
POPULATION APPENDIX

I. INTRODUCTION

This appendix is an examination of existing trends and forecasts of growth for the next 20 years. The information in this appendix was used as a planning tool for development of the Comprehensive Plan and used to allocate population within the county to better provide adequate public facilities. The information was used to conduct an urban residential land capacity analysis intended to identify the amount of land available for residential development with the urban growth areas. That analysis is included in this appendix.

It is important to note that these forecasts are intended to provide a sense of scale as to possible future growth in Kitsap County. These population forecasts should be considered as “working projections,” subject to review to verify the continued validity of the assumptions upon which they are based.

This report contains a wide range of data from a number of sources including, but not limited to, the U.S. Census of Population and Housing, the Washington State Office of Financial Management (OFM), the Kitsap County Economic Development Council (EDC), Puget Sound Regional Council (PSRC), Kitsap Regional Council (KRC), local tribes and planning departments of all municipalities in Kitsap County.

II. EXISTING CONDITIONS AND POPULATION TRENDS

Historical Population Trends

Growth has been very rapid in Kitsap County in the last 20 years. Kitsap County’s resident population grew from 101,732 in 1970 to 189,731 by 1990, an increase of 87%, representing 88,000 people. By comparison, the state population grew 42.6% over the same period.

Kitsap County population increased by 29% between 1980 and 1990 or by 42,579 persons. **Table A-PE-1** illustrates the population trend and growth rate from 1980-1990, and population for 1997 and the growth rate from 1990- 1997.

The average annual growth rate for Kitsap County was 2.9% between 1980 and 1990. During the 1980s, the unincorporated areas of the county had an average annual growth rate of 3.8% compared to the incorporated rate of 0.9%, representing the majority of the population growth. Of the increase of 42,579 persons, less than 17% occurred in incorporated areas. Bainbridge Island, due to its incorporation, increased the most with 3,532 persons. Bremerton grew by almost 2,000, Poulsbo by 1,400, and Port Orchard by 200. Bremerton remains the county’s largest incorporated area with 39,610 residents in 1995, this being 57% of the incorporated population for Kitsap County.

Kitsap County population totals for each decade since 1900. The county’s population increased in every decade with the exception of the 1920s, when the population decreased by more than 2,000. The largest numerical increases in growth occurred in the decades of the 1940s, 1970s and 1980s respectively. World War II brought residents to the county in the 1940s with work at the Puget Sound Naval Shipyard

(PSNS). Almost 50% of Kitsap County’s growth occurred between 1970 and 1990 with the development of Naval Submarine Base Bangor.

TABLE A-PE-1 Kitsap County Population					
	1980	1990	1980 -1990 Average Annual Growth Rate	1997	1990- 1997 Average Annual Growth Rate
Kitsap County	147,152	189,731	2.9%	229,400	2.7%
Unincorporated	100,508	138,676	3.8%	158,740	3.4%
Incorporated	46,644	51,055	0.9%	70,660	* 1.5%
Bainbridge Island	**12,314	**15,846	2.9%	18,920	2.6%
Bremerton	36,208	38,142	0.5%	38,600	0.3%
Port Orchard	4,787	4,984	0.4%	6,965	4.9%
Poulsbo	3,453	4,848	4.0%	6,175	2.6%

*** Reflects 1991 incorporation of Bainbridge Island ** Total includes City of Winslow's population**

Source: U.S. Census of Population and Housing;

Washington State Office of Financial Management, 1995.

TABLE A-PE-2 Kitsap County Population 1900-1990		
	Total Population	% Growth
1900	6,767	
1910	17,647	161
1920	33,162	88
1930	30,776	-7
1940	44,387	44
1950	75,724	71
1960	84,176	11
1970	101,732	21
1980	147,152	45
1990	189,731	29

Table A-PE-3 presents Kitsap County population growth in five-year increments between 1990 and 1997. Since the mid-1980s, the county has experienced strong growth -- between 2.1% and 5.2% per year.

TABLE A-PE-3 Population Growth 1990 - 1997		
	Total Population	% Annual Change
1990	189,731	
1991	196,500	3.6
1992	205,600	4.6
1993	210,000	2.1
1994	213,200	1.5
1995	220,600	3.4
1996	224,700	1.9
1997	229,400	2.1
1990-1997 Average		2.74

*Source: Washington State Office of Financial Management;
U.S. Census of Population and Housing, 1980, 1990.*

Population Forecast and Allocations

Table A-PE-6 illustrates the 20-year population forecast by subarea, including the Kitsap Regional Council’s updated population allocations by subarea for the year 2012.

TABLE A-PE-6 Kitsap County Population and Urban Growth Area Forecast			
1992 OFM Population			205,600
1997 OFM Population ^a			229,400
KRC’s Adopted 2012 Population Projection			292,224
1997-2012 Increase			62,824
Incorporated Cities Allocation of 1997-2012 Increase			29,258
	1992-2012 Forecasted Increase	1992-1997 Growth ^e KRC’s	1997-2012 Remaining Increase
Bainbridge Island	7,430 ^b	2,070	5,360
Bremerton	19,152 ^b	-330	19,152
Port Orchard	2,300 ^c	1,690	610
Poulsbo	d	895	4,136 ^d
Unincorporated Sub-Total 1997-2012 Increase (1997-2012 Increase minus Cities Allocation)			33,566
<u>Unincorporated UGA Total</u> 70% of Unincorporated Sub-Total 1997-2012 Increase			23,495
Rural Total 30% of 1997-2012 Increase			10,070

- a) 1997 OFM population is for April 1, 1997.
- b) From KRCC adopted 2012 population forecast.
- c) From City of Port Orchard’s adopted Comprehensive Plan.
- d) The City of Poulsbo produced a population capacity analysis for the city in a memo dated 11/14/97.
- e) 1992 to 1997 OFM figures.

Population Allocations and Methodology

To adequately plan and prepare for the needs of new residents, it is necessary to allocate population into smaller geographic service areas. An important tool used in determining the projected future growth were the population forecasts adopted by the Kitsap Regional Council. These projections were used as the source for allocating population to the UGAs and for planning for capital facilities.

The KRC numbers include the 1992 and 2012 population estimates for each subarea and each

incorporated city. Utilizing the two-thirds urban and one-third rural formula, and subtracting the city population from the urban population within each subarea, it was possible to derive the urban, rural and incorporated population for each subarea. (For definitions of land use terms, please see Section II, Assessor's Land Use Classifications in the Land Use Appendix.)

In order to allocate these forecasts to various service areas, it was necessary to distribute the population to the lowest common denominator: the ownership parcel. (The size, current use, number, and type and age of buildings for each ownership parcel is contained in the Assessor's Real Property database). By excluding buildings constructed after 1992, it was possible to distribute the 1992 subarea and city population to the parcel level, based on the number of existing dwelling units on each parcel. To incorporate actual growth into the equation, the 1992-95 population was estimated for each parcel by multiplying the number of dwelling units built during 1993-95 by 2.5 persons per dwelling unit.

