dwelling's street-facing facade. Front-loaded garages/carports are attached garages/carports with entrances facing the same street as the dwelling's entrance. The area shall be measured in sq. ft. and, with the exception of gabled areas and second stories, the entire facade of the garage shall be measured. The interior of the garage determines the width of the garage facade, not just the garage doors. See Figure 4.10-3A - Unacceptable Street-facing Garage Area and Figure 4.10-3B - Acceptable Street-facing Garage Area. Both of these figures are located on the next page. For dwellings with front-loaded carports, the carports shall be subject to the same restrictions outlined in "1," above.




Garage Facade Area =
20 ft. X 9 ft. = **180 sq. ft.**

Other Facade Area =
10 ft. X 12 ft. = 120 sq. ft.
Plus 40 sq. ft.
= **160 sq. ft.**

**Garage Facade Area of 180 sq. ft. is GREATER than the Other Facade Area of 160 sq. ft.**

Figure 4.10-3A - Unacceptable Street-facing Garage Facade Area

Garage Facade Area =
20 ft. X 11 ft. = **220 sq. ft.**

Other Facade Area =
18 ft. X 11 ft. = 198 sq. ft.
Plus 164 sq. ft.
= **362 sq. ft.**

**Garage Facade Area of 220 sq. ft. is LESS than the Other Facade Area of 362 sq. ft.**

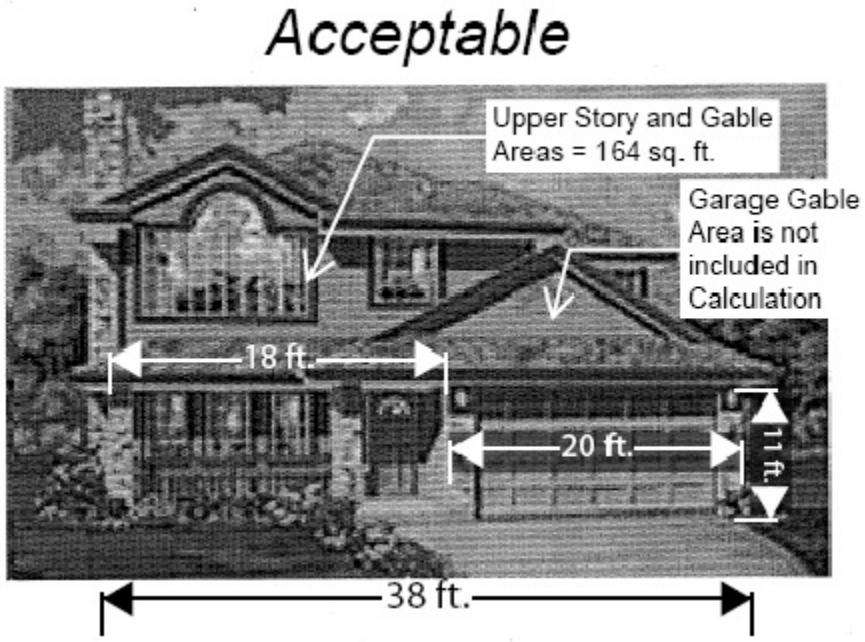



Figure 4.10-3B - Acceptable Street-facing Garage Facade Area

3. Exception - Where the street-facing facade of a dwelling is less than 24 ft. wide, the garage wall facing the street may be up to 12 ft. wide if the garage meets one of the following:

a) Interior Living Area above the Garage - The living area is not set back more than four ft. from the street-facing garage wall; or

b) Covered Balcony - A covered balcony above the garage is:

1) At least the same width as the street-facing garage wall;

2) At least six ft. deep; and

3) Accessible from the interior living area of the dwelling unit.

**b. Garage and Carport Placement** - Garages and carports shall be placed only as indicated in the options below. The applicant shall indicate the proposed option(s) on plans submitted for building permits. Additionally, measurements may be taken from the second floor of homes, provided the second floor spans across the entire garage/carport.

Garage/Carport Placement Options -

1. Rear Garage Accessed From the Street - Vehicular entrances are at the rear of a dwelling unit and accessed from the street, as shown in Figure 4.10-4 - Rear Garage Accessed from the Street, below. The garage may be attached to or detached from the dwelling unit. Where two adjacent dwelling units use this option, a shared driveway is encouraged.

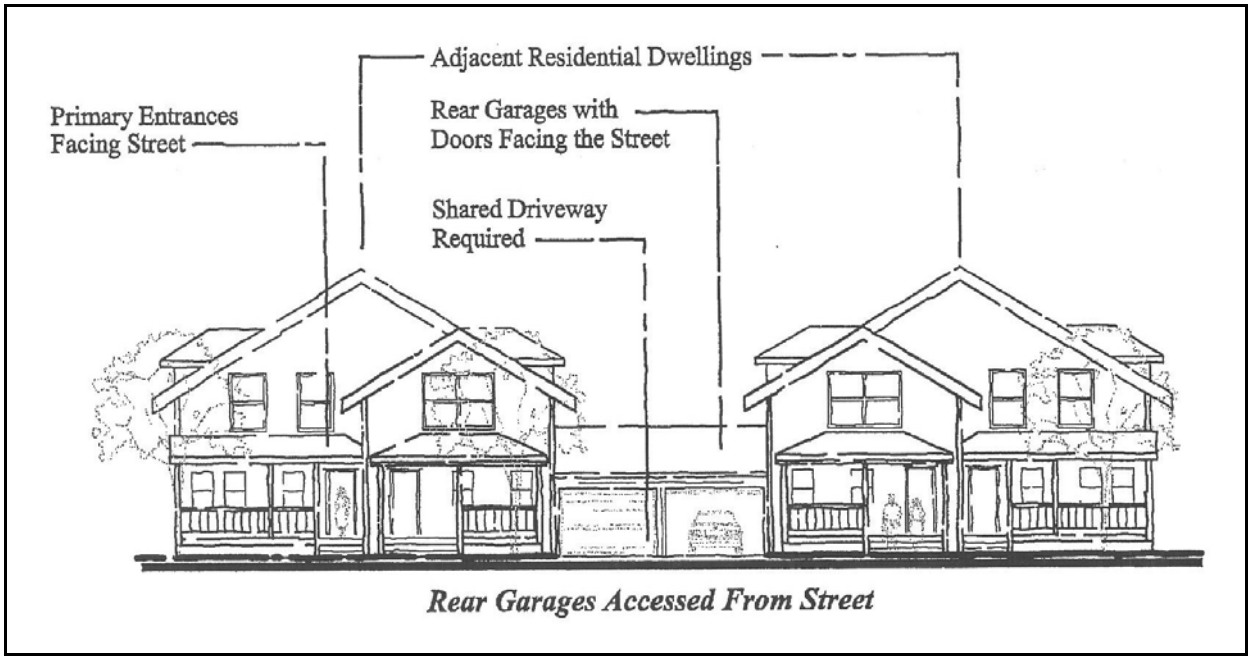



Figure 4.10 - 4 - Rear Garage Accessed from the Street

2. Front Accessed Garage with Four-ft. Recess - Vehicular entrances face the street and are recessed at least four ft. from the front wall of the dwelling as shown in Figure 4.10-5 - Garage Facing Street and Recessed at Least Four Ft., on the next page. The recess from the front wall of the dwelling shall be measured from the front wall of the living space area, not from the front porch, a bay window, or other projection or architectural feature.

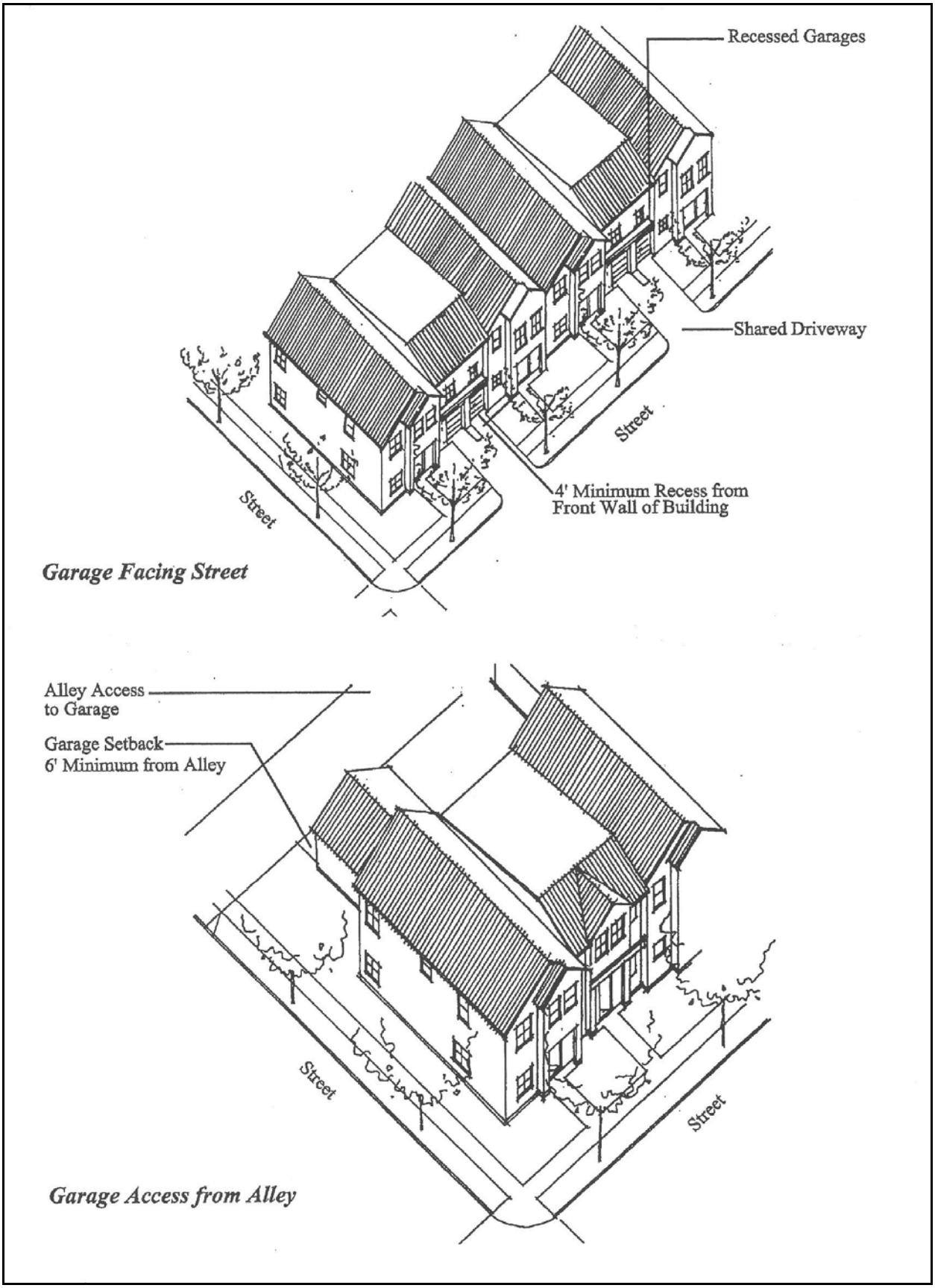



Figure 4.10-5 - Garage Facing Street and Recessed at Least Four Ft.; and
Figure 4.10-6 - Garage with Alley Access

3. Garage Accessed From an Alley - Vehicular entrances are accessed from an alley, as shown in Figure 4.10-6 - Garage with Alley Access. Garage/carport setbacks from alleys are outlined in Section 4.0.60.j of Chapter 4.0 - Improvements Required with Development. Garage/carport entrances may be located parallel to (facing) an alley, perpendicular to (not facing) an alley, or angled up to 45 degrees to an alley.

