Appendix F – Existing Conditions, Opportunities, and Constraints Summary

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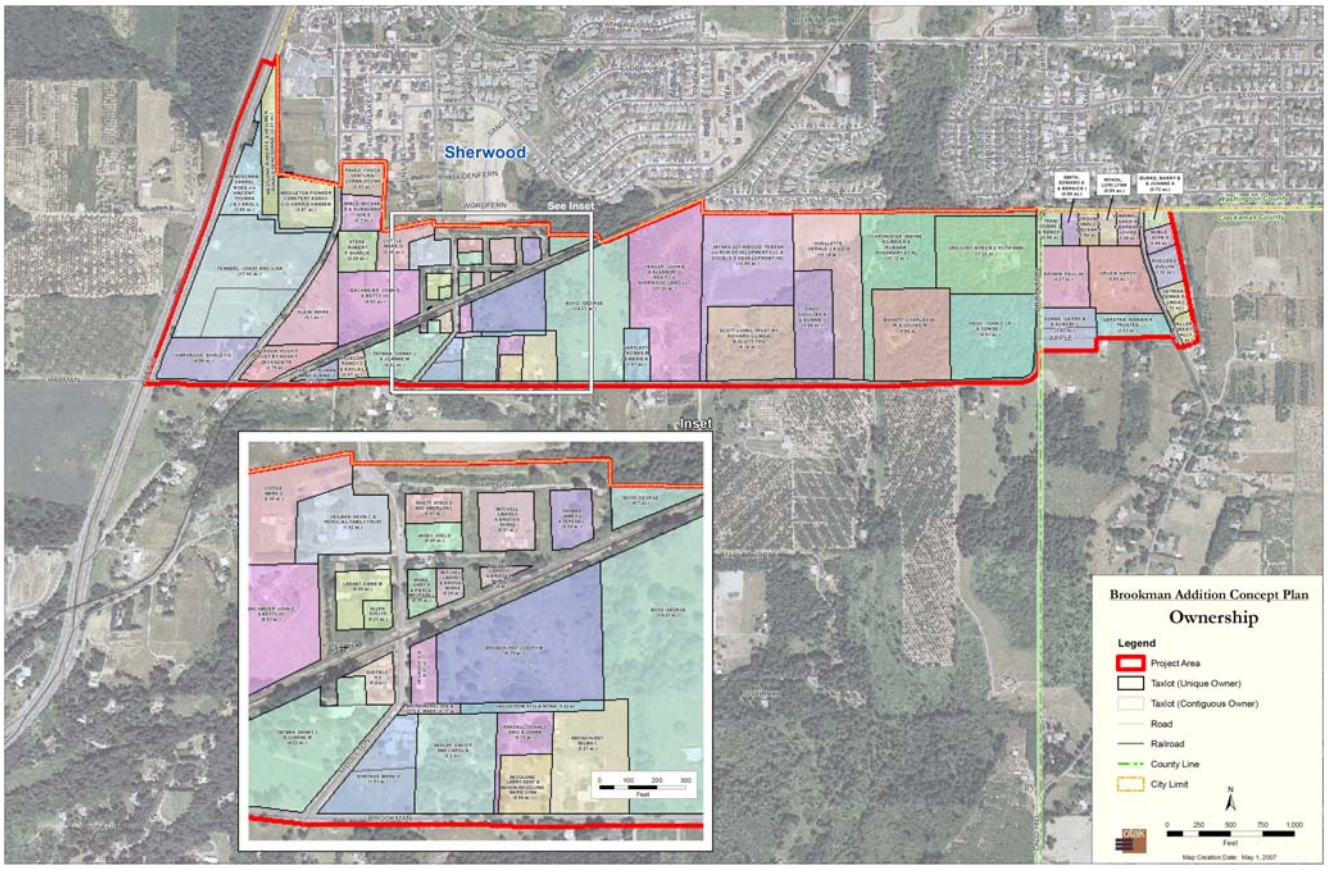
The following is a synopsis of existing conditions and opportunities in the Brookman Addition Concept Plan area. Eight subject areas are summarized: land availability; market assessment; parks and open space; natural resources; water and sanitary sewer; storm water and water quality; and transportation. Complete reports for each of these subject matters are contained in the Concept Plan Report Technical Appendix.