By overlaying the Comprehensive Plan Land Use Map onto ownership parcels, it was possible to assign each parcel a plan designation and assign it to either an urban growth area, incorporated city or unincorporated rural area. The planned or zoned capacity for each parcel can then be obtained by multiplying the parcel size by the plan density for the given designation. (For example: A three-acre parcel designated "Urban Residential 6" or "UR6" has a planned capacity of 18 dwelling units.) The net capacity for the post-1995 growth was obtained by subtracting existing dwelling units from the planned capacity. Those properties that were "built-out" (or had a current land use other than "vacant," "open land," "wooded," "estate" or "rural") were assigned a net capacity of zero.

The total capacity for each subarea, urban growth area and rural area was then tabulated from the ownership parcels and population growth allocated accordingly. Each parcel is assigned a growth factor, of which, its net capacity is divided by the total net capacity of the region. (For example: A parcel with a net capacity of 18 dwelling units in an UGA with total net capacity of 100 dwelling units will be assigned 18% of the total population increase for that particular UGA.) The 2000 and the 2012 population increases are distributed to the ownership parcel using this method. Finally, the population for each ownership parcel is tabulated by service areas to give the total population forecasts for each UGA.

It should be noted that the above method cannot be applied to distribute population within the incorporated cities, as the plan and zoning information for each jurisdiction is not available in the Counties Geographic Information System. Therefore, the County utilized adopted Comprehensive Plan population forecasts for each of the cities to achieve these results.

III. URBAN RESIDENTIAL LAND CAPACITY ANALYSIS

A. INTRODUCTION

On September 8, 1997 the Central Puget Sound Growth Management Hearings Board (CPSGMHB) remanded Kitsap County's Dec. 23, 1996 Comprehensive Plan. Problems identified by the CPSGMHB

included errors in its land capacity analysis used to size its Urban Growth Areas (UGA). The Comprehensive Plan is being revised consistent with the Hearings Board's directions.

This section describes the County's methodology for calculating land capacity. This approach is modeled after those used by other jurisdictions and the guidance provided by the Hearings Board.

Overview

The Growth Management Act (GMA) requires that counties designate sufficient land in their UGAs to accommodate a 20-year population projection. Residential land capacity analysis is used to determine if UGAs contain adequate land for the forecast population growth. UGAs also include land for employment growth and public facilities.

This analytic process used to define UGAs examines both supply and demand. The land capacity analysis is the supply side of the equation, identifying how much developable land is contained in a proposed UGA. The growth target is the demand side of the equation, showing how much population is forecast for the 20 year planning period, and how much land is needed to accommodate the forecast. **Figure 1** shows a flow chart of the supply and demand analysis.

County-wide Planning Policies

The Kitsap County-wide Planning Policies (CPPs, 1992) were reviewed for direction on land capacity. Element A.1 of the CPPs contains general criteria for designating Urban Growth Areas (UGAs) and for guiding growth to them. The CPPs state that at least 2/3 of new growth should be directed to UGAs (incorporated and unincorporated) and 1/3 to rural areas (Element A.1.B). The UGAs should be determined by existing development patterns, residential densities and the presence and capacity of urban services (A.1.D). UGAs must contain cities and may contain unincorporated areas (A.1.E). The UGAs must contain enough land to accommodate a minimum 20-year population forecast (A.1.J). The county and cities are expected to work cooperatively to determine the amount of developable land within UGAs (A.1.L).

Element 2 of the CPPs references a process for allocating forecast population. Appendix A contains allocations for cities and sub-areas of the county. The Allocations are identified as "working population forecasts and allocations."

The Land Capacity Methodology in CPPS

The Land Capacity methodology identified in the CPPs is used as the starting point for the methodology followed in this analysis. New population growth allocated to UGAs is at least 70 percent, which is consistent with CPP A.1.B. The revised UGA is being sized to accommodate the 2012 population forecast; based on Central Puget Sound Growth Management Hearings Board decisions subsequent to adoption of the CPPs, the population is considered both a minimum and maximum (Element A.1.J). The County and the cities are currently working cooperatively through the Kitsap Regional Coordinating Council (KRCC) to develop a common, agreed upon methodology for determining capacity and designating UGAs (Element A.1.L).