4. Garage Entrance Perpendicular to Street - Vehicular entrances are perpendicular to the street, as shown in Figure 4.10-7 - Garages Perpendicular to the Street, below. This option pertains to the situation where the garage/carport is sideways. The garage wall facing the street shall provide a minimum area of 15 percent windows and/or doors.

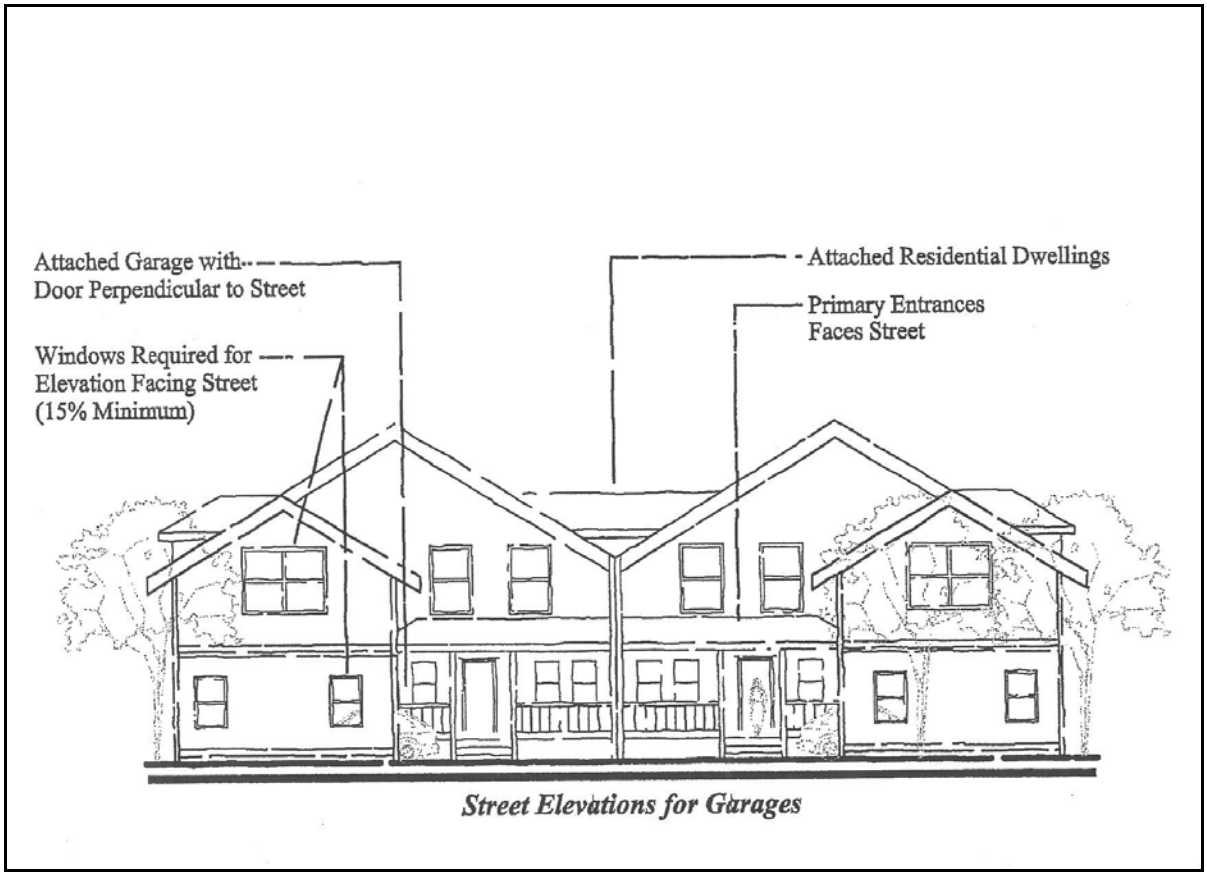



Figure 4.10-7 - Garages Perpendicular to the Street

5. Garage Access Diagonal to the Street - Vehicular entrances are oriented diagonally to the street, as shown in Figure 4.10-8 - Garage Access Diagonal to the Street, below. The garage wall facing the street shall provide a minimum area of 15 percent windows and/or doors. To determine whether the portion of the garage that faces the street complies with Section 4.10.50.2.a, the width of the front garage wall shall be measured as the length of the leg of a right triangle parallel to the street, where the hypotenuse of the triangle is the front of the garage.

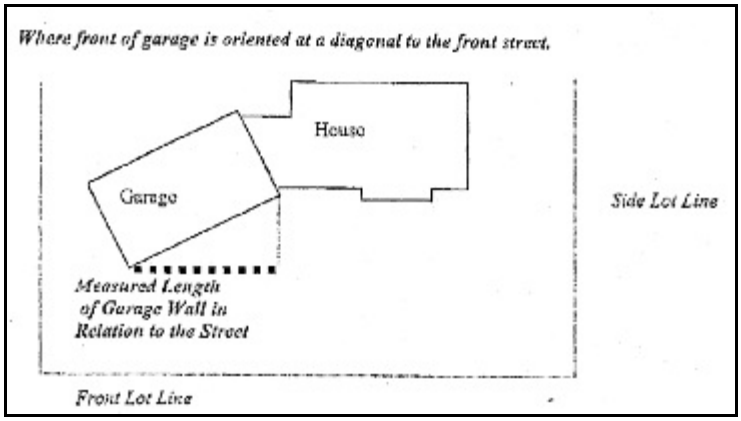



Figure 4.10-8 - Garage Access Diagonal to the Street

6. Basement Garage - Vehicular entrances face the street and garages are located beneath the main floor and front door entrance to the dwelling unit, provided the garage/carport entrances are flush with or set behind the front wall of the dwelling unit, as shown in Figure 4.10-9A - Flush Basement Garage and Figure 4.10-9B - Recessed Basement Garage, below. This option addresses the basement garage scenario in hillside areas.

Figure 4.10-9A - Flush Basement Garage

Figure 4.10-9B - Recessed Basement Garage

7. Flush Garage with Porch - Vehicular entrances face the street and are flush with or recessed up to four ft. from the front wall of the dwelling, and a front porch is provided with a minimum size of six ft. deep by 10 ft. wide (60 sq. ft.). A minimum of 60 percent of the porch shall be covered to provide weather protection.

8. Flush or Recessed Single Car Garage - Vehicular entrances face the street and are flush with or recessed up to four ft. from the front wall of the dwelling, and the garage/carport is a single-car garage/carport that is a maximum of 12 ft. wide. These options are shown below in Figure 4.10-10 - Single Car Garage Access Recessed from Front Wall of Dwelling and in Figure 4.10-11 - Single Car Garage Flush from Front Wall of Dwelling.

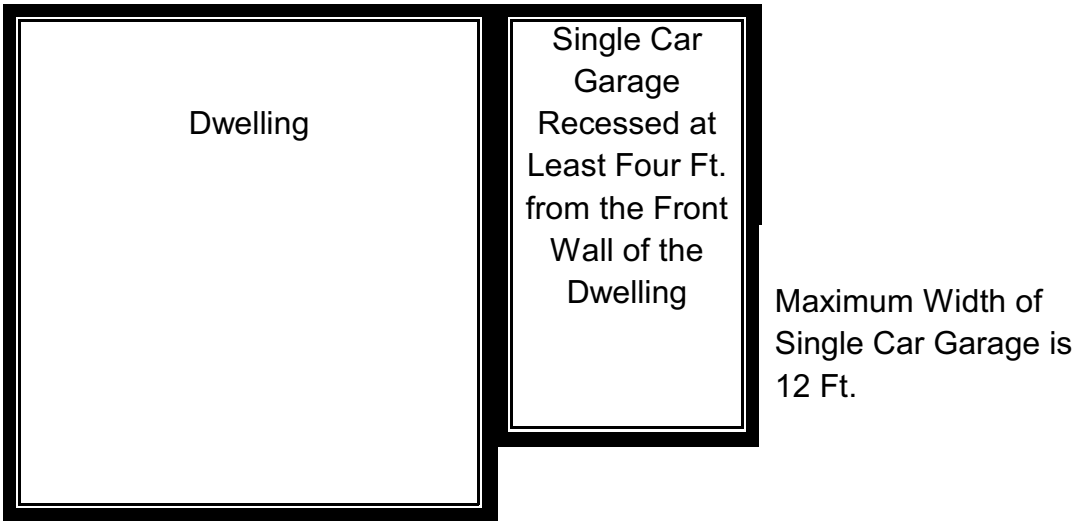



Figure 4.10-10 - Single Car Garage Recessed from Front Wall of Dwelling

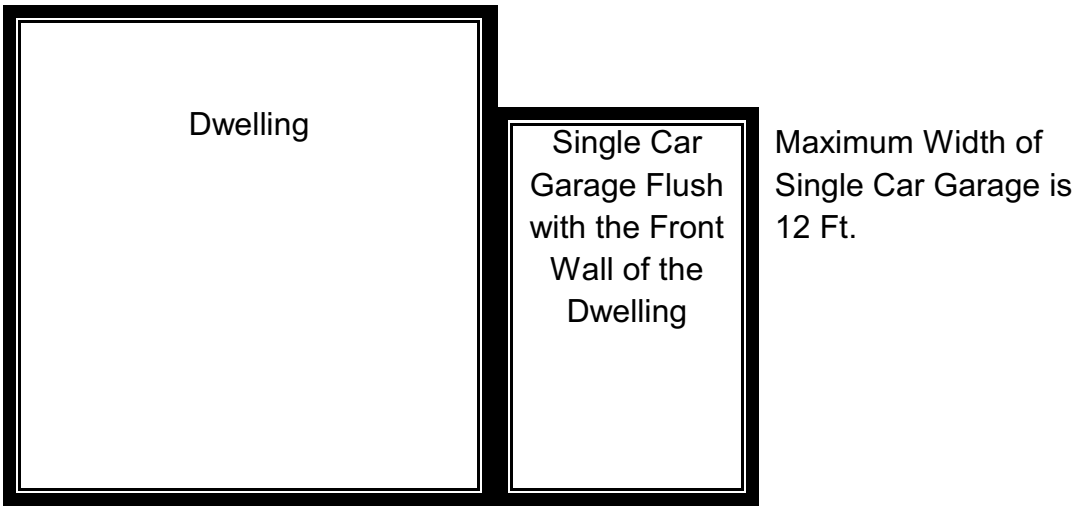



Figure 4.10-11 - Single Car Garage Flush with Front Wall of Dwelling

9. Recessed Garage with Cantilevered Second Story - Vehicular entrances face the street and are recessed at least two ft. from the front wall of the dwelling, and the dwelling includes a second floor that cantilevers over the garage/carport at least two ft. This option is shown in Figure 4.10-12 - Garage Recessed and Upper Floor Cantilevers Over It, below. The recess from the front wall of the dwelling shall be measured from the front wall of the living space area, not from the front porch, a bay window, or other projection or architectural feature. Additionally, the second floor that cantilevers over the garage/carport shall run the full length of the garage/carport.

