FINAL
Environmental Impact Statement

for the

Comprehensive Growth Management Plans

of

Clark County,
Battle Ground, Camas, La Center, Ridgefield, Vancouver, Washougal, and Yacolt

Volume 3:
Revised DEIS

proud past, promising future

CLARK COUNTY
WASHINGTON

May 4, 2007

FACT SHEET

(a) Title	Clark County Comprehensive Growth Management Plan
Purpose:	Adopt revised comprehensive plan that meets the requirements of RCW 36.70A regarding growth management.
(b) Proponents:	Clark County Department of Community Planning
(c) Lead Agency:	Clark County, Washington
Responsible Official:	Marty Snell, Director Clark County Department of Community Planning P.O. Box 9810 1300 Franklin Street, Floor 3 Vancouver, Washington 98668-9810
(d) Licenses Required:	Adoption by the Board of County Commissioners
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(f) Draft EIS Date of Issue:	August 25, 2006 (Revised, May 4, 2007)
(g) Time and Place of Public Hearings:	A public hearing on the DEIS was held September 19, 2006. The County Board of Commissioners will consider comments in selecting a Preferred Alternative. This selection may be preceded by either public meetings or public hearings. Hearings will be held on the Final EIS and the Clark County Comprehensive Plan based on the Preferred Alternative.
(h) Anticipated Date of Final Action:	June 2007

(i) Nature of Final Action: Adoption of comprehensive plan and related programs

(j) Type and Timing of any Subsequent Environmental Review: Final Environmental Impact Statement, April 2007

(k) Documents Incorporated by Reference:

1) Plan Monitoring Report, 2002-2004, Clark County Department of Community Development
2) Metropolitan Transportation Plan (2005), Southwest Washington Regional Transportation Council
3) Environmental Impact Statement for the Comprehensive Growth Management Plans of Clark County, Battle Ground, Camas, La Center, Ridgefield, Vancouver, Washougal, and Yacolt (September 2003)
4) City of La Center Draft Environmental Impact Statement for the La Center Comprehensive Plan Amendment (May 1, 2006)
5) City of Ridgefield Supplemental Environmental Impact Statement for the Comprehensive Growth Management Plan (September 14, 2005)

Documents 1 through 3 are available for review at Clark County Community Planning, 1300 Franklin Street, Vancouver, Washington. Document 4 is available through the City of La Center. Document 5 is available through the City of Ridgefield.

(l) Cost per Copy: Cost of reproduction

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SUMMARY

I. What is being proposed?

Clark County and the cities and towns of Battle Ground, Camas, La Center, Ridgefield, Vancouver, Washougal, and Yacolt are proposing to revise their Comprehensive Growth Management Plans (the GMA plans) to comply with the requirements of the Growth Management Act (GMA). The revisions focus on changes to the Urban Growth Areas (UGAs[1]) to accommodate projected growth over the next 20 years.

This Draft Environmental Impact Statement (DEIS) evaluates the environmental impacts of different ways of managing the projected population and job growth. Clark County is considering the potential environmental impacts of a No Action Alternative that would not expand the UGAs and two Alternatives with expanded UGAs. The DEIS analysis can be used to help decision makers and the public to choose or develop a Preferred Alternative that will be evaluated in the final EIS (FEIS) and form the basis of a new 2006 Plan.

The County's stated objective for the new 2006 Plan is to accommodate the projected demand for jobs and housing by 2024 based on new growth assumptions, to implement land use patterns that reflect local preferences and values (see pages 24-25 for a summary of principles and values), and to minimize impacts on the environment, schools, and the cost of infrastructure by fine-tuning the location of expansion areas.

In accordance with the regulations of the State Environmental Policy Act (SEPA), the DEIS consists of a summary and an abbreviated discussion of the impacts of the different alternatives. A technical document attached to the DEIS and incorporated by reference provides more information on all the topics found in the summary section and documents the environmental impacts in more depth. For backup or background information to all of the topics presented in the DEIS readers are directed to the Technical Document.

II. What is the Growth Management Act?

The Growth Management Act (GMA) was enacted by the state legislature in 1990. It requires high population counties and fast-growing counties to develop comprehensive plans to balance the needs of housing and jobs with preservation of resource lands (for agriculture, forestry and mining) and critical areas (such as habitat, wetlands and areas subject to flooding). Clark County was required to prepare a plan because it met both the population and growth rate criteria. The county adopted its first comprehensive plan in 1994 and completed its first comprehensive plan update in 2004. The EIS for the Comprehensive Growth Management Plan for Clark County (2003) is incorporated by reference in this DEIS.

III. What is the State Environmental Policy Act?

The State Environmental Policy Act (SEPA) was enacted by the state legislature in 1984. It requires local governments to evaluate the environmental impacts that may result from actions they approve or that they undertake. Projects that are not direct proposals for development, such as the adoption of code language or a new program, are called "non-project actions" and they also require review under SEPA.

Projects or non-project actions that are expected to have significant impacts require the most analysis, typically in the form of an environmental impact statement (EIS). EISs require agencies to compare

[1] What are UGAs? They are areas where urban growth will be encouraged. Counties and cities planning under GMA must cooperatively establish the urban growth areas and cities must be located inside urban growth areas. Growth outside urban growth areas must be rural in character.

impacts from the proposed action against impacts from one or more alternatives, of which one of the alternatives must be the option of not doing the project. The expansion of urban growth boundaries (a non-project action) requires a greater level of analysis, which is why the County has prepared an EIS.

IV. What is a Growth Management Plan?

The Growth Management Act (GMA) was enacted by the state legislature in 1990. It requires high population counties and fast-growing counties to develop comprehensive plans to balance the needs of housing and jobs with preservation of resource lands (for agriculture, forestry and mining) and critical areas (such as habitat, wetlands and areas subject to flooding). Clark County was required to prepare a plan because it met both the population and growth rate criteria. The comprehensive plan and plan map together must provide a land supply adequate to accommodate the projected 20-year demand for jobs and housing as estimated by the Office of Financial Management.

Several amendments to the GMA have occurred in 1990. The DEIS for the Comprehensive Growth Management Plan for Clark County (2003) listed key changes to the GMA between 1995 and 2001. Key changes between 2001 and 2005 are contained in Appendix A at the end of the Technical Document.

V. Why are the Growth Management Plans being revised?

The Board of County Commissioners (Board) adopted the first update to the 1994 comprehensive plan in 2004. This is the plan that is currently in effect. The 2004 plan was challenged on a number of grounds. The Boards subsequently decided to revisit several of the assumptions made in the 2004 plan, resulting in a proposal to again expand the urban growth boundaries to include enough land to accommodate 20 years of projected job and population growth.

Between May 2005 and March 2006, staff and the Board received input from the cities and from the public about how and where to add land to the cities' urban growth areas (UGAs). From this input the BOCC did three things. First, the Board developed a list of principles and values to help guide development in the next 20 years. Some of these relate to where land should develop, and some relate to how land should develop (see pages 24-25 for a summary of principles and values).

Next, the Board developed a set of planning assumptions to be used in analyzing the effects of expanding UGAs for the various alternatives. The planning assumptions have to do with growth rates, population, and jobs per acre, and are listed below. Comments in parentheses indicate similarities or differences with the assumptions of the 2004 Plan.

- A total population of 584,310 by 2024, from an annual growth rate of 2.0 percent, with 2.2 percent assumed in 2004-2010 for capital facilities planning purposes (2004 Plan: annual rate of 1.67 percent)
- Population growth of 192, 635; 90 percent of the population would live in urban areas; 10 percent in rural areas
- A residential market factor of 10 percent; no market factor for commercial, industrial or business park (2004 Plan: 25 percent for business park and commercial; 50 percent for industrial)
- 66,939 new dwelling units needed for households in urban areas and 138,312 new jobs by 2024
- Currently built land would be redeveloped, absorbing five percent of the projected population and job growth (same as 2004 Plan)
- 2.59 persons per household (2004 Plan: 2.69 pph)
- 20 employees per commercial acre; 9 employees per industrial acre; and 20 employees per business park acre (same as 2004 Plan)

- Average residential densities in urban areas would be 8 units per net acre for Vancouver, 4 units per net acre for La Center, 6 units per net acre for Battle Ground, Ridgefield, Camas and Washougal, and no minimum for the town of Yacolt (same as 2004 plan)

- Infrastructure factor of 27.5 percent for residential development and 25 percent for industrial and commercial development.

- No expansion of Yacolt or Woodland UGAs.

- No more than 75 percent of any product type of detached/attached housing.

Lastly, the Board developed the alternatives that are the focus of the DEIS process. There are three alternatives evaluated in the DEIS. SEPA requires that there be a No Action Alternative. In the DEIS, Alternative 1 is the No Action Alternative, which means the UGAs would remain as they are now. Alternative 2 includes UGA expansions to accommodate job and population growth projected over the next 20 years. Alternative 3 includes additional expansion areas beyond Alternative 2 but only as options for adjusting the boundaries in Alternative 2. More detail about the Alternatives can be found on pages 19-22 of this DEIS.

The purpose of the SEPA process is to disclose potential impacts. By disclosing the potential impacts of three alternatives and by soliciting public and agency input through the DEIS process, Clark County and its cities expect to develop a Preferred Alternative that will be the subject of an FEIS, and that will ultimately be consistent with the GMA.

VI. What are the differences between the alternatives and their impacts?

All of the alternatives assume the same 2 percent rate of growth of population and employment. In the next 20 years it is expected that about 192,000 more people would live in Clark County (for a total population of about 584,000). It is assumed that 90 percent of these (about 173,000) would settle in urban areas, with the remaining 10 percent moving to rural areas. This would require about 67,000 new dwelling units in urban areas and the need for about 138,000 new jobs. (For current urban and rural county zoning, refer to Figure 41, Clark County 2004 Zoning Map.)

The difference between the alternatives is in where the growth would occur.

Alternative 1 is the No Action Alternative, as previously stated. Under Alternative 1, urban growth areas would not be expanded (see Figure 2). This means that an expected 173,000 new residents would need to be accommodated in the current UGAs. Without increasing the planned densities in some areas, or changing the growth assumptions, the urban areas as planned would not have sufficient land to accommodate approximately 54,000 people, or approximately 21,000 households. Keeping the current boundary would require upzoning or increasing densities of dwelling units and jobs in existing UGAs. Increasing densities would make more efficient use of current infrastructure (for roads, schools, wastewater and water supply) and land. Subsequent upzoning would also create additional impacts not anticipated by the current zoning, primarily with respect to increased impervious surface, lower levels of service for parks and recreation, and a higher proportion of travelers using alternative transportation modes.

It is expected that under this alternative the result would be a lower number of congested lane miles, vehicle hours of delay and vehicle miles traveled; and a somewhat higher share of transit and non-motorized modes, as compared to Alternative 2. The I-5 and I-205 bridges would be operating at or near failing levels of service at a.m. peak times, which would affect the flow of traffic at interchanges and connecting streets. Maintaining acceptable levels of service is estimated to cost between $576 million and $609 million (2006-2024). Proposed projects to mitigate this alternative would be between $98.5 and $124.5 million.

Alternative 2 is the principal Action Alternative proposed by the county (see Figure 3). Under Alternative 2, the 2005 Discussion Map alternative), the urban growth areas would be expanded about 10,850 acres, a little less than 17 square miles. This means that the expected 173,000 people in urban areas would be accommodated both in the current UGAs and in the expanded UGAs. The other 19,000 people would be accommodated in rural areas. Given the planning assumptions for growth rate and jobs/acre, the 10,850 acres represents the amount of land needed to accommodate the population and job growth projected in the next 20 years. Impacts on the environment consist primarily in bringing urban levels of development to land that is currently rural.

Building urban types of development in expanded UGAs would result in new impacts to the environment in those (currently rural) areas, but would not require upzoning in the existing UGAs and so would avoid those impacts cited under Alternative 1. Development would occur on land currently known to contain prime agricultural and forest soils. Forty-two (42) stream miles of surface water and 213 acres flood hazard areas would be added to UGAs. Given proposed land uses, there is a potential increase of about 5,700 acres of impervious surface. The county's critical areas ordinances, all of which have recently been revised, would be used to mitigate any site-specific impacts.

This alternative would result in a higher number of congested lane miles, vehicle hours of delay and vehicle miles traveled; and a somewhat lower share of transit and non-motorized modes, all as compared to Alternative 1. The I-5 and I-205 bridges would be operating at or near failing levels of service at a.m. peak times, which would affect the flow of traffic at interchanges and connecting streets. Maintaining acceptable levels of service is estimated to cost between $576 million and $609 million (2006-2024). Proposed projects to mitigate this alternative would be between $117.4 and $147.9 million. The additional costs are represented by one mitigation project estimated to cost $18.9 to $23.4 million.

Alternative 3 is different from the other two alternatives (see Figure 4). Alternative 3 looks at smaller individual subareas of potential expansion of the UGAs (Figures 4 through 11). Alternative 3 is intended to provide options for adjusting the UGA expansions proposed by Alternative 2. The subareas could be added to the UGAs while a same-sized area with environmental impacts could be removed from the expansion. The main reason for adjusting the boundaries in Alternative 2 would to avoid or reduce identified significant environmental impacts.

All of the Alternative 3 subareas could not be adopted as a whole alternative or as additive to Alternative 2 because sufficient infrastructure could not be provided to all of the land in the subareas in Alternative 3, which would be inconsistent with that GMA requirement. (See discussion of concurrency in the Public Facilities and Transportation elements.)

VII. How do all of the environmental impacts under the alternatives compare?

SEPA requires every DEIS to summarize the impacts and mitigation for each alternative. The summaries are presented in Tables 1 and 2, beginning on page 5.

VIII. How well do the alternatives meet the principles and values of the Board?

In September 2005 the BOCC identified numerous principles and values that should be reflected in the new plan and in determining the new UGA boundaries. The consistency of the alternatives with the BOCC's principles and values were evaluated and are rated in Table 3, beginning on page 14. The principles and values established by the BOCC are shown in the left-hand column of Table 3.

Table 1. *Summary of Impacts*

Earth, Air

	Alternative 1	Alternative 2	Alternative 3 Subareas								
			Battle Ground		Camas		La Center		Ridgefield		
			B1	B2	C1	C2	L1	L2	R1	R2	R3
Size of Subarea			41 acres	120 acres	1,243 acres	125 acres	534 acres	793 acres	614 acres	227 acres	362 acres
EARTH											
Soils and Geology: (acres)											
Acres of land with soils with severe limitations to foundations	22,109 acres	22,109 acres + 3,490 acres	18 acres	8 acres	419 acres	16 acres	375 acres	413 acres	391 acres	79 acres	159 acres
Land with prime agricultural soil converted to urban uses	51,856 acres	51,856 acres + 6,385 acres	1 acre	-	825 acres	81 acres	285 acres	398 acres	355 acres	129 acres	163 acres
Land with prime forest soil converted to urban uses	38,604 acres	38,604 acres + 7,184 acres	33 acres	112 acres	390 acres	117 acres	295 acres	480 acres	260 acres	150 acres	249 acres
Topography:											
Earthquake zone D: 2nd highest hazard zone[2]	18,703 acres	18,703 acres + 1,823 acres	1 acre	-	-	-	134 acres	26 acres	-	-	14 acres
Steep slopes over 40% slope	947 acres	947 acres + 96 acres	6 acres	-	3 acres	-	44 acres	12 acres	2 acres	-	-
Landslide hazard areas	3,631 acres	3,631 acres + 674 acres	9 acres	-	4 acres	-	99 acres	106 acres	55 acres	2 acres	40 acres
Erosion hazard areas	3,900 acres	3,900 acres + 824 acres	9 acres	-	34 acres	-	141 acres	113 acres	61 acres	-	32 acres
AIR	All alternatives have the potential to affect the air quality and climate. Impacts can be related to the balance between emissions from automobile use (vehicle miles traveled or VMT), emissions from unregulated private sources (e.g. gas lawnmowers), federal regulations through the Clean Air Act, and conversion of rural and resource land to urban land with less vegetative cover. For differences in VMT (full build-out capacity, not planned growth) see Transportation Impacts. For conversion of rural to urban land see the Rural and Resource land impacts.										

	Alternative 3 Subareas									
	Vancouver							Washougal		
	V1	V2	V3	V4	V5	V6	V7	W1	W2	W3
Size of Subarea	1,006 acres	875 acres	402 acres	908 acres	635 acres	219 acres	668 acres	809 acres	122 acres	21 acres
EARTH										
Soils and Geology: (acres)										
Acres of land with soils with severe limitations to foundations	182 acres	266 acres	75 acres	150 acres	31 acres	47 acres	527 acres	775 acres	122 acres	21 acres
Land with prime agricultural soil converted to urban uses	648 acres	538 acres	294 acres	710 acres	575 acres	172 acres	341 acres	250 acres	45 acres	21 acres
Land with prime forest soil converted to urban uses	923 acres	645 acres	310 acres	683 acres	635 acres	4 acres	47 acres	722 acres	122 acres	-
Topography:										
Earthquake zone D: 2nd highest hazard zone	804 acres	538 acres	-	41 acres	635 acres	-	-	16 acres	-	21 acres
Steep slopes over 40% slope	9 acres	-	-	5 acres	-	-	-	65 acres	-	-
Landslide hazard areas	108 acres	32 acres	23 acres	30 acres	-	-	-	160 acres	3 acres	10 acres
Erosion hazard areas	115 acres	2 acres	24 acres	5 acres	-	-	-	188 acres	12 acres	-
AIR										
Climate and air quality	All alternatives have the potential to affect the air quality and climate. Impacts can be related to the balance between emissions from automobile use (vehicle miles traveled or VMT), emissions from unregulated private sources (e.g. gas lawnmowers), federal regulations through the Clean Air Act, and conversion of rural and resource land to urban land with less vegetative cover. For differences in VMT (full build-out capacity, not planned growth) see Transportation Impacts. For conversion of rural to urban land see the Rural and Resource land impacts.									

[2] *None of the land proposed for UGAs in Alternative 2 contains Zone A land*

Water, Plants and Animals

	Alternative 1	Alternative 2	Alternative 3 Subareas								
			Battle Ground		Camas		La Center		Ridgefield		
			B1	B2	C1	C2	L1	L2	R1	R2	R3
Size of Subarea			41 acres	120 acres	1,243 acres	125 acres	534 acres	793 acres	614 acres	227 acres	362 acres
WATER											
Surface waters: miles of streams added to UGAs	185 miles	185 miles + 42.5 miles	0.2	-	7	-	6	6	6	1	3
Stormwater: Acres of new impervious surface	17,166 acres	17,166 acres + 5,722 acres	27	54	603	56	169	479	294	50	218
Shorelines: Acres of environment affected	6,414 acres	6,414 acres + 145 acres	-	-	209	-	67	-	-	-	-
Flood hazard areas: Acres in new UGAs	14,525 acres	14,525 acres + 213 acres	-	-	422	-	223	2	-	-	-
Groundwater:											
Acres of Category 1 Critical Aquifer Recharge Areas in new UGAs	4,010 acres	4,010 acres + 386 acres	-	-	70	-	4	71	-	3	-
Acres in 1-Yr Zones of Contribution in new UGAs	4,373 acres	4,373 acres + 8.9 acres	-	-	-	-	5	-	-	-	-
PLANTS AND ANIMALS											
Acres with Priority Species in new UGAs	7,384 acres	7,384 acres + 109.5 acres	-	-	46.7	-	225.5	-	-	9.7	55.1
Acres of Non-Riparian Priority Habitat Conservation Area	2,256 acres	2,256 acres +190.1 acres	-	-	3.7	-	-	-	5	-	-
Acres of Riparian Priority Habitat Conservation Area	7,314 acres	7,314 acres +1,321.5 acres	-	-	311.3	-	235	175.7	149.6	38.9	84
Wetlands in new UGAs	16,150 acres	16,150 acres + 1,406 acres	-	-	630	14	200	75	206	18	102

	Alternative 3 Subareas									
	Vancouver							Washougal		
	V1	V2	V3	V4	V5	V6	V7	W1	W2	W3
Size of Subarea	1,006 acres	875 acres	402 acres	908 acres	635 acres	219 acres	668 acres	809 acres	122 acres	21 acres
WATER										
Surface waters: miles of streams added to UGAs	4.8	4.7	2.2	2.6	-	.5	3.9	6	.6	.1
Stormwater: Acres of new impervious surface	427	597	184	400	409	88	563	399	60	18
Shorelines: Acres of environment affected	79	-	-	77	-	1	107	74	-	-
Flood hazard areas: Acres added to UGAs	91	-	25	83	-	1	578	33	0	21
Groundwater:										
Acres of Category 1 CARAs	2	-	18	-	-	-	27	1	-	-
Acres in 1-Yr Zones of Contribution	-	-	-	22	-	-	-	0.7	-	-
PLANTS AND ANIMALS										
Acres with Priority Species	16	-	8		-	-	308	-	-	16
Acres of Non-Riparian Priority Habitat Conservation Area	23	-	-			-	20		-	-
Acres of Riparian Priority Habitat Conservation Area	208	164	95	170		4	24	277	21	5
Wetlands	121	159	57	211	113	47	155	29	-	-

Energy Conservation, Environmental Health

	Alternative 1	Alternative 2	Alternative 3 Subareas								
			Battle Ground		Camas		La Center		Ridgefield		
			B1	B2	C1	C2	L1	L2	R1	R2	R3
Size of Subarea			41 acres	120 acres	1,243 acres	125 acres	534 acres	793 acres	614 acres	227 acres	362 acres
ENERGY CONSERVATION	Impacts on energy and natural resource conservation are not quantitatively comparable. Total energy impacts are more determined by overall growth and consumption by type of use, less so from patterns of expansion. Planned growth is the same for both Alternative 1 and Alternative 2. Impacts from growth based on potential land capacity (as opposed to planned growth) would likely result in greater impacts than planned, though that impact has not been measured in this DEIS. Growth based on capacity would be greatest under Alternative 2, because the land added to UGAs would accommodate more than the planned population. Impacts from VMT on energy (petroleum) use based on capacity for growth (full build-out) can be found in Transportation Impacts.										
ENVIRONMENTAL HEALTH											
Scenic Resources Only Alternative 2 would convert rural and resource land to urban uses, affecting scenic values adjacent to the new UGAs.	Pressure to increase density for planned population may impact scenic areas at the Columbia River shoreline and Vancouver Lake Lowlands	Conversion of about 11,000 acres to urban use would result in the loss of agricultural , forest, and rural lands that have scenic and visual values	Rural residential scenic values affected by extension of employment and residential zones	Potential impacts from extending low-density residential areas to the north	Employment and low-density residential zones abutting scenic areas near Lacamas Lake & creek		Low-density residential and industrial areas would replace agricultural scenic views	Extending industrial and medium density residential zones south would replace agricultural views	Residential low-density expanded on ag land designated as urban reserve	Residential & industrial expanded on rural land to east; potential merge w/ La Center	Medium density residential & industrial expanded on rural land; potential merge w/ Vancouver UGA
Noise	Impacts from noise not quantitatively compared. Higher noise impacts expected from increased traffic (see Transportation), from expansion of diverse urban uses into formerly rural areas (see Land Use, and Rural and Resource land comparisons).										

	Alternative 3 Subareas									
	Vancouver							Washougal		
	V1	V2	V3	V4	V5	V6	V7	W1	W2	W3
Size of Subarea	1,006 acres	875 acres	402 acres	908 acres	635 acres	219 acres	668 acres	809 acres	122 acres	21 acres
ENERGY CONSERVATION	Same impacts as described for the other subareas.									
ENVIRONMENTAL HEALTH										
Scenic Resources	Agricultural and rural residential land would be converted to urban low-density development.							Most change consists of conversion of farmland, rural residential to residential & industrial uses north of city limits		
Noise	Impacts from noise not quantitatively compared. Higher noise impacts expected from increased traffic (see Transportation), from expansion of diverse urban uses into formerly rural areas (see Land Use, and Rural and Resource land comparisons).									

Land Use, Economy, Historic and Cultural Resources

	Alternative 1	Alternative 2	Alternative 3 Subareas								
			Battle Ground		Camas		La Center		Ridgefield		
			B1	B2	C1	C2	L1	L2	R1	R2	R3
LAND USE											
Urban residential land capacity Difference between number of planned households and number of households at build-out; actual land capacity Planned new urban population: 173,372 (190,709 with 10% market factor) Planned households: 66,939 (73,633 with 10% market factor)	118,969 new residents in 45,934 dwelling units could be accommodated = capacity deficit of 21,005 dwelling units Has actual capacity for 69% of planned growth	177,385 new residents (68,488 housing units) could be accommodated = surplus capacity of 1,549 dwelling units Has actual capacity for 102% of planned growth	Urban residential land capacity was not calculated for Alternative 3 subareas								
Rural residential land capacity (Difference between number of planned households and number of households at build-out; actual land capacity) Planned new rural population: 19,263 Planned new rural households: 7,437	29,422 new residents in 11,360 dwelling units could be accommodated = surplus capacity of 3,923 dwelling units Has actual capacity of 152% of planned rural growth	27,790 new residents in 10,730 dwelling units could be accommodated = surplus capacity of 3,292 dwelling units Has actual capacity of 144% of planned rural growth	Rural residential land capacity was not calculated for Alternative 3 subareas								
Rural Lands: Acres of rural land into new UGAs	-	3,004	41	120	794	98	223	279	316	32	76
Resource Lands: Acres into new UGAs											
Agricultural land	-	4,054	-	-	407	27	306	405	298	23	286
Forest land	-	154	-	-	-	-	-	-	-	-	-
Mineral land	-	229	-	-	-	-	-	-	-	-	-
ECONOMY											
Planned jobs to population ratio: Planned new jobs: 138,312 jobs Actual capacity for jobs to actual capacity for population	1:1.39 1:1.10 (114,026 jobs capacity to 118,969 population capacity)	1:1.39 (1:1.24 (136,382 jobs capacity to 177,385 population capacity)	Jobs to population ratio was not calculated for Alternative 3 subareas								
New industrial land	-	1,907	-	-	-	-	86	239	-	49	-
New Employment Center/Employment Campus	-	498	22	-	590	-	-	-	-	-	122
New commercial land	-	227	-	-	-	-	-	-	-	-	-
Employment capacity (% of land used for planned jobs)	**Has actual capacity for 82% of planned employment growth**	**Has actual capacity for 99% of planned employment growth**	Employment capacity was not calculated for Alternative 3 subareas								
HISTORIC AND CULTURAL RESOURCES	Would not add new urban development to high probability areas. Existing UGAs have 34,000 acres with moderate to high probability for cultural resources and 289 identified historic sites.	Much of the county has been identified as having a high probability for archaeological resources, in part because of the area's rich history and its importance as a settlement location. Many of the high probability areas are located along streams, rivers, and other water bodies. (See stream miles, above.) All subareas would include areas identified as having a high probability for archaeological resources. New UGAs have 7, 700 acres with moderate to high probability and 8 historic sites; Alternative 3 subareas have 10 historic sites.									

	Alternative 3 Subareas									
	Vancouver							Washougal		
	V1	V2	V3	V4	V5	V6	V7	W1	W2	W3
LAND USE										
Urban residential land capacity (Difference between number of planned households and number of households at build-out; actual land capacity)	Urban residential land capacity was not calculated for Alternative 3 subareas									
Rural residential land capacity (Difference between the number of planned households and number of households at build-out; actual land capacity)	Rural residential land capacity was not calculated for Alternative 3 subareas									
Rural Lands: Acres of rural land into new UGAs	70	68	-	-	248	-	55	654	107	-
Resource Lands: Acres into new UGAs										
Agricultural land	-	197	-	-	387	-	613	46	15	-
Forest land	-	-	-	-	-	-	-	-	-	-
Mineral land	-	-	-	-	-	-	-	46	29	-
ECONOMY										
Average jobs to population ratio: Planned jobs to population Actual capacity for jobs to actual capacity for population	Jobs to population ratio was not calculated for Alternative 3 subareas									
New industrial land	-	-	-	-	495	-	668	-	41	
New Office/Bus. Park land	-	875	-	-	-	-	-	-	-	-
New commercial land	-	-	-	-	-	-	-	31		
Employment capacity (% of land used for planned jobs)	Employment capacity was not calculated for Alternative 3 subareas									
HISTORIC AND CULTURAL RESOURCES	Much of the county has been identified as having a high probability for archaeological resources, in part because of the area's rich history and its importance as a settlement location. Many of the high probability areas are located along streams, rivers, and other water bodies. (See stream miles, above.) All subareas would include areas identified as having a high probability for archaeological resources.									

Transportation and Public Facilities

	Alternative 1	Alternative 2	Alternative 3 Subareas								
			Battle Ground		Camas		La Center		Ridgefield		
			B1	B2	C1	C2	L1	L2	R1	R2	R3
TRANSPORTATION											
Projected Vehicle hours of delay [Not calculated for Subareas]	3,379	4,518	Need new local access to SR 503; expect increased delays at SR 503 and 244th	Substantial trip generation; significant impacts to SR 503 and 244th would increase delays	Underserved by local network; two major corridors serving area projected to fail during peak hours	Insignificant increase beyond local network	Area south of river would substantially increase congestion at Paradise Park and La Center roads and interchange	Residential area would add to failing level of service at NW 11th and NW Spencer Road	Inadequate arterial & collector system for north of Pioneer Street	Impacts to I-5 interchange could be mitigated by improvements underway	Would need extension of new arterial west from I-5/219th interchange
Projected Vehicle Miles Traveled [Not calculated for Subareas]	1,070,911	1,076,081									
Projected Lane miles at LOS E/F [Not calculated for Subareas]	159	175									
Transportation costs to maintain LOS D [Not calculated for Subareas]	Capital projects and programs: $576-$609 million (m) Additional planned projects $200-233m Mitigation projects: $98.5-124.5m	Same as Alt 1, but with one additional mitigation project of $19 to 23 m. Total costs: 117.4 to 147.9 m									
PUBLIC FACILITIES & UTILITIES											
Fire Protection	CCFD #5 response time would increase (& currently do not meet LOS)	CCFDs #3, #5, and #11 affected; new training facilities needed, $2 million (CCFD #11) and $350,000 (CCFD #3)	Growth impacts associated with specific fire districts for each expansion area. Specific impacts if different than Alternative 2would be addressed in FEIS.								
Police Protection	Additional staff & vehicles needed; increased response times likely due to traffic congestion. Additional sworn officers needed: 457	Additional staff and facilities for County Sheriff; new county jail est. cost $90-100 million; possible increased response times Additional sworn officers needed: 535 (79 more than Alternative 1). Alternative 3: one additional sworn officers above those in Alternative 2.									
Public Schools	New facilities: 16 elementary, 6 middle, 2 high, 85 portables Costs: $594 million	New facilities: 23 elementary, 10 middle, 3 high, 83 portables Costs: $880 million	Depends on subareas chosen, location of boundary and relative dispersal of residential areas, but more than under Alternatives 1 and 2.								
Parks and Recreational Facilities	Need for new park and recreation facilities for population growth; most efficient use of existing facilities	Need for new park and recreation facilities for population growth; no park land allocated to low-density residential expansion areas; Vancouver-Clark and all cities would face increased demand									
Libraries	More efficient use of existing facilities; New library facilities needed for growth	New library facilities needed for projected growth									
General government	Demand mostly driven by overall projected growth, not location of growth. No new office space for Clark County needed for next 10 years. La Center expects to construct a new city hall. Vancouver may need additional facilities over next years. Battle Ground expects to need additional space for projected growth. Camas expects to remodel city hall. Washougal may have to expand city hall to provide facilities										
Solid waste	Facilities have capacity to handle waste stream for projected population beyond the 20-year plan period.										
Public water supplies: Additional water demand at capacity build-out Cost to build facilities to meet demand	Some additional transmission lines and water capacity (wells) may be required due to increased densities. Demand of 17.5 million gallons per day.	6.67 million gallons per day more than Alternative 1(demand based on new UGA capacity growth only)	Alternative 3 options are assumed to result in a similar land use profile as Alternative 2. Therefore, demand would be similar. Network extensions (main lines, etc.) would be different and location and cost would depend upon the option chosen.								
Sewer	No expansion beyond existing sewer plans. Some additional pipes and capacity may be required due to increased densities. Demand of 15.6 million gallons per day.	5.79 million gallons per day more than Alternative 1 (demand based on new UGA capacity)	Alternative 3 options are assumed to result in a similar land use profile as Alternative 2. Therefore, demand would be similar. Network extensions (main lines, etc.) would be different and location and cost would depend upon the option chosen.								
Electricity	Electrical service is entirely a "pay as you go" service. Electrical system upgrades are paid for by new development directly (in the form of system connection fees) and by utility rates paid by Clark Public Utilities (CPU) customers. Rates are adjusted to reflect changing costs of purchasing or generating power. CPU expects to be able to expand the electrical system to serve development for either alternative. Availability of electricity is not expected to be a limiting factor for new development.										

	Alternative 3 Subareas									
	Vancouver							Washougal		
	V1	V2	V3	V4	V5	V6	V7	W1	W2	W3
TRANSPORTATION	Potential needed road system constrained; significantly impact I-5/ Salmon Creek interchange	179th corridor could have failing level of service	Residential development likely to cause congestion and delays at I-5/179th St interchange even after planned improvements	Urban development would increase traffic on Salmon Creek Ave., 50th Ave and 72nd Ave; improvements constrained by environmental factors	Extension of NE 94th St north of NE 119th needed	Residential land would add traffic to NE 99th St, NE 172 Ave, and Ward Rd; impacts not significant if 172nd and Ward Rd improved as planned	Road network limited in this area; traffic impacts to Fourth Plain, SR 500 and NE 162nd Ave	Development west of Washougal river would add traffic to Woodburn and Washougal rds; primary access to east of river is via 32nd St/Stiles/34th St	Access to industrial portion would be via local streets 49th & J sts. Industrial area on south side of 20th St would have poor accessibility	No public street access to single parcel
Vehicle hours of delay [Not calculated for Subareas]										
Lane miles at LOS E/F [Not calculated for Subareas]										
Total project mitigation costs to maintain LOS D [Not calculated for Subareas]										
PUBLIC FACILITIES & UTILITIES										
Fire Protection	Increasing call volume likely an impact and would require additional resources, including a new station with fire and EMS equipment; service in new UGAs would come at the expense of a reduced LOS overall in east county							No additional facilities would be needed; CFP schedule includes construction of a new station and purchase of a new pumper in 2000 and replacement of another in 2011		
Police Protection	Additional staff and facilities for County Sheriff; new county jail est. cost $90-100 million; possible increased response times									
Public Schools	Depends on subareas chosen, location of boundary and relative dispersal of residential areas..									
Parks and Recreational Facilities	Need for new park and recreation facilities for population growth; no park land allocated to low-density residential expansion areas; Vancouver-Clark and all cities would face increased demand									
Libraries	New library facilities needed for projected growth									
General government	Demand mostly driven by overall projected growth, not location of growth. No new office space for Clark County needed for next 10 years. Vancouver may need additional facilities over next years. Battle Ground expects to need additional space for projected growth. Camas expects to remodel city hall. Washougal may have to expand city hall to provide facilities									
Solid waste	Facilities have capacity to handle waste stream for projected population beyond the 20-year plan period.									
Sewer: Additional capacity at build-out Cost to upgrade facilities	Alternative 3 options are assumed to result in a similar land use profile as Alternative 2. Therefore, demand would be similar. Network extensions (main lines, etc.) would be different and location and cost would depend upon the option chosen.									
Public water supplies: Additional water demand at capacity build-out Cost to build facilities to meet demand	Alternative 3 options are assumed to result in a similar land use profile as Alternative 2. Therefore, demand would be similar. Network extensions (main lines, etc.) would be different and location and cost would depend upon the option chosen.									
Electricity	Electrical service is entirely a "pay as you go" service. Electrical system upgrades are paid for by new development directly (in the form of system connection fees) and by utility rates paid by CPU customers. Rates are adjusted to reflect changing costs of purchasing or generating power. CPU expects to be able to expand the electrical system to serve development for either alternative. Availability of electricity is not expected to be a limiting factor for new development.									

Table 2. *Summary of Mitigation*

Element	Mitigation Measures
Soils	Comprehensive plan policies and ordinances of Clark County and the cities protect resource land soils and restrict development where there are soil limitations.
Geology and Topography	Comprehensive plans of Clark County and the cities have policies for regulating development within geologically hazardous areas, which are implemented through local geological hazard ordinances.
Climate	Climate change is indirectly addressed and mitigated through federal and state air quality. Choosing an alternative that converts the least amount of undeveloped vegetated areas to impervious surfaces and reduces vehicle emissions through more efficient development are available forms of mitigation to avoid impacts to climate.
Air Quality	Protection of air quality occurs through federal and state regulations on automobiles, fireplaces, and wood stoves. All of the comprehensive plans recognize the importance of maintaining good air quality. Some have policies in their Transportation, Economic Development, and/or Environmental Element to mitigate impacts to air quality from vehicle and industrial emissions.
Surface Water	Comprehensive plan policies and development regulations provide for the protection of surface water quality throughout the county. Generally, mitigation consists of the identification and protection of critical areas and floodplains through local ordinances, protection of shorelines through Shoreline Master Programs, and through stormwater management and erosion control ordinances.
Groundwater and Aquifer Recharge Areas	As required by the GMA, the county and each city have identified critical environmental areas, including critical aquifer recharge areas. Protection of groundwater resources is addressed in critical areas ordinances (CAOs) that regulate development within recharge areas. The County regulates septic systems through its public health department.
Fish and Wildlife Habitat	The protection of fish and wildlife habitat conservation areas is addressed in comprehensive plan policies and implemented through local ordinances. The county and each city have identified critical environmental areas, which include fish and wildlife habitat conservation areas. CAOs, stormwater management programs and regulations, erosion control regulations, and tree protection ordinances are the mechanisms for mitigating adverse impacts to these areas.
Sensitive, Threatened, and Endangered (STE) Species	Mitigation of impacts to STE species is the same as for fish and wildlife habitat, above. All local jurisdictions have updated or are in the process of updating their CAOs, in part to provide greater protection for ESA-listed salmon and steelhead.
Migratory Species/Migration Routes	Mitigation for impacts to migratory species and habitat is the same as for fish and wildlife habitat, above.
Wetlands	The protection of wetlands is accomplished primarily by federal Clean Water Act, Section 404 regulations. State regulations that provide for the mitigation of impacts to wetlands include the Shoreline Management Act, Hydraulic Project Approval, State Environmental Policy Act, and the Floodplain Management Program. The county and the cities have adopted wetland protection ordinances, incorporated into their CAOs.
Renewable and Non-Renewable Energy Sources	The primary energy conservation measure available to local jurisdictions is to adopt a compact urban form that supports alternative, energy efficient transportation. The Battle Ground, Camas, and Vancouver comprehensive plans directly address energy conservation.
Scenic Resources	Clark County has designated 2 scenic routes and implements the provisions of the Columbia River Gorge National Scenic Area Act in its code requirements. Battle Ground has adopted interim policies to protect and promote significant views. Camas' municipal code also allows for the protection of scenic resources. Other local codes do not directly address scenic resources.
Noise	Federal and state regulations that limit noise exposure in different classes of land use provide for some mitigation of noise impacts. Noise impacts are also considered in SEPA environmental review. Vancouver proposes to adopt a modification of the state noise ordinance.
Land Use, Population, and Housing	Mitigation for the lack of sufficient land for the 20-year growth projection is to change growth or redevelopment assumptions or upzone land within existing UGAs.
Rural Lands	Clark County's comprehensive plan has policies that protect rural lands. Development on rural lands is also regulated by the county's zoning code, which establishes rural districts and permitted uses.

Element	Mitigation Measures
Resource Lands	Clark County's comprehensive plan policies protect resource lands from incompatible uses and from conversion to urban land. The zoning code regulates the intensity and nature of development that can occur on and adjacent to resource lands. City comprehensive plans contain policies that direct development away from productive forest and farm land.
Historic and Cultural Resources	Clark County and the cities have policies and/or ordinances that require these jurisdictions to identify and protect historic and cultural resources.
Transportation	Both Alternative 1 and Alternative 2 would require significant transportation improvements to reduce congestion and achieve a system-wide level-of-service D. Other mitigation could consist of : Seeking out local option transportation funding and increased funding through the state legislature or referenda. Lowering the LOS standards on corridors where appropriate funding levels are not available or where multimodal transportation use is to be encouraged. Reducing the amount of UGA expansion or the intensity of growth in outlying urban growth areas, or at a minimum, developing a mechanism to delay growth in certain areas until funding is available. Amending the County's comprehensive plan to allow rural major collectors to become multi-lane, non-state highways on specific routes that connect urban areas. Implementing a regional traffic impact fee structure whereby rural and outlying urban area development contributes toward the cost of rural corridor capacity improvements.
Emergency Services and Fire Protection	Battle Ground would require a new training facility. Increasing call volume, particularly in east county, would require additional resources for CCFD No. 5 to serve the Vancouver UGA, including a new station with fire and EMS equipment.
Police Protection	New facilities would be needed to mitigate the impacts of projected demands for services in most new UGAs. A new jail facility would be necessary within the next 6 years for the Clark County Sheriff. A new La Center facility could be required to serve development concentrated at the I-5 Junction; a new city hall would house expanded police department in the next 5-10 years. Ridgefield anticipates a need for a new public safety facility (combining fire and police protection) to serve proposed development in the Ridgefield Junction area. Funding this mitigation would be difficult. An additional mitigation measure would be developing a mechanism to delay growth in certain areas until funding is available.
Public Schools	Several new schools in each local jurisdictions have adopted school impact fees on new development. Local comprehensive plan policies address the siting of new school facilities. Balancing land uses within school districts helps to ensure adequate tax base for schools. Battle Ground would need to expand existing school facilities and add at a minimum of 12 new schools and 2 to 13 portlables. Camas would add 2 or 3 new schools and 3 to 4 portables. Evergreen would need at least 9 new schools, and 27 to 32 portables. Green Mountain would add either 4 portables or 1 school. Hockinson would expand its high school and add from 2 to 6 portables, plus 1 elementary school. La Center has plans for 2 new schools and an expanded high school. Ridgefield would add 5 to 7 new schools and 8 portables. Vancouver add 4 to 5 new schools and 24 to 32 portables. Washougal would add 1 to 4 new schools and 2 to 4 portables. An additional mitigation measure would be developing a mechanism to delay growth in certain areas until funding is available.
Parks and Recreation	Clark County and its cities have established policies for the provision of parks and open space to accommodate new development and enhance the quality of life in urban areas. Mitigation in the form of additional parks would be needed to maintain levels of service in Battle Ground, Camas, Ridgefield, Vancouver, .and Washougal. Funding this mitigation would be difficult. An additional mitigation measure would be developing a mechanism to delay growth in certain areas until funding is available.
Libraries	Fort Vancouver Regional Library District provides this service. Mitigation measures to meet additional demand for library services consists of upgrading old or establishing new facilities where needed, purchase of materials, and increasing staff and other services. Local jurisdictions can provide mitigation for impacts from growth in form of assistance in locating facilities, assistance with entitlements, and coordination with programs and planning.
General Government	New and expanded facilities for several jurisdictions, as noted in the Summary of Impacts table, would need to be funded to maintain services for the new population.
Solid Waste	No mitigation needed.
Sanitary Sewer	Concurrency requirements extend to sanitary sewer provision. Each jurisdiction has established policies for providing sanitary sewer service concurrent with new development.

Element	Mitigation Measures
Public Water Systems	Concurrency requirements extend to water provision. Each jurisdiction has established policies for the provision of public water concurrent with new development.

Table 3. *Compliance with BOCC Principles and Values*

Principle or Value	Alternative 1	Alternative 2	Alternative 3																			
			Battle Ground		Camas		La Center		Ridgefield			Vancouver							Washougal			
			B1	B2	C 1	C2	L1	L2	R1	R2	R3	V1	V2	V3	V4	V5	V6	V7	W1	W2	W3	Comments
Subarea Size (acres)	0	10,858	41	120	1,243	125	534	793	614	227	362	1,006	875	402	908	635	219	668	809	122	21	
Maintain county tax base:	○	●	●	○	●	○	●	●	○	◐	◐	○	●	○	○	●	○	●	●	●	○	All vacant areas that would be developed, other than those dedicated for parks/open space or government office would increase the tax base.
Balance between the cities:	○	●	Determining the balance between local jurisdictions is not possible for Alternative 3 sub areas. Each sub area is located adjacent to a local jurisdiction. Alternative 3 assumes that sub areas would be swapped with Alternative 2 areas and benefits/impacts would be spread across all jurisdictions.																			Each of the cities would have additional employment and residential land under Alternative 2. Current development patterns would continue in cities under Alternative 1.
Equalize land allocation and jobs/populations ratio so that cities have equitable share of jobs – diverse job base:	○	●	●	●	●	○	●	●	○	◐	◐	○	●	○	○	●	○	●	◐	●	○	2000-2004 land absorption rates show that most jurisdictions are developing vacant land as planned with vacant land still available in existing UGAs.
Job lands close to transportation so that capacity is provided to job opportunities:	●	●	●	N/A	○	N/A	●	●	N/A	●	○	N/A	●	N/A	N/A	●	N/A	◐	N/A	○	●	Subareas that do not include land for employment were not evaluated.
Ground-truth where residential and jobs "make sense":	N/A	●	●	●	◐	●	●	●	◐	●	●	◐	●	○	○	●	◐	○	●	○	●	Staff liaisons did field work on city proposals with the city planners.
Resulting tax-base (e.g., jobs, residential that doesn't result in greater school demand) needs to be equitable for school districts. Tax base equitably distributed between residential and job-producing lands:	○	●	Alternative 3 assumes that sub areas would be swapped with Alternative 2 areas and benefits/impacts would be spread across all jurisdictions. Compliance with this principle/value would require that any changes to Alternative 2 from "swapping" Alternative 3 sub areas would be made in a manner equitable to local school districts.																			Industrial and land has been added to all jurisdiction except for Camas. Residential land is added to all districts.
Breaks/Green spaces between communities – natural borders:	●	●	●	●	●	○	●	○	○	○	○	N/A	○	N/A	N/A	N/A	N/A	●	●	●	●	
Minimize the conversion of productive farmland – those lands which have long-term commercial agriculture viability: Is it being used today for commercial agriculture? Balance goals e.g. economic development versus agricultural land preservation.	●	○	●	●	○	●	◐	◐	○	◐	○	●	○	●	●	○	●	○	◐	◐	○	Agriculturally designated land has been included in the expanded UGAs. Prior to plan adoption, those lands would need to be assessed as to whether they continue to be protected for Agricultural uses given the location of the proposed urban development. Alternative 3 sub areas meet BOCC principles/values if less than 25 percent of the sub area is currently designated for agricultural uses.
Ensure good geographic distribution of commercial lands:	N/A	●	○	○	●	○	○	○	○	○	○	○	◐	○	○	◐	○	◐	●	○	○	Commercial land includes Commercial, Mixed Use, Employment Center, and Employment Campus has been added under Alternative 2. Alternative 3 sub areas meet BOCC principles /values if commercial land is designated.

LEGEND Meets BOCC principle or value ● Partially meets BOCC principle or value ◐ Does not meet BOCC principle or value ○ In progress to meet BOCC principle or value I/P Does not apply N/A

Principle or Value	Alternative 1	Alternative 2	Alternative 3																			
			Battle Ground		Camas		La Center		Ridgefield			Vancouver							Washougal			
			B1	BG2	C 1	C2	L1	L2	R1	R2	R3	V1	V2	V3	V4	V5	V6	V7	W1	W2	W3	Comments
Size (acres)	0	10,858	41	120	1,243	125	534	793	614	227	362	1,006	875	402	908	635	219	668	809	122	21	
Build on the work done for the January 2004 plan map proposal:	N/A	●	Alternative 3 sub areas are not based on the January 2004 boundary. They are meant to be evaluated as alternative locations to Alternative 2 for boundary expansions.																			
Prioritize lands that are most likely to provide "family-wage jobs" as defined in the comprehensive plan policies:	●	●	●	○	●	○	●	●	○	◐	◐	○	●	○	○	●	○	●	◐	◐	●	Land identified for industrial uses was added in areas located close to major transportation routes and on land with few constraints.
La Center needs greater economic diversification opportunities and multi-family land use designations:	○	●	N/A				○	●	N/A													Alternative 2 would add land for industrial and commercial uses near the La Center/I-5 interchange. Medium density residential land has also been added.
Ridgefield needs greater population (to balance employment opportunities). Meeting 75:25 housing type split may be an issue:	○	●	N/A						●	●	●	N/A										Alternative 2 would add residential land to the north, south, and east side of the urban growth area. Density or housing split goals would be assessed at the time proposed zoning is available.
Vancouver UGA – job producing reserve lands need to be included in the boundary:	○	●	N/A									N/A	●	N/A	N/A	●	○	●	N/A			Industrial urban reserve land has been identified along 1) the railroad north of 119th Street and west of SR 503, and 2) I-5 north of 199th Street (the Discovery Corridor).
Camas density needs to meet 6 units/acre:	●	I/P	N/A		I/P	I/P	N/A															Density and housing split goals can be assessed when zoning is proposed.
Ground-truthing is extremely important for employment:	●	●	●	N/A	◐	N/A	◐	◐	N/A	◐	◐	N/A	●	N/A	N/A	●	N/A	○	◐	◐	●	Staff has reviewed the land within the proposed boundaries. In most cases, this occurred in field work made in conjunction with the applicable city staff.
Lands with few if any restraints ("easy") should be allocated first for employment:	●	◐	◐	N/A	◐	N/A	◐	○	◐	○	○	○	◐	N/A	N/A	●	N/A	◐	◐	●	○	Industrial land that was relatively flat, large parcels, near transportation corridors have been identified along SR 503, La Center, and Ridgefield junctions. Land with major constraints was removed from the boundary east of NE 162nd Avenue. Urban Area as industrial.
Population and employment allocation should be guided by the values identified:	○	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	The Board took the first cut at addressing this principle and staff followed up wherever possible as discussed above.
Ground-truthing would clarify/define the allocation (versus "assigned"):	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Most of the areas identified are appropriate for the land uses proposed.
Vancouver UGA: minimize residential growth, with some residential growth at lower densities (R1-10 or R1-20):	○	○	N/A									●	N/A	●	●	●	●	N/A	N/A			Meeting 8 units per acre and the 75/25 housing split can't be specifically analyzed until and unless the proposed zoning is actually applied to the land.

LEGEND Meets BOCC principle or value ● Partially meets BOCC principle or value ◐ Does not meet BOCC principle or value ○ In progress to meet BOCC principle or value I/P Does not apply N/A

Principle or Value	Alternative 1	Alternative 2	Alternative 3																			
			Battle Ground		Camas		La Center		Ridgefield			Vancouver							Washougal			
			B1	B2	C 1	C2	L1	L2	R1	R2	R3	V1	V2	V3	V4	V5	V6	V7	W1	W2	W3	Comments
Size (acres)	0	10,858	41	120	1,243	125	534	793	614	227	362	1,006	875	402	908	635	219	668	809	122	21	
Need creative opportunities for communities (e.g. form-based zoning, performance zoning):	N/A	I/P	I/P	I/P	I/P	I/P	I/P	I/P	I/P	I/P	I/P	I/P	I/P	I/P	I/P	I/P	I/P	I/P	I/P	I/P	I/P	It is up to the cities to develop zoning regulations to achieve this objective and that meet county-wide planning assumptions.
New growth needs to blend well with existing neighborhoods:	N/A	I/P	I/P	I/P	I/P	I/P	I/P	I/P	I/P	I/P	I/P	I/P	I/P	I/P	I/P	I/P	I/P	I/P	I/P	I/P	I/P	It is up to the cities and the county to develop zoning regulations to achieve this objective.
Maintain Focus Public Investment Areas – "hubs" of job growth that can be serviced effectively:	●	●	●	●	○	N/A	●	○	●	N/A	○	N/A	●	N/A	N/A	◉	N/A	○	N/A	○	●	All of the primary focused public investment areas have been expanded or continue to be included in proposed UGAs.
Maintain a mix of housing options (a variety of housing densities – large, medium and small lots):	●	○	◉	◉	◉	○	●	●	○	○	●	○	○	○	○	○	○	○	●	◉	○	The plan has not analyzed types of housing or the size of potential lots. These factors depend on the actual zoning that is to be applied.
Identify school sites inside the new residential areas:	I/P	I/P	I/P	I/P	I/P	I/P	I/P	I/P	I/P	I/P	I/P	I/P	I/P	I/P	I/P	I/P	I/P	I/P	I/P	I/P	I/P	The school districts would need to identify general areas for new schools.
Maximize the potential for the county's railroad as a job-creating asset:	○	◉	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	●	N/A	N/A	N/A	N/A	N/A	Alternative 2 includes a portion of the railroad as industrial urban reserve. Subarea V5 brings the railroad west of SR-503 into the Vancouver UGA.
Identify "real" urban reserve lands that could be readily capable of being converted to urban uses in the next 10:	●	●	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Alternative 2 proposes urban reserve lands adjacent to the Vancouver, Camas and Washougal UGAs.
Use an integrated view in examining the proposed boundaries and plan map:	N/A	●	●	●	●	●	●	●	○	○	◉	○	●	○	○	●	◉	○	●	●	●	The needs for residential, commercial, and industrial land have been addressed. Further review through the Capital Facilities Plan and the Environmental Impact Statement (EIS) process would provide additional information the Board can use in settling the final boundary next year.
Identify areas which should never be urban. All other factors being equal, select the area that has fewest critical areas.	◉	◉	○	●	◉	●	●	○	○	○	○	◉	◉	◉	○	○	○	○	○	◉	○	Critical areas have been designated by the county and are shown in the figures. Development regulations are in place for each critical area type.

LEGEND Meets BOCC principle or value ● Partially meets BOCC principle or value ◉ Does not meet BOCC principle or value ○ In progress to meet BOCC principle or value I/P Does not apply N/A

PROJECT DESCRIPTION

I. What is being proposed?

As discussed above in the Summary section, Clark County and the cities and towns of Battle Ground, Camas, La Center, Ridgefield, Vancouver, Washougal, and Yacolt are proposing to revise their Comprehensive Growth Management Plans (the GMA plans) to comply with the requirements of the Growth Management Act (GMA). The revisions focus on changes to the Urban Growth Areas (UGAs) to accommodate projected growth over the next 20 years.

Clark County is considering the potential environmental impacts of a No Action Alternative that would not expand the UGAs and two Alternatives with expanded UGAs. The DEIS analysis can be used to help decision makers and the public to choose or develop a Preferred Alternative that would be evaluated in the final EIS (FEIS) and form the basis of a new 2006 Plan.

Clark County is releasing this DEIS to present alternatives for accommodating growth and discusses the potential impacts of doing so. This DEIS summarizes 1) the purpose of and need for the DEIS; 2) the alternatives presented in the DEIS, and 3) the potential impacts of the alternatives.

A. What is the purpose of the proposal?

The County's objective for the new 2006 Plan is to accommodate the projected demand for jobs and housing by 2024 based on new growth assumptions, to implement land use patterns that reflect local preferences and values (see Table 3 and pages 22-23), and to reduce impacts on the environment, schools, and the cost of infrastructure by fine-tuning the location of expansion areas.

B. What is the schedule for reviewing the proposal?

To complete the planning for Clark County in conformance with the GMA (described above), the following schedule in Table 4 has been adopted by the County.

Table 4. *Schedule for Updating the Clark County Comprehensive Plan*

April 2005	Initiate BOCC workshops examining 2004 Plan
May – December 2005	BOCC decisions on fundamental assumptions and policy issues.
September -October 2005	Scoping Open Houses and Published Scoping Notice
March 2006	BOCC decisions on Alternatives to be evaluated
August 25, 2006	Distribute Draft Environmental Impact Statement
September 25, 2006	Deadline for comments on DEIS (31 days)
October 3, 2006	BOCC Decision on Preferred Alternative
October/November 2006	Issuance of Final EIS
November/December 2006	Public hearings on draft Clark County Comprehensive Plan and FEIS

II. What comprehensive plan alternatives are being considered?

There are three alternatives discussed in this DEIS. Alternative 1 is the No Action Alternative required by SEPA to be evaluated in any EIS. Alternative 2 would move the UGAs. Alternative 3 proposes boundary options that would modify Alternative 2.

1. Alternative 1, No Action Alternative

Alternative 1, the No Action Alternative (Figure 2), maintains the UGA boundaries adopted in the 2004 Plan, and assumes the level and type of growth consistent with the new assumptions of 2.0 average population growth, 2.59 pph, and a 5 percent redevelopment factor for residential land. Employment and population growth would need to be accommodated by redevelopment of under-developed land, and by development on vacant land within existing UGAs and rural areas.

Approximately 173,000 new urban residents would need to be accommodated in the current UGA boundaries. Based on Board assumptions for future growth and development, approximately 54,000 of the 173,000 new residents and 24,000 new jobs could not be accommodated because there would be an insufficient land supply. If the boundary is not changed, but population and jobs are still to be accommodated (as required by the GMA) land uses in the urban areas would need to be changed. Keeping the current boundary would require upzoning or increasing densities of dwelling units and jobs in existing UGAs.

This could be accomplished by a number of combinations of residential zone changes in one or more of the seven city UGAs, such as from Urban Low to Urban Medium density, from Urban Medium to Urban High, and by increasing the maximum densities of Urban Low. Approximately 19,000 people would be accommodated in rural areas, though there could be pressure to upzone rural densities in some areas as well. There would also be insufficient land for planned employment growth. Upzoning employment lands within existing UGAs would require changing zoning from industrial to business park. Another avenue would be to change some Urban Medium and High Density to Mixed Use.

Table 5 shows one set of calculations for how upzoning could provide accommodation for all of the planned growth. The row showing households shows how much residential land designated in the comprehensive plan as Urban Low would need to be re-designated as Urban Medium to accommodate the projected household growth in the next 20 years if UGAs are not expanded. Similarly, the table shows how much industrial land would have to be re-designated as commercial to accommodate the projected job growth. There are currently 12,689 gross acres of residential buildable land and 3,684 gross acres of buildable industrial land, sufficient to accommodate the rezones.

Table 5. *Land Needed to Convert to Meet Households and Jobs Targets for Alternative 1*

	Shortfall	Conversion	Total Net Acres	Total Gross Acres
Households	21,005[1] dwelling units (d.u.)	8 d.u./acre (Urban Low) to 16 d.u./acre (Urban Medium)	2,626[2]	5,540[3]
Jobs	11,623[4]	9 jobs/acre (industrial) to 20/jobs/acre (business park or commercial)	1,057[5]	1,856[6]

[1]*Growth target of 66,939 households minus Alternative 1 capacity of 45,934 households*
[2]*21,005 households divided by a net gain of 8 households / acre*
[3]*Conversion factor for residential net acres to gross acres is 1:2.11*
[4]*Growth capacity target of 138,312 jobs minus the Alternative 1 growth capacity of 116,782 jobs minus the 9,907 public sector jobs*
[5]*11,623 jobs divided by a net gain of 11 jobs / acre*
[6]*Conversion factor for industrial net acres to gross acres is 1:1.756*

Impacts from growth in the existing UGAs using current zoning were evaluated for environmental impacts in the 2003 DEIS. Increasing densities would make more efficient use of current infrastructure (for roads, schools, wastewater and water supply) and land. However, increased densities in urban areas would result in some impacts not covered in that DEIS. More compact development and more infill development would occur. One of the potential impacts from the upzoning would be a larger amount of impervious surface which would result in localized stormwater run-off and water quality issues for urban

streams. Increased development pressure could limit the availability of land for future parks and open space if not identified in existing UGAs as part of this update.

It is expected that under this alternative there would be a higher number of total person trips, but a somewhat higher share of those would be by transit and non-motorized modes. Greater use of mixed-use development would also help mitigate local congestion. However, both the I-5 and I-205 bridges would be operating at a congested level of service (LOS) F at a.m. peak times, which would affect the flow of traffic at interchanges and connecting streets. There could be an increase in the number of days with bad air quality due to congestion. Costs for maintaining acceptable levels of service would be approximately $576 to $609 million (2006-2024) for capital projects and programs. Proposed mitigation projects for both alternatives are projected to cost between $98.5 and $124.5 million.