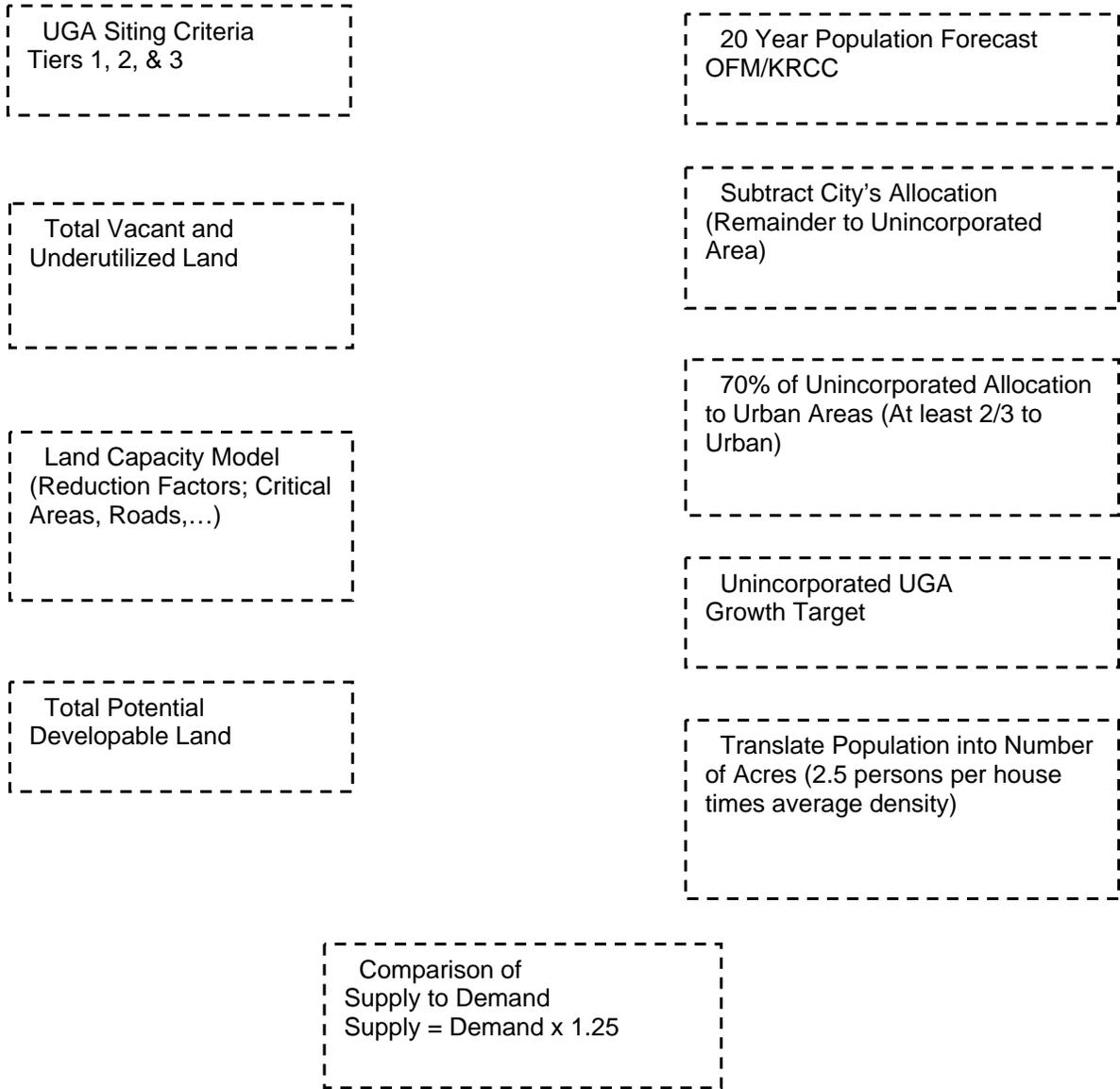


Figure 1
Process for Determining Size of Urban Growth Areas

B. LAND DEMAND – POPULATION GROWTH

Growth Targets

Background

A growth target is a number used for planning; it helps to determine the necessary size of urban growth areas. The growth target, which is initially expressed as an amount of population growth, is converted to the number of acres of land needed to accommodate that growth. Household size, type of housing and average density are factors used to translate population into land demand.

Population Forecasts

The GMA requires Counties to plan for 20 years growth. Planning targets must be within a range of projections produced by the Washington State Office of Financial Management (OFM). **Table 1** shows the most current OFM projections for Kitsap County for 2012. [Note: Consistent with the Hearings Board’s directives, the 1992-2012 period is used as the basis for planning.] **Tables 2** reflect the KRCC adopted Country-wide population forecast of 292,224 for the year 2012, which is between the OFM low and medium forecasts. KRCC adopted this population forecast as part of the County-wide Planning Policies (CPP) adopted on June 7, 1995.

This capacity analysis assumes continued reliance on the CPP target of 292,224. Change in the target would require amendment of the CPPs, could result in change in the size of the UGA, and would require amendment of the comprehensive plan.

Similarly, the capacity analysis assumes continued reliance on the CPPs allocation of growth as between the Cities and the County. Greater or smaller allocations to the Cities could occur in the future from updated analyses of capital facilities plans, recent growth trends and other factors. Any such changes, if agreed to by the region’s governments, could result in changes in City and County Comprehensive Plans and/or in the UGA.

Based on OFM figures, the April 1, 1997 County population is 229,400. The population increase from 1992 to 1997 has already been absorbed and was excluded from the growth target used to define UGAs.

TABLE 1 Official OFM GMA Population Projections for Kitsap County Dec. 29, 1995	
Series	2012 Population
Low	271,982
Medium	297,462
High	317,654

Table 2 shows the 1997-2012 population allocations to each jurisdiction based on a county-wide distribution; these are updated to reflect recent growth. The allocations reflect the County-wide Planning Policy decision that at least 2/3 of the 20-year forecast should be located in the urban area, and 1/3 in the rural area; this issue paper assumes 70% of future growth will locate in the UGA. After allocating growth to the cities first, 70% of the unincorporated sub-total is allocated to the unincorporated UGAs. It should be noted that the CPPs did not include specific allocations to Port Orchard and Poulsbo. The unincorporated UGAs will need to accommodate an estimated 23,450 people between now and 2012. Growth would be allocated to geographic sub-areas based on the criteria for allocating growth within UGAs discussed in Section IV of this population appendix.

1992 OFM Population				205,600
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Incorporated Cities Allocation of 1997-2012 Increase				29,258
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Number of Dwelling Units Needed

The population projection has been translated into dwelling units and acres in order to identify the

amount of developable land needed within the UGAs. The first step is to divide the population projection by the average number of persons per dwelling unit projected over the planning period. This will identify how many dwelling units are needed within the UGA. The assumed average number of persons per dwelling unit (ppdu) in Kitsap County for the year 2010 is 2.5 ppdu, based upon the Puget Sound Regional Council Population and Employment Forecast for the Puget Sound Region, August 1995.

Tables 3 show the population increase for the unincorporated UGAs converted into dwelling units. Converting the number of dwelling units to number of acres needed within the unincorporated UGAs is discussed in the Housing Density Section of this population appendix..

TABLE 3 Number of Dwelling Units needed in Unincorporated UGAs	
1997-2012 Projected Population Increase to Unincorporated UGAs	23,496
Persons per dwelling unit	2.5
Dwelling Units Needed (Population Increase / persons per dwelling unit)	9,398 d.u.

Housing Density - Background

Housing density is a major factor in determining the size, as well as the character of the UGAs. The choice of density allows the community to determine what it wants the urban areas to look like in 20 years, including:

- X How much land area will the urban areas contain;
- X What mixture of housing densities is desired (the ratio of single family to multi-family houses); and
- X What commitment of resources is necessary to ensure a desired quality of life.

Currently, Kitsap County’s housing mixture in the urban areas is approximately 85% single family and 15% multi-family (based on a October 1997 GIS survey of Assessor’s data of developed lots of one acre and smaller). Typical single family residential designations in Kitsap County have ranged from 1 du/ac to 9 du/ac. Average residential density is calculated by dividing the total number of developed acres in the residential zone by the total number of dwelling units on those acres.

The current average residential densities for developed land in the incorporated cities in Kitsap County are:

- X City of Bremerton is 5.16 du/ac;
- X City of Bainbridge Island is .92 du/ac;
- X City of Port Orchard is 3.11 du/ac;
- X City of Poulsbo is 3.79 du/ac; and
- X Unincorporated urban area (based on East Bremerton study area) is 3.16 du/ac.

Planned residential densities in the incorporated cities range from .4 du/ac to 20 du/ac, based on data

in their comprehensive plans.

Housing Density Variables & Issues

The choice of an average housing density for new development in the UGA will have a major influence on how much land is needed for future development. The relative mix of single-family and multi-family housing will also influence the type and form of development within the UGA. Higher average densities and greater percent of MF housing will generally result in smaller UGAs and more compact urban patterns.

TABLE 4 Number of Acres needed in Unincorporated UGAs	
Dwelling Units Needed (From Table 3)	9,398 d.u.
Average Density	5 du/ac
*Net Developable Acres Needed for Unincorporated UGAs	1,880 acres

* Net Acres = After discounting for critical areas, public facilities, unavailable land, and ROW; and before adding market factor.

Merely zoning land for a certain density will not ensure that development occurs at the zoned density. Significant underbuilding, if it occurred, could use land less efficiently than planned. Use of a minimum density requirement is one approach that could help ensure that development occurs as assumed. Monitoring development trends can also help identify whether population and density targets are being met. Historical patterns of “underbuilding” (i.e. developed densities consistently lower than zoned densities) can also indicate the presence of regulatory requirements or processes that effectively prevent achievement of zoned densities. These could include minimum lot size requirements, drainage requirements or neighborhood opposition to proposals.