Land Availability

Ownership

The area is characterized by multiple property ownership. Ranging in size from 0.1 to 17 acres, there are 66 total properties with 59 different owners. Forty eight (48) of those properties have buildings or structural improvements ranging in size from just under 800 square feet to nearly 6,000 square feet. Of these developed properties, 14 are considered single family residential with the remainder coded as agricultural or rural land uses. The median year of construction for these improvements is 1966.



The remaining 18 properties are undeveloped.

Buildable Lands

Estimating the location and amount of buildable land is an important early step in the concept planning process. It establishes a building envelope for development or redevelopment by considering lands constrained by steep topography, hydrology, wetlands, and habitat areas. The exercise also estimates the amount of land required for public rights-of-way and facilities such as schools. The net yield of buildable lands ultimately is used in preparing land use programs of housing, mixed use, commercial, employment, and parks and open space. Its

spatial organization informs, guides and shapes the arrangement of concept plan neighborhoods, districts, and corridors.

The estimating process starts with the total gross acreage of the Brookman project area and subtracts out constrained, committed and nonresidential land. The total Brookman Concept land area is approximately 247 acres. Of this gross acreage, approximately 48 acres, or 20 percent of the total area, contains environmentally sensitive lands in its potential wetlands, floodplain areas, slopes of over 25 percent, and its vegetated corridor proxy as defined by the Tualatin Basin Natural Resources Protection Program. Committed lands in Brookman Addition include existing road and railroad rights-of-way, homes that will not likely redevelop the Middleton Pioneer Cemetery, and 10 acres for a potential school. These committed lands account for another 48 acres and 20% of the total area that is not available for development. This leaves approximately 150 acres available for urban use.

Table 4 Buildable Lands Summary

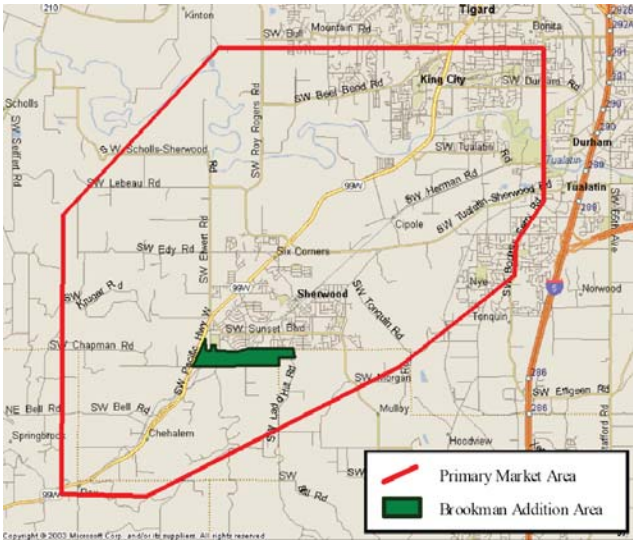
	Estimated Acres	Percent of Total Acres
Total Planning Area	**247.0**	**100%**
Constrained Lands		
Less >25% Slope	0.8	0%
Less Natural Resources	47.7	19%
Committed Lands		
Less Existing Street/Railroad Rights-of-Way	27.9	11%
Less 1/4 acres for each taxlot with a building value that is over half the land value	7.8	3%
Less Middleton Cemetery	3.0	1%
Less Potential School	10.0	4%
Gross Development Area	**149.9**	**61%**

To inform the planning process, an initial working estimate of land available for residential development was developed. Naturally, as concept plan alternatives were created and refined, this acreage would change. The initial estimate was determined by first deducting lands for nonresidential uses such as commercial, mixed use, industrial (27 acres) and parks (8 acres). Based on these land use assumptions, land was then taken out for the right-of-way of all of the future streets (33 acres). In total, these deductions equal approximately 68 acres, or 28% of the total area. Thus, the initial estimate for residential land amounted to 82 net acres. This number increased by approximately 40 acres over the course of the concept plan development phases as nonresidential lands were reprogrammed for residential uses and project constraints limited the amount of land identified as public rights-of-way.