Vancouver requested another alternative that would generally hold to the adopted 2004 UGA boundaries, apply Vancouver's growth assumptions (essentially consisting of more intense residential redevelopment and employment), and include only a minor expansion to the Vancouver UGA for industrial land. The BOCC did not adopt this approach, but Vancouver's assumptions are included in the environmental analysis as a form of mitigation. (See discussion under "How are the evaluations made?")

2. Alternative 2, 2005 Discussion Map

Alternative 2, 2005 Discussion Map, (Figure 3) expands the UGAs roughly equal with the projected demand for housing and jobs. Using the planning assumptions adopted by the BOCC, staff calculated the needed acreage of residential, commercial, and industrial land. Then the location of expansion areas was determined by staff, the BOCC, cities' requests, and public input. The urban growth areas would be expanded about 10,850 acres, a little less than 17 square miles. This means that the expected 173,000 new residents in urban areas would be accommodated both in the current UGAs and in the expanded UGAs. The other 19,000 people would be accommodated in rural areas. Given the planning assumptions for growth rate and jobs/acre, the 10,850 acres represents the amount of land needed to accommodate the population and job growth projected in the next 20 years. In general the proposed supply of land matches the amount of needed land under this alternative. This includes an additional 10 percent of residential land was added to the residential land supply as a market factor, allowed by GMA for market flexibility.

Alternative 2 would expand the UGAs of all cities except Yacolt and Woodland. The Battle Ground UGA would expand by 1,507 acres along the west of the existing UGA to include mostly residential and employment uses, with a smaller industrial use expansion on the south boundary. The Camas UGA would expand north of Goodwin Road by 1,123 acres, with mixed use and employment designations and north of the city limits on the east side with residential designations.

The La Center UGA would expand west and east for low-density residential land, contiguous to the current UGA or city limits. Another, employment-based, UGA is proposed for the I-5/La Center Junction, connected to the existing city limits UGA along La Center Road. Total La Center UGA expansion would be 1,213 acres.

The Ridgefield UGA would expand primarily north and south along the I-5 axis for medium- and low-density residential and industrial uses, and to the east of the existing eastern UGA boundary. The total expansion would be 2,144 acres.

The Vancouver UGA would expand at several locations adjacent to the existing UGA, primarily along the north boundary of the existing UGA between NW 11th Avenue to NE 182nd Avenue. Most of the expansion would be for residential low-density and industrial uses. Two new large areas of industrial reserve overlay would be added. Total expansion area would be 3,993 acres.

The Washougal UGA would expand to the northwest and north east of the existing UGA and city limits for a mix of residential and industrial uses. Total expansion would be 877 acres.

Figure 3 assigns subarea numbers to the UGAs. The subareas are labeled to facilitate comparison with related optional areas in Alternative 3. For further explanation, reviewers are directed to the discussion under "How are the evaluations made?".

Alternative 2 was developed from BOCC and staff input, from public requests generated by a public notice requesting consideration of specific properties for inclusion in the UGAs, and boundary expansion requests from the cities. Through January and February 2006 Clark County and the Regional Transportation Council (RTC) evaluated transportation impacts from Alternative 2. After examining the results at work sessions, the BOCC decided to make no changes to the Alternative boundaries developed from BOCC, the cities, and the public requests.

Impacts on the environment consist primarily in bringing urban levels of development to land that is currently rural. Building urban types of development in expanded UGAs would result in new impacts to the environment in those (currently rural) areas, but would not require upzoning in the existing UGAs and so would avoid those impacts cited under Alternative 1. Development would occur on land currently known to contain prime agricultural and forest soils. Forty-two (42) stream miles of surface water and 213 acres flood hazard areas would be added to UGAs. Given proposed land uses, there is a potential increase of about 5,700 acres of impervious surface. The county's critical areas ordinances, all of which have recently been revised, will be used to mitigate any site-specific impacts.

It is expected that under this alternative the result would be a higher number of congested lane miles, vehicle hours of delay and vehicle miles traveled; and a somewhat lower share of transit and non-motorized modes, all as compared to Alternative 1. The I-5 and I-205 bridges would be operating at or near LOS F conditions at a.m. peak times, which would affect the flow of traffic at interchanges and connecting streets. Costs for maintaining acceptable levels of service would be approximately $576 to $609 million (2006-2024) for capital projects and programs. Proposed mitigation projects for both alternatives are projected to cost between $117.4 and $147.9 million. The difference from Alternative 1 is one additional project: 137th/142nd Avenues from 159th Street north to the Battle Ground city limits, that is expected cost between $18.9 and $23.4 million.

3. Alternative 3, Geographic Flexibility Alternative

Alternative 3 differs significantly from the other two alternatives in its intent. The BOCC requested an alternative that would present and evaluate additional but individual options for UGA expansions. Alternative 3 assumes expansions of UGAs similar in overall size to those proposed for Alternative 2, but provides options for adjusting the UGA boundaries to reduce environmental impacts. The numbered subareas (Figure 4) are not intended to be adopted together as a whole alternative. Rather, the BOCC requested the development of Alternative 3 as a decision-making tool for modifying the boundaries under Alternative 2 to reduce potential impacts.

For example, where impacts on natural resources are higher, the way to reduce those impacts may be to retract the proposed boundary to avoid the impacts. Since Alternative 2 was developed to more or less meet, rather than exceed, the expected demand, a shrinking of the boundary could affect the 20-year land supply. Alternative 3 options are intended to be used to offset those areas where the boundary may be altered in developing a final Preferred Alternative to be evaluated in the FEIS. The acreage of the Preferred Alternative evaluated in the FEIS is expected to be approximately the acreage in Alternative 2, but no specific locations in Alternative 2 were identified for exchanging with Alternative 3.

Some of the Alternative 3 subareas are the same as urban reserve areas in Alternative 2 (C1, V2, V5, and W1). Some subareas abut Alternative 2 UGA while others are independent of any other proposed UGA or urban reserve area (C1, R3, V3, and W2).

The whole of Alternative 3 could not be adopted as a Preferred Alternative because the GMA requires that when UGAs are expanded they either 1) include already urbanized land and/or 2) abut existing city limits or UGAs. Optional subareas C1, R3, V3, and W2 would not be allowable as stand-alone UGA expansions without the addition of the adjacent UGA boundary proposed by Alternative 2, since without

adoption of the adjacent Alternative 2 boundary, they would not be contiguous to a city or UGA boundary. In addition, the County knows that sufficient infrastructure could not be provided to all of the land in the subareas in Alternative 3, a condition that would be inconsistent with that GMA concurrency requirement. (See discussion of concurrency in the Public Facilities and Transportation elements.)

Figures 2 and 3 illustrate the No Action and 2005 Discussion Map alternatives and Figures 4 through 11 illustrate the subareas in Alternative 3.

To compare the potential impacts under Alternative 2 and Alternative 3, the discussions of Alternative 3 groups the UGAs under Alternative 2 into companion subareas, by city. The reviewer can evaluate the characteristics of each Alternative 3 subarea against the characteristics of the adjacent city UGA. (In Vancouver's case, the Alternative 2 UGA is divided into east and west subareas.) Tables in the environmental analysis present the potential impacts of expanding the boundary by the subareas of Alternative 3 to the potential impacts represented by the adjacent boundary expansion in Alternative 2.

Table 6 shows how the different subareas under Alternative 3 relate to Alternative 2 subareas.

There are a number of ways of interpreting the data. For example, the Camas Alternative 3 Subarea C1 contains 3.4 miles of Lacamas Creek within its 1,243 acres and Subarea C2 zero miles within its 125 acres. The Camas UGA in Alternative 2 (labeled Subarea 6) contains 0.3 miles of Lacamas Creek within 1,123 acres. One way to evaluate the data is to consider that adding Subarea C1 while reducing Subarea 6 could more than double the miles of Lacamas Creek surrounded by urban growth. A minor expansion of the boundary to include C2, while assuming the Alternative 2 boundary would be withdrawn to exclude 125 acres around Lacamas Creek, could result in fewer environmental impacts. Furthermore, if additional land is needed, a reviewer could look at how C1 and C2 compare to other Alternative 3 subareas, such as in Ridgefield, where none of the subareas (R1, R2, R3) would affect Lacamas Creek.

Reviewers should note that Alternative 3 subareas are not intended to be direct substitutions for Alternative 2 subareas, only partial substitutions. Directly equivalent comparisons between the subareas of Alternatives 2 and 3 are not relevant because generally the sizes are different and would not accommodate the same amount of growth. In addition, no direct comparisons are made between Alternative 1 and Alternative 3 because Alternative 3 does not represent an entire adoptable alternative. While reviewers may decide to look at the Alternative 3 subareas together, neither the lead agency, nor the authors of the DEIS, intends that Alternative 3 be considered a whole, intact, and adoptable, option.

Table 6. *Subarea Comparisons*

	Alternative 3	Alternative 2
Battle Ground	Subarea B1	Subarea 3
	Subarea B2	
Camas	Subarea C1	Subarea 6
	Subarea C2	
La Center	Subarea L1	Subarea 1
	Subarea L2	
Ridgefield	Subarea R1	Subarea 2
	Subarea R2	
	Subarea R3	
Vancouver	Subarea V1	Subarea 4
	Subarea V2	
	Subarea V3	
	Subarea V4	
	Subarea V5	Subarea 5
	Subarea V6	
	Subarea V7	
Washougal	Subarea W1	Subarea 7

B. How were options for managing growth developed?

The development of alternatives began with the BOCC's decision in May 2005 work sessions that the No Action Alternative (Alternative 1) would be the 2004 Plan boundaries with new planning assumptions as detailed below. County staff refined their analysis of existing development and the availability of developable land. The amount of developable land needed to accommodate projected population and jobs growth depends on the density at which development occurs (that is, the number of housing units or jobs per acre). This in turn is influenced by many other factors, such as historical development trends or environmental regulations. Several planning assumptions were discussed early in the process, to guide development of alternatives for evaluation.

C. What are the Principles and Values that will guide the new plan?

In June 2005, the BOCC adopted a planning period of 2004-2024 and a population forecast of 584,310, slightly higher than the midpoint between the medium and high forecasts from OFM. The projection equates to a 2.0 percent annual growth rate through 2024. For capital facilities planning purposes, the projection is for growth to occur at 2.2 percent for the first six years of the plan, and to decline slightly over the subsequent 14 years. Section VII, Land Use discusses historic and projected growth trends in the county and cities.

One focus of the 2004 Plan was to reduce traffic congestion in the region and improve the county tax base by increasing the ratio of jobs to population within the county and bringing the population-to-jobs ratio more in line with what is found in the Portland metropolitan area. Currently, the jobs-to-population ratio in Clark County is 1 to 2.2. As noted earlier, it is up to the counties to determine the demand for industrial and commercial land to meet employment targets or projected jobs. The BOCC decided on a goal of 1:1.39 new jobs to new population ratio, including rural population. This results in a target of 138,312 jobs by 2024. The number of jobs per acre was established as the following: 20 employees per commercial acre; 9 employees per industrial acre; and 20 employees per business park acre.

Another factor adopted for calculating the required land supply was that residential land in existing UGAs would redevelop by a factor of 5%, thereby adding 5 percent to the land supply.

After several months of discussion and work sessions, in September 2005 the BOCC identified numerous principles and values that should be reflected in the new plan and in determining the new UGA boundaries. The principles and values established by the BOCC are as follows:

- Maintain county tax base (generate revenue necessary to provide services)
- Balance between the cities
- Equalize land allocation and jobs/population ratio so that cities have equitable share of jobs – diverse job base
- Vancouver UGA: Minimize residential growth (there would be some residential growth but not dense residential growth, especially where there already exists large-lot, high-value development). Minimize doesn't mean "don't" but lower density (maybe R-10, R-20 or newer larger lot zones) of residential growth.
- Cities: Meet density and housing mix requirements.
- Mapping: Put job lands close to transportation so that capacity is provided to job opportunities
- Need creative opportunities for communities (e.g. form-based zoning, performance zoning)
- Blend new growth with existing neighborhoods (i.e., transition zones, buffering, gradual transitions in development style, type)
- Ground-truth where residential and jobs "make sense" – no more "wetland industrial"
- Ensure resulting tax-base (e.g., jobs, residential that doesn't result in great demand for schools) is equitable for school districts. Tax base equitably distributed between residential and job producing lands.

- Focus Public Investment Areas: create "hubs" of job growth that can be served effectively (adjust Transportation Improvement Program if necessary)
- Create breaks/green spaces between communities – natural borders
- Minimize the conversion of productive farmland – those lands which have long- term commercial agriculture viability. Balance goals such as economic development against agricultural land preservation.
- Identify "real" urban reserve lands (they need to be readily capable of being converted to urban uses in the future – next 10 years).
- Critical areas: Identify areas that should "never" be urban (critical areas of county-wide significance); all other factors being equal, select the area that has fewest critical areas.
- Maintain a mix of housing options (a variety of housing densities – large, medium and small lots).
- Identify school sites or areas where schools buildings would be necessary inside the new hubs of residential areas (need sites close to where the children would be). Avoid penalizing property owners in the process.
- Maximize the potential for the county's railroad as a job-creating asset.
- Ensure good geographic distribution of commercial lands.
- Prioritize lands that are most likely to provide "family-wage jobs" as defined in the comprehensive plan policies.

The BOCC did not change the housing density and type that are adopted as part of the Community Framework Plan or Countywide Planning Policies. These include:

- Housing density factors – 8 net units per acre in the Vancouver urban growth area; 6 net units per acre in the Battle Ground, Camas, Ridgefield and Washougal urban growth areas and 4 net units per acre in the La Center urban growth area.

- No more than 75 percent of new development within a city can be of any one type, such as detached single-family housing.

In the 2004 Plan, the BOCC directed staff to retain the use of market factors to determine the size of urban growth areas. Market factors when incorporated on the demand side help to balance the uncertainty of growth rates and patterns by providing a buffer of additional land so the urban growth boundaries do not turn out to be too tight. An insufficient land supply that cannot meet demand can put upward pressure on the price of land. Clark County's 1994 plan used a market factor of 25 percent for residential and commercial lands and 50 percent for industrial land. The 2004 Plan used the same market factors. In this DEIS, a 10 percent residential market factor was added to Alternative 2, and there are no market factors for commercial, industrial and business park.

In September 2005, the County published a Scoping Notice for the EIS and held a public scoping meeting in October. No alternatives were presented at that time, but a "maximum impact area" illustrated the potential areas that could be included in the action alternatives. The public provided input on areas of the environment that should be evaluated in the DEIS. A copy of the scoping comments can be found on the County's Growth Management website.

D. Are the assumptions behind the three alternatives different?

It is important to note that all alternatives use the same planning assumptions. The assumptions are listed on page 2. In some cases they coincide with the principles and values discussed in the Summary.

III. How has the public been involved in the growth management update?

The public involvement program for the Plan update began with news releases advising residents of the BOCC's series of work sessions to review the 2004 Plan. Local cities have been involved in contributing requests for changes to their UGAs and in the case of Ridgefield and La Center, pursuing separate SEPA review of their revised comprehensive plan.

Opportunities for public input and the program to inform Clark County residents have consisted of the following:

- BOCC work sessions

  April 19, 2005 - Review Planning Assumptions
  April 26, 2005 - Vacant & Buildable Lands Model
  May 3, 2005 - Capital Facilities Planning
  May 10, 2005 - Review Planning Assumptions
  May 17, 2005 - Review Planning Assumptions
  May 25, 2005 - Focused Public Investment, Review Planning Assumptions
  May 31, 2005 - Review Planning Assumptions
  June 7, 2005 - Revenue Forecasting & Plan Monitoring
  June 14, 2005 - Review City Requests
  June 28, 2005 - Review Property Owner Requests, Review Planning Assumptions
  July 5, 2005 - Review Property Owner Requests
  July 6, 2005 - Review Property Owner Requests
  August 16, 2005 - Maximum Study Area Update
  September 6, 2005 - Maximum Study Area Update and Mapping

- Media coverage—news releases, stories, and public notification of BOCC work sessions

- In-depth information on Clark County's Growth Management Plan web site

- Dissemination of information to a mailing list of interested citizens

- October 18, 2005 countywide public scoping meeting, attended by 20 people. The meeting included staff presentations, a question and answer session, and an open house format, with informational displays, maps, and handouts. Staff was present to respond to questions and elaborate on the available materials. No alternatives were presented at that time, but a "maximum impact area" illustrated the potential areas that could be included in the action alternatives. The public provided input on areas of the environment that should be evaluated in the DEIS. A copy of the scoping comments can be found on the County's Growth Management website.

- Public open houses were held on February 9 and 23, 2006 to present the alternatives and to give the public a progress report on the update of the comprehensive plan. A copy of the comments is available on the Clark County Growth Management Plan update webpage.

- Public hearing on the DEIS planned for September 2006.

Written and oral input at the October and February open houses demonstrated a diversity of opinion about how growth should be managed in Clark County. Some comments expressed a desire for more UGA expansion, while others expressed concern for the environmental impacts of expanding the UGAs and believed that holding to the boundaries added in the 2004 Plan would be sufficient.

IV. What must growth management plans contain?

A. Are there state legal requirements?

Counties and cities planning under the GMA must review their comprehensive plans and development regulations at least once every seven years (the most recent deadline for Clark County was set for December 1, 2004). Clark County is also required to review and evaluate the UGAs at least once every 10 years to provide a sufficient land supply for 20 years of growth in population and employment, as well as the infrastructure—such as roads, schools, and parks—to support this growth. The GMA does not prohibit UGA expansions earlier than the ten- and seven-year cycles, although amendments are generally limited to no more than once yearly.

The GMA requires that planning be based on population forecasts provided by the Washington State Office of Financial Management (OFM). The OFM usually provides low, medium, and high projections. The 2024 projections for Clark County (released in January 2002) were approximately 469,800 (low), 538,000 (medium), and 611,300 (high). Each GMA county can decide what the average household size might be and how much employment would grow over the 20-year period.

Comprehensive Growth Management Plans need to provide policies on land use, housing, capital facilities, utilities, rural development, transportation, economic development, and parks and recreation. The County must also include policies guiding the future use and development of rural lands and annexation. The plans for the cities and the county must be consistent. The GMA requires the county and the cities to agree to a set of County-wide Planning Policies (CWPP). Comprehensive plans must be consistent with the CWPP.

In general, the GMA requires that the counties and cities planning under its regulations update their plans periodically to reflect changes to the GMA and to adapt the plan and plan map to changing conditions. A full list of non-procedural changes to the GMA since the 2004 Plan was adopted can be found in the technical document for this DEIS. Important regulatory changes include:

- County adoption of-updated critical areas ordinances for habitat conservation, flood hazard areas, geohazard areas, critical aquifer recharge areas, and wetlands protection.
- County adoption of a mixed use ordinance.
- Changes in the way urban holding is applied and removed.
- County adoption of updated regulations for the Columbia River Gorge National Scenic Area.
- Changes to the Growth Management Act in 2004-2005, including:
    - clarification on transportation concurrency strategies,
    - modifications to the provisions for public services and facilities in qualifying limited areas of more intensive rural development (LAMIRDs).

A table in Appendix A lists changes to state law that affect the GMA.

B. What are the local requirements for Growth Management Plans?

Countywide Planning Policies were revised during the 2004 Plan update. There are no substantial proposed policy changes to CWPPs planned for this update.

WHAT ARE THE POTENTIAL IMPACTS OF THE GROWTH MANAGEMENT ALTERNATIVES?

I. What does this section evaluate and why?

Since the county cannot stop growing, it is impossible to entirely avoid the adverse impacts associated with growth. These impacts would occur across many aspects of the environment. This DEIS evaluates the potential environmental impacts of proposed changes to the comprehensive plans and UGAs of Clark County and the cities of Battle Ground, Camas, La Center, Ridgefield, Vancouver, and Washougal. As noted in previous sections, SEPA requires that actions proposed by a public agency that could have a significant environmental impact must evaluate those potential impacts and available mitigation for the impacts before a decision is made or the action is taken.

II. How are the evaluations made?

SEPA lists major elements of the environment that should be evaluated, depending on their applicability to a proposed action. Each of the major elements of the environment listed in SEPA has been analyzed in this DEIS. The difference in impacts between the alternatives is based primarily on the location and size of UGAs proposed to accommodate the residential, commercial, and industrial growth. As noted in the previous chapter, the analysis focuses on comparing No Action to Alternative 2. Alternative 3 builds on the assumed expansion of UGAs similar to Alternative 2 by adding options for adjusting the UGA boundaries to reduce impacts. Alternative 3 in the aggregate is compared in a broad way to No Action, and in a targeted way to the subareas of Alternative 2.

A. What is an "impact"?

An impact is the consequence of the proposed action or program. In the context of SEPA, the significant adverse impacts or consequences of a proposed project must be discussed. Beneficial impacts or adverse insignificant impacts may be discussed, but are not required. Impacts can be temporary or permanent, direct or indirect, and cumulative.

B. How are impacts evaluated for their significance?

In the case of the natural environment, determining the relative impacts depended on knowing where the natural resources are and how much of them would be impacted by each proposed expansion area. Analysis therefore relied on Geographic Information System (GIS) mapping to establish the location and size of the natural resources, such as soils, streams, wetlands, shorelines, or and resource lands. The UGA expansion areas were overlaid on those resources, and the GIS system calculates how much of the resource is found within the UGA boundary. Then the impacts of converting the now rural land to urban uses are evaluated and a quantitative comparison is made. In some cases, the impacts are directly calculated, such as in the conversion of agricultural land to urban uses. For other elements of the environment, conversion to urban uses would have less direct effects. For example, increasing UGAs into lands with more soil limitations for structures can impact the intensity and cost of development. A new UGA could increase the number of miles of a stream subject to impacts from urban areas. Streams are protected resources and would not themselves be converted to urban uses. However, urban development in that UGA would increase impervious surface and increase the potential for pollutants and vegetation removal to affect both the quality of the stream, and then the habitat and wildlife it supports.

With respect to the built environment, acreages of land converted from rural designations to an urban designation were calculated for each UGA under each alternative. The location and size of UGAs formed

the basis for analyzing impacts on public facilities and services. Whether each service provider would be able to accommodate the additional UGA was also determined from the capital facilities plans or conversations with the providers.

It is important to note that the impacts analysis looks at the overall capacity of the proposed UGA expansions rather than just the housing and jobs targets. In some 2003 alternatives, the acreage of some UGAs was increased by residential, commercial, and industrial "market factors" of from 25 percent to 50 percent to allow for flexibility in the market. Adding such market factors, however, dramatically increased the amount of land and therefore the maximum build-out that would need to be served by public utilities and services. The 2003 DEIS compared the impacts of the projected growth with the potential full-build-out growth.

In this DEIS, the BOCC decided to match the new UGA acreages to projected growth, limiting the market factor to 10 percent for residential land to the UGAs in Alternative 2. The population and jobs are essentially goals or targets established by BOCC policy. However, by adding more land for the market "cushion" the overall capacity of the UGAs is expanded and must be evaluated.

Here is an example. If a city decides it would accommodate 500 more households and decides it wants those households to live at a density of five units per acre, it would need 100 more acres of land for that growth. However, if it also decides that infrastructure takes 25 percent of developed land and that a 50 percent market factor makes the real estate market more fluid, then it would need to add 75 more acres to a proposed UGA expansion. Now the expansion is 175 acres and the city has to plan to provide services to the entire 175 acres. If full build-out were to occur, even with 25 percent in infrastructure, the impact is that 131 acres (1.75 x 0.75) have houses, and at five per acre, that is 655 households, not 500 and the impacts from that development are 175 acres of build-out, not 100. Therefore, assessing impacts must be on the total capacity of the land, not just the planned-for growth target. Unlike the 2003 DEIS, the assessment of impacts based on the total geographical expansion of UGAs more closely resembles the anticipated build-out.

Since Yacolt and Woodland are not proposing any UGA expansions or any changes to their plan policies that would affect the environment, no impacts or mitigation measures are discussed.

C. What is "mitigation"?

Mitigation is defined as avoiding, minimizing, rectifying (repairing), reducing, eliminating or monitoring environmental impacts. Mitigation can consist of measures mandated by existing or proposed regulations at the local, state, and federal level. A lead agency may use its Substantive Authority under SEPA to require additional mitigation measures where appropriate to reduce impacts. An EIS should identify possible mitigation measures that would reduce or eliminate the adverse environmental impacts of a proposal. If the technical feasibility or economic practicality is uncertain, the mitigation measure may still be discussed but discussion of the uncertainties should be included. The EIS should also clearly identify the mitigation measures as either mandatory or as potential so reviewer may better assess the impacts of the proposal.

Mitigation measures must be reasonable and capable of being accomplished and should match the extent of the identified adverse impacts of the proposal.

III. How is the DEIS organized?

The DEIS consists of three parts:

- A summary section.
- The body of the DEIS (this section) briefly describing existing conditions, impacts of the alternatives, and available mitigation for the elements of the environment. The body of the DEIS presents only the

most important aspects of existing conditions and impacts. For a more thorough understanding of existing conditions and the impact analysis, reviewers should review the Technical Document.

- A Technical Document that provides all of the supporting documentation, including the detailed environmental analysis, for the other two parts of the DEIS.

The elements of the environment discussed in the DEIS are grouped under the following headings:

- Earth
- Air
- Water
- Plants and Animals
- Energy Conservation
- Scenic Resources
- Noise
- Land Use
- Economy
- Historic and cultural resources
- Transportation
- Public Facilities and Utilities

For each of these elements, the following questions are posed:

1. How can growth management plans affect this element of the environment? (what are some impacts

2. How do the potential impacts between the alternatives compare?

3. How do the growth management plans and development regulations of the cities and Clark County reduce the potential impacts? What other options for mitigation exist?

A similar but expanded grouping can be found in the technical document.

A. What is in the technical document?

The technical document contains a list of changes to the GMA since 2003, detailed analysis of the characteristics of the environment (the setting), that potential impacts of each alternative and subareas for each of those elements of the environment, and a discussion of the regulations that form the basic mitigation for the potential impacts. The technical document also contains tables demonstrating how each cities' and the county's Proposed Plan complies with Countywide Planning Policies and the requirements of the GMA.

EVALUATION OF POTENTIAL IMPACTS ON THE ENVIRONMENT

I. Earth

A. How might growth management plans affect the soils, geology, and topography of Clark County?

Soil, geological, and topographical characteristics are important in the management of urban development because they may limit the ability of land to support the use it is zoned for. Weak soils require special engineering (and additional costs) to support foundations for buildings or less than optimal development may result if there are high water tables. Poorly draining soils are unsuitable for septic systems, constraining rural development and making it more costly. Most of the county has soils unsuitable for septic systems.

Second, soil characteristics determine whether an area is particularly suited to agriculture or timber production. The GMA requires local jurisdictions to identify and protect agricultural and timber lands of long-term commercial significance. Most of the western half of Clark County has soils suitable for agriculture and nearly all of the County has either prime or good forest soils.

Certain geological and topographical features present hazards to development. Unstable and steep slopes, landslide prone areas, seismic zones of high earthquake probabilities, land prone to liquefaction during earthquakes, lands with high erosion potential, and nearby volcanic activity are included in this category.

The reader is directed to the technical document for a more detailed analysis of existing conditions, applicable regulations, and quantitative impacts to earth resources.

B. How do the potential impacts between the alternatives compare?

In general, because Alternative 1 does not add new land proposed for development, the risks and constraints of the county's earth environment are bound to be fewer in terms of land area. Less prime agricultural and forest land (52,000 and 39,000 respectively) would be urbanized than under Alternative 2 (58,200 and 45,800, respectively). On the other hand, because there would be an insufficient land supply, Alternative 1 would put pressure on more marginally developable lands to develop, adding to development costs to mitigate the risks. Alternative 2 proposes new UGAs west of Battle Ground, north of Camas and north of Washougal, three areas in the county with the weakest soils for foundations. Vancouver UGA has a significantly higher proportion and absolute land area (1,630 acres) within the 2nd-highest-risk earthquake hazard zone, Zone D. La Center UGA has 134 acres in Zone D. High landslide areas are found in all UGAs, but mostly within the La Center and Ridgefield UGAs.

Alternative 3 subarea highlights:

- Least constrained soils for urban development, both in absolute acreage as well as constraints as a proportion of total subarea are: B2, C2, V5, and V6.
- High proportion of total acreage in landslide prone areas are in B1, L1, and W1.
- Subareas with more land with higher risk of earthquakes are in V1, V2, and L1.

C. How do the growth management plans and development regulations of the cities and Clark County reduce the potential impacts? Do other options for mitigation exist?

Mitigation for impacts of each alternative on soils would involve protecting soils that support agriculture and forest uses and limiting or preventing development on unsuitable soils. Protection of lands that have soils suitable for agriculture and forest uses is primarily the County's responsibility through protection of resource lands. Drawing UGAs to avoid lands with high quality soils for agriculture and forest uses is the primary method of protecting those areas. Soils that are unstable or hazardous for building upon are classified as geologically hazardous critical areas by state law, and each jurisdiction restricts, or specially regulates the design of, development in those areas through its comprehensive plan and zoning districts, critical areas ordinances, and building codes.

City plans and ordinances do not generally deal with soils in terms of resource lands, since by definition these lands are outside city limits. Construction on soils with structural limitations is typically dealt with by the requirements of building codes. Other than geotechnical studies and implementation of appropriate construction practices, prohibition of development on unsuitable soils is the typical mitigation measure.

The main mitigation is to avoid soils and topography that present severe constraints. No other options for mitigation are proposed.

II. Air

A. How can growth management plans affect the climate and air quality in Clark County?

Global climate change could cause average temperatures to rise by 4 to 5 degrees and the numbers of very hot and dry days to increase in Washington State. Human-induced climate change is influenced by myriad decisions about growth and urban form made at local and regional levels. The efficiency with which resources, most notably fossil fuels, are used is directly related to development patterns. Policy decisions that promote the development of a compact urban form that can reduce motorized and non-motorized emissions of greenhouse gases and preserves vegetation that captures carbon emissions can reduce contributions to global climate change.

Air pollutants come from a wide variety of point sources like manufacturing plants and from area sources, such as dry cleaning businesses and residential wood stoves. Vehicles are mobile sources of pollution. Motor vehicles are Clark County's largest producer of air pollution. Non-mobile sources include the small engines of lawn mowers and leaf blowers, which are predicted to form an increasing share of pollution in the future.

The Portland-Vancouver airshed has mobile emissions "budgets" which must not be exceeded in order for the County to remain in compliance with federal regulations and to permit the growth of new industrial uses. The Southwest Washington Regional Transportation Council (RTC) uses its regional transportation model to monitor mobile emissions and ensure they are not exceeded. The Southwest Washington Clean Air Agency (SWCAA) is responsible for monitoring and developing programs to reduce pollution from area and point sources. Under existing air quality regulations, new industry locating in the county is required to use the best available control technology to reduce its own emissions.

The reader is directed to the technical document for a more detailed analysis of existing conditions, applicable regulations, and quantitative impacts to air resources.

B. How do the potential impacts between the alternatives compare?

The growth management decisions reflected in the different alternatives—the amount of land that is urbanized, the extent to which resource, rural, and open space areas are preserved, the efficiency of the transportation system reflected in the number of vehicle miles traveled—have the potential to make an incremental contribution to climate change on a larger scale over a longer period of time. Assessing how

each alternative may contribute to climate change is difficult because of the interaction of many variables. Fossil fuel emissions have historically been large contributors of greenhouse gases. Regulations have reduced the share of pollution coming from mobile sources, while the share of pollution from unregulated non-mobile sources increases. This trend is expected to continue. Growth patterns that reduce emissions by reducing vehicle miles traveled and by reducing the use of small engine equipment, would have a lower impact on climate change.

Farmland, forest land, and soils are important for absorbing the carbon dioxide released by burning fossil fuels. The more farmland, forest land, and soils that are converted to urban uses—roads, infrastructure, residential, commercial, and industrial development—and the more gasoline fueled engines are used, the greater the "carbon footprint" of a city or region is likely to be.

With those factors in mind, an alternative that uses resources more efficiently is less likely to contribute to air pollution and climate change. That conclusion favors Alternative 1 for fewer impacts on the environment, particularly in terms of preserving more vegetation and increasing use of alternative modes of travel. While there are not significant differences in vehicle miles traveled between Alternatives 1 and 2 (1.07 million miles and 1.076 million miles, respectively), the construction of low density residential development rather than more intense urban development is likely to result in an increase in emissions from non-vehicle mobile sources like lawn mowers and leaf blowers. Alternative 3 is based on the assumption that the land in its subareas would be exchanged for the same land area in similar designations in Alternative 2. Therefore, the impacts would be similar to those described for Alternative 2.

C. How do the growth management plans and development regulations of the cities and Clark County reduce the potential impacts? Do other options for mitigation exist?

Most of the cities' plans recognize the link between air quality, traffic congestion, and vehicle emissions, primarily in the transportation elements. The plans contain policies to encourage the use of alternative modes of transportation, such as bicycling, walking, and transit, which can reduce the total amount of air emissions. Level of service standards and transportation concurrency contribute to the reduction of congestion which can improve air quality. Many of the plans also have policies citing the importance of preserving air quality as part of their economic development strategies, since new industrial development cannot occur if the regional air quality does not meet federal standards.

III. Water

A. How can growth management plans affect surface and ground waters in Clark County?

Development patterns can affect the quality and quantity of surface and ground waters. Replacing floodplains, wetlands, and vegetated areas with impervious surfaces increases the risks of contaminants finding their way into streams and groundwater. New impervious surface can change surface water flows and limit recharge of aquifers from which water is withdrawn. The most common causes of surface water quality impairment are high temperatures, dissolved oxygen, and presence of fecal coliform bacteria. All of these impacts are typically due to human activities or development, such as removing vegetation during development that otherwise shades streams or adding new impervious areas from roads, roofs, and parking lots that increases the potential for stormwater runoff to carry sediment and pollutants into streams.

The water quality of most rivers, streams, and lakes in Clark County in 2004 was fair to poor. Water quality tended to be better in rural areas and poorer in urban areas, although runoff from agriculture has negatively impacted many waterways in the county. Groundwater is the source of over 95 percent of the water used by businesses and residents in Clark County. All of Clark County's lowlands can be considered an aquifer recharge area, as groundwater lies beneath virtually all populated areas and is used as drinking water. Although most of the county's groundwater is of good quality, there are areas where it has been degraded or contaminated due to human activities. Groundwater contamination often occurs where water demand and consumption are greatest.

The GMA requires counties and cities to designate and protect critical areas, which include fish and wildlife habitat (such as streams, rivers, and lakes), floodplains, wetlands, and groundwater recharge areas. The reader is directed to the technical document for the detailed analysis of existing conditions, applicable regulations, and quantitative impacts to surface and ground waters.

B. How do the potential impacts between the alternatives compare?

Under Alternative 1, no new surface waters areas would be added to urban areas. There are 185 miles of streams, and 6,400 acres of shorelines and 14,500 acres of flood hazard areas within existing UGAs. Development within the UGAs would have potential impacts as described in the previous paragraphs. Projected total impervious surface in UGAs is about 17,200 acres. Since accommodating planned growth would require upzoning, there would also be an increase in impervious surface above that predicted by the current zoning. Multi-family housing tends to have more impervious surface per acre than low-density development.

Alternative 2 would bring approximately 42 miles of streams, 145 acres of shoreline and 213 acres of floodplains into urban areas, in addition to the 185 miles of streams and 6,400 acres of shorelines and 14,500 floodplains already in existing UGAs. About 5,700 acres of impervious surface would result from development of the new UGAs in addition to the 17,200 acres in existing UGAs. Six of the 10 streams whose water quality has already been compromised by development would be affected by this alternative (East Fork Lewis River, Gee Creek, Lacamas Creek, Salmon Creek, Washougal River, and Whipple Creek).

Alternative 3 subarea highlights:

- Most miles of streams: C1 (6.6 miles) and W1 (6.4 miles); zero miles of streams: B2, C2, L1, V5, W2, W3.
- Most flood hazard areas: C1 (422 acres), L1 (223 acres), and V7 (578 acres) and largest amounts of shorelines: C1 (209 acres) and V7 (107).
- Zero acreage of flood hazard and shoreline areas: B1, B2, C2, R1, R2, R3, V2, V5, W2.
- Most acres of critical aquifer recharge areas: C1 (70 acres) and L2 (71 acres). Zero acres: B1, B2, C2, R1, R3, V2, V4, V5, V6, W2 and W3.
- Most acreage in 1-year zones of contribution (a drinking water wellhead protection measure—more acres means greater impact): L1 (5 acres), V4(22 acres), and W1 (0.7 acres). Remainder have no acres in 1-year zones of contribution.

C. How do the growth management plans and development regulations of the cities and Clark County reduce the potential impacts? Do other options for mitigation exist?

All jurisdictions in the county have policies and ordinances that address impacts to surface waters, which has been a concern of the SEPA and GMA regulations since their adoption. Clark County and the cities have adopted wetland protection ordinances and/or critical areas ordinances to comply with the GMA mandate to protect environmentally critical areas, including wetlands, riparian habitat along streams and lakes, and floodplains. Vancouver, Clark County, Camas, La Center, Ridgefield and Washougal have also adopted Shoreline Master Programs to protect shorelines.

Stormwater and erosion control regulations that reduce impacts to surface waters from stormwater runoff are implemented in all jurisdictions as well. Listings of threatened fish species have required all jurisdictions with fish-bearing streams to re-evaluate water quality protection and habitat restoration for those streams. Revisions of existing ordinances to comply with ESA, such as incorporating measures for using "best available science" as required by recent amendments to the GMA, have been adopted or are being revised.

Additional measures that could be adopted include the following:

- Select a growth pattern that minimizes the urban footprint and directs growth away from wetlands, stream corridors, and shorelines.
- Prohibit development involving impermeable surfaces in flood hazard zones unless required for a water-related use, resource land management (consistent with the Forest Practices Act), or development beneficial to the public which could be appropriately mitigated.
- Acquire undeveloped flood plain areas (particularly wetlands) as open space. Other jurisdictions could consider adoption of funding mechanisms permitted by the GMA for this purpose.
- Permit filling of flood plain areas only when it can be shown to be beneficial to the public (e.g., trails) and is mitigated in an appropriate manner.
- Establish stormwater management districts to fund and implement stormwater collection and treatment programs in each watershed or basin.

IV. Plants and Animals

A. How can growth management plans affect fish and wildlife habitats in Clark County?

Impacts to fish and wildlife habitat are related to the spatial distribution of growth within the county that each alternative would implement. Generally, growth patterns that convert more land to urban uses are more likely to result in the loss and fragmentation of fish and wildlife habitat. Growth patterns that promote more compact development within existing UGAs are more likely to preserve this habitat, although more stress may be placed on terrestrial and aquatic habitat within urban areas as the level and intensity of development increase. Assessing impacts to fish and wildlife habitat primarily involves identifying priority habitat that occurs within the expanded UGAs. About 102,372 acres are currently identified as priority habitats across the county. Clark County maps priority habitats that have been identified as containing evidence of priority species, non-riparian priority habitat, and riparian priority habitat.

The Endangered Species Act (ESA) of 1973 provides the primary framework within which Clark County and its cities must address the conservation of federally listed threatened and endangered species. The County must comply with the ESA by ensuring that its policies, programs, and regulations do not result in harm to listed species, including harm to designated critical habitat. Eleven plant and seven animal species are federal and/or state listed species. The technical document names the species, and in particular, streams with salmonid habitat. As part of the Pacific Flyway and Lower Columbia River system, Clark County also provides critical habitat for a variety of migratory fish and bird species and locally important migration corridors for terrestrial wildlife. The primary impact to sensitive, threatened, and endangered (STE) species and migratory wildlife is the conversion of habitat to urban uses in order to accommodate anticipated growth.

Because wetlands can be located within floodplains and provide important water quality functions and wildlife habitat, the discussion of existing wetland conditions within Clark County is closely related to other sections of this report that discuss water resources, floodplains, vegetation, and wildlife. The most common impact to wetlands is from filling or draining to make land available for other uses that diminish their functional value and service they provide to the larger ecosystem.

B. How do the potential impacts between the alternatives compare?

Alternative 1 would not expand UGAs. Because less land would be urbanized under this alternative, impacts to priority habitats, listed species, migratory habitats, and wetlands would be less than under Alternative 2. In existing UGAs there are 7,384 acres of land with priority species, 2,256 acres of non-riparian priority habitat conservation area, 7,314 acres of riparian priority habitat conservation area, and 16,150 acres of wetlands. Confining growth within existing urban areas could intensify development within these areas and make the conservation of urban fish and wildlife habitat more difficult in the short term. Especially important habitat areas include the Vancouver Lake Lowlands, Columbia River shoreline, and Burnt Bridge Creek. Urban waterways that support anadromous fish, including Burnt Bridge Creek, Salmon Creek, Washougal River, Gibbons Creek, Gee Creek, and the East Fork Lewis River, could be more stressed than predicted by current zoning. Cumulative impacts to fish and wildlife habitat from

further development in these areas could be particularly important, since these urban areas are already characterized by significant habitat modification from development. More intensive development within existing urban areas could place greater stress on wetland functions by generating more stormwater runoff. Maintaining or restoring wetland functions in wetland bank receiving areas could become more difficult within the cities, but would preserve potential areas for mitigation outside the cities. Confining growth to existing UGAs would also preserve rural and agricultural land that would otherwise be converted to urban uses. These areas provide some habitat function for migratory species, and their conservation would avoid impacts to migratory species that would result from their loss.

Alternative 2 would convert about 10,800 acres of rural land to urban uses whereas Alternative 1 would not. Alternative 2 would have more significant impacts on habitat for priority, STE, and migratory species. A total of 1,321 acres of riparian habitat conservation areas would be added to the existing 7,314 acres in the UGAs for future urbanization. Non-riparian habitat conservation areas (190 acres) are found primarily in the Camas and Vancouver UGAs and would add to the 2,256 acres in existing UGAs. About 1,400 acres of wetlands would be added to the 16,150 in existing UGAs.

Alternative 3 subarea highlights:

- Two subareas with the most land having priority species: L1 (225 acres) and V7 (308 acres). Subareas with zero acres: B1, B2, C2, L2, R1, V2, V4, V5, V6, W1, W2.
- Four subareas with the most acres of riparian habitat: C1 (311 acres), L1 (235 acres), V1 (208 acres) and W1 (277 acres). Fewest acres: V6 (4 acres), W3 (5.2 acres). Zero acres: B1, B2, C2, V5.
- Three subareas with the most wetlands: C1 (630 acres), R1 (206 acres), and V4 (211 acres).

C. How do the growth management plans and development regulations of the cities and Clark County reduce the potential impacts? Do other options for mitigation exist?

Mitigation for increased development in habitat areas consists primarily of avoidance of critical areas or other compensatory mitigation required by federal, state, and local regulations. Requirements for protecting critical habitats—which includes fish and wildlife habitat conservation areas and wetlands—are found in the GMA, ESA, and the SMA. All Clark County jurisdictions have implemented requirements to protect critical areas. Federal, state, and local regulations for protecting habitat for threatened and endangered species and for the preservation of water quality would provide protection for habitat that supports other species. Consistency of regulations among jurisdictions, connectivity of ecosystems, and limits on growth in sensitive areas would continue to be important goals that provide additional mitigation.

Cities could establish an internally consistent regional program to identify and protect priority habitat areas. This program could include transfer of development rights (TDR) for those cities that do not have such programs, purchase of the land using funds earmarked for that purpose, and property taxation, which recognizes the restrictions on development. Incentive programs, education, and taxation policies (in addition to the County's current use assessment program) that encourage the conservation of these species and their habitats could be an additional form of mitigation.

V. Energy Conservation

A. How can growth management plans affect energy conservation in Clark County?

The demand for electricity, natural gas, and other natural resources would increase in Clark County as growth occurs. The cost of supplying these services can vary depending on the land use pattern of that growth but most of the increase in consumption would occur with growth in general. Since most energy providers are private companies, most of the discussion of energy revolves around energy consumption and conservation rather than production.

Efficient land uses and cost-effective provision of services can often have energy conservation as a by-product. Electricity conservation by residents and businesses is encouraged by programs sponsored by providers such as Bonneville Power Administration (BPA) and CPU, sometimes in concert with local jurisdictions. Vancouver and Clark County have programs to help improve the energy efficiency of homes. Solar energy ordinances are often implemented to ensure that residences are oriented on lots in a way that maximizes the collection of passive and active solar energy. Shade point requirements attempt to ensure that vegetation and structures do not create shade that impairs the collection of solar energy. Clark County's solar access requirements were repealed in 1997. Countywide Planning Policies for Transportation refer to the creation of a regional transportation system that encourages energy efficiency.

Tree preservation ordinances, such as Vancouver's, can promote energy conservation. Deciduous trees keep buildings cooler in the summer (requiring less energy for air conditioning) while maximizing sun exposure in winter (promoting passive solar energy use). La Center proposes to adopt a tree preservation ordinance.

B. How do the potential impacts between the alternatives compare?

Most of the significant impacts on energy and natural resources would result from the population and employment growth, not the way in which that growth is accommodated. Since growth is the same for Alternatives 1 and 2, there would be little difference in energy by individual usage. New people and businesses would require light and heating and energy to operate equipment.

The main difference is in fossil fuel usage. The more compact the urban form, generally the greater the efficiencies that can be gained in serving that form with urban services and with energy. For example, more dense development requires fewer street lights than development that is spread out. In that case, Alternative 1 would enable more energy conservation than Alternative 2 because no new urban areas would need to be served. Alternative 3, by assumption, would have similar impacts to Alternative 2.

The impact on fossil fuel usage for transportation would vary depending on the land use pattern adopted. For instance, a low-density land use pattern would have higher impacts compared to a more compact growth pattern. Impacts of the proposed transportation systems for each alternative are discussed in the Transportation section.

C. How do the growth management plans and development regulations of the cities and Clark County reduce the potential impacts? Do other options for mitigation exist?

Since none of the jurisdictions is an energy provider, promoting conservation is largely a voluntary task. The primary energy conserving measure available to local jurisdictions is to adopt a compact urban form that supports alternative, energy efficient transportation (walking, bicycling, and transit). Battle Ground, Camas, and Vancouver comprehensive plans contain policies promoting energy conservation and sustainability.

Beyond participating with providers to promote energy conservation, local jurisdictions could add similar policies to their comprehensive plans that deal in general with "sustainable" practices that support citizen and business efforts to reduce energy consumption and promote recycling. Policies could recognize the link between reducing energy consumption and protecting the environment on a regional, state, and national level. Implementation of tree preservation ordinances and examining building codes to allow more innovative "green" building design ideas would also be helpful.

VI. Scenic Resources

A. How can growth management plans affect scenic resources in Clark County?

Natural features are an integral part of what is often considered a scenic resource. Surface waters, vegetation, and topographic variations are natural features that are often elements of scenic resources. As

an area's population increases, there is often an associated deterioration, fragmentation, and loss of these natural features. Scenic resources can also include elements of the built environment, such as views and panoramas of city landscapes, bridges, and dams. These viewpoints are also at risk when an area's population is increasing and development is intense. No systematic survey of scenic resources has been performed for the county, although visual preference surveys were done in order to determine what visual characteristics are most important to county residents. There are also few policies that directly address the preservation of scenic and visual resources. There are, however, policies that address the preservation and protection of open space and natural resources. Therefore, most scenic resources are protected only to the extent that they are associated with natural resources.

No changes to UGAs under either Alternative 2 or Alternative 3 would directly impact the Columbia River Gorge National Scenic Area (which is governed by federal rules implemented by the County), the Columbia River shoreline, the Vancouver Lake Lowlands, the Steigerwald Refuge, or the Ridgefield Wildlife Refuge, all areas with recognized scenic values.

B. How do the potential impacts between the alternatives compare?

Assessing impacts on specific resources from programmatic actions is difficult because project-specific development patterns are unknown. Most land subject to development review is not governed by design standards that can protect scenic resources. Because most scenic resources in Clark County are associated with natural resource areas, impacts to these resources are usually considered negative. Such impacts can result in the conversion of natural environments to non-natural ones; for instance, the conversion of an orchard to a residential subdivision.

Alternative 1 would not involve the expansion of any UGAs. All urban growth and development over the next 20 years would occur within existing UGAs on land already targeted for urban development. While this would reduce the likelihood of impacts to scenic resources associated with rural and agricultural lands, Alternative 1 could encourage development to occur sooner in existing UGAs. Development in some locations would happen more densely with upzoning. Pressure to development near or within portions of the Vancouver Lake Lowlands, the Columbia River Shoreline area, and, more generally, within those natural areas that are currently undeveloped although located within existing UGAs could occur. This would be due to pressure from growth that could not be accommodated by existing zoning inside the UGAs. Alternative 2 proposes to convert approximately 10,800 acres to urban uses. Alternative 2 would see the greatest loss of agricultural, forest, and rural areas, lands that are often considered to have scenic and visual values. Some of the areas with higher scenic values that would be added to UGAs include those around Ridgefield and La Center, and near Lacamas Lake, and Washougal's northern boundary. Proposed expansion areas between La Center and Ridgefield, between Battle Ground and Vancouver (along SR 503), and between Vancouver and Ridgefield (along I-5) would reduce the undeveloped areas between those jurisdictions, creating a sense of contiguous urban areas.

Alternative 3 subarea highlights:

- C1 would add about a third of its 1,200 acres as employment center and the other third as low-density residential uses along the east side of Lacamas Lake. This area currently has agricultural or forest scenic characteristics.
- L1 would include a major area of open space along East Fork Lewis River. Low-density residential and industrial areas would replace agricultural values of the area west of the river. L2 would extend the La Center Junction to the south with similar industrial and medium density uses, bringing the urban areas of La Center and Ridgefield closer together and replacing the current agricultural views.
- Washougal's UGA expansion would primarily involve agricultural land north of the city. The conversion of farmland to urban residential uses would result in the loss of scenic values associated with agricultural land.

C. How do the growth management plans and development regulations of the cities and Clark County reduce the potential impacts? Do other options for mitigation exist?

The comprehensive plans of Battle Ground, Camas, and Clark County have policies related to scenic values or views. Evergreen Highway and Lucia Falls Road are designated scenic routes by Clark County. Battle Ground encourages new development designs that protect and promote significant views. Camas identifies public places consisting of viewpoints, parks, scenic routes, and view corridors. The city may condition or deny a proposal to eliminate or reduce its adverse impacts on designated public views or open space networks.

Scenic resources have generally not been recognized as a critical or sensitive resource which should be inventoried and protected to the same extent as other natural resources. The first step in mitigation of the potential impacts of development on these resources would be to inventory the views from major public routes, public facilities, and viewpoints particularly those used by tourists to the area. Policies and programs could then be developed to protect these scenic resources from alteration as a result of development.

VII. Noise

A. How can growth management plans affect the creation of noise in Clark County?

Primary noise sources in Clark County are: vehicular traffic; railroads, rock quarrying, industrial and commercial operations, airplanes and airport activity; construction equipment and activities; rural activities associated with farming and timber harvesting; residential equipment such as heat pumps and air conditioners; and human activity such as parties, sports and games, etc. The Clark County Amphitheater hosts music events that are subject to specific noise regulations.

Vehicular noise is a combination of noises from the engine, exhaust, and tires. Other conditions affecting traffic noise include defective mufflers, steep grades, terrain, vegetation, distance from the roadway, and shielding by barriers and buildings. Noise levels from traffic sources depend on volume, speed, and the type of vehicle. Generally, an increase in volume, speed, or vehicle size increases traffic noise levels.

Comprehensive plans can affect noise generation and reception by designating where noise generators, such as industrial uses, can be built. Generally, plan attempt to buffer residential uses from major noise generators, though this is not always possible when laying out road networks. The Noise Control Act of 1974 established maximum noise levels permissible in identified environments and standards relating to the reception of noise within such environments. Three classes are identified and generally correspond to zoning districts. Residential zoning districts are Class A, commercial zoning districts are Class B, and industrial zoning districts are Class C.

B. How do the potential impacts between the alternatives compare?

The population and employment growth expected in Clark County would increase noise levels. Environmental noise indirectly affects human welfare by interfering with sleep, thought, and conversation. Problems occur when sources of loud noise impact sensitive environments such as residences, schools, and hospitals. It is difficult to predict noise impacts from future development patterns and uses at a plan level. Impacts are described generally in terms of the relative intensity and types of uses under each alternative. In particular, as rural uses are converted to urban uses, the impression of increasing noise levels would be sharpest for rural residents at the edge of those converting land uses and along heavily traveled routes.

Alternative 1 would have most of the population growth in current urban areas, so noise impacts, although expected to be minimal, would remain in urban areas already expecting urban noise levels. Alternative 2 would have over half of the proposed UGA expansion in low-density, large-lot, single-family detached development. This land use pattern would have more opportunities to buffer noise-sensitive uses from traffic and from commercial and industrial development. The buffering would be in the form of

distance between the noise source and the sensitive receptors or residences. Additional noise would be expected in areas of more intense residential and industrial uses, and where heavy traffic impacts would occur, which in this alternative would be most major corridors, some of which run through rural areas. The quietness of the existing rural area would be altered, though the I-5 corridor already generates noise from heavy traffic volumes.

Individual Alternative 3 subarea impacts on noise would be relatively low compared to impacts proposed under Alternative 2. In most cases the impacts from noise would be minor additional increases beyond Alternative 2. However, the subareas with large amounts of industrial land, such as those in C1 and V2 and V5, that are adjacent to undeveloped rural land, would tend to make a relatively larger noise impact.

C. How do the growth management plans and development regulations of the cities and Clark County reduce the potential impacts? Do other options for mitigation exist?

When new developments are proposed, noise is a factor considered in SEPA review. However, experience has shown that enforcement of noise regulations can be a problem if they involve limitations on actions instead of buffering. Noise conflicts can be reduced in all of the alternatives simply by assuring that policies and programs are implemented that would buffer noise between uses.

Potential mitigation measures that could apply to all of the alternatives, but would be especially important in areas where rural uses would experience a change to uses other than low-density residential or where traffic impacts would be greatest, are listed below.

1. Revise development codes to incorporate noise and safety mitigation, for example, requirements that all industrial activity occur within buildings or that all industrial sites include noise-attenuated buffer walls.

2. Revise building codes to increase noise insulation requirements for both industries and homes (especially in the mixed-use districts). Extra insulation would also improve energy efficiency.

3. Require sound mitigation for adjacent residential development with all widening projects along transportation corridors.

4. Require noise insulation on all mechanical equipment (HVAC, etc.) in new construction.

VIII. Land Use

A. How can growth management plans affect urban land uses and growth in Clark County and its cities?

As discussed in detail in the beginning sections of this DEIS, the GMA was adopted to ensure that development occurs in a planned manner, that there are adequate services available, and that critical resources are protected. The GMA requires comprehensive plans to establish land use designations and growth boundaries to guide development and ensure that the land supply can accommodate projected demands for housing and employment over a 20-year period. The Board is concerned that the *2004 Comprehensive Plan* does not provide sufficient land to accommodate 20 years of growth within adopted UGAs. Vacant or underutilized residential land in Vancouver and Washougal and commercial land in Washougal and La Center, developed at rates somewhat faster than planned growth for housing between 2000 and 2004. Otherwise, vacant or underutilized land in the cities and the county has been absorbed (or developed) at close to the planned rate. Reviewers should consult the Technical Document for critical details about planned and actual growth in demand for housing and employment, income, housing affordability, residential densities and patterns, and land absorption in the section titled Land Use. This section includes a similar detailed profile of the county economy and economic growth. All of these characteristics of the county's growth impact qualities of life and the ability of the county and its cities to

provide adequate and affordable housing for its citizens. Providing for adequate urban growth opportunities needs to be balanced against protection of the environment, and of rural resource lands.

Comprehensive plan predictions are based on a set of assumptions that may not be realized over the lifespan of the plans. For that reason, comprehensive plans and the growth that actually occurs are compared at most every year and at least every ten years to enable corrections to be made. Growth assumptions for this comprehensive plan update include key factors such as a 2.0 percent annual growth rate, an average an average household size of 2.59 people, a redevelopment of underdeveloped land that would accommodate about 5 percent of projected growth, and development at average densities of 8 units per (net) acre in Vancouver, 6 units per (net) acre in Battle Ground and 4 units per (net) acre in the other cities. Adopting the assumptions represents a policy decision by the Board and impacts the projected need for housing and jobs. Changing one or more of these assumptions affects the projected need for housing (and jobs).

B. How do the potential impacts between the alternatives compare?

There are approximately 81,000 acres in existing UGAs. As noted in the sections describing the alternatives, Alternative 1, No Action, is forecasted to be short of residential land, by 21,005 dwelling units. If the UGA boundaries are not moved, as proposed in Alternative 1, and the Board's assumptions around growth prove to be correct, then there would be insufficient land for residential growth over the next 20 years.

To meet GMA requirements to accommodate growth, residential and employment land would need to be rezoned to higher densities. A number of different scenarios could accomplish the task. One scenario would be to upzone low density residential land to medium densities. Table 7 shows the land that would be needed to create the needed number of additional dwelling units. In that case, approximately 5,540 acres of low density residential land would need to be upzoned to medium densities. Up to 1,856 acres of industrial land would need to be rezoned. That estimate is based on assumptions about the presence of critical lands that constrain maximum build-out and on average densities that have occurred in the past, as well as land needed for roads and other public facilities and infrastructure. There are currently 12,689 gross acres of residential buildable land and 3,684 gross acres of buildable industrial land, sufficient to accommodate the rezones.

Table 7. *Land Needed to Convert to Meet Households and Jobs Targets for Alternative 1*

	Shortfall	Conversion	Total Net Acres	Total Gross Acres
Households	21,005[1] dwelling units (d.u.)	8 d.u./acre (Urban Low) to 16 d.u./acre (Urban Medium)	2,626[2]	5,540[3]
Jobs	11,623[4]	9 jobs/acre (industrial) to 20/jobs/acre (business park or commercial)	1,057[5]	1,856[6]

[1]Growth target of 66,939 households minus Alternative 1 capacity of 45,934 households
[2]21,005 households divided by a net gain of 8 households / acre
[3]Conversion factor for residential net acres to gross acres is 1:2.11
[4]Growth capacity target of 138,312 jobs minus the Alternative 1 growth capacity of 116,782 jobs minus the 9,907 public sector jobs
[5]11,623 jobs divided by a net gain of 11 jobs / acre
[6]Conversion factor for industrial net acres to gross acres is 1:1.756

Other scenarios could include upzoning medium density to high density, changing the minimum densities in low-density districts, and changing commercial zones to mixed use zones. The shortage of land for jobs (commercial and industrial) is estimated to be 11,623 acres. Those job densities could be increased by rezoning industrial (9 jobs per care) land to business park or commercial districts (20 jobs per acre). In

that case, an additional 1,856 acres of industrial land would need to be rezoned to business park or commercial zones.

In terms of balancing use of land for growth against impacts of growth, Alternative 1 would make the most efficient use of land and other resources, since the road, sewer, and water networks would not need to be expanded much beyond what is currently planned under the 2004 Plans. Higher densities would result in more use of alternative transportation modes.

Alternative 2 would expand the UGAs of all jurisdictions except Woodland and Yacolt. Countywide, 10,858 acres would change from rural to urban uses. Alternative 2 would add almost exclusively urban low-density residential land to accommodate future growth. This alternative includes a 10 percent market factor for residential land, which is intended to ensure that the residential land supply has an extra cushion that would prevent a shortage of land in the real estate market. There would be 6,200 new acres of low-density residential land, and about 750 acres of medium density land. Approximately 45 percent of low-density residential would be in the Vancouver UGA and 23 percent in the Ridgefield UGA. The remaining four jurisdictions would have from 424 to 615 acres of new low-density land each. Land proposed for conversion to urban uses consists of agricultural districts (about 4,000 acres), urban reserve (about 3,400 acres), and rural residential (about 3000 acres). About 3,500 acres would be industrial, commercial, or business park districts.

More infrastructure would be required under Alternative 2 than under Alternative 1, because of the land area added to the UGAs. This alternative would make less efficient use of land and other resources than Alternative 1.

Alternative 3 highlights:

- Three subareas with the most acreage of low-density residential land: V1 (1006 acres), V4 (908 acres), and W1 (693 acres).
- Subareas with medium or high density residential land: L2 (139 acres), R3 (80 acres), and W1 (85 acres).
- Subareas with employment center, employment campus, or industrial land: B1 (22 acres), C1 (590 acres), L1 (86 acres), L2 (239 acres), R2 (49 acres), R3 (122 acres), V2 (875 acres), V5 (495 acres), V7 (668 acres), W1 (31 acres) and W2 (41 acres).
- Subareas with land zoned for public facilities: none.
- Subareas with land zoned for parks or open space: C1 (284 acres), L1 (224 acres), and W3 (21 acres).