C. LAND SUPPLY – CAPACITY FOR GROWTH

Overview

A Land Capacity Analysis (LCA) is used to estimate how much land is needed within an UGA to meet a jurisdiction’s growth target. Different factors are used to account for physical, social, and economic influences in the land supply market.

Although there are many different models for conducting a land capacity analysis, they all follow the same basic outline.

1. Vacant and underutilized residential land within each urban growth area is tabulated. Other non-residential lands, such as commercial land, industrial land, publicly owned lands, schools, and county parks, are not included. Vacant land does not contain any structures. Underutilized land is land that is zoned at a higher density than its current use (e.g., a house on 5 acres that is zoned at 5 dwelling units per acre) and that would permit further development. Future growth is

generally assumed to occur on vacant and underutilized lands.

2. Reduction factors are applied to account for non-residential development (public facilities), unavailable land, critical areas and street rights-of-way.
3. The remaining net acreage is compared to the growth target to determine the supply needed to accommodate the 20-year growth target.

The examples or models relied on in Kitsap County's revised land capacity analysis include King County, Snohomish County and Pierce County. The Washington State Department of Community, Trade, and Economic Development's (CTED) publication on land capacity entitled, "Issues in Designating Urban Growth Areas (Part I): Providing Adequate Urban Area Land Supply" (March 1992), was also consulted. In addition, direction in Hearings Board decisions was applied to derive a methodology. A methodology recently adopted by a Task Force in King County, which is being used by all jurisdictions in the region, was also reviewed.

Reduction Factors - Background

Urban residential development takes place in a complex and dynamic market environment whose functions are not fully understood. Factors that influence urban development include local and regional land supply and demand, as well as economic and regulatory forces. In an attempt to account for realities affecting land supply, reduction or "discount" factors are applied to different categories of the county's urban land base to more accurately estimate developable land. Discounts are typically made for critical areas, roads, public facilities, and land estimated to be unavailable during the planning period. It is almost impossible to accurately predict how the development market will act over a 20-year period; discount and market factors are intended to help ensure that an adequate supply of developable land is available to achieve the County's land use objectives.

Following are descriptions of each reduction factor and Kitsap County's approach to their use.

East Bremerton Urban Study Area

The East Bremerton peninsula (south of Bucklin Hill Road, Waaga Way and the Brownsville Highway) was selected as a study area for developing and testing options for Land Capacity Analysis, using the Geographic Information System. This area was chosen as representative of unincorporated lands which may be included in Urban Growth Areas.

The study area is a 10,000 acre peninsula consisting of all contiguous lands lying east of the Clear Creek Estuary, south of N.W. Bucklin Hill Road, SR303 (aka Waaga Way), N.E. Gluds Pond Street, Brownsville Highway N.E. and the Illahee Road N.E. bridge over Burke Bay. This area includes East Bremerton, Tracyton, Illahee and Brownsville. It is an area largely characterized by urban growth, both residential and commercial. It has been included in Urban Growth Areas on both the 1994 and the 1996 Comprehensive Plans. It is largely served by public facilities and is impacted by environmentally critical areas typical of Kitsap County, including streams, wetlands, frequently flooded areas and both steep and unstable slopes.

For the purpose of the study, ownership parcels (with their land use attributes) were overlaid with a

combination of various critical areas (including wetland and stream buffers) to evaluate the intersection of vacant and underutilized lands with critical areas. Also, built densities, proportions of uses such as public facilities, street rights-of-way, etc. were evaluated. This information was used as background to test the assumptions used in the Land Capacity Analysis formula.

General Characteristics of East Bremerton Urban Study Area:	
Total Area:	10,134 acres
Vacant Lands:	2,977 acres
Underutilized Lands:	1,401 acres
Developed Portion of Underutilized Lands: 406 acres	
Residential Development:	14,858 dwelling units 3,479 acres
Non-Residential Development:	1,221 acres
Street Rights-of-Way:	1,056 acres
Areas Covered by Critical Areas:	26%
Vacant Lands Covered by Critical Areas:	32%
Underutilized Lands Covered by Critical Areas:	32%
Mapping Sources:	National Wetland Inventory, WADNR Hydrography (with streams buffered 50-100'), SCS Soil Survey (hydric soils and steep/erodable soils), Flood Insurance Rate Maps (USFEMA), Slope Stability Atlas of Kitsap County.

Method of Calculating Reduction Factors: There are two basic methods of calculating a reduction formula: a percentage method, where each reduction is based on a percentage estimate of gross acreage subject to a particular factor; or estimates of actual acres subject to particular constraints or discount factors based on GIS information or land surveys.

The factors may be applied as a cumulative total or sequentially. This analysis deducts for the redevelopment and unavailable lands discount factors cumulatively (discount calculated from the previous sub-total), and for roads, public facilities, and critical areas constraints sequentially (discount taken from the same gross total). This is intended to avoid potential double counting.

Redevelopment Constraints: Land that contains an existing structure, but which could be developed further based on zoning, is considered to be redevelopable. However, all land within this category is not considered likely to be available for redevelopment during the planning period. Given its historical development pattern, there has been little redevelopment for residential use in Kitsap County. Existing land use patterns in the near term will constrain the ability to redevelop. This may change over time, as vacant land is consumed and market pressure for redevelopment is created. The redevelopment factor is an estimate of this situation. This factor is also used to account for the

difficulty of developing smaller parcels with an existing house. The smaller the parcel with an existing home, the more difficult it is to locate additional homes or other land uses. Based on an examination of development patterns in Kitsap County, and the factors used by other jurisdictions, the County uses a reduction of 20% for redevelopable lands.

Unavailable Land (Discount Factor): “Unavailable land” is a portion of supply estimated to not be available for sale or development within the 20-year planning period. This discount accounts for property owners who have no interest in selling or developing their land. The CTED report entitled, “Issues in Designating Urban Growth Areas (Part I): Providing Adequate Urban Area Land Supply” (March 1992) recommends using 15% for vacant land and 30% for partially used land. These figures are used in this analysis.

Streets and Roads: A reduction factor is applied to the residential capacity to account for land used for streets and roads. The amount of land needed for roads depends upon the type and density of development in the urban areas. Estimates range from 5% to 50 % of land needed for roads in communities around the country. According to CTED’s report entitled, “Issues in Designating Urban Growth Areas (Part I): Providing Adequate Urban Area Land Supply” (March 1992), 17% to 22% is a typical range for road right-of-way in communities such as Lynnwood, Kent and Wenatchee. The CTED report also states that a 17% to 30% reduction for road right-of-way can be assumed for vacant land when major roads are not in place. Snohomish County used 15.4% for street right-of-way, based upon 64 approved plats from January 1990 to October 1992. A study of road rights of way in developed portions of the East Bremerton Study area showed that roads consumed 17% of the land area. The County uses a percentage reduction of 17% based upon existing community development patterns. Information is based on plat studies and on GIS analysis of the East Bremerton study area.