Market Factors

Primary Market Area

Brookman Addition is partially defined by the surrounding market area and its associated demographics. The Primary Market Area (PMA) of Brookman Addition covers the area of the city of Sherwood, King City and the unincorporated area of Bull Mountain to the north, and much of Tualatin to the east. The PMA had an estimated population of 51,105 residents in 2007 and an average income that is significantly higher than the region ($79,000). The majority of households in 2007 have an age of 25 to 45, with a shift to the age of 45 to 75 within the next ten years, reflecting the regional Baby Boomer demographic shift. The current estimated employment in the PMA is 25,900, and employment in the area has recovered from pre-recession levels.



Market Trends

Market statistics about existing residential, commercial, and industrial lands surrounding Brookman Addition provide insight on potentially appropriate uses for the area. Residential homes in Washington County have a

median price of $480,950. In Sherwood, over 95% of new dwelling units permitted between 2000 and 2006 were single family, compared to 67% countywide. Retail centers in the area are experiencing very low vacancy, but the households in the PMA spend almost $158 million on retail items outside of the area per year, which indicates sales leakage. However, Sherwood is attracting external business in home furnishings, building and gardening materials, and grocery/convenience stores. The Sherwood area is not an epicenter of existing office development, but there is currently a relative scarcity of office space to meet the projected demand. In the Southwest I-5 submarket, there exist significant industrial lands between Sherwood and Tualatin as well as some along Highway 99W. Industrial and flex-space buildings have lower than average vacancy rates, indicating a healthy market and the scarcity of industrial lands elsewhere in the region.

Development Strategy Considerations

In order to determine potential land use in Brookman Addition, the market analysis considered the types of development that will most likely thrive in that market. According to the market assessment, the study area is excellently suited for residential development. The study area is not the ideal location for retail development, but it would be a natural place to serve the needs of the surrounding neighborhoods and travelers on Highway 99W. The study area presents some challenges for large-scale office development, but should support smaller-scale office development to suit the needs of the south Sherwood market. The Brookman location might be well-suited for some light industrial uses, although it is further from the freeway than industrial lands along Tualatin-Sherwood Road.

Key Market Findings

Residential

- *Excellent location for housing development*
- *Market for low to mid-density owner-occupied housing*

Retail

- *The Brookman Addition location is on the periphery of the UGB is not ideal for significant retail development*
- *Market potential for retail supporting the new community located near Highway 99w*

Employment (Office & Industrial)

- *Location of periphery of UGB creates challenges for employee commuting, freight and access to market*
- *Flat areas abutting Highway 99w are best alternative for employment uses*
- *An aggressive amount of planned employment lands would likely depend on economic development activities to promote them*

Parks & Open Space

Inventory

The City of Sherwood has seven parks, open spaces, linear parks, and natural areas within a two mile radius of Brookman Addition. Six public regional school grounds also provide shared park space in the Sherwood School District. In the region, the Tualatin National Wildlife Refuge includes the Tualatin River Water Trail and seasonal trails that could potentially link to Sherwood's local trail system. In addition, the Tonquin Trail and the Lower Tualatin River Greenway Trail are projects listed in the Metro Trails Master Plan that could also create connections to Brookman Addition.

Level of Service

The level of service for parks is outlined in "Chapter 5- Environmental Resources" in the *Sherwood Comprehensive Plan, Part 2*. The level of service indicates the amount of acres and location to meet the needs of the community. The City of Sherwood defines several types of park and the facilities and activities necessary in each park designation. Types of parks include tot lots, neighborhood parks, community parks, general open space, nature trails, conservation and management areas, cultural facilities, historic sites, and community sites. After determining the buildable residential land acres, it was estimated that Brookman Addition will need to have at a minimum 2.25 acres of Tot Lots/Mini-Parks, 4.5 acres of neighborhood parks, and 2.25 acres of community parks. For the purposes of the concept plan, it is assumed that the Tot Lots/Mini-Parks will be incorporated within residential subdivision plats and site plans.

Strategies

Several strategies could be considered to increase the viability and strength of the parks system in Brookman Addition. These strategies include park and open space connectivity, creation of a unique park system, coordination with existing park facilities, and the integration of parks with natural systems.