C. How do the growth management plans and development regulations of the cities and Clark County reduce the potential impacts? Do other options for mitigation exist?

Some of the cities anticipate certain specific, planned projects would reduce the need for new dwelling units. If the projects have not been adopted by local jurisdictions they are not used in the calculations for future available dwelling units. This does not mean that over time those projects would not occur and mitigate the lack of available land by accommodating more people than currently predicted for Alternative 1. Aside from possible projects, the rezoning discussed above would be one type of mitigation measure available. Other mitigation measures to accommodate growth would be to change the assumptions, such as the average annual growth rate or average densities. For example, the employment assumptions of 20 jobs per acre for business park and commercial uses, and 9 jobs per acre for industrial uses, are lower than the densities achieved in the last decade. If the county changed the assumptions to reflect achieved densities, no new employment lands would be needed in Alternative 1 and Alternative 2 would have a larger surplus of land for jobs.

IX. Rural and Resource Lands

A. How can growth management plans affect the rural and resource lands of Clark County?

Rural lands include rural residential, commercial and industrial land use designations. Resource lands are those designated for mineral extraction, agriculture, or forest uses. The county currently contains about 106,000 acres of rural lands and 203,000 acres of resource lands. When land converts from rural or resource designations to urban designations, there is usually no further opportunity to extract or use the resources in the future. For that reason, the GMA protects rural and resource lands from premature urban development. When land is converted from a rural or resource designation to an urban designation, the rural landscape changes. The impact analysis looks at the amount of land that would be converted under the alternatives and how the rural landscape would change as a result.

B. How do the potential impacts between the alternatives compare?

Alternative 1 would not convert rural or resource lands to urban land, the total acreage preserved would remain at about 309,000 acres. Additional growth and development over the next 20 years would be accommodated within existing UGAs by increasing densities as needed and developing vacant and under-developed land within existing UGAs. This alternative is consistent with the GMA goal of protecting and preserving resource land for its long-term commercial viability by providing an adequate mineral extraction, forest, and agricultural land base and by reducing conflicts between mineral extraction/agriculture and other surrounding land uses. The preservation of agricultural land would help to preserve the role of the agricultural sector within the county's economy. Alternative 1 would help to preserve the rural character of the county, small-scale resource uses, and other values—recreational, scenic, historic, and environmental—that are associated with rural and resource lands. Rural land that buffers the urban areas, providing a distinctive dividing line between urban areas would not change.

Under Alternative 1, because projected population is not anticipated to be accommodated by existing zoning designations, rural areas with larger lots, such as in the Rural-10 and Rural-20 may experience increased pressure to upzone to accommodate additional population, which would be counter to the intent of the GMA.

Alternative 2 would convert about 3,000 acres of rural land and about 4,400 acres of resource land to urban land. This alternative would reduce total rural and resource land to about 103,000 and 199,000 acres, respectively. Most of the rural land acreage would be added to Battle Ground (726 acres) and Ridgefield (647 acres). Other jurisdictions would be allocated between 450 to 500 acres of rural with Washougal the exception, receiving 222 acres. Of the 3,004 acres dedicated to UGA expansion nearly all of the land is currently designated for rural residential type uses with Rural-5, -10, and -20 zoning designations.

Agricultural land would be the primary resource land converted to urban uses, primarily to Ridgefield (1,211 acres) and Vancouver (1,072 acres), with some resource land allocated to Washougal, La Center, and Camas and Battle Ground. If Alternative 2 were chosen and rural areas were added to UGAs, the delineation between urban and rural areas could be less defined because as proposed, the majority of development under this alternative would be for low-density residential development. This style of development would intentionally create more of a suburban rather than a higher density urban environment, blurring the edge of urban areas.

Alternative 3 highlights:

- Subareas with most rural land: C1 (794 acres) V2 (678 acres), and W1 (654 acres). Zero rural land: V3, V4, V6, and W3
- Subareas with most resource land V7 (613 acres), C1 (407 acres) and L2 (405 acres). Zero resource lands: B1, B2, V1, V3, V4, V6, W3.
- Subareas with mineral resource lands: W1 (46 acres) and W2 (15 acres).

C. How do the growth management plans and development regulations of the cities and Clark County reduce the potential impacts? Do other options for mitigation exist?

Mitigation for conversion of rural lands consists primarily in ensuring that provisions to protect remaining rural lands are in place in the comprehensive plan and development regulations, since rural land brought into UGAs would (and is intended to) eventually urbanize and lose its rural character. Clark County's comprehensive plan defines rural lands and rural centers with the intent to provide for land uses and densities that are compatible with designated resource lands and ultimately maintain the rural character of those areas. The County has also adopted "right to farm" and "right to harvest timber" ordinances to protect resource-based industries on rural lands from adjacent incompatible residential development. Additional rural land mitigation could include:

- County designations of a larger portion of the undeveloped rural lands with soils identified by SCS as prime agricultural and forest lands as resource lands, regardless of lot size.
- Incentives (e.g., transfer or purchase of development rights) and strict development regulations to discourage construction of residences on subdivided resource lands.
- Adopt "No net loss" policies for rural designations.

Once resource land is included in a UGA, it is assumed that the resource itself is no longer protected from conversion to urban uses and loss of the resource would eventually occur. However, the County's mineral resource overlay zone does provide protection in those cases.

X. Economy

A. How can growth management plans affect the economy of Clark County?

Clark County's location within the larger Portland Metropolitan Statistical Area and its existing and new industries have provided the basis for continued growth and prosperity. Clark County's economy is broadly diversified and is strong in high technology manufacturing, financial and business services, and international trade. Various factors affect the economic health of the county and its cities. Growth management plans should ensure a sufficient land supply to provide for future economic development, and should balance the ratio of jobs-to-population to encourage workers to live and work in Clark County, and to ensure that sufficient revenues from taxes can support the public facilities needed to serve land development. The jobs-to-population ratio in Clark County is higher than in the Portland metro area.

Another factor affecting economic viability is the ability of businesses to develop available industrial lands. Clark County has the largest inventory of industrial lands in the PMSA marketplace. There are approximately 12,000 acres zoned for industrial uses (light and heavy industrial zoning designations) in Clark County, 97 percent of which is located in urban areas. Clark County has approximately 800 acres of *prime* industrial land available for development with a total vacant inventory of over 5,000 acres. Prime industrial land is defined as immediately available industrial land of sufficient size that is vacant, properly zoned, served with adequate infrastructure, and free of land use and environmental conflicts. The 2005 *Plan Monitoring Report* showed that between 2001 and 2004, approximately 229 acres of industrial land were developed, primarily within the Vancouver UGA, which accounted for approximately 65 percent of industrial development countywide. Industrial development in Ridgefield accounted for approximately 30 percent of the total industrial development in the county. Overall, approximately 41 percent of industrial development has occurred on portions of parcels with critical lands.

Approximately 602 acres of commercial land was developed between 2001 and 2004, primarily in the Vancouver UGA that accounted for approximately 80 percent of all commercial development within the county. Approximately 23 percent of commercial development occurred on portions of parcels with critical lands.

If developed appropriately industrial lands can generate high-wage jobs at a rapid pace and propel the county's economy. The Portland Metropolitan area attracts industry to the region but, for firms to locate in Clark County, adequately serviced and readily available land is needed. The biggest potential concerns could be the funding of infrastructure and jurisdictional questions between the land use planning and regulatory functions of Clark County and the water/sewer service functions of the cities.

B. How do the potential impacts between the alternatives compare?

Job growth is assumed to occur under all alternatives, although job growth under Alternative 1 would occur only within existing UGAs while job growth under Alternative 2 would occur within the existing UGAs and proposed expansion areas. Alternative 1 would not have the capacity to accommodate the projected number of jobs needed by 2024, exceeding capacity by 18 percent, approximately 24,000 jobs. If forecasts for jobs used the job densities achieved between 1995 and 2000, Alternative 1 would nearly meet the jobs target, accommodating all but 3 percent of the planned jobs. Alternative 2 would accommodate the projected jobs target under the proposed assumptions. If the actual achieved employment densities in retail and industrial are assumed, this alternative would include enough land for 17 percent more jobs than the employment target. Most jurisdictions have developed only a small percentage of their vacant industrial and commercial land and still have large tracts of land available for development.

Both Alternatives 1 and 2 assume one new job for every 1.39 new people. Alternative 1 would meet Vancouver's goals of creating activity centers more than Alternative 2 because it would concentrate housing and employment on land within the existing UGA and have the greatest opportunity to connect new development with the existing urban development pattern. Compared to Alternative 2, Alternative 1 would provide better connections to the existing development pattern and would meet Vancouver's policies around activity centers.

Alternative 1 would offer fewer large tracts of vacant land for economic development and therefore would not support some of the County's economic development strategies, particularly those with emphasis on campus development and industry clusters, whereas Alternative 2 alternative would include large lots for industrial uses, with some acreage for other types of employment, although less than half of the total acreage of Alternative 2 would be designated for jobs and may still mean that Clark County residents would have to look for employment in other areas outside of the county because of the higher percentage of land devoted to housing. Alternative 2 would add land for jobs to all jurisdictions, but the majority would be dedicated to Vancouver and Camas. Expansion of the Camas UGA would be predominantly for mixed-uses whereas Battle Ground, La Center, and Ridgefield would all be allocated employment acreage predominantly for commercial, employment center/campus, and industrial lands.

Alternative 3 highlights:

- The most industrial acreage would be added in the Vancouver area, particularly V5 (495 acres) and V7 (668 acres).
- The largest increase in employment acreage would occur in V2 (875 acres). Other large increases in employment center land uses would occur in C1 (590 acres).
- No employment acreage would be provided in B2, C2, R1, V1, V3, V4, V6, and W3.

While Alternative 3 subareas would provide additional industrial and employment center land, the majority of land devoted to employment would still be concentrated in Alternative 2 subareas. Employment acreage that would be added to existing UGAs under Alternative 3 would increase potential employment opportunities provided public facilities could be provided to those sites to support future development.

Subareas where no land for employment is proposed could still provide short-term employment opportunities from residential construction, although these jobs would likely be more cyclical than long-term employment in industrial and high tech clusters the county is attempting to attract.

C. How do the growth management plans and development regulations of the cities and Clark County reduce the potential impacts? Do other options for mitigation exist?

As with mitigation for land uses, the primary mitigation for economic impacts is to select an alternative that would contain sufficient land to accommodate firms of varying sizes and sectors. Mitigating a land supply shortfall implies few remedies other than changing the assumptions behind the designated UGAs, such increasing the assumed number of employees per acre or upzoning to a higher density employee/acre ratio.

XI. Historic and cultural resources

A. How can growth management plans affect historic and cultural resources in Clark County?

Much of the county has been identified as having a high probability for archaeological resources, in part because of the area's rich history and its importance as a settlement location. Many of the high probability areas are located along streams, rivers, and other water bodies. When applications for development are submitted, a pre-determination of the probability rating is required. The model helps staff determine whether an applicant is required to investigate potential resources further in order to protect them from development, or how to mitigate impacts. Most of the cities work with Clark County to protect historic and cultural resources, and many have agreements to use the County's predictability model in their own reviews. More intensive development pressures can make it difficult to prevent historic or cultural resources from being disturbed, though having more land available for development does not preclude those pressures from occurring. Land that remains undeveloped or in rural uses can end up protecting potential uses from future disturbances.

B. How do the potential impacts between the alternatives compare?

Alternative 1 would not create any new impacts on cultural or historic resources that were not discussed in the EIS for the 2004 Plan. There are approximately 34,000 acres of land with a moderate, moderate-high, or high probability for archeological resources in the cities and their UGAs. Alternative 2 would add about 7,700 acres to that total, an increase of 23 percent.

Alternative 1 contains 289 historic sites in the UGAs, of which 29 are on the local Clark County register and 20 are on the National Register. The rest are inventoried but not registered. The expanded UGAs under Alternative 2 contain eight inventoried, but not registered, historic sites, which would bring the total to 297 sites in UGAs. Alternative 3 subareas have a total of 10, of which two are registered historic sites: C1 (National Register) and L2 (Clark County Historic Register).

Confining growth to existing UGAs in Alternative 1 could increase the pressure to remove urban historic resources, usually structures such as homes, schools, and churches, to make way for higher density and higher intensity development.. However, impacts tend to be largely a matter of project-level decisions. All areas in and adjacent to UGAs contain a very high proportion of land having a high predictability, so comparing subareas does not reveal many opportunities for reducing impacts under Alternative 2 by expanding into Alternative 3 subareas.

C. How do the growth management plans and development regulations of the cities and Clark County reduce the potential impacts? Do other options for mitigation exist?

Clark County: Under Clark County's historic preservation ordinance (CCC Section 40.250.030), the Clark County Historical Preservation Commission is directed to collect and evaluate cultural resource information; review proposed restoration/rehabilitation for historic significance; review nominations to the National Register of Historic Places, Washington State Heritage Register, Clark County Heritage Register, or other local registries; and develop and manage a variety of educational and interpretive programs. Further, the Commission is responsible for evaluating probable impacts to historic properties, the nature of those impacts, and the reasons for a particular determination. Through inter-local

government agreements, the Commission is able to provide historic preservation services to each incorporated city in the county. All of the comprehensive plans contain policies related to historic and cultural resource protection.

XII. Transportation

A. How can growth management plans affect the transportation network in Clark County?

The GMA contains extensive requirements for transportation planning because of the critical link between transportation and land use. Local comprehensive plans must include a transportation element. The transportation plans must evaluate not only the road network, but also alternative modes and networks for transit, pedestrians, bicycles, freight, rail, and air and water travel. Approval of proposed development depends on the applicant demonstrating that adequate transportation facilities would be available at the time of development (or complete within six years of approval) and meeting the level of service (LOS) standards in the plan. This approach is referred to as the "concurrency" requirement of the GMA.

Concurrency means that transportation capacity is available to serve development and the adequate functioning of networks is preserved. LOS standards represent the minimum performance level desired for transportation facilities and services. Clark County and each city jurisdiction have a concurrency program. The two main parts of a concurrency program are an ordinance, which defines how concurrency is administered, and the comprehensive plan, which establishes the transportation LOS standards.

B. How do the potential impacts between the alternatives compare?

Overall, impacts on the transportation networks are due to growth that would occur, which is the same for both alternatives. Consequently, many of the impacts would be similar for both Alternative 1 and Alternative 2. An explanation of the details of the impacts, and the projects designed to mitigate the impacts are in the Technical Document. This section presents highlights of the impacts. Both alternatives show a significant number of congested lane miles of roadway. For example, most of I-5 south of 99th Street is forecast to be at a failing LOS, even with the widening to six lanes in that area. Significant congestion is also likely to occur on I-5 between the 219th and Ridgefield interchanges unless alternative arterial and collector routes are planned and built. The I-205 and I-5 bridges would operate at a failing LOS during the peak hour under both Alternatives 1 and 2. Under both alternatives, the SR-503 corridor between Fourth Plain in Vancouver and SR-502 in Battle Ground would be close to a failing condition. SR-14 is approaching full capacity between I-205 and SE 164th Avenue in both Alternatives 1 and 2. LOS on most county and city roadways would be similar under either Alternative 1 or 2. Twenty-one corridors would experience poor to failing levels of service during peak hours under both alternatives. These are listed in the Technical Document.

1. Alternative 1 and Alternative 2 Roadway Network Impacts

a. Alternative 1

Alternative 1 has a higher number of total person trips, and a somewhat higher transit and non-motorized mode share (see Table 66 in the Technical Document). This alternative has a lower number of Columbia River Bridge crossings and a lower percentage of all trips traveling from Clark County to Portland. I-5 and I-205 bridges would both be operating at failing conditions. Because of the impacts on the freeway mainlines, it is expected that in the a.m. peak travel time in Clark County, ramps leading to the I-5 and I-205 facilities would queue and would spill back onto the intersecting arterials, impacting traffic operations on those facilities.

With the forecast level of congestion, there could be increased cut-through traffic using neighborhood streets to avoid congestion on the major corridors, intersections, and interchanges. Major corridors where traffic levels are noticeably higher and where levels of service would be lower compared to Alternative 2 include:

- Burton Road from Andresen Road to NE 86th Avenue
- the SE 164th Avenue corridor from SR-14 to Mill Plain
- the SE 192nd Avenue corridor.

b. Alternative 2

Alternative 2 is higher in the number of congested lane miles, vehicle hours of delay, vehicle hours and miles traveled (see Table 66). I-5 and I-205 and the mainline approaches would both be operating at or near a failing LOS. Alternative 2 has almost 18,000 more daily bridge crossings, so the congestion at both river crossings would be worse than under Alternative 1. Because of the impacts on the freeway mainlines, it is expected that in the a.m. peak in Clark County, ramps leading to the I-5 and I-205 facilities would queue and would spill back onto the intersecting arterials, impacting traffic operations on those facilities.

Congestion on the major corridors, intersections, and interchanges could increase the potential for traffic to use neighborhood streets to avoid congestion. Major corridors where traffic levels are noticeably higher and where levels of service would be lower compared to Alternative 1 include:

- SR-503 from NE 119th St to Battle Ground
- NW 11th Ave/Spencer Rd
- NE 259th St west of 29th Ave
- portions of Hillhurst and Royle Roads
- NE 10th Avenue north of 219th Street
- NE 142nd Avenue from 159th Street to Battle Ground
- A section of NE 50th Avenue just south of NE 179th Street

c. Alternative 3 Subareas

Since the subareas individually are relatively small compared to Alternative 2, their impacts individually on the transportation system would be unlikely to show up in the regional transportation model. Therefore, the discussion of impacts is qualitative. The analysis looks at access to and connectivity within the subareas, as well as whether the subarea uses would affect congested areas projected by the model under Alternative 2. Reviewers are directed to the analysis in the Technical Document.

2. Transit Impacts

Under all three alternatives, C-TRAN buses would travel in mixed traffic on surface streets and freeways. No high capacity transit facilities were included in the transportation network. A study of potential high capacity transit corridors and options is just getting underway under the direction of the Regional Transportation Council.

C-TRAN buses would experience high congestion levels on most local routes and cross-river commuter routes. C-TRAN service corridors would experience substantial delays and, therefore, increased costs to provide levels-of-service reflecting current conditions. Increased ridership might be gained through provision of additional park-and-ride facilities to capture commuter work trips on I-5, I-205, and other regional facilities. Development of these park-and-ride facilities would require significant capital expenditures and increased operating expenditures. Significant delays on I-5 and I-205 may serve to inhibit transit ridership.

a. Alternative 1

Greater housing and employment densities under Alternative 1 could increase demand for transit service. C-TRAN may need to expand service hours, focused primarily within the existing Vancouver UGA. The financial impacts on operations and maintenance budgets are not known at this time.

b. Alternative 2

Alternative 2's expansions to existing UGA boundaries for moderate to low-density housing could make providing transit service to these areas difficult. C-TRAN would need to expand service hours and route miles, both of which have financial impacts on its operations and maintenance budget.

c. Alternative 3 Subareas

Alternative 3 subareas would likely require additional service hours and route miles with a corresponding increase in financial impacts. Subareas that already have fixed route service or that are adjacent to areas currently served could be provided service at the least expense. Subareas V2, V4, and V5 have a fixed route line through the subarea, while V6 and V7 are fairly close to existing fixed route service. None of the other subareas could be easily served by transit.

3. Pedestrian and Bicycle Network Impacts

Impacts would be similar under all three alternatives. The non-motorized mode share is 34% higher than for Alternative 2. Congestion on the major corridors could serve to encourage pedestrian and bicycle trips for shorter non-work trips and bicycle trips for work trips, if pedestrian and bicycle facilities were provided. The outlying employment centers in Alternatives 2 and 3 may serve to discourage longer-distance bicycle commute trips without a focus on regional bicycle facilities connecting the Vancouver and Battle Ground UGAs to other FPIAs and urban areas. Of the Alternative 3 subareas, W3 is closest to a city center and would be most accessible for pedestrian and bicycle trips to work. V5 and V7 are relatively close to develop urban areas and could also be made reasonably accessible to non-motorized travel. A list of the areas with deficient facilities is provided in the Technical Document.

4. Freight Network Impacts

Significant improvements to the freight rail system would be necessary under any land use alternative to reduce existing bottlenecks and increase system capacity. Truck freight mobility is dependent on road and highway levels of service, which, as noted above, are compromised by both alternatives. freight mobility would be substantially impacted by both alternatives. The number of vehicle hours of delay is substantially higher for Alternative 2 (4,518) than for Alternative 1 (3,379). The difference is to a great extent due to the much higher employment level and jobs to population ratio assumed in Alternative 1, which reduces the number of cross-river commuters. A list of the areas with deficient facilities is provided in the Technical Document.

5. School Transportation System

Congestion on the major arterial roadways from either Alternative 1 or 2 would likely have adverse impacts on school bus operations. Peak morning congestion would increase travel time for school buses, which in turn reduces the length of routes that school buses can have and still run on time (high schools and middle schools). Since the a.m. peak hour level of service was not specifically analyzed, a comparison of relative impacts between the alternatives is not available. In general, Alternative 2, based on the higher total vehicle hours of delay is likely to create the greater impact.

6. Emergency Services

Refer to discussion and tables in the sections regarding Impacts on Fire Protection and Impacts on Police Protection in Section X Public Facilities and Utilities.

7. Safety

There are several high accident corridors and locations currently identified within Clark County (identified by WSDOT, Clark County, and the City of Vancouver). These are listed in the Technical Document. Alternatives which add significant traffic levels at these locations would likely serve to exacerbate the high accident problem unless mitigation measures are undertaken.

8. Impacts on Focused Public Investment Areas (FPIAs)

Focused Public Investment Areas (FPIAs) are subareas that the County has identified for focusing public infrastructure investments in a concentrated area to maximize the efficiency of public investment to stimulate economic development. FPIAs are shown on Figure 31.

As previously noted, there are few major differences between Alternatives 1 and 2 in terms of transportation corridor failures. The high levels of growth in Section 30 and the Columbia Tech Center in Alternative 1 appear to contribute significantly toward the increased congestion on Burton Road, 162nd Ave and 192nd Avenue. The dispersal of jobs and households and lower jobs-to-population ratio in Alternative 2 contribute to declining levels of service on several major corridors that serve FPIAs including SR-502 and SR-503 to Battle Ground, NE 50th Ave through the WSU Research Park FPIA and 72nd Ave and Andresen/Padden in the St. Johns FPIA.

For Alternative 3 subareas, the addition of L1 and L2 would support the La Center FPIA. R2 includes a substantial amount of employment land that would implement the Ridgefield Junction FPIA. V2 includes more Employment Center land than was originally envisioned in the Discovery Corridor FPIA. V5 expands the 117th Avenue FPIA. V7 adds to the Burnt Bridge Creek FPIA and W3 is a minor expansion of the Port of Camas/Washougal FPIA. To the extent that these areas produce jobs that balance housing growth and reduce the growth of cross-river commuting and reduce trip length for home-to-work trips, they would provide a net benefit to critical transportation corridors during peak hours.

C. How do the growth management plans and development regulations of the cities and Clark County reduce the potential impacts? Do other options for mitigation exist?

All of the cities experiencing growth have adopted new or updated transportation plans that identify the deficiencies, levels-of-service, proposed improvements, costs and revenues in 2004 or since. Ridgefield and La Center have also issued Draft EIS documents that address the impacts and mitigation for their proposed UGA expansions. These documents provide a much more detailed analysis than can be readily summarized in this DEIS. All adopted plans met the GMA requirements.

Table 68 in the Technical Document compares transportation capacity improvements needed under each alternative to achieve the adopted, system-wide LOS on roadways. Table 69 identifies transportation projects that would be necessary to mitigate the impacts of additional population and employment projected under any of the alternatives. The CFP includes cost estimates for the six-year Transportation Improvement Program and on-going programs as well as planning-level cost estimates for projects assumed in the 2024 network (MTP) and mitigation projects identified for Alternatives 1 and 2. The total cost for capital projects and programs is estimated at between $576 million and $609 million (2006-2024). Of that total, over the next 6 years, expenditures for projects and programs would total $167.7 million. An additional $131 million would be required to complete the projects started in the next 6 years. Additional MTP projects could cost between $200.5 to $233.8 million (low and high estimate). Proposed projects to mitigate Alternative 1 would cost between $98.5 and $124.5 million. An additional mitigation project for Alternative 2 would cost between $18.9 and $23.4 million, for a total cost for Alternative 2 mitigation of $117.4 to 147.9 million.

As previously noted, Alternative 3 subareas can only be discussed in qualitative or relative terms until the combination of subareas is known. None of the subareas is likely to trigger significant County or regional transportation improvements.

The impact analysis highlights several major policy issues. These issues are the same regardless of the alternative selected and concern the following topics (discussed in more detail in the Technical Document:

- Cross-river bridge capacity insufficient to serve projected growth at the current acceptable LOS.
- Balance between jobs and housing should be improved to keep work related trips in the county.

- Low levels of service on state highways. Capacity on state highway facilities can be helped by parallel arterial and collector roadways as alternatives for short distance travel.

- Current county policy does not provide for four-lane rural arterials except as state highways. Both alternatives shows a need for four lanes on some rural arterials.

XIII. Public Facilities and Utilities

A. How can growth management plans affect the provision of public facilities and utilities in Clark County?

The GMA contains requirements for public facilities planning because of the critical link between the provision of services and planned development. Local comprehensive plans must address capital facilities and show that adequate funds exist for the provision of those services. This section summarizes the existing conditions of each service or utility. For a more extensive discussion of impacts, reviewers are directed to the Technical Document.

Fire Protection/Emergency Services. Fire protection for Clark County is provided by a combination of municipal fire departments, rural fire protection districts, the Washington Department of Natural Resources (DNR) and the US Forest Service. Each provider or jurisdiction establishes levels of service for response times.

Police Protection. The Cities of Camas, Washougal, Battle Ground, La Center, Ridgefield, and Vancouver provide local law enforcement services through local police departments. The Clark County Sheriff's Department provides services in those areas outside the city boundaries and in Yacolt. The Washington State Patrol has police jurisdiction on state routes. Facilities include the county jail, a leased office for the inter-jurisdictional Clark-Skamania Narcotics Task Force, the 911 Clark Regional Communication Agency, and the Child Abuse Intervention Center. Larch Corrections Center is the only State detention facility in Clark County. Service providers typically use ratios of staff to population and response time to measure level of service.

Public Schools. There are nine school districts within Clark County: Battle Ground, Camas, Evergreen, Green Mountain, Hockinson, La Center, Ridgefield, Vancouver, and Washougal. Although schools are not subject to the direct concurrency requirements of the GMA, schools are required by existing state law to be adequately provided for before land divisions can be approved. To meet minimum facility standards set by state and federal agencies, schools usually require relatively large sites of at least 10 acres for elementary schools, 20 acres for middle schools, and 40 acres for high schools. These sizes can make it difficult to plan for schools inside UGAs.

Parks and Recreation. . In 1995/96, the City of Vancouver and Clark County joined forces and created the Vancouver-Clark Regional Parks and Recreation Dept. A joint parks plan for the Vancouver urban area was adopted and updated in 2001. Clark County has adopted minimum standards for the number of acres of parks of different kinds necessary to maintain the quality of life and recreation opportunities desired by county residents. In addition, each city has its own parks and recreation facilities. Not all of the cities have adopted park standards, and some differ from those adopted by Clark County. Table 83 in the Technical Document compares park standards for each jurisdiction.

Libraries. Fort Vancouver Regional Library District (FVRLD) serves all of Clark, Skamania and Klickitat Counties and the city of Woodland in Cowlitz County. The City of Camas has its own library. FVRLD has twelve branch libraries, three bookmobiles, a Vancouver operations center, and dial-up and Internet access to electronic services. National library standards are not widely used to establish levels of service because local conditions vary so greatly nationwide. Standards used by Fort Vancouver Regional Library System (FVRLS) indicate that there should be 0.50 square feet of library space per capita. Currently, FVRLD provides a total of 69,400 square feet of library space in eight Clark County branches, which

translates into a ratio of 0.2 square feet per capita. The FVRLD also coordinates with the City of Camas Library.

General Government. General government buildings house the staff that operate each city and town, and include offices, public works yards, and maintenance facilities. As cities and towns grow, more staff is required to provide services to residents and maintain city/town facilities. As a result, more general government space is needed.

Solid Waste. Transfer stations serve as centralized collection points for solid wastes collected by licensed trash haulers. The Central Transfer and Recovery Center (CTR) on 117th Avenue (SR 503) serves primarily the northern Vancouver urban area, outlying rural areas and the cities of Camas and Washougal. The West Van Materials Recovery Center (West Van) on NW Old Lower River Road generally serves west and north Vancouver. Clark County does not have a licensed landfill within its boundaries. Municipal solid waste delivered to CTR and West Van is end-loaded by hydraulic compactor units into shipping containers which are transported directly to the barge-loading facility at Tidewater Barge Lines. They are then shipped upriver for final transport to the Port of Morrow and ultimately the Finley Buttes Landfill. Tidewater Barge Lines is the contracted transport company.

Public Water Systems. The GMA requires that availability of public water be included in the concurrency management system of each local jurisdiction. The ability of local governments and utilities to keep up with service demands can be difficult in times of rapid growth. The cities of Vancouver, Battle Ground, Camas, Ridgefield, and Washougal generally provide water service to their urban areas. CPU is the primary water provider for the unincorporated areas of the county and for the City of La Center and town of Yacolt. The source for virtually all water in Clark County, public and private, is from groundwater aquifers. Identifying and developing adequate water supply to meet future demand is essential in order to ensure the continued growth and economic viability of Clark County. Although overall water capacity is ultimately determined by the physical carrying capacity of available sources, the delivery capabilities of individual purveyors are determined by available water rights.

Sanitary Sewer. Several jurisdictions and public agencies provide sanitary sewer services in Clark County. These include the cities of Battle Ground, Camas, Ridgefield, Vancouver, Washougal, CPU, and the Clark Regional Wastewater District (CRWWD). La Center assumed ownership of the sewer system previously owned by CPU in August 2006. CPU provides septic system monitoring for the Yacolt. Clark County operates the Salmon Creek Wastewater Treatment Plant (SCWTP) near the confluence of Salmon Creek and Lake River. The treatment plant is currently at 75 to 80 percent capacity. Clark Regional Wastewater District serves approximately 26,000 customers/sewer connections in unincorporated Clark County.

- The City of Battle Ground owns, operates, and maintains its collection lines and mains. Two other collection systems located outside of the Battle Ground UGA (Meadow Glade and Hockinson) are owned and operated by the Clark Regional Wastewater District.

- The City of Camas provides wastewater service to all areas within the city limits and to areas west and north of the city limits within the city's UGA. As of 2005, the Camas treatment facility is operating at approximately 53 percent of its capacity.

- La Center assumed ownership of the sanitary sewer collection system and treatment plant, previously owned by CPU, in August 2006. It is operating at approximately 55 percent capacity.

- The Ridgefield sewer system serves all land within the city's UGA, although most of the area is rural and relies on septic systems. The Ridgefield wastewater treatment facility generally meets residential needs, but is often overloaded during heavy rainfall.

- The City of Vancouver provides wastewater collection and treatment services to the Vancouver city limits and some unincorporated areas. Residential and commercial wastewater flows can be shifted between the Westside Treatment Plant and the Marine Park Treatment Plant depending on available

capacity. The Marine Park Treatment Plant receives flows from the southeasterly section of the city that is primarily residential wastewater. As of 2005, the Westside Treatment Plant treated is operating at approximately 43.6 percent capacity. The Marine Park Treatment Plant is operating at approximately 57.6 percent capacity.

- The Washougal sewer system serves the Washougal service area. The City's wastewater treatment facility is capable of treating approximately 2.25 MGD.

- There is no public sewer service in Yacolt. All existing development is served by on-site septic systems. The City recently adopted a sewer plan that includes a small monthly fee to inspect individual septic systems and ensure that they are operating properly. CPU performs these inspections. Eventually, the town plans to construct a local sewer system and treatment facility.

Electrical system. Electricity is provided to all Clark County jurisdictions by CPU, a consumer-owned public utility founded in 1938 that both generates and buys electricity. About half of the power supplied to CPU customers is generated at the River Road Generating Plant. CPU has 48 substations and more than 3,500 miles of power lines. BPA has a major substation and the control center for the western power grid located in Vancouver. This substation has 65, 115, 230 and 345 kV lines feeding in and out of it. Major electricity users (such as aluminum processing plants) can buy electricity wholesale directly from BPA.

B. How do the potential impacts between the alternatives compare?

Fire Protection and Emergency Services. Increased demand for EMS and fire protection is related to population and employment growth in Clark County. In general, alternatives that convert more land to urban uses would be more expensive to serve. More compact development patterns are easier to serve, and particularly easier to provide with adequate water flows for fire suppression. Needed fire and emergency services are shown in Table 76 in the Technical Document.

Police Protection. All alternatives would require additional staff and facilities than is projected under the 2004 Plan based on the increase in projected population. The main difference between Alternatives 1 and 2 are additional sworn officers projected to be needed in La Center and Clark County. In La Center, Alternative 1 would require an additional 5 sworn officers and Alternative 2 an additional 17 officers. A new city hall planned within the next 5 to 10 years would house the expanded La Center police force. In Clark County, a new or expanded jail facility would be needed at an estimated cost of $90-100 million under Alternative 2. In Clark County, Alternative 1 would require an additional 136 sworn officers and Alternative 2 an additional 203 officers. Under Alternative 1, response times could be affected by traffic associated with additional density, although this can be offset by changes in deployment strategies. Alternative 2 would have a greater impact to the Sheriff's Department because of the increased growth proposed for all UGAs, particularly in commercial property. Needed sworn officers are shown in Table 79 in the Technical Document.

Schools. Alternative 1 would have the least cost impacts to school districts. Expansion of existing facilities or new facilities would be needed under both alternatives (see Table 82 in the Technical Document), but Alternative 1 would make the most efficient use of existing facilities. Alternative 1 would require 24 new schools and 85 portable classrooms compared to the need for 36 new schools and 83 portable classrooms. The cost estimates include the land acquisition costs. To build the additional schools needed under each alternative would cost approximately $658 million (Alternative 1), $944 million (Alternative 2). Additional facilities and costs would be needed for expansion into Alternative 3 areas, though Alternative 3 is not intended as a total add-on to Alternative 3.

Parks. The distribution of parks and the cost of acquiring them would be affected by the different development patterns proposed by each alternative. Because park standards are based on population, new parks would be required under any of the alternatives. Currently, parks within cities and UGAs cost approximately $225,000 per acre, while the per-acre cost in rural areas is $15,000 to $40,000 per acre. Alternative 1 would require 659 acres of new parks, while alternative 2 would require 960 acres. Planned low-density single family land uses under Alternative 2 would create a relatively dispersed residential

population that would not be served by any newly allocated park land. Needed park facilities are shown in Table 85 in the Technical Document.

Libraries. Since levels of service are based on population, impacts on circulation would be similar. However, the locational needs would be different, since Alternative 1 would have more compact growth than Alternative 2. Alternative 1 would have more efficient use of existing facilities, but it could face increased demand for available land, making it more expensive to develop new library facilities. Expansion of UGAs under Alternative 2 would allow more options for siting of needed facilities.

Government Facilities. General government buildings are not included in the concurrency management system. Government staff growth is more related to program mandates than to population growth. The County would not need additional office space over the next 10 years. The cities of Vancouver and Battle Ground may need additional facilities over the next 10 years. The City of Camas is expects to remodel its city hall over the next five years in order to provide for growth and changing state mandates. The City of Washougal may have to expand its city hall to provide facilities for staff expansion as it grows over the next 20 years.

Solid Waste. Transfer facilities have been designed to receive and transfer up to double the amounts received in 2001 (250,000 tons). Under interim emergency conditions, either facility is designed to handle the entire projected year 2011 flow of municipal solid waste within Clark County and this backup capability is expected to last through the 20-year planning period. Since waste generation is more influenced by growth than development patterns, there would not be significant differences between the alternatives.

Water Supply. Water is a concurrency management system under the GMA. Increase in demand for water is primarily a function of population and employment growth and the mix of uses. The pattern of development would affect the transmission facilities more than demand levels. Table 87 in the Technical Document shows the growth in or added demand for Alternative 1 (17.5 million gallons per day) and Alternative 2 (24.2 million gallons per day). The difference is approximately 6.7 millions gallons per day. Table 88 shows the added demand for each of the Alternative 3 subareas, which should not significantly affect the Alternative 2 total, based on a like-for-like exchange of land.

Waste Water. Sanitary sewer service is one of the urban services that the county includes in its concurrency management system. Under all alternatives, public sewer service would be limited to urban areas, as required by GMA. Rural areas would continue to rely on septic systems. Impacts on sewer service are directly related to population and employment growth. The estimated volumes under the alternatives are 15.6 million gallons per day (Alternative 1) and 21.3 million gallons per day (alternative 2) as shown in Table 90 in the Technical Document. Total costs for all jurisdictions are estimated to be $265.7 million. Under Alternative 1, some sewer mains might have to be replaced over the twenty-year planning period to support higher intensity use and new lines would be needed in some areas. Treatment plant capacity is expected to be expanded to accommodate projected growth with planned improvements for Vancouver, and expansions may be needed for other cities as well.

Under Alternative 2, a majority of the demand falls on the Salmon Creek Wastewater Treatment Plant. Additional growth would require constructing new pump stations along the I-5 corridor. This area would also have high costs to serve with sewer because of the terrain. Ridgefield's urban growth boundary, which is larger than proposed under Alternative 2 or 3 as indicated in their Comprehensive Plan, would require constructing approximately 41,500 additional linear feet of force mains, 136,050 linear feet of trunk lines, and 13 new pump stations. They have identified 4 phases to complete this work at a cost of $58.1 million that would likely be financed by system development charges and developer funded improvements. The Ridgefield plant is operating at near full capacity and would need expanding to accommodate growth. La Center's plant is operating at 55% capacity and can accommodate future growth. A secondary location of demand is Camas and Washougal. As previously mentioned, Camas' treatment plant is operating at 53% (2005), and it can accommodate identified growth. Washougal is currently updating is Sanitary Sewer Capital Facility Plan to hold future growth. Impacts under Alternative 3 would depend on the size of the

final urban growth boundaries and costs would also depend on the terrain. The Technical Document presents the terrain for each of the subareas. Eleven of the subareas would be at a lower elevation than the nearest pump station. Only three would be on flat ground, or above the elevation of the nearest pump station: R2, V6, and W3.

Electricity. Electrical system upgrades are paid for by new development directly (in the form of system connection fees) and by utility rates paid by CPU customers. Rates are adjusted to reflect changing costs of purchasing or generating power. For this reason, CPU expects to be able to expand the electrical system to serve development, regardless of alternative. Likewise, availability of electricity is not expected to be a limiting factor for new development. However, industries with special power needs – either total amount or reliability – may prefer to locate near existing substations or in areas where the power grid is more fully developed.

C. How do the growth management plans and development regulations of the cities and Clark County reduce the potential impacts? Do other options for mitigation exist?

Meeting adopted level of service standards is the primary mitigation for impacts on public facilities and utilities. Individual jurisdictions have established policies in their comprehensive plans requiring public facilities and services such as police protection to be adequate to serve new development at the time that it is available for occupancy and use. The staffing and facilities projects and costs discussed in the impacts section above are the mitigation measures identified by service providers and their capital facilities plans. Another major mitigation measure could be mandating some form of phased development in new expansion areas until emergency, school, and other services meet adopted standards. Other possible mitigation measures include the following (more are presented in the Technical Document mitigation sections):

Emergency services. Revise the development standards for residential, commercial and industrial development to incorporate safety measures; include police precincts as part of new community facilities and identify locations for them on each local subarea plan; encourage neighborhood watch programs to support community policing efforts.

Schools. Align UGAs to support an equitable distribution of jobs, housing, and infrastructure; reinforce urban revitalization for efficient use of existing facilities and services; coordinate City/County planning in the unincorporated areas within the Vancouver UGA; ensure that school impact fees are adequate; include concurrency for schools; identify school site requirements as part of the designation of land for community facilities when planning for urban activity centers; identify alternative sources and means of funding school facilities and educational programs; eliminate the conditional use permit required for new school facilities.

Libraries. Include facilities in the planning for community facilities; permit libraries to locate facilities with schools; provide land for libraries in or adjacent to urban neighborhood or community parks; assist FVRLD to identify alternative sources and means of funding new facilities and outreach programs.

Water Supply. Review and revise existing service boundaries, plans and agreements to ensure water services and resources are managed efficiently; manage future groundwater sources to prevent contamination; deny the use of excess water system infrastructure as justification for development counter to countywide land use policies; encourage water reuse and reclamation; aggressively pursue water conservation; prohibit the drilling of new private wells in urban areas and require all households to connect to public water as soon as it is available; establish a water pricing structure to encourage conservation and cover the full cost of providing water service.

Waste Water. In January 2005, the United States Environmental Proteciton Agency developed the *Guide for Evaluating Collection Systems' Management, Operation, and Maintenance Porgarm (CMOM) at Sanitary Sewer Collection Systems.* Collection system owners or operators can review their own systems by following the checklist in Chapter 3 to reduce the occurrence of sewer overflows and improve or maintain compliance.

XIV. Are there adverse impacts that cannot be avoided?

SEPA requires a discussion of any adverse environmental effects that cannot be avoided should a proposal be implemented. A DEIS should also discuss the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity; and any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented. The Technical Document discusses unavoidable adverse impacts, irreversible and irretrievable commitments of resources, and the trade-offs between short-term and long-term environmental costs and benefits to productivity in Section XI. This section presents highlights of the more significant potential impacts.

Surface Waters

Most of the problems that lead to listing a stream as water quality limited are due to human activity or development in the drainage area of the stream. Regulations in Clark County do not require mitigation of impacts on a drainage basin scale. Therefore, cumulative changes to the hydrology of streams or other surface waters as a result of development can be an unavoidable impact.

Increased impervious area decreases stormwater infiltration and thus the amount of cold groundwater-feeding streams, which is a cumulative and unavoidable impact. These changes inevitably occur as a result of the creation of impervious surfaces and removal of canopy cover on a site-by-site basis. Rural activities also have the potential to impact surface waters cumulatively. Fecal coliform bacteria come from malfunctioning septic systems and animal waste from wild and domestic animals. Not all impacts from urbanization can realistically be eliminated by regulations. Compact urban development that emphasizes infill, redevelopment and reuse of existing urban land is the best way to mitigate or avoid these impacts.

Failures of septic systems continue to occur and there are insufficient county-wide programs to inspect and monitor the safe functioning of septic systems. Ordinances rely on residents and property owners to ensure that their septic systems are functioning properly. Unavoidable adverse impacts can occur from violations of the ordinances.

Groundwater

Unavoidable impacts include more impervious surfaces in critical recharge areas and greater risk of contamination from new industrial and commercial development in areas that currently are rural. Alternative 1 could result in more pressure to develop in rural areas may develop and install septic systems. More rural residential development increases the eventual risk septic system failures that can contaminate private well water and public water sources.

Fish, Wildlife, and Migratory Species Habitat

Requirements for protecting critical habitats are found in the GMA, ESA, and the SMA. All Clark County jurisdictions have implemented requirements to protect critical areas, which include fish and wildlife habitat. There is little mitigation available, however, for the incremental loss of fish and wildlife habitat within larger watersheds. Native plants and animals are displaced by development. As with the potential unavoidable impacts on surface and ground water, mitigation based on Best Available Science is likely more effective at mitigating or avoiding impacts, but not all impacts from urbanization can realistically be eliminated. Protecting habitat and STE species from new development does not restore habitat lost to previous development or reduce the unavoidable conversion of native vegetation to urban use that occurs with development.

Wetlands

Unavoidable adverse impacts on wetlands occur if mitigation proposed to offset the loss of wetland area and function does not produce the intended results. Therefore, unavoidable adverse impacts have the potential to occur both with conversion of rural land to urban uses, inclusion of wetlands in UGAs and with potential lapses in long-term monitoring and enforcement to ensure compliance with the permit conditions.

Land Use, Rural and Resource Lands

With any expansion of UGAs, there would be conversion of rural land to urban uses. This can be considered to be an irreversible commitment of some rural resources to urban uses. There would be conversion of agricultural and forest resource lands. Prevention of unnecessary conversion of agricultural land to urban uses is a goal of the GMA. Loss of prime agricultural soils to urban development would occur with Alternative 2. This is considered an unavoidable impact; the only mitigation would be no expansion onto land with prime agricultural soils. This also an irretrievable commitment of resources to urban uses.

Transportation

The major unavoidable adverse impact of growth in the region would be increased congestion unless additional capacity is provided. Additional capacity could be provided by transit as well as road improvements.

Public Facilities and Utilities

Inevitably population and employment growth would result in increased need for all public facilities and utilities. Unavoidable adverse impacts are related to the expenditure of resources to serve that growth. To the extent that one growth pattern uses resources less efficiently than another and increased revenues are not an option, those resources must be funded at the expense of other services or programs.

Short-term Uses of the Environment and Long-Term Productivity

SEPA requires a discussion of short-term environmental gains and long-term gains and the extent to which the proposed action forecloses future options. Proposed UGA expansions result in the long-term commitment of rural areas to future urban uses. It is so extremely unlikely that those areas would ever revert back to rural uses, that they would be considered permanently converted and that some resources within them (such as agricultural or cultural resources) may be irretrievably lost. UGA expansion forecloses future rural use or open space (unless zoned for open space). The anticipated gain is the ability to house and employ residents in the county and its cities.

XV. How do the proposed revised comprehensive plans conform with the Growth Management Act?

How the comprehensive plans of Clark County and its cities conform to the requirements of the GMA is evaluated at length in the Technical Document. It also looks at the conformance of these plans with the requirements of the County-wide Planning Policies, which serve as the framework for the policies in the county's and cities' comprehensive plans. Consistency with the procedural criteria established by the Department of Community Development (DCD) is also evaluated. Tables 94 through 109 evaluate conformance for each jurisdiction.

Concurrency, fiscal impacts, and annexation and incorporation are issues associated with the different alternatives under consideration. The concurrency requirement is mentioned at several points in the GMA. The GMA defines concurrency for transportation as "…improvements or strategies that are in place at the time of development, or that a financial commitment is in place to complete the improvement of strategies within six years." Only transportation, water, and sewer facilities are mandated by the GMA for concurrency review. Programs and issues of concurrency are discussed in detail in the Technical

Document. In general, Alternative 2 makes concurrency management more difficult and costly than under Alternative 1 because it proposes over half of the proposed new UGA acreage as low-density residential development. The more dispersed growth is the more challenging it is to meet concurrency requirements.

The GMA requires CWPPs to include an analysis of fiscal impact (RCW 36.70A.210(3)(h)), although the statutory requirement is brief and general. Subsequent conclusions by the Central Puget Sound Growth Management Hearings Board appeared to establish minimum requirements for fiscal analysis that included an assessment by local jurisdictions of anticipated costs versus revenues based on designated UGAs. Differences in the fiscal impacts between the alternatives are not significant. They are discussed in the Technical Document.

The intention of the GMA is that urban development occurs within cities or UGAs, which are areas that are designated to eventually become cities, either through annexation or incorporation. The transition of these areas from unincorporated to incorporated areas requires the cooperation of staff and policy makers from the County, cities, towns, and special districts. In order to achieve this level of cooperation, the Clark County Community Framework Plan (CFP) requires each jurisdiction within the county to plan for annexation and incorporation within UGAs. Regardless of which alternative is selected, policies established by the CFP and countywide planning policies would continue to define the overall annexation and incorporation process that jurisdictions must follow.

SETTINGS, IMPACTS, AND MITIGATION

This Technical Document provides the analysis of potential environmental impacts of proposed changes to the comprehensive plans and UGAs of Clark County and the cities of Battle Ground, Camas, La Center, Ridgefield, Vancouver, and Washougal.

I. Earth

A. Soils

1. Setting

Soil characteristics are important in the management of urban development for two reasons. First, soil characteristics may constrain development, such as when certain characteristics cause them to be relatively weak in supporting foundations for buildings or when they have high water tables or poor drainage making them unsuitable for septic systems. Second, soil characteristics determine whether an area is particularly suited to agriculture or timber production.

The GMA requires local jurisdictions to identify and protect agricultural and timber lands of long-term commercial significance. The Washington State Department of Community and Economic Development (CTED) recommends using the soil classification system developed by the Natural Resource Conservation Service (NRCS) and establishing larger minimum lot sizes to ensure the commercial viability of resource industries. The most recent comprehensive soil survey of Clark County was completed by the NRCS in 1972. Since soil does not change rapidly, information from the 1972 survey can still be considered reliable.

The NRCS has classified the soils of Clark County into eight major soil associations:

- Sauvie-Puyallup, found in the bottomlands and flood plains;
- Hillsboro-Gee-Odne, Hillsboro-Dollar-Cove, and Lauren-Sifton-Wind River, found in terraces;
- Hesson-Olequa and Hesson-Olympic, found in uplands; and
- Cinebar-Yacolt and Olympic-Kinney, found in the foothills.

These soil associations have been further classified according to their ability to support different types of land uses, including urban development, agriculture and silviculture. Figure 12 shows soils with characteristics that restrict the placement of foundations for structures. As indicated, the majority of the county has moderate to severe soil limitations to foundations. The major restriction is related to slope. Figure 13 shows areas with soils that limit the use of septic systems. Again, it is apparent that most of the county has some type of soil limitation to septic systems. This map is based largely on soil drainage characteristics, including the risk of groundwater contamination in areas that readily percolate septic system effluent and stormwater runoff. All septic systems within the county are reviewed prior to permitting by Clark County to ensure that they would function appropriately and that no contamination of surface or ground water is likely to occur. With respect to planning for future growth, urbanizing land with soils unsuitable for septic systems can be a good thing, if it limits the potential for new systems to be built. On the other hand, including rural land in urban growth boundaries might encourage speculative rural development in the short term, thereby increasing septic systems.

Figure 14 shows agricultural soil capability in the county and Figure 16 shows forest soil capability. The best soils for a wide range of agricultural uses are located in the lowlands along rivers, areas that have already received substantial urban development. Special crops, such as vineyards, may be grown on land with other than prime agricultural soils. The GMA requires protection of agricultural land, which is defined to some extent by soil suitability. It is not acceptable under the GMA to propose unnecessary conversion of

agriculturally viable land to urban uses. Specifically, the GMA establishes policies and development regulations that protect these areas from adjacent incompatible land uses that would interfere with their long-term commercial significance.

2. Impacts

The evaluation of soil-related impacts assesses the suitability of soils to support a proposed activity or project, or the suitability of the proposed project or action given the soil characteristics of the location. The impact analysis for soils also looks at what soils underlie the new areas proposed for future urban development and to what extent soils that can support agriculture or timber production would be converted to those urban uses within the new UGAs. Figure 12 shows soil limitations to foundations while Figure 13 shows soil limitations for septic sewer systems. Tables 8 through 13 compare soil suitability for foundations and septic systems and the presence of prime agricultural soils for the alternatives and subareas.

All cities prohibit new septic systems within urban areas. With respect to soils unsuitable for septic systems, typically the regulations require alternative engineering or connection to a public sewer if soil on an individual lot does not allow percolation to occur at an acceptable rate. While there are engineering solutions to address issues of soils not supporting septic systems, increasing the number of individual septic systems increases long-term risk of contamination from failing systems in rural areas. Development on weak soils also requires special engineering that raises the cost of development and may result in lower densities than projected.

Conversion of rural resource lands to urban uses is an important land use issue. While agricultural and forest soil suitability maps are provided here, the more detailed assessment of impacts to agriculture and forest lands is found in the Resource Lands section of this document. Under the GMA, resource lands (lands designated for agricultural, forest, or mineral resource uses) are not to be included within UGAs. They are, by definition, inconsistent with urban development. The size of the UGA would therefore affect the amount of prime agricultural and forest soils that are preserved.

a. Alternative 1

Alternative 1 maintains the UGA boundaries adopted in the 2004 Plan. Most of the population growth in the county would occur on vacant and underdeveloped lots within the existing UGAs. Existing UGAs contain 22,109 acres of land with severe limitations to foundations and 33,156 acres of land with moderate limitations. Much of the existing Vancouver urban area, with the exception of land along the Columbia River, has soils that place slight limitations on the construction of foundations.

All new urban development would occur within existing UGAs and would be served by existing municipal sewer systems or their extensions. However, because existing zoning would not provide sufficient land for projected growth, there may be pressures to upzone urban and possibly rural residential areas. At most, up to 5,400 acres of low-density residential land may need to be upzoned, less if districts with higher densities are upzoned, to mitigate a shortfall of about 21,000 units. Medium and high density development would require additional engineering and costs to mitigate for soils unsuitable for foundations.

Less prime agricultural and forest land (51,856 and 38,604 acres respectively) would be urbanized than under Alternative 2/3 (58,400 and 45,804 acres, respectively). Therefore, because Alternative 1 accommodates new growth within existing UGAs, it would preserve the most existing rural resource lands compared to Alternative 2 and to adding expansion options from Alternative 3.

b. Alternative 2

Under Alternative 2, the UGAs for all cities except Yacolt would expand, adding about 10,850 acres of rural land to the approximately 81,000 acres of urban land in existing UGAs. Tables 8 through 13 compare the important characteristics of soils for UGAs in Alternative 2: limitations for foundations, limitations for septic systems, and prime agricultural soils. Under this alternative, 25,599 acres would have

soils with severe limitations (3,490 acres more than Alternative 1) while 38,259 acres would have moderate limitations (5,103 acres more than Alternative 1). Of all UGAs, the new UGA for Vancouver would have the most land with severe limitations (945 acres) and expand at several locations that have slight soil limitations (Table 11). Battle Ground's UGA expansion to the west includes mostly land that places moderate (1,212 acres) limitations on the construction of building foundations. Camas's new UGA expansion to the north includes predominately land with severe and moderate soil limitations to foundations. The UGA for La Center expands to the west, which includes mostly severe soil limitations (480 acres) while the expansion to the east includes land with moderate soil limitations (734 acres). Ridgefield's UGA north and south expansion includes land along the I-5 axis that ranges from slight (5 acres) to severe (826 acres) soil limitations. Under this Alternative, Washougal's expanded UGA has about half its area with moderate (399 acres) and about half with severe (365 acres) soil limitations to foundations,

In general, all UGA expansions under Alternative 2 are located in areas that limit the use of septic sewer systems. In terms of absolute acreage, expanding the Vancouver and Battle Ground UGA would have the highest impacts, adding close to 1,500 acres of severe soil limitations to septic sewer systems.

Under this alternative, 58,241 acres would have prime agricultural soils (6,385 more acres than Alternative 1) while 45,788 acres would have prime forest soils (7,184 acres more than Alternative 1). Impacts to prime agricultural and forest soils would occur primarily on land between Vancouver and Ridgefield. Alternative 1 would have no impact to prime agricultural or forest soils. Alternative 2 would leave 82,311 acres of prime agricultural soils and 175,618 acres of prime forest soils in the rural areas, compared to Alternative 1, which assumes that the existing amount of prime agricultural and forest soils in rural areas would remain unchanged.

Table 8. *Soils with Limitations to Foundations, Alternatives 1 and 2 (acres)*

	Alternative 1	**Alternative 2**						
	Existing urban areas	Total Acres by UGA	Battle Ground UGA	Camas UGA	La Center UGA	Ridgefield UGA	Vancouver UGA	Washougal UGA
Severe limitations	22,109	3,490 +22,109	296	575	480	826	948	365
Moderate limitations	33,156	5,103 +33,156	1,212	497	734	1,313	2,862	399
Slight limitations	25,323	341 +25,323		51		5	174	110

Source: USDA Soil Conservation Service – Modified by Washington State DNR

Table 9. *Soils with Limitations to Septic Sewer Systems, Alternatives 1 and 2 (acres)*

	Alternative 1	**Alternative 2**						
	Existing urban areas	Total Acres by UGA	Battle Ground UGA	Camas UGA	La Center UGA	Ridgefield UGA	Vancouver UGA	Washougal UGA
Severe limitations	29,610	5,969 +29,610	1,354	1,058	497	826	1,484	749
Moderate limitations	27,762	4,662 +27,762	155	28	717	1,313	2,325	124
Slight limitations	23,186	216 +23,186		37		5	174	

Source: USDA Soil Conservation Service – Modified by Washington State DNR

Table 10. *Prime Agricultural Soils, Alternatives 1 and 2 (acres)*

	Alternative 1	**Alternative 2**						
	Existing UGAs	Total Acres by UGA	Battle Ground UGA	Camas UGA	La Center UGA	Ridgefield UGA	Vancouver UGA	Washougal UGA
Prime Agricultural Soils	51,856	6,385 +51,856	776	503	550	1,178	3,037	341
Prime Forest Soils	38,604	7,184 +38,604	546	674	995	1,719	2,717	533

Source: USDA Soil Conservation Service – Modified by Washington State DNR

c. Alternative 3

The purpose of Alternative 3 is to offer options for altering the Alternative 2 boundary to reduce the environmental impacts by changing the location of expansion. For that reason, locational comparisons are made between those subareas proposed under Alternative 3 and similarly-located broad subareas under Alternative 2. Tables 11 through 13 show these comparisons for soils.

Those subareas with the least absolute impacts include: B1, B2, C2, R2, V3, V5, V6, W2, and W3. The highest absolute impacts from soils with severe limitations to foundations are in C1, L1, L2, R1, V7 and W1—close to 400 acres each. Several of the subareas, if additive to their neighboring expansion area under Alternative 2 would tend to double or triple the amount of area with severe limitations to foundations. For example, expanding the UGAs to include C1, L1, L2, V4, V7, and W1 would more than double the impacts when added to under the respective Alternative 2 subareas. That fact also means that substituting those subareas for adjacent Alternative 2 subarea would not improve conditions. Expansion of the Alternative 2 boundary into areas with few impacts under Alternative 3, such as W3, B1, B2, and C2 would potentially reduce the area of soil limitations on the construction of building foundations.