Critical Areas: Designated critical areas (and any required buffers) are assumed to be constrained for development pursuant to the Critical Areas Ordinance. This includes wetlands, streams, and geologic hazards. A reduction factor is applied to account for development density lost due to critical areas.

Critical area constraints can be estimated by using a flat percentage reduction or using mapped information to calculate the amount of critical areas present in the UGAs. Using a flat percentage does not look at each individual property in a UGA, but instead assumes an overall average impact on land development. Using mapped information assumes that most of the critical areas are mapped to a relatively high degree of accuracy. Although the county does have excellent mapped critical area information, the relative scale that the information is mapped (1:2000 or greater) does not lend itself to small area or parcel specific analysis. In addition, the data are based on broad scale surveys. Using a flat percentage reduction for critical areas is the preferred method for Kitsap County at this time.

Snohomish County used mapped information from their GIS to determine the percentage reduction for each individual UGA. Overall reduction factors for critical areas used by Snohomish County ranged from 4.7% to 52.5%, depending on the UGA being analyzed. 13% was added to the mapped critical areas to account for unmapped wetlands. Snohomish county concluded that 60 % of the development density on the encumbered land would be lost. This means that if $\frac{1}{2}$ of a piece of property is covered by critical areas, then 30% of the potential development is lost ($.6 \times .5 = .3$).

A study conducted in October of 1997 of the east Bremerton area showed that 32% of vacant and partially developed residential land was encumbered by critical areas, including wetland and stream buffers. This study was conducted using the County’s Geographic Information System (GIS); mapped critical areas information was combined with assessor’s parcel data. This study area encompasses a large portion of the urbanizing area of central Kitsap County and is believed to be generally representative of unincorporated UGAs throughout the County.

Operation of the Critical Areas Ordinance can affect selection of an appropriate reduction factor for critical areas. If the development capacity attributable to designated critical areas can be transferred and used on an unconstrained portion of a site, this should reduce the estimated amount of land subject to the reduction factor. Currently, the CAO contains a provision specifically allowing wetland and wetland buffers to be used in the calculation of the minimum lot area for proposed lots (CAO, Section 260.E.1). Through use of a PUD, the development capacity attributable to wetlands can be utilized on a constrained site, this analysis assumes that roughly half of the development potential of designated critical area is recaptured pursuant to this provision, therefore, this analysis uses a 15% reduction for critical areas.

Public Facilities: This reduction factor accounts for future public facilities that will be located within the UGA. These public purpose lands include, but are not limited to, parks, schools, institutions, utility corridors, sewage treatment facilities, and open space. The Snohomish County General Policy Plan states that “research on public purpose land (excluding streets) as a percentage of total developed land in Snohomish County and in other U.S. metropolitan areas suggests that this percentage should be in the vicinity of 15%.”

The October, 1997 analysis of the East Bremerton study area showed that approximately 11% of the study area was consumed by public facilities. Since this area is not yet fully developed, it is reasonable to assume that the percentage of public facilities will reach 15% a full build-out.

Table 6 shows a summary of the reduction, discount and market factors used in this issue paper. The model for land capacity in the CPPs (Appendix B, Task 2.04) is reflected in the reduction factors used in this analysis. The model in the CPPs results in a maximum potential population, or build out population. The CPP model is; density multiplied by (vacant and underutilized land - critical - roads) multiplied by average household size + existing population = total population. This basic approach is used in this analysis and expanded upon using the CTED report and other jurisdictions’ capacity analysis models.

TABLE 6 Summary of Kitsap County Land Capacity Analysis Model Factors	
	<u>For Redevelopment and Unavailable Lands:</u> Cumulative Method (Each reduction taken from previous subtotal)
Method of Calculating Reduction Factors	<u>For all other factors:</u> Percentage method (each reduction taken from the same gross subtotal)
Redevelopment factor for Underutilized land (-)	20%

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Unavailable lands (-)	15% for vacant land; 30% for underutilized land
Roads (-)	17%
Public Facilities (-)	15%
Critical Areas (-)	15%
* Market Factor (+)	25%

* Added to net acreage after discounts/reductions taken; market factor is discussed in Section V.

D. UGA SITING CRITERIA

Definitions:

RCW 36.70A.110 and the Growth Hearings Board Order of September 8, 1997 use certain terms and phrases in the description of lands that must or may be included in Urban Growth Areas. For purposes of the Kitsap County Comprehensive Plan, these terms and phrases are defined as follows:

City means the incorporated boundaries of Bainbridge Island, Bremerton, Poulsbo and Port Orchard.

Gross land area means the total land area including street rights-of-way.

Net available land area means the result of the Residential Land Capacity Analysis formula as applied to the *gross land area*.

Areas already characterized by urban growth means areas where the *net available land area* is less than 30% of the *gross land area* AND the predominant density of existing residential development is at least three (3) dwelling units per acre (net).

Adequate existing public facility and service capacities means areas with existing water and sanitary sewer capacity to serve planned urban densities.

Areas that will be served adequately by a combination of both existing public facilities and services and any additional needed public facilities and services that are provided means areas where water and sanitary sewer capacity to serve planned urban densities is planned (contained within a capital facilities plan).

The remaining portions of the Urban Growth Areas means those areas not *already characterized by urban growth*, but which have or are planned to have adequate water and sanitary sewer capacity to serve urban densities and are adjacent to cities and/or incorporated *areas already characterized by urban growth*.

Siting Criteria

The method of allocating growth within UGAs is defined in RCW 36.70A.110 and uses land use and the presence of adequate services as the primary criteria for deciding where to locate planned growth. This sequence is described below and is shown on the accompanying maps.

1. Cities

The cities of Bainbridge Island, Bremerton, Poulsbo and Port Orchard must be included in Urban Growth Areas: “Each city that is located in such a county shall be included within an urban growth area”.

2. Unincorporated Areas

a. First Priority

“Urban growth should be located first in areas already characterized by urban growth that have adequate existing public facility and service capacities to serve such development...”. These areas are adjacent to incorporated cities, or are adjacent to or contain major employment or commercial areas. Kingston and Silverdale are typical of First Priority areas.

b. Second Priority

“Urban growth should be located...second, in areas already characterized by urban growth that will be served adequately by a combination of both existing public facilities and services and any additional needed public facilities and services that are provided...” In Kitsap County, these areas are adjacent to incorporated cities, or First Priority areas, or are adjacent to or contain major employment or commercial areas. Gorst is typical of Second Priority areas.

c. Third Priority

“Urban growth should be located...third in the remaining portions of the Urban Growth Areas”. These areas are adjacent to incorporated cities, or First Priority areas, or Second Priority areas.

Using the criteria listed above, the following areas were designated as UGAs.

Cities - Based on the first siting criteria, all incorporated Cities are included in a UGA. Therefore, the cities of Bainbridge Island, Bremerton, Poulsbo and Port Orchard are included in Urban Growth Areas.