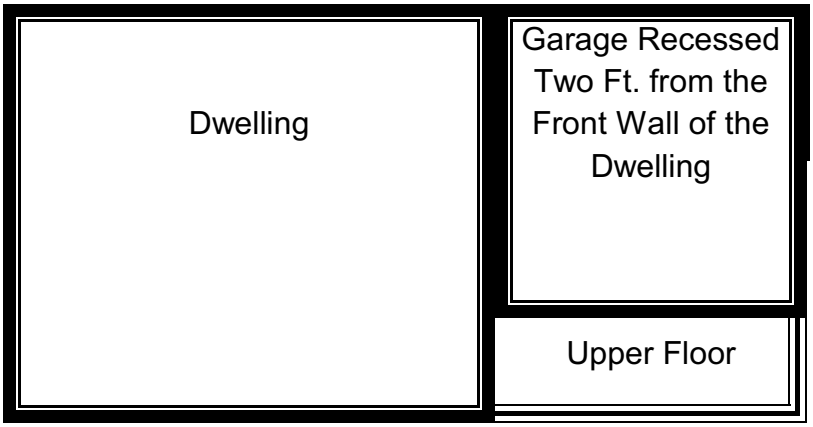



Figure 4.10-12 - Garage Recessed and Upper Floor Cantilevers Over It

**c. Garage and Carport Materials** - Garages and carports, when provided, shall be constructed of the same building materials as the dwelling.

### 4.10.50.03 - Menus for Pedestrian Features and Design Variety

**a. Pedestrian Features Menu** - Each home shall incorporate a minimum of one of the following three pedestrian features. The applicant shall indicate the proposed options on plans submitted for building permits. While not all of the pedestrian features are required, the inclusion of as many as possible is strongly encouraged.

1. Elevated Finished Floor - An elevated finished floor a minimum of two ft. above the grade of the nearest street sidewalk or streetside multi-use path.

2. Front Porches/Patios - A front porch or front patio a minimum size of six ft. deep by 10 ft. wide (60 sq. ft.), and covered by a minimum of 60 percent to provide weather protection.

3. Sidewalk/Walkway to Front Door - A minimum three-ft.-wide walkway constructed of a permanent hard surface that is not gravel and that is located directly between the street sidewalk and the front door. This walkway shall not be part of the driveway area.

**b. Design Variety Menu** - Roof forms shall be at least a 4:12 pitch. Additionally, each home shall incorporate a minimum of three of the following seven building design features. The applicant shall indicate proposed options on plans submitted for building permits. While not all of the design features are required, the inclusion of as many as possible is strongly encouraged.

1. Increased Roof Pitch - A minimum 6:12 roof pitch.

2. Eaves - Eaves with a minimum 18-in. overhang.

3. Building Materials - At least two different types of building materials including but not limited to stucco and wood, brick and stone, etc.. Alternatively, a minimum of two different patterns of the same building material, such as scalloped wood and lap siding, etc., on facades facing streets. These requirements are exclusive of foundations and roofs and pertain only to the walls of a structure.

4. Trim - A minimum of 2.25-in. trim or recess around windows and doors that face the street. Although not required, wider trim is strongly encouraged.

5. Increased Windows - A minimum area of 20 percent windows and/or dwelling doors on facades facing streets, sidewalks, and multi-use paths. This provision includes garage facades. Gabled areas need not be included in the base wall calculation when determining this minimum 20 percent calculation.

6. Architectural Features - At least one architectural feature included on dwelling facades that face the street. Architectural features are defined as bay windows, covered porches greater than 60 sq. ft. in size, balconies above the 1st floor, dormers related to living space, or habitable cupolas. If a dwelling is oriented such that its front facade, which contains the front door, is oriented to a sidewalk and no facades of the dwelling face a street, then the architectural feature may be counted if it is located on the front facade.

7. Architectural Details - Architectural details used consistently on dwelling facades. Architectural details are defined as exposed rafter or beam ends, eave brackets, windows with grids or divided lights, or pergolas/trellis work integrated into building facades. If a dwelling is oriented such that its front facade, which contains the front door, is oriented to a sidewalk and no facades of the dwelling face a street, then the architectural feature may be counted if it is located on the front facade.

# Staff Identified Applicable Water Quality Standards

**1993 LDC, 4.0.80.e**. All public utility installations required with development shall conform to the City's adopted facilities master plans.

**Appendix F of the Storm Water Master Plan**, IV. Storm Drainage, B. Design Criteria, 2. Detention Facilities, and 3. Water Quality Facilities. (IV.B.2 and IV.B.3)

**2. Detention Facilities**
a. The maximum design storm for detention facilities shall be based on the 10-year return event with 24-hour duration based on the standard SCS Type 1A rainfall distribution. The Soil Conservation Service (SCS) TR-55 or TR-20 are recommended. The use of alternative hydrograph methods may be allowed, but require pre-approval by the City. The use of alternative techniques may require additional development review time. The use of the Rational Method for designing detention facilities is not permitted.

**3. Water Quality Facilities**
a. The design storm for water quality facilities (vegetated swales, water quality ponds, sedimentation ponds, water quality vaults, etc.) shall be based on two-thirds of the 2-year, 24-hour SCS Type 1A design storm. The analysis and design shall be based on a hydrograph method. The Soil Conservation Service (SCS) TR-55 or TR-20 are recommended. The use of alternative hydrograph methods may be allowed, but require pre-approval by the City. The use of alternative techniques may require additional development review time. The use of the Rational Method for designing water quality facilities is not permitted.

**Detention Facilities** - Appendix F of the Storm Water Master Plan, IV. Storm Drainage, K. Detention Facilities, 1. When Required; 2. Exemptions; 3. Standards; 4. Access and Maintenance Responsibility (IV.K.1, IV.K.2, IV.K.3, and IV.K.4) IV.K.3. Standards is where King County is referenced for facility design criteria.

**K. Detention Facilities**

**1. When Required**
All new development and redevelopment shall require detention unless specifically exempted from this requirement. When required, stormwater detention facilities shall be designed to capture runoff so the run-off rates from the site after development do not exceed the predeveloped conditions, based on the 2-year through 10-year, 24-hour design storms.

**2. Exemptions**
a. Detention is not required for sites draining directly into Mary's River or the Willamette River.

b. Detention is not required if infiltration methods can be demonstrated to be feasible. A soil map or geotechnical report is required to document the infiltration rates of the soils

in the area of the proposed infiltration facility. Infiltration shall not be allowed in areas with slopes over 10 percent.

c. Detention is not required for single family residences not developed as part of a planned development.

d. Detention is not required for areas specifically identified as exempt (not requiring detention) in the Corvallis Stormwater Master Plan.

**3. Standards**

a. Detention facilities shall be designed in accordance with criteria as established in the King County, Washington Surface Water Design Manual, September 1998 or the most recent finalversion.

b. Parking areas should not be used as detention facilities except for larger storm events. Up to 6-inches of water depth is allowed to be detained in parking areas for storm events larger than the 10 year return event.

c. Detention of storm water shall be limited to a single facility, rather than a series of smaller detention facilities, whenever possible. Detention facilities may be designed as combination detention and water quality facilities. Detention facilities may be designed "in-line" with water quality facilities.

d. The detention facility must be designed to safely pass storms up to the 100-year, 24-hour event.

**4. Access and Maintenance Responsibility**

a. Detention facilities must be located on a site dedicated for public use. Access tracts, easements or permanent right-of-ways are required when the facilities do not abut the public right-of-way. The minimum width of an access easement is 15 feet. All-weather road(s) shall provide maintenance vehicle access to the facility and the control structures.

b. The City will assume maintenance and operation responsibility for detention facilities within the improved public right-of-way for any residential subdivision with two or more lots, and any similar development or redevelopment where at least two-thirds of the developed contributing area is from single family or duplex residential structures on individual lots. Detention facilities for the above mentioned land uses shall be located in a tract or right-ofway dedicated to the City.

c. The City does not accept maintenance responsibility for private storm water conveyance, detention, or water quality systems. Private systems include single family residential (not associated with a subdivision or multiple lot residential development), multifamily development, industrial, or commercial and all redevelopment for the above mentioned land uses.

d. Maintenance requirements for stormwater facilities are identified in the King County Manual. A maintenance plan shall be submitted to the City for approval along with the design and analysis calculations prepared for the construction permit application.

e. For public facilities, the City will assume maintenance responsibility two years after final construction approval by the City and upon passing an inspection by City inspectors to ensure the facility has been properly maintained, the vegetation clearly established, and the facility is operating as designed. The site developer/owner shall provide a maintenance bond to the City that shall remain in effect until the facilities are accepted by the City.

f. The City reserves the right to perform maintenance on private facilities if those facilities are found to have the potential to have a negative impact on public facilities or water quality. The City will charge the owner for all expenses incurred from City performed maintenance.

**Water Quality Facilities** - Appendix F of the Storm Water Master Plan, IV. Storm Drainage, L. Water Quality Facilities, 1. When Required; 2. Standards; 3. Access and Maintenance Responsibility (IV.L.1, IV.L.2, and IV.L.3) IV.L.2. Standards is where King County is referenced for facility design criteria.

**L. Water Quality Facilities**

**1. When Required**

All new development and redevelopment are required to construct quality facilities to reduce the contaminants entering the storm collection and surface water systems. The stormwater facilities shall be designed to remove 70 percent of the total suspended solids (TSS) entering the facility during the water quality design storm. This policy may require the use of a combination of water quality facilities to achieve the designed removal rate.

**2. Standards**

a. Water quality facilities shall be designed in accordance with criteria as established in the King County, Washington Surface Water Design Manual, September 1998 or the most recent final version.

b. Acceptable water quality facilities include vegetated swales, water quality ponds, sedimentation ponds, water quality inlets, and infiltration facilities.

c. The use of infiltration facilities is recommended where soil and slope conditions permit the use of this type of facility and the facilities do no have an adverse impact to adjacent or downhill properties.

d. The use of multiple water quality facilities may be required to meet the performance standard. Chapter 6 of the King County Manual identifies seven types of treatment facilities that will meet the performance standards.

e. Water quality facilities must be designed to safely pass without damage to the facility flows in excess of the water quality design storm up to the 100-year, 24-hour event. For some facilities, a bypass system will be required.