Connectivity will be the most important factor in creating a seamless and integrated open space system. Key connectivity strategies include reserving open space along vegetated corridors, creating greenways between districts, using parks as access points, keeping trail access along the rail corridor, and planning for tree-lined streets. Sidewalks could have adjacent storm water swales and direct links to parks or trail heads, seamlessly weaving urban and natural pedestrian corridors.

The perception of a park, open space, or trail as a special and unique feature builds pride and ownership in the users of the amenities. Strategies include building on the history of the agrarian landscape, associating parks with Cedar Creek, placing parks near a village center or schools, or locating linear parks next to the vegetated stream corridors.

Coordination with the existing parks and open space network off the site optimizes facilities and avoids duplication. Brookman Addition has the opportunity to capitalize on the three schools within a half-mile and a nearby YMCA facility. Additional strategies for integrating parks, open spaces and trails with natural systems include preserving the tree canopy, locating storm detention in the parks, green streets and connecting habitat areas.

Transportation

Existing System

With low intensity land uses such as large lot (average size is 3 acres) single family residential, the plan area is currently served by a limited transportation system. Primary access to the area is by a small number of public and private vehicular roads. The system currently lacks transportation routes and choices for bicyclists, pedestrians and transit users.

Given the area does not currently possess the primary generators of walking and biking trips including schools, parks and mixed use shopping areas, pedestrian and bicycle activity is limited within the plan area. The closest schools, Middleton and Archer Glen Elementary Schools, are respectively located outside of the northwest and northeast corners of the plan area. Within Brookman Addition, existing sidewalks are located along Middleton Road. Ladd Hill has sidewalks that end at the entrance to the Brookman Addition. No designated bike lanes are found in the project area.

TriMet bus service does not currently reach Brookman Addition. Local and commuter service is provided from downtown Sherwood. Route 94, the Sherwood-Pacific Highway Express offers express service to downtown Portland with short 6 to 15 minute headways during the morning and evening peak periods. Route 12, Barbur Boulevard, offers more local connections en route to Portland through the day.

The existing study area roadway characteristics are listed in Table 5. Most roads are posted at 25 mph and have two lanes. Forming the western edge of Brookman Addition, four-lane Highway 99W exhibits posted speeds of 45 and 55 mph. Highway 99W is a state highway and subject to the standards of the Oregon Highway Plan. According to the Oregon Highway Plan, at 45mph posted speed, access points should be spaced no closer than every 990 feet and at 55 mph posted speed, access points should be spaced no closer than every 1,320 feet. Currently, segments of Highway 99W do not meet these standards as a result of frequent roadway intersections or driveways located along the highway.

Table 5 Study Area Roadway Characteristics by Functional Classification

Corridor	Functional Class	Posted Speed	Street Width[1]	Right-of-Way Width	Number of Lanes	Lane Width
Highway 99W	Principal Arterial	45-55	132'	174'-184'	4	12'
Sunset Boulevard	Arterial	35	52'	75'-85'	2	12'
Ladd Hill Road	Arterial	25	39'-45'	65'-70'	2	12'
Old Highway 99	Collector	25	20'	60'	2	10'
Brookman Road	Collector	25-35	22'-24'	40'-50'	2	11'-12'
Timbrel Lane	Collector	25	27'	50'	2	12'-13'
Middleton Road	Neighborhood Route	25	20'	40'	2	10'
Redfern Drive	Local	25	30'	50'	2	15'

[1] *Street width includes traffic island.*

Level of Service (LOS) and volume to capacity (v/c) ratios are both used as performance standards, or measures of effectiveness, for intersection operation. Seven intersections within Sherwood were selected for existing and future operations analysis. Each of the studied seven intersections meets performance standards under existing conditions.

Future No-Build Scenario

The future year 2030 no-build scenario was also analyzed for intersection performance. The 2030 no-build scenario represents development and growth of the region without a change in existing zones in the Concept Plan area. With the forecasted growth, many of the seven intersections will degrade in performance, but continue to meet operating standards. However, the all-way stop at Sunset Boulevard and Ladd Hill Road would cease to function within acceptable standards. The intersection of Highway 99W and Brookman Road would fail to meet ODOT standards. The failure of both of these intersections could be mitigated with the installation of traffic signals. The intersection at Sunset Boulevard and Ladd Hill Road could also consider a roundabout as a solution.