Table 11. *Soils with Limitations to Foundations by Subarea (acres)*

	Battle Ground			Camas			La Center			Ridgefield			
	Alternative 3		Alternative 2	Alternative 3		Alternative 2	Alternative 3		Alternative 2	Alternative 3			Alternative 2
	B1	B2	Subarea 3	C1	C2	Subarea 6	L1	L2	Subarea 1	R1	R2	R3	Subarea 2
Size of Subarea	41	120	1,507	1,243	125	1,123	534	793	1,213	614	227	362	2,144
Severe Limitations	18	8	296	419	16	575	375	413	480	391	79	159	826
Moderate Limitations	24	112	1,212	320	109	497	165	380	734	209	148	-	1,313
Slight Limitations	-	-	-	563	-	51	-	-	-	14	-	-	5

	Vancouver									Washougal			
	Alternative 3				Alternative 2	Alternative 3			Alternative 2	Alternative 3			Alternative 2
	V1	V2	V3	V4	Subarea 4	V5	V6	V7	Subarea 5	W1	W2	W3	Subarea 7
Size of Subarea	1,006	875	402	908	2,302	635	219	668	1,691	809	122	21	877
Severe Limitations	182	266	75	150	625	31	47	528	323	407	23	21	365
Moderate Limitations	769	609	328	758	1,678	605	4	116	1,184	372	100	-	399
Slight Limitations	-	-	-	-	-	-	168	25	174	14.40	-	-	110.12

Source: USDA Soil Conservation Service – Modified by Washington State DNR

Table 12. *Soils with Limitations for Septic Sewer Systems by Subarea (acres)*

	Battle Ground			Camas			La Center			Ridgefield			
	Alternative 3		Alternative 2	Alternative 3		Alternative 2	Alternative 3		Alternative 2	Alternative 3			Alternative 2
	B1	B2	Subarea 3	C1	C2	Subarea 6	L1	L2	Subarea 1	R1	R2	R3	Subarea 2
Size of Subarea	41	120	1,507	1,243	125	1,123	534	793	1,213	614	227	362	2,144
Severe Limitations	41	120	1,354	633	125	1,058	425	425	497	391	79	159	826
Moderate Limitations	-	-	155	106	-	28	115	380	717	209	148	204	1,313
Slight Limitations	-	-	-	563	-	37	-	-	-	14	-	-	5

	Vancouver									Washougal			
	Alternative 3				Alternative 2	Alternative 3			Alternative 2	Alternative 3			Alternative 2
	V1	V2	V3	V4	Subarea 4	V5	V6	V7	Subarea 5	W1	W2	W3	Subarea 7
Size of Subarea	1,006	875	402	908	2,302	635	219	668	1,691	809	122	21	877
Severe Limitations	182	271	195	414	635	31	50	600	849	775	122	21	749
Moderate Limitations	769	604	207	494	1,668	605	-	43	658	18	-	-	124
Slight Limitations	-	-	-	-	-	-	168	25	174	-	-	-	-

Source: USDA Soil Conservation Service – Modified by Washington State DNR

Table 13. *Prime Agricultural Soils, by Subarea (acres)*

	Battle Ground			Camas			La Center			Ridgefield			
	Alternative 3		Alternative 2	Alternative 3		Alternative 2	Alternative 3		Alternative 2	Alternative 3			Alternative 2
	B1	B2	Subarea 3	C1	C2	Subarea 6	L1	L2	Subarea 1	R1	R2	R3	Subarea 2
Size of Subarea	41	120	1,507	1,243	125	1,123	534	793	1,213	614	227	362	2,144
Prime Agricultural Soils*	1	-	776	825	81	503	285	398	550	355	129	163	1,178
Prime Forest Soils*	33	112	546	390	117	674	295	480	995	260	150	249	1,719

	Vancouver									Washougal			
	Alternative 3				Alternative 2	Alternative 3			Alternative 2	Alternative 3			Alternative 2
	V1	V2	V3	V4	Subarea 4	V5	V6	V7	Subarea 5	W1	W2	W3	Subarea 7
Size of Subarea	1,006	875	402	908	2,302	635	219	668	1,691	809	122	21	877
Prime Agricultural Soils*	648	538	294	710	1,687	575	172	341	1,350	250	45	21	341
Prime Forest Soils*	923	645	310	683	1,782	635	4	47	934	722	122	-	533

Source: USDA Soil Conservation Service – Modified by Washington State DNR

**Acreages may contain soils suitable for both uses; therefore, total acreage may add to more than total acreage in the subarea.*

Table 12 shows UGA expansions under Alternative 3 located in the subareas of La Center, Ridgefield, and Vancouver, contain moderate soil imitations to septic sewer systems. C1, L1, L2, R1, V4, and W1 present the most land and percent of total UGA acreage with severe limitations. L1 impacts account for roughly 80 percent and W1 impacts represent close to 95 percent of the total land area with severe soil limitations. There are few opportunities to reduce Alternative 2 impacts by expanding subareas under Alternative 3. For instance, adding land in W1 would double the impacts under Alternative 2 subarea 7.

C1, V1, V4, and V5 include the most prime agricultural soils, having the highest absolute impacts under this alternative. Likewise, V1 (923 acres), W1 (722 acres), and V5 (635 acres) include areas with the most prime forest soils that would have the absolute highest impacts on those resource areas from development. B2 and W3 are the only two areas under Alternative 3 that do not account for any resource areas that include prime agricultural and forest soils, respectively. UGA expansion within these two areas in lieu of an equal area Alternative 2 could reduce potential impacts under Alternative 2. Expanding the Alternative 3 subareas in Ridgefield along with the V6, and V7 subareas would reduce impacts on both agricultural and forest resource areas that exist within the respective Alternative 2 subarea boundaries.

3. Mitigation

Mitigation for impacts of each alternative on soils would involve protecting soils that support agriculture and forest uses and preventing development on unsuitable soils. Protection of lands that have soils suitable for agriculture and forest uses is primarily the County's responsibility through protection of resource lands, which is discussed in the Resource Lands section of this report. Drawing UGAs to avoid lands with high quality soils for agriculture and forest uses is the primary method of protecting those areas. Soils that are unstable or hazardous for building on, such as landslide-prone areas, are classified as geologically hazardous critical areas by state law, and each jurisdiction is responsible for restricting development in those areas through its comprehensive plan and zoning districts, critical areas ordinances, and building codes.

a. Plans and ordinances

Countywide planning policies require urban-type growth to be directed to urban areas as designated by urban growth boundaries and provide for the protection of resource lands and critical areas.

Clark County: The County's existing comprehensive plan elements for land use, rural and natural resources, the natural environment, and annexation contain policies that together reinforce protection of resource lands and critical areas. Policies 1.2.1, 1.2.2, 3.3.1-3.4.19, and 4.2.1-4.2.5 contain provisions for restricting urban growth to urbanizing areas, protecting environmentally sensitive areas, and excluding lands with the potential for long-term agriculture or forestry resource uses from UGAs. Goal 4.1 in Chapter 4 Environmental Element directs the County to protect and conserve environmentally critical areas, to map critical areas (4.2.1), and to reduce risk to life and property (4.2.9) from development in geologically hazardous areas by requiring geotechnical studies to determine construction methods and technologies appropriate to soil limitations on individual sites. Many proposed goals and policies in the environment element (Chapter 1) of the comprehensive plan are carried over from the existing Land Use chapter.

As discussed in the Rural and Natural Resources element (Chapter 3 of the comprehensive plan), Clark County has mapped agricultural and forest lands using criteria established by the state. Although soils are a factor in designating forest and farm lands, soils are more critical in establishing farm lands of long-term commercial significance, as viable forest lands depend more on other factors. The maps were used to identify the most productive farm land. Goal 4.4 and its policies call for protecting productive agricultural lands and discouraging incompatible uses. These policies are implemented by CCC Chapter 40.210. For further discussion of the policies proposed for designating Resource Lands, see Resource Lands section.

Clark County maps geologically hazardous areas on its GIS system. Geologically hazardous areas are subject to regulation under the County's Geologic Hazards (CCC Chapter 40.430) incorporated into the Unified Development Code.

Cities: City plans and ordinances do not generally deal with soils in terms of resource lands, since by definition these lands are outside city limits. Construction on soils with structural limitations is typically dealt with by the requirements of building codes. Other than geotechnical studies and implementation of appropriate construction practices, prohibition of development on unsuitable soils is the typical mitigation measure.

Battle Ground: Soils issues identified in Battle Ground's 2004 Comprehensive Plan consist of erosion problems associated with inappropriate construction practices and inadequate stormwater management. Environmental Goal 4 states the City would encourage protection, preservation and enhancement of Critical Areas within the city and its UGA. The City's critical areas ordinance protects geologic hazard areas. Chapter 18.260 of the Battle Ground Municipal Code was adopted in accordance with the critical areas protection requirements of the GMA.

Camas: Camas has mapped soils in the area (City of Camas, Washington, Comprehensive Plan, Figure 4) and identified those that are unsuitable for development or require geotechnical engineering. Goal EN-1 calls for evaluating the environmental concerns in all decision-making processes. Policy EN-6 under that goal protects environmentally sensitive areas that are not suitable for intensive use, such as steep slopes and unstable bluffs. Goal EN-7 and related policies, in the City of Camas Comprehensive Plan Environmental Element deal specifically with promoting soil stability and preserving vegetation and topographic features. Policy EN- 19 prohibits development on unstable land. The City spent over two years drafting a critical areas ordinance (CAO) in accordance with the GMA requirement for using the Best Available Science. In 2004, the City adopted the chapters on floodplains, critical aquifer recharge areas, and geologically hazardous areas. Regulations for those critical areas are found under Title 16 starting at chapter 16.50.

La Center: Specific soil limitations for construction are handled through the critical areas policies in the La Center Urban Area Comprehensive Plan, which requires geotechnical studies to determine construction methods and technologies necessary to further public safety in hazardous areas, including landslide areas and steep slopes. The plan defines urban growth as intensive land uses incompatible with the primary use of land for agricultural products or the extraction of mineral resources. Policy 8.1.11 of Goal #8—Urban Growth and Annexation—states that prime and important agricultural land and productive timberland shall be located outside of the urban growth boundary where possible and that conversion to other uses is strongly discouraged.

Ridgefield: The Ridgefield Comprehensive Plan does not contain any policies regarding soils. Chapter 18.280 of the Ridgefield Municipal Code contains provisions for the conservation and enhancement of sensitive lands while encouraging urban densities and affordable housing through density transfer to non-sensitive (buildable) lands. Chapter 18.280.130 regulates development on geologically hazardous areas, within a critical areas context.

Vancouver: Chapter 4, Environment, of the Comprehensive Plan contains policy EN-10 which calls for management of development in geologically hazardous areas and floodplains to protect public health and safety. Vancouver's zoning ordinance protects agricultural lands with the Agricultural/Open Space (AO) and Agricultural/Open Space/Wildlife districts. Minimum lot sizes and restricted uses implement the comprehensive plan provisions.

Washougal: Chapter 2 of the City of Washougal Comprehensive Plan deals with natural resources and Critical Areas. Section 2.2.2 of Chapter 2 discusses agricultural and forest lands but states that no agricultural or forest land of long-term commercial significance exists within the current UGA. Although there are no agricultural or forest lands of long-term commercial significance in Washougal, the plan notes the importance of preserving native vegetation. Policy 2-A is to protect land quality from erosion and other soil-related natural hazards. Policy 2-C is to protect life and property from

mass movement hazards. Goal 4 calls for establishing consistent development standards for steep and unstable slopes. Policy 4-B states that development on steep and unstable slopes shall be restricted to insure public safety and prevent loss of private property. The City's critical areas ordinance protects geologic hazard areas.

b. Additional Mitigation

The primary mitigation for impacts to soils is to carefully design UGA expansion to avoid (1) areas of prime agricultural soils or forest suitability and (2) areas where soil characteristics are not suitable for construction. When these areas cannot be avoided, it is important to ensure that each city has policies and ordinances that address special construction requirements.

B. Geology and Topography

1. Setting

Clark County exhibits traces of its geologic history, including repeated inundation by fluctuating seas during the glacial epochs, sedimentary processes of the Columbia River, volcanic activity, and periodic earthquakes. These processes are on-going—rivers are eroding and transporting material to create new land areas, land is changing by slumping and downwarping, the weathering of rocks is creating soil, and landslides, earthquakes, and volcanic events can occur at any time. The geology of the county affects all land uses. The abundance of sand and gravel deposited by the historic floods of the Columbia River are major sources for gravel extraction in the county. Additionally, lava flows near the Columbia River are primary sources for Columbia River basalt, which is quarried for jetty rock.

Bog deposits, sometimes referred to as beaver dam soils, underlie the upper and central sections of Burnt Bridge Creek, south of Orchards, and extend eastward to Lacamas Creek. These areas have an estimated thickness of 10 feet and consist of muck composed of muds with organic matter. In the Lettuce Fields subarea, deposits have been reported to vary from one foot to 40 feet deep.

Figure **16** shows the surface geology of Clark County. Figure 17 shows its topographic contours. The topographic features of the county are largely defined by its mountain province—the foothills of the county—which are characterized by steep slopes, and the plains province—plains and terraces—which are flatlands and gently sloping areas.

Geological hazard areas are those that, because of their susceptibility to erosion, sliding, earthquakes, or other geological events, are not suited to siting residential, commercial, or industrial development. Potential geologic hazards in Clark County include landslides—often in steep-sloped areas around stream corridors—ground settling, flooding related to volcanic activity, and earthquakes.

a. Slope Stability and Landslide Hazard

The two physiographic regions of Clark County—the plains province and the mountains province—present different slope stability problems. The eastern part of the county (the mountains province) has the most varied topography, and slopes represent a major constraint on all land uses, including urban development. Slopes in the southwestern portion of the county are generally associated with streambeds draining toward the Columbia River. These slopes may be steep in places: portions of the Salmon Creek drainage have slopes that range from 26 to 40 percent; slopes along parts of Burnt Bridge Creek also range from 26 to 40 percent; and some areas in the Vancouver Lake Lowlands have slopes greater than 40 percent. Figure 18 shows slope gradients for the county.

Few recent landslides (those within the last 200 years) have occurred in either region. Most that have occurred have been caused by rivers and streams (in the plains province) and by logging activities (in the mountain province). The Department of Natural Resources (DNR) has identified four classes of slope stability within the county: older landslides, recent landslides, areas susceptible to landslides or that are potentially unstable, and stable areas. Figure 19 shows landslide hazard areas within the county. The first three of these classes require special action. Older and potentially unstable landslides

should have detailed geologic and engineering studies conducted prior to any development. Recent and active landslide areas should be avoided. In areas susceptible to landslides, activities such as septic system construction, the watering of lawns, and the redirection of stormwater runoff could lead to the saturation of otherwise stable soils and may cause the loss of internal slope stability, resulting in landslides. In the mountain region of the county, most development is related to logging, and logging roads are a primary cause of most landslides.

b. Earthquake Hazards

Scientists predict that the St. Helens Seismic Zone in the Southern Washington Cascade Mountains is capable of producing an earthquake with a magnitude of 7 or greater on the Richter scale. Clark County updated its geohazard maps in 2005 to reflect the Department of Natural Resources NEHRP data. Mapping of earthquake hazards divides the county into 5 zones: Zone A and Zone B describe the areas susceptible to the lowest earthquake hazards while Zone C indicates moderate hazards and Zones D and E have the greatest hazards. For example, Types A and B include unweathered igneous rock, bedrocks between 64 and 245 million years old, and volcanics and they do not contribute greatly to shaking amplification. Type C includes sands less than 1.8 million years old, sandstones, mudstones and limestones. Types D and E include muds, sands, gravels, and silts that can significantly amplify shaking.

Mapping of earthquake hazards also indicate peat soils. According to the Washington Department of Natural Resources (WADNR), the peat class is based on mapping of Holocene peat assumed to be 10 feet thick and is not known to be susceptible to liquefaction. However, peat soils may experience loss of strength from an earthquake event.

An earthquake in Clark County could result in damage from the following:

- Landsliding—the perceptible downward movement of masses of rock and soil.
- Shaking—the actual shaking of the ground by the transmission of earthquake energy waves.
- Differential settlement—the uneven settling of parts of a structure by different rates, due to inconsistencies in the material on which the structure is built. This may be by the compression of the material or its liquefaction.
- Liquefaction—loosely packed, water-logged sediments at or near the ground surface lose their strength because of ground shaking, resulting in ground failure. Figure 20 shows areas of the county potentially prone to liquefaction during an earthquake.

Figure 21 shows the National Earthquake Hazards Reduction Program (NEHRP) data on earthquake zones, surface waters, and peat soils. All are related to hazards associated with earthquakes.

Nothing can be done to control the magnitude or location of earthquakes. However, structures can be properly sited away from areas of greatest risk and designed to withstand shaking and settlement. Areas of greatest risk (those immediately adjacent to fault lines or on unstable slopes) should not be intensely developed. The greatest potential for earthquake damage in Clark County exists in areas of unconsolidated sediment. Such soils are found along the Columbia River, at Steigerwald Wildlife Refuge and in the Vancouver Lake Lowlands. In urbanized areas, the greatest earthquake-related damage is often caused by secondary events, such as fires that result from ruptured natural gas lines or flooding caused by ruptured water lines or storage tanks.

c. Erosion Hazard

Accelerated erosion from water results in a rill, a steep-sided channel typically a few inches deep. Rill erosion is most likely to occur on sparsely vegetated, steep slopes. The Natural Resource Conservation Service (NRCS) describes potential erosion hazard as slight, moderate, and severe. Soils

with severe erosion hazard usually have slopes of 30 percent or greater, but can be on relatively shallow slopes where the probability of flooding is high. The *Perspectives Resource Document* lists soils in Clark County with moderate to severe erosion hazard, as classified by the NRCS. Figure 22 shows erosion hazard areas. Erosion from urban development can carry soil into nearby streams and lakes, degrading water quality and endangering fish and wildlife that are dependent on those water bodies.

d. Volcanic Activity

Future volcanic activity that may affect Clark County is confined to Mount St. Helens, located some 40 miles to the northeast of the county. Mount Rainier is considered the most volatile of the Cascade peaks. Impacts from its eruption on Clark County would probably be limited to ash, although ash from past eruptions of Mount Rainier and Mount Hood has not been found within the county.

Throughout its 50,000-year history, Mount St. Helens has deposited large quantities of volcanic debris into the Lewis River valley and its tributaries. The last major eruption of the mountain occurred on May 18, 1980, causing regional flooding, spreading ash over much of the region, and profoundly changing the landscape around the mountain.

2. Impacts

The discussion of potential impacts related to geology and topography is closely related to other areas of impact assessment, such as groundwater quality and soils. Geology effects may differ from other areas of impact assessment because many proposed projects or actions would not actually cause direct effects on the geology of a site or an area. Rather, effects are normally associated with geology, as opposed to causing any physical or chemical changes in the characteristics of the actual geology. The same can be said for topography, where the primary consideration is the constraints that are placed on development because of topographical features, such as steep slopes. In considering the impacts of different growth alternatives on the geology of the region, the evaluation is essentially one of land use compatibility. The area for proposed urban area expansion is overlaid on the relevant geologic data, most often geologically hazardous areas, to determine the compatibility of development with the existing features of the geology.

Under all of the alternatives, Clark County and its cities would limit development in geologically hazardous areas, consistent with the requirements of the GMA and each jurisdiction's critical areas ordinance. These regulated areas include those with steep slopes—generally more than 40 percent—landslide hazard areas, and seismic hazard areas. Earthquake hazard areas are categorized by zone, with Zone A an area of greatest hazard and Zone E an area of least hazard.

Tables 14 and 15 also indicate the earthquake hazard areas that may not necessarily be susceptible to liquefaction yet are areas that could potentially undergo permanent displacement as a result of earthquake shaking.

Alternative 1

There are 640 acres in the highest earthquake hazard zone (E) and over 18,000 acres in the second most hazardous earthquake zone (D), 947 acres of steep slopes, 3,631 acres of landslide hazard areas, and 3,900 acres of erosion hazard areas within the current UGAs. Under Alternative 1, all growth over the next 20 years would be mostly accommodated within existing UGAs. Some projected growth could not be accommodated under the current growth assumptions. There may be pressure to upzone urban and possibly rural residential areas. At most, up to 5,400 acres of low-density residential land may need to be upzoned, less if districts with higher densities are upzoned, to mitigate a shortfall of about 21,000 units. This could add development pressure on constrained sites, particularly in low-density areas where it might be difficult to avoid building on hazardous land. However, on larger sites medium and high density districts could also provide more flexibility in working around site constraints and avoiding impacts to protected hazard areas.

Table 14. *Geological Hazard Areas, Alternatives 1 and 2 (acres)*

	Alternative 1*	**Alternative 2**						
	Existing UGAs	Total Land Added to UGA	Battle Ground UGA	Camas UGA	La Center UGA	Ridgefield UGA	Vancouver UGA	Washougal UGA
Earthquake Hazard Areas:								
Zone A (least hazard)	-	-	-	-	-	-	-	-
Zone B	6139	709 +6139	28	327	-	2	-	351
Zone C	55,614	8,277 +55,614	1,474	794	2,086	1,073	2,324	526
Zone D	18,703	1,823 +18,703	-	-	59	134	1,630	-
Zone E (highest hazard)	640	2 +640	-	-		2	-	-
Water	563	10 +563	-	3	-	7	-	-
Peat	6930	6 +6930	6	-	-	-	-	-
Steep Slope Areas (≥40%)	947	96 +947	1	25	28	6	1	35
Landslide Hazard Areas	3,631	674 +3,631	18	19	213	255	97	71
Erosion Hazard Area	3,900	824 +3,900	13	130	219	268	77	118

Source: Clark County Department of Assessment and GIS, 2006
**For purpose of summarizing site class data for all UGAs, site class data for B-C was collapsed into site B; C-D into C; and D-E into D. for the City of Vancouver data set as they have adopted separate classifications for the NEHRP categories in their geologic hazard ordinance that are different than Clark County's.*

Local ordinances include policies that discourage development in potentially hazardous areas. In cases where development cannot be avoided (for example, roads crossing steep slopes), appropriate design and construction technology would be required to protect against impacts. This would include limiting vegetation removal to reduce runoff and erosion and requiring geotechnical studies to determine the best construction time and techniques to ensure public safety, particularly in landslide areas and on steep slopes.

a. Alternative 2

Alternative 2 would add 1,827 acres of land within the most hazardous earthquake-prone zones (D and E) to the 19,343 acres of most-hazardous land in Alternative 1. Most land within the new UGAs for Alternative 2—8,277 acres out of nearly 11,000—is within the moderate earthquake hazard area of Zone C. About 6 percent would be within the second-least hazardous Zone B. There is no land found within the least-hazardous earthquake zone (A). The amount of land in earthquake hazard zone D in the Vancouver UGA is markedly higher than in other UGAs.

Alternative 2 adds about 100 acres of steep slopes to the 947 acres in existing UGAs and 674 acres of landslide prone areas to the 3,631 acres in the current UGAs, as shown in Table 14. The majority of steep or unstable slopes are identified in the Camas, Washougal, and La Center UGAs. Few steep slopes are located in the Battle Ground and Vancouver UGAs. Areas of potential instability include land along parts of Salmon Creek and its tributaries, Gee Creek, the Columbia River (within an area currently used for surface mining), and Lacamas Lake.

Alternative 2 adds 824 acres of erosion hazard areas to the 3,900 acres in existing UGAs. There are severe erosion hazard areas in UGAs for all cities within Clark County under Alternative 2. The majority of erosion hazard area is found in the UGAs of Ridgefield (268 acres) and La Center (219 acres), while the least amount of erosion hazard areas would be added to the Battle Ground UGA (approximately 13 acres).

b. Alternative 3

With respect to earthquake hazards, most of the land in the subareas is within Zone C, moderate risk hazard areas as shown in Table 15. V1 and V2 have a significantly greater number of acres in Zone D, the second-highest hazard zone, than all other Alternative 3 subareas. B2, C1, and W1 would add significant proportions of Zone B land (second lowest risk category) to those UGAs, whereas none of the other subareas would. Furthermore, Zone D land in the Vancouver UGAs under Alternative 2 already makes up a third of the total acreage, so adding V1 and/or V2 would tend to intensify the risk of building on higher earthquake hazard sites. Very few Peat hazard are identified in Table 15, with the greatest impacts expected in V7 (184 acres), C1 (26 acres), and V4 (21 acres).

The majority of steep slopes for Alternative 3 are found in W1 (65 acres) and L1 (44 acres), while all the Vancouver subareas display the least amount of steep slope areas. Most steep slopes, about 35 acres, for Alternative 2 would be located in Alternative 2, Subarea 7 Washougal and the least are in Alternative 2, Subarea 3 Battle Ground.

The largest amounts of land designated as a landslide hazard are found in V1 and W1. Landslide hazard areas make up a relatively high proportion of the total subarea in B1 (22 percent), L1 (19 percent), and W1 (20 percent). Several subareas have no landslide hazard areas: B2, C2, V5, V6, V7 W2 and W3. Alternative 2 subareas have significantly more land identified as landslide hazard areas than Alternative 3 subareas. Specifically, Ridgefield in Alternative 2 has approximately 255 acres of land described as areas of potential instability. Comparatively, the most landslide hazard areas identified in Alternative 3 are found in W1 and include about 163 acres. The least amount of landslide hazard areas for Alternative 3 are found in R2 (1.8 acres) and C1 (4.3 acres). The least amount of landslide hazard areas for Alternative 2 includes Battle Ground (17.9 acres) and Camas (18.9 acres).

Severe erosion hazard areas are found in the UGA Subareas for all cities within Clark County under Alternative 3. Table 15 shows the majority of erosion hazard areas for Alternative 3 is in L1 (141 acres out of 534 acres) and W1 (188 acres out of 809 acres). These areas have the highest proportion of land designated for severe erosion hazard. Under Alternative 2, the La Center, Ridgefield, and Washougal UGAs each have close to 200 acres identified as both landslide and severe erosion hazards. Ridgefield contributes the majority of erosion hazard areas (268 acres) identified for Alternative 2. No land with erosion hazards for Alternative 3 are found in B2, C2, R2, V2, V5, V6, V7, W3.

Table 15. *Geological Hazard Areas, Subareas (acres)*

	Battle Ground			Camas			La Center			Ridgefield			
	Alternative 3		Alternative 2	Alternative 3		Alternative 2	Alternative 3		Alternative 2	Alternative 3			Alternative 2
	B1	B2	Subarea 3	C1	C2	Subarea 6	L1	L2	Subarea 1	R1	R2	R3	Subarea 2
Size of Subarea	41	120	1,507	1,243	125	1,123	534	793	1,213	614	227	362	2,144
Earthquake Hazard Areas:													
Zone A (least hazard)	-	-	-	-	-	-	-	-	-	-	-	-	-
Zone B	-	109	28	124	8	327	12	-	-	-	-	-	2
Zone C	40	11	1,474	1,146	117	794	221	765	2,086	614	227	348	1,073
Zone D	1	-	-	-	-	-	134	26	59	-	-	14	134
Zone E (greatest hazard)	-	-	-	-	-	-	161	-	-	-	-	-	2
Water*	-	-	-	269	-	3	34	-	-	-	-	-	7
Peat*	-	-	6	26	-	-	-	1	-	-	-	-	-
Steep Slope Areas (≥40%)	6	-	1	3	-	25	44	12	28	2	-	-	6
Landslide Hazard Areas	9	-	18	4	-	19	99	106	213	55	2	40	255
Erosion Hazard Areas	9	-	13	34	-	130	141	113	219	61	-	32	268

**Acreages may contain soils in more than one category; therefore, total acreage may add to more than total acreage in the subarea.*

	Vancouver									Washougal			
	Alternative 3				Alternative 2	Alternative 3			Alternative 2	Alternative 3			Alternative 2
	V1	V2	V3	V4	Subarea 4	V5	V6	V7	Subarea 5	W1	W2	W3	Subarea 7
Size of Subarea	1,006	875	402	908	2,302	635	219	668	1,691	809	122	21	877
Earthquake Hazard Areas:													
Zone A (least hazard)	-	-	-	-	-	-	-	-	-	-	-	-	-
Zone B	-	-	-	-	-	-	-	-	-	304	4	-	351
Zone C	157	337	403	845	1,645	-	219	484	679	474	118	-	526
Zone D	804	538	-	41	658	635	-	-	972	16	-	21	-
Zone E (greatest hazard)	-	-	-	-	-	-	-	-	-	-	-	-	-
Water*	60	-	-	-	-	-	-	-	-	16	-	-	-
Peat*	-	-	-	21	-	-	-	184	40	-	-	-	-
Steep Slope Areas (≥40%)	9	-	-	5	1	-	-	-	-	65	-	-	35
Landslide Hazard Areas	108	32	23	30	97	-	-	-	-	160	3	10	71
Erosion Hazard Areas	115	2	24	5	76				1	188	12	-	118

Source: Clark County Department of Assessment and GIS, 2006

**Acreages may contain soils in more than one category; therefore, total acreage may add to more than total acreage in the subarea.*

3. Mitigation

a. Plans and Ordinances

To be consistent with the GMA, Clark County and its cities have developed policies that identify geologic hazardous areas and that ensure development within these areas would minimize risk to life and property. The discussion below outlines these policies, which show considerable overlap, and additional mitigation measures that could be adopted to protect geologically hazardous areas from unsafe development.

Clark County. The County's Environmental Element contains goals related to geological hazards. Policy 4.2.9 calls for reducing risk to life and property from hazards associated with development in geologically hazardous and frequently flooded areas by discouraging development in those areas, limiting the removal of vegetation, requiring geotechnical studies, and prohibiting development in the floodway. Policies 4.10.1 through 4.10.3 would implement a comprehensive hazard Mitigation Plan, establish a sustainable approach to natural hazard mitigation, and provide incentives for hazard reduction development and land use techniques.

Clark County's geological hazard ordinance was amended in 2005 (CCC Chapter 40.430). The purpose of the ordinance is to safeguard public health, safety, and welfare by placing limitations on development in geologically hazardous areas, consistent with the requirements of the GMA. CCC Chapter 40.430 applies to all development activities within or adjacent to (within 100 feet) geologically hazardous areas, which are defined as steep slopes, landslide hazard area, and seismic hazard areas. All activities on hillsides subject to severe erosion hazard must minimize erosion by following management practices prescribed by the erosion control ordinances of Chapter 40.380. Development on steep slopes is regulated to prevent potential landslide damage by placing improvements away from steep slopes and leaving steep slopes with natural vegetation. Although it is often recommended that development on slopes greater than 40 percent be avoided, the County's ordinance regulates this development rather than prohibiting it. Development in landslide hazard areas is generally not allowed, and requires buffers that keep vegetation in a natural state on and around the landslide hazard area. Development within seismic hazard areas requires a detailed site analysis in order to determine how soils and structures would respond at a particular site.

Clark County has mapped areas that have earthquake potential, steep slopes with a susceptibility to landslides and erosion, and seismic hazard vulnerabilities. More stringent and relevant seismic codes have been incorporated into the permitting and building ordinances.

Battle Ground: Environmental Goal 4 of the Battle Ground Comprehensive Plan states the City will encourage protection, preservation and enhancement of Critical Areas within the city and its UGA. Five objectives express ways the city intends to protect critical areas, which includes geologically hazardous areas. Chapter 18.260 of the Battle Ground Municipal Code was adopted in accordance with the critical areas protection requirements of the GMA. Applicants for development hazardous areas must demonstrate that all reasonable efforts have been examined to avoid and minimize impacts to critical areas. Alterations of the critical area must be minimized, or compensated for. Chapter 18.300 contains regulations specific to geologically hazardous areas, requiring setbacks from steep slopes, landslide hazard areas, and special building code requirements on areas at risk for damage from earthquakes.

Camas: Goal EN-7 and related policies in the City of Camas Comprehensive Plan Environmental Element deals specifically with promoting soil stability and preserving vegetation and topographic features. Policy EN- 19 prohibits development on unstable land. As noted in the Mitigation Section for Soils, the City of Camas a critical areas ordinance on flood hazard areas, critical aquifer recharge areas, and geologically hazardous areas. Regulations for those critical areas are found under Title 16 starting at Chapter 16.50. Camas' zoning ordinance Chapter 18.31 establishes regulations for Environmentally Sensitive Areas and Open Space, which includes a designation of "Natural Open Space" for sensitive lands. GIS mapping identifies steep slopes as generally over 15 percent.

Geotechnical reports are required prior to development approvals on land within the steep slope areas. Management zones (buffers) from geologically sensitive areas are also required.

La Center: Environmental Goal #10 ensures the preservation and protection of natural resources, critical areas, open space and recreational lands through adequate and compatible policies and regulations. Geologically hazardous areas are included in the policies for critical areas (10.1). Specific policy 10.1.8 calls for reducing risk to life and property from development in geologically hazardous areas and flood hazard areas by discouraging development in those constrained areas, limiting vegetation removal, requiring geotechnical studies, and prohibiting development in the floodway. The La Center Municipal Code defines geologically hazardous areas in Chapter 14.20. The La Center EIS notes that development buffers next to critical areas will be enforced for any development within the UGA. No development is allowed on slopes over 25 percent. Development on other lands having susceptibility to erosion, sliding, earthquake or other geological events is prohibited unless the applicant provides a geotechnical study proposing construction methodologies and other assurances as to public safety. Other regulations govern vegetation removal and minimization of erosion potential to reduce the potential for impacts.

Ridgefield: The Ridgefield Comprehensive Plan contains Policy EN-11, Hazard Areas. It calls for managing development in geologically hazardous areas and flood hazard areas to protect public health and safety. Chapter 18.280 of the Ridgefield Municipal Code contains provisions for the conservation and enhancement of sensitive lands while encouraging urban densities and affordable housing through density transfer to non-sensitive (buildable) lands. Chapter 18.280.130 regulates development on geologically hazardous areas as critical areas. As a result, special requirements apply to development within areas having seismic or landslide risk.

Vancouver: Chapter 4, Environment, of the Comprehensive Plan contains policy EN-10 which calls for management of development in geologically hazardous areas and flood hazard areas to protect public health and safety. Vancouver has adopted a Critical Areas Protection Ordinance to manage development in areas of landslide hazard, steep slopes, earthquake hazard and fill areas. The City also has adopted a Greenway District to protect open space in the Lettuce Fields subarea and to preserve land suitable for agricultural production and to protect from incompatible uses in agricultural areas in the Vancouver Lake subarea. Title 14 contains measures to protect critical aquifer recharge areas while Title 20.740 deals with the other critical areas mandated by the GMA. Section 740.120 sets standards for development in frequently flooded areas, while 740.130 establishes protections for Landslide, Seismic, and Erosion Hazard Areas. Slopes greater than 25% and landslide and bank erosion hazard areas require buffers.

Washougal: Chapter 2 of the City of Washougal Comprehensive Plan deals with natural resources and Critical Areas. Section 2.3.2.5 identifies geologically hazardous areas as slopes greater than 25 percent. Policy 2-A is to protect land quality from erosion and other soil-related natural hazards. Policy 2-C is to protect life and property from mass movement hazards. Goal 4 calls for establishing consistent development standards for steep and unstable slopes. Policy 4-B states that development on steep and unstable slopes shall be restricted to insure public safety and prevent loss of private property. Washougal has adopted a Critical Areas Ordinance.

b. Additional Mitigation

The County and cities could add policies to:

- Require review of the design of all development on steep slopes to identify and mitigate not only safety but also potential drainage, habitat, and visual impacts of the development.
- Support and participate in a program to fund the acquisition of sensitive lands, including geologically hazardous areas. The GMA permits the adoption of a real estate excise tax for this purpose, but other mechanisms should also be investigated.

II. Air

A. Climate

1. Setting

The climate of Clark County is influenced by the Coast Range to the west and the Cascade Range to the east. The Coast Range provides limited shelter from the Pacific Ocean. As moist, heavy air from the west rises up the steep slopes of the Cascade Range, the air is cooled, which creates moderate rainfall in the lower-lying areas and more significant rainfall on the west slope of the Cascades. The Cascades also form an eastern barrier from continental air masses originating over the Columbia River Basin.

Clark County has wet, mild winters and warm, dry summers. Precipitation ranges from a low of 41 inches annually in Vancouver to a high of 114 inches annually in the northeastern corner of the county. Approximately 80 to 85 percent of the precipitation occurs from October to May.

Temperatures in the county, as recorded at four reporting stations between 1971 and 2000, averaged 38.7 degrees in January and 66 degrees in July. Temperatures may vary from one location to another, depending on the direction of the wind, type of vegetation, and topography. Generally, temperatures are higher in the urbanized areas than in the surrounding rural areas. This is often due to (1) increased human activities that occur within urban areas (2) less evaporation because there is less water retention in the developed areas, and (3) less heat loss at night in urban areas because of heat retention in buildings and paved areas.

The prevailing surface winds are generally from the northwest in the months of April through September and from the east/southeast from October through March. There are occasional winds from the east that are a part of extremes in either cold or hot weather. Winter storm tracks are generally from the southwest, with infrequent snow storms dropping down from the Gulf of Alaska. Major wind events in Clark County occur infrequently. Two of the more famous were the Columbia Day storm in 1962 and the Peter Ogden tornado in 1972.

Fog often occurs in the valleys and low-lying areas of the county. Fog is either the result of clear skies and still air that allows large heat losses at night or from warm, moist air masses moving over cooler ground. In either case, when the lower air is cooled to below the dew point, fog occurs. Fog as a result of clear skies and still air is most common in the county during the spring and fall months.

According to the United Nations Intergovernmental Panel on Climate Change (IPCC) and the U.S. Environmental Protection Agency (EPA), temperatures in Washington State could increase by about 5 degrees Fahrenheit in winter and summer and by about 4 degrees Fahrenheit in spring and fall over the next 100 years. Precipitation is projected to change little in the spring, summer, and fall and to increase by about 10 percent in winter. The frequency of extreme hot days in summer is expected to increase along with the general warming trend.

While it is difficult to predict the exact impacts of climate change on the region, these impacts could be severe, affecting human health, the health of aquatic and terrestrial ecosystems, and economic resources such as agriculture, forestry, fisheries, and water resources.

2. Impacts

Neither of the alternatives would have a direct impact on the climate of the region in the short-term. The changes that each alternative would bring about in land use, transportation, the environment, and the economy would take place gradually over that period. It is possible that, over time, the alternatives could impact microclimates, at least in terms of temperature. Because urban areas generally have slightly higher temperatures and each alternative involves a greater level of urbanization, either within

existing or expanded UGAs, it is possible that temperatures could increase somewhat in these areas, although any increase in temperature would be slight.

The growth management decisions reflected in the different alternatives—the amount of land that is urbanized, the extent to which resource, rural, and open space areas are preserved, the efficiency of the transportation system reflected in the number of vehicle miles traveled—do have the potential to make an incremental contribution to climate change on a larger scale over a longer period of time. Human-induced climate change is influenced by myriad decisions about growth and urban form made at local and regional levels. The efficiency with which resources, most notably fossil fuels, are used is directly related to development patterns. Policy decisions that promote the development of a compact urban form that can reduce motorized and non-motorized emissions of greenhouse gases can, as a result, contribute less to global climate change. (For further analysis of potential impacts on air quality from transportation, refer to the following section on Air Quality.)

Assessing how each alternative may contribute to climate change is difficult, made so by the interaction of many variables. Two parameters are known to play an important role in climate change: fossil fuel emissions and amount of resource land converted to urban uses. Fossil fuel emissions from motorized sources such as the engines of automobiles, trains, and planes have historically been large contributors of greenhouse gases. While this is still the case, regulations to reduce the average emissions from these sources have been successful over the last few decades in reducing the share of pollution coming from them. This trend is expected to continue. In the meantime, other key contributors are and would be the smaller engines, such as those in lawn mowers, boats, and leaf blowers. Emissions from these sources are growing dramatically as a share of such pollution. Consequently, it would be expected that growth patterns that reduce emissions by reducing vehicle miles traveled and by reducing the use of small engine equipment, would have a lower impact on climate change.

While the link between fossil fuel consumption and climate change is fairly well known, the role of farmland, forest land, soils, and other environmentally significant areas in climate regulation may be less so. Generally, these areas function as "carbon sinks," absorbing the carbon dioxide that is released with the burning of hydrocarbons through the process of photosynthesis. While some lands, most notably mature forests are more efficient at sequestering carbon dioxide, all biomass (vegetation and soils) to some degree functions as a carbon sink. It is estimated that land-based vegetation and soils currently absorb about 40 percent of global carbon dioxide emissions from human activities. The more farmland, forest land, and soils that are converted to urban uses—roads, infrastructure, residential, commercial, and industrial development—and the more gasoline fueled engines are used, the greater the "carbon footprint" of a city or region is likely to be.

a. Alternative 1

Alternative 1 would result in a more compact urban form than Alternative 2 and would likely have less impact on climate than Alternative 1 because it would convert less undeveloped and vegetated rural areas to urban uses, resulting in less impervious surface replacing agricultural areas, and fewer large-lot urban developments that would require the use of mowers and leaf blowers. Because existing zoning would not provide sufficient land for projected growth, there may be pressures to upzone urban and possibly rural residential areas. At most, up to 5,400 acres of low-density residential land in existing UGAs may need to be upzoned, less if districts with higher densities are upzoned, to mitigate a shortfall of about 21,000 units. Medium and high density development would require more impervious surface, but this could be balanced by avoiding the need to convert rural lands. It is estimated to have the lowest Vehicle Miles Traveled (VMT) 1,070,911, about 5,000 miles fewer than Alternative 2, because fewer miles of roads would need to be built to reach the same population. In addition, higher densities can support and encourage the use of alternative transportation, such as walking, cycling, and public transit, all of which reduce carbon emissions.

This alternative would conserve the most farm and forest resource land and rural land. No additional resource or rural land would be added to urban areas. It can be assumed that, because these lands

would be conserved and less vegetation and soils would be lost, they would continue to function to some degree as carbon sinks.

b. Alternative 2

Alternative 2 would include an expansion of UGAs, converting approximately 11,000 acres of rural land to urban land, land that otherwise would be able to sequester carbon. Approximately 6,200 acres of that expansion would be in low-density single family development. Therefore, the use of small engine equipment is likely to be greater under this alternative. The dispersed nature of the land use pattern would also require 6,081 more vehicle miles of travel (1,076,081). This would not be a significant amount, however, in terms of contribution to climate change. Because Alternative 2 would result in more fossil fuel emissions and reduce resource and rural land compared to Alternative 1, its contribution to climate change would likely be greater than Alternative 1.

c. Alternative 3

Alternative 3 is based on the assumption that the land in its subareas could be added to UGAs or could be added "in exchange" for removal of land from Alternative 2. In other words, how the Alternative 3 subareas are used to develop the Preferred Alternative for the FEIS could have a negative impact on climate or a neutral impact if offset against a reduction in the total land added to UGAs.

3. Mitigation

a. Plans and ordinances

In general, the plans and ordinances of Clark County and the cities do not deal specifically with preventing impacts to climate, except in the context of protecting air quality. The concept of mitigating impacts on climate by preserving vegetative cover (restricting conversion of rural, agricultural or forest uses to urban uses) is not directly addressed. However, restricting conversion of large (i.e., undeveloped) vegetated areas to impervious surfaces and reducing vehicle emissions (through all available means) are forms of mitigating impacts that contribute to climate change. To the extent that air quality impacts from transportation and industry are mitigated, impacts from sources that make an incremental contribution to climate change could also be reduced through use restrictions on gasoline-powered equipment, for example. Consequently, the transportation and air quality sections of this DEIS provide mitigation for potential impacts to climate.

b. Additional Mitigation

The County and cities could add policies on climate change to their comprehensive plans in those sections that address air quality. Action items could include monitoring the technical literature on climate change, and amending their ordinances as needed to consider climate change when assessing land use decisions that might affect air quality.

B. Air Quality

1. Setting

Clark County is located in an airshed that is bounded on the south by Eugene, Oregon, on the north by Chehalis, Washington, on the west by the Coast Range, and on the east by the Cascade Mountains. This region is susceptible to concentrations of air pollution near human activity centers.

Air pollutants come from a wide variety of sources. Point source pollutants are traditionally stationary facilities like rock quarries, lumber mills, and other manufacturing plants and processes. Area sources, such as dry cleaning chemicals, solvents, and wood stoves come from relatively small, individual sources of pollution usually spread over a broad geographic area. Mobile sources of pollution include such things as trucks, cars, and other vehicles. Mobile sources emit significant quantities of nitrogen oxide (NOx), fine particulate matter, ground-level ozone, carbon monoxide, and other toxic

compounds. Motor vehicles are Clark County's largest producer of air pollution, contributing about a 60 percent share. This share has been declining and is predicted to continue to decline over the next 20 years due to increasingly stringent tail-pipe emission requirements.

In 1991, the urban area of the Vancouver portion of the Portland-Vancouver Interstate Air Quality Maintenance Area was designated as a non-attainment area for ozone (O_3) and carbon monoxide (CO). Since the 1994 comprehensive planning process, an Air Quality Maintenance Plan was developed and approved for Clark County. A maintenance plan is a 10-year plan for the implementation of transportation and other control strategies to ensure that National Ambient Air Quality Standards (NAAQS), once they can be attained for the region, can be maintained for a period of ten years. The Portland-Vancouver Interstate airshed has since been declared a maintenance area.

The Maintenance Plan established mobile emissions "budgets" which must not be exceeded in order for the County to remain in compliance with the Maintenance Plan. The Southwest Washington Regional Transportation Council (RTC) ensures that emissions are not exceeded by monitoring emissions through its regional transportation model. The Metropolitan Transportation Plan (MTP) contains transportation projects expected to be constructed and is based on population forecasts and the land patterns and uses established by the local transportation plans. All regionally significant transportation improvement projects are included in the regional travel forecasting model for purposes of air quality conformity analysis. RTC is responsible for assisting in the development of programs and policies to reduce pollutant emissions from mobile sources. The Southwest Washington Clean Air Agency (SWCAA) is responsible for monitoring and developing programs to reduce pollution from area and point sources.

Under the new federal 8-hour Ozone standard, the Vancouver/Portland Air Quality Maintenance Area has been redesignated from "maintenance" to "unclassifiable/attainment" for ozone and no longer needs to demonstrate conformity of the MTP with the Maintenance Plan. The Air Quality Maintenance Area is currently designated a maintenance area for carbon monoxide.

Under existing air quality regulations, new industry locating in the county is required to use the best available control technology to reduce its own emissions.

2. Impacts

Despite major increases in motor vehicle use and the attraction of new industries under all alternatives, it is unlikely that emissions from motor vehicle and major industrial sources would increase dramatically in the future with projects under the current MTP. Major reductions in these emissions have been achieved through stringent federal controls on automobiles and major industries. The passage of the Clean Air Act Amendments in 1990 requires even greater air quality controls on new development. This, combined with fines, monitoring programs, and the retirement of older vehicles and industrial plants (the major motor and stationary emission violators), should help to maintain air quality at current levels even with significant growth. As noted earlier, motor vehicle sources are expected to decline as a share of these pollutants, while shares from other sources such as small engines, are and would rise dramatically without new controls on those emissions.

These sources are currently uncontrolled, and as such their impact on air quality would continue to increase as the population grows. Significant decreases in motor vehicle emissions can, however, be achieved by mitigating congestion through roadway maintenance and management and by developing strategies which reduce trips or encourage the use of alternatives to the automobile.

Air quality modeling was not performed for this plan level of analysis. Despite increasing numbers of miles traveled by vehicles in Clark County, overall emissions remain lower than the budget for carbon and ozone. The current budget for carbon monoxide emissions is 260,000 pounds per day. Emissions are expected to continue to decline. According to the 2005 MTP, the forecasted carbon monoxide emissions would decline from about 250,000 pounds per day in 2006 to a low of about 200,000

pounds by 2019, and then begin to rise again by 2030 to 205,500 pounds per day. The 2030 emissions would be considerably lower than current emissions, even with the anticipated population growth.

As noted above in the discussion under climate, above, air quality is increasingly likely to be affected more by other pollution sources over the next 20 years, sources which are not monitored by local jurisdictions at this time. Therefore evaluating potential impacts by alternative is made even more difficult. The general discussion for climate impacts would also hold for impacts to local air quality.

a. Alternative 1

Alternative 1 would result in a more compact urban form than Alternative 2. Although projected growth and development over the next 20 years would not entirely be accommodated within existing UGAs as currently zoned, Alternative 1 would likely have the least impact on air quality. Upzoning required to accommodate growth would not negatively affect air quality. It would have fewer large-lot urban developments that would require the use of mowers and leaf blowers. It would have the lowest VMT (1,070,911) —about 6,000 miles fewer than Alternative 2—because fewer miles of roads would need to be built to reach the same population.

b. Alternative 2

Alternative 2 would include an expansion of UGAs, converting 6,200 acres to low-density single family development. Therefore, the use of small engine equipment is likely to be greater under this alternative. The dispersed nature of the land use pattern would also require more vehicle miles to travel. Because Alternative 2 would result in more fossil fuel emissions compared to Alternative 1, its negative impacts on air quality would likely be greater, though not significantly.

c. Alternative 3

Alternative 3 is based on the assumption that the land in its subareas would be exchanged for the same land area in similar designations in Alternative 2. Therefore, the impacts would be similar to those described for Alternative 2.

3. Mitigation

a. Plans and Ordinances

Most of the cities' plans recognize the link between air quality, traffic congestion, and vehicle emissions, primarily in the transportation elements. The plans contain policies to encourage the use of alternative modes of transportation, such as bicycling, walking, and transit, which can reduce the total amount of air emissions. Level of service standards and transportation concurrency contribute to the reduction of congestion which can improve air quality. Many of the plans also have policies citing the importance of preserving air quality as part of their economic development strategies, since new industrial development cannot occur if the regional air quality does not meet federal standards.

The state requires private automobiles in designated urban sections of the state to meet air emissions standards every year. State and federal regulations require limitations on open burning of brush, and using wood stoves or fireplaces for heating. Where wood stoves and fireplaces are permitted, they must be fitted with filters to reduce emissions. With the designation as a maintenance area, controls on burning, vehicle pollution inspections, and requirements for industry to use the best available technology to control emissions continue.

Clark County: The Environmental Element of the Clark County Comprehensive Plan contains a goal and two policies regarding air quality. Policy 4.9.1 states that the county's air resource is to be managed to preserve and enhance air quality. Policy 4.9.2 state that land use planning needs to incorporate air quality impacts as an additional land use planning decision criterion. Other policies directly related to preserving or improving air quality are found in the Economic Development element of the comprehensive plan. Goal 9.6 promotes long-term economic development that will

improve air quality to attainment status and preserve air shed capacity to accommodate job generating activities. Policies 9.6.1 through 9.6.2 discuss assigning priority to businesses creating family-wage jobs that operate within the available air shed capacity. Policy 9.6.2 encourages existing industries to reduce air pollution emissions.

Battle Ground: The Comprehensive Plan goals and objectives (Goal 5 Environment) adopted in December 2001 include protection and improvement of air quality (EG-8), including development of a transportation plan that promotes and encourages the use of alternative travel modes (EA-8.1). Another policy would have the city seek to attract clean industries that do not adversely impact air quality and work to locate new business and industries so that the adverse impacts on air quality are minimized (EO-8.3). The City will also work with property owners and construction companies to lessen air quality impacts from new construction and daily living (EO-8.4).

Camas: Policy EN-3 of the proposed Environmental Element of the comprehensive plan calls for minimizing and eliminating (where feasible) the release of substances into the air that may degrade air quality. Goal EC-10 of the new Economic Development Element supports a multi-modal transportation system that helps to reduces air pollution. Goal EC-12 calls for improving air quality and preserving airshed capacity to accommodate new employment opportunities. A new policy and strategy for implementation are associated with this goal. Policy EC-17 is to identify and pursue strategies to reduce air pollution from mobile sources to preserve usable airshed for potential commercial and industrial users.

La Center: The Urban Area Comprehensive Plan Policies on air quality (10.4.1 and .2) are to manage the air resource to preserve and enhance air quality and to incorporate air quality impacts as an additional land use planning decision criteria.

Ridgefield: Policy EN-10 of the Comprehensive Plan is to protect and enhance air quality, in coordination with local and regional agencies and organizations.

Vancouver: Vancouver's Comprehensive plan Policy EN-9 calls for protecting and enhancing air quality, in coordination with local and regional agencies and organizations.

Proposed revisions to the comprehensive plan include a policy for air quality which calls for the City to protect and enhance air quality, in coordination with local and regional agencies and organizations.

Washougal: Goal 1 of the Critical Areas section of the comprehensive plan includes the protection and improvement of the quality of life through the protection of air quality. Policy 1-H requires the city to guard against the degradation of air quality while Policy 1-J would locate new business and industry so that the impact on air quality is minimized.

b. Additional Mitigation

Additional mitigation measures which could be adopted by the County and/or cities include:

1. Modify alternatives to have less land proposed for expansion.
2. Investigate ways of limiting or reducing the use of fossil-fuel powered equipment.
3. Encourage the use of energy from alternative non-polluting sources, energy-efficient heating in all new development, including adoption of solar access ordinances.
4. Encourage energy conservation.
5. Encourage an aggressive alternative fuels program.

III. Water

A. Surface Waters

1. Setting

Clark County has an abundance of rivers and streams. The county is bounded on the south and west by the Columbia River and on the north by the Lewis River. The Columbia River is the most important river in the county. It controls the movement of surface water, all surface streams ultimately discharge into the Columbia, and groundwater that leaves the county does so by discharging into the river or its tributaries. The major tributaries of the Columbia River in Clark County are the Lewis River, Washougal River, and Lake River. Important streams that are tributaries to these rivers are Siouxon Creek, Canyon Creek, Cedar Creek, East Fork Lewis River, Little Washougal River, Salmon Creek, and Burnt Bridge Creek. Figure 23 shows major rivers, streams, and drainage basin boundaries.

Major lakes in the county include Vancouver Lake and Battle Ground Lake, which are naturally occurring lakes, and Lacamas Lake, Lake Merwin, and Yale Lake, which are man-made.

Rapid population growth and development pressures within Clark County over the past decade have made it increasingly difficult to maintain water quality. Currently, the water management programs of Clark County and its cities are focused on water quality issues and those factors that negatively influence water quality, such as erosion, stormwater runoff, and the loss of key environmental elements—namely, wetlands, floodplains, and riparian areas.

As required by the Clean Water Act (CWA), the State of Washington has established standards for water quality that reflect the present and potential uses of surface waters throughout the state (WAC 173-201A). All surface waters are protected by narrative criteria, designated uses, and an antidegradation policy. Based on the use designations, numeric and narrative criteria are assigned to a water body to protect the existing and designated uses. Section 303(d) of the CWA requires states to identify and list all surface waters that do not meet their water quality standards and that do not support their identified beneficial uses. These beneficial uses include surface water supply for industrial, agricultural, and domestic uses, fish and wildlife habitat protection, recreation, and commerce and navigation. In Clark County, the function of fish and wildlife protection is very important given the listing of salmon and steelhead under the ESA. Table 16 shows those stream segments and lakes within Clark County that are identified as impaired under Section 303(d), along with the parameters that are the basis for the listing. This list was most recently updated in 2004, so conditions may have changed.

The state requires that Salmon Creek and its tributaries — Cougar, Mill, Curtin, and Woodin Creeks — comply with state and federal total maximum daily load requirements (TMDLs). TMDLs attempt to limit the load or amount of a particular pollutant entering a water body. In Salmon Creek watershed, the targeted categories are harmful bacteria and turbidity (cloudiness of the water).

Most of the problems that lead to listing a stream as water quality limited are due to human activity or development in the area. Fecal coliform bacteria originate from malfunctioning septic systems and animal waste from wild and domestic animals. Increased temperature can result from removing vegetation that shades the stream or withdrawing so much water that the remainder is more subject to solar heating, or from industries discharging warm water to the stream. Increased impervious area also decreases the amount of cold groundwater-feeding streams.

Section 305(b) of the CWA requires states to prepare a written water quality assessment every five years. Washington State's 2004 305(b) Report showed that, for the Clark County area, the water quality of most rivers, streams, and lakes was fair to poor. Water quality tended to be better in rural areas and poorer in urban areas, although runoff from agriculture has negatively impacted many

waterways in the county. The most common causes of water quality impairment were temperature, dissolved oxygen, and presence of fecal coliform bacteria.

Table 16. *303(d) Surface Waters in Clark County (2004)*

Water Body	Parameter
Breezee Creek	fecal coliform
Burnt Bridge Creek	dissolved oxygen, fecal coliform, temperature
Clearwater Creek	temperature
Cedar Creek	fecal coliform, temperature
China Ditch	temperature, dissolved oxygen
China Lateral	temperature, dissolved oxygen
Columbia River	temperature, fecal coliform, dieldrin, total PCBs
Curtin Creek	pH, dissolved oxygen
Dwyer Creek	dissolved oxygen
Fifth Plain Creek	dissolved oxygen, temperature
Gee Creek	fecal coliform
Horseshoe Lake	total phosphorus
Kalama River	temperature
Lacamas Creek	dissolved oxygen, pH, fecal coliform, temperature, total PCBs
Lacamas Lake	total phosphorous
Lake River	fecal coliform, temperature
Lewis River	temperature, total dissolved gas
Lewis River-East Fork	fecal coliform, temperature
Lockwood Creek	fecal coliform
Matney Creek	fecal coliform, dissolved oxygen, temperature
McCormick Creek	fecal coliform
Muddy River	temperature
Quartz Creek	temperature
Rock Creek	fecal coliform
Rock Creek (north)	fecal coliform
Rock Creek (south)	fecal coliform
Round Lake	dissolved oxygen, low pH
Salmon Creek	fecal coliform, temperature, dissolved oxygen, pH
Shanghai Creek	dissolved oxygen, pH, temperature
Vancouver Lake	fecal coliform, total phosphorous, total PCBs
Washougal River	fecal coliform
Weaver (Woodin) Creek	pH
Whipple Creek	fecal coliform

Source: Water Resource Inventory Area 27 and 28, Washington State Department of Ecology

Clark County has been monitoring stream health in recent years. Clark County Public Works published a report on streams titled *Clark County Stream Health* in 2004, as part of its Clean Water Program. It compared general stream health scores for many streams to the land uses in their drainage areas and developed a simple method to predict stream health where there is no usable field data. The information is presented through discussion of the 10 watersheds in the County and can be found through Clark County website and the following link: http://www.clark.wa.gov/water-resources/stream.html.

Some of the conclusions on major creeks were:

- Lacamas Creek watershed streams ranges from good to very poor. Stream health is best in the upland areas of relatively undisturbed forest, but declines markedly as streams flow through agricultural, suburban, and urban areas.

- The East Fork Lewis River has a good overall rating, even though there are areas where the stream is too warm and levels of harmful bacteria are elevated.

- Salmon Creek watershed health ranges from good to very poor. It is best in the upland areas of relatively undisturbed forest, but declines markedly as streams flow through agricultural, rural residential, suburban, and urban areas.

- Washougal River and Little Washougal River data for existing water quality is not sufficient to identify specific problems and sources. There are concerns about temperature and bacteria in these streams, as well as increased channel erosion caused by forest clearing, road building, and residential development, especially in the lower part of the watershed.

a. Stormwater

Inadequately controlled stormwater runoff results in increased runoff volumes, peak flow rates, and duration of peak flows in streams. This can cause flooding and safety hazards, erosion, scouring, and discharge of sediment into surface waters. Untreated stormwater runoff discharges nutrients, metals, oil and grease and other forms of pollution to surface and groundwater resources, thereby threatening the use of these resources for drinking water, support of aquatic life, and recreation. Clark County's stormwater management program addresses the problem of surface water quality from non-point source pollution. Under Section 402 of the CWA, Clark County is required to obtain a National Pollutant Discharge Elimination System (NPDES) permit for all county-owned storm sewers that empty to surface waters or to groundwater.

The current approach to managing stormwater quality is to require new development to retain stormwater on site and treat it (generally by running it through vegetated areas where the plants filter out and absorb pollutants) prior to releasing the water into the ground or to nearby surface waters. This approach also reduces the risk of flooding along streams in the county by regulating flow into the stream during storms.

Clark County's stormwater management program consists of five elements:

- Operation and maintenance of the county's storm sewers.
- Regulation of stormwater runoff to reduce pollutants entering stormwater.
- Construct stormwater controls for existing development, rehabilitating streams and wetlands, and possible purchasing of development rights within floodplains.
- Monitoring and evaluation to provide information needed to make management decisions.
- Public outreach and education programs.

Stormwater basin planning is a tool to better manage stormwater runoff through a combination of capital projects and other Clark County Clean Water Program activities. Since 2005, the Water Resources Department of Clark County Public Works has been systematically developing stormwater basin plans for county watersheds in support of the Water Resources section mission to protect water resources in Clark County through stormwater management. Stormwater basin plans assess watershed resources, identify and rank problems and opportunities, and recommend specific actions to protect water quality through stormwater management.

b. Shorelines

Washington State's Shoreline Management Act (SMA) was passed by the Legislature in 1971 and adopted by the public in a 1972 referendum. The goal of the SMA is "to prevent the inherent harm in an uncoordinated and piecemeal development of the state's shorelines." The Act establishes a broad policy giving preference to uses that protect the quality of water and the natural environment, that depend on proximity to the shoreline, and that preserve and enhance public access or increase recreational opportunities for the public along shorelines. The SMA establishes a balance of authority between local and state government. Counties and cities are the primary regulators, but the state, through the Department of Ecology, reviews local programs and permit decisions.

The SMA applies to all marine waters, streams with a mean annual flow greater that 20 cubic feet per second, water areas of the state larger than 20 acres, upland areas called "shorelands" 200 feet landward from the edge of shoreline waters, and the wetlands and floodplains associated with these water bodies. Stream or river shorelines in Clark County subject to the provisions of the SMA are: Lake shorelines within Clark County that are subject to the provisions of the SMA include an unnamed lake, Battle Ground Lake, Lacamas Lake, Merwin Lake, Mud Lake, Round Lake, and Yale Reservoir.

Clark County, Camas, Ridgefield, Vancouver have adopted shoreline master programs. The City of Woodland has adopted the shoreline master program from Cowlitz County.

c. Floodplains

The GMA requires counties and cities to designate and protect critical areas, which include floodplains. Floodplains are adjacent to rivers, streams, and lakes and are subject to periodic inundation where the river rises due to storm flows. They are particularly important for their functional values, which include the maintenance of water quality, the regulation of life-threatening flood waters, and the provision of wildlife habitat.