**3. Access and Maintenance Responsibility**

a. Water quality facility access tracts, easements or permanent right-of-ways are required when the facilities do not abut the public right-of-way. All-weather road(s) shall provide access to the facility and the control structure as required for vehicular maintenance access.

b. The City will assume maintenance and operation responsibility for water quality facilities within the improved public right-of-way for any residential subdivision with two or more lots, and any similar development or redevelopment where at least two-thirds of the developed contributing area is from single family or duplex residential structures on individual lots. Water quality facilities for the above mentioned land uses shall be located in a tract or right-of-way dedicated to the City.

c. The City does not accept maintenance responsibility for private storm water quality systems. Private systems include single family residential (not associated with a subdivision or multiple lot residential development), multifamily development, industrial, or commercial and all redevelopment for the above mentioned land uses.

d. Maintenance requirements for the facilities are identified in the King County Manual. A maintenance plan shall be submitted to the City for approval along with the design and analysis calculations prepared for the construction permit application. The maintenance plan shall describe the maintenance activity and frequency of execution.

e. For public facilities, the City will assume maintenance responsibility two years after final construction approval by the City and upon passing a City inspection to ensure the facility has been properly maintained and is operating as designed. The site developer/owner shall provide a maintenance bond to the City that shall remain in effect until the facilities are accepted by the City.

f. The City reserves the right to perform maintenance on private facilities if those facilities are found to have the potential to have a negative impact on public facilities or water quality. The City will charge the owner for all expenses incurred from City performed maintenance.

# TECHNICAL MEMORANDUM NO. 4

November 10, 1999 53-15989

TO: Bruce Moser,
City of Corvallis

FROM: James Hansen,
Brown and Caldwell

PROJECT: City of Corvallis
Recommendations to Development Standards

## CONTENTS



## Introduction

This technical memorandum was prepared to assist the City of Corvallis with updating of the existing stormwater development standards. The recommendations provided below should be considered as interim measures that should be implemented until a more detailed evaluation can be performed later in the stormwater master planning process. However, the interim recommendations will improve the City's ability to manage both stormwater quantity and quality from new development or redevelopment.

A more detailed analysis of the development standards should be based on citywide definition of the stormwater problems and potential solutions as determined from the master planning process. The adoption of new development standards will have a major impact on future stormwater management within the city. The standards will impact many different interest groups, including citizens, environmental groups, developers, builders, realtors, engineers, landscape architects, and city staff. City departments affected by the standards include planning, engineering, development assistance, legal, and operations/maintenance. Private and public representatives should participate in the development of the modified development standards, policies, and ordinances in order to develop an effective stormwater management program.

**EXHIBIT X - 5**
**LUBA REMAND**

## Major Categories of Development Standards

The major categories of stormwater development standards addressed by this technical memorandum include:

1. Design storm and method
2. Detention policy
3. Water quality policy
4. Acceptable types of water management facilities
5. Operation and maintenance requirements

The above noted categories are discussed in the following sections and are represented in the recommended design standards at the end of this document.

## Design Storm and Method

Pipe sizing. The Design Criteria Manual requires the use of the Rational Method for a 10-year storm event. Most cities use either a 10-year or a 25-year design storm for sizing drainage facilities. The decision is based on the level of flood protection desired by the community along with the cost of providing the additional level of protection. Modifying the design criteria with a longer return period (i.e., 25-year) design storm would create a situation where the collection systems in the newly developed areas of the city would have greater capacity than older downstream sections of the system, thus creating greater downstream flooding situations in both open channels and pipes. We recommend that the city stay with the 10-year design storm using the Rational Method for most conveyance facilities.

We recommend that additional guidance be provided with the use of the Rational Method. The method should not be used for drainage areas larger than 25 acres or have times of concentration that exceed 100 minutes. A hydrograph technique should be used for either of these situations. Flow routes should be identified for storms larger than the 10-year, up to and including the 100-year storm. The City should adopt or establish runoff coefficients and an intensity-duration-frequency curve for use on projects within the City's jurisdiction. This approach would help provide consistency in the design of stormwater facilities.

Detention Facilities. The design storm for detention facilities should be based on the 10-year return event with 24-hour duration based on the standard SCS type 1A rainfall distribution. A hydrograph approach provides the most accurate rainfall model for this analysis. The SCS TR-55/20 method or the Santa Barbara Urban Hydrograph (SBUH) method are recommended options. We understand that most of the Corvallis development community uses the SCS method rather than the SBUH method; therefore, use the SCS method as the approved city standard. We do not recommend the use of the Rational Method for designing detention facilities.



**EXHIBIT X - 6**
**LUBA REMAND**

Water Quality Facilities. The design storm for water quality facilities should be based on two-thirds of the two year storm with a 24-hour duration. This is similar to the design storm used by King County and is slightly more conservative than the storms used by City of Portland and the Unified Sewerage Agency. The more conservative approach will better prepare the city for future TMDL, NPDES Phase II and Endangered Species Act requirements. Water quality facilities should be designed using a hydrograph technique as recommended for detention facilities.

## Detention Policy

The existing level of development throughout the city has altered the natural drainage characteristics of the major surface water systems. These streams are under stress due to an increase in the volume and duration of stormwater runoff. In addition, some of the older piped collection systems and culverts are becoming undersized as additional development generates increased flows and durations. Detention and other types of stormwater management techniques are required to prevent these problems from getting worse.

## Water Quality Policy

Urban development creates a wide range of stormwater management related problems, including higher flow rates and increased water pollution. Surface water collects a variety of pollutants as it travels through the drainage system, including nutrients, suspended solids, organic matter, bacteria, hydrocarbons, trace metals, pesticides, thermal pollution and trash and debris. Water quality facilities constructed in new and redeveloped areas will help lessen the negative impacts associated with increased urban development.

## Acceptable Types of Water Management Facilities

Our letter dated May 13, 1999 identified five facility types that should be considered for immediate use for new development or redevelopment, including detention ponds, water quality ponds, sedimentation ponds, vegetated swales, and water quality inlets. The King County Manual should be used as guidance for the basis of design of these facilities. The City should consider the adoption of the other treatment facilities identified in the manual. A toolbox of acceptable facilities would allow developers to customize the design of detention and water quality systems to best meet the constraints of the site.

The City should consider developing a guidance manual for the design of stormwater quantity and quality facilities. A custom manual would address the specific needs of the Corvallis community. A manual specifically prepared for the City of Corvallis would provide the greatest ease of use for City staff and design professionals in the community. A minimum of $75k would be required to produce such a manual. The total effort required would be dependent on the level of detail provided by the manual. Several of the manuals in use throughout the northwest cost many times that to produce.



**EXHIBIT X - 7**
**LUBA REMAND**

## Operation and Maintenance Requirements

Detention and water quality facilities require routine maintenance to ensure the desired performance of the facility. The efficiency of most types of water quality facilities will drop significantly in the absence of routine maintenance. The maintenance requirements identified in the King County Manual should be followed for these facilities. Inspection of major stormwater facilities, including detention ponds, water quality ponds, vegetated swales, trash racks, etc. should be conducted annually. The City should develop and manage an inspection program to ensure that the maintenance is being performed for both public and privately owned facilities. The cost of the inspection program needs to be determined and an appropriate funding mechanism established for implementing the inspection program.

Support of the inspection program needs to be written into City code. The code needs to be modified to provide for enforcement actions to address maintenance deficiencies for privately owned facilities. Using the King County model, the City would perform the maintenance and charge the owner if the owner did not perform the required maintenance within a specified timeframe.

Facility access is a major complaint of many municipalities charged with maintaining storm water facilities. Where possible an all-weather access road should be provided to the site. This requirement is particularly important for those facilities requiring routine maintenance, such as, detention and water quality facilities. The City shall ensure during design review that adequate access to the facility is provided through a maintenance easement or other form of permanent legal transfer of the right-of-access to the City.

## Proposed Changes to the Design Criteria Manual

The following sections represent interim replacement or additional sections to the existing *Design Criteria Manual for Public Improvements*. The changes affect Section IV. STORM DRAINAGE. Only the subsections shown below are modified.

### IV. STORM DRAINAGE

#### B. Design Criteria

1. Conveyance Facilities

    a. Capacity

        1) Conveyance facilities shall be designed to convey and contain the peak runoff flow from the 10-year design event. No surcharging of the system is allowed for the 10-year storm event. Conveyance system capacity shall be determined for most conveyance facilities using the Rational Method.

A hydrograph technique shall be used for designing facilities draining areas larger than 25 acres or for sites that have a time of concentration longer than 100 minutes. Acceptable hydrograph techniques include the Soil Conservation Service (SCS) TR-55 or TR-20 methods. The SCS Type 1A rainfall distribution for the 10-year, 24-hour storm shall be used with the hydrograph techniques.

2) The 10-year design shall be supplemented with an overland conveyance component demonstrating the safe passage of the 100-year, 24-hour SCS type 1A storm event. The overland component shall not be allowed to flow through or inundate existing buildings.

3) Sufficient capacity shall be designed into the system to account for the future growth potential of the area served as identified in the Comprehensive Plan.

b. Sizing

1) Minimum pipe size for storm drain mains is twelve (12) inches.
2) Minimum pipe size for lines leading from curb inlets or catch basins to the main lines is ten (10) inches.

c. Grades

1) All storm drains shall be designed at a grade that will produce a mean velocity when flowing full or half-full of at least two (2) feet per second.

d. Separation

1) New combined sanitary sewer and storm drain systems will only be permitted in the existing combined sewer areas of the city.

2. Detention Facilities

a. The maximum design storm for detention facilities shall be based on the 10-year return event with 24-hour duration based on the standard SCS Type 1A rainfall distribution. The Soil Conservation Service (SCS) TR-55 or TR-20 are recommended. The use of alternative hydrograph methods may be allowed, but require pre-approval by the City. The use of alternative techniques may require additional development review time. The use of the Rational Method for designing detention facilities is not permitted.

3. Water Quality Facilities

a. The design storm for water quality facilities (vegetated swales, water quality ponds, sedimentation ponds, water quality vaults, etc.) shall be based on two-thirds of the 2-year, 24-hour SCS Type 1A design storm. The analysis and design shall be based on a hydrograph method. The Soil Conservation Service (SCS) TR-55 or TR-20 are recommended. The use

of alternative hydrograph methods may be allowed, but require pre-approval by the City. The use of alternative techniques may require additional development review time. The use of the Rational Method for designing water quality facilities is not permitted.