Kingston UGA – This UGA meets the criteria for tier one area, being a location with both existing urban character and existing urban services (i.e., presence of both public water and sewer). This area also has a major transportation link with the ferry terminal to Edmonds. Due to continued population growth, the Kingston UGA boundary is expected to be increased when the KRCC adopts new population projections for the year 2017. New population projections could be ready for incorporation into the Comprehensive Plan as early as the first annual review of this plan.

The Kingston Design Study will be used for guidance for commercial development within the Kingston UGA until such time as it is formally adopted. The Kingston Urban Design Study will be used for guidance as long as it does not conflict with other portions of this Comprehensive Plan, zoning ordinance, and other implementing regulations.

Silverdale UGA – This UGA includes the Silverdale and Island Lake areas. Much of this UGA has

an existing development pattern that is characterized by urban growth, including a major retail mall and surrounding commercial properties. Large portions of this UGA have existing or planned urban services including both public water and sewer. Most of this area corresponds to tier one areas.

Central Kitsap UGA – This UGA includes the Tracyton, and Illahee areas. Much of this UGA has an existing development pattern that is characterized by urban growth. Large portions of this UGA have existing or planned urban services including both public water and sewer. Most of this area corresponds to tier one areas, with smaller portions meeting tier two criteria.

Bremerton UGA – This UGA consists of two unincorporated areas adjacent to the east and west of the City of Bremerton. The UGA to the west of the City of Bremerton includes Navy Yard City and Warner Road; areas that are essentially unincorporated islands within the City of Bremerton. The UGA to the east of the City of Bremerton generally includes the area south of Ridell Road and north of the city limits. This UGA meets the criteria for tier one and two areas, with existing urban character and is or will be served adequately by a combination of both existing and planned public facilities and services.

Port Orchard UGA – This UGA includes areas immediately adjacent to the incorporated city of Port Orchard that are characterized by urban growth and have existing urban services. This UGA meets the criteria for a tier one area.

Port Gamble UGA – From its initial settlement in 1853, Port Gamble has been a relatively urban place. The townsite has served as support for the adjoining mill and shipping enterprises for over 140 years. Throughout its history, Port Gamble has been one of Puget Sound's unique, small centers of industrial, residential and commercial activity. It was designated a National Historic District in 1966. It is the intent of the current owner to continue to maintain the historical character of the remaining townsite. This UGA meets the criteria for a tier one area with existing urban character and urban services.

The Port Gamble area has major historic significance for Kitsap County. The County places great importance on preserving the historic nature and integrity of Port Gamble and will work to ensure that any new development respects and enhances the character of this area. Port Gamble Bay is also an important natural resource for the Port Gamble S'Klallam Tribe, and the County will work with the Tribe and property owners of Port Gamble to protect this resource.

McCormick Woods UGA - This UGA consists of the McCormick Woods development (a partly developed, vested golf course/residential PUD), and Campus Station (a vested mixed-use area north of McCormick Woods). Both McCormick Woods and Campus Station are partly developed for urban uses and densities and served by adequate services. This UGA is also included in the South Kitsap Urban Joint Planning Area.

Gorst UGA - This UGA is comprised of the commercial/industrial area in Gorst and is also included in the City of Bremerton Urban Joint Planning Area.

E. SUPPLY/DEMAND ANALYSIS

The supply/demand analysis section compares land demand with the land supply to determine the adequacy of the proposed UGAs.

Market Safety Factors: Land capacity studies typically include a market or safety factor. This is an additional amount of land (usually expressed as a %) that is added to account for operation of land markets. It can also be seen as providing a margin of safety so that land supply is not constrained. The market factor is also an acknowledgment that urban land markets are complex and imperfectly understood. Growth management systems intentionally limit the supply of land to encourage compact, higher density development. We do not know, however, precisely what balance between supply and demand is required to keep these factors in equilibrium. A constrained supply of land within a jurisdiction can have adverse effects on land and housing costs; this can create pressure for growth to locate in other jurisdictions and generally impede accomplishment of growth management objectives.

The literature on market factors is limited. Various studies identify factors ranging from 25% to 300%. A 25% factor was identified in the CTED report, has been used by numerous jurisdictions, and has been approved in CPSGMHB decisions. A 25% market factor is used in this analysis.

Kitsap County also proposes to establish a monitoring system to help track factors that could indicate an imbalance between land supply and demand. The Comprehensive Plan will contain processes for review and revision of the UGA in response to specified indicators.

Demand: Based on the discussion in Section II of this issue paper, the population demand for the unincorporated portion of the UGAs is 23,496. Table 7 shows the number of net developable acres needed in the unincorporated UGAs, including a 25% market factor.

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TABLE 7 Number of Acres needed in Unincorporated UGAs	
Dwelling Units Needed (From Table 3a)	9,398 d.u.
Average Density	5 du/ac
*Net Developable Acres Needed for Unincorporated UGAs	1,880 acres
Net Developable Acres Needed for Unincorporated UGAs with a 25% Market Factor	2,350 acres

* *Net Acres = After discounting for critical areas, public facilities, unavailable land, and ROW; and before adding market factor.*

Supply: Using the siting criteria developed in Section IV, vacant and underutilized residential land in first, second, and third priority areas were tabulated separately. The reduction factors, discussed in Section III of the Population Appendix, were then applied to produce a net developable acreage total for each tier area. Using a 25% market factor, the land supply as identified can be 25% larger than the forecasted demand. As noted above, these calculations do not include industrial lands or open space.

Comparison of Supply to Demand: Starting with tier 1 areas and then moving to tier 2 areas, UGA were created calculated at an average of 5 du/ac with a 25% market factor, which equals a growth target of 2,350 acres. The total supply of net developable acres is comprised of the the net developable acres in the unincorporated UGAs, plus the equivalent acres allocated to the Poulsbo JPA, plus the equivalent acres in the McCormick Woods UGA. Population equal to 386 net developable residential acres have been allocated to the Poulsbo JPAs. This population has been reserved for the Poulsbo JPA until the Joint Planning process has been completed. For further discussion of JPAs see Chapter 2, Land Use. The McCormick Woods UGA has been calculated based on the number of vested unbuilt lots in the master plan projects of McCormick Woods and Campus Station. The number of vested unbuilt lots was converted into an equivalent number of net developable acres by dividing the number of vested lots by five to create an equivalent acreage total to match the average density target for UGAs of five dwelling units per acre.

The UGAs (including the McCormick Woods UGA and the Poulsbo JPA) as depicted on the Comprehensive Plan map contain 2,397 net developable residential acres, which is within 47 acres of the 2,350 acres growth target. This is calculated with McCormick Woods achieving the five dwelling units per acre allowable under the Urban Low residential designation. Calculating McCormick Woods at its current vested net density of 3.25 du/ac, the UGAs would contain 2,523 net developable acres.