Please refer to the Appendix B for the complete transportation technical memorandum.

Natural Resources

Planning Goal 5

According to Oregon Statewide Planning Goal 5, "local governments shall adopt programs that will protect natural resources and conserve scenic, historic, and open space resources for present and future generations. These resources promote a healthy environment and natural landscape that contributes to Oregon's livability." Goal 5 Resources include wetlands, streams and their riparian areas, wildlife habitat and other resources. Oregon's statewide planning guidelines require that natural areas be inventoried and evaluated, and that natural areas with high resource values be protected from development.

Inventory

The evaluation of natural resources within Brookman Addition consisted primarily of an examination of existing resource information including a review of existing documents such as Metro Goal 5 Inventory maps, National Wetlands Inventory maps, Natural Resource Conservation Service (NRCS) Soils Survey, StreamNet fisheries data, and other sources of existing information. Site visits to the Plan Area were also conducted where some of the resource areas were observed.

Stream Corridors

The study area occupies 247 acres within the Cedar Creek watershed. Cedar Creek is a tributary to Chicken Creek, which enters the Tualatin River approximately two miles north of Sherwood. Cedar Creek enters the eastern portion of the Plan Area from the southwest. Two unnamed tributaries of Cedar Creek are located near the eastern boundary of the Plan area. Riparian corridors and forest habitat associated with Cedar Creek and these two unnamed tributaries occupy most of the eastern one third of the Plan Area.

Goose Creek, which is also a tributary to Cedar Creek, enters the Plan Area from the northwest at Highway 99W. Goose Creek flows southeast across the western part of the Plan Area to its confluence with Cedar Creek south of the Plan Area boundary. The riparian corridor and upland habitat associated with Goose Creek is less extensive than the habitat areas adjacent to Cedar Creek and its unnamed tributaries.

Habitat Areas

In addition to the stream corridors and their associated upland habitats, natural features in the Plan Area include significant pockets of forest habitat centrally located between Goose Creek and Cedar Creek. Cedar Creek, its unnamed tributaries and their associated riparian areas possess extensive tree and shrub cover, and appear to provide high value wildlife habitat according to Metro inventories. Much of the reach of Goose Creek that flows through the Plan area is degraded, and historic disturbances such as clearing and grazing have reduced habitat values.

Upland forest communities adjacent to the Cedar Creek riparian corridors provide additional high quality wildlife habitat within the Plan Area, and enhance the habitat value of these riparian areas. Upland areas adjacent to the Goose Creek riparian corridor possess limited habitat value.

Wetlands

Potential wetlands were also determined to be present within the Plan Area. A substantial portion of these potential wetland areas overlay Metro-designated habitats, particularly the Goose Creek and Cedar Creek riparian corridors. While some of these areas, particularly those areas adjacent to existing stream reaches, are almost certainly jurisdictional wetlands, other areas may not currently have wetland characteristics due to historic draining, filling or other disturbances. Further investigation would be required to confirm whether jurisdictional wetland criteria are met in any of these areas.

Endangered Species

According to the Oregon Department of Fish and Wildlife (ODFW), it is not likely that anadromous fish such as salmon and steelhead currently use any of the stream reaches within the Plan Area. Upper Willamette River steelhead, a species listed as *Threatened* under the Federal Endangered Species Act, are present in the Tualatin River, and may use Cedar Creek for rearing as far upstream as SW Washington Street in Sherwood, which is north (downstream) of the Plan Area limits.

Passage barrier removal efforts such as those under Clean Water Services' Healthy Streams Plan will provide access for these fish to the upper reaches of Cedar Creek in the near future. For example, the City of Sherwood has completed a feasibility study and is currently in preliminary design for a project to replace the existing culvert at Washington Street, which has been identified as a passage to juvenile fish, with a fish-passable bridge structure.

Table 1 provides additional information on mapped resource areas. These areas are identified by location (west half or east half of the Plan Area), size, type of resource and Goal 5 designation. The Class 1 and Class A designations identify a resource of high value, while the Class 2 and Class B designations identify resources of lesser value. Within the Plan Area, approximately 61 acres are designated as Class1 or Class A resource areas, while about 21 acres are designated as either Class 2 or Class B.