K. Detention Facilities

1. When Required

All new development and redevelopment shall require detention unless specifically exempted from this requirement. When required, stormwater detention facilities shall be designed to capture run-off so the run-off rates from the site after development do not exceed the predeveloped conditions, based on the 2-year through 10-year, 24-hour design storms.

2. Exemptions

a. Detention is not required for sites draining directly into Mary's River or the Willamette River.

b. Detention is not required if infiltration methods can be demonstrated to be feasible. A soil map or geotechnical report is required to document the infiltration rates of the soils in the area of the proposed infiltration facility. Infiltration shall not be allowed in areas with slopes over 10 percent.

c. Detention is not required for single family residences not developed as part of a planned development.

d. Detention is not required for areas specifically identified as exempt (not requiring detention) in the Corvallis Stormwater Master Plan.

3. Standards

a. Detention facilities shall be designed in accordance with criteria as established in the King County, Washington Surface Water Design Manual, September 1998 or the most recent final version.

b. Parking areas should not be used as detention facilities except for larger storm events. Up to 6-inches of water depth is allowed to be detained in parking areas for storm events larger than the 10 year return event.

c. Detention of storm water shall be limited to a single facility, rather than a series of smaller detention facilities, whenever possible. Detention facilities may be designed as combination detention and water quality facilities. Detention facilities may be designed "in-line" with water quality facilities.

d. The detention facility must be designed to safely pass storms up to the 100-year, 24-hour event.



**EXHIBIT X - 10**
**LUBA REMAND**

4. Access and Maintenance Responsibility

a. Detention facilities must be located on a site dedicated for public use. Access tracts, easements or permanent right-of-ways are required when the facilities do not abut the public right-of-way. The minimum width of an access easement is 15 feet. All-weather road(s) shall provide maintenance vehicle access to the facility and the control structures.

b. The City will assume maintenance and operation responsibility for detention facilities within the improved public right-of-way for any residential subdivision with two or more lots, and any similar development or redevelopment where at least two-thirds of the developed contributing area is from single family or duplex residential structures on individual lots. Detention facilities for the above mentioned land uses shall be located in a tract or right-of-way dedicated to the City.

c. The City does not accept maintenance responsibility for private storm water conveyance, detention, or water quality systems. Private systems include single family residential (not associated with a subdivision or multiple lot residential development), multifamily development, industrial, or commercial and all redevelopment for the above mentioned land uses.

d. Maintenance requirements for stormwater facilities are identified in the King County Manual. A maintenance plan shall be submitted to the City for approval along with the design and analysis calculations prepared for the construction permit application.

e. For public facilities, the City will assume maintenance responsibility two years after final construction approval by the City and upon passing an inspection by City inspectors to ensure the facility has been properly maintained, the vegetation clearly established, and the facility is operating as designed. The site developer/owner shall provide a maintenance bond to the City that shall remain in effect until the facilities are accepted by the City.

f. The City reserves the right to perform maintenance on private facilities if those facilities are found to have the potential to have a negative impact on public facilities or water quality. The City will charge the owner for all expenses incurred from City performed maintenance.

L. Water Quality Facilities

1. When Required

All new development and redevelopment are required to construct quality facilities to reduce the contaminants entering the storm collection and surface water systems. The stormwater facilities shall be designed to remove 70 percent of the total suspended solids (TSS) entering the facility during the water quality design storm. This policy may require the use of a combination of water quality facilities to achieve the designed removal rate.



**EXHIBIT X - 11**
**LUBA REMAND**

2. Standards

   a. Water quality facilities shall be designed in accordance with criteria as established in the King County, Washington Surface Water Design Manual, September 1998 or the most recent final version.

   b. Acceptable water quality facilities include vegetated swales, water quality ponds, sedimentation ponds, water quality inlets, and infiltration facilities.

   c. The use of infiltration facilities is recommended where soil and slope conditions permit the use of this type of facility and the facilities do no have an adverse impact to adjacent or downhill properties.

   d. The use of multiple water quality facilities may be required to meet the performance standard. Chapter 6 of the King County Manual identifies seven types of treatment facilities that will meet the performance standards.

   e. Water quality facilities must be designed to safely pass without damage to the facility flows in excess of the water quality design storm up to the 100-year, 24-hour event. For some facilities, a bypass system will be required.

3. Access and Maintenance Responsibility

   a. Water quality facility access tracts, easements or permanent right-of-ways are required when the facilities do not abut the public right-of-way. All-weather road(s) shall provide access to the facility and the control structure as required for vehicular maintenance access.

   b. The City will assume maintenance and operation responsibility for water quality facilities within the improved public right-of-way for any residential subdivision with two or more lots, and any similar development or redevelopment where at least two-thirds of the developed contributing area is from single family or duplex residential structures on individual lots. Water quality facilities for the above mentioned land uses shall be located in a tract or right-of-way dedicated to the City.

   c. The City does not accept maintenance responsibility for private storm water quality systems. Private systems include single family residential (not associated with a subdivision or multiple lot residential development), multifamily development, industrial, or commercial and all redevelopment for the above mentioned land uses.

   d. Maintenance requirements for the facilities are identified in the King County Manual. A maintenance plan shall be submitted to the City for approval along with the design and analysis calculations prepared for the construction permit application. The maintenance plan shall describe the maintenance activity and frequency of execution.



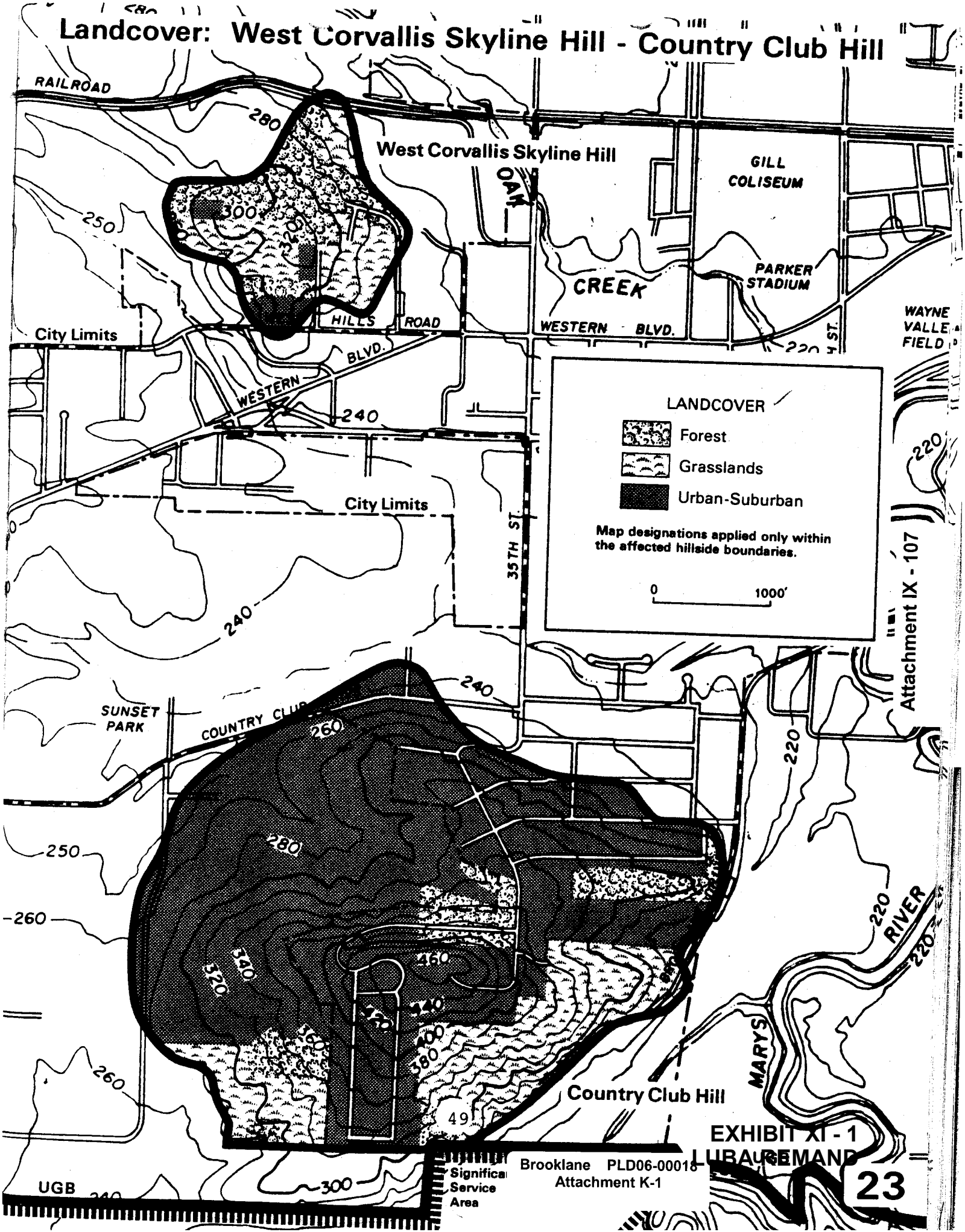
**EXHIBIT X - 12**
**LUBA REMAND**

e. For public facilities, the City will assume maintenance responsibility two years after final construction approval by the City and upon passing a City inspection to ensure the facility has been properly maintained and is operating as designed. The site developer/owner shall provide a maintenance bond to the City that shall remain in effect until the facilities are accepted by the City.

f. The City reserves the right to perform maintenance on private facilities if those facilities are found to have the potential to have a negative impact on public facilities or water quality. The City will charge the owner for all expenses incurred from City performed maintenance.