Floodplains along rivers and streams are divided into two areas: the *regulated floodway*, which includes the stream or river channel and any adjacent floodplain area that must be kept free from encroachments so that the 100-year flood may be discharged without any substantial increase in flood height; and the *flood fringe*, which is the area between the floodway and the boundary of the 100-year floodplain. A 100-year flood, which is normally considered the base flood, is a flood having a one percent chance of being exceeded in any given year. The definition of a floodplain encompasses areas along most of the rivers in Clark County. Figure 24 shows the major floodplains within the county, those associated with the Columbia River, the North Fork Lewis River, the Washougal River, the East Fork of the Lewis River, Salmon Creek, Burnt Bridge Creek, and Lacamas Creek. Tributaries of these major waterways are also subject to flooding, although, historically, the impacts of this flooding have been minor. More detailed information on the floodplains of major and minor waterways and tributaries within the county can be found in the *Perspectives Resource Document*.

Flood hazard areas are delineated by the Federal Emergency Management Agency (FEMA) maps and these maps generally adopted by local jurisdictions and regulated by development codes. In addition, the critical areas ordinances of the County and cities define and regulate flood hazard areas in accordance with GMA requirements.

New development would be subject to federal, state, and local laws and regulations that are meant to protect surface water quality. Each city has regulations similar to the County's flood hazard ordinance, imposing restrictions on development within regulated floodway areas of rivers and streams. This includes local stormwater and erosion control ordinances, as well as critical areas ordinances that provide some protection to flood hazard and riparian areas. Local jurisdictions must adopt and enforce regulations in order for federal flood insurance to be made available to local property owners.

2. Impacts

Evaluating impacts to surface waters of urbanization of currently rurally-designated areas means comparing the miles of streams, amount of stormwater runoff (represented by new impervious surfaces), shorelines, and floodplains that would be in the proposed UGAs and subareas under the alternatives. Table 17 (Alternatives 1 and 2) and Table 22 (Alternative 3) compare the miles of streams that would be brought into new UGAs.

Table 18 (Alternatives 1 and 2) and Table 23 (Alternative 3) compare the acres of shoreline and floodplain environments that would be incorporated into new UGAs. Increased urbanization near or within shorelines and floodplain areas can accelerate runoff and increase erosion, increase transport and loading of chemical and organic contaminants, increase flood peaks due to accelerated runoff, and

decrease groundwater recharge. Very high water tables can make urban development very challenging and costly. So too can building on top of poorly draining soils because they exacerbate runoff potential.

Increased urbanization, in either existing UGAs or new UGAs, poses numerous challenges to water quality management programs and makes more difficult the goal of no net loss in surface water quality. Impervious surfaces of roadways, parking lots, and driveways produce a proportionate increase in the volume of runoff and the potential for that volume to be carrying pollutants from erosion or chemical contamination to surface waters, as discussed above under stormwater runoff. Tables 19 and 20 compare amounts of new impervious surfaces that would likely result under Alternatives 1 and 2.

Increased sedimentation and turbidity loading from erosion degrades streams and lake waters with silt, which can eliminate food supplies for aquatic species and alter the balance of the aquatic ecosystem. Stormwater runoff can also impact surface water levels, flow patterns, and temperature.

Cumulative impacts from new impervious surface within watersheds are another important measurement. Generally, the health of surface waters within a watershed is related to the percentage of that watershed covered by impervious surfaces. The greater the percentage of impervious surface coverage, the more likely it is that surface water quality would be degraded and the more difficult it becomes to implement watershed recovery plans. Table 21 (Alternative 1 and 2) and Table 24 (Alternative 3) show the percentage of individual watersheds that are covered by impervious surfaces and the acres of impervious surfaces that are found within new UGAs by watershed. The amount of new impervious surface under each alternative would vary according to density and the size of the urban area expansion. Any expansion of the UGA would increase future impervious surface. Because Alternative 3 assumes that the total amount of acreage for each use would be the same as under Alternative 2, just in a different location, the amount of impervious surface would remain the same. The location would affect which watershed would receive more impacts from new impervious surface.

Table 17. *Comparison of Impacts on Streams, Alternatives 1 and 2 (acres)*

	Alternative 1	**Alternative 2**							
Miles of streams added to urban areas:	Existing UGAs	Total Stream Miles by UGA	Battle Ground UGA	Camas UGA	La Center UGA	Ridgefield UGA	Vancouver UGA	Washougal UGA	% of Stream Length Added to Urban Area
(NO NAME)	112.9	33.2 +112.9	2.1	1.4	8.3	16.1	4.4	1.0	2%
Allen Creek	1.0	0.7 +1.0				0.7			25%
Burnt Bridge Creek*	16.0	16.0							
Brezee Creek*	0.8	0.8							
Campen Creek	1.6	0.9 +1.6						0.9	22%
Cold Canyon	1.6	1.6							
Columbia River*	21.9	21.9							
Cougar Canyon	3.4	3.4							
Curtin Creek*	3.4	3.4							
East Fork Lewis River	0.1	0.3 +0.1			0.3				1%
Fifth Plain Creek*	0.0	0.8					0.8		11%
Gee Creek*	3.9	3.0 +3.9				2.9	0.1		35%
Gibbons Creek	0.5	.5							
Lacamas Creek*	2.8	0.7 +2.8		0.3			0.3		4%
McCormick Creek*		1.2			0.8	0.4			28%
Mill Creek	1.5	1.0 +1.5	0.6				0.4		19%
Morgan Creek	0.4	0.4							
Packard Creek		0.2					0.2		8%
Washougal River*	4.8	4.8							
Weaver Creek*	4.0	4.0							
Whipple Creek*	3.3	0.5 +3.3					0.5		9%
Yacolt Creek	0.6	0.6							
Total	**184.7**	**42.5 +184.7**	**2.7**	**1.7**	**9.3**	**20.1**	**6.7**	**1.9**	

Source: Clark County Department of Assessment and GIS, 2006

** 303(d) surface water limited quality*

Table 18. *Floodplains and Shoreline Environments, Alternatives 1 and 2 (acres)*

	Alternative 1	Alternative 2						
Acres of floodplain and shoreline areas added to UGAs:	Existing UGAs	Total UGAs	Battle Ground UGA	Camas UGA	La Center UGA	Ridgefield UGA	Vancouver UGA	Washougal UGA
Floodway fringe	9,683	177 +9,683	12	60	3	70	33	-
Floodway	4,842	36 +4,842	-	18	9	0.2	9	-
Shorelines	6,414	145 +6,414	-	28	13	50	55	-

Source: Clark County Department of Assessment and GIS, 2006

Table 19. *New Impervious Surface, Alternatives 1 and 2 (acres)*

Projected new impervious surface:*	**Alternative 1 (existing UGAs)**	**Alternative 2**
In proposed new UGAs		5,722
In existing UGAs	17,166	17,166
Total potential new impervious surface	**17,166**	**22,888**

Source: Clark County Department of Assessment and GIS, 2006
** Impervious surface estimates based on vacant lands analysis: representing the amount of potential impervious surface that would be created if the expanded UGAs were fully developed.*

Table 20. *New Impervious Surface by Land Use, Alternatives 1 and 2 (acres)*

	Alternative. 1	Alternative 2						
	Existing UGAs	Total Land Added to UGA	Battle Ground UGA	Camas UGA	La Center UGA	Ridgefield UGA	Vancouver UGA	Washougal UGA
Residential	7,228-	3,368 +7,228	452	183	346	837	1,278	272
Industrial	4,640-	1,452 +4,640	58	-	316	243	683	153
Commercial	5,308-	974 +5,308	328	278	50	85	80	81
Total	17,166-	**5,722 +17,166**	**839**	**460**	**712**	**1,165**	**2,040**	**578**

Source: Clark County Department of Assessment and GIS, 2006

Table 21. *Impervious Surface by Watershed, Alternatives 1 and 2*

	Alternative 1		Alternative 2	
Watershed	Estimated Future Impervious Surface in Existing UGAs	Total Watershed Acreage in Existing UGAs	Estimated Future Impervious Surface in New UGAs	Total Watershed Acreage in New UGAs
Allen Creek	626	1,206	286 +626	1566
Burnt Bridge Creek*	2,450	3,406	0 +2,450	3,406
Columbia Slope	1,561	1,666		1,666
East Fork Lewis River	677	1,806	1,051 +677	3,406
Flume Creek	254	489	31 +254	551
Gee Creek *	1,008	1,494	1,541 +1,008	1,705
Gibbons Creek	247	395	205 +247	715
Lacamas Creek*	2,571	3,813	1,384 +2,571	5,826
Lakeshore	244	478	0 +244	478
Little Washougal River			77 +0	113
Salmon Creek*	4,837	7,268	1,456 +4,837	9,729
Vancouver Lake	1,339	1,592	0 +1,339	1,592
Washougal River *	596	984	96 +596	1,119
Whipple Creek *	703	1,023	267 +703	1,518

Source: Clark County GIS (Note: Condensed residential, industrial, and commercial estimates)
**303(d) surface water limited quality*

a. Alternative 1

Under Alternative 1, most new urban development over the next 20 years would be accommodated within existing UGAs. This means that Alternative 1 as proposed would result in no new impacts on surface waters from urban development that have not previously been generally disclosed in the EIS for the 2004 Plan.

No additional miles of streams or shoreline or floodplain areas would be added to the 185 miles of streams, 14,524 acres of flood hazard areas, and 6,414 acres of shorelines in existing UGAs. However, this does not mean that there would not continue to be potential impacts on those surface waters. Within current UGAs there would be pressure to upzone lower density residential areas to accommodate the projected growth. At most, up to 5,540 acres of low-density residential land may need to be upzoned, less if districts with higher densities are upzoned, to mitigate a shortfall of about 21,000 units. There is projected to be 17,166 acres of impervious surface in the UGAs. Multi-family housing tends to have more impervious surface per acre than low-density development, potentially increasing adverse impacts to surface waters. An additional 1,890 acres of impervious surface could result from the upzoning of 5,540 acres of low-density land.

Development outside of UGAs would be consistent with existing ordinances that regulate the scale and type of development appropriate for rural and resource lands, due to insufficient land supply, there could be accelerated development in, or pressure to increase densities on, rural lands.

b. Alternative 2

This alternative would add 42 miles of streams to the 185 miles in existing UGAs (Table 17). Alternative 2 represents a 34 percent increase in stream miles within UGAs. Most stream miles are located along unnamed streams or tributaries (33 miles) and along Gee Creek (3 miles).

The Ridgefield and La Center UGAs would include nearly 75 percent of the new stream miles added. Ridgefield would add 20 miles and La Center would add 9 miles. Six of the 10 named streams affected by this alternative are listed as not meeting the state standards for streams (303[d]). To the extent that vegetation clearing, development, and runoff from impervious surfaces contribute to the degraded quality in these streams, urbanization could make improving water quality in those streams more difficult than under Alternative 1, which would leave those 6.5 miles of streams within rural areas.

This alternative would add 145 acres of shoreline environment to the 6,414 acres in existing UGAs (Table 18). Alternative 2 would add 177 acres of floodway fringe and 36 acres of floodway to the 14,524 acres of flood hazard areas in existing UGAs.

As development occurs, 5,722 acres of total new impervious surface would be added to the 17,166 projected for existing UGAs (Table 19) under Alternative 2, an increase of about 33 percent. It is important to note that seven of the 10 water quality limited 303(d) streams would be affected by this alternative, with large acreages of watersheds of East Fork Lewis River, Gee Creek, Lacamas Creek, and Salmon Creek being affected by new impervious surface. The Allen Creek watershed would experience the greatest proportional impact with 80 percent of the UGA under Alternative 3 covered by new impervious surface (Table 21). All other watersheds' impervious coverage would range between 54 to 71 percent. The Flume Creek watershed is expected to have the least amount of impacts with about half of the watershed covered by new impervious surface under Alternative 2.

c. Alternative 3

Table 22 shows that Alternative 3 subareas could potentially add from 0.2 to 6.6 stream miles per subarea. Camas subarea C1 (6.6 miles) and La Center subareas L1 (6.4 miles) and L2 (6.1 miles) have the highest potential impacts on streams by stream mile added. However, if La Center maintains open space in L1, there would be lower impacts to the streams from development than the miles of stream would otherwise indicate. Subareas B1, R2, and V6 would have the lowest impacts, and six subareas (B2, C2, L1, and V5) have no (or under 0.01 miles) of stream impacts. Ridgefield also has the highest stream impacts under Alternative 2 (20 miles), so expanding into subarea R1 would increase impacts to 26 miles. Expanding into the La Center subarea L2 would almost double proposed impacts under Alternative 2 at that location.

Table 23 shows that C1 would have the highest impacts on shoreline areas, expanding the UGA to include 209 acres of shorelines adjacent to Lacamas Lake. V7 also would contain a relatively high amount of shoreline jurisdiction out of the total acreage, 107 acres, about 16 percent of the total land area within the subarea.

Floodway fringe impacts vary widely between Alternative 3 subareas. Subareas C1, L1, and V7, would add 421, 86, and 413 acres, respectively. Floodplain impacts would be most significant under L1 (137 acres) and V7 (165 acres). These impacts are noticeably higher than proposed impacts under Alternative 2 alone.

Subareas with no or very low impacts on surface waters include B1, B2, C2, L2, R1-R3, V2, V6, and W2. To reduce potential impacts on surface waters, the Alternative 2 boundary could be reduced in

critical areas for Ridgefield and for the east side of Vancouver in favor of expansion into the subareas with low to no impacts.

No table of total impervious surface by subarea is included, because Alternative 3 subareas would modify Alternative 2 by the same amount and type of land use, so there would be no difference between the two. What would be different is the relative amount added to each watershed. Table 24 shows the range of new impervious surface area within critical watersheds, by subarea for Alternative 3 compared to the impervious surface estimated for Alternative 2 for the same watershed. Streams having impaired water quality under the 303(d) rule are indicated by an asterisk. The greater the amount of development in a given watershed, the more difficult it is to restore stream health.

Table 22. *Comparison of Impacts on Streams, by Subareas*

	Battle Ground			Camas			La Center			Ridgefield			
	Alternative 3		Alternative 2	Alternative 3		Alternative 2	Alternative 3		Alternative 2	Alternative 3			Alternative 2
	B1	B2	Subarea 3	C1	C2	Subarea 6	L1	L2	Subarea 1	R1	R2	R3	Subarea 2
Size of Subarea	41	120	1,507	1,243	125	1,123	534	793	1,213	614	227	362	2,144
(NO NAME)	0.2	-	2.1	3.2	-	1.4	4.5	4.9	8.3	5	1	3	16
Allen Creek	-	-	-	-	-	-	-	0.3	-	1	-	-	1
Campen Creek	-	-	-	-	-	-	-	-	-	-	-	-	-
East Fork Lewis River	-	-	-	-	-	-	1.1	-	0.3	-	-	-	-
Fifth Plain Creek	-	-	-	-	-	-	-	-	-	-	-	-	-
Gee Creek	-	-	-	-	-	-	-	-	-	-	-	-	3
Lacamas Creek	-	-	-	3.4	-	0.3	-	-	-	-	-	-	-
Little Washougal River	-	-	-	-	-	-	-	-	-	-	-	-	-
McCormick Creek	-	-	-	-	-	-	0.8	0.8	0.8	-	-	-	-
Mill Creek	-	-	0.6	-	-	-	-	-	-	-	-	-	-
Packard Creek	-	-	-	-	-	-	-	-	-	-	-	-	-
Salmon Creek	-	-	-	-	-	-	-	-	-	-	-	-	-
Spring Branch	-	-	-	-	-	-	-	-	-	-	-	-	-
Washougal River	-	-	-	-	-	-	-	-	-	-	-	-	-
Whipple Creek	-	-	-	-	-	-	-	-	-	-	-	-	-
Total stream miles	**0.2**	**0.0**	**2.7**	**6.6**	**0.0**	**1.7**	**6.4**	**6.1**	**9.3**	**6**	**1**	**3**	**20**

	Vancouver									Washougal			
	Alternative 3				Alternative 2	Alternative 3			Alternative 2	Alternative 3			Alternative 2
	V1	V2	V3	V4	Subarea 4	V5	V6	V7	Subarea 5	W1	W2	W3	Subarea 7
Size of Subarea	1006	875	402	908	2302	635	219	668	1691	809	122	21	877
(NO NAME)	2.9	3.0	1.1	1.0	4.4	-	0.5	0.7	-	5	0.4	0.06	1
Allen Creek	-	-	-	-	-	-	-	-	-	-	-	-	-
Campen Creek	-	-	-	-	-	-	-	-	-	-	0.2	-	1
East Fork Lewis River	-	-	-	-	-	-	-	-	-	-	-	-	-
Fifth Plain Creek	-	-	-	-	-	-	-	0.2	0.8	-	-	-	-
Gee Creek	-	1.7	-	-	0.1	-	-	-	-	-	-	-	-
Lacamas Creek	-	-	-	-	-	-	-	2.2	0.3	-	-	-	-
Little Washougal River	-	-	-	-	-	-	-	-	-	0.04	-	-	-
McCormick Creek	-	-	-	-	-	-	-	-	-	-	-	-	-
Mill Creek	-	-	1.1	-	0.4	-	-	-	-	-	-	-	-
Packard Creek	-	-	-	-	0.2	-	-	-	-	-	-	-	-
Salmon Creek	1.1	-	-	1.6	-	-	-	-	-	-	-	-	-
Spring Branch	-	-	-	-	-	-	-	0.8	-	-	-	-	-
Washougal River	-	-	-	-	-	-	-	-	-	1.3	-	-	-
Whipple Creek	0.8	-	-	-	0.5	-	-	-	-	-	-	-	-
Total stream miles	**4.8**	**4.7**	**2.2**	**2.6**	**5.6**	**0.0**	**0.5**	**3.9**	**1.1**	**6.3**	**0.6**	**0.06**	**2**
Size of Subarea	1006	875	402	908	2302	635	219	668	1691	809	122	21	877

Source: Clark County Department of Assessment and GIS, 2006.

Table 23. *Comparison of Impacts on Floodplains and Shoreline Environments, by Subarea*

	Battle Ground			Camas			La Center			Ridgefield			
	Alternative 3		Alternative 2	Alternative 3		Alternative 2	Alternative 3		Alternative 2	Alternative 3			Alternative 2
	B1	B2	Subarea 3	C1	C2	Subarea 6	L1	L2	Subarea 1	R1	R2	R3	Subarea 2
Size of Subarea	41	120	1,507	1,243	125	1,123	534	793	1,213	614	227	362	2,144
Floodway fringe (acres)	-	-	12	421	-	60	86	2	3	1	-	-	70
Floodway (acres)	-	-	-	1	-	1	138	-	9	-	-	-	-
Shorelines (acres)	-	-	-	209	-	28	67	-	13	-	-	-	49

	Vancouver									Washougal			
	Alternative 3				Alternative 2	Alternative 3			Alternative 2	Alternative 3			Alternative 2
	V1	V2	V3	V4	Subarea 4	V5	V6	V7	Subarea 5	W1	W2	W3	Subarea 7
Size of Subarea	1,006	875	402	908	2,302	635	219	668	1,691	809	122	21	877
Floodway fringe (acres)	38	-	12	53	5	-	1	413	28	32	-	21	-
Floodway (acres)	53	-	14	30	7	-	-	165	2	1	-	-	-
Shorelines (acres)	79	-	-	77	-	-	1	107	55	74	-	-	-

Source: Clark County Department of Assessment and GIS, 2006.

Table 24. *Impervious Surface by Watershed, by Subarea*

	Battle Ground			Camas			La Center			Ridgefield			
	Alternative 3		Alternative 2	Alternative 3		Alternative 2	Alternative 3		Alternative 2	Alternative 3			Alternative 2
	B1	B2	Subarea 3	C1	C2	Subarea 6	L1	L2	Subarea 1	R1	R2	R3	Subarea 2
Size of Subarea	41	120	1,507	1,243	125	1,123	534	793	1,213	614	227	362	2,144
Allen Creek (3,838 acres[3])	-	-	-	-	-	-	-	139	42	172	4	-	245
East Fork Lewis River (106,910 acres)*	27	46	285	-	-	-	169	341	670	-	44	-	96
Flume Creek (3,289 acres)	-	-	-	-	-	-	-	-	-	-	-	-	31
Gee Creek(11,027 acres)*	-	-	-	-	-	-	-	-	-	122	-	218	793
Gibbons Creek(11,529 acres)	-	-	-	-	-	-	-	-	-	-	-	-	-
Lacamas Creek (42,092 acres)*	-	-	-	603	56	460	-	-	-	-	-	-	-
Little Washougal River	-	-	-	-	-	-	-	-	-	-	-	-	-
Salmon Creek (56,949 acres)*	-	8-	553	-	-	-	-	-	-	-	-	-	-
Washougal River (19,504 acres)*	-	-	-	-	-	-	-	-	-	-	-	-	-
Whipple Creek (7,643 acres)*							-	-	-	-	-	-	-

	Vancouver									Washougal			
	Alternative 3				Alternative 2	Alternative 3			Alternative 2	Alternative 3			Alternative 2
	V1	V2	V3	V4	Subarea 4	V5	V6	V7	Subarea 5	W1	W2	W3	Subarea 7
Size of Subarea	1,006	875	402	908	2,302	635	219	668	1,691	809	122	21	877
Allen Creek (3838 acres)	-	-	-	-	-	-	-	-	-	-	-	-	-
East Fork Lewis River (106,910 acres)*	-	-	-	-	-	-	-	-	-	-	-	-	-
Flume Creek (3289 acres)	-	-	-	-	-	-	-	-	-	-	-	-	-
Gee Creek(11,027 acres)*	-	570	-	-	73	-	-	-	-	-	-	-	-
Gibbons Creek(11,529 acres)	-	-	-	-	-	-	-	-	-	1.9	55	18.0	205
Lacamas Creek (42,092 acres)*	-	-	-	-	-	-	-88	563	797	-	-	-	128
Little Washougal	-	-	-	-	-	-		-	-	-	-	-	77
Salmon Creek (56,949 acres)*	-178	27	184-	400	683	409	-	-	219	-	-	-	-
Washougal River (19,504 acres)*	-	-	-	-	-	-	-	-	-	399	4.7	-	96
Whipple Creek (7,643 acres)*	-249	-	-	-	267	-	-	-	-	-	-	-	-

Source: Clark County Department of Assessment and GIS, 2006.

**303(d) surface water quality limited*

[3] *Numbers in parentheses are the total acreages of each watershed.*

It is also important to note that six out of the 10 watershed include Section 303 (d) streams, which are surface water impaired streams and include East Fork Lewis River, Gee Creek, Lacamas Creek, Salmon Creek, Washougal River, and Whipple Creek. The East Fork Lewis River watershed includes subareas B1, B2, L1, L2 and R2. The Salmon River watershed includes subareas B2, V1, V2, V4, and V5. The Washougal River watershed includes subareas W1 and W2. All have relatively higher impacts related to Section 303 (d) surface water impairments discussed earlier in this section.

To reduce potential impacts on watersheds, a more refined analysis would likely be required, because new impervious surface would be created in all of the options in Alternative 3 and many of the streams have already been compromised.. Further refinement by county biologists could help to avoid impacts where water quality has been most compromised, or where there are better chances of stream health recovery if future development is limited.

3. Mitigation

Concern for mitigating the impacts to surface waters has been a part of the SEPA and GMA regulations since their adoption. Consequently, all jurisdictions in the county have policies and ordinances that address these impacts. Clark County and the cities have adopted wetland protection ordinances and/or critical areas ordinances to comply with the GMA mandate to protect environmentally critical areas, including wetlands, riparian habitat along streams and lakes, and floodplains. Vancouver, Clark County, Camas, La Center, Ridgefield and Washougal have also adopted Shoreline Master Programs to protect shorelines.

Stormwater and erosion control regulations that reduce impacts to surface waters from stormwater runoff are implemented in all jurisdictions as well. Listings of threatened fish species have required all jurisdictions with fish-bearing streams to re-evaluate water quality protection and habitat restoration for those streams. Revisions of existing ordinances to comply with ESA, such as incorporating measures for using "best available science" as required by recent amendments to the GMA, have been adopted or are being revised.

Clark County: The Environmental Element of the Comprehensive Plan contains several goals and policies regarding surface waters. Policies call for identifying watershed processes and incorporating ways to respond to watershed processes in local planning processes, updating regulatory and incentive programs for the protection of surface waters and underlying watershed processes. Policy 4.2.8 would protect groundwater and surface water as a resource by minimizing the amount of impervious area created by developments, providing stormwater management service,

Another goal is to provide a long-range stormwater management program to minimize impacts from stormwater discharge from existing and new development. Policies for this goal are to implement stormwater basin planning, adopt standards substantially equivalent to those in the Department of Ecology Stormwater Management Manual, maintain clear development review standards for the control of the quantity and quality of stormwater discharge, and to limit the removal of vegetation.

The comprehensive plan also has Policy 4.7.1 to protect and enhance the shorelines, and reevaluating the Master Program for consistency with the GMA and the Comprehensive Plan.

In 2005, the Department of Ecology updated its standards in the *Stormwater Management Manual for Western Washington* to provide the best available science for stormwater requirements relating to development and redevelopment. Renewal of the County's existing NPDES permit in late 2006 would require updating of the standards in CCC Section 40.380 to maintain equivalency with DOE standards. Since 2003, Clark County revised its municipal code to create a Unified Development Code, Title 40, incorporating the previous water quality ordinance, stormwater and erosion control ordinance, and the flood hazard ordinance. Title 40 protects the county's surface and groundwater quality by establishing requirements for reducing and controlling the discharge of contaminants and stormwater flows and requires the use of best management practices. Chapter 40.380 seeks to prevent

surface and groundwater degradation; minimize erosion and control sediment; protect the quality of waters; maintain existing groundwater levels, in-stream flows, and available water supply volumes; and further the County's goals of no net negative impact caused by the quantity of runoff entering streams and no net negative change in the quality of runoff entering streams through the implementation of best management practices (BMPs). The ordinance establishes design standards of stormwater facilities, prescribes specific best management practices that are to be used, and lists development requirements.

Regulation of development in the flood hazard areas is covered by Chapter 40.420, as part of the County's Critical Areas and Shorelines regulations. The construction or reconstruction of residential structures is prohibited in the floodway under this ordinance. The County has developed policies for critical areas to preserve wetlands and flood plains and protect against floods, but they do not prohibit all development in flood hazard areas. Clark County is working with FEMA to update the flood maps by mid-2007. Over half date from before 1986. Recent changes were made to the county's flood hazard ordinance at the suggestion of the Department of Ecology, to bring the ordinance into compliance with federal requirements and to comply with the best available information requirement of the GMA.

Battle Ground: Chapter 6 Battle Ground's Comprehensive Plan addresses natural resources. Environment Goal 4 and its objectives are to protect critical areas from further loss or degradation and their enhancement and protection through development actions and working with other jurisdictions and special districts. Environment Goal 5 is to protect and improve the quality, and quantity of drinking water resources. Environment Goal 6 is to enhance and protect water quality through treating stormwater, reducing runoff volumes, and reducing the impacts of construction, such from erosion and sedimentation. The City's critical areas ordinance protects surface waters (Battle Ground Municipal Code Chapter 18.260). The CIO requires delineation and buffering requirements for riparian habitats, special construction in frequently flooded areas, and prohibits construction in the floodway.

Municipal Code Section 18.250.010 (Stormwater Management) establishes the goals of no net negative impact caused by quantity of runoff entering streams and no net negative change in the quality of runoff entering streams by implementing best management practices.

Camas: The Camas comprehensive plan identifies critical areas in its Environmental Element and protects critical areas such as surface waters through its Natural Open Space designation. Goals EN-3, EN-4, and EN-5 are aimed at preserving and enhancing water resources, including wetlands, shorelines, watersheds, and waterways. Goal EN-6 calls for reclaiming and restoring shoreline areas that are degraded. Policies EN-8 through EN-13 deal with protecting surface water quality; restoring and maintaining the health of the watershed; maintaining the water storage capacity of 100-year floodplains; conserving high quality wetlands; and preserving aquatic and riparian habitats in a natural state.

In January 2007, the City of Camas updated its CAOto implement state requirements and best available science for fish and wildlife habitat. Land use regulations to protect fish and wildlife habitat in Chapter 18.31 of the Camas zoning code were repealed. The regulations identify critical fish and wildlife habitat, including waters of the state and ponds under 20 acres. The ordinance establishes requirements to maintain the functions of those surface water habitats.

Land use regulations in Chapter 18.31 of the Camas zoning code protects streams by establishing a classification system and standard buffers for development. Chapters 15.28 and 15.32 of the zoning code regulate development in flood hazard areas and erosion control, respectively. Permits for construction are required in flood hazard areas as identified on FEMA maps for Camas. Chapter 15.32 adopts by reference the documents: *Erosion Control Plans, A Technical Guidance Handbook* (City of Camas, 1991), the latest edition of *Stormwater Management in Washington State*, Department of Ecology)

and the latest edition of *A Builders Guide to Erosion Prevention and Sediment Control*, Second Edition (Clark County Home Builders Association).

The Comprehensive Plan contains a Shoreline Use Element that contains 10 goals for use of the shoreline. Camas also has an approved Shoreline Master Program, as adopted by Chapter 18.88 of the zoning code.

La Center: Environmental Goal #10 ensures the preservation and protection of natural resources, critical areas, open space and recreational lands through adequate and compatible policies and regulations. Policy 10.6.1 states that the City shall protect the quality and quantity of ground water used for public purposes and shall identify and protect wellhead areas, critical aquifer recharge areas and surface water sources.

The La Center Critical Areas Ordinance (chapter 14.20 of the Municipal Code) contains regulations for the protection of wetlands and riparian areas. This chapter creates an overlay district that requires the conservation and/or enhancement of identified critical areas while encouraging urban densities and affordable housing through density transfer to no sensitive (build able) lands. Riparian buffer width based on stream quality and Best Available Science data have been implemented. Chapter 14.10 creates regulations for stormwater and erosion control. The municipal code also has a Flood Hazard Area section in Title 17 (Zoning) that uses a combining district to require permits for development in flood hazard areas.

Ridgefield: Policy EN-7 is to protect and enhance surface, stormwater, and groundwater quality, to ensure adequate water supplies and promote the wise use and conservation of water resources. Ridgefield's Comprehensive Plan provides for stormwater management as a public utility. Policy PF-ST-1 calls for managing stormwater to safely pass floodwaters, maintain and improve water quality of receiving streams, lakes and wetlands, protect and enhance fish and wildlife habitat, promote recreational opportunities, and enhance community aesthetics. PF-ST-2 requires new development to conform to the City's long-range management plans and programs, including the *Stormwater Management Manual for Western Washington* Off-site water quality and quantity impacts are to be controlled through appropriate design and best management practices. Chapter 18.280 of the Ridgefield Municipal Code regulates sensitive lands, including wetlands, riparian areas, and frequently flooded areas. The ordinance establishes buffers based on water body features and requirements for delineating those features. It also provides for density transfers to avoid development in those areas.

Vancouver: Policy EN-7 of the Comprehensive Plan calls for enhancing and protecting surface-, storm-, and groundwater quality from septic system discharge, impervious surface runoff, improper waste disposal and other potential contaminant sources. It calls for ensuring safe and adequate water supplies and promoting wise use and conservation of water resources. The Shoreline Management Master Program was revised and adopted in 2006 by the City Council and is currently being reviewed by the State Department of Ecology.

The city's zoning code also implements the comprehensive plan policies through Chapter 20.740 (Critical Areas), and the general provision that activities in critical areas shall result in no net loss of functions and values. Chapter 20.740 contains regulations for development in the floodway. The city also has erosion control regulations that protect surface water quality. The Water Resources Protection Ordinance (VMC 14.26) provides protection for streams, wetlands, and floodways, minimize water quality degradation from urban runoff and ensure the sound development of property.

Washougal: Chapter 2 of Washougal's comprehensive plan, Natural Resources and Critical Areas, contains policies for protecting surface water. Goal 1 of Chapter 2 includes the protection of surface water quality as part of protecting and improving the quality of life. Policies 1-A through 1-G address different aspects of water quality, including minimizing erosion, classifying wetlands, establishing a wetlands/watershed management program, and using water efficiently. Goal 4 establishes regulations for

development in the 100-year floodplain. Policy 4-A sets standards for development within floodplains that is consistent with FEMA. Development within high value wetlands is managed in accordance with the city's wetland protection ordinance.

a. Additional Mitigation

Additional measures that could be adopted include the following:

1. Select a growth pattern that minimizes the urban footprint and directs growth away from wetlands, stream corridors, and shorelines.

2. Prohibit development involving impermeable surfaces in flood hazard zones unless required for a water-related use, resource land management (consistent with the Forest Practices Act), or development beneficial to the public which could be appropriately mitigated.

3. Acquire undeveloped flood plain areas (particularly wetlands) as open space. Other jurisdictions could consider adoption of funding mechanisms permitted by the GMA for this purpose.

4. Permit filling of flood plain areas only when it can be shown to be beneficial to the public (e.g., trails) and is mitigated in an appropriate manner.

5. Establish stormwater management districts to fund and implement stormwater collection and treatment programs in each watershed or basin.

B. Groundwater and Aquifer Recharge Areas

1. Setting

Groundwater is the source of over 95 percent of the water used by businesses and residents within Clark County. Although most of the county's groundwater is of good quality, there are areas where it has been degraded or contaminated due to human activities. Groundwater contamination often occurs where water demand and consumption are greatest.

All of Clark County's lowlands can be considered an aquifer recharge area, as groundwater lies beneath virtually all populated areas and is used as drinking water. Many of the urban portions of Clark County are moderately to highly vulnerable to groundwater contamination. Areas of special concern are urban, residential, industrial, and commercial land uses; developed urban areas without sanitary sewers; urban areas with stormwater disposal wells (drywells); areas near sites of known groundwater contamination; and areas where shallow aquifers underlie urban development.

Areas that require protection include drinking water supply areas for public supply wells (wellhead protection areas), critical aquifers, and 50-year recharge areas for critical aquifers and wellhead protection areas.

The GMA requires jurisdictions to identify and protect critical aquifer recharge areas, which are "areas with a critical recharging effect on aquifers used for potable water." Groundwater quality protection is crucial because, once contaminated, aquifers are almost impossible to restore and the costs associated with restoration can be prohibitive. Counties and cities must regulate development to preclude incompatible uses in critical recharge areas. The GMA also suggests that jurisdictions consider the availability of groundwater when planning for growth management.

a. Recharge Areas

Shallow aquifers provide drinking water in most of the county. These shallow aquifers receive recharge directly from the land surface as rainfall and snow melt infiltration, and as infiltration from rivers and other surface water bodies. Urban areas, such as southern Clark County, afford little opportunity for recharge because most surfaces are impervious and therefore prevent precipitation

from entering the soil. A significant part of recharge in urban areas is from drywells and septic systems. Deeper aquifers are primarily recharged by groundwater moving downward from more shallow aquifers. The risk that aquifers would be degraded by contaminants released at the land surface is greatest in areas, such as Clark County, where water moves downward from the land surface to the more shallow aquifers. The significance of an aquifer as a drinking water source increases as the number of people using the aquifer increases. Aquifers used as potable water sources have been mapped by the County by comparing the distribution of wells with aquifer extent.

The principal aquifers in Clark County are the Troutdale gravel aquifer (upper Troutdale Formation) and the unconsolidated sedimentary aquifer. Most of the wells in Clark County are in the Troutdale Formation. A deeper sedimentary unit, about which less is known, is also a significant water source in some areas and supplies water to several wells owned by CPU and the City of Vancouver.

b. Vulnerability Assessment

Areas most likely to have existing or future groundwater contamination are described as highly vulnerable. Activities in highly vulnerable areas should be managed to minimize the risk of groundwater contamination. Clark County has performed a vulnerability assessment of its groundwater resources. Figure 25 shows susceptible groundwater areas.

A number of factors are considered when assessing "contaminant loading" potential. They include land use, population density, transportation corridors, known sites of contamination, solid waste disposal sites, underground storage tanks, and potentially contaminated recharge sources, such as areas with drywells, septic systems, and land application of animal waste. Table 25 summarizes contaminant loading potentials for different land uses.

Table 25. *Contaminant Loading Potential Ratings for Existing Land Use*

Land Use	Urban/Industrial Rating	Agricultural/Nutrient Rating	General Rating
Forest	Low	Low	Low
Agriculture	Low	High	Medium
Commercial Service	High	Medium	High
Commercial Retail	Medium	Medium	Medium
Commercial Highway	High	Medium	High
Commercial Freeway (motel, hotel, RV, etc.)	Medium	Low	Medium
Heavy Industrial and Mining	High	Medium	High
Light Industrial	High	Medium	High
Public Facilities	Medium	Low	Medium
Parks, Schools, Recreation	Low	Medium	Medium
Institutional	Medium	Medium	Medium
Single-Family Residential	Medium	Medium	Medium
Duplex, Residential	Medium	Medium	Medium
Multi-Family Residential	Medium	Medium	Medium
Rural Residential (<2.5 ac. lots)	Low	Low	Low

Source: Clark County Water Division, as cited in Final Supplemental Environmental Impact Statement for the Growth Management Plans of Clark County, Battle Ground, Camas, La Center, Ridgefield, Vancouver, Washougal and Yacolt, September 1994.

In general, forest and rural residential development are rated low, residential development medium, and industrial and commercial development high, for contaminant loading potential. Considering the contaminant loading potential in determining future land use patterns would be the best way to protect against groundwater contamination. If land uses with higher potential risks are directed away from zones of contribution, the risk is avoided altogether. However, a lot of development has already occurred in those areas surrounding wellheads in the county. In that case, groundwater quality depends on protections in the development regulations, rather than changing land use patterns.

c. Critical Groundwater Resource Areas

Under the GMA, critical groundwater resource areas are to be designated for special protection through critical areas ordinances. These areas include wellhead protection areas and critical aquifers recharge areas (CARA).

d. Wellhead Protection Areas

Wellhead protection programs protect drinking water quality by managing aquifers critical to public drinking water supplies. There are currently 55 public-supply wells within the county. Figure 26 shows wellhead protection areas. Municipal wells have 'zones of contribution' representing the surrounding surface area that contributes rainfall to the groundwater for a particular well site. These are mapped as 1-year, 5-year, and 10-year zones of contribution. Wellhead protection areas are mapped zones of contribution within which special regulations apply to preserve groundwater quality.

e. Critical Aquifer Recharge Areas

Because 95 percent of the county's drinking water comes from groundwater sources, it is important that critical aquifer recharge areas be identified, mapped, and protected. Clark County has designated and mapped critical aquifer recharge areas (CARAs) used for potable water to fulfill obligations of state law under the GMA, Washington State Wellhead Protection Program, and the Water Quality Standards for Groundwater of the State of Washington. Lands proximate to public and private water supply wells (well fields) are subject to source control regulations designed to prevent uses that would negatively impact the public water supply. CARAs are defined as either Category 1-the highest priority critical aquifer area-or as Category 2-unconsolidated sedimentary aquifers and the Troutdale gravel aquifer.

2. Impacts

Assessing impacts to groundwater resources is closely related to other areas of impact analysis, including surface water, geology, and soils. Typical impacts on groundwater from development and urbanization are related to quantity and quality. Quantity issues include the interception of the water table or other changes brought about through earthwork, blasting, and other activities that alter the flow, recharge, or other hydrological conditions. Substantial new demand and use of groundwater can cause local or regional drawdowns. Another factor affecting groundwater supplies is the creation of impervious surfaces within recharge areas. By covering the recharge area with impermeable surfaces, the total area available for water percolation through the soils to the underlying aquifer is reduced. As a result, the amount of water reaching the aquifer is reduced. Cumulative impacts from impervious surfaces are particularly important to consider. Groundwater recharge areas are seldom lost all at once. Recharge areas are covered by impervious surfaces little by little, until there is a significant overall effect. Residential development is calculated to have about 50 percent of a site covered by impervious surface. Commercial and industrial development tends to be 85 percent covered. So relatively more residential land in a given scenario would imply more land available to recharge aquifers.

An increase in impervious surfaces can contribute not only to impacts on groundwater quantity, but can also impact groundwater quality. Possible water quality effects on groundwater may include increases in suspended solids from erosion or in chemical contaminants through rapid runoff from

impervious surfaces. While residential development could be less harmful to the quantity of groundwater recharge, stormwater discharge from residential development is much less regulated and able to be controlled than discharge from commercial and industrial development. As noted in Table 25, only forest and rural residential uses merit a "low" contaminant loading potential, versus a "medium" rating for other urban residential sources, and "high" ratings for some commercial and industrial sources.

General growth and development would increase the demand for water from existing groundwater sources and new wells would be needed. Since the projected population and jobs growth is the same under Alternative 1 and 2, the increased draw from groundwater would be the same because increased demand is related to growth rather than development patterns. However, development patterns may influence where new wells are located, how much and where new impervious surfaces would restrict recharge, and the particular groundwater sources that are drawn upon.

The expansion of UGAs into zones of contribution to municipal wells makes protecting groundwater more difficult, and including areas of wellhead protection makes development subject to more stringent regulations to protect water quality in the wells.

The following assessment of impacts to groundwater resources in Clark County looks at the amount of impervious surface area that each alternative would add (Tables 19, 20, and 24), and the type of development that is proposed for the new UGAs, since different land uses involve different contaminant loading potentials. Table 26 details the critical aquifer recharge areas for Alternative 2, and Table 27 looks at the occurrence of zones of contribution within new UGAs.

All new UGAs would eventually develop as planned and most land proposed for conversion to urban uses is currently in rural residential, agriculture, or urban reserve uses (low densities with low to medium contaminant ratings). Consequently, the ratings for contaminant loading potential under all of the expansion alternatives would generally be from low or medium ratings to medium to high ratings based on proposed urban residential, industrial, commercial, and transportation uses. Potential impacts to the public water supply are discussed under Public Facilities and Services.

Table 26. *Critical Aquifer Recharge Areas, Alternatives 1 and 2 (acres)*

	Alternative 1	Alternative 2						
	Existing UGAs	Total Acres by UGA	Battle Ground UGA	Camas UGA	La Center UGA	Ridgefield UGA	Vancouver UGA	Washougal UGA
Category 1	4,010	386 +4,010	81	75	28	35	167	-
Category 2	53,704	10,215 +53,704	1,426	885	1,190	2,110	3,827	776
Total	**57,714**	**10,601 +57,714**	**1,508**	**960**	**1,218**	**2,145**	**3,994**	**776**

Source: Clark County Department of Assessment and GIS, 2006

Table 27. *Zones of Contribution, Alternatives 1 and 2 (acres)*

	Alternative 1	Alternative 2						
	Existing UGAs	Total Acres by UGA	Battle Ground UGA	Camas UGA	La Center UGA	Ridgefield UGA	Vancouver UGA	Washougal UGA
1 year	4,373	9 +4,373	0.5	-	4.5	3.4	0.5	-
5 year	6,657	273 +6,657	2.2	2.5	-	85.3	129.9	53.3
10 year	10,776	247 +10,776	5.2	15.3	0.9	43.5	182.2	-
Total	**21,806**	**529 +21,805**	**8**	**18**	**5**	**132**	**313**	**53**

Source: Clark County Department of Assessment and GIS, 2006

a. Alternative 1

Existing UGAs contain 4,010 acres of Category 1 CARAs and 53,704 acres of Category 2 CARAs. About 17,000 acres of impervious surface is projected to occur under the current zoning. Not all population growth over the next 20 years could be accommodated within existing UGAs as proposed. Within current UGAs there would be pressure to upzone lower density residential areas to accommodate the projected growth. At most, up to 5,540 acres of low-density residential land may need to be upzoned, less if districts with higher densities are upzoned, to mitigate a shortfall of about 21,000 units. Multi-family housing tends to have more impervious surface per acre than low-density development, potentially increasing adverse impacts to ground water not accounted for in the impact analysis. An additional 1,890 acres of impervious surface could result from the upzoning of 5,540 acres of low-density land. As a result there could be less groundwater recharge in existing UGAs, especially if fewer stormwater facilities in urban areas are built above-ground.

b. Alternative 2

Under Alternative 2, additional impervious surface area, wellhead protection areas and zones of contribution would be brought into UGAs. Alternative 2 would add a total of about 5,700 acres of impervious surface to the projected 17,166 acres, an increase of 34 percent. Because the impervious

surface is calculated on uses, the coverage ranges from about 50 percent to 85 percent and would occur wherever development is allowed, and so locate where the largest expansion areas are proposed.

The only occurrence of additional wellhead protection areas would take place in the La Center UGA, which includes about 7.5 acres.

Table 26 shows the critical aquifer recharge areas under Alternative 2. This alternative would add 386 of Category 1 CARAs to the 4,010 acres in existing UGAs. About 10,200 acres of Category 2 CARAs would be added to the existing 53,704 acres in existing UGAs. The highest priority recharge areas (Category 1) are primarily located in Vancouver and Battle Ground, while La Center and Ridgefield UGAs have the fewest Category 1 areas. The most acreage of unconsolidated sedimentary aquifers, or Category 2, is in the Ridgefield and Vancouver UGAs and the least are in the Camas and Washougal. UGAs.

Table 27 shows nearly 529 acres of 1- to 10-year zones of contribution would be contained with the new UGAs under Alternative 2, adding to the 21,805 acres in Alternative 1. Vancouver and Ridgefield UGAs would add land with the largest zones of contribution, while La Center and Camas would add the least. The majority of acreage (about 60 percent) of the total zones of contribution is included in the Vancouver UGA.

Table 25 shows the different land uses that involve different contaminant loading potential ratings. The majority of land added to the UGAs is Residential (3,368 acres), having a medium contaminant loading rating under Alternative 2. A smaller proportion of land is designated as Industrial (1,452 acres) and Commercial (974 acres), which have high ratings.

c. Alternative 3

Tables 28 and 29 compare impacts to groundwater resources by subarea based on the amount of CARAs, and zones of contribution to wellhead areas. No table is provided for impervious surface alone. Because Alternative 3 subareas represent options to alter the boundary in Alternative 2 without changing the total acreage of land uses, and the impervious surface is based on land use, there would be no real difference between the two alternatives or the subareas exchanged between them. As noted in the discussion under impervious surface impacts by watershed, above, the relative amount of impervious surface by watershed would be different.

No additional wellhead protection areas are found in any Alternative 3 subareas.

Table 28 shows the zones of contribution in each Alternative 3 subarea. V4, V5, and W1 include the highest acreage of zones of contribution, while W1, C1, and R2 have the least areas identified as zones of contribution. Only W1, L1 and V4 would add any land within a 1-year zone of contribution, the most critical zone for groundwater quality. Nearly all of the Alternative 2 subareas contain zones of contribution at all three levels; as noted above, many of the public wells are within Vancouver or its UGA. To reduce impacts for zones of contribution, land in B1, B2, C2, R3, V6, W2, and W3 could be exchanged for land having more zones of contribution in the Vancouver UGA.

Contaminant loading potential for the subareas is not examined because Alternative 3 subareas represent options to alter the boundary in Alternative 2 without changing the total acreage of land uses, and the contaminant loading potential is based on land use. Therefore there is assumed to be no difference if a subarea in Alternative 3 were exchanged for the same land area in Alternative 2, by land use.

Table 29 shows the critical aquifer recharge areas under Alternative 3. Nearly all land in each subarea is within either Category 1 or Category 2. Category 1 is the most critical to protect when protecting groundwater quality. C1 and V1 would have the highest absolute impacts on the more critical Category 1 recharge areas. In fact, C1 is about the same size as its Alternative 2 counterpart, Subarea

6, and they each have the same Category 1 impacts. Therefore, adding C1 in exchange for Subarea 6 would not reduce impacts on CARAs.

Subareas V3 and V7 have the highest impacts for the Vancouver area, which also has the most acreage in Category 1. Expanding into V2, V4, V5, or V6 could reduce those impacts under Alternative 2. Likewise, Battle Ground's Alternative 2 UGA has relatively large amount of Category 1, which might be able to be reduced if B1 and B2 could be exchanged for a high impact area. For a given amount of land area, the subareas in Alternative 2 tend to contain more Category 1 CARAs.

Table 28. *Zones of Contribution by Subarea (acres)*

	Battle Ground			Camas			La Center			Ridgefield			
	Alternative 3		Alternative 2	Alternative 3		Alternative 2	Alternative 3		Alternative 2	Alternative 3			Alternative 2
	B1	B2	Subarea 3	C1	C2	Subarea 6	L1	L2	Subarea 1	R1	R2	R3	Subarea 2
Size of Subarea	41	120	1,507	1,243	125	1,123	534	793	1,213	614	227	362	2,144
1 yr	-	-	0.5	-	-	-	4.5	-	4.5	-	-	-	3.4
5 yr	-	-	2.2	3.3	-	2.5	-	-	-	-	-	-	85.3
10 yr	-	-	5.2	7.2	-	15.3	-	-	0.9	-	3.5	-	43.5
Total*	**-**	**-**	**7.9**	**10.6**	**-**	**17.7**	**4.5**	**-**	**5.4**	**-**	**3.5**	**-**	**132.3**

	Vancouver									Washougal			
	Alternative 3				Alternative 2	Alternative 3			Alternative 2	Alternative 3			Alternative 2
	V1	V2	V3	V4	Subarea 4	V5	V6	V7	Subarea 5	W1	W2	W3	Subarea 7
Size of Subarea	1,006	875	402	908	2,302	635	219	668	1,691	809	122	21	877
1 yr	-	-	-	22.2	-	-	-	-	0.5	0.7	-	-	-
5 yr	36.2	-	-	124.6	80.4	84.0	-	32.3	49.6	115.5	-	-	53.3
10 yr	64.4	-	-	135.7	91.7	123.7	-	32.3	90.5	-	-	-	-
Total*	**100.6**	**-**	**-**	**282.5**	**172.1**	**207.7**	**-**	**64.6**	**140.5**	**116.1**	**-**	**-**	**53.3**

Source: Clark County Department of Assessment and GIS, 2006

Table 29. *Critical Aquifer Recharge Areas, by Subarea (acres)*

	Battle Ground			Camas			La Center			Ridgefield			
	Alternative 3		Alternative 2	Alternative 3		Alternative 2	Alternative 3		Alternative 2	Alternative 3			Alternative 2
	B1	B2	Subarea 3	C1	C2	Subarea 6	L1	L2	Subarea 1	R1	R2	R3	Subarea 2
Size of Subarea	41	120	1,507	1,243	125	1,123	534	793	1,213	614	227	362	2,144
Category 1	-	-	81	70	-	75	4	71	27	-	3	-	35
Category 2	41	120	1,427	1,396	125	885	538	722	1,190	614	224	362	2,110
Total	**41**	**120**	**1,508**	**1,466**	**125**	**960**	**543**	**793**	**1,218**	**614**	**227**	**362**	**2,145**

	Vancouver									Washougal			
	Alternative 3				Alternative 2	Alternative 3			Alternative 2	Alternative 3			Alternative 2
	V1	V2	V3	V4	Subarea 4	V5	V6	V7	Subarea 5	W1	W2	W3	Subarea 7
Size of Subarea	1,006	875	402	908	2,302	635	219	668	1,691	809	122	21	877
Category 1	2		18	-	116	-	-	27	51	1	-	-	-
Category 2	1,019	875	385	908	2,187	635	219	641	1,640	636	122	21	776
Total*	1,021	875	403	908	2,303	635	219	668	1,691	**637**	**122**	**21**	**776**

Source: Clark County Department of Assessment and GIS, 2006

**Where total acreages exceed subarea acreage, additional acreage is due to surface waters included in CARAs or decimal rounding*

5

3. Mitigation

Mitigation for potential impacts to groundwater resources consists of comprehensive plan policies that place a priority on protecting groundwater quality from source and non-source pollutants. Comprehensive plan policies also focus on aquifer recharge areas by requiring infiltration of collected stormwater on-site, where feasible, and protecting open space areas that help to recharge the large aquifers in Clark County. Regulation of septic systems is through Clark County Public Health.

a. Plans and Ordinances

Clark County: The Environmental Element of the comprehensive Plan addresses both surface water and groundwater. Goal 4.2 addresses the protection and conservation of environmentally critical areas. The associated policies call for updating maps of critical areas, updating regulatory and incentive programs for their protection, and protecting ground and surface water quality through the minimization of impervious surface areas and a reduction in the application of animal wastes and toxic pesticides. Goal 4.5 requires sewer service within UGAs and discourages the use of septic systems. Policies 4.5.1 through 4.5.3 require regular inspections of on-site sewage disposal systems in wellhead protection areas, and the establishment of mandatory inspections of existing septic systems.

Clark County's wellhead protection program is implemented by the public works department. The program's goals include education, technical assistance, and incentive programs to protect groundwater; outreach to the business community through the Business Partners for Clean Water Program; and development of funding sources to implement the program.

The protection of critical aquifer recharge areas within Clark County is achieved, in part, through the County's critical aquifer recharge ordinance which was incorporated into Title 40 (Chapter 40.410). In 2005 this ordinance was updated to reflect best available information as required by the GMA. The ordinance seeks to protect these areas from contamination through their identification, designation, and mapping and by establishing exempted, prohibited, and permitted activities within these critical areas. The ordinance also establishes a system of incentives—tax reductions for maintaining open space and land exchanges to locate high-use impacts outside of Category I areas—in order to protect critical aquifer recharge areas.

Other programs and ordinances within Clark County address groundwater and aquifer recharge area protection and management. Clark County's stormwater and erosion control ordinance Chapter 40.380 seeks to prevent ground and surface water quality degradation. The ordinance requires stormwater infiltration wherever soil conditions make it feasible. This preserves groundwater recharge when sites are covered with buildings and pavement. Stormwater regulations also require that this infiltrated stormwater be treated to remove pollutants.

Clark County's water quality ordinance (CCC Chapter 13.26A) seeks to protect the county's surface and groundwater quality by establishing requirements for reducing and controlling the discharge of contaminants and stormwater flows. The ordinance prohibits the discharge of contaminants to surface water and groundwater and requires the use of best management practices. This ordinance recognizes the importance of public awareness about how everyday activities can contribute to the degradation of groundwater and surface water quality. It also establishes a public education program to further this awareness within the county.

Battle Ground: Comprehensive Plan Environmental Goals 5 and 6 deal with protecting the quality of water resources. Objective EO-4.1 – 4.5 includes a number of measures to protect critical areas, which includes aquifer recharge areas, from degradation and loss, working with districts and other jurisdictions. The regulations in the City's Critical Areas Ordinance are designed to minimize impacts to the city's aquifer recharge areas. The stormwater and wastewater regulations in the Municipal Code (Title 13) are designed to maintain existing groundwater levels, in stream flows and available water supply volumes.

Camas: Camas' Environmental Element of the Comprehensive Plan has general policies that protect natural resources and water quality. Goal EN-3 is intended to preserve and enhance water resources. Policy EN-14 is meant to conserve and protect groundwater resources. Land use regulations to protect critical aquifer recharge areas.

La Center: Environmental Goal #10 ensures the preservation and protection of natural resources, critical areas, open space and recreational lands through adequate and compatible policies and regulations. Policy 10.3.1 is to implement stormwater basin planning to effectively address stormwater management. Policy 10.6.1 states that the City shall protect the quality and quantity of ground water used for public purposes and shall identify and protect wellhead areas, critical aquifer recharge areas and surface water sources.

The La Center Critical Areas Ordinance (chapter 14.20 of the Municipal Code) contains regulations for the protection of critical aquifer recharge areas. This chapter creates an overlay district that requires the conservation and/or enhancement of identified critical areas while encouraging urban densities and affordable housing through density transfer to no sensitive (buildable) lands. Title 14 of the La Center Municipal Code, Land Use and Environmental Regulation, contains regulations for water quality treatment (14.10.210) that protect against groundwater contamination from infiltration of stormwater flows.

Ridgefield: Policies noted above under surface waters also protect groundwater. Policy PF-S-4 of Ridgefield's Comprehensive Plan addresses groundwater quality by calling for the development of groundwater protection mechanisms to protect well heads, reduce the risk of accidental groundwater contamination and encourage the conservation of groundwater. Policy PF-ST-2 for new construction states a preference for the use of infiltration for groundwater recharge. Policy PF-S-4 states that the city will work with the County to eliminate private sewer systems within the UGA. Chapter 18.280 of the Ridgefield Municipal Code regulates sensitive lands, including aquifer recharge areas and wellhead protection areas. The ordinance establishes buffers from features, requirements for delineating the features, and provides for density transfers to avoid development in those areas.

Vancouver: Policy EN-7 of the Comprehensive Plan calls for enhancing and protecting surface-, storm-, and groundwater quality from septic system discharge, impervious surface runoff, improper waste disposal and other potential contaminant sources. It calls for ensuring safe and adequate water supplies and promoting wise use and conservation of water resources.

The city's zoning code also implements the comprehensive plan policies through Chapter 20.740 (Critical Areas), and Title 14 (Waters and Sewers). The Water Resources Protection Ordinance (VMC 14.26) provides protection for streams, wetlands, and floodways, minimize water quality degradation from urban runoff and ensure the sound development of property. Erosion control regulations that protect surface water quality are found in Chapter 14.27.

Washougal: Chapter 2 of Washougal's comprehensive plan, Natural Resources and Critical Areas, addresses natural resources, including groundwater. Goal 1 of the Critical Areas section of Chapter II includes the protection of groundwater quality and quantity as part of protecting and improving the quality of life. Policies 1-A through 1-G address different aspects of water quality, including minimizing erosion, establishing a wetlands/watershed management program, and efficiently using water. An implementation measure under Policy 1-B would establish regulatory policies regarding the protection of aquifer recharge areas. A second implementation measure under that policy recommends the adoption of the standards in the Puget Sound Water Quality Authority's stormwater management standards to assure some quality of run-off to surface and ground water. Chapter 4 (Land Use) contains groundwater protection policies. Goal 12 is to protect and improve the quality of life through the protection of groundwater quality and quantity. Policy 12-A calls for enforcement of regulations applicable to waters within Washougal, and 12-B calls for enforcing the wellhead protection ordinance.

b. Additional Mitigation

Additional measures could include:

1. Adopt a program (possibly including incentives) to identify private wells in the urban area and cap them to reduce the risk of contamination.

2. Revise building codes and design standards to encourage the use of pervious pavement and other technologies to improve on-site treatment and infiltration of stormwater.

IV. Fish & Wildlife Habitat

A. Habitat

1. Setting

Clark County is one of the fastest growing and most heavily populated counties in the state. These conditions have increased impacts on a variety of resources, including fish and wildlife habitat and open space lands. Nevertheless, Clark County continues to support a variety of valuable wildlife habitat that ranges from the Douglas fir forests of the Cascade Mountains to the wetlands and riparian forests of the Columbia River Lowlands.

In recent years, several methods have been used to map and/or designate the county's highest priority habitat and critical/sensitive lands (e.g., high quality wetlands). The Clark County Open Space Commission Report from 2000 represents one effort to identify these areas. The Commission developed a three-tiered system for mapping habitat areas throughout the county:

- Tier 1: All endangered, threatened, and species of concern habitat as identified by WDFW Priority Habitat and Species Program, which is described below. These include game, nongame, and fish species.
- Tier 2: Approximations for important generalized species habitat, including all wetland areas, areas within the 100-year floodplain, areas within 100 feet of all lakes, rivers, and streams, and big game winter ranges in the northeast corner of the county.
- Tier 3: All other undeveloped areas in Clark County

The maps that resulted from this effort identified priority wildlife habitat and open space areas within the county. These areas included the Vancouver Lake Lowlands, Steigerwald Lake Lowlands, major stream and river systems, including the North Fork Lewis River, East Fork Lewis River, Washougal River, Salmon Creek, Lacamas Creek, and Burnt Bridge Creek systems, and big game winter range in the foothills of the Cascades.