The average planned density of the UGAs (excluding the Urban Restricted designation) as depicted on the land use map is 5.1 du/ac. Several assumptions were made in developing the average density figure, these assumptions are listed below;

- # Urban residential designations are calculated using the minimum density required for each designation. Actual achieved density may be higher and is intended to be monitored through the County’s buildable lands monitoring program.
- # McCormick Woods is currently calculated at 3.25 du/ac for net developable acreage. Average planned density for all UGAs would be 5.5 if McCormick Woods calculated at 5 du/ac.
- # Acreage allocated to the Poulsbo JPA is not included. Final land use designations have not been determined for the JPA and therefore can not be included in this calculation.
- # Urban Restricted designation is not included. This designation is a special situation which is intended to protect

critical areas. It is unlike the other urban designations that have a minimum density requirement. The Urban Restricted designation has a base density of one du/ac, with a maximum of five du/ac. Each applicant is required to demonstrate an ability to accommodate higher density through site specific environmental review. Including the Urban Restricted designation calculated at one du/ac, the average density of the UGAs is 4.3 du/ac (with McCormick Woods calculated at 3.25 du/ac) or 4.6 du/ac (with McCormick Woods calculated at 5 du/ac).

Table - 9 shows the land capacity analysis calculations for the unincorporated portions of the UGAs. Numbers in the table were rounded to the nearest hold number and may not total to 100%.

- # The first column contains an alphabetic row indicator used for reference in the calculation (fourth) column.
- # The second column shows the type of reduction factor and the order of it's application. Two of the reduction factors apply different percentage reductions for vacant and underutilized land and are shown in the percentage reduction and calculation columns.
- # The third column contains the percentage reduction for each reduction factor. The calculation column shows how the percentage reduction factor is applied for each row.
- # The far right column shows the acreage subtotal for each row, and is not indented to be added as a column.
- # Row 'H' shows the net developable acreage after all reduction factors have been applied.
- # Row 'J' shows the number of dwelling units for each column and is calculated by multiplying the net developable acreage by the low end of the density range for each land use designation.
- # The low end of the density range is shown in Row 'A'.

For more detailed discussion of the reduction factors and their application, please refer to the reduction factor section of this population appendix.

Tables 10-14 show the land capacity analysis calculations for unincorporated portions of each UGA.

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Table-8 Urban Residential Land Capacity Analysis County-wide Unincorporated UGA Total												
				Vacant Land				Underutilized Land				
A	Reduction Factor	Percentage Reduction	Calculation	Urban Restricted (1 du/ac)	Urban Low (5 du/ac)	Urban Medium (10 du/ac)	Urban High (19 du/ac)	Urban Restricted (1 du/ac)	Urban Low (5 du/ac)	Urban Medium (10 du/ac)	Urban High (19 du/ac)	Acreage Subtotal for each row
B		Gross Acreage		616	2,017	73	88	420	1,287	38	9	4,548
C	Redevelopment	Vacant 0% Underutilized 20%	Vac. = B - (B x 0) Und. = B - (B x .2)	616	2,017	73	88	336	1,030	30	7	4,197
D	Unavailable Land	Vacant 15% Underutilized 30%	Vac. = C - (C x .15) Und. = C - (C x.3)	524	1,714	62	75	235	721	21	5	3,357
E	Roads	17%	D - (D x .17)	435	1,423	52	62	195	598	18	4	2,786
F	Public Facilities	15%	E - (D x .15)	356	1,166	42	51	160	490	14	3	2,283
G	Critical Areas	15%	F - (D x .15)	278	909	33	40	125	382	11	3	1,779
H	Net Developable Acres		G	278	909	33	40	125	382	11	3	1,779
J	Dwelling Units (du)		G x A	278	4,543	329	753	125	1,910	113	51	8,101

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**Table-8
Urban Residential Land Capacity Analysis
County-wide Unincorporated UGA Total**

L	Subtotal - Net Developable UGA Acreage	G	1,779		
M	Equivalent Net Developable Acreage for Poulsbo JPA*	3,864/(2.5ppdu x 5 du/ac) x 1.25 = 386 acres	386		
N	Equivalent Net Developable Acreage for McCormick Woods UGA**	1,162 lots / 5 du/ac = 232 acres	232	1,162 lots / 3.25 du/ac = 343 acres	358
N	Total Net Developable Acres	L + M + N	2,397	2,523	

* Equivalent acreage total is calculated using unincorporated Poulsbo JPA population increase of 3,864 divided by 2.5 persons per dwelling unit (ppdu) and five dwelling units per acre (du/ac) with a 25% market factor. $3,864 / (2.5 \text{ ppdu} \times 5 \text{ du/ac}) \times 1.25 = 386$ acres. The total population projection for the City of Poulsbo and the unincorporated Poulsbo JPA is 8,000, which is used as the basis for sewer planning. The city's Nov. 1997 land capacity analysis memo shows that the city can accommodate 4,136 additional people, therefore the unincorporated JPA can accommodate 3,864 people (8,000 - 4,136 = 3,864).

** Equivalent acreage total is calculated using 1,162 vested, unbuilt dwelling units in McCormick Woods and Campus Station. Two equivalent calculations are shown, one using 5 du/ac, which is the minimum density achievable under the urban low residential designation, and one using the 3.25 du/ac which is the current density of the vested lots excluding the roads, community open space and golf course.

**Table-9 Urban Residential Land Capacity Analysis
Kingston Unincorporated UGA Total**

			Vacant Land				Underutilized Land					
A	Reduction Factor	Percentage Reduction	Calculation	Urban Restricted (1 du/ac)	Urban Low (5du/ac)	Urban Medium (10du/ac)	Urban High (19du/ac)	Urban Restricted (1 du/ac)	Urban Low (5 du/ac)	Urban Medium (10 du/ac)	Urban High (19 du/ac)	Acreage Subtotal for each row
B		Gross Acreage		0	197	32	1	0	56	0	0	286

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**Table-9 Urban Residential Land Capacity Analysis
Kingston Unincorporated UGA Total**

C	Redevelopment	Vacant 0% Underutilized 20%	Vac. = B - (B x 0) Und. = B - (B x .2)	0	197	32	1	0	45	0	0	275
D	Unavailable Land	Vacant 15% Underutilized 30%	Vac. = C - (C x .15) Und. = C - (C x.3)	0	167	27	1	0	31	0	0	227
E	Roads	17%	D - (D x .17)	0	139	23	1	0	26	0	0	188
F	Public Facilities	15%	E - (D x .15)	0	114	18	1	0	21	0	0	154
G	Critical Areas	15%	F - (D x .15)	0	89	14	0	0	17	0	0	120
H	Net Developable Acres		G	0	89	14	0	0	17	0	0	120
J	Dwelling Units (du)		G x A	0	444	144	9	0	83	0	0	680

**Table-10 Urban Residential Land Capacity Analysis
Port Gamble Unincorporated UGA Total**

			Vacant Land				Underutilized Land					
A	Reduction Factor	Percentage Reduction	Calculation	Urban Restricted (1 du/ac)	Urban Low (5du/ac)	Urban Medium (10du/ac)	Urban High (19du/ac)	Urban Restricted (1 du/ac)	Urban Low (5 du/ac)	Urban Medium (10 du/ac)	Urban High (19 du/ac)	Acreage Subtotal for each row