**EXHIBIT X - 13**
**LUBA REMAND**


Landcover: West Corvallis Skyline Hill - Country Club Hill
RAILROAD
West Corvallis Skyline Hill
OAK
GILL COLISEUM
CREEK
PARKER STADIUM
HILLS ROAD
WESTERN BLVD.
City Limits
WESTERN BLVD.
WAYNE VALLE FIELD
LANDCOVER
Forest
Grasslands
Urban-Suburban
Map designations applied only within the affected hillside boundaries.
0
1000'
City Limits
35TH ST.
SUNSET PARK
COUNTRY CLUB
Country Club Hill
MARYS
RIVER
UGB
Significa
Service
Area
Brooklane PLD06-00018
Attachment K-1
EXHIBIT XI - 1
LUBA REMAND
23
Attachment IX - 107

# Parcelization: West Corvallis Skyline Hill - Country Club Hill

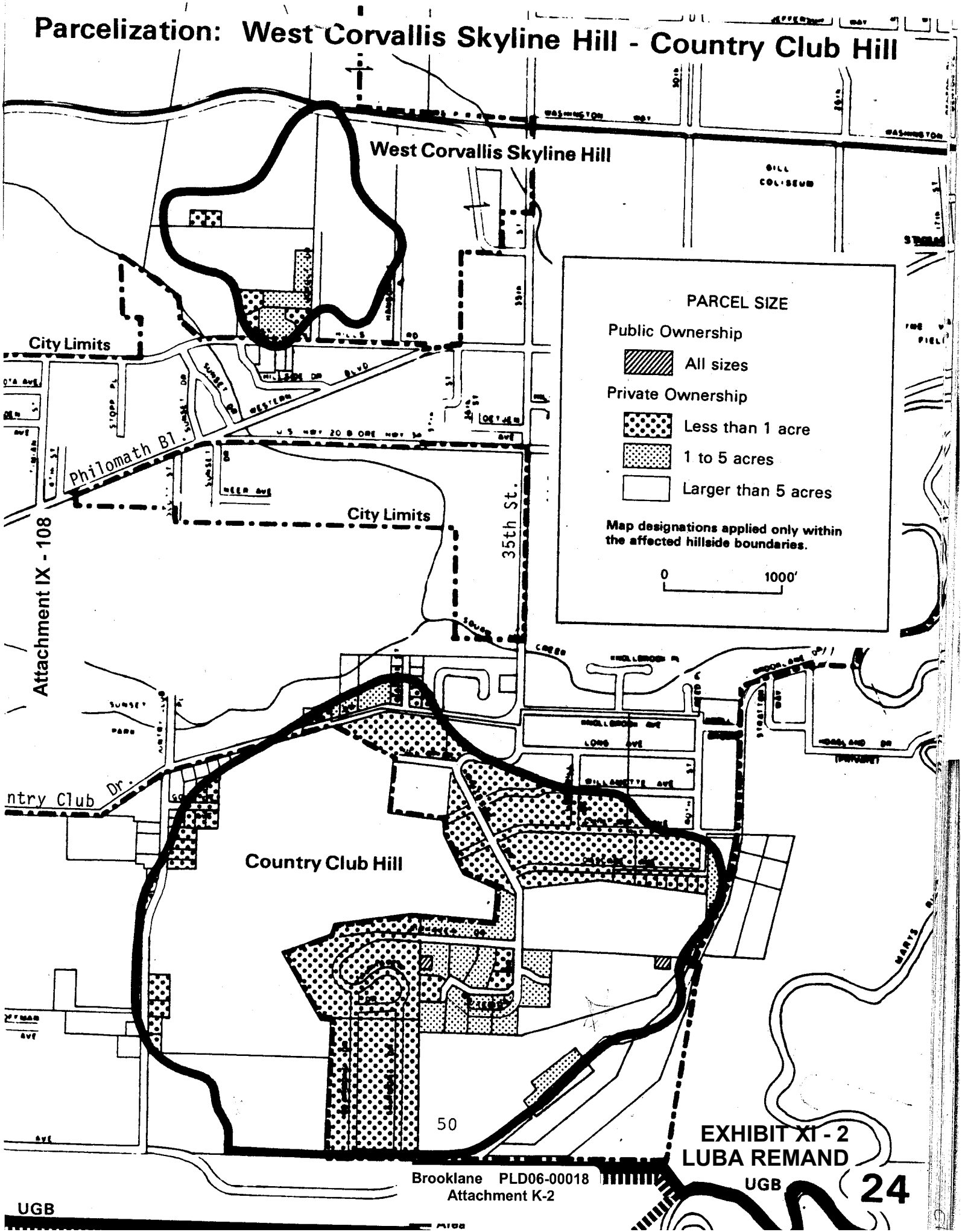





EXHIBIT XI - 2
LUBA REMAND
24

Brooklane PLD06-00018
Attachment K-2

# Existing Comprehensive Plan: West Corvallis Skyline Hill - Country Club Hill

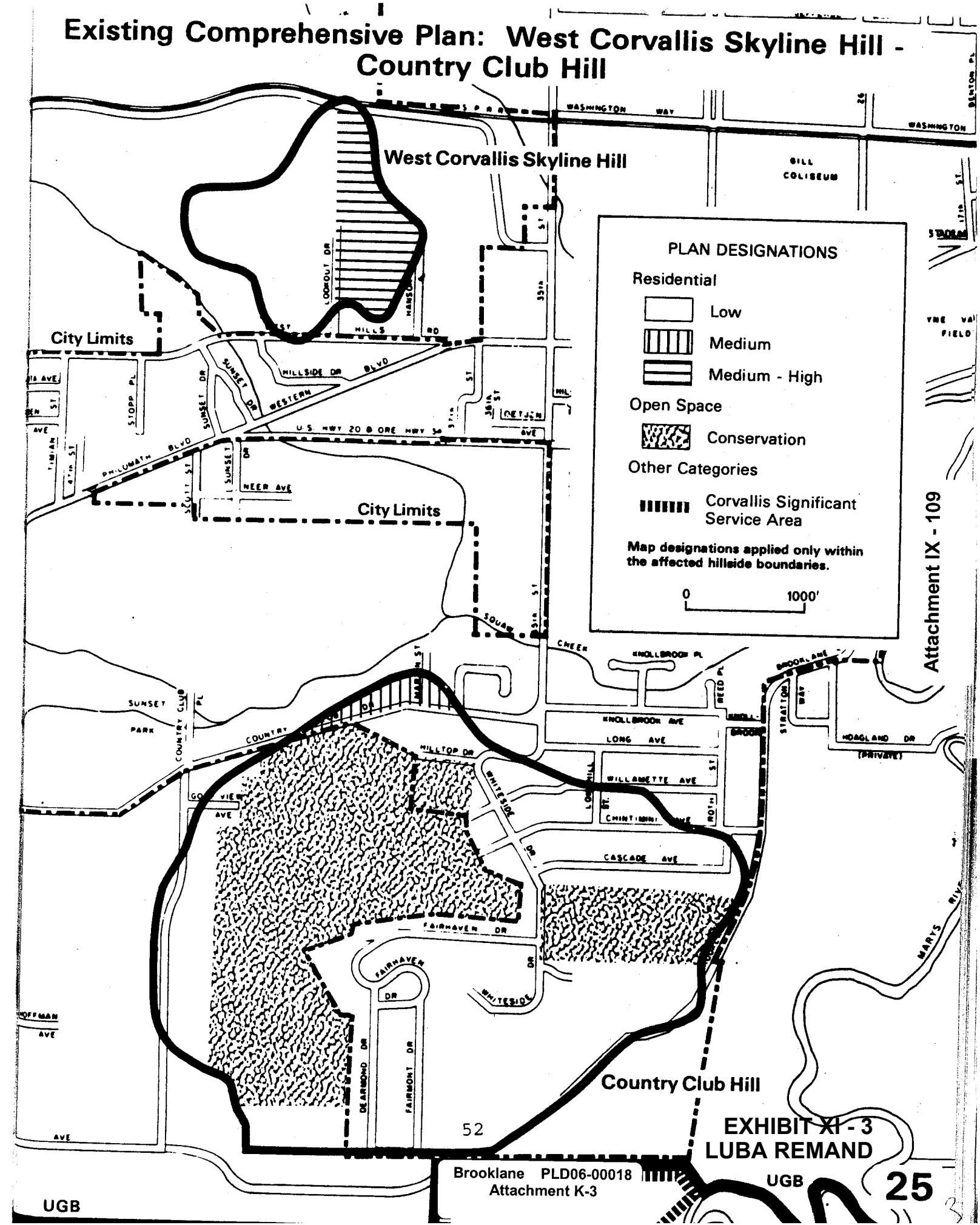


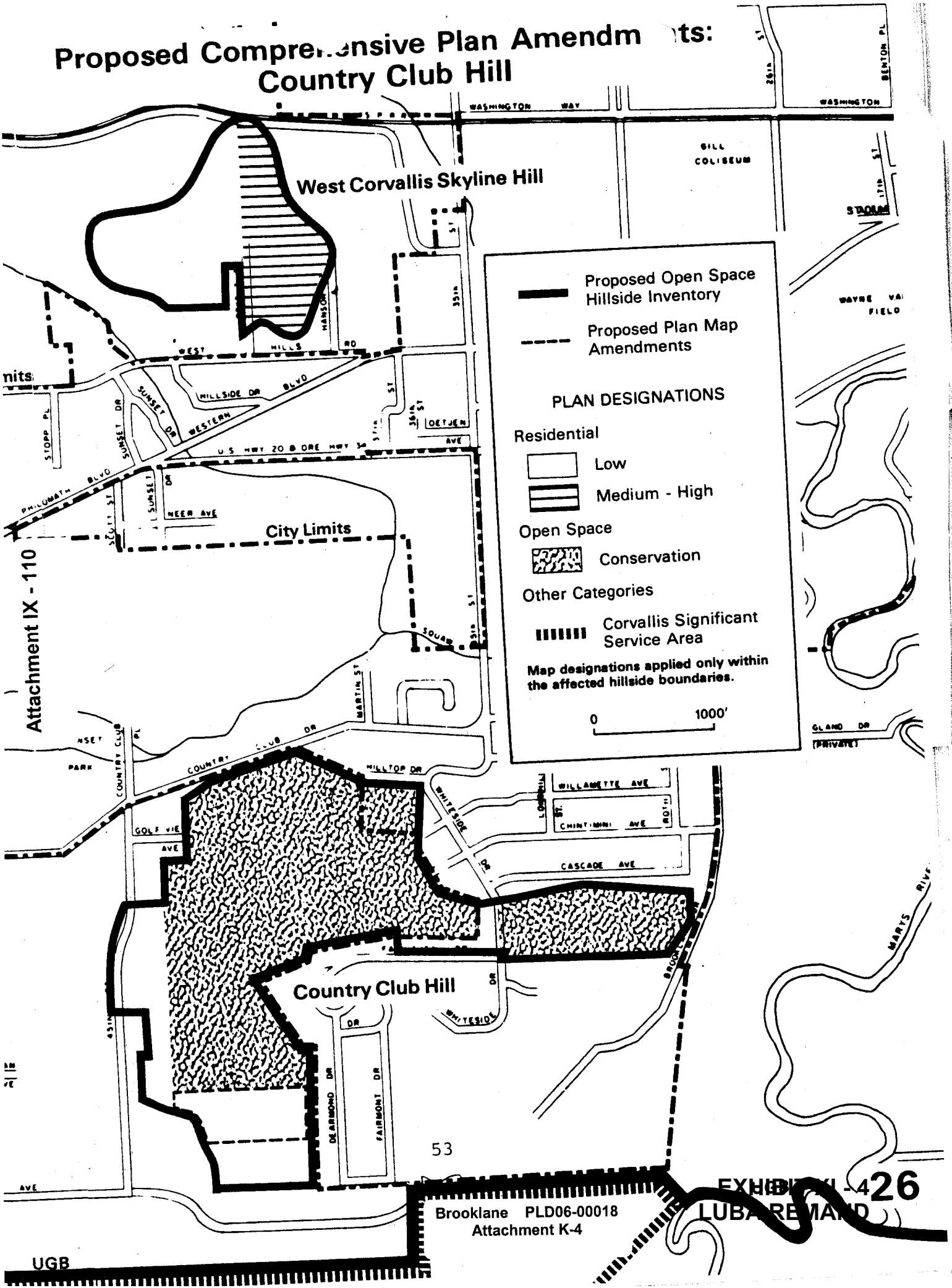



EXHIBIT XI - 3
LUBA REMAND

Brooklane PLD06-00018
Attachment K-3

25

# Proposed Comprehensive Plan Amendments: Country Club Hill




Attachment IX - 110



Brooklane PLD06-00018
Attachment K-4

EXHIBIT K-4 26
LUBA REMAND

The potential adverse social and environmental consequences of the loss of open space can be mitigated by development of housing on the lower west and south slopes and by retention of desirable native vegetation. The potential negative impacts of residential development could be further minimized by encouraging retention of a small park or viewpoint near the summit of the hill to provide public access.