Descriptions of specific significant fish and wildlife habitat areas within the county, such as floodplains, wetlands, and shorelines, can be found in separate sections of this document.

a. Clark County Critical Areas Designations

Wildlife habitat can be found throughout Clark County. However, only certain areas are designated and protected wildlife habitat. The County has identified and mapped priority habitat areas as part of the GMA planning process. Under the GMA, cities and counties are required to designate five types of critical areas: wetlands, frequently flooded areas, aquifer recharge areas, geologically hazardous areas, and fish and wildlife conservation areas (RCW 36.70A.170). In addition, in designating critical areas, cities and counties must give "special consideration to conservation or protection measures to preserve or enhance anadromous fisheries" (RCW 36.70A.172).

b. Washington State Priority Habitat and Species (PHS) Program

Priority habitats "are those habitat types or elements with unique or significant value to a diverse assemblage of species." Priority habitats "may consist of a unique vegetation type or dominant plant species, a described successional stage, or a specific structural element." In addition, areas identified as priority habitats have one or more of the following attributes:

- Comparatively high fish and wildlife density
- Comparatively high fish and wildlife species diversity
- Important fish and wildlife seasonal ranges
- Important fish and wildlife movement corridors
- Limited availability
- High vulnerability to habitat alteration
- Unique or dependent species

Washington Department of Fish and Wildlife (WDFW) has identified and defined 18 priority habitat types in Washington State. Eleven of these habitat types are believed to occur in Clark County. Table 30 lists priority habitats within the county. WDFW has also identified specific priority habitat areas in Clark County. Table 31 lists these areas. Figure 27 illustrates fish and wildlife conservation areas mapped for Clark County.

Table 30. *WDFW Priority Habitat Types and Elements Found in Clark County*

Priority Habitat	Criteria
Caves	Comparatively high wildlife density, important wildlife breeding habitat and seasonal ranges, limited availability, vulnerable tohuman disturbance, dependent species.
Cliffs	Significant wildlife breeding habitat, limited availability, dependent species.
Oak Woodlands	Comparatively high fish and wildlife density high fish and wildlife species diversity, limited and declining availability, high vulnerability to bagitat alteration, dependent species.
Old-Growth/ Mature Forest	High fish and wildlife density, high fish and wildlife species diversity, important fish and wildlife breeding habitat, important fish and wildlife seasonal ranges, limited and declining availiability, high vulnerability to habitat alteration.
Riparian	High fish and wildlife density, high fish and wildlife species diversity, important fish and wildlife breeding habitat, important wildlife seasonal ranges, important fish and wildlife movement corridors, high vulnerability to habitat alteration, unique or dependent species.
Rural natural open space	High fish and wildlife density, high fish and wildlife species diversity, important fish and wildlife breeding habitat, important fish and wildlife seasonal ranges, important fish and wildlife movement corridors, high vulnerability to habitat alteration, uniq1ue species assemblages in agricultural areas.
Snags and Logs	Comparatively high fish and wildlife density and species diversith, important fish and wildlife breeding habitat and seasonal ranges, limited availability, high vulnerability to habitat alteration, large number of cavity-dependent species.
Talus	Limited availability, unique an ddependent species, high vulnerability to habitat alteration.
Urban Natural Open Space	Comparatively high fish and wildlife density, high fish and wildlife species diversity, important fish and wildlife breeding habitat, important fish and wildlife movement corridors, limited availability, high vulnerability to habitat alteration.
Wetlands, Freshwater	Comparatively high fish and wildlife density, high fish and wildlife species diversity, important fish and wildlife breeding habitat, important fish and wildlife seasonal ranges, limited availability, high vulnerability tohabitat alteration.

Source: State of Washington Department of Fish and Wildlife

Table 31. *WDFW Priority Habitat Areas in Clark County*

Area
Lake Merwin and Yale Lake areas
Lewis River Area
Northeast County area, including Siouxon, Canyon, and Fly Creeks
Portions of Northeast County, including Siouxon, Canyon, and Cedar Creeks
Rock Creek area and East Fork of the Lewis River, from Rock Creek to Rogers Creek
East Fork of the Lewis River from North Lewis River to Morgan Creek
Gifford Pinchot National Forest including Cougar Creek and Boulder Creek areas
Hogan Creek area
Lacamas Creek from Lacamas Lake north to SR 500
Lacamas Lake and portion of Lacamas Creek
Steigerwald Lake area
Salmon Creek from Lake River to Cougar Creek
Post Office Lake area
North Lancaster Lake area
Portions of Columbia River area from Vancouver city limits to Lady Island, and from Camas/Washougal city limits to the east boundary of Clark County
Vancouver Lake area north to Ridgefield Wildlife Refuge
Columbia River
Washougal and Little Washougal Rivers
Gibbons Creek
Lake River
East Fork of the Lewis River and its tributaries of Jenny, Lockwood, Mason, Rock, and Cedar Creeks
Cedar Creek and its tributaries of John and Chelatchie Creeks
Salmon Creek and its tributaries of Mill, Woodin, Morgan, and Rock creeks

Source: State of Washington Department of Fish and Wildlife

2. Impacts

Impacts to fish and wildlife habitat are related to the spatial distribution of growth within the county that each alternative would implement. Generally, growth patterns that convert more land to urban uses are more likely to result in the loss and fragmentation of fish and wildlife habitat. Growth patterns that promote more compact development within existing UGAs are more likely to preserve this habitat, although more stress may be placed on terrestrial and aquatic habitat within urban areas as the level and intensity of development increase. Assessing impacts to fish and wildlife habitat primarily involves identifying priority habitat that occurs within the expanded UGAs. About 102,372 acres are currently identified as priority habitats across the county. Existing programs, policies, and regulations that provide protection to priority habitat and species would remain in place under the different alternatives. Table 32 shows the acreage within new UGAs that have been identified as containing evidence of priority species, non-riparian priority habitat, and riparian priority habitat, as mapped by Clark County.

a. Alternative 1

Alternative 1 plans no expansion of UGAs. Growth over the next 20 years would primarily occur within current UGAs. No priority habitat within rural areas would be converted to urban areas. Alternative 1 would preserve the existing agricultural, forest, and rural land outside UGAs. These lands often provide important habitat for fish and wildlife, in addition to their other environmental functions and services.

However, because projected growth cannot be accommodated under the current growth assumptions, there may be pressures to upzone urban and rural residential areas. Pressure for increased densities inside

cities and their existing UGAs could result in more intense redevelopment than anticipated. At most, up to 5,500 acres of low-density residential land may need to be upzoned, less if districts with higher densities are upzoned, to mitigate a shortfall of about 21,000 units. Most of the urban areas are unlikely to have much high quality habitat, but where there are significant stream or wildlife corridors, wildlife could be subjected to more impacts from intensified development. Impacts could include more impervious surface and more human interference from noise and light, than would be currently predicted for those areas. This alternative, by not accommodating all projected urban growth, could result in accelerated development of rural lots.

Even with potential spill-over effects in rural areas, because this alternative would accommodate most of the projected growth over the next 20 years without expanding into rural areas, it would have less potential impact on priority habitats and species than under Alternative 2.

b. Alternative 2

Under Alternative 2, additional fish and wildlife habitat would be brought into UGAs. This alternative would include new urban development patterns and intensities different from the existing rural conditions, which would have a greater impact to priority habitats than under the No Action Alternative.

This alternative involves four out of the 11 priority habitats identified in Clark County. Table 32 shows the distribution in acres of priority habitats for the UGAs under Alternative 2. Only the UGAs of Camas (47 acres), La Center (11 acres), and Ridgefield (52 acres) contain priority habitat with known sites for priority species (either locally important or state listed). No priority habitat with species would be added to the Battle Ground, Vancouver and Washougal UGAs.

Table 32. *Priority Habitat and Priority Species, by Alternatives 1 and 2 (acres)*

	Alternative 1	**Alternative 2**						
	Existing UGAs	Total Acres by UGA	Battle Ground UGA	Camas UGA	La Center UGA	Ridgefield UGA	Vancouver UGA	Washougal UGA
Species	7,384	110 +7,384	-	46.7	11.0	51.7	-	-
Non-riparian Habitat Conservation Area	2,256	190 +2,256	-	111.0	1.9	2.5	74.2	0.5
Riparian Habitat Conservation Area	7,314	1,322 +7,314	79.5	40.5	228.4	597.7	295.2	80.2
Total	16,955	1,621 +16,955	79.5	198.3	241.3	651.9	369.4	80.8

Source: Washington Dept of Fish & Wildlife

Table 33. *Priority Habitat Species, by Subarea*

	Battle Ground			Camas			La Center			Ridgefield			
	Alternative 3		Alternative 2	Alternative 3		Alternative 2	Alternative 3		Alternative 2	Alternative 3			Alternative 2
	B1	B2	Subarea 3	C1	C2	Subarea 6	L1	L2	Subarea 1	R1	R2	R3	Subarea 2
Size of Subarea	41	120	1,507	1,243	125	1,123	534	793	1,213	614	227	362	2,144
Species	-	-	-	46.7	-	46.7	225.5	-	11.0	-	9.7	55.1	51.7
Non-riparian Habitat Conservation Area	-	-	-	3.7	-	111.0	-	-	1.9	5.0	-	-	2.5
Riparian Habitat Conservation Area	-	-	79.5	311.3	-	40.5	235.0	175.7	228.4	149.6	38.9	84.0	597.7
Total	-	-	79.5	361.8	-	198.3	460.6	175.7	241.3	154.6	48.5	139.1	651.9

	Vancouver									Washougal			
	Alternative 3				Alternative 2	Alternative 3			Alternative 2	Alternative 3			Alternative 2
	V1	V2	V3	V4	Subarea 4	V5	V6	V7	Subarea 5	W1	W2	W3	Subarea 7
Size of Subarea	1,006	875	402	908	2,302	635	219	668	1,691	809	122	21	877
Species	15.5	-	7.7	-	-	-	-	307.8	-	-	-	16.0	-
Non-riparian Habitat Conservation Area	22.6	-	-	-	74.2	-	-	20.4	-		-	-	0.5
Riparian Habitat Conservation Area	207.5	164.4	95.4	170.1	226.6	-	4.0	24.4	68.6	277	20.6	5.2	80.2
Total	245.7	164.4	103.0	170.1	300.7	0	4.0	352.6	68.6	201.3	20.6	21.2	80.8

Source: Washington Dept of Fish & Wildlife

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In general, the UGAs under Alternative 2 have much more riparian habitat than non-riparian habitat. A total of 1,322 acres of riparian habitat would be added to the UGAs, accounting for about 12 percent of the total land area under this alternative. The La Center, Ridgefield, and Vancouver UGAs would have the highest acreage of riparian habitat .The La Center and Ridgefield UGAs would have a relatively high concentration of priority habitat, equal to 19 and 28 percent of the total land area in the UGAs, respectively. The Camas and Washougal UGAs would have the least amount of riparian habitat, but when the percent of priority habitat in the UGAs are compared, Battle Ground and Camas have the least, at 5 and 4 percent of the UGAs, respectively.

Non-riparian habitats are found primarily in the Camas and Vancouver UGAs, where they equal approximately 8 percent and 2 percent, respectively, of new UGA land areas. All other UGAs have less than 1 percent of this type of habitat.

c. Alternative 3

Fish and wildlife impacts vary widely between Alternative 3 subareas, as shown in Table 33. L1 has the most priority habitat in total, with 461 acres, while Battle Ground does not have any priority habitat under this alternative. It should be noted, however, that the L1 subarea would not be developed, as it would be designated as open space.

Alternative 3 includes the same four out of 11 priority habitats and watershed areas as described above in Alternative 2. Alternative 3 subareas could potentially add between 7.7 acres (V3) and 307 acres (V7) of priority habitat for species per subarea. V7 would have the highest absolute impact on fish and wildlife areas. Ten out of the 19 subareas would have no impact.

The subareas for Alternative 3 have substantially more riparian habitat than non-riparian habitat, potentially adding between 4 acres (V6) and 311 acres (C1) of riparian habitat per subarea. C1, V1, and W1 would have the highest absolute impact on fish and wildlife habitat. Expanding the UGA boundary into C1 could have a net increase in impacts on priority habitats, as it has a much higher percentage of the subarea with priority habitats than the Alternative 2 Camas UGA. The same is true for the La Center subareas and W1, which each contain significant proportions of habitat, higher than their companion subarea in Alternative 2. The C1 and W1 subareas would account for the greatest direct impact on priority habitat. Including these subareas as part of the Preferred Alternative could create greater potential for adverse impacts on priority habitat.

B1, B2, C2 and V5 would have no impacts. In addition, there are several subareas without any non-riparian habitats identified.

In terms of proportion of subareas and greatest impacts that include priority habitats, C1 , R3, W1 and W3 subareas have the most constrained land, with 35 percent to 75 percent of the total land area identified as priority habitat. Exchange of the R2 and L2 subareas with land in their respective Alternative 2 subareas could reduce overall impacts to priority habitats in a Preferred Alternative. For instance, Alternative 2 subarea 2 (Ridgefield) currently has 30 percent of the land area designated as priority habitat and Alternative 2 subarea 1 (La Center) has 20 percent. Expansion of the V5 and V 6 subareas would have lower impacts on priority habitats as the Alternative 2 subarea has only 4 percent of the total land designated as priority habitats for fish and wildlife and V5 and V6 would have low absolute impacts.

To reduce impacts on priority habitats, Battle Ground's UGA boundary could be expanded to include B1 and B2 if the boundary were retracted to eliminate some of the nearly 80 acres of riparian habitat in Alternative 2. C2, R2, V2, V5 and V6 could be used to offset impacts under Alternative 2.

3. Mitigation

Mitigation for increased development in habitat areas consists primarily of the protection that is afforded by local regulations. Requirements for protecting critical habitats are found in the GMA, ESA, and the SMA. All Clark County jurisdictions have implemented requirements to protect critical areas, which include fish and wildlife habitat.

Mitigation for Alternative 1 could consist of increasing densities sufficient to accommodate projected growth within existing UGAs in areas not containing priority habitats. Pressures to increase densities in the rural areas would not occur if sufficient upzoning occurs in the urban areas. Some of the cities have indicated that their assumptions would result in more room for growth within their existing UGAs than the County model predicts. In that case, if Alternative 1 accommodates new growth within existing UGAs, it would avoid impacting the priority habitat areas that would be affected by Alternative 2.

a. Plans and ordinances

Clark County: The Clark County Comprehensive Plan addresses fish and wildlife habitat and other critical areas. The Environmental Element of the Comprehensive Plan contains several goals and policies regarding habitats and priority species. Policies call for updating Priority Habitat Species, incorporating ways to respond to Priority Habitat Species data in local planning processes, such as SEPA review and the Habitat Conservation Ordinance, updating regulatory and incentive programs for the protection of critical areas, including wildlife habitat. Policy 4.2.10 encourages habitat protection that will provide a diverse and sustainable population of fish and wildlife.

Policy 4.2.4 encourages consistency among Clark County and its cities for critical areas mapping, mitigation strategies, and policy treatment. Goal 4.3 seeks to protect and recover endangered species in the county. Associated policies relate to updating and implementing the Habitat Conservation Ordinance with regard to the preservation of listed species. Goal 4.4 and its policies address the protection and recovery of salmonids.

Policies 4.4.1 through 4.4.6 outline ways to protect, conserve, and recover salmonids within the county. Policies under this goal call for restoring and maintaining ecosystem conditions to support salmon and updating regulations to achieve the County's salmon-friendly vision, for example, by reviewing impervious surface limits, developing clustering provisions, conducting concurrent riparian and transportation corridor planning, and integrating water quality concerns into the planning process. Where appropriate, other chapters of the plan have been updated to reflect salmon habitat issues.

Chapter 40.440 of the Clark County Code (Habitat Conservation Ordinance) defines and provides a mapping framework for fish and wildlife habitat to be protected as GMA Fish and Wildlife Conservation Areas. Habitat areas include priority habitat and species sites as defined and mapped under the PHS program and locally important habitat sites as defined and mapped under the code. This Chapter also plays a role in the conservation of listed species. The ordinance establishes regulations for clearing and development activities within designated habitat areas. These areas include riparian areas, non-riparian areas, primarily within the eastern portion of the county, that support deer, elk, and bald eagle, and priority species point sites, which indicate individual threatened or endangered species locations, such as wildlife colonies and nesting areas. Policies in the Regional and Urban Parks Master Plan authorize purchase of sensitive lands, particularly habitat.

Battle Ground: The City's comprehensive plan does not contain goals or objectives related specifically to fish, wildlife, and their habitats, other than those for protection of endangered and threatened species (Environment Goal 7, objectives EO 7.1 and EO7.2). The City of Battle Ground's Critical Areas Ordinance contained in Title 18 of the Municipal Code includes regulations for development within or near locally important, priority, shoreline, and riparian habitats (18.280). Applicants for development within habitats and their buffers must demonstrate that the proposal

substantially maintains the level of habitat functions and values and minimizes habitat disruption or alternative.

Camas: Camas' Comprehensive Plan addresses environmental issues in Chapter 4 of the plan, the Environmental Element. Goals EN-4 through EN-6 calls for management practices that will allow use of resources while minimizing impacts to and restoring shorelines resources and other natural systems. Goals EN-8 and EN-9 protect critical areas, including fish and wildlife habitat conservation areas. Policy EN-22 would preserve endangered, threatened, sensitive species and species of local importance. Aquatic and riparian habitats are to be protected in Policies EN-23 and EN-24. In January 2007, the City of Camas updated its CAO to implement state requirements and best available science for wetlands and for fish and wildlife habitat. Land use regulations to protect fish and wildlife habitat in Chapter 18.31 of the Camas zoning code were repealed. The regulations provide for the protection of habitat functions and values, and require mitigation for impacts from development.

La Center: Environmental Goal #10 ensures the preservation and protection of natural resources, critical areas, open space and recreational lands through adequate and compatible policies and regulations. Policy 10.1.4 is to maintain regulatory and incentive programs for conservation of wildlife habitat areas. Policy 10.1.9 encourages habitat protection that will provide a diverse and sustainable population of fish and wildlife. Refer to mitigation under Section IV Water, above, for a discussion of the La Center Critical Areas Ordinance.

Ridgefield: The policies in Section 6.4 of the Ridgefield comprehensive Plan provide for protecting and restoring ecosystems and fish and wildlife habitat. Policy EN-5 calls for contiguous networks and support for sustainable fish and wildlife populations. The protection of fish and wildlife habitat is regulated through the Critical Areas Ordinance in the Municipal Code, Chapter 18.280. Under this ordinance, development is required to avoid critical areas unless certain criteria are met. Mitigation of impacts is required. The ordinance establishes buffers and building setbacks and provides for density transfers.

Vancouver: Vancouver's Comprehensive Plan Policy EN-5 (Habitat) and EN-6 (Endangered Species) are for protecting riparian areas, wetlands, and other fish and wildlife habitat, protecting habitat for salmonids and other listed species and facilitating their recovery. EN-6 encourages and supports actions that protect other species from becoming listed.

The city's Critical Areas Ordinance protects locally important habitat, habitat for state-identified priority species, riparian areas through establishing Habitat Conservation Areas and regulations to establish buffers around those areas. Activities with the management areas and buffers of critical areas must not result in any net loss of function or value. Vancouver modified its SEPA policies to include the 4(d) rule guidelines for protecting salmon habitat during development. The overall goal of the ordinance is to protect and provide properly functioning conditions for fish and wildlife, particularly threatened or endangered species. The ordinance will incorporate references to sources for "best available science."

Washougal: Goal 5, Critical Areas, from the city's comprehensive plan addresses the protection of fish and wildlife habitat areas. It provides for the optimum number of game and nongame fish and animals by protecting through resource management those resource and open space areas that serve as habitat. Policy 5-B calls for protecting habitat to provide for optimum numbers of nongame wildlife for recreational and aesthetic opportunities, while keeping land use conflicts at a minimum. Policy 5-C identifies and protects special habitat areas. Goal 6 states the city will assist in the enhancement of the Steigerwald Lake National Wildlife Refuge.

b. Additional Mitigation

1. Federal, state, and local regulations for protecting habitat for threatened and endangered species and for the preservation of water quality will provide protection for habitat that supports other

species. Consistency of regulations among jurisdictions, connectivity of ecosystems, and limits on growth in sensitive areas will continue to be important goals that provide additional mitigation.

2. Cities could establish a regional program to identify and protect priority habitat areas. This program could include transfer of development rights (TDR) for those cities that do not have such programs, purchase of the land using funds earmarked for that purpose, and property taxation, which recognizes the restrictions on development.

3. Most of the mitigation measures implemented for sensitive, threatened, and endangered species are in the form of regulatory requirements. Additional mitigation could be in the form of incentive programs, education, and taxation policies (in addition to the County's current use assessment program) that encourage the conservation of these species and the habitat upon which they depend.

B. Threatened and Endangered Species

1. Setting

Population growth and development within Clark County have resulted in the loss, degradation, and fragmentation of fish and wildlife habitat. The loss of habitat is particularly significant for some species, whose numbers have decreased precipitously during the past decade. Table 34 shows those plant species listed by the state and/or federal government as threatened or endangered. Table 35 shows fish and wildlife species that have been listed by the state and/or federal government as threatened or endangered.

Table 34. *Threatened and Endangered Plant Species within Clark County*

Common Name	Scientific Name	Status
Golden Paintbrush	*Castilleja levisecta*	state endangered, federal threatened
Tall Bugbane	*Cimicifuga elata*	state threatened
Clackamas corydalis	*Corydalis aquae-gelidae*	state threatened
Oregon coyote-thistle	*Eryngium petiolatum*	state threatened
Western wahoo	*Euonymus occidentalis*	state sensitive
Howellia	*Howellia aquatilis*	state and federal threatened
Torrey's peavine	*Lathyrus torreyi*	state threatened
Great polemonium	*Polemonium carneum*	state threatened
Idaho gooseberry	*Ribes oxyacanthoides ssp irriguum*	state sensitive
Hairy-stemmed checker-mallow	*Sidalcea hirtipes*	state endangered
Bradshaw's lomatium	*Lomatium bradshawii*	state endangered, federal endangered

Source: Washington Natural Heritage Program, 2002.

Table 35. *Threatened and Endangered Fish and Wildlife within Clark County*

Common Name	Scientific Name	Status
Gray wolf	Canis lupus	state endangered, federal endangered
Sandhill crane	Grus Canadensis	state endangered
Bald Eagle	Haliaeetus Leucocephalus	state threatened, federal threatened
Western grey squirrel	Sciurus griseus	state threatened
Chinook salmon	Oncorhynchus tshawytscha	federal threatened
Chum salmon	Oncorhynchus keta	federal threatened
Steelhead	Oncorhynchus mykiss	federal threatened

Source: Washington State Department of Fish and Wildlife, 2002.

In addition, numerous species that may be found in Clark County have been listed by the federal government as sensitive or candidate species. Sensitive species are those that are in decline and potentially eligible as candidates for listing. Candidate species have been proposed for listing as threatened or endangered. Table 36 lists sensitive and candidate species.

The Endangered Species Act (ESA) of 1973 provides the primary framework within which Clark County and its cities must work to address the conservation of federally listed threatened and endangered species. The County must comply with the ESA by ensuring that its policies, programs, and regulations do not result in harm to listed species, including harm to designated critical habitat. Of particular concern because of their dramatic decline is the listing of several species of salmon and steelhead. Table 37 where these species are found within the county. The National Marine Fisheries Service (NMFS), now called NOAA Fisheries, issued its final 4(d) rules for these species in 2000 (steelhead) and 2001 (salmon). Section 4(d) of the ESA allows the U.S. Fish and Wildlife Service (FWS) or NOAA Fisheries to promulgate any regulation deemed necessary for the conservation of a threatened species. The "take" prohibitions of the ESA, which automatically extend to endangered species, do not apply to threatened species unless the FWS or NOAA Fisheries adopts a rule under Section 4(d) of the Act. To "take" a listed species means "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in such conduct." It also extends to the degradation of critical habitat upon which listed species depend. The 4(d) rules apply to new development and redevelopment in both rural and urban portions of the county.

Table 36. *Sensitive and Candidate Fish and Wildlife Species within Clark County*

Common Name	Scientific Name	Status
Peregrine falcon	*Falco peregrinus*	state sensitive, federal candidate
Leopard dace	*Rhinichthys falcatus*	state candidate
Purple martin	*Progne subis*	state candidate
Cascade torrent salamander	*Rhyacotriton cascadae*	state candidate
Larch Mountain salamander	*Plethodon larselli*	federal candidate, state sensitive
Tailed frog	*Ascaphus truei*	federal candidate
Northern goshawk	*Accipiter gentilis*	state candidate, federal candidate
Pacific Townsend's big-eared bat	*Coryhorhinus townseddii*	state candidate, federal candidate
Coho salmon	*Oncorhynchus kisutch*	federal candidate
River lamprey	*Lampetra ayresi*	state candidate
Margined sculpin	*Cottus marginatus*	state sensitive

Source: Washington State Department of Fish and Wildlife, 2002.

Table 37. *Distribution of Salmonid Fish Stocks within Clark County*

Species	Location
Fall Chinook	Washougal River, East Fork Lewis River, North Fork Lewis River
Spring Chinook	North Fork Lewis River
Coho Salmon	North Fork Lewis River, East Fork Lewis River, Whipple Creek, Salmon Creek, Burnt Bridge Creek, Washougal River, Gibbons Creek, Lake River, Campen Creek
Chum Salmon	East Fork Lewis River, North Fork Lewis River, Washougal River, Gibbons Creek, Columbia River, Columbia Slope streams
Summer Steelhead	East Fork Lewis River, Washougal River, North Fork Lewis River
Winter Steelhead	East Fork Lewis River, North Fork Lewis River, Washougal River, Burnt Bridge Creek, Salmon Creek, Whipple Creek Gibbons Creek, Lake River
Bull Trout	North Fork Lewis River, East Fork Lewis River, Lake River, Washougal River

Source: Washington State Department of Fish and Wildlife, 2002.

Clark County's approach to salmon recovery has four main elements: a regulatory approach, which ultimately seeks 4(d) certification; an operational approach in which different County operations, such as road and park maintenance, are reviewed for their impact on salmon; an educational approach that raises awareness about how everyday activities can affect salmon and how the public can participate in salmon recovery efforts; and a regional approach in which the County joins with other jurisdictions to develop a comprehensive, coordinated salmon recovery strategy.

Clark County's program to obtain 4(d) certification under the municipal, residential, commercial, and industrial (MRCI) development limit involves several steps. MRCI development (and redevelopment) can have a significant impact on salmonid habitat and can injure or kill salmonids in a variety of ways. With appropriate safeguards, MRCI development can be specifically tailored to minimize impacts on listed salmonids and make additional federal protections under the ESA unnecessary. Under this particular limit, NOAA Fisheries can ensure that MRCI development and redevelopment are consistent with ESA requirements. The County's program to obtain 4(d) compliance certification includes the following elements:

- A review of its codes for ESA consistency and compliance.
- An analysis of the environmental baseline condition of all sub-basins in order to assess the effects of environmental ordinances and projected build-out on these areas and their continued ability to support salmonid populations.
- The development of specific remedies, such as overlay zones and implementing guidelines, which address any potentially significant impacts to listed species.
- A review of the 4(d) compliance program for its consistency with state and federal laws and permits.

At the state level there are various policies that indirectly work to provide some protection to threatened and endangered species. SEPA is the primary tool for assessing and mitigating the environmental impacts of a proposed action. The GMA includes a requirement to designate critical areas and adopt development regulations that protect these areas. Three of the five critical areas that local jurisdictions must identify are important for salmon survival: wetlands, fish and wildlife habitat conservation areas, and frequently flooded areas. Figure 27 shows fish and wildlife habitat conservation areas. The SMA provides a policy basis for addressing salmon habitat issues as a part of a management system for shoreline development. The local shoreline master program is considered to be an element of the comprehensive plan and development regulations and should be consistent with them. Finally, in 1999 the Joint Natural Resources Cabinet issued its report entitled *Extinction Is Not An Option: A Statewide Strategy to Recover Salmon*, which provides a general framework and guidelines for state agencies to follow in their salmon recovery efforts.

Vancouver's salmon recovery strategy is broad-based. Activities include modifying land use regulations, participating in regional salmon recovery, gaining support for restoration and preservation, modifying city operations to minimize negative impacts on salmon, and protecting habitat through easements and acquisition and education. Vancouver modified its SEPA policies to include the 4(d) rule guidelines for protecting salmon habitat.

Also important to the conservation of listed species within the county is the Priority Habitats and Species (PHS) list and the Species of Concern (SOC) list. A description of the PHS list is found in the previous section, Fish and Wildlife habitat. The SOC list includes species listed as state endangered, threatened, sensitive, or candidate, as well as species listed or proposed for listing by FWS or NOAA Fisheries.

2. Impacts

The primary impact to fish and wildlife, including sensitive, threatened, and endangered (STE) species, would result from the conversion of habitat to urban uses in order to accommodate

anticipated growth. The impact assessment for the 2003 DEIS looked at listed species that have been found within areas that would be added to existing UGAs under each of the alternatives, consulting the Wildlife Heritage (HRTG) and Priority Habitats and Species (PHS) databases. The databases provide locational information on non-game species of concern and state- and federal-listed species, which include those designated as endangered, threatened, candidate, and monitor. Priority species include those state endangered, threatened, candidate, and sensitive species, animal aggregations considered vulnerable, and species of recreational, commercial, or tribal importance that are vulnerable. None of those listings or locational data are likely to have changed significantly in the three years since the 2003 DEIS was written. Therefore, information from the 2003 DEIS was used to identify general locations of STE species with respect to the new proposed UGAs or subareas. A site-specific request of the Washington State Department of Fish and Wildlife databases would be made for the proposed expansion areas of the Preferred Alternative, to be evaluated in the FEIS. Under all of the alternatives, policies and regulations that preserve critical habitat and provide protection to listed species would remain in place.

a. Alternative 1

Alternative 1 would not expand UGAs. All growth and development over the next 20 years would be accommodated within existing UGAs. Because less land would be urbanized under this alternative, impacts to listed species would likely be reduced. However, confining growth within existing urban areas could intensify development within these areas and make the conservation of urban fish and wildlife habitat more difficult in the short term. Especially important habitat areas include the Vancouver Lake Lowlands, Columbia River shoreline, and Burnt Bridge Creek. Cumulative impacts to fish and wildlife habitat from further development in these areas could be particularly important, since these urban areas are already characterized by significant habitat modification from development.

Because projected growth cannot be accommodated under the current growth assumptions, there may be pressures to upzone urban areas. Increased density in rural areas could create potential impacts on priority habitat from new development. This alternative, by not accommodating all projected urban growth, could result in accelerated development of rural lots.

Even with potential spill-over effects in rural areas, because this alternative would accommodate most of the projected growth over the next 20 years without expanding into rural areas, it would have less potential impact on priority habitats and species than Alternative 2.

b. Alternative 2

Because this alternative would convert rural land to urban uses whereas Alternative 1 would not, it would likely have the most significant impacts on habitat for T&E species. Two priority species have been identified: bald eagles and purple martins. Bald eagles, a state and federal threatened species, were identified in the Salmon Creek/Lewis River area. Purple martins, a state candidate species, have been identified within an area that would include part of Camas' expanded UGA. Reticulate sculpins, a state monitor species, have been identified in Lacamas Creek.

Stream areas known to provide habitat for listed species would be included in expanded UGAs under Alternative 2. Waterways that support threatened salmon would include: Gee Creek, Salmon Creek, Weaver Creek, and Whipple Creek, all of which support coho salmon and steelhead.

In addition to these terrestrial species, several species of threatened salmon and steelhead are found in waterways that either cross or are adjacent to new UGAs. These waterways include Salmon Creek (coho salmon and steelhead), Whipple Creek (coho salmon and steelhead), East Fork Lewis River (chinook, coho, and chum salmon and steelhead), Gee Creek (coho salmon and steelhead), and Weaver Creek (coho salmon and steelhead).

c. Alternative 3

Impacts to threatened and endangered species in these subareas can be assessed by looking at their location in relation to the major creeks, similar to the discussion under Alternative 2, and also to the discussion of the acreage containing priority species, above. C1 includes areas known for purple martins and reticulate sculpins. Waterways located within close proximity to urban areas could have greater impacts on threatened and endangered species. These waterways include East Fork Lewis River (Chinook, coho, chum salmon, and steelhead), Gee Creek (coho salmon and steelhead), Salmon Creek (coho salmon and steelhead), and Whipple Creek (coho salmon and steelhead).

Table 22 shows that approximately 6 miles of streams that support anadromous fish species would be added to new UGAs under Alternative 3. V1, V2, and V4 would all have impacts on salmon-bearing streams. The greatest impacts would occur with the expansion of V2 (2 miles of Gee Creek) and V4 (2 miles of Salmon Creek), while there are no impacts on the East Fork Lewis River and only 1 mile along Whipple Creek in V1.

3. Mitigation

The Land Use Element of each jurisdiction's comprehensive plan contains policies to protect critical areas, including STE species. Plan policies and ordinances generally include STE species in their discussion of fish and wildlife habitat. Therefore, a discussion of mitigation measures for impacts to STE species is contained in the Fish and Wildlife Habitat section of this document.

C. Migratory/Migration Routes

1. Setting

Clark County and the Lower Columbia region provide critical habitat for a variety of migratory fish and wildlife species. These include salmon and steelhead populations that have been listed or proposed for listing as threatened under the ESA, as well as some of the largest populations of migratory waterfowl, neotropical migrant birds, and shorebirds of the Pacific Northwest.

Historically, it is estimated that as many as 15-17 million adult salmon and steelhead returned each year to the Columbia River. Over time, these fish populations have declined drastically. Salmon and steelhead populations are now estimated to be less than 10 percent of their original size. Many individual stocks have been eliminated and others are severely depressed. In recent years, the number of chum salmon returning to the Columbia River has been less than one percent of historic high levels.

The Lower Columbia region now has the largest number of salmon and steelhead runs in the state of Washington listed or proposed for listing under the ESA. These include Columbia River chum (federal threatened), Lower Columbia River chinook (threatened), steelhead (threatened), and Lower Columbia River coho (threatened). Bull trout, a resident species, are also listed as federal threatened.

Collectively, Clark County streams support several naturally spawning stocks of listed salmon and steelhead. Streams supporting naturally producing anadromous fish populations include the Lewis River system, the Washougal River system, Salmon Creek, and other small tributaries. These streams provide critical habitat for spawning and rearing, and are essential to the overall recovery of Lower Columbia fish populations. Both the Lower Columbia Steelhead Conservation Initiative (LCSCI) and Washington Conservation Commission Limiting Factors Analysis identify Clark County streams as highly important to salmon recovery. The LCSCI identifies the East Fork Lewis and Washougal Rivers as "Tier II" streams; only the Wind and Kalama Rivers are rated higher priorities in terms of steelhead recovery in the Lower Columbia region. The largest Columbia River chum mainstream spawning site between Bonneville Dam and the mouth of the river is along the shore in Vancouver.

Clark County and the Lower Columbia River are located within an extensive migration route known as the Pacific Flyway that extends from the Bering Sea in Alaska along the Pacific Seaboard to South

America. In addition, the wetlands and floodplains associated with the Columbia River, lower East Fork Lewis, and other tributaries are a key part of an area known as the Lower Columbia region, which extends downstream from Bonneville Dam to the Pacific Ocean.

The Lower Columbia's floodplain and wetland areas are highly important for migrating and wintering waterfowl, neotropical migrant birds, and shorebirds. These areas support the second largest wintering and migration populations on the Pacific Northwest Coast, the first being the northern bays of Puget Sound. Peak waterfowl numbers exceed 200,000 birds during migration, and the area regularly winters over 150,000 ducks, geese, and swans. The main puddle duck species are mallard, northern shoveler, American wigeon, northern pintail, and green-winged teal. The main diving ducks are canvasback, ring-necked duck, and lesser scaup. In addition, the area provides important habitat for several sub-species of Canada geese: taverners, lessers, cacklers, duskys, Aleutians, and to a lesser extent Vancouvers. All subspecies listed within the region winter in substantial numbers with the exception of Aleutians and Vancouver Canada geese.

The Ridgefield National Wildlife Refuge and surrounding farm land and open spaces play an especially important role for migrating sandhill cranes, a state endangered species. The region serves as both a staging and wintering area for these birds, which often move between the Ridgefield National Wildlife Refuge and Sauvie Island.

The protected riparian communities of the Lower Columbia region provide excellent habitat for a mixed assemblage of neotropical migratory bird species. Although several species are transients, the Lower Columbia also supports one of the richest nesting neotropical bird communities in the Pacific Northwest. Twenty-six species of land birds utilize the forests for nesting, including several declining species in the Pacific Northwest: western wood pewee, willow flycatcher, purple martin, Swainson's thrush, yellow warbler, yellow-breasted chat, and black-headed grosbeak. In their lowland breeding range, all of these species are dependent on palustrine hardwood forests.

The Lower Columbia region is also seasonally important for migratory shorebirds. Twenty-five species of shorebirds have been recorded in the region. Most of the migratory shorebirds migrate along the coast staging in coastal tidal habitats such as Willapa Bay, Grays Harbor, and the bays of Puget Sound. However, the Vancouver Lake/Shillapoo Bottoms, Ridgefield National Wildlife Refuge, and Sauvie Island also provide important habitat for these bird species; the most common include long-billed dowitchers, dunlin, western sandpiper, common snipe, and yellow legs.

As part of the Pacific Flyway and Lower Columbia River system, Clark County provides critical habitat to a variety of fish and bird species. In addition, the county provides locally important migration corridors for terrestrial wildlife. These migration routes may include areas that are necessary for long-term shifts in wildlife species distributions, or that are used to facilitate movement to and from breeding habitats or summer and winter ranges. Examples include travel corridors that are used by frogs and salamanders moving to and from seasonal wetlands for breeding, or by big-game during movements between summer and winter ranges. It is important to maintain interconnected systems of habitat and open space lands, particularly river and stream corridors, in order to enhance seasonal migrations and the general movement of wildlife populations.

2. Impacts

Direct impacts from the different alternatives to migratory habitat and species would typically be those associated with the conversion of this habitat to urban uses. Those areas within the county that provide habitat suitable to migratory bird species are located primarily along the Columbia River, Vancouver Lake Lowlands, Shillapoo Bottoms, and Ridgefield National Wildlife Refuge. However, many other areas within the county also serve some habitat function for migratory bird species. These areas include rural and agricultural lands, parks and open space, and rural lands that birds use for resting. Waterways within the county that provide important migratory routes for anadromous fish include the Lewis River system, Columbia River, Washougal River, Salmon Creek, and various smaller tributaries.

This impact assessment looks at the extent to which expanded UGAs include land known to provide significant habitat to migratory species. It also looks at the extent to which each action alternative includes proposed development near waterways that serve as migration routes for salmonids. Development adjacent to streams and rivers can result in the degradation of water quality through erosion, sedimentation, accelerated stormwater runoff, and loss of riparian, wetland, or floodplain habitat. Migratory habitat was identified by using the data from the 2003 DEIS which came from the Wildlife Heritage database.

Existing policies and regulations that protect water quality and critical environmental areas, which include habitat for migratory species, would remain in place. An alternative that expands existing UGAs would likely result in some loss or degradation of habitat for migratory species. It is inevitable that as more land is converted to urban uses, habitat would become increasingly fragmented and migration routes to some degree disrupted.

a. Alternative 1

Alternative 1 would not expand UGAs. All growth and development over the next 20 years would be accommodated within existing UGAs. Because less land would be urbanized under this alternative, impacts to habitat for migratory species would likely be less than for an alternative that expands the UGAs. More intensive development from upzoning to accommodate growth within existing UGAs could place greater stress on urban waterways that support anadromous fish. These waterways include Burnt Bridge Creek, Salmon Creek, Washougal River, Gibbons Creek, Gee Creek, and the East Fork Lewis River. As development is contained within existing urban areas, waterways that either occur within or immediately adjacent to urban areas could see greater impacts, particularly from accelerated runoff from impervious surfaces. The magnitude and severity of environmental impacts from urban infill are generally less than those that result from the conversion of rural land to urban land.

Confining growth to existing UGAs would also preserve rural and agricultural land that would otherwise be converted to urban uses. These areas almost certainly provide some habitat function for terrestrial migratory species, and their conservation would avoid any impacts to migratory species that would result from their loss.

b. Alternative 2

Proposed UGAs would include waterfowl concentration areas. These areas are identified as providing suitable habitat to migratory bird species over time. Alternative 2 would not directly impact areas identified as providing the most significant habitat to migrating bird species—the Vancouver Lake Lowlands, Shillapoo Bottoms, Ridgefield National Wildlife Refuge. However, Vancouver's UGA would be extended to an area adjacent to Green Lake and land just north of the Shillapoo wildlife area. This new UGA would see eventual residential development and, because of its close proximity to Green Lake and the Salmon Creek/Lake River area, could have some impact on migratory species.

Various streams that support anadromous fish are found within proposed UGAs as well. These include Salmon Creek or its tributaries, Whipple Creek, a portion of the Columbia River shoreline, East Fork Lewis River, and Gee Creek.

c. Alternative 3

Alternative 3 subareas are proposed as options for higher impact portions of Alternative 2 UGAs. To the extent that subareas in Alternative 3 contain fewer miles of migratory waterways in rural areas, exchanging those areas for areas in Alternative 2 with higher impacts could reduce the impacts in a Preferred Alternative.

Waterways that support anadromous fish could potentially be brought into the urban areas under some of the Alternative 3 subareas. These waterways include East Fork Lewis River (Chinook, coho, chum salmon, and steelhead), Gee Creek (coho salmon and steelhead), Salmon Creek (coho salmon

and steelhead), and Whipple Creek (coho salmon and steelhead). Waterways located within close proximity to urban areas could have greater impacts on migratory species, particularly from accelerated runoff from impervious surfaces.

Table 22 shows approximately 6 miles of streams that support anadromous fish species would be added to new UGAs under Alternative 3. The greatest impacts would occur with the expansion of V2 (2 miles of Gee Creek) and V4 (2 miles of Salmon Creek), while there are no impacts on the East Fork Lewis River and only 1 mile along Whipple Creek in V1.

However, any rural and agricultural land converted to urban uses potentially represents a loss of some habitat function for terrestrial migratory species.

3. Mitigation

Mitigation for impacts to migration routes and migratory species is discussed in the Fish and Wildlife Habitat section, above, since areas that serve an important migratory function are included within habitat conservation areas.

D. Wetlands

1. Setting

The GMA requires counties and cities to identify environmentally critical areas, including wetlands. Wetland areas are among the most productive ecosystems on earth, and are significant for their functional values and the services they provide, which include groundwater recharge, flood protection, water quality maintenance, wildlife habitat provision, recreation, and aesthetic enjoyment. Because wetlands can be located within floodplains and provide important water quality functions and wildlife habitat, this discussion of existing wetland conditions within Clark County is closely related to other sections of this report that discuss water resources, floodplains, vegetation, and wildlife.

Wetland areas are defined and classified by the presence of three factors: wetland hydrology, hydric soils, and hydrophytic vegetation. Hydrology refers to the water characteristics of the area, such as the amount of time an area is wet or flooded. Wetland hydrology exists when areas are permanently inundated or saturated to the surface at some period during the growing season. Hydric soils are those that are wet long enough to periodically produce anaerobic (lacking free oxygen) conditions, thereby influencing the growth of plants. Hydrophytes are plants growing in water or on a substrate that is at least periodically deficient in oxygen as a result of excessive water content.

The US Army Corps of Engineers (USACE) defines wetlands as "areas that are inundated or saturated by surface or groundwater at a frequency or duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions." Wetlands are also commonly called swamps, marshes, bogs, or fens, although each of these terms has a specific meaning.

Figure 28 shows high value wetlands within the county. Figure 29 shows where hydric soils are found, soils that often indicate the presence of wetlands.

Wetland areas are numerous throughout the region. A significant number of wetlands are found in the Battle Ground area. Forested wetlands line Woodin Creek in the northeastern and southern sections of the city. Scrub/shrub wetlands are located along the creek south of Main Street. To the north, south, and west of the city are emergent wetlands.

In the Camas area, wetlands are primarily found on Lady Island, along the Washougal River, Fallen Leaf Lake, Lacamas Lake, and Round Lake, as well as within Fisher Basin. Wetlands within the UGA of Washougal occur within the floodway of the Washougal River and in the low-lying southeast portion of the UGA adjacent to the Columbia River. The most extensive wetland area occurs in the

southeastern portion of the city. The wetlands in this area are predominately distributed between the lands within the Steigerwald Wildlife Refuge and the low-lying areas along the Columbia River, an area owned by the Port of Camas-Washougal, which presently exists as undeveloped park land.

In the Vancouver area, most wetlands are found along Burnt Bridge Creek and Salmon Creek, along the Columbia River, and in the Vancouver Lake Lowlands. There are also wetlands scattered north and south of Walnut Creek and throughout the northernmost portion of the Vancouver urban area.

Most wetlands in the La Center area are found south of the city along the East Fork of the Lewis River. Most of the wetlands in the Ridgefield area are associated with Gee Creek, to the north and east of the city. Palustrine wetlands are also located in the Carty Lake area and along Lake River, to the west of the city.

Many federal, state, and local agencies are involved in the identification and protection of wetlands in Clark County. These include the FWS, NRCS, US Army Corps of Engineers, Washington State Department of Natural Resources, Washington State Department of Fish and Wildlife, and the Washington State Department of Ecology.

2. Impacts

The most common impact to wetlands is from filling or draining to make land available for other uses that diminish their functional value and service they provide to the larger ecosystem. Whereas with project-level actions the physical characteristics of the project can be reviewed to determine if any part of a wetland would be impacted, assessing impacts from programmatic actions is necessarily more general. It primarily involves identifying wetlands that occur within each new UGA and the type of development that is proposed for that area. Wetland areas were identified for this analysis using National Wetlands Inventory maps. These maps do not necessarily identify all wetlands within an area.

Evaluating impacts of urbanization on wetlands that are located in rural areas of Clark County includes comparing the acres of wetlands proposed under both alternatives, as in Table 38. Figure 28 shows the high value wetlands in Clark County. The following assessment of impacts to wetlands provides a brief description of the existing conditions under Alternative 1, compares impacts by UGA under Alternative 2, and describes impacts between subareas for Alternative 3.

Table 38. *Identified Wetlands, Alternatives 1 and 2 (acres)*

	Alternative 1 (Existing UGAs)	Alternative 2 New + Existing	% of New UGA Covered by Wetlands
Battle Ground UGA	1,501	229 +1,501	15%
Camas UGA	2,695	109 +2,695	10%
La Center UGA	17	49 +17	4%
Ridgefield UGA	604	222 +604	10%
Vancouver UGA	10,899	782 +10,899	20%
Washougal UGA	377	15 +377	2%
Total	16,150	1,406 +16,150	

Source: Wetlands Inventory Model - an aggregation of NWI, mapped, permitted and modeled wetlands.

a. Alternative 1

Under Alternative 1, all urban population growth over the next 20 years would be accommodated within existing UGAs. There would be 16,150 acres of wetlands in existing UGAs (Table 38) at build out; most within the Vancouver UGA. Because not all projected growth can be accommodated under the current growth assumptions, there may be pressures to upzone urban residential areas. Within current UGAs there would be pressure to upzone lower density residential areas to accommodate the projected growth. At most, up to 5,540 acres of low-density residential land may need to be upzoned, less if districts with higher densities are upzoned, to mitigate a shortfall of about 21,000 units. This alternative could also result in accelerated development of rural lots.

More intensive development within existing urban areas could place greater stress on wetland functions by generating more stormwater runoff. There could be more pressure to fill existing wetlands and provide mitigation outside the urban areas, such in Clark County's proposed future wetland mitigation bank. Wetland functions within the cities and UGAs would need to be replaced by engineered solutions that can be more costly in the long run. Maintaining or restoring wetland functions in wetland bank receiving areas could become more difficult within the cities.

b. Alternative 2

About 1,400 acres of wetlands would be added to the 16,150 acres in existing UGAs (Table 38). The additional wetland acreage is located primarily around Vancouver (782 acres), Battle Ground (229 acres), and Ridgefield (222 acres), accounting for approximately 20 percent, 15 percent, and 10 percent, respectively. Much less wetland area would be added to the Washougal UGA under this alternative (14.7 acres), accounting for about 2% of the UGA covered by wetlands. La Center would add around 49 acres (4 percent) of wetlands to its UGA, located along a tributary of the East Fork Lewis River.

c. Alternative 3

Wetland impacts vary widely between Alternative 3 subareas. Table 39 shows that Alternative 3 subareas could potentially bring in between 0.1 and 630 acres of wetlands per subarea. C1 (630 acres) and V4 (211 acres) would have the highest absolute impact on wetland areas, while subareas W3 (.1 acres), C2 (14 acres), and R2 (18 acres) would have the lowest.

The higher the percentage of wetlands, the more constrained development would be in addition to having absolute impacts on those wetlands from development. In terms of the proportion of subareas covered by wetlands, R1, L1 and C1 subareas have the most constrained land, with 34% to 51% covered by wetlands. For instance, expansion of the L1 subarea would double the impacts for La Center under Alternative 2. Likewise, expanding the C1 subarea would add six times the amount of wetland acreage to the Camas UGA proposed under Alternative 2.

Subareas with lower impacts on wetland areas include the subareas of B1, B2, W2, and W3. It is important to note these areas have a smaller proportion of land area with either less than of the subareas covered by wetlands, compared to the other UGAs.

The proportion of wetland acres to land acres is more evenly distributed across the Vancouver subareas for Alternative 3. Therefore, expansion of the Alternative 2 boundary for Vancouver would not reduce potential impacts on wetlands to the extent they can in critical areas for the northernmost parts of Ridgefield and Battle Ground, in favor of expansion into the subareas with no impacts under Alternative 3. The greatest impact to wetlands by subarea would be C1 (630 acres), V4 (211 acres), R1 (206 acres), and L1 (200 acres).

Table 39. *Identified Wetlands, by Subarea (acres)*

	Battle Ground			Camas			La Center			Ridgefield			
	Alternative 3		Alternative 2	Alternative 3		Alternative 2	Alternative 3		Alternative 2	Alternative 3			Alternative 2
	B1	B2	Subarea 3	C1	C2	Subarea 6	L1	L2	Subarea 1	R1	R2	R3	Subarea 2
Size of Subarea	41	120	1,507	1,243	125	1,123	534	793	1,213	614	227	362	2,144
Wetland Acres	-	-	229	630	14	109	200	75	49	206	18	102	222
% of Subarea Covered by Wetlands	0%	0%	15%	51%	12%	10%	38%	10%	4%	34%	8%	28%	10%

	Vancouver									Washougal			
	Alternative 3				Alternative 2	Alternative 3			Alternative 2	Alternative 3			Alternative 2
	V1	V2	V3	V4	Subarea 4	V5	V6	V7	Subarea 5	W1	W2	W3	Subarea 7
Size of Subarea	1,006	875	402	908	2,302	635	219	668	1,691	809	122	21	877
Wetland Acres	121	159	57	211	447	113	47	155	336	29	-	.1	15
% of Subarea Covered by Wetlands	12%	18%	14%	23%	19%	18%	22%	23%	20%	4%	0%	1%	2%

Source: Wetlands Inventory Model - an aggregation of NWI, mapped, permitted and modeled wetlands

3. Mitigation

a. Plans and Ordinances

Of particular importance in the regulation of wetlands at the federal level is Section 404 of the Clean Water Act, which regulates the discharge of dredged and fill material into the waters of the United States, including wetlands. The Section 404 regulatory permit program is administered jointly by the USACE and the US Environmental Protection Agency (EPA). The EPA has issued guidelines that prohibit the discharge of dredged or fill material (1) if there is a practicable alternative (2) if the discharge would have an unacceptable adverse impact on the aquatic ecosystem (3) if the discharge would violate state water quality standards or jeopardize a species listed under the Endangered Species Act and (4) unless appropriate and practicable steps have been taken that minimize potential adverse impacts of the discharge.

Clark County: Clark County has adopted wetlands protections within the Critical Areas Ordinance (Chapter 40.450) to comply with the GMA mandate to protect environmentally critical areas. Chapter 40.450 (Wetlands Protection Ordinance) is intended to ensure no net loss of wetland acreage and functions. It encourages restoration and enhancement of degraded and low-quality wetlands and provides for a greater level of protection for higher quality wetlands. Consistency with federal wetland protective measures and avoiding over-regulation by limiting regulatory applicability to those development proposals that significantly impact important wetlands are other purposes of the ordinance.

The ordinance establishes a process and requirements for the identification and delineation of wetland areas. It also specifies the categories of wetlands and the characteristics and criteria that define the categories, from highest to lowest values. The wetland categories are used to determine protective buffer widths around wetlands and mitigation requirements. For example, Category 1 wetlands require a 300-foot buffer. The County updated this ordinance in 2006 to reflect the best available information as required by the GMA.

Battle Ground: The City's comprehensive plan does not contain goals or policies directly related to wetlands. The City of Battle Ground's Critical Areas Ordinance contained in Title 18 of the Municipal Code includes regulations for development within or near wetlands (18.270). The stated purpose of the regulations are to ensure no net loss of wetland acreage and functions, encourage restoration and enhancement of degraded and low quality wetlands, provide a high level of protection for higher-quality wetlands, and maintain consistency with federal wetland protective measures, while balancing these needs with private property rights and economic development. The City has adopted the Washington State Department of Ecology wetland rating system and establishes buffers based on the classification of wetland.

Camas: In January 2007, the City of Camas updated its CAOto implement state requirements and best available science for wetlands and for fish and wildlife habitat. Land use regulations to protect fish and wildlife habitat in Chapter 18.31 of the Camas zoning code were repealed. The stated purpose of the regulations are to ensure no net loss of wetland acreage and functions, encourage restoration and enhancement of degraded and low quality wetlands, provide a high level of protection for higher-quality wetlands, and maintain consistency with federal wetland protective measures, and respect private property rights. The regulations designate wetlands in accordance with the Washington State wetland identification or US Army Corps of Engineers delineation manuals and uses the Washington State Department of Ecology wetland rating system. The ordinance establishes buffers based on the classification of wetland.

La Center: Environmental Goal #10 ensures the preservation and protection of critical areas, which includes wetlands, through adequate and compatible policies and regulations. Policy 10.1.9 encourages habitat protection that will provide a diverse and sustainable population of fish and wildlife. La Center's critical areas ordinance (LCMC 14.20) protects wetlands through buffers based on wetland classification.

Ridgefield: Measures to protect wetlands and regulate development within these areas are contained in Ridgefield's Critical Areas Ordinance, Chapter 18.280 of the Municipal Code. The ordinance classifies wetlands into categories and establishes commensurate buffer widths to protect the wetland and its functions.

Vancouver: The city's Critical Areas Ordinance protects wetlands through establishing Habitat Conservation Areas and regulations to establish buffers around those areas. Activities with the management areas and buffers of critical areas must not result in any net loss of function or value. Development or clearing activities must protect the functions of wetlands and wetland buffers on the site. Activities must not result in any net loss of wetland or buffer functions. Protection may be provided by avoiding (the preferred protection) or minimizing and mitigating as described in the general critical areas performance standards (VMC 20.740.060).

Washougal: The City of Washougal's wetland protection ordinance (WMC Chapter 16.20) establishes a process for the identification, delineation, and protection of wetlands within its jurisdiction. The ordinance recognizes three categories of wetlands and establishes base wetland buffer widths based on these categories. These buffer widths are less than those that are found in the DOE's Wetland Rating System for Western Washington.

V. Energy & Natural Resources

A. Energy Conservation

1. Setting

The demand for electricity, natural gas, and other natural resources will increase in Clark County as growth occurs. The cost of supplying these services can vary depending on the land use pattern of that growth but most of the increase in consumption would occur with growth in general. The Capital Facilities and Utilities Element of the comprehensive plan contain an inventory of energy-related facilities operated by public agencies. In the case of Clark County, most energy sources are supplied by the private sector. Only CPU generates and supplies electricity. Clark County is not a major source of energy; it does not contain oil or natural gas reserves, or wind farms, although solar power and hydro-electric energy is available. Most of the discussion of energy consequently revolves around energy consumption.

Since fossil fuel consumption has an impact on air quality, the impacts of the alternatives on the environment from that fossil fuel use is contained in the Climate section. Electricity supply and demand is discussed in the Public Facilities section (Section X) as CPU is a consumer-owned utility. The utility continually reviews Clark County's growth plan and coordinates the construction of new electrical facilities with those plans. The discussion below is confined to an assessment of provisions for energy conservation and solar energy.

Efficient land uses and cost-effective provision of services can often have energy conservation as a by-product. The state requires energy efficient construction of buildings (Washington State Energy Code, WAC 51-11, as amended). Construction of energy efficient buildings is, as a result, provided for in local building codes. Electricity conservation by residents and businesses is encouraged by programs sponsored by providers such as Bonneville Power Administration (BPA) and CPU, sometimes in concert with local jurisdictions. CPU offers financing for insulation, window replacement, sealing leaks and for installation of heat pumps. Vancouver and Clark County have programs to help improve the energy efficiency of homes. The Weatherization Assistance Program works to significantly increase the number of low-income households receiving cost effective and energy efficient improvements.

Solar energy ordinances are often implemented to ensure that residences are oriented on lots in a way that maximizes the collection of passive and active solar energy. Shade point requirements attempt to

ensure that vegetation and structures do not create shade that impairs the collection of solar energy. Clark County's solar access requirements were repealed in 1997.

Countywide Planning Policies for Transportation refer to the creation of a regional transportation system that encourages energy efficiency.

Tree preservation ordinances, such as Vancouver's, can promote energy conservation. Deciduous trees keep buildings cooler in the summer (requiring less energy for air conditioning) while maximizing sun exposure in winter (promoting passive solar energy use). La Center proposes to adopt a tree preservation ordinance.

2. Impacts

Most of the impacts on energy and natural resources would result from the population and employment growth, not the way in which that growth is accommodated. Since growth is the same for Alternatives 1 and 2, there would be little difference in energy by individual usage. New people and businesses would require light and heating and energy to operate equipment. Typical energy usage by industry in Clark County ranges from 100 kVa to 150 kVa per acre, while commercial and residential demand ranges from 20 to 35 kVa per acre. The main difference is in fossil fuel usage.

However, the more compact the urban form, generally the greater the efficiencies that can be gained in serving that form with urban services and with energy. For example, more dense development requires fewer street lights. In that case, Alternative 1 would enable more energy conservation than Alternative 2 because no new urban areas would need to be served. Public facility and service impacts are discussed in the Public Facilities section of the DEIS.

The impact on fossil fuel usage for transportation would vary depending on the land use pattern adopted. For instance, a low-density land use pattern would have higher impacts compared to a more compact growth pattern. Impacts of the proposed transportation systems for each alternative are discussed in the Transportation section.

3. Mitigation

Since none of the jurisdictions is an energy provider, promoting conservation is largely a voluntary task. The primary energy conserving measure available to local jurisdictions is to adopt a compact urban form that supports alternative, energy efficient transportation (walking, bicycling, and transit).

Battle Ground's Comprehensive Plan Environment Goal 1 states the City will pursue conservation of energy. Objective EO1.1 encourages development of energy efficient housing using passive and active designs. Objective EO1.2 states the City will investigate energy savings measures in all City operations and encourage conservation by contractors. Housing Objective 1.4 encourages housing that supports sustainable development patterns, resource-efficient design and construction and use of renewable energy resources.

Camas' Comprehensive Plan has several policies (EN-1 through EN-5) regarding conservation and wise use of resources.

Vancouver's Comprehensive Plan Policy EN-11 calls for promoting sustainable public and private development practices and patterns, building design, water-use reduction, and waste reduction. It also encourages the incorporation of green building principles and practices into the design construction, and operation of all City facilities, City-funded projects, and infrastructure to the fullest extent possible.

Beyond participating with providers to promote energy conservation, local jurisdictions could add similar policies to their comprehensive plans that deal in general with "sustainable" practices that support citizen and business efforts to reduce energy consumption and promote recycling. Policies

could recognize the link between reducing energy consumption and protecting the environment on a regional, state, and national level. Implementation of tree preservation ordinances and examining building codes to allow more innovative "green" building design ideas would also be helpful.

B. Scenic

1. Setting

Natural features are an integral part of what is often considered a scenic resource. Surface waters, vegetation, and topographic variations are natural features that are often elements of scenic resources. As an area's population increases, there is often an associated deterioration, fragmentation, and loss of these natural features. Scenic resources can also include elements of the built environment, such as views and panoramas of city landscapes, bridges, and dams. These viewpoints are also at risk when an area's population is increasing and development is intense.