Development Constraints

The presence of natural resources within Brookman Addition may present a number of constraints to development. Clean Water Services designates buffer areas ("vegetated corridors") adjacent to water features including wetlands; rivers, streams, and springs with year round or intermittent flow; and impoundments including natural lakes and ponds. The purpose of these buffer areas is to preserve the natural function of water features from surrounding development. The width of these areas can vary from as little as 15 feet to as much as 200 feet, depending on the type of water feature and steepness of adjacent slopes. Development is restricted within these areas. Preliminary evaluation of the water features present within the Plan Area indicate that most if not all of these features would require a buffer of 50 feet.

Development in natural areas such as streamside habitats, floodplains and wetlands is also subject to Metro's Title 13 rules. These rules were developed to protect the water quality and ecological benefits these resources provide. The level of development constraint in these areas varies with the type and quality of the resource. Resources considered to be of high quality receive a greater level of protection, and development in these areas may be highly restricted or prohibited. Resources considered to be of lower quality may provide some level of development opportunity. In Sherwood, Title 13 compliance was achieved by implementing the Tualatin Basin Program which relied on CWS buffers for protection and flexibility and encouragement for low impact development techniques for remaining areas.

Disturbances to wetlands and streams within the Plan Area would also require authorization from the US Army Corps of Engineers (USACE) and/or the Oregon Department of State Lands (DSL). Formal studies for wetlands and stream areas proposed for disturbance would need to be conducted, and findings of these studies would need to be submitted for agency concurrence to support wetland fill permit applications to USACE and DSL. Mitigation would also need to be provided to address any development impacts to these areas.

Enhancement Opportunities

In addition to identifying natural resource areas, it is consistent with Metro's Urban Growth Management Functional Plan to identify natural resource areas that call for maintenance, restoration, or enhancement. Resource areas with high enhancement potential are those resources that are highly degraded and provide few habitat functions. Since most of the resource areas within in the Plan Area are of high value, these are likely to offer few enhancement opportunities. Of all the resources present, the lower two-thirds of Goose Creek as it passes through the Plan Area may provide the greatest opportunity. A reach of Goose Creek approximately 2,300 feet in length is identified as having a degraded riparian corridor. Enhancements to this area could include invasive plant species removal, additional native plantings, or structural improvements such as channel meandering.

Water, Sanitary Sewer and Stormwater Infrastructure

Stormwater

Brookman Addition contains 100-year floodplains, potential wetlands, and Cedar and Goose Creeks. The City of Sherwood is has recently adopted a Storm Water Master Plan (July 2007). This plan recommends three regional storm water quality facilities in the area. These potential sites are reflected on the draft concept plan.

The Brookman Concept Plan is an opportunity to plan for the integration of development of the area with the infrastructure needed to manage storm water runoff while protecting natural resources. The plan could do this by imposing more rigorous storm water design standards; applying flow duration based design standards; creating regional detention facilities that blend with other natural resources, open space, or recreation areas; or by situating low impact development near the storm water source.

Water

The City of Sherwood's current water distribution system has three separate water pressure zones supplied by two storage facilities and two pumping stations. The Brookman Addition plan area is within the 380-foot pressure zone. The 380-foot pressure zone is the largest pressure zone in Sherwood, and it serves all customers below an approximate ground elevation of 250 feet above mean sea level. The zone includes residential, commercial, and industrial land uses. It is served by the Main Reservoir at SW Division Street east of South Pine Street. All four of the City's groundwater wells and the City's Tualatin Supply Connection provide water to the 380-foot pressure zone.

The City of Sherwood Water System Master Plan indicated the need for several major improvements including reservoirs, several pipeline segments, and the Southwest Sherwood pressure reducing valve (PRV) in Brookman Addition. Most of the water mains will be installed within the existing right-of-way.

Sanitary Sewer

The sanitary sewer system to serve Brookman Addition will most likely be a traditional gravity flow municipal system. The City of Sherwood Sanitary System Master Plan lists a future 12-inch collector sewer extension along Cedar Creek and two capacity upgrade projects downstream of the extension as future improvements.

Please refer to Appendices C and D for the complete stormwater, water, and sanitary sewer technical memorandums.