E. RECOMMENDATIONS

1. Remove built-up portions of the hill on the south slope from the City's Open Space Inventory.
2. ~~Establishment of a~~ ENCOURAGE PROVISION of A PUBLIC VIEWPOINT public ~~park~~ of approximately 1 acre in size for the purpose of providing views from the hill shall be considered at the time of site development. Residential development shall be located so as to preserve the views from the park.

## 11. COUNTRY CLUB HILL

A. RESOURCE INVENTORY

The Open Space Report notes that the Country Club Hill is an important feature at the south entrance of Corvallis because of elevation and vegetation. The Report indicates that the existing vegetation offers a buffer between agricultural land to the south and urban development on the hill.

B. REFINEMENT OF THE INVENTORY

Maps 23 and 24 provide the topography, landcover, and parcelization inventories for Country Club Hill. As indicated in the Open Space Report, the hill includes a substantial amount of existing urban development. In contrast to most of the other Corvallis hill areas, the most extensively parcelized and developed portion of the hill includes the summit. Currently, there are approximately 125 residential lots of sizes up to 1 acre located within the resource area. It is anticipated that low density residential development will continue to expand in the area.

The area's major open space resources are associated with the Country Club Golf Course (111 acres) and a cemetery (21 acres). Both are currently designated in the Comprehensive Plan as Open Space/Conservation.

There does appear to be a Comprehensive Plan Map error in designating a portion of a privately-owned property adjacent to the golf course as Open Space/Conservation.

Based on the preceding discussion of area resources, it is recommended that the City's inventory be modified to recognize the cemetery and the portion of the golf course currently designated Open Space/Conservation as the only significant hillside open space resources.

C. IDENTIFICATION OF CONFLICTING USES

There are no conflicting uses identified for the cemetery and golf course since they have been designated for Open Space/Conservation.

D. RECOMMENDATIONS

1. Modify the Open Space Inventory to delete reference to the built-up portions of Country Club Hill.

2. Amend the Comprehensive Plan Future Land Use Map as shown in Map 26 to redesignate privately-owned property south of the golf course as Low Density Residential.



PROPOSED COMPREHENSIVE PLAN FINDINGS AND POLICIES

The following section provides recommended Comprehensive Plan findings and policies. In most cases the proposed Plan findings and policies were originally adopted as part of the December 1980 Comprehensive Plan. Proposed deletions from language in the existing Comprehensive Plan is indicated by the use of brackets; proposed additions are indicated in bold type.

4.3 OPEN SPACE

FINDINGS

4.3.a. A properly planned and managed system of open space and recreation lands reduces the impact of urbanization and serves the leisure and aesthetic needs of all residents. The system needs to recognize the relationship between urban uses and the natural character of the land and drainageways.

4.3.b. Citizens have expressed a desire to have parks and open space serve to shape and guide urban development.

4.3.c. Citizens have indicated a desire to have a coordinated system of open spaces linked as a greenbelt around the planning area. A greenbelt system would link park and natural features and provide recreation corridors.

[redacted]

## Richardson, Robert

**From:** Ann Kreager [Ann.Kreager@state.or.us]
**Sent:** Friday, May 04, 2007 11:53 AM
**To:** Richardson, Robert
**Cc:** James Young
**Subject:** Brooklane Heights and Oakmont Addition Subdivision

Hello Bob,

Thanks for this opportunity to provide comment on the above referenced plan. I had the opportunity to survey the site on Wednesday, May 2 with botanist Carolyn Menke from the Institute for Applied Ecology. No listed plant species were documented but the site provides exceptional habitat value on numerous scales. Sensitive animal species that were documented include a pair of bald eagle (no sign of nesting was observed but the pair were in the immediate vicinity for the duration of the survey). Pileated woodpecker(s) (*Dryocopus pileatus*), a State-Sensitive (Vulnerable Category) and Strategy Species under the Oregon Conservation Strategy (Strategy) have been documented on-site (Susan Morre, pers. comm).

While the majority of the grasses on-site are non-native grasses, the overall structure and composition of the forb layer is excellent. The site has experienced relatively little disturbance historically, as evidenced by the presence of native strawberry (*Fragaria vesca*), buttercup (*Ranunculus occidentalis*), oatgrass (*Danthonia sp.*), and Roemer's fescue (*Festuca idahoensis* ssp. *roemeri).* As acknowledged in the application, the stand of Oregon white oak is significant and increasingly rare not only the Valley, but in Corvallis as well. Oak woodlands and savanna are habitats identified for conservation in the Strategy and provide benefit to a suite of species also identified in the plan, including western gray squirrel, California myotis (bat), Kindcaid's lupine, Willamette daisy, and Fender's blue butterfly. Sites of this size and composition, as well as its proximity to other natural resources, are rapidly diminishing resources, especially within the City limits.

Efforts are currently underway to secure sites for preservation and restoration of Strategy species and habitats. The Brooklane Heights property would serve as a vital stepping stone to other off-site resources such as Lupine Meadows and Bald Hill, where efforts to restore Kincaid's lupine and the Fender's blue butterfly will be contingent on surrounding conserved habitat. The site could also be utilized for restoration of Taylor's checkerspot habitat. It is our understanding that the owner of the proposed development site is willing to consider conservation of the property in lieu of development. Because of the importance of this site to the overall conservation design for the City of Corvallis, ODFW would strongly support any effort toward this alternative.

If the site cannot be conserved, ODFW recommends that measures to eliminate erosion, sedimentation, and siltation to watershed resources onsite as well as offsite be ensured. Further, because of the sensitivity of the oak habitat, a biologist should be onsite during the clearing phase of the project to monitor construction activity so that unnecessary impacts to the resources are avoided. In addition, the applicant should be aware of any federal laws that may affect the action, such as the Migratory Bird Treaty Act (MBTA) which governs the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts and nests. MBTA's regulations govern the take of all migratory birds (such as ground nesting birds). Any federal, state, county, or city police officers can implement enforcement of MBTA laws. Consequently, it is recommended that any clearing of habitat be conducted during the non-breeding season (April 15 to August 15).

Thank you again for this opportunity to comment. If you have any questions or need additional assistance, please don't hesitate to contact me.

Sincerely,

*Habitat Conservation Biologist*

*Ann Kreager*

*Oregon Department of Fish and Wildlife*
*Southwest Willamette Watershed District*
*7118 NW Vandenberg Ave*
*Corvallis, OR 97330-9446*
*541.757.4186 x 246*

5/8/2007

**Attachment IX - 129**

**EXHIBIT XII - 1**
**LUBA REMAND**
**Brooklane PLD06-00018**
**Attachment O-1**

## Richardson, Robert

**From:** Nancy Taylor [Nancy.C.Taylor@state.or.us]
**Sent:** Friday, April 13, 2007 4:11 PM
**To:** Richardson, Robert; Crowell, Sharon
**Subject:** FW: Subdivisions and western pond turtles near Brooklane Drive

Bob-

Comments regarding the western pond turtles on Brooklane Drive

Nancy

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**From:** Nancy Taylor
**Sent:** Friday, April 13, 2007 4:02 PM
**To:** 'robert.richardson@ci.corvalllis.or.us'
**Cc:** Nancy Taylor; Brian Wolfer
**Subject:** Subdivisions and western pond turtles near Brooklane Drive

Bob,

Thank you for forwarding the proposed plans for the Oakmont Addition Subdivision and Brooklane Heights Planned Development and Subdivision in Corvallis, Oregon.

As discussed, it will be important to protect the water quality that flows into the turtle ponds. Water should be pre-treated prior to entering the natural ravines and drainages.

The long term survival of this turtle population depends on a cooperative effort to identify and fence the turtle nesting habitat. I will coordinate with the City of Corvallis Parks Department, Mr. Wolfgang Dilson and others to further discuss this issue.

Sincerely,

Nancy Taylor
District Wildlife Biologist
Oregon Dept. of Fish and Wildlife
SWWD-Corvallis Office
7118 NE Vandenberg Ave
Corvallis, OR 97330
541 757-4186 ext 226

Attachment IX - 130

**EXHIBIT XII - 2**
**LUBA REMAND**

**Brooklane PLD06-00018**
**Attachment O-2**

Oregon Department of Fish and Wildlife
3406 Cherry AVE NE
Salem, OR 97303

*Living with Wildlife* — *Clemmys marmorata*

OREGON DEPARTMENT OF FISH AND WILDLIFE

# WESTERN POND TURTLE

The western pond turtle is one of two native turtle species in Oregon. From a distance the western pond turtle looks uniformly dark green or brown from head to tail. Up close the head and neck are flecked with cream and brown markings. Populations of western pond turtles and their habitats have been declining. As a result, the species is on Oregon's Sensitive Species List.

Turtles are declining because of loss of nesting habitat, loss of hatchling habitat and predation on hatchlings. In the early 20th century, commercial trapping for food and pets reduced turtle populations. Habitat loss from wetland draining, urban development and intensive agriculture has led to reduced distribution and numbers of turtles. Spread of exotic plant species such as Himalayan blackberry and reed canary grass, and fewer floods and fires have reduced the quality and quantity of turtle habitat. Introduction of turtle-eating exotic predators such as bullfrogs, opossums and largemouth bass reduced turtle populations.

Most western pond turtle populations consist primarily of large, old turtles. Few young turtles are surviving to replace the aging adults. Many turtle populations have 20 individuals or less and are separated from each other by several miles, especially those in the Willamette Valley. Isolation of turtle populations is increased by barriers such as roads, development and drained wetlands. As a result, genetic diversity is lost as small turtle populations become inbred.

Private landowners are key to the survival of western pond turtles because most of the best turtle habitat is privately owned. If you have western pond turtles on or near your land, your habitat improvement and management efforts can play a major role in conserving turtles.

## Western Pond Turtle FACTS

POPULATION STATUS

- One of two native turtle species in Oregon.
- Declining because of habitat loss and introduction of non-native predators.
- Can be helped by private landowners who provide suitable habitat.

HABITAT NEEDS

- Use both land and water throughout the year.
- Key habitat needs to include permanent slow-moving water with both deep and shallow areas, hiding and basking sites, nearby undisturbed nesting habitat, minimal impacts from non-native predators, and travel corridors.