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**Table-10 Urban Residential Land Capacity Analysis
Port Gamble Unincorporated UGA Total**

B		Gross Acreage		0	30	0	0	0	0	0	0	30
C	Redevelopment	Vacant 0% Underutilized 20%	Vac. = B - (B x 0) Und. = B - (B x .2)	0	30	0	0	0	0	0	0	30
D	Unavailable Land	Vacant 15% Underutilized 30%	Vac. = C - (C x .15) Und. = C - (C x.3)	0	26	0	0	0	0	0	0	26
E	Roads	17%	D - (D x .17)	0	21	0	0	0	0	0	0	21
F	Public Facilities	15%	E - (D x .15)	0	17	0	0	0	0	0	0	17
G	Critical Areas	15%	F - (D x .15)	0	14	0	0	0	0	0	0	14
H	Net Developable Acres		G	0	14	0	0	0	0	0	0	14
J	Dwelling Units (du)		G x A	0	68	0	0	0	0	0	0	68

**Table-11 Urban Residential Land Capacity Analysis
Silverdale Unincorporated UGA Total**

				Vacant Land				Underutilized Land				
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**Table-11 Urban Residential Land Capacity Analysis
Silverdale Unincorporated UGA Total**

A	Reduction Factor	Percentage Reduction	Calculation	Urban Restricted (1 du/ac)	Urban Low (5 du/ac)	Urban Medium (10 du/ac)	Urban High (19 du/ac)	Urban Restricted (1 du/ac)	Urban Low (5 du/ac)	Urban Medium (10 du/ac)	Urban High (19 du/ac)	Acreage Subtotal for each row
B		Gross Acreage		97	372	7	73	54	238	4	8	853
C	Redevelopment	Vacant 0% Underutilized 20%	Vac. = B - (B x 0) Und. = B - (B x .2)	97	372	7	73	43	190	3	6	792
D	Unavailable Land	Vacant 15% Underutilized 30%	Vac. = C - (C x .15) Und. = C - (C x .3)	82	316	6	62	30	133	2	4	637
E	Roads	17%	D - (D x .17)	68	262	5	52	25	111	2	4	529
F	Public Facilities	15%	E - (E x .15)	56	215	4	42	21	91	2	3	433
G	Critical Areas	15%	F - (F x .15)	44	168	3	33	16	71	1	2	338
H	Net Developable Acres		G	44	168	3	33	16	71	1	2	338
J	Dwelling Units (du)		G x A	44	838	32	625	16	353	12	45	1964

**Table-12 Urban Residential Land Capacity Analysis
Central Kitsap Unincorporated UGA Total**

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**Table-12 Urban Residential Land Capacity Analysis
Central Kitsap Unincorporated UGA Total**

				Vacant Land				Underutilized Land				
A	Reduction Factor	Percentage Reduction	Calculation	Urban Restricted (1 du/ac)	Urban Low (5 du/ac)	Urban Medium (10 du/ac)	Urban High (19 du/ac)	Urban Restricted (1 du/ac)	Urban Low (5 du/ac)	Urban Medium (10 du/ac)	Urban High (19 du/ac)	Acreage Subtotal for each row
B		Gross Acreage		439	713	21	13	342	525	23	0	2076
C	Redevelopment	Vacant 0% Underutilized 20%	Vac. = B - (B x 0) Und. = B - (B x .2)	439	713	21	13	274	420	18	0	1898
D	Unavailable Land	Vacant 15% Underutilized 30%	Vac. = C - (C x .15) Und. = C - (C x .3)	373	606	18	11	192	294	13	0	1507
E	Roads	17%	D - (D x .17)	310	503	15	9	159	244	11	0	1250
F	Public Facilities	15%	E - (D x .15)	254	412	12	8	130	200	9	0	1024
G	Critical Areas	15%	F - (D x .15)	198	321	9	6	102	156	7	0	798
H	Net Developable Acres		G	198	321	9	6	102	156	7	0	798
J	Dwelling Units (du)		G x A	198	1606	95	111	102	779	68	0	2959

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**Table-13 Urban Residential Land Capacity Analysis
Bremerton Unincorporated UGA Total**

				Vacant Land				Underutilized Land				
A	Reduction Factor	Percentage Reduction	Calculation	Urban Restricted (1 du/ac)	Urban Low (5 du/ac)	Urban Medium (10 du/ac)	Urban High (19 du/ac)	Urban Restricted (1 du/ac)	Urban Low (5 du/ac)	Urban Medium (10 du/ac)	Urban High (19 du/ac)	Acreage Subtotal for each row
B		Gross Acreage		0	413	3	1	0	235	0	1	653
C	Redevelopment	Vacant 0% Underutilized 20%	Vac. = B - (B x 0) Und. = B - (B x .2)	0	413	3	1	0	188	0	1	606
D	Unavailable Land	Vacant 15% Underutilized 30%	Vac. = C - (C x .15) Und. = C - (C x .3)	0	351	3	1	0	132	0	1	487
E	Roads	17%	D - (D x .17)	0	291	2	1	0	109	0	0	404
F	Public Facilities	15%	E - (D x .15)	0	239	2	1	0	89	0	0	331
G	Critical Areas	15%	F - (D x .15)	0	186	1	0	0	70	0	0	258
H	Net Developable Acres		G	0	186	1	0	0	70	0	0	258
J	Dwelling Units (du)		G x A	0	930	14	9	0	349	0	6	1307

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**Table-14 Urban Residential Land Capacity Analysis
Port Orchard Unincorporated UGA Total**

				Vacant Land				Underutilized Land				
A	Reduction Factor	Percentage Reduction	Calculation	Urban Restricted (1 du/ac)	Urban Low (5 du/ac)	Urban Medium (10 du/ac)	Urban High (19 du/ac)	Urban Restricted (1 du/ac)	Urban Low (5 du/ac)	Urban Medium (10 du/ac)	Urban High (19 du/ac)	Acreage Subtotal for each row
B		Gross Acreage		80	299	10	0	24	232	5	0	650
C	Redevelopment	Vacant 0% Underutilized 20%	Vac. = B - (B x 0) Und. = B - (B x .2)	80	299	10	0	19	186	4	0	598
D	Unavailable Land	Vacant 15% Underutilized 30%	Vac. = C - (C x .15) Und. = C - (C x .3)	68	254	9	0	13	130	3	0	477
E	Roads	17%	D - (D x .17)	56	211	7	0	11	108	2	0	396
F	Public Facilities	15%	E - (D x .15)	46	173	6	0	9	88	2	0	324
G	Critical Areas	15%	F - (D x .15)	36	135	5	0	7	69	1	0	253
H	Net Developable Acres		G	36	135	5	0	7	69	1	0	253
J	Dwelling Units (du)		G x A	36	673	45	0	7	344	15	0	1121