Clark County has a variety of landscape settings providing scenic beauty. These include the following:

- Farmland-areas of pastures and intensive agriculture—Orchards, vineyards, row crops, small wooded areas and scattered rural development. Terrain is flat to gently rolling hills. The La Center area, Columbia River lowlands, and isolated areas north of Camas are representative of this type of landscape setting.
- Forested areas—Forested areas with limited timber harvest activities, scattered residences, hilly and mountainous areas. East Clark County represents this landscape setting.
- River bottomlands—Floodplains, wetlands, and riparian areas found along rivers and streams, particularly those areas along the East and North Forks of the Lewis River and its tributaries, and portions of the Columbia River and its lowland areas.
- Rural estate/rural farm—Areas that are partly rural residential in nature but retain a strong rural environment. Composed of small farms and wooded areas, parcels typically range from 5 to 20 acres. Terrain is usually gently rolling hills with good access. These areas are found north of Camas and Washougal, northeast of Ridgefield, near La Center, within the Columbia River Gorge Scenic Area, east of I-5 and west of Battle Ground, and along portions of the East Fork of the Lewis River.

Clark County is located on the western edge of the Columbia River Gorge National Scenic Area, designated by the US Congress in 1986 in recognition of the unique natural beauty of the area. The Scenic Area Management Plan sets policy for land use and development in this area, and County ordinances must be consistent with this policy. The County recently adopted new rules in Clark County Code (Chapter 40.240) to comply with changes to the Management Plan adopted by the Columbia River Gorge Commission in 2006. About 250 Clark County residents currently live within the national scenic area. Evergreen Highway and Lucia Falls Road are designated scenic routes by CCC Section 40.350.030(A)(7)(d). Scenic routes are roadways with unique scenic or historical features, officially designated by the board. Scenic routes seek to enhance, preserve and facilitate the enjoyment of those scenic or historical features unique to each route.

The Columbia River Lowlands encompass a large area, extending from the Vancouver Lake area north to the Ridgefield National Wildlife Refuge. During this century the lowlands have been dramatically changed by human activities and intervention. The construction of dams and dikes and the introduction of plant, animal, and fish species have irreversibly altered the natural environment. Use of the lowlands for crop and livestock has provided habitat for wintering migratory waterfowl. A notable value of the lowlands as a scenic natural and recreational area is its close proximity to the Portland/Vancouver metropolitan area, making it accessible to a large population.

No systematic survey of scenic resources has been performed for the county, although visual preference surveys were done in order to determine what visual characteristics are most important to county residents. There are also few policies that directly address the preservation of scenic and visual resources. There are, however, policies that address the preservation and protection of open space

and natural resources. Therefore, scenic resources are protected only to the extent that they are associated with natural resources.

2. Impacts

Assessing scenic values and determining the potential visual impacts from development projects involves inventorying scenic resources, assessing the visual appeal of those resources, measuring public concern for scenic quality, and determining whether the resource is visible from travel routes or observation points.

Assessing impacts on specific resources from programmatic actions is difficult because project-specific development patterns are unknown. Most land subject to development review is not governed by design standards that can protect scenic resources. This section considers how the growth patterns of the alternatives may impact those areas frequently considered scenic, such as the landscape settings described above. Because scenic resources are often associated with natural resource areas, impacts to these resources are usually considered negative. Such impacts can result in the conversion of natural environments to non-natural ones; for instance, the conversion of an orchard to a residential subdivision.

No changes to UGAs under either Alternative 2 or Alternative 3 would directly impact the Columbia River Gorge National Scenic Area, the Columbia River shoreline, the Vancouver Lake Lowlands, the Steigerwald Refuge, or the Ridgefield Wildlife Refuge, all areas with recognized scenic values.

a. Alternative 1

Alternative 1 would not involve the expansion of any UGAs. All urban growth and development over the next 20 years would occur within existing UGAs on land already targeted for urban development. While this would reduce the likelihood of impacts to scenic resources associated with rural and agricultural lands, it may place greater pressure on scenic areas within existing urban boundaries—especially the Columbia River shoreline area and the Vancouver Lake Lowlands.

Because projected growth cannot be accommodated under the current growth assumptions, there may be pressures to upzone urban residential areas. Accelerated development of rural lots may also occur. Alternative 1 could encourage development to occur sooner and more densely than it otherwise would within portions of the Vancouver Lake Lowlands, the Columbia River Shoreline area, and, more generally, within those natural areas that are currently undeveloped although located within existing UGAs. This would be due to pressure from growth that could not be accommodated by existing zoning inside the UGAs.

Under Alternative 1, projects would continue to be subject to review for compliance with policies and regulations that protect critical areas such as habitats, and parks and open space. Projects would also continue to be assessed for their impact on scenic resources under the State Environmental Policy Act (SEPA) process. To the extent that Alternative 1 encourages redevelopment and revitalization of existing urban areas, it could have a positive impact on urban visual resources.

b. Alternative 2

Alternative 2 proposes to convert approximately 11,000 acres to urban uses. Alternative 2 would see the greatest loss of agricultural, forest, and rural lands, lands that are often considered to have scenic and visual values.

Battle Ground: Battle Ground's UGA would expand primarily to the west, where much of the land to be brought into the new urban area is currently designated Rural Residential, Urban Reserve and Agriculture. The new residential uses proposed would be about half single family low density, a suburban pattern of development that can blur the distinction between rural and urban areas without retaining the scenic values of the rural area. Much land added to Battle Ground in 2004 has yet to be

developed, so the addition of undeveloped land could result in patchy, leap-frog type of development. On the other hand, the addition of medium density and mixed use designations to the west and north will help to intensify the urban characteristics of Battle Ground and more concretely define the edge between urban and rural areas. The conversion of agricultural or rural land to commercial or more intensive mixed uses would likely result in the loss of scenic resource values in this area.

Camas: About half the proposed expansion of Camas' UGA would occur on predominately resource lands designated agricultural or forest. The remainder would convert Rural Residential. Most of the residential area is east of Lacamas Lake and north of a tributary to Lacamas Creek, an area marked by naturally forested drainages. This area's natural resource values could be incorporated to some extent into low-density development if those drainages are protected. The other expansion area is north of Goodwin Road, which is in an area of rural rolling hillsides with views typically to the north, rather than to the Columbia River. Under Alternative 2 this area is proposed for mixed use development. Mixed uses are likely to dramatically alter the scenic values of this area; as such development typically entails multi-story, relatively dense development.

La Center: Expansion areas adjacent to the existing city limits or UGA would become low-density residential. The proposed expansion areas are currently mostly Rural Residential or Agricultural, so the scenic agricultural values would eventually change to suburban characteristics. The other part of La Center's new UGA under Alternative 2 is bisected by I-5. To the west of the freeway this area is currently designated industrial urban reserve. To the east there is agricultural land that would see eventual conversion to commercial and medium density residential uses. Views of this area from the freeway would be altered with the conversion of farmland to commercial, industrial, and higher density development. This alternative would narrow the distance between La Center and Ridgefield, urban areas and create the general impression of a contiguous urban area.

Ridgefield: Under Alternative 2, the predominant proposed urban use by acreage would be low density residential in three areas, to the north, south, and east of city limits. Industrial uses would be designated adjacent to I-5 to the south and north of the city. Ridgefield's new proposed UGA would include land primarily designated Agricultural or Rural Residential. Scenic resources associated with this agricultural land would be changed to a suburban residential and industrial character.

Vancouver: Vancouver's UGA would expand northward for primarily low density residential uses in a number of locations. North of city limits along SR 503 the UGA would expand into a major industrial area. While much of this land is currently designated as urban reserve, it also includes agricultural and rural land. Land that is currently designated for agricultural use is proposed for urban low density development. New residential development within a portion of the Salmon Creek area could impact scenic resources associated with this stream. Views of agricultural and less developed rural land from I-5 and SR 503 would be impacted as land is converted to more intensive residential development. This alternative would significantly reduce the distance between Battle Ground and Vancouver and overtime is likely to create the general impression of a contiguous urban area, particularly as both cities would have industrial uses along SR 503 at the UGA limits.

Washougal: Washougal's UGA would expand north of the city to include land currently designated Agricultural, Rural Residential, and Urban Reserve. Proposed urban uses would be low- and high-density residential, industrial, Employment Center/Business Park. About half would be in low-density residential at the northwest city limits and northeast city limits. This area is characterized by forested slopes, steep drainages, and flatter agricultural lands that would change over time to more intense uses.

c. Alternative 3

Alternative 3 offers options for expansion that could be used in conjunction with Alternative 2 to accommodate projected growth or be used instead of expansion areas in Alternative 2 to reduce impacts.

Battle Ground: B1 would extend employment campus impacts on rural residential scenic values. B1 and B2 would also extend low-density residential areas to the north, similar to impacts discussed for Alternative 2.

Camas: C1 would add about a third of its 1,200 acres as employment center and the other third as low-density residential uses along the east side of Lacamas Lake. This area currently has agricultural or forest scenic characteristics that would see an eventual conversion to office/business park development, changing the scenic values to urban development. An existing park area would be added along Lacamas Creek.

La Center: L1 would include a major addition to scenic values with the addition of a major area of open space along East Fork Lewis River. Low-density residential and industrial areas would replace agricultural values of the area west of the river. Addition of this area to proposed Alternative 2 UGA would extend urban characteristics of La Center to I-5. L2 would extend the La Center Junction to the south with similar industrial and medium density uses, bringing the urban areas of La Center and Ridgefield closer together and replacing the current agricultural views with relatively intense development.

Ridgefield: R1 would occur on agricultural land designated as urban reserve; it would not include any rural or agricultural land. Therefore, under Alternative 2 there would be few, if any, impacts to scenic or visual resources.

Vancouver: Most of the land included in the new UGA for Vancouver is now designated as urban reserve. Some agricultural land would be converted to urban low-density development. Less of the western portion of Salmon Creek would be included within the new UGA and the risk of impacts to scenic resources associated with this waterway would be reduced.

Washougal: Washougal's UGA expansion would primarily involve agricultural land north of the city. Adjacent land is proposed for urban low-density development under Alternative 2. The conversion of farmland to urban residential uses would result in the loss of any scenic values associated with this agricultural land.

3. Mitigation

a. Plans and Ordinances

Clark County: The Community Design Element of the Comprehensive Plan discusses community character and views. Policy 10.1.6 states that where new development adjoins agricultural or rural land a soft transitional edge should be established to provide a transition between open space and new development. Siting of buildings should take advantage views in Policy 10.1.4.

While Clark County contains a variety of scenic areas, the most prominent and the only one federally protected is the Columbia River Gorge National Scenic Area. Clark County's implementing ordinance was updated in 2006 to reflect changes to the federal management plan for the National Scenic Area.

Evergreen Highway and Lucia Falls Road are designated scenic routes by CCC Section 40.350.030(A)(7)(d).

Battle Ground: Battle Ground's Comprehensive Plan Livability Goal 5 is to encourage new development design that protects and promotes significant views. Objectives under this goal call for preserving public views, promoting the creation of new views through innovative development design, exploring location of new public spaces and parks to preserve significant views, and seeking to protect the views of the night sky.

Camas: Goal EN-2 of the Comprehensive Plan is to preserve the scenic aesthetic quality of shoreline areas and vistas to the greatest extent feasible. Strategy EN-5 is to preserve the visual integrity of the

wooded hillsides that provide the backdrop for the city. Public places consisting of viewpoints, parks, scenic routes, and view corridors are identified in Chapter 16.06 of the Camas Municipal Code. The city may condition or deny a proposal to eliminate or reduce its adverse impacts on designated public views or open space networks.

b. Additional Mitigation

Scenic resources have generally not been recognized as a critical or sensitive resource which should be inventoried and protected to the same extent as other natural resources. The first step in mitigation of the potential impacts of development on these resources would be to inventory the views from major public routes, public facilities, and viewpoints particularly those used by tourists to the area. Policies and programs could then be developed to protect these scenic resources from alteration as a result of development.

VI. Environmental Health

A. Noise

1. Setting

Noise is a by-product of increased human activity. Noise levels from traffic sources depend on volume, speed, and the type of vehicle. Generally, an increase in volume, speed, or vehicle size increases traffic noise levels. Vehicular noise is a combination of noises from the engine, exhaust, and tires. Other conditions affecting traffic noise include defective mufflers, steep grades, terrain, vegetation, distance from the roadway, and shielding by barriers and buildings.

Noise levels decrease with distance from the noise source. For a line source such as a roadway, noise levels decrease over hard ground (concrete, pavement) less than over soft ground (grass). The propagation of noise can be greatly affected by terrain and the elevation of the receiver relative to the noise source. Level ground is the simplest case. Noise travels in a straight line-of-sight path between the source and the receiver. The addition of a berm or other area of high terrain will reduce the noise energy arriving at the receiver. If the noise source is depressed or the receiver is elevated, noise generally will travel directly to the receiver. In some situations, noise levels may be reduced because the terrain crests between the source and receiver, resulting in a partial noise barrier near the receiver.

There is no comprehensive mapping of noise levels in Clark County although Portland International Airport has noise contour maps of Vancouver. The County has noise regulations that apply to amplified music. Section I of the *Perspectives Resource Document* contains a discussion of noise issues and regulations affecting Clark County. Primary noise sources in Clark County are: vehicular traffic; railroads, rock quarrying, industrial and commercial operations, airplanes and airport activity; construction equipment and activities; rural activities associated with farming and timber harvesting; residential equipment such as heat pumps and air conditioners; and human activity such as parties, sports and games, etc. The Clark County Amphitheater hosts music events that are subject to specific noise regulations.

The Noise Control Act of 1974 established maximum noise levels permissible in identified environments and standards relating to the reception of noise within such environments. Three classes are identified:

1. Class A: lands where human beings reside and sleep (i.e., residential areas);
2. Class B: lands involving uses requiring protection against noise interference with speech (i.e., commercial areas); and,
3. Class C: lands involving economic activities of such a nature that higher noise levels than experienced in other areas are normally to be anticipated (i.e., industrial, agricultural or forest lands).

These environments generally correspond to zoning districts. Residential zoning districts are Class A, commercial zoning districts are Class B, and industrial zoning districts are Class C.

2. Impacts

The population and employment growth expected in Clark County would increase noise levels. Noise in an urbanizing area is a more serious problem than is usually recognized. Environmental noise at high intensities directly affects human health by causing hearing loss. Although scientific evidence currently is not conclusive, noise is suspected of causing or aggravating other diseases. Environmental noise indirectly affects human welfare by interfering with sleep, thought, and conversation. Problems occur when sources of loud noise impact sensitive environments such as residences, schools, and hospitals.

It is difficult to predict noise impacts from future development patterns and uses at a plan level. Impacts are described generally in terms of the relative intensity and types of uses under each alternative. In particular, as rural uses are converted to urban uses, the impression of increasing noise levels would be sharpest for rural residents at the edge of those converting land uses and along heavily traveled routes.

a. Alternative 1

This alternative would have most of the population in current urban areas, so noise impacts would primarily be in urban areas. Because projected growth cannot be accommodated under the current growth assumptions, there may have to increased densities in urban areas, which could create more impacts than may otherwise occur with existing zoning. Pressures to increase densities in the rural areas would not occur if sufficient upzoning occurs in the urban areas. Some of the cities have indicated that their assumptions would result in more room for growth within their existing UGAs than the County model predicts. In that case, if Alternative 1 accommodates all demand for urban growth within existing UGAs, it would avoid new noise impacts in rural areas.

b. Alternative 2

Alternative 2 would have over half of the proposed UGA expansion in low-density, large-lot, single-family detached development. This would offer more opportunity to buffer noise-sensitive uses from the noise and other side effects associated with traffic and commercial and industrial development. The buffering would be in the form of distance between the noise source and the sensitive receptors or residences.

Additional noise would be expected in areas of more intense residential and industrial uses, and where heavy traffic impacts would occur, which in this alternative would be most major corridors. The area between Battle Ground and Vancouver, between Vancouver along I-5 and Ridgefield, and along I-5 between La Center and Ridgefield would likely experience a distinct change as those rural uses become primarily industrial, and medium residential with little intervening rural land remaining to buffer noise impacts. The quietness of the existing rural area would be altered, though the I-5 corridor already generates noise from heavy traffic volumes.

c. Alternative 3

Individual Alternative 3 subarea impacts on noise would be relatively low compared to impacts proposed under Alternative 2. In most cases the impacts from noise would be minor additional increases beyond Alternative 2. However, the subareas with large amounts of industrial land, such as those in C1 and V2 and V5, that are adjacent to undeveloped rural land, would tend to make a relatively larger noise impact.

3. Mitigation

Federal and state regulations limit the noise exposure in different classes of land use. When new developments are proposed, the noise standards are part of the approval process since noise is a factor considered in SEPA review. However, experience has shown that enforcement of noise regulations can be a problem if they involve limitations on actions instead of buffering. Noise conflicts can be reduced in all of the alternatives simply by assuring that policies and programs are implemented that would buffer noise between uses.

Clark County is working with residents to update its regulations concerning noise, particularly amplified noise in the rural area.

Battle Ground's Comprehensive Plan contains an environmental goal and objectives to encourage the minimization of noise impacts from uses within the UGA (Goal 9). The City will endeavor to reduce noise impacts through effective ordinances and a program of enforcement that is affordable to administer (Objective EO9.2).

Vancouver adopted the state noise ordinance with the exception of Class A regulations.

Potential mitigation measures that could apply to all of the alternatives, but would be especially important in areas where rural uses would experience a change to uses other than low-density residential or where traffic impacts would be greatest, are listed below.

5. Revise development codes to incorporate noise and safety mitigation, for example, requirements that all industrial activity occur within buildings or that all industrial sites include noise-attenuated buffer walls.

6. Revise building codes to increase noise insulation requirements for both industries and homes (especially in the mixed-use districts). Extra insulation will also improve energy efficiency.

7. Require sound mitigation for adjacent residential development with all widening projects along transportation corridors.

8. Require noise insulation on all mechanical equipment (HVAC, etc.) in new construction.

VII. Land Use

A. Urban Growth Areas and Population

1. Setting

The GMA mandates changes to local land use plans to:

- Encourage development in urban areas where adequate public facilities and services exist or can be provided in an efficient manner.
- Reduce the inappropriate conversion of undeveloped land into sprawling, low-density development.
- Ensure that applications for both state and local government permits are processed in a timely and fair manner to ensure predictability.
- Maintain and enhance natural-resource-based industries, including productive timber, agricultural, and fisheries industries. Encourage the conservation of productive forest lands and productive agricultural lands, and discourage incompatible uses.

To accomplish these goals, each county and city planning under the GMA must designate a 20-year UGA distinct from rural development and resource lands. UGAs are an essential part of required GMA comprehensive plans. They shape the character of development within a region by designating where urban growth will be encouraged and where urban services will be provided. Urban services

cannot be provided outside UGAs, and urban levels of development are permitted only within UGAs. The designation of new or expanded UGAs would have a major impact on current land use and transportation patterns and development approval procedures in Clark County.

The purpose of this section is to evaluate the effects of the County's proposed UGA alternatives on land use patterns, housing population, and employment distribution.

The housing needs of the county are determined by the characteristics of its existing and projected population (household size, income, etc.), when compared to the characteristics of the existing and expected housing supply (total units, size, cost, etc.). The projected employment needs are determined by the type of industry and what ratio of jobs to population the county would like to add to support the existing and projected number of new residents. The issue facing local governments is where to direct this growth given environmental constraints and the cost of providing public services, and how to ensure that a range of housing types and prices are available.

Much of the data contained in this section comes from the U.S. Bureau of the Census, the Clark County/City of Vancouver Consolidated Housing and Community Development Plan (2005-2009) prepared by Clark County Department of Community Services and the City of Vancouver Community and Housing Services, and the State of Washington Office of Financial Management (OFM). The Consolidated Housing and Community Development Plan is required under the Cranston-Gonzalez National Affordable Housing Act of 1990. All jurisdictions eligible for funding under this act that wish to participate in the program are required to prepare a plan identifying the different types of housing needed in the community and setting priorities for addressing them.

Land Use information from the Clark County *Plan Monitoring Report* (June 2005) and information provided by the Clark County Department of Assessment and GIS was used for the land use analysis.

2. Population, Housing & Land Use Patterns

a. Historic Population Growth

Table 40 shows the population trends of the cities and unincorporated areas of the county from 1970 to 2005. There was a significant increase in the overall population (205 percent) between 1970 and 2005, growing at an average rate of over 3 percent annually. Incorporated areas of the county experienced the most growth, increasing in population by 273 percent with an annual growth rate of nearly 4 percent since 1970 compared to rural areas that grow by 154 percent at an annual rate of just under 3 percent for the same time period. The majority of growth since 1990 has occurred in incorporated areas, where the population has nearly tripled, although this increase also includes population in areas added to the city UGAs in 2004.

While population growth has been concentrated in urban areas over the last 30 years, a significant amount of growth has also occurred in unincorporated areas, mainly in the 1970s and 1980s prior to adoption of the GMA. Between 1990 and 2000, stricter land use regulations and annexation of urbanized rural land has reduced rural population growth dramatically. Unincorporated areas went from strong growth in the 1970s and 1980s to negative growth in the 1990s, due in large part to annexation of previously developed unincorporated land into Vancouver in 1997 (e.g., Cascade Park). Between 2000 and 2005, the OFM estimated that the population increased by 13 percent in unincorporated areas of the county. While this is considerably less than the growth that occurred before 1990, it does show that growth is occurring in rural areas faster than between 1990 and 2000.

Table 40. *Population Trends in Clark County, 1970-2005*

Area	1970	1980	1990	2000	2005	Percent Change 1970-2005	AAGR* 1970-2005	Percent Change 2000-2005	AAGR* 2000-2005
Clark County	128,454	192,227	238,053	345,238	391,675	205%	3.2%	13%	2.5%
Unincorporated	74,487	134,974	173,844	166,279	188,955	154%	2.7%	14%	2.6%
Incorporated	54,267	57,168	64,115	178,959	202,545	273%	3.8%	13%	2.5%
Percent Unincorporated	57.8%	70.2%	73.0%	48.2%	48.3%				
Percent Incorporated	42.2%	29.8%	27.0%	51.8%	51.7%				
Battle Ground	1,438	2,774	3,758	9,322	14,960	940%	6.9%	60%	9.9%
Camas	5,790	5,681	6,798	12,534	15,460	167%	2.8%	23%	4.3%
La Center	300	439	483	1,654	2,095	598%	5.7%	27%	4.8%
Ridgefield	1,004	1,062	1,332	2,147	2,630	162%	2.8%	22%	4.1%
Vancouver	41,859	42,834	46,380	143,560	154,800	270%	3.8%	8%	1.5%
Washougal	3,388	3,834	4,764	8,595	11,350	235%	3.5%	32%	5.7%
Yacolt	488	544	600	1,055	1,160	138%	2.5%	10%	1.9%

Sources: WA State Office of Financial Management (Revised December 2005). April 1 Intercensal Population Estimates for the state, counties, and cities and towns for 1968 to 2000 and Postcensal Population Estimates for 2000 through 2005.

**Average annual growth rate*

Several cities grew at rates significantly higher than the county as a whole. Since 2000, Battle Ground grew by 60 percent, nearly 10 percent annually, although some of that growth is attributable to annexations occurring since 2003. Other cities where growth occurred faster than the county since 2000 are Washougal (32 percent), La Center (27 percent), Camas (23 percent), and Ridgefield (22 percent), much of this a result of annexations since 2003.

b. Projected Urban Population and Household Growth

The OFM develops a range of population projections for counties; the counties then select a target within that range based on local input about economic trends and planned development. For the alternatives evaluated, the County chose a 2.0 average annual growth rate that would produce a 2024 population of 584,310. Accommodating the forecasted population growth would mean adding 173,372 new urban residents and an estimated 66,939 additional urban housing units by the year 2024. Table 41 shows the projected population and projected growth for each alternative. Approximately 90 percent of the population growth is assumed to occur in urban areas; about 10 percent is assumed to occur in rural areas.

While the County is required to plan for planned population growth, the County also evaluated each alternative for the actual capacity it could hold based on assumed residential designations. This analysis showed that Alternative 1 would accommodate about 69 percent of the projected growth and would not have adequate capacity without increasing urban density and/or more people locating in rural areas,. Alternative 2 would have enough capacity for the projected number of needed housing units. Urban and rural densities would remain similar as they are today under Alternative 2.

Capacity under Alternative 2 could vary depending on which subareas in Alternative 3, if any, are chosen. The County assumes that depending on the outcome of this analysis, some areas in Alternative 2 would be "swapped" with Alternative 3 subareas. The size of those subareas could have

an impact on the amount of land added to UGAs and the capacity to accommodate population growth.

Table 41. *Projected Urban Population and Dwelling Units, Alternatives 1 and 2*

	Alternative 1	Alternative 2
Planned Population Growth		
2005 population	391,675	391,675
Annual growth rate	2.00%	2.00%
2024 population	584,310	584,310
Population Growth	192,635	192,635
Urban Population Growth	173,372	173,372
Persons per household	2.59	2.59
Planned dwelling units	66,939	66,939
Actual Capacity		
2024 total population capacity	540,066	588,327
Urban Population Growth Capacity	118,969	177,385
Persons per household	2.59	2.59
Dwelling units in urban areas*	45,934	68,488
Actual capacity minus planned units	-21,005	1,549
Capacity for growth as a percent of planned growth (over 100 % means excess capacity*)	69%	102%

Source: Clark County Planning Department; Clark County Department of Assessment and GIS, 2006; April 1 Intercensal Population Estimates for the state, counties, and cities and towns for 1968 to 2000 and Postcensal Population Estimates for 2000 through 2005.

Note: Household capacity is based several factors including anticipated urban growth and plan designation, average household size, and housing split. Household capacity is also calculated for school districts, which shows slightly different results due to different assumptions and household size estimates.

**Based on vacant and underutilized developable land within existing or proposed UGAs.*

The total amount of land needed for housing depends on the overall densities achieved and the percentage of housing devoted to single-family and multifamily uses. While foreseeing demand is not easy because housing markets can change quickly, the county currently has a less diverse housing stock than the primary metropolitan statistical area (PMSA)[4], potentially limiting its attractiveness for residents looking for varied housing choices. Alternative 2 would not change that trend because the majority of housing acreage (89 percent) that would be added would be for single-family detached homes on large lots. Alternative 3 would likely add a similar mix of housing as Alternative 2, depending on which sub areas are chosen.

Section f, Renter and Owner-Occupied Housing discusses county housing in more detail.

c. Projected Rural Population and Household Growth

Increases in population would occur in urban and rural areas (outside of proposed UGAs). Between 2000 and 2004, about 13 percent of the new housing development occurred in rural areas within the county. This percentage of development is expected to continue independent of the alternative chosen. Table 42 shows the amount of population anticipated in rural areas for each alternative and

[4]*The PMSA includes Clark County in Washington and Clackamas, Columbia, Washington, and Multnomah, and Yamhill Counties in Oregon.*

compares the actual capacity within the county for accommodating the projected population. Both Alternatives 1 and 2 assume that 10 percent of the planned population growth would occur in rural areas.

Table 42. *Projected Rural Population and Dwelling Units, Alternatives 1 and 2*

	Alternative 1	Alternative 2
Planned Population Growth		
2005 population	391,675	391,675
Annual growth rate	2.00%	2.00%
2024 population	584,310	584,310
2005-2024 population growth	192,635	192,635
Rural population growth*	19,264	19,264
Percent of population in rural areas	10%	10%
Persons per household	2.59	2.59
Planned dwelling units	7,438	7,438
Actual Capacity		
2024 population capacity	29,422	27,790
Rural Population Growth Capacity	15%	14%
Persons per household	2.59	2.59
Dwelling units in Rural Areas**	11,360	10,730
Actual capacity minus planned units	3,922	3,292
Capacity for growth as a percent of planned growth (over 100% means excess capacity**)	152%	144%

Source: Clark County Planning Department; Clark County Department of Assessment and GIS, 2006.
**10 percent of planned population growth would be in rural areas.*
***Based on vacant and underutilized developable land in rural areas outside of existing or proposed UGAs.*

The County compared the planned population and household increases for each alternative to the actual capacity in rural areas under each alternative based on existing residential designations. This analysis shows that under both alternatives there is adequate capacity to accommodate the projected rural population growth. The smaller amount of rural capacity in Alternative 2 is because Alternative 2 would add land to UGAs and reduce the amount of land in rural areas while increasing the area for urban expansion.

Capacity under Alternative 2 could vary depending on which subareas in Alternative 3, if any, are chosen. The County assumes that depending on the outcome of this analysis, some areas in Alternative 2 would be "swapped" with Alternative 3 subareas. The size of those subareas could have an impact on the amount of land remaining in rural areas and the capacity to accommodate population growth in rural areas.

d. Households

A household is all of the people living in one housing unit, whether or not they are related. A single person renting an apartment is a household, just as is a family living in a single-family house. The number and type of households in a community can indicate the housing needs of that community. Table 43 describes the number of households in Clark County and each of its cities. As is the case with population, most of the household growth has occurred in incorporated communities over the past 20 years. All local jurisdictions have grown considerably, although Battle Ground, La Center, and Vancouver have received the majority of new households.

Table 43. *Number of Households in Clark County, 1990-2000*

Area	1990	2000	CHANGE 1990-2000	AAGR 1990-2000
Clark County	88,571	134,030	51%	4.20%
Incorporated	26,630	73,210	175%	10.60%
Unincorporated	61,941	60,820	-2%	-0.20%
Percent Incorporated	30%	55%		
Percent Unincorporated	70%	45%		
Battle Ground	1,341	3,209	139%	9.10%
Camas	2,438	4,736	94%	6.90%
La Center	129	585	353%	16.30%
Ridgefield	441	777	76%	5.80%
Vancouver	20,135	60,039	198%	11.50%
Washougal	1,898	3,463	82%	6.20%
Yacolt	199	344	73%	5.60%

*Source: U.S. Bureau of the Census, 1990-2000; WA State Office of Financial Management (2002), 2002 Population Trends for Washington State; WA State Office of Financial Management (2002),Illustrative Household and Persons per Household Projections *Average Annual Growth Rate*

Another characteristic that would affect the type of housing needed in Clark County is the average household size. Average household size has declined nationally and in Washington over the past several decades. Table 44 shows that in 1980, the average household size in Clark County was 2.76 persons per household (pph) and has continued to decline in the last 20 years. The 2000 Census reported an average household size of 2.69 persons per household in Clark County. The OFM has set a 2024 average household size of 2.59 pph. Declining trends in household size means more units are needed to accommodate the county's population, even if no growth were to occur.

Table 44. *Persons Per Households in Clark County, 1980-2024*

Year	Total households	Persons per household
1980	68,750	2.76
1990	88,571	2.66
2000	127,208	2.69
2024	225,602	2.59

Sources: U.S. Bureau of the Census (1980-2000) .Clark County, 2005 (persons per household).

e. Income

The relationship of household income to housing prices is the main factor affecting the ability of Clark County's residents to secure adequate housing. Table 45 shows median household incomes (MHI) for the state and region. Median household income is defined as the mid-point of all of the reported household incomes; that is, half the households had higher incomes and half the households had lower incomes than the mid-point.

Median household incomes have increased in Clark County as a whole at a rate comparable to the Portland-Vancouver PMSA, and slightly faster than the state median. Nearly all of the cities have experienced much more substantial increases in median household income than either the county or the PMSA. The largest percent increases between 1990 and 2000 occurred in La Center (124 percent), Yacolt (117 percent), and Camas (111 percent).

Table 45. *Median Household Incomes, 1990-2000*

Jurisdiction/Area	1990	2000	Percent change 1990-2000
Washington State	$31,183	$45,776	47%
Portland-Vancouver PMSA	$31,259	$47,077	51%
Clark County	$31,800	$48,376	52%
Battle Ground	$24,256	$45,070	86%
Camas	$28,576	$60,187	111%
La Center	$24,750	$55,333	124%
Ridgefield	$26,992	$46,012	70%
Vancouver	$21,552	$41,618	93%
Washougal	$25,463	$38,719	52%
Yacolt	$18,194	$39,444	117%

Source: U.S. Bureau of the Census (1990-2000)

The 2000 Census reported that Clark County had a MHI of $48,376, which is slightly higher than the Portland-Vancouver PMSA ($47,077) and the state of Washington ($45,776), although the 2004 American Community Survey (ACS) reported a slightly lower MHI for Clark County ($48,288) than what was reported in the 2000 Census.[5] Camas had the highest median household income of any city ($60,187 annually). The only other jurisdiction with a higher median household income than the county is La Center, where the median household income in 2000 was $55,333. While Yacolt experienced one of the largest percent increases in the last decade, households in Yacolt still earn less than every other jurisdiction annually except Washougal. Income is also discussed in *Section g, Housing Affordability*.

Clark County residents who fall below the federal poverty level have a more difficult time securing adequate housing than those with higher incomes. Table 46 shows the poverty rate reported in the 2000 Census for all residents in Clark County and the PMSA by relationship. The 2000 Census reported that the percentage of individuals below the poverty level in Clark County was slightly lower than the entire PMSA, although female householder families were having a harder time making ends meet. The percentage of all families in poverty in Clark County in 2000 (6.9 percent) was slightly higher than families in poverty in the PMSA (6.4 percent). The 2004 ACS does not provide data for the entire PMSA or for the percentage of families in poverty, although individuals in poverty showed an increase since 2000, particularly for residents 18 years and older. Approximately 14 percent of residents live in poverty in 2004 compared to 8.7 percent in 2000.

Female-headed households are much more likely to live in poverty than other families. The percentage of female-headed households in Clark County in poverty (24.2 percent) was higher than the PMSA (20.9 percent). The biggest concern is female-headed households with children under five; over 43 percent live below the poverty line in Clark County compared to about 40 percent for the PMSA.

[5] The ACS is a nationwide survey intended to eliminate the need for the long form in the 2010 Census. The ACS collects information from U.S. households similar to what was collected on the Census 2000 long form, such as income, commute time to work, home value, veteran status, etc. Not all geographies, including the Portland-Vancouver PMSA or local jurisdictions within Clark County, were counted in the 2004 ACS. Future ACS releases may include data for those areas.

Table 46. *Poverty Rates, 2000 and 2004*

			2000			2004
Category	**Clark County**	**Percent of population**	**Portland-Vancouver PMSA**	**Percent of population**	**Clark County**	**Percent of Population**
Individuals	31,027	9.1	178,528	9.5%	46,064	11.1%
Persons 18 years and older	19,220	7.9	122,372	8.7%	14,221	14.1%
Persons 65 years and older	2,180	6.8	14,057	7.3%	24,720	9.9%
All families	6,291	6.9	30,896	6.4%	-	-
With related children under 18	5,207	10.3	25,067	9.7%	-	-
With related children under 5	2,799	13.4	13,738	13.1%	-	-
All female householder families	3,208	24.2	14,737	20.9%	-	-
With related children under 18	3,006	31.1	13,575	27.6%	-	-
With related children under 5	1,514	43.5	6,869	40.0%	-	-

Source: U.S. Bureau of the Census, 2000; American Community Survey, 2004

f. Rental and Owner-Occupied Housing

Table 47 shows the total number of units (both occupied and vacant) by structure type. The total number of housing units in Clark County in 2004 was 148,993 units, a 60 percent increase since 1990. Single-family homes make up 80 percent (119,528 units) of this stock. Multi-family homes constitute 20 percent (29,465 units) of total housing stock. The percentage of single-family homes in Clark County in 2004 was slightly less than in 1990. By far the majority of single-family homes are one-unit-detached structures, although other single-family housing types, particularly one-unit-attached structures (townhouses) have also grown in popularity. The total number of single-family attached units increased by over 122 percent since 1990, while single-family detached homes increased by about 60 percent. The number of multi-family housing units has also increased, particularly in apartment complexes with 5 to 9 units.

Table 47. *Number of Housing Units by Type in Clark County, 1990-2004*

Unit Type	**1990**	**Percent Of Total Housing Units**	**2000**	**Percent Of Total Housing Units**	**2004**	**Percent of Total Housing Units**	**Percent Change 1990-2004**
Single-Family							
1, detached	61,187	65.9%	90,081	67.2%	97,824	65.7%	59.9%
1, attached	2,655	2.9%	4,583	3.4%	5,902	4.0%	122.3%
Duplex	4,515	4.9%	4,914	3.7%	7,207	4.8%	59.6%
Mobile home	7,320	7.9%	8,833	6.6%	8,595	5.8%	17.4%
Subtotal	75,677	81.5%	108,411	80.9%	119,528	80.2%	57.9%
Multi-family							
3 or 4	3,105	3.3%	4,803	3.6%	5,856	3.9%	88.6%
5 to 9	3,965	4.3%	6,203	4.6%	8,990	6.0%	126.7%
10 to 19	4,549	4.9%	4,418	3.3%	8,581	5.8%	88.6%
20 or more	5,019	5.4%	9,879	7.4%	6,038	4.1%	20.3%
Other	534	0.6%	316	0.2%	-	-	-
Subtotal	17,172	18.4%	25,619	19.1%	29,465	19.8%	71.6%
Total Units	**92,849**		**134,030**	**100.0%**	**148,993**		**59.6%**

Source: U.S. Bureau of the Census, 1990, 2000; American Community Survey, 2004.

Single family units in 2000 (2004 data is not available for the Portland-Vancouver PMSA) accounted for a higher percentage of units in Clark County than in the Portland-Vancouver PMSA, where single-family units accounted for about 74 percent of housing stock and multifamily units accounted for about 26 percent of total units. The lower percentage of multifamily and other types of housing within Clark County limits housing choices for those needing less expensive housing or wanting an alternative to single-family residences. A more varied housing stock better serves the needs of the entire population that includes seniors, low-income households, and other residents with specific needs.

Table 48 shows housing units by type of occupancy over time. While total housing units increased by over 44 percent between 1990 and 2004, vacancy rates have dropped significantly from a relatively stable rate of about five percent between 1990 and 2000 to about 2.4 percent in 2004. Of the occupied units (145,455 units), about 68 percent (98,903 units) were owner-occupied. Renters occupied 32 percent of the units (46,552 units).

Table 48. *Number of Housing Units by Occupancy Type in Clark County, 1990-2004*

Housing occupancy type	1990	2000	2004	Percent Change 1990-2004
Total housing units	92,849	134,030	148,993	60.47%
Vacant units (percent vacant)	4,409 (4.7%)	6,822 (5.1%)	3,538 (2.4%)	-48.4%
Occupied units	88,440	127,208	145,455	64.47%
Owner-occupied units	56,872	85,551	98,903	73.90%
Renter occupied units	31,568	41,657	46,552	47.47%

Source: U.S. Bureau of the Census, 1990, 2000; American Community Survey, 2004.

The Consolidated Housing and Community Development Plan describes trends in the local rental market based on several data sources. Between 1997 and 2004, the median rent for apartments increased from $609 to $665 per month, a 9 percent increase. Vacancy rates have increased for the same timeframe from a low of 3.8 percent in 1997 to a high of 7.2 percent in 2004, which contradicts ACS survey information that showed a much smaller vacancy rate. This may be due to how the ACS calculated the vacancy rates, which also included homes that are typically owner-occupied but vacant at the time of the survey whereas the HCDP calculated vacancy rates for only rental units. The actual vacancy rate for rental units is likely similar to what was identified in the HCDP, which shows an adequate number of vacancies and a healthy rental market.

For some moderate and upper income households (particularly retirees), renting is a choice since they have the financial means to buy a home. For some young households, renting is an interim step to future homeownership. For many low and moderate-income households, however, renting is the only financially feasible choice due to the relatively high cost of purchasing and maintaining a home. The rising cost of renting has the greatest effect on the most vulnerable of Clark County's population. Once rents get too high, low-income households are forced to double up with family members, live in an apartment that is far away from their job, school, or social networks, and some are even forced into homelessness.

For those buying homes, median home prices in Clark County are slightly lower than the average for the Portland Metro area. According to the Regional Multiple Listing Service (RMLS), the median home price in the Oregon portion of the PMSA[6] was $231,500 in 2005, compared to $221,800 in Clark County for the same timeframe.

6 Includes Clackamas, Columbia, Washington, and Multnomah, and Yamhill Counties.

g. Housing Affordability

The market value for existing housing is only one facet of determining how much home Clark County residents can afford, or if they can even afford to purchase a home. Income requirements from lenders and savings for a down payment are two stumbling blocks, but affording the monthly mortgage payment on a home can also be a burden. Housing affordability is based on the percentage of monthly income spent on housing. The U.S. Department of Housing and Urban Development (HUD) uses a standard formula to determine affordability, assuming no more than 30 percent of monthly household income is spent on rent or mortgage. Table 49 compares household income to fair market rents in Clark County.[7] Fair market rents are used to assess the average cost of rental housing within the county and are an indicator of the entire rental housing stock in the region. Using HUD's formula, approximately 15 of percent of Clark County residents cannot afford a studio apartment, and over 27 percent are not able to afford a two-bedroom apartment.

Table 49. *Housing Affordability in Clark County Based on Household Income*

Income	Clark County Households	Percent of households	Affordable housing cost (30 percent)	HUD fair market rent (2005)
Less than $10,000	7,434	5.8%	0-$250	Studio: $535 One-bedroom: $620 Two-bedroom: $717 Three-bedroom: $1,044 Four-bedroom: $1,257
$10,000 to 14,999	6,082	4.8%	$250-$375	
$15,000 to 24,999	13,386	10.5%	$375-$625	
$25,000 to 34,999	15,269	12.0%	$625-$875	
$35,000 to 49,999	23,938	18.8%	$875-$1,250	
$50,000 to 74,999	30,448	23.9%	$1,250-$1,875	
$75,000 to 99,999	15,697	12.3%	$1,875-$2,500	
$100,000 to 149,000	10,649	8.4%	$2,500-$3,725	
More than $150,000	4,387	3.4%	more than $3,750	

Source: U.S. Census Bureau, 2000 Decennial Census; US Department of Housing and Urban Development (Fair Market Rent), 2005. Analysis by David Evans and Associates, Inc.

Although many residents cannot afford even the most basic housing, most Clark County households can. Households with incomes between $35,000 and $75,000 account for the majority of households and all are able to afford at least a two-bedroom apartment.

While many Clark County households are able to afford larger and more expensive housing, households with lower incomes are in a more precarious situation. When rent accounts for more than 30 percent of income, HUD considers the household "cost burdened." Households spending more than 50 percent of monthly income on rent are considered "extremely cost burdened" and likely to be financially stressed by emergencies or even unable to afford basic needs such as food and transportation. HUD breaks low-income households into several categories: extremely low-income (earning at most 30 percent of the median household income); very low-income (earning at most 50 percent of the median household income); and low-income (households earning at most 80 percent of the median household income). Table 50 illustrates what different Clark County household income levels can afford based on the median household income. Extremely low-income households (earning less than approximately $14,000 annually) cannot afford even a studio apartment ($535/month) in Clark County. Very low-income households earning less than approximately $24,000 annually and accounting for about 20 percent of Clark County's population are able to afford only a one-bedroom

7 HUD determines fair market rent based on annual phone survey and other data gathering techniques down to the county level, but does not collect data for smaller geographic units.

apartment ($620/month). In order to find housing, very-low income households may double up or accept substandard units. Residents with the low-income category (earning less than $38,700) can sometimes afford larger units.

Table 50. *Monthly Affordable Housing Costs for Clark County Resident*

		Range of affordable monthly housing costs			
Percent of median household income	2004 Median household income/month	30 percent of MHI	50 percent of MHI	80 percent of MHI	100 percent of MHI
Clark County	$4,024	$362	$604	$966	$1,207

Source: American Community Survey, 2004; Analysis by David Evans and Associates, Inc.

The National Low-Income Housing Coalition (NLIHC) estimates that, nationally, 55 percent of low-income households experience cost burden, live in substandard housing, and/or live in overcrowded units. For extremely low-income households (30 percent of MHI), the likelihood that a household experiences some type of housing problem is even higher, at 88 percent.

The high percentage of extremely low and very low-income households in Clark County, in combination with high rental rates and home prices, indicates a lack of affordable housing for low-income households.

h. Residential Density/Housing Split

As a part of updating the 20-Year Comprehensive Growth Management Plan, the County evaluated residential building permit data for local jurisdictions and rural areas between 2001 and 2004, as shown in Table 51. Overall the county achieved a density of 1.4 units per acre since 2001, which is slightly lower than 1.5 units per acre achieved between 1995 and 2000. Growth has generally been concentrated in UGAs, where residential densities were significantly higher than rural areas at 6.0 units per acre versus development outside UGAs in rural areas averaging one unit per five acres. The highest densities within individual UGAs were achieved within the Vancouver and Battle Ground UGAs, achieving 6.5 and 5.7 units per acre, respectively. Within the city limits, urban densities were also higher in Vancouver and Battle Ground than any other local jurisdiction, reaching a density of 8.4 and 6.8 units per acre, respectively.

Compared to development reported in the 2003 DEIS, density has remained relatively stable countywide, although housing constructed between 2001 and 2004 consisted of a higher percentage of single family homes compared to 1995-2000 figures. Between 1995 and 2000, approximately 75 percent of residential development was in single family units compared to nearly 80 percent between 2001 and 2004. Since 2001 multifamily construction generally occurred only in Vancouver, with few multifamily units being constructed in other jurisdictions. While the majority of multifamily units were also constructed in Vancouver between 1995 and 2000, other jurisdictions added more multifamily units then were added since 2001.

Countywide Planning Policy 1.1.12 in the *2004 Clark County Comprehensive Plan* specifies that no more than 75 percent of new dwelling units to be a specific product type (e.g. single-family housing). Based on development between 2001 and 2004, it appears the County has not achieved the desired development pattern. Rather, the County achieved approximately a 77 percent single-family/23 percent multi-family housing split within all UGAs. This is higher than the 71/29 single family/multifamily split experienced between 1995 and 2000. Local jurisdictions, with the exception of Vancouver, almost exclusively constructed single family units and all jurisdictions except for Vancouver had over 96 percent of the residential development as single family between 2001 and 2004. Vancouver in contrast, had a single family/multi-family housing split of 69 percent single-family/31 percent multi-family housing within the UGA for the same time period. Within the

Vancouver city limits, the housing split was 43 percent single family/57 percent multifamily. Since single-family homes are generally more expensive, communities where by far the majority of new units are single family are less likely to provide housing affordable to the full range of county residents and is less likely to be providing affordable housing opportunities for residents the lower income brackets.

Table 51. *2001-2004 Residential Development and Housing Split*

Area	Single Family				Multi Family				Total		
	Units	Percent single family	Acres	Units per acre	Units	Percent multi family	Acres	Units per acre	Units	Acres	Units per acre
Battle Ground											
City	1,311	100.0%	194	6.8	-	-	-	-	1,311	194	6.8
Total UGA	1,331	100.0%	233	5.7	-	-	-	-	1,331	233	5.7
Camas											
City	990	98.9%	214	4.6	11	1.1%	0.8	13.8	1,001	214	4.7
Total UGA	1,085	99.0%	235	4.6	11	1.0%	0.8	13.8	1,096	236	4.6
La Center											
City	133	97.8%	30	4.5	3	2.2%	0.3	10.0	136	30	4.5
Total UGA	133	97.8%	30	4.5	3	2.2%	0.3	10.0	136	30	4.5
Ridgefield											
City	132	97.1%	33	4.0	4	2.9%	0.1	40.0	136	33	4.1
Total UGA	132	97.1%	33	4.0	4	2.9%	0.1	40.0	136	33	4.1
Vancouver											
City	1,775	42.7%	368	4.8	2,380	57.3%	126.4	18.8	4,155	494	8.4
Total UGA	6,431	68.9%	1,281	5.0	2,900	31.1%	160.0	18.1	9,331	1,441	6.5
Washougal											
City	686	96.5%	157	4.4	25	3.5%	1.6	15.6	711	159	4.5
Total UGA	692	96.5%	168	4.1	25	3.5%	1.6	15.6	717	169	4.2
Woodland											
City	2	100.0%	0.4	5.0	-	-	-	-	2		5.0
Total UGA	2	100.0%	0.4	5.0	-	-	-	-	2		5.0
Yacolt											
City	33	100.0%	11	3.0	-	-	-	-	33	11	3.0
Total UGA	33	100.0%	11	3.0	-	-	-	-	33	11	3.0
Total Cities	5,062	67.6%	1,006	5.0	2,423	32.4%	129.2	18.8	7,485	1,135	6.6
Total UGAs	9,839	77.0%	1,991	4.9	2,943	23.0%	162.8	18.1	12,782	2,154	5.9
Rural Areas	1,567	100.0%	8,407	0.2	-	-	-	-	1,567	8,407	0.2
County Total	11,406	79.5%	10,398	1.1	2,943	20.5%	162.8	18.1	14,349	10,561	1.4

Source: Clark County Community Planning Department. Clark County Plan Monitoring Report (June 2005)

i. Constraints on Housing Production

There are relatively few constraints on housing production in Clark County. Natural resources, such as lumber and gravel, are readily available in the area, and interest rates continue to remain low. The only foreseeable limitations to housing construction would be the amount of available land for construction and the constraining effect of environmental protection regulations. Increasing federal,

state, and local environmental protection regulations have reduced the amount of land available for development and increased the time and cost involved in producing housing.

j. Land Absorption

The Clark County BOCC is concerned that the *2004 Comprehensive Plan* does not provide sufficient land to accommodate 20 years of growth within adopted UGAs. As required by state law, Clark County surveyed development activity between 2001 and 2004 to determine how well the County has done at meeting the GMA goals. The *Plan Monitoring Report* (June 2005) presents the results of that survey.

To identify the how fast growth is occurring, land absorption rates were calculated for the 4 year period from 2001 to 2004. Land absorption rates are assumed to be consistent with planned growth if not more than 25 percent of available land between 2001 and 2004 was developed.

Strong population growth has spurred residential development mainly inside UGAs, although rural areas also experienced strong growth between 2001 and 2004. Between 2001 and 2004, the number of residents living in rural areas increased by 13 percent, with residential units increasing by about 1,560 units in rural areas with an average density of approximately 1 unit per 5 acres. The increased lot size and tendency for rural residences to be larger and often makes them more expensive than homes within UGAs.

Countywide, 4,705 acres of vacant or underutilized land, approximately 28 percent of available residential land, was converted to residential uses. Residential land absorption rates between 2001 and 2004 varied by UGA. Vancouver, Washougal and Yacolt absorption rates for residential land were higher than anticipated with more than 25 percent of vacant of underutilized land developed since 2001. Vancouver and Battle Ground converted the most vacant land, converting about 3,376 acres (33 percent) and 497 acres (23 percent), respectively, of developable residential acres. Washougal developed about 377 acres, nearly 34 percent of vacant or underdeveloped residential land, while Ridgefield developed less than 11 percent of its residential land for the same time period.

With the exception of Washougal and La Center, which developed nearly 55 percent and about 32 percent, respectively, of vacant and underutilized commercial land in existing UGAs, commercial land absorption since 2000 generally meet planned absorption rates, with less than 25 percent of vacant or underdeveloped commercial land developed in existing UGAs since 2000. Overall, development has occurred on about 16 percent of the vacant or underutilized commercial land within the county.

Overall, approximately 26 percent of vacant and underutilized industrial land was developed between 2000 and 2005. Development of industrial land within UGAs varies by jurisdiction with the most industrial development, in terms of total acreage, occurring in Vancouver, which developed approximately 826 acres, or about 19 percent of total developable industrial land. Camas and Washougal, while developing less industrial land than Vancouver, developed a higher percentage of developable industrial land within each UGA. Camas developed approximately 523 acres, or 88 percent, of its available industrial land since 2000 and Washougal had developed 114 acres, nearly 44 percent of available industrial land.

3. Impacts

Direct impacts are shown in Tables 52 to 54, with the alternatives' capacity to accommodate urban and rural growth, the impacts each alternative would have to land with existing county zoning and how land within each expansion area would be allocated.

Table 52. *Land Added to City UGAs by Rural Designation, Alternatives 1 and 2 (acres)*

			Urban Land											
	County		Battle Ground		Camas		La Center		Ridgefield		Vancouver		Washougal	
	Alt 1	Alt 2	Alt 1	Alt 2	Alt 1	Alt 2	Alt 1	Alt 2	Alt 1	Alt 2	Alt 1	Alt 2	Alt 1	Alt 2
Existing County Comprehensive Plan Designation		Acres of existing Comprehensive Plan designations added to UGAs	County acreage dedicated to City		County acreage dedicated to City		County acreage dedicated to City		County acreage dedicated to City		County acreage dedicated to City		County acreage dedicated to City	
Rural Residential	All land in Alternative 1 is currently designated for urban uses within each UGA. No additional county land would be added	2,980	No additional land would be added to UGA	715	No additional land would be added to UGA	459	No additional land would be added to UGA	476	No additional land would be added to UGA	647	No additional land would be added to UGA	460	No additional land would be added to UGA	222
Urban Reserve		3,434		291		-		75		265		2,420		383
Commercial		16		2		-		10		-		4		-
Office Park/Business Park		-		-		-		-		-		-		-
Industrial		8		8		-		-		-		-		-
Industrial Urban Reserve		135		-		-		135		-		-		-
Mining Lands		-		-		-		-		-		-		-
Agriculture		4,054		490		510		498		1,211		1,072		272
Forest land		154		-		154		-		-		-		-
Other		-		-		-		-		-		-		-
Parks/Open Space		77		-		-		19		22		37		-
Public Facility		-		-		-		-		-		-		-
Water		-		-		-		-		-		-		-
Total Acres		**10,858**		**1,507**		**1,123**		**1,213**		**2,144**		**3,993**		**877**

Table 53. *Land Added to City UGAs by Urban Designation, Alternatives 1 and 2 (acres)*

	Urban Land				**Urban Land**								
	All UGAs				Battle Ground			Camas			La Center		
	Existing UGAs	Alt 1	Alt 2		Alt 1	Alt 2		Alt 1	Alt 2		Alt 1	Alt 2	
New Land Use Designation	Total acreage within UGAs	Total acreage within UGAs	Total acres within UGA	Acreage added to UGA	Acres within UGA	Acres within UGA	Acreage added to UGA	Acres within UGA	Acres within UGA	Acreage added to UGA	Acres within UGA	Acres within UGA	Acreage added to UGA
Urban Low Density Residential	37,543	37,543	45,674	6,219	2,154	2,596	442	906	1,330	424	595	1,210	615
Urban Medium Density Residential	8,997	8,997	10,428	743	928	1,212	284	3,433	3,433	-	-	91	91
Urban High Density Residential	1,719	1,719	1,905	116	101	101	-	396	396	-	-	-	-
Mixed Use Residential	81	81	438	276	81	357	276	-	-	-	-	-	-
Total new residential acres	48,259	48,259	58,364	7,078	3,264	4,266	1,001	4,734	5,158	424	595	1,301	706
Mixed Use	1,623	1,623	1,955	575	332	332	-	-	535	535	55	59	4
Mixed Use Employment	43	43	382	297	43	340	297	-	-	-	-	-	-
Commercial	6,066	6,066	6,711	227	604	614	10	326	338	12	82	160	78
Employment Center	10,452	10,452	12,680	370	641	641	-	295	447	153	-	-	-
Employment Campus	1,650	1,650	1,901	128	123	250	128	1,528	1,528	-	-	-	-
Industrial	3,462	3,462	5,132	1,907	-	71	71	974	974	-	-	425	425
Total employment acres	23,297	23,297	28,761	3,504	1,742	2,248	506	3,122	3,821	699	137	644	507
Public Facilities	3,742	3,742	3,759	-	17	17	-	-	-	-	76	76	-
Parks/Open Space	5,829	5,829	6,614	-	277	277	-	296	296	-	114	114	-
Total acres	**81,207**	**81,207**	**97,580**	**10,858**	**5,300**	**6,808**	**1,507**	**8,152**	**9,276**	**1,123**	**920**	**2,134**	**1,213**

	Urban Land								
	Ridgefield			Vancouver			Washougal		
	Alt 1	Alt 2		Alt 1	Alt 2		Alt 1	Alt 2	
New Land Use Designation	Acres within UGA	Acres within UGA	Acreage added to UGA	Acres within UGA	Acres within UGA	Acreage added to UGA	Acres within UGA	Acres within UGA	Acreage added to UGA
Urban Low Density Residential	1,767	3,221	1,455	29,731	32,550	2,819	2,392	2,856	464
Urban Medium Density Residential	207	424	218	4,256	4,407	150	173	173	-
Urban High Density Residential	-	-	-	1,222	1,222	-	-	116	116
Mixed Use Residential	-	-	-	-	-	-	-	-	-
Total new residential acres	1,973	3,646	1,673	35,209	38,179	2,969	2,565	3,145	581
Mixed Use	49	49	-	1,188	1,224	37	-	-	-
Mixed Use Employment	-	-	-	-	-	-	-	-	-
Commercial	208	234	26	4,610	4,686	76	237	262	24
Employment Center	1,654	1,782	128	7,722	7,722	-	141	230	89
Employment Campus	-	-	-	-	-	-	-	-	-
Industrial	-	317	317	2,099	3,010	911	389	572	183
Total employment acres	1,910	2,382	472	15,618	16,642	1,024	768	1,064	296
Public Facilities	187	187	-	3,316	3,316	-	146	146	-
Parks/Open Space	164	164	-	4,543	4,543	-	435	435	-
Total acres	**4,235**	**6,379**	**2,144**	**58,687**	**62,680**	**3,993**	**3,913**	**4,790**	**877**

Source: Clark County Planning Department; Clark County Department of Assessment and GIS, 2006

Table 54. *Alternative 3 Options for Additions to City UGAs, by Subarea (acres)*

	Battle Ground			Camas			La Center			Ridgefield			
	Alternative 3		Alternative 2	Alternative 3		Alternative 2	Alternative 3		Alternative 2	Alternative 3			Alternative 2
	B1	B2	Subarea 3	C1	C2	Subarea 6	L1	L2	Subarea 1	R1	R2	R3	Subarea 2
Existing Designation													
Rural Residential	41	120	715	794	98	459	223	279	476	316	30	76	647
Urban Reserve	-	-	291	-	-	-	-	-	75	-	-	-	265
Commercial	-	-	2	-	-	-	-	-	10	-	-	-	-
Office Park/Business Park	-	-	-	-	-	-	-	-	-	-	2	-	-
Industrial	-	-	8	-	-	-	-	-	-	-	-	-	-
Industrial Urban Reserve	-	-	-	-	-	-	-	-	135	-	-	-	-
Mining Lands	-	-	-	-	-	-	-	-	-	-	-	-	-
Agriculture	-	-	490	407	27	510	306	405	498	298	23	286	1,211
Forest land	-	-	-	-	-	154	-	-	-	-	-	-	-
Other	-	-	-	-	-	-	-	-	-	-	-	-	-
Parks/Open Space	-	-	-	42	-	-	6	109	19	-	171	-	22
Public Facility	-	-	-	-	-	-	-	-	-	-	-	-	-
Water	-	-	-	-	-	-	-	-	-	-	-	-	-
Total acres	**41**	**120**	**1,507**	**1,243**	**125**	**1,123**	**534**	**793**	**1,213**	**614**	**227**	**362**	**2,144**

	Vancouver									Washougal			
	Alternative 3				Alternative 2	Alternative 3			Alternative 2	Alternative 3			Alternative 2
	V1	V2	V3	V4	Subarea 4	V5	V6	V7	Subarea 5	W1	W2	W3	Subarea 7
Existing Designation													
Rural Residential	70	657	-	-	111	248	-	55	349	654	107	-	222
Urban Reserve	933	-	402	908	2,154	-	219	-	266	109	-	-	383
Commercial	-	21	-	-	-	-	-	-	4	-	-	-	-
Office Park/Business Park	-	-	-	-	-	-	-	-	-	-	-	-	-
Industrial	-	-	-	-	-	-	-	-	-	-	-	-	-
Industrial Urban Reserve	-	-	-	-	-	-	-	-	-	-	-	-	-
Mining Lands	-	-	-	-	-	-	-	-	-	-	-	-	-
Agriculture	-	197	-	-	-	387	-	613	1,072	46	15	-	272
Forest land	-	-	-	-	-	-	-	-	-	-	-	-	-
Other	-	-	-	-	-	-	-	-	-	-	-	-	-
Parks/Open Space	2	-	-	-	37	-	-	-	-	-	-	21	-
Public Facility	-	-	-	-	-	-	-	-	-	-	-	-	-
Water	-	-	-	-	-	-	-	-	-	-	-	-	-
Total acres	**1,006**	**875**	**402**	**908**	**2,302**	**635**	**219**	**668**	**1,691**	**809**	**122**	**21**	**877**

	Battle Ground			Camas			La Center			Ridgefield			
	Alternative 3		Alternative 2	Alternative 3		Alternative 2	Alternative 3		Alternative 2	Alternative 3			Alternative 2
Designation	B1	B2	Subarea 3	C1	C2	Subarea 6	L1	L2	Subarea 1	R1	R2	R3	Subarea 2
Urban Low Density Residential	20	120	442	369	125	424	224	414	615	614	178	160	1,455
Urban Medium Density Residential	-	-	284	-	-	-	-	139	91	-	-	80	218
Urban High Density Residential	-	-	-	-	-	-	-	-	-	-	-	-	-
Mixed Use Residential	-	-	276	-	-	-	-	-	-	-	-	-	-
Total new residential acres	**20**	**120**	**1,001**	**369**	**125**	**424**	**224**	**553**	**706**	**614**	**178**	**241**	**1,673**
Mixed Use	-	-	-	-	-	535	-	-	4	-	-	-	-
Mixed Use Employment	-	-	297	-	-	-	-	-	-	-	-	-	-
Commercial	-	-	10	-	-	12	-	-	78	-	-	-	26
Employment Center	-	-	-	590	-	153	-	-	-	-	-	122	128
Employment Campus	22	-	128	-	-	-	-	-	-	-	-	-	-
Industrial	-	-	71	-	-	-	86	239	425	-	49	-	317
Total employment acres	**22**	**-**	**506**	**590**	**-**	**699**	**86**	**239**	**507**	**-**	**49**	**122**	**472**
Public Facilities	-	-	-	-	-	-	-	-	-	-	-	-	-
Parks/Open Space	-	-	-	284	-	-	224	-	-	-	-	-	-
Total acres	**41**	**120**	**1,507**	**1,243**	**125**	**1,123**	**534**	**793**	**1,213**	**614**	**227**	**362**	**2,144**

	Vancouver									Washougal			
	Alternative 3				Alternative 2	Alternative 3			Alternative 2	Alternative 3			Alternative 2
Designation	V1	V2	V3	V4	Subarea 4	V5	V6	V7	Subarea 5	W1	W2	W3	Subarea 7
Urban Low Density Residential	1,006	-	402	908	2,140	141	219	-	679	693	81	-	464
Urban Medium Density Residential	-	-	-	-	80	-	-	-	71	-	-	-	-
Urban High Density Residential	-	-	-	-	-	-	-	-	-	85	-	-	116
Mixed Use Residential	-	-	-	-	-	-	-	-	-	-	-	-	-
Total new residential acres	**1,006**	**-**	**402**	**908**	**2,219**	**141**	**219**	**-**	**750**	**778**	**81**	**-**	**581**
Mixed Use	-	-	-	-	37	-	-	-	-	-	-	-	-
Mixed Use Employment	-	-	-	-	-	-	-	-	-	-	-	-	-
Commercial	-	-	-	-	46	-	-	-	30	31	-	-	24
Employment Center	-	875	-	-	-	-	-	-	-	-	-	-	89
Employment Campus	-	-	-	-	-	-	-	-	-	-	-	-	-
Industrial	-	-	-	-	-	495	-	668	911	-	41	-	183
Total employment acres	**-**	**875**	**-**	**-**	**83**	**495**	**-**	**668**	**941**	**31**	**41**	**-**	**296**
Public Facilities	-	-	-	-	-	-	-	-	-	-	-	-	-
Parks/Open Space	-	-	-	-	-	-	-	-	-	-	-	21	-
Total acres	**1,006**	**875**	**402**	**908**	**2,302**	**635**	**219**	**668**	**1,691**	**809**	**122**	**21**	**877**

Source: Clark County Planning Department; Clark County Department of Assessment and GIS, 2006

None of the alternatives would change the UGA or land use designations for Yacolt or Woodland nor would they change land use, population, or employment projections. Development within these two communities would continue as in the past and the existing and proposed comprehensive plan policies and zoning ordinance would direct any anticipated growth.

a. Methodology

The Clark County Department of Assessment and GIS calculated land use acreage for each alternative. Acreage that would be added to a city's UGA is generally rural in nature, but when annexed to a UGA the intensity of use would be expected to increase over time. This can have significant impacts on agricultural, forest, and other lands where development is sparse or has yet to occur. Separate discussions about impacts on rural and resource lands are presented below.