ODFW: 8/00

# A Year in the Life of the Western Pond Turtle

Western pond turtles use both land and water during their life cycle. The turtles spend much of the year in water, living in slow-moving parts of rivers and streams or in ponds, lakes and wetlands. Pond turtles also spend a part of each year in grassy, sunny areas for nesting, and in wooded or brushy thickets for winter hibernation.

***Spring:*** Turtles emerge from winter hibernation in spring, then move to wetlands and search for food. Turtles locate their food by sight and smell, and are often seen "cruising" along the bottom or banks of a wetland. They eat small aquatic insects, crustaceans or dead meat. Turtles eat underwater because they are unable to swallow in air. Pond turtles can remain under water 60 minutes or more, but usually rise to the surface every few minutes to breathe.

Turtles often "haul out" and bask in the sun on logs, rocks, banks or floating vegetation, especially in the spring when water temperatures are cool. Turtles are cold-blooded; thus the environment controls their temperature. Turtles can be seen stacking on top of each other or in a line if basking sites are limited. If there are too few basking sites, turtles will exhibit aggressive behavior that may include an open-mouthed gesture, lunging or biting.

***Summer:*** Pond turtles can lay eggs after they are 10-12 years old, or greater than 6 inches long. Larger turtles carry more eggs, while smaller turtles may carry only one. The average number of eggs is eight. When the female is ready to lay her eggs in June or July, she empties her bladder onto the ground, then digs a nest with her hind legs in the moistened, loose soil. The completed nest takes about 10 hours to dig and is pear-shaped, 4 inches deep and 1 inch wide. When the nest is complete, the female deposits the eggs, then kneads the vegetation and soil in to the neck of the nest to form a plug. The female returns to the water and the eggs are incubated by the summer sun. Short, sparse grass or weeds on south-facing slopes are important to nest success.

***Fall:*** The eggs hatch in September and October (about 75 days) in warm, sunny weather, or as much as 125 days in cool weather or shady conditions. If the eggs don't get enough warmth, they may not hatch at all. The fully formed turtles survive on the yolk sac which they slowly absorb as they grow. When the temperatures drop in the fall, the hatchlings enter a state of hibernation in the nest. The hatchlings emerge, then travel to water. Because the hatchlings stay in the nest for almost one year, the key to their survival is an undisturbed nest from early summer through the following spring.

Hatchlings leave the nest when they are about the size of a quarter, and will live in shallow water, hiding among vegetation, to avoid predators like bullfrogs, herons and fish. It takes two to three years for them to grow large enough (about 3 inches long) that most predators can't eat them. Adult female offspring may return to their home nest area to lay their eggs.

***Winter:*** During winter, turtles hibernate in mud at the bottom of ponds, or buried on land in duff, the top layer of vegetation and soil. Some turtles travel more than a half mile to overwinter on land.

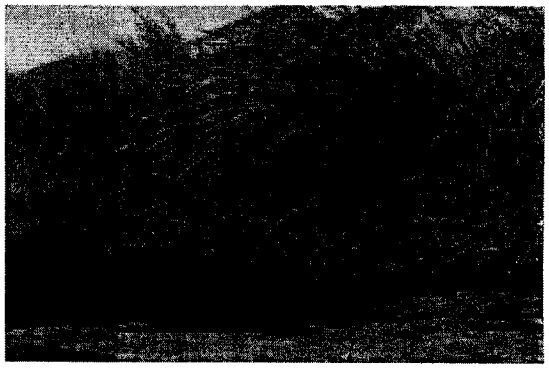
# Habitat Assessment

The most important habitats for western pond turtles are:

- Permanent water bodies with slow-moving waters for foraging;
- Shallow, near-shore waters with aquatic vegetation for hatchlings to hide from predators;
- Nearby, accessible, undisturbed upland sites with sparse vegetation and south-facing slopes for nests;
- Aquatic basking sites for temperature regulation; and
- Corridors such as streams, rivers and riparian areas that allow movement between populations.

You can help the western pond turtle by considering the following five habitat elements to determine the suitability of your land as habitat:

- ***Water body:*** A permanent body of still or slow-moving water with emergent and submergent aquatic vegetation, limited chemical application or runoff. Both shallow and deep areas will provide suitable habitat for turtles. Sizes of permanent wetlands range from small 1/4-acre sites to hundreds of acres. Small ponds that dry in the summer may be used seasonally by turtles. However, ponds are most effective when located near other ponds or streams.
- ***Hiding and basking sites:*** Habitat quality increases as the number of basking sites, especially those with underwater cover, increase. In addition to logs and rocks, vegetation and stream banks can provide good basking habitat. A combination of good basking habitat and underwater hiding cover improves habitat quality.



- ***Hatchling Habitat:*** Hatchlings need shores with gentle gradients and water less than 12 inches deep to

survive. At least 25 percent of the edge of a water body should contain shallow habitat for hatchlings to regulate their body temperature. Mats of vegetation and other structure are important for cover to hide.

•***Nesting Habitat:*** Quality nesting habitat consists of short, grassy or weedy areas in hard, compacted, clay soil on south or southwest-facing slopes. The nests must be undisturbed almost year-round. Nesting areas must be outside winter floodplains and must not contain steep slopes or barriers to travel.

•***Nest and Hatchling Predators:*** Raccoons, skunks, opossums, coyotes, red foxes and dogs are turtle nest predators. One individual predator can destroy all of the turtle nests near a water body because predators can detect turtle urine in nests. Bullfrogs, largemouth and smallmouth bass, river otter, mink and raccoon eat turtle hatchlings in wetlands. The best defense mechanism from predators is to hide, thus extensive shallow water with aquatic vegetation and other hiding cover is critical.

•***Corridors:*** Rivers, streams and irrigation canals are safer and quicker routes for turtles than land travel. Turtles may take several days to a few weeks to complete a dispersal or migration, thus food and cover provided by aquatic and riparian vegetation is critical.

## Actions Landowners Can Take to Improve Habitat

You can improve your land for western pond turtles by:

•Managing water bodies to provide forage, basking and hiding sites;

•Maintaining shallow wetlands for hatchlings;

•Managing uplands to provide nesting habitat; and

•Controlling non-native predators, especially bullfrogs and bass.

***Water body:*** Create a water body with different types of emergent and submergent aquatic vegetation. Restrict chemical application within 30 feet of the water. Place logs or rocks in the water if water flow is rapid with few pools. Increase the number of sunny areas along the edge of the pond. Create 2 to 6 foot deep areas throughout the pond.

***Basking/Cover:*** Place abundant basking structures with root wads and attached limbs throughout the water body. Establish a diversity of vegetation.

***Hatchling Habitat:*** Create a diversity of vegetation and place small root wads or tree branches in shallow areas for hiding cover. Create near-shore habitat less than 12 inches deep if your water body lacks shallow areas. Plant wetland vegatation such as reeds and sedge.

***Existing Nest Areas:*** Locate existing nesting areas and protect them. Search for nests within 500 feet of water bodies from May 15 through July 31. Suitable habitat is any sunny site with short, sparse vegetation on south or southwest-facing aspects. Look for trampled vegetation the size and shape of a turtle, disturbed soil and a small clod of mud or dried soil about 2-3 inches long. If you see a turtle nesting, leave immediately and observe from a distance with binoculars. Keep woody vegetation such as blackberry and Scotch broom from encroaching on the nest site. Protect the site from human and animal disturbance.

***Creating Nest Areas:*** You can improve existing habitat or create new habitat a number of ways.

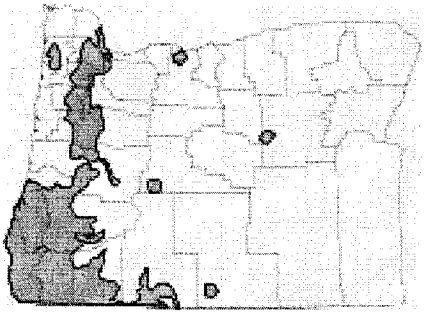
•Create a clear visual and travel path between the water and a large sunny spot at least 20 x 20 feet in low grass. Turtles often use existing hiking trails or roads because they are easy to negotiate.

•Mow grass and create bare soils for nesting by hand-pulling, scraping or "spot" applicating herbicide in areas 1 to 2 feet across. Import soil that is primarily silt or clay and deposit in mounds 2 to 3 feet high and at least 10 feet wide. Nest mounds can be built on flat ground or on ground that has a slight north or east slope, as long as you create a south-facing slope suitable for nesting.

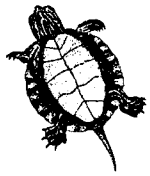
•Create 5 to 10 foot buffers around nest sites and protect these areas from grazing and agricultural practices.

***Predators:*** Eliminate or control exotic fish populations in the water body by short-term dewatering, angling and screening of water intake and outflow structures to prevent re-invasion of fish. Be careful to use chemicals aimed at controlling vegetation or animals as these may affect the food turtles need to survive.

•Control bullfrogs by allowing the pond to dry up late in the summer or by removing egg masses, tadpoles and large frogs over 3.5 inches on a yearly basis. Bullfrog eggs are laid in a broad, frothy sheet of "jelly;" they look like



Distribution of the Western Pond Turtle in Oregon



poppy seeds scattered on a patch of slime. The egg mass is laid on the water surface in shallow water or on vegetation. Tadpoles are up to 5 inches in length and adult bullfrogs have large eardrums with a ridge or groove. Juvenile frogs squeak when they are scared.

•Reduce predation by providing large nesting areas. Biologists have developed small cages you can place over the nests to exclude predators, maximize sun exposure and allow hatchlings to emerge. If you find a nest, call ODFW for a free nest cage and instructions. You can also reduce predation by obtaining ODFW approval to trap and relocate nest predators prior to and during the turtle egg-laying period.

Please contact an ODFW office if you find evidence of turtle nesting on your property and if you would like to obtain a free turtle nest protection cage.

Clackamas ..... 503-657-2000
Corvallis ..... 541-757-4186
Roseburg ..... 541-440-3353
Medford ..... 541-826-8778
Charleston ..... 541-888-5515
Springfield ..... 541-726-3515
Bend ..... 541-388-6340

**DEPARTMENT REGION OFFICES**

| REGION | ADDRESS | TELEPHONE |
|---|---|---|
| Northwest | 17330 SE Evelyn Street, Clackamas, OR 97015 | 503-657-2000 |
| Southwest | 4192 N Umpqua Hwy, Roseburg, OR 97470 | 541-440-3353 |
| High Desert | 61374 Parrell Road, Bend, OR 97702 | 541-388-6363 |
| Northeast | 107 20th Street, La Grande, OR 97850 | 541-963-2138 |
| Portland HQ | 2501 SW First Avenue, Portland, OR 97201 | 503-872-5268 |

ODFW Internet site address: www.dfw.state.or.us

ODFW: 8/00