The County has identified three alternative ways to meet the county's 20-year housing and employment needs described above. All alternatives used the same planning assumptions. The calculation of how much land is needed is based on the planning assumptions described in the first sections of this document.

A market factor for residential land was added to the acreage needed to accommodate growth. This market factor is a "cushion" to ensure flexibility in the residential market and to discourage artificial increases in land prices if growth occurs more rapidly than anticipated. An additional 10 percent was added to the total acreage for residential land. No market factors were added for industrial or commercial lands.

The estimated land need was also increased to reflect infrastructure (e.g., roads, storm water detention etc.). All alternatives added 27.5 percent of the total acreage for infrastructure for residential development and 25 percent for all other uses. The estimated population is the same for both alternatives and would require the same number of housing units to accommodate the projected population.

b. Alternative 1

Clark County: Alternative 1 would maintain the existing UGAs for each jurisdiction. Development would occur on existing vacant and underdeveloped land within existing UGAs. Assuming existing residential densities do not exceed the Clark County Comprehensive Plan Policy 1.1.13 that describes the residential densities for each jurisdiction, the projected population through 2024 could not be accommodated on existing vacant or underutilized parcels. There would be available and buildable land to accommodate approximately 69 percent of the projected population, a shortfall of approximately 21,000 households and 54,000 people. In short to medium term, Alternative 1 would likely continue the current housing trend as described in *Section h, Residential Density/Housing Split*, which saw primarily single-family home construction - 80 percent of residential development was single family between 2001 and 2004. As vacant land is developed, pressure to increase densities could occur to accommodate the new residents in both urban and rural areas, though there could be less pressure to develop in rural areas with sufficient upzoning in urban areas. Accommodating all of the projected growth would require some areas within existing UGAs to develop at higher residential densities than they are currently zoned.

The amount of land needed to be upzoned depends on the new densities that could be achieved by the upzoning. For example, existing low density residential development allowing 2 units per acre might be increased to allow 8 units per acre, adding a net 6 units per acre. Low-density development to medium density uses would permit up to 16 units per acre, a net addition of 8 to 10 units per acre. Medium density zones could be changed to high density zones. A variety of scenarios could be used to achieve the result of accommodating the 21,000 new units needed. Where increases in density would occur would depend on existing development patterns and intensities in a given area and the maximum allowable units. The changes to zones could be made in one general location, perhaps creating a new urban center in the Vancouver UGA, or could be spread across the cities proportionately and using different combinations of new zones to achieve the goal. Increasing density in some areas could mean adding only a few units per acre, whereas in others, there could be more large scale changes. Whether the changes would significantly

alter the existing development pattern depends on the availability of vacant and buildable land currently exists. Rezoning that is apportioned to the cities rather than in one UGA, for example could minimize impacts to existing neighborhoods.

The amount of land required, based on the growth projections, could be significant. The County determined that if the projected 2024 population were accommodated under Alternative 1 by increasing densities in only low-density residential areas, approximately 5,540 acres would need to be rezoned from low-density residential uses (8 units/acre) to medium density residential uses (16 units/acre).[8] The acreage needed would be less than 5,540 acres if (for example) medium density uses were changed to allow high density uses and commercial and retail areas were rezoned to permit mixed-use development (which essentially keeps the existing development pattern but permits residential uses as well).

Existing low density residential land would be affected regardless of changing zoning in UGAs under Alternative 1. Impacts would likely be greatest in UGAs with very low existing densities and large lots. Vacant or underdeveloped acreage would likely be converted first, particularly large lots that could be subdivided into several parcels. While changes to these low-density areas would occur, landowners with large lots in urban areas could take advantage of the increased permitted density and subdivide their land. While increased density could change the character of UGAs where zoning is changed, over time existing landowners would benefit by selling portions of their property for new housing and local jurisdictions could see an increase in its property tax base because of the additional residential units.

Overall, Alternative 1 would better meet the County policies that call for new housing to not be more than 75 percent of a single housing type, a policy Clark County did not meet between 2000 and 2004. Rezoning areas to provide for more housing diversity could help the County meet that goal more easily than under Alternative 2, which would continue the existing development pattern of primarily low-density residential development.

Job creation under Alternative 1 would rely on vacant or redevelopable industrial land within existing UGAs whereas Alternative 2 would provide developable industrial land to UGAs in addition to what is already located in UGAs. Most of development under Alternative 1 would occur along major thoroughfares and I-5, potentially increasing congestion along existing roadways if adequate housing is not available near new employment areas. Some changes in zoning could occur to accommodate additional jobs. For example, medium and high density housing districts could be changed to mixed use, which would still provide for housing development but also provide increased employment opportunities. Industrial land could also be converted to commercial uses that typically provide a higher number of jobs per acre.

Job creation under Alternative 1 would rely on vacant or redevelopable industrial land within existing UGAs whereas Alternative 2 would provide developable industrial land to UGAs in addition to what is already located in UGAs. Most development under Alternative 1 would occur along major thoroughfares and I-5, potentially increasing congestion along existing roadways if adequate housing is not available near new employment areas. Some changes in zoning could occur to accommodate additional jobs. For example, medium and high density housing districts could be changed to mixed use, which would still provide for housing development but also provide increased employment opportunities. Industrial land could also be converted to commercial uses that typically provide a higher number of jobs per acre.

This alternative would make the most efficient use of existing infrastructure and would best support transit because no new areas would require public services. As densities increase, mass transit is better supported by urban areas. Alternative 1 would have no impact on resource lands. No resource lands would be made available for development as a part of this alternative because all development would occur within the existing city UGAs.

[8] *The estimated acreage is based on net acreage needed, which accounts for land with environmental protections and land needed for infrastructure.*

Battle Ground: No change would occur to Battle Ground's UGA as a result of this alternative. Development would occur on vacant and underutilized parcels and some larger lots with only one home would likely be subdivided. This alternative would result in the most efficient use of existing infrastructure of any alternative but would not accommodate the anticipated population or job increases under BOCC adopted growth assumptions. Battle Ground permits density transfers due to environmental site constraints, which, as development increases, could occur and may compensate for a lower estimate of build-out due to those environmental constraints. Density transfers alleviate development pressure from constrained lands, potentially accommodating more residents.

Camas: No change would occur to the Camas UGA as a result of this alternative and development would continue as it has in the past. As population increases, some underdeveloped larger lots would likely be subdivided to increase the number of housing units. This alternative would result in the most efficient use of land of any alternative, but would not accommodate the anticipated population and job increases under BOCC adopted growth assumptions. Camas permits density transfers due to environmental site constraints, which as development increases could occur and may compensate for a lower estimate of build-out due to those environmental constraints.

La Center: No change would occur to La Center's UGA as a result of this alternative. Development would continue as it has in the past. As population increases, some larger underutilized lots would likely be subdivided to increase the number of housing units. This alternative would result in the most efficient use of existing infrastructure of any alternative but would not accommodate the anticipated population or job increases under BOCC adopted growth assumptions. La Center permits density transfers due to environmental site constraints, which as development increases could occur and may compensate for a lower estimate of build-out due to those environmental constraints.

Ridgefield: No change would occur to the Ridgefield UGA as a result of this alternative. Development would continue as it has in the past. As population increases, some larger underutilized lots would likely be subdivided to increase the number of housing units. This alternative would result in the most efficient use of existing infrastructure of any alternative but would not accommodate the anticipated population or job increases under BOCC adopted growth assumptions. As with Battle Ground, density transfers are permitted within the UGA and could occur and may compensate for a lower estimate of build-out due to those environmental constraints.

Vancouver: No change would occur to the Vancouver UGA as a result of this alternative. While this alternative would result in the most efficient use of existing infrastructure of any alternative it would not accommodate the anticipated population or job increases. Rezoning would be required to increase density to accommodate the projected population increases under BOCC adopted growth assumptions. Some larger underutilized lots would likely be subdivided to increase the number of housing units. Vancouver allows density transfers on the same site as that with environmental or cultural resources constraints and those transfers may compensate for a lower estimate of build-out due to those environmental constraints.

Washougal: No change would occur to the Washougal UGA as a result of this alternative. Development would continue as it has in the past. As population increases, some larger underutilized lots would likely be subdivided to increase the number of housing units. This alternative would result in the most efficient use of existing infrastructure of any alternative but would not accommodate the anticipated population or job increases under BOCC adopted growth assumptions.

c. Alternative 2

Clark County: Alternative 2 would expand the UGAs of all jurisdictions except for Woodland and Yacolt. Countywide, 10,858 acres would be reallocated to city UGAs. This alternative would likely produce a low density residential development pattern with large urban lots as the preferred use. Alternative 2 would add almost exclusively urban low-density residential land (6,219 acres), primarily to Vancouver (3,993 acres) and Ridgefield (2,144 acres). Some land (743 acres) would be allocated for medium density residential uses, with Battle Ground receiving approximately 284 acres, the most of any

jurisdiction. Overall, housing development would be less compact than Alternative 1 where all housing would be located within the existing UGA. Much of this land is currently designated as agriculture (4,054 acres), urban reserve (3,434 acres), and rural residential (2,980 acres). Most UGA expansion for residential development would occur north of Vancouver, which would receive over a third of the total acreage under Alternative 2. Other jurisdictions would also have acreage added to the UGAs, with Ridgefield (2,144 acres) receiving the most land after Vancouver, followed by Battle Ground (1,507 acres), La Center (1,213 acres), Camas (1,123 acres), and Washougal (877 acres).

Affordable housing is also not likely to increase under Alternative 2 because residential development would be almost exclusively low-density residential uses. Some pockets of high-density residential acreage allocated to Washougal could offer some additional affordable housing, but the total acreage dedicated to high-density uses (116 acres) is less than two percent of the total amount of land dedicated for residential uses. Affordable housing would likely be found within cities where more housing options are available. This alternative would generally spread development along the I-5 corridor and north of Camas and Washougal, rather than producing a more compact development pattern.

The primary focus of Alternative 2 in terms of job creation would be by adding industrial land to UGAs. Of land that would be dedicated for employment (3,504 acres), more than half (54 percent) would be industrial land. Job creation under Alternative 1 would rely on vacant or redevelopable industrial land within existing UGAs whereas Alternative 2 would provide developable industrial land in addition to what is already located in UGAs. Most of this development would occur along major thoroughfares and I-5, potentially increasing congestion along existing roadways if adequate housing is not available near new employment areas.

This alternative would require more infrastructure than Alternative 1. Additional infrastructure would be required to serve areas added to UGAs. Because the majority of residential development would be low density uses, transit service would be more sporadic because to of smaller numbers of users it would serve when compared to Alternative 1 where higher residential densities are assumed to support a higher number of riders.

Battle Ground: Alternative 2 would add 1,507 acres to the Battle Ground UGA, generally to the west of the existing UGA on land currently designated as rural residential (715 acres), agriculture (490 acres), and urban reserve (291 acres). As with other jurisdictions in the county, low density residential (442 acres) would be the primary use within the expansion area, although 276 acres would be designated for mixed-use residential and 297 acres would be dedicated to mixed-use employment, potentially offering more housing diversity within the UGA. Nevertheless, with the majority of new housing continuing to be large lot single family residential units, affordable housing options would likely be limited to existing high-density development within the existing UGA or reliance on construction on vacant or redevelopable areas within the existing boundary to provide less expensive multifamily housing. New mixed-use areas could provide some affordable housing options, but mixed-use development is often a high demand type of housing option and may cater to those able to afford more expensive housing.

Camas: Alternative 2 would add 1,123 acres to the Camas UGA, primarily to the north of the existing UGA and affecting land currently designated as rural residential, agriculture and forest land. Unlike land added to the other jurisdictions, the majority of acreage (699 acres) would be designated for employment, primarily as mixed-use (535 acres) and employment center (153 acres). The remaining acreage would be designated for low density residential development (424 acres).

Providing land for mixed uses could diversify housing options in the Camas UGA, especially because Camas has a very high median income, but may not provide more affordable housing options because the cost of mixed-use housing can often be more expensive than medium- or high-density development alone. No medium or high density housing would be added to the Camas UGA. Medium and high density housing would have to be provided on vacant and undeveloped land within the existing UGA.

La Center: This alternative would add 1,213 acres to the existing UGA, primarily at the La Center Junction along I-5. The expansion area along I-5 would be dedicated primarily in industrial uses (425 acres) on land currently designated as Industrial urban reserve and agriculture. Low density residential (615 acres) and medium density residential (91 acres) would also be located along the I-5 corridor as well as to the west and east of the existing UGA. As population increases and the industrial area develops, residential demand can be expected to increase, and housing choices should be more varied as population densities reach levels that could support varied housing types. Some larger lots within the current UGA would likely be subdivided to increase the number of housing units.

Ridgefield: This alternative would add 2,144 acres to the existing UGA, primarily for low density residential (1,455 acres), industrial (317 acres), and medium density residential (218 acres), primarily along I-5 and to the south of the existing UGA. Of the 2,144 acres, 1,211 acres are currently used for agriculture with the majority of remaining expansion area designated for rural residential (647 acres) and urban reserve (265 acres). While some medium density residential development would likely occur under Alternative 2, the majority of future residential development would be large lot, low density residences and typically less affordable than more dense urban development patterns.

Vancouver: Alternative 2 would expand Vancouver's UGA by 3,993 acres, primarily to the north of the existing UGA and along the I-5 corridor. Most of this land is currently designated for urban reserve and agriculture. The expansion area would be designated primarily for low density residential (2,819 acres) and industrial (911 acres) uses, accounting for approximately 71 percent and 23 percent, respectively, of the total expansion area.

Alternative 2 would provide few housing options other than single-family low-density residential units because less than 4 percent (150 acres) of the total expansion area would be dedicated to medium density housing and no land would be designated for high density residential uses. Overall, this alternative would create a less compact development pattern than under Alternative 1.

Little affordable housing would likely be provided in the expansion areas. While there would be more residential land available, most land would develop as single-family homes on large lots rather than in a more compact pattern. More affordable housing options would have to be provided within the existing UGA on vacant or redevelopable parcels.

Washougal: This alternative would add 877 acres north of the UGA, land now designated as urban reserve (383 acres), agriculture (272 acres), and rural residential (222 acres).The expansion area would be dedicated to primarily to low-density (464 acres) and high-density (116 acres) residential uses. Washougal is the only jurisdiction that would add high-density residential land under Alternative 2. Employment acreage added to Washougal would be primarily industrial land, accounting for approximately 62 percent of employment acreage. Some land, 113 acres, would also be dedicated to employment center (89 acres) and commercial (24 acres) uses.

d. Alternative 3

As noted in the Methodology section at the beginning of Chapter 3, Alternative 3 is meant to offer expansion alternatives or additions to Alternative 2. Alternative 3 subareas are, therefore, not evaluated jointly as a single alternative. The existing and proposed land use designations for Alternative 3 subareas are shown in Table 54.

Alternative 3 is broken into 19 subareas to aid in comparing the relative impacts each area would have on land use. Subareas are compared to similar geographic areas that would be added to UGAs under Alternative 2. All jurisdictions, with the exception of Vancouver, are considered one subarea. Because of the size of Vancouver and the geographic location of the proposed Alternative 3 expansion areas, Vancouver's proposed Alternative 2 expansion area has been divided into two Alternative 2 subareas rather than one as in other jurisdictions to make identification of potential impacts more clear.

In some cases, subareas for Alternative 3 would not be adjacent to the existing UGA boundary and would require that if the Alternative 3 subarea were added, the Alternative 2 subarea between the existing UGA and Alternative 3 subarea would also likely be added to the UGA to connect the existing UGA to the expansion area. While this is not true for all Alternative 3 subareas, it is noted under each Alternative 3 subarea where this would occur. If Alternative 3 subareas were added, it is assumed that reductions in other areas would occur where impacts under Alternative 2 are thought to be greater than what is proposed under Alternative 3.

Battle Ground (B1 and B2): Two subareas are located in Battle Ground. B1 is located along the northern UGA boundary in the vicinity of NE 244th and would add approximately 41 acres of land currently zoned for rural residential uses to the UGA. The subarea would be converted to approximately 20 acres of low density residential and 21 acres of employment campus, primarily as an expansion of the employment campus area proposed under Alternative 2. B1 would likely require land identified for inclusion to the Battle Ground UGA under Alternative 2 to be added if B1 were added to the existing UGA because the subarea does not have a common boundary with the existing UGA.

Unlike B1, B2 is located along the existing Battle Ground UGA and would convert approximately 120 acres of land currently designated for rural residential uses to urban low density residential use.

Compared to Alternative 2, both Alternative 3 subareas would account for approximately 11 percent of the total amount of land that would be added under Alternative 2 to the Battle Ground UGA, although if Subarea B1 were added, more land would likely be added to connect the expansion area with the existing UGA. Another difference between the expansion areas proposed under this alternative is that the sub areas are only located to the north of the existing UGA, whereas the Alternative 2 expansion areas are to the north, west, and south of the existing UGA and propose a mix of residential and commercial uses. Alternative 3 subareas propose a very limited range of development options, mainly expanding upon what is proposed under Alternative 2.

Neither subarea is anticipated to provide affordable housing because little land would be devoted to residential uses and what would be residential would likely be on large lots, typically a more expensive form of housing because of high land costs associated with relatively few units produced.

Camas (C1 and C2): Two subareas, C1 and C2, are located adjacent to the Camas UGA. C1 is the larger of the two, encompassing in 1,243 acres of land currently designated rural residential (794 acres), agriculture (407 acres), and parks/open space (42 acres). C1 is located on the east side of Lacamas Lake between NE Goodwin Road/NE 28th Street to the north and in the vicinity of the existing UGA boundary to the south. C1 would be designated for primarily employment center uses (590 acres) but would also include land for low density residential uses (369 acres) and parks/open space (284 acres). Compared to Alternative 2, C1 would add approximately 200 more acres, primarily for parks and open space at the north end of Lacamas Lake.

Subarea C1 would be connected to the existing UGA on the north side of Lacamas Lake, but would not have a shared boundary on the south side of the lake. If C1 were chosen, some connection to the existing UGA to C1 would likely be required such as the portions of Alternative 2 proposed to be included in the area between C1 and the existing UGA.

In contrast, C2 would add relatively few acres, approximately 125 acres of low-density residential land to Camas UGA east of NE Everett Street. C2 is currently designated for rural residential uses (98 acres) and agriculture (27 acres). This subarea is adjacent to the existing Camas UGA and proposed expansion area for Alternative 2, which would also designate low-density residential uses in the area.

Subareas in Camas are not anticipated to provide affordable housing because land would be devoted to residential development on large lots, typically a more expensive form of housing because of land costs associated with relatively few units produced.

La Center (L1 and L2): Two subareas, L1 and L2, are proposed south of the East Fork of the Lewis River. L1 would be located along the south riverbank between La Center Road and the western UGA boundary expansion line, although the western boundary would also extend north of the river to NW Bolen Street. Overall, L1 would convert a total of 534 acres of agricultural (306 acres) and rural residential land (223 acres), and parks/open space (6 acres) to urban uses. The majority of land would be designated for low density residential uses (224 acres) and parks/open space (224 acres), with a smaller amount of land designated for industrial uses (86 acres). Land on the south side of the East Fork of the Lewis River would be devoted primarily to park/open space, although residential and industrial lands would also be designated along the periphery of the subarea. All land north of the river in L1 would be designated for low density residential uses. The key component of L1 would be the designation of 224 acres of park and open space. With the exception of the nearly 400 acres of parks/open space proposed in C1 in Camas, this is the only substantial acreage devoted to recreation in any of the expansion areas in the county.

Subarea L1 would connect La Center's existing UGA with Alternative 2's proposed expansion area and would expand the industrial and low-density residential style of development proposed under that alternative. L1 would likely develop in the future if the proposed UGA expansion under Alternative 2 were chosen because it would be between two areas designated for urban uses. L1 would not likely provide affordable housing because the proposed development pattern would be residential uses on large lots, typically a more expensive form of housing because of land costs associated with relatively few units produced.

As with L1, L2 is located south of the East Fork of the Lewis River and would designate approximately 793 acres of primarily agricultural land (405 acres), rural residential (279 acres), and parks/open space (109 acres) for urban uses. L2 would add land to the south of Alternative 2's proposed expansion area, continuing the same pattern of development as proposed under Alternative 2 with industrial land (239 acres) added on the west side of I-5, medium density residential acreage (139 acres) along the east side of I-5 and along NW Spencer Road, and low density residential land (414 acres) in the remaining portion of the subarea.

Subarea L2 would likely be added to the La Center UGA only if areas proposed under Alternative 2 were also added. This subarea would add nearly 150 percent of the amount of medium density residential acreage compared to that proposed under Alternative 2 as well as nearly 70 percent more low-density housing. Compared to all subareas, L2 could provide more affordable housing than any other Alternative 3 subarea within the county, except possibly W1 in Washougal which would add high-density housing.

Ridgefield (R1-R3): Ridgefield's subareas under Alternative 3 are located on the north and south sides of Alternative 2 expansion areas. R1 would allocate approximately 614 acres to the Ridgefield UGA and is located west of I-5 on land currently designated for rural residential (316 acres) and agricultural uses (298 acres). R2 would add approximately 227 acres to the UGA on land located east of I-5 adjacent to the existing Ridgefield UGA and primarily designated for parks/open space (171 acres), with some acreage designated for rural residential (30 acres) and agricultural uses (23 acres). R3 is located on the southern boundary of Alternative 2's boundary and would add approximately 362 acres of land now designated for agricultural (286 acres) and rural residential uses (76 acres) to the UGA.

Subarea R1 would be designated entirely for low-density residential uses, the same style of development proposed for the strip of land under Alternative 2 between the existing UGA and R1. If R1 were added to the UGA, the strip of land between the subarea and the existing UGA would also likely be added to provide better connections to the existing development in the city. Part of the northern boundary of this subarea (near I-5) also shares the boundary with La Center's L2, which would also proposes to add land primarily for low-density residential uses where it would share a common boundary with Ridgefield's proposed expansion areas, eliminating the greenbelt between the urban areas, a Community Framework Plan Policy.

Subarea R2 has two distinct pieces located east of I-5. Adjacent to I-5, R2 would be devoted to low-density residential uses (178 acres). This subarea would add land between the existing Ridgefield UGA to

the south and La Center's L2. Southeast of the residential portion of the subarea, R2 would also include approximately 49 acres of land designated for industrial uses. This industrial portion of the subarea is bounded on the west and south sides by the existing Ridgefield UGA.

Subarea R3 would have no direct connection to the existing Ridgefield UGA unless expansion areas proposed under Alternative 2 were also added to the UGA, therefore R3 would be additive to Alternative 2. R3 would provide a mix of uses similar what is proposed for portions of Alternative 2 located between the existing UGA and the subarea. Both low and medium density residential uses (160 acres low density residential and 80 acres medium density residential) would be designated within the subarea, essentially expansions of low and medium density designations provided under Alternative 2. Along the I-5 corridor, R3 would also designate approximately 122 acres for employment center/business park development.

Subarea R3 is the only subarea of the three in Ridgefield where higher density residential uses are proposed and where the most affordable housing would likely be located. All other residential uses would be low density, single family homes, which as discussed for other subareas, is generally a more expensive form of housing because of the higher land costs and larger homes.

Vancouver (V1-V7): Vancouver's seven subareas are broken into two geographies for comparison. Subareas V1-V4 are located in a similar geography as Alternative 2 Subarea 4, which is located in the vicinity of I-5 north of the existing UGA. Subareas V5-V7 are in the same area as Alternative 2 Subarea 5 located south of Battle Ground along SR 503 and along NE 182nd Avenue.

The Vancouver subareas vary in size and in the land they would add to the UGA. V1 is the largest of any subarea proposed except for C1 in Camas. V1 would add approximately 1,006 acres of land designated primarily as urban reserve (933 acres) and rural residential uses (70 acres). V2 would add approximately 875 acres to the Vancouver UGA, land that is now designated for rural residential (657 acres), agriculture (197 acres), and commercial (21 acres) uses. V3 and V4 would add 402 acres and 908 acres, respectively, all on land now designated as urban reserve.

Subareas in the vicinity of Alternative 2 Subarea 5 south of Battle Ground would be located on land serving a mix of uses. V5 would convert approximately 635 acres from agricultural (387 acres) and rural residential (248 acres) uses. V6, the smallest of any of the proposed Vancouver subareas, would affect approximately 219 acres of land currently designated as urban reserve. V7 would affect 668 acres, the majority of which is designated for agriculture (613 acres) and small amount of rural residential (55 acres) land.

Subareas V1, V3, and V4 would designate land exclusively for low-density residential uses, similar to what is proposed for the majority of Alternative 2 Subarea 4. Subareas V1 and V4 would be located adjacent to the existing UGA, compared to Subarea V3, which would be connected on the south end of the subarea south of NE 179th Street. The remainder of the subarea would be located adjacent to Alternative 2 Sub area 4 expansion area with no other direct connection to the existing UGA.

Unlike V1, V3, V4, which would be dedicated exclusively for residential uses, V2 would be dedicated exclusively as employment center. V2 would be located east of the I-5 corridor and would provide the most acreage for employment center uses of any subarea in the county. The next largest employment center designation would be located in Camas' C1.

Alternative 3 subareas would provide a similar mix of uses as Alternative 2 Subarea 5, which would provide a mix of uses, but would be dedicated primarily to low-density residential (679 acres) and industrial (911) uses. V5 would be located north along NE 119th Street and SR-503 and would be dedicated primarily for industrial uses (495 acres), but would also provide approximately 141 acres of low-density residential land. Land within this subarea is currently designated for agriculture (387 acres) and rural residential (248 acres) uses.

Subarea V6 would convert approximately 219 acres of rural residential land to low-density residential uses, which is similar to what is proposed in the vicinity of this subarea for Alternative 2 Subarea 5. V7 would designate approximately 668 acres of primarily agricultural land (613 acres) and a small amount of rural residential land (55 acres) to exclusively industrial uses, the largest industrial designation of any Alternative 3 subarea in the county. Only Alternative 2 Subarea 4 would add more industrial land, which would be added next to the proposed V5 expansion area on the north side of Vancouver.

None of the subareas as proposed would provide any medium or high-density housing. All residential uses would be low density, single family homes similar to what is proposed for Alternative 2, which as discussed for other subareas, is generally a more expensive form of housing because of the higher land costs and larger homes.

Washougal (W1-W3): Two of the three subareas near Washougal are located north of the UGA. W1 is generally located adjacent to the existing UGA on land now designated for rural residential (654 acres), urban reserve (109 acres), and agriculture (46 acres) uses and would be one of the larger expansion areas within the county. W2 would be considerably smaller. Located east of W1, W2 would designate approximately 122 acres for urban uses that is now designated for rural residential (107 acres) and agriculture (15 acres) uses. The smallest of the subareas, W3 located south of the existing UGA, would designate 21 acres for industrial uses on land that is currently designated for public facilities.

Subarea W1 would add a mix of uses but would focus primarily on low-density residential uses, accounting for approximately 85 percent of the subarea. Other uses proposed in the subarea are high density residential (85 acres) and commercial (31 acres). W1 is the only subarea in the entire county that would designate land for high density residential uses. This subarea would add approximately 70 percent more high density residential land to what is already proposed under Alternative 2, which designates approximately 116 acres of high density residential land. Commercial land would be located adjacent to high density residential uses as would employment center/business park uses proposed under Alternative 2.

Unlike W1, which would be located adjacent to the existing UGA, W2 would be located adjacent to the proposed Alternative 2 expansion area. W2 would designate approximately 81 acres of low density residential land and approximately 41 acres of industrial land. W2 would provide industrial land not proposed under Alternative 2. If W2 were added to the UGA, land between the existing UGA and sub area would also likely be added because W2 has no direct connection to the existing UGA.

Subarea W3 would designate approximately 21 acres exclusively for industrial uses at the southeast end of the existing UGA. This subarea would provide the only industrial land in addition to what would be designated in W2. No industrial land is designated in Alternative 2 in Washougal.

Subarea W1 is the only subarea in the entire county that designates land for high-density residential development and would be the most likely area of any expansion area to provide affordable housing.

4. Mitigation Measures

Each of the alternatives would affect, to a greater or lesser extent:

- the conversion of rural land to urban land;
- the distinction between rural and urban uses at the edge of urban development;
- the affordability of housing; and
- the diversity of housing types.

Mitigation for impacts to land use would vary by alternative and are described below.

a. Alternative 1

The primary mitigation for these impacts listed above is to select an alternative that provides a diverse range of residential zones, provides an adequate buildable land base, allows flexibility and uses land efficiently. In most cases, that would be Alternative 1. However, existing zoning designations within local jurisdictions would not provide adequate land for the projected population. Alternative 1 could provide adequate land if upzoning were to occur in each jurisdiction to increase density and minimize the footprint of urban growth If increased densities in urban areas are adequate to accommodate the projected population, there would be less pressure on rural areas to accommodate the spillover population. Another form of mitigation is to change assumptions that the plans are based on. Some of the cities have based their planning on assumptions that differ from the County's. They assume that more housing and employment could be accommodated within the existing UGAs.

Local jurisdictions anticipate that with projects already underway or approved for construction, additional population would be accommodated within existing UGAs that are not accounted for in the County's calculations. Some jurisdictions also assume an increased amount of jobs would be generated based on development proposed in master plans or from projects currently under construction in addition to what the County assumes would be needed to meet the 1:1:39 jobs to population ratio. Based on what local jurisdictions assume would occur with existing development proposals that would add 12,329 jobs, and actual employment densities achieved between 1995 and 2000 (the most recent data) are used to calculate capacity rather than existing County assumptions, Alternative 1 would meet the County's 2024 employment target on vacant and underdeveloped land in existing UGAs.

The GMA requires that cities and counties periodically review their comprehensive plans to ensure compliance with the requirement that the plans can accommodate 20 years of growth. It is understood that within the 20-year period the initial assumptions may prove wrong and require adjustments to the boundaries. For that reason, monitoring land absorption (also required by the GMA) can reveal when predictions are off and the boundaries or assumptions should be changed to better fit observed trends.

b. Alternative 2

Alternative 2 would still have many of the housing impacts listed above, plus affect more of the natural environment. Mitigation measures for one set of impacts could increase impacts in other areas. For example, expanding the boundaries (as in adding Alternative 3 subareas to a Preferred Alternative) would increase impacts on the natural environment. Reducing the boundary to reduce environmental impacts would exacerbate the insufficient land supply, absent any change in the assumptions behind the growth projections.

Changing the growth rate assumption would reduce the amount of land needed to meet demand, thereby eliminating the insufficient land area impact. Eliminating the 10 percent market factor for residential lands would reduce the amount of land added to each jurisdiction, as well as changing the number of jobs per acre, which would change the amount of land needed to provide for those jobs. This is not mitigation of impacts, but changing assumptions for the alternatives proposed.

c. Alternative 3

Alternative 3 was developed as a form of mitigation for impacts under Alternative 2. These include both high and adverse impacts at specific locations within the Alternative 2 UGAs and the insufficient land supply impact. To reduce non-land-use impacts, the remedy would be similar to Alternative 2 in that the alternative should only provide adequate land for projected employment and housing demand. Mitigation under Alternative 3 would be that subareas chosen would provide only the amount of land necessary to accommodate the projected population and employment needs. If an Alternative 3 subarea were added to a UGA, land could be removed from Alternative 2 so that additions from Alternative 3 would not add more land to UGAs.

d. Additional Mitigation Measures

Consideration should be given to requiring subarea plans for newly added urban growth areas where inadequacies in infrastructure exist before urban development is allowed.

Cities that do not permit density transfers could implement ordinances to transfer development from critical areas to developable parcels that could accommodate higher densities.

B. Rural Lands

1. Setting

Rural lands are defined as areas that lie outside of UGAs and that are not reserved for agriculture, forest, or mineral resources (WAC 365-195-210(19)). The GMA provides guidelines for the development of policies and development regulations that preserve rural lands. A basic principle of the GMA is that growth should first be directed to areas already designated for development and to areas where this growth can be supported by adequate urban facilities and services. By directing development to areas where facilities are currently provided, or that can be efficiently provided in the future, the county can better utilize resources in both rural and urban areas. Additionally, by directing growth to such areas, Clark County can ensure that a distinct option for rural living would be available for future generations.

The GMA's mandatory Rural Element (RCW 36.70A.070(5)) requires comprehensive plans to designate rural areas, provide for population growth with a variety of densities, identify rural services and address rural character.

Planning for rural lands in Clark County is important for the following reasons:

- to maintain rural character;
- to recognize rural lands at the urban fringe, where they are susceptible to sprawl, which can overwhelm the existing character, infrastructure, and way of life;
- to create transition areas between urban and resource uses because urban and resource uses are dependent on each other but are not always compatible;
- to provide services and goods that support resource activities;
- to supply nearby urban residents with locally harvested resource products;
- to allow the efficient provision of public facilities and services by clearly delineating between urban and rural uses so that growth is directed to more compact urban centers; and
- to provide for the planned future expansion of urban uses in rural land areas, if needed.

Approximately 106,400 acres, or 33 percent of the county's land area outside of existing UGAs, is currently designated for rural uses.[9] These rural areas contain predominantly low-density residential development, farms, forests, watersheds crucial to fisheries and flood control, small rural commercial centers, historic sites and buildings, archaeological sites, and regionally important recreation areas.

Various types of development are permitted within rural areas provided it is consistent with the rural character of these lands. Permitted uses are outlined in the different rural districts. Approximately 70 percent of rural land is designated Rural-5 (approximately 75,000 acres) with a of 5-acre minimum lot size. Other designations include Rural Center Residential (lands found within designated rural centers that encourage small-scale natural resource activities in conjunction with residential uses), Rural-10, and Rural-20 zones. There are also areas designated for rural commercial and industrial development.

9 Clark County Department of Assessment and GIS (2006). Rural lands include land outside of existing city UGAs with Rural Center Residential, Rural-5, Rural-10, Rural-20, Rural Commercial, and Heavy Industrial zoning designations.

Historically, rural lands have provided affordable home-ownership opportunities for county residents, but in recent years this has changed. Rural residential lands within the county have become increasingly scarce and expensive. The county's rapid population growth has been due, at least in part, to the availability of developable rural lands. While rural land in Clark County has become more expensive in recent years, it is still less expensive than rural land in the Portland metropolitan area. Much less land in the Portland metropolitan area has been zoned for rural residential development. Clark County has about 96,100 acres zoned for 5- and 10-acre parcels, more than Multnomah, Clackamas, and Washington Counties combined.

In addition to providing homes for people who work in resource-based industries, rural residential areas are attractive to those who want to keep animals (kennels, horses, or other farm animals), grow food crops (smaller-scale home orchards, specialty farms, and gardens), and to those who prefer rural living to life in urban areas. Scattered throughout the rural areas of the county are rural centers that serve rural residents by providing supplies (grocery stores, hardware stores, feed stores), public facilities (schools, post offices, churches, community buildings), and services (doctor offices, veterinarians, equipment repair). These communities often have small-lot residential areas that are home to the people who work in these rural centers or on the resource lands surrounding these areas. Examples of these communities include Amboy, Brush Prairie, and Dollars Corner.

2. Impacts

The intent of the GMA is to protect rural lands from premature urban development, just as resource lands are protected. Existing policies and development regulations that protect rural lands would remain unchanged under each of the alternatives. The two action alternatives would bring land currently designated as rural into new UGAs. In doing so, each of the alternatives would contribute to redefining the rural landscape of the county. This impact analysis looks at the amount of rural land that would be converted to urban uses under each alternative and how the rural landscape would change as a result. Table 55 shows the rural acreage that would be added to each city's UGA under the different alternatives.

Table 55. *Rural Lands, Alternatives 1 and 2 (acres)*

	Alternative 1	Alternative 2
Rural Land in Clark County	106,395	103,391
Rural Land Allocated to UGAs		
Battle Ground	-	726
Camas	-	459
La Center	-	486
Ridgefield	-	647
Vancouver	-	464
Washougal	-	222
Total	-	3,004
Percent of Rural Land Converted to Urban Uses	0	3%

Source: Clark County Department of Assessment and GIS, 2006

a. Alternative 1

The county currently contains about 106,000 acres of rural lands. Under Alternative 1, there would be no expansion of UGAs and no additional rural land would be converted to urban uses. This would be consistent with the goals of the GMA and with the rural element of Clark County's comprehensive plan that work to preserve rural land. Additional growth and development over the next 20 years would be accommodated within existing UGAs, likely by increasing densities and developing vacant and under-developed land within existing UGAs. Under Alternative 1, because projected population is not anticipated to be accommodated by existing zoning designations, rural areas with larger lots, such as in the

Rural-10 and Rural-20 may experience increased pressure to upzone to accommodate additional population.

By not bringing rural lands into UGAs, rural buffers that currently exist between jurisdictions and that provide for a contrast between urban and rural lands would more likely be preserved. Alternative 1 would help to preserve the rural character of the county, small-scale resource uses, and the other values—recreational, scenic, historic, and environmental—that are associated with these lands.

b. Alternative 2

Alternative 2 would add approximately 3,004 acres, about 3 percent of the existing rural lands acreage, to the existing UGAs, primarily to Battle Ground (726 acres) and Ridgefield (647 acres). Other jurisdictions would be allocated between 450 to 500 acres of rural with Washougal the exception, receiving 222 acres. Of the 3,004 acres dedicated to UGA expansion nearly all of the land is currently designated for rural residential type uses with Rural-5, -10, and -20 zoning designations.

If Alternative 2 were chosen and rural areas were added to UGAs, the delineation between urban and rural areas could be less defined because as proposed, the majority of development under this alternative would be for low-density residential development. This style of development would intentionally create more of a suburban rather than a higher density urban environment, blurring the edge of urban areas.

c. Alternative 3

Table 56 shows the amount of rural land that would be added to UGAs within each subarea.

Two subareas, B1 and B2 would be located entirely on rural lands (now rural residential), converting approximately 41 acres and 120 acres, respectively, in addition to approximately 726 acres of what would be converted under Alternative 2 in Battle Ground. Compared to other Alternative 3 subareas within the county, B1 and B2 would convert less land overall than C1, L1, L2, R1, V2, V5, and W1, but are also smaller in size than the acreage for those subareas. Other subareas where more 50 percent of the land of the subarea is now rural and would be converted to urban uses are W2, (88 percent), W1 (81 percent), C2 (80 percent), V2 (77 percent), C1 (64 percent), and R1 (51 percent). Adding these areas to UGAs could have a greater impact to rural land than subareas where little or no rural lands would be affected. This would be particularly true if the larger subareas (C1, V2, and W1) were added. V3, V4, V6, and W3 would have no impact to rural land.

In terms of overall acreage converted, C1 would convert the most rural land, adding approximately 794 acres to the Camas UGA in addition to approximately 459 acres that would be converted under Alternative 2, totaling 1,253 acres of affected rural lands and the most rural land added to any UGA. In comparison, two other subareas, V2 and W1 would convert approximately 678 acres and 654 acres, respectively, the second and third highest of all Alternative 3 subareas, but because less rural land would be added under the corresponding Alternative 2 Subareas 4 and 7 (111 acres and 222 acres, respectively), the impact to rural lands would be smaller than what would occur in Camas if C1 were added to the Camas UGA. If V2 were added to Subarea 4, the total affected rural acreage would be 789 acres; if W1 were added to Subarea 7 the total affected acreage would be 876 acres.

Table 56. *Rural Lands, by Subarea (acres)*

	Alternative 3	Alternative 2	
Battle Ground		Subarea 3	726
Subarea B1	41		
Subarea B2	120		
Camas		Subarea 6	459
Subarea C1	794		
Subarea C2	98		
La Center		Subarea 1	486
Subarea L1	223		
Subarea L2	279		
Ridgefield		Subarea 2	647
Subarea R1	316		
Subarea R2	32		
Subarea R3	76		
Vancouver		Subarea 4	111
Subarea V1	70		
Subarea V2	678		
Subarea V3	-		
Subarea V4	-		
Subarea V5	248	Subarea 5	353
Subarea V6	-		
Subarea V7	55		
Washougal		Subarea 7	222
Subarea W1	654		
Subarea W2	107		
Subarea W3	-		

Source: Clark County Department of Assessment and GIS, 2006

3. Mitigation

a. Plans and ordinances

Mitigation for conversion of rural lands consists primarily in ensuring that provisions to protect remaining rural lands are in place in the comprehensive plan and development regulations, since rural land brought into UGAs would (and is intended to) eventually urbanize and lose its rural character. Clark County's comprehensive plan defines rural lands and rural centers with the intent to provide for land uses and densities that are compatible with designated resource lands and ultimately maintain the rural character of those areas. The following describes proposed County goals and policies for rural lands and additional mitigation measures.

Chapter 3 of the comprehensive plan addresses rural and natural resource land. Goal 3.1 is to maintain the existing rural character and compatibility with resource lands and activities. Policies under that goal define rural lands in terms of their function (3.1.1) and typical uses expected (3.1.2). Policy 3.1.3 considers rural areas to be permanent pursuant to the GMA requirements (RCW 36.70A130(3)). Policy 3.1.4 addresses compatibility issues between rural uses and resource-based uses in the rural area. Policy 3.1.5 encourages recreation and educational opportunities consistent with the rural character of the area. Policy 3.1.6 allows for master planned resorts if they meet certain criteria, consistent with the GMA requirements (RCW

36.70A.365). Policies 3.1.7 through 3.1.16 deal with provision of services, and ensure that the type and availability of services are appropriate to the rural area.

Goal 3.2 calls for maintaining the character of designated Rural Centers. Policies 3.2.1 through 3.2.13 help to define the density, types, and descriptive character of rural centers, including defined edges, surrounding open lands, rural commercial uses that serve residents (not strip development) and resource-based industrial uses.

In addition, the County's zoning code establishes rural residential districts with a range of densities (5 to 20 acre minimum lot sizes). It also establishes rural center districts limited to those areas specified on the comprehensive plan map.

The Rural element goals and policies are also supported by the provisions in the Land Use element that restricts urban levels of development and public services in the county to UGAs.

b. Additional Mitigation

1. The county could designate a greater portion of the undeveloped rural lands with soils identified by SCS as prime agricultural and forest lands as resource lands, regardless of lot size.

2. Incentives (e.g., transfer or purchase of development rights) and strict development regulations could be developed to discourage the construction of any residences on resource lands that have already been subdivided.

3. While the County's comprehensive plan includes policies for advising residents of adjacent resource-based uses and calls for incentives for resource uses, issues of incompatibility with residential uses can still arise and place pressure on resource uses. The County could be more aggressive in protecting resource uses by adopting "right to farm" or "right to harvest timber" ordinances to protect resource-based industries on rural lands from residential development adjacent to their operations.

4. "No net loss" policies for rural land designations similar to those used to protect industrial land could be implemented to forestall piecemeal conversions.

C. Resource Lands

1. Setting

Clark County contains a rich diversity of resource lands, which include forests, farmland, and mineral resource areas. Approximately 60 percent of the county's rural area outside of existing UGAs is designated as forest and agricultural land. Resource lands are an important component of the region's economy and provide jobs, tax revenue, and commodities for local use and for export. In addition to their economic value, these lands have recreational and aesthetic value and are important for the environmental services they provide.

The identification and protection of resource lands is one of the central goals of the GMA, which requires all counties and cities to preserve agricultural, forest, and mineral resource lands and to protect these areas from adjacent incompatible land uses that would interfere with their long-term commercial viability. Each county and city must designate resource lands of long-term commercial significance—that is, land with the physical characteristics to support a resource industry—and establish policies and development regulations that ensure the conservation of these lands for their economic, social, and environmental values.

The Washington Department of Community, Trade and Economic Development (DCTED) provides counties and cities with guidelines to assist in the classification of resource lands, which Clark County has used to identify and map the most productive resource lands. Much of this work was completed as part of the 1994 comprehensive planning process.

Historically, agriculture has played a central role in the development of the region's economy and way of life. However, as the county has urbanized and as its economy has diversified, the relative size of the agricultural sector has decreased. The loss of productive farmland has become an important issue not only within Clark County, but also around the country. According to the 2002 Census of Agriculture, land acreage in farms within the county decreased by 14 percent between 2002 and 1997. The previous agricultural census (1997) reported a 12 percent reduction on acreage in farms between 1997 and 1992. The average size of farms decreased by 6 percent between 2002 and 1997, the same rate experienced between 1997 and 1992. A reduction in the number of acreage in farms can signify that development is occurring in rural areas because it would no longer be productive farmland. The further loss of agricultural land within the county would continue this trend. Moreover, while the number of acres in agricultural production is an important indicator of the commercial significance of the agricultural sector, the health of farmland and farm businesses within the county is also dependent on the degree to which farmland is fragmented and isolated. Fragmentation of the farmland base can make it more difficult to farm and can increase conflicts between agriculture and other surrounding land uses. The loss of agricultural land would also affect other values that are associated with this land—aesthetic, recreational, cultural, and environmental.

Figure 14 shows agricultural capability, primarily those lands with the highest quality soils and larger parcel size. Generally, agricultural lands are scattered throughout the county, with larger agricultural areas south of La Center and Battle Ground and north of Camas. Another large agricultural area is east of Washougal. Countywide, approximately 37,606 acres are designated as Agriculture (AG), with approximately 2,294 acres designated as Agriculture-Wildlife (AG-WL). The Agriculture District "encourages the preservation of agricultural production and to protect agricultural areas from incompatible uses." These lands are subject to a 20-acre minimum lot size and are concentrated primarily in two areas: the area east of Vancouver and north of Camas along the Lacamas Creek drainage that extends northwesterly to the Brush Prairie/Hockinson area south of Salmon Creek; and the area north of Salmon Creek along the bluff overlooking the Columbia River Lowlands, an area that extends northeasterly to south of Ridgefield, through Ridgefield Junction to north of La Center. The Agriculture/Wildlife District, applied primarily to areas in the Columbia River Lowlands, requires a 160-acre minimum lot size for single-family housing and a 20-acre minimum lot size for agriculture and related uses. The purpose of this zone is to encourage the preservation of agricultural and wildlife use on land that is suited for agricultural production and to protect agricultural areas that are highly valuable seasonal wildlife habitat from incompatible uses.

Figure 15 shows the forest capability of soils in the county. Clark County has approximately 158,176 acres as forest resource land. Soils suitable for forest use have a range of suitabilities, from fair to prime. Prime soils designates the most productive forest land. The County also specifically designates forest lands as either Tier I or Tier II. Tier I is land most suitable for forest use. Approximately 127,915 acres are designated as Forest Tier I with remaining forest resource land, approximately 30,261 acres, designated as Forest Tier II.

As with agriculture and forest resources, GMA also requires Clark County to designate significant mineral resource lands. Figure 30 shows mineral resource lands in the county, which are limited to sand, gravel, and quarry bedrock (primarily basalt and other volcanics). These materials are used for construction in concrete and asphalt aggregate. The GMA defines minerals as gravel, sand, and valuable metallic substances. A large portion of Clark County is underlain by commercial grade sand and gravel resources. No mining lands, with the exception of Vancouver, are designated in Clark County inside of existing UGAs. Vancouver has designated approximately 40 acres in Section 31 as mining lands. Section 30 (Fisher Quarry) has new plan and zoning designations and a surface mining overlay.

While not specifically designated by a zoning district, Clark County currently manages mineral resources through the Surface Mining Overlay District (SMOD), an overlay zone that can be combined with any other zoning district. The SMOD encompasses approximately 5,012 acres. The ordinance permits the extraction of sand, gravel, and minerals within the district, but related high-impact activities, such as rock crushing, require a conditional use permit. Uses legally established prior to ordinance adoption are "grandfathered" with the right to continue as nonconforming uses. When it was originally implemented,

the combining district was applied to all existing gravel pits, whether active or inactive, as well as to unmined sites for which the owner indicated an intent to mine. This district continues to provide for the ability to extract minerals within the county.

While metals occur in Clark County, they are not commercially significant.

a. Aggregate Resources

The mineral resources identified and mined in Clark County are aggregate resources of two types: sand and gravel (round rock) and quarry rock. There are four principle sand and gravel mining areas in Clark County: the North County-Woodland Area, East Fork of the Lewis River, Orchards, and East Mill Plain. The most abundant gravel deposits lie in the southern portion of the county (Orchards, East Mill Plain), although expansions of the Vancouver and Camas urban areas have made a major portion of this resource permanently inaccessible.

The second type of aggregate, quarry rock, is typically used as base rock for roads, riprap, jetty rock or as crushed aggregate. While, most quarry rock in southwest Washington is characterized by poor strength and durability, Clark County has several deposits of high-quality basalt bedrock capable of producing substantial amounts of durable aggregate. There are 14 quarries in the county with surface mine reclamation permits, although most of them are not actively mined on a continuous basis With the exception of Fisher Quarry, most rock quarries are located in the north and east portions of the county a considerable distance from the market.

Demand

Estimates of aggregate demand statewide are based on surveys of producers. Because the survey response rates are typically low, use of these estimates for planning purposes requires considerable caution. Data from a 1991 US Bureau of Mines survey suggest that the per-capita annual demand for sand and gravel in Washington was eight tons or six cubic yards. Similar USGS statewide production data for 2001 indicate a per capita demand of seven tons for sand and gravel and three tons for quarry rock.

However, a 1991 Washington Division of Geology and Earth Resources (DGER) survey, which had an exceptionally high response rate of 24 percent from sand and gravel producers, suggests that the per-capita annual demand for sand and gravel in Washington was 12 tons or nine cubic yards. Demand for quarry rock products was four tons or three cubic yards per capita based on data from the same DGER survey.

A 1992 survey of Clark County aggregate producers found that total production rates were 16.5 tons per capita in 1991 and 14.5 tons in 1992. Net exports of aggregate out of the county comprised 33 percent of the 1991 production. Therefore, the combined per capita consumption of aggregate in Clark County was 11.3 tons in 1991 and somewhat lower in 1992.

Supply

The Resource Document of the 1994 comprehensive plan included forecasts of supply and demand and predicted that the supply of good quality sand and gravel on designated mineral lands in the county would be exhausted within the next three years at current rates of production unless new sites are permitted.

There have been five permits issued for new or expanded sand and gravel mining since the 1993 analysis was done:

- SE 1st Street Facility (11 acres)
- Columbia Tech Center (148 acres)
- Frost Pit (40 acres)
- Columbia/English Pit (3 acres)

- Tebo Pit expansion (58 acres)
- One additional quarry site and two expansions were also permitted:
- Chelatchie Rock (13 acres)
- Maple Pit (37 acres)
- Livingston Mt. (40 acres)

The DGER has begun to develop aggregate resource inventories for selected counties to meet GMA requirements to identify and classify existing and potential aggregate resources. Analysis was completed using existing information about known aggregate resources and the potential for undeveloped aggregate deposits based on identifiable geologic features. In 2005, the DGER released *Rock Aggregate Resource Land Inventory Map for Clark County, Washington*. The inventory identified much of Vancouver and land northeast of the I-205/SR 500 interchange as having identified gravel resources. Speculative gravel deposits, those that have not been identified specifically but have the existing geologic features present that may meet criteria for extraction, are found along streams north of Vancouver, particularly Salmon Creek. Other areas with speculative gravel resources include area surrounding Ridgefield and Battle Ground, and pockets of land north of the La Center and along the East fork of the Lewis River.

The DGER inventory map also identified bedrock resources, which are almost all located in the eastern portion of the county with the exception of deposits near Prune Hill, located between Camas and Vancouver near the Columbia River. Other bedrock deposits are also thought to exist north of the Camas and Washougal UGAs in the vicinity of Lacamas Lake.

While additional sites could extend the aggregate supply, the supply of available sand and gravel in the southern portion of the county is likely to be exhausted over the next four years. Extraction of Lewis River terrace deposits comes at a high environmental cost. Despite the market preference for round rock in concrete, a transition to greater use of crushed quarry rock, which produces a much greater return of aggregate per acre of surface area disturbed, is likely to occur over the next 10 to 20 years.

2. Impacts

Under each of the alternatives, County policies and regulations to protect resource lands and resource-related industries would remain unchanged. For agricultural land, this means the Agriculture/Wildlife District and the Agriculture District would continue to define permitted uses and development standards for these areas. For forest lands, the Forest District would continue to regulate uses and development within these areas. The Surface Mining Combining District would define uses for surface mining areas. Table 57 shows the amount of resource land designated within the county and the amount of resource land added to UGAs under each alternative under each alternative.

a. Alternative 1

The county currently contains about 203,000 acres of resource lands. Alternative 1 would not expand UGAs and as a result, this alternative would preserve the most agricultural and forest land and reduce the amount of fragmentation that occurs with conversion of farmland to other uses. This alternative is consistent with the GMA goal of protecting and preserving resource land for its long-term commercial viability by providing an adequate agricultural land base and by reducing conflicts between agriculture and other surrounding land uses. The preservation of agricultural land would help to preserve the role of the agricultural sector within the county's economy. Other values that are associated with the preservation of farmland (scenic, recreational, historic, environmental) would also be provided.

b. Alternative 2

Agricultural land would be the primary resource land converted to urban uses, primarily to Ridgefield (1,211 acres) and Vancouver (1,072 acres), with some resource land allocated to Washougal, La Center, and Camas and Battle Ground. Overall, Alternative 2 would convert 4,437 acres of resource land including 4,054 acres of agricultural land that would account for 10 percent of all existing agricultural land

in unincorporated Clark County. The remaining land that would be converted to urban uses is currently designated as forest land, which would be allocated to Camas. Little forest land would be allocated to UGAs because it is primarily located away from urban areas in the eastern parts of the county. Approximately 229 acres of mining resource land located north of Washougal would be added to the UGA.

Table 57. *Resource Land Added to UGAs, Alternatives 1 and 2 (acres)*

	Alternative 1	Alternative 2
Resource land (outside of UGAs)	203,088	198,651
Agriculture*	39,900	35,847
Forest**	158,176	158,022
Mining lands	5,012	4,782
Battle Ground		
Agriculture*	-	490
Forest**	-	-
Mining lands	-	-
Camas		
Agriculture*	-	510
Forest**	-	154
Mining lands	-	-
La Center		
Agriculture*	-	498
Forest**	-	-
Mining lands	-	-
Ridgefield		
Agriculture*	-	1,211
Forest**	-	-
Mining lands	-	-
Vancouver		
Agriculture*	-	1,072
Forest**	-	-
Mining lands	-	-
Washougal		
Agriculture*	-	272
Forest**	-	-
Mining lands	-	229
Total Resource Land in County Converted to Urban Uses	0	4,437
Agriculture*	-	4,054
Forest**	-	154
Mining lands	-	229
Percent of Resource land Converted to Urban Uses	0	2%
Agriculture*	-	10%
Forest**	-	0.1%
Mining lands	-	5%

*Source: Clark County Department of Assessment and GIS, 2006. * Includes Agriculture and Agriculture-Wildlife designations. **Includes Forest Tier 1 and Forest Tier II designations*

c. Alternative 3

As shown in Table 58, the majority of Alternative 3 subareas would convert resource land to urban uses. All impacts would be to agricultural land, no forest land would be affected by any of the Alternative 3 subareas and only W1 and W2 would affect mining resource lands.[10] Subareas B1, B2, V1, V3, V4, and V6 would not affect any resource lands. No impacts to resource lands would occur in the Battle Ground vicinity, other than what is proposed under Alternative 2.

Table 58. *Acres of Resource Lands, by Subarea*

	Alternative 3				Alternative 2		
	Agriculture	Forest	Mining		Agriculture	Forest	Mining
Battle Ground							
Subarea B1	-	-	-	Subarea 3	490	-	
Subarea B2	-	-	-				
Camas							
Subarea C1	407	-	-	Subarea 6	510	154	-
Subarea C2	27	-	-				
La Center							
Subarea L1	306	-	-	Subarea 1	498	-	-
Subarea L2	405	-	-				
Ridgefield							
Subarea R1	298	-	-	Subarea 2	1,211	-	-
Subarea R2	23	-	-				
Subarea R3	286	-	-				
Vancouver							
Subarea V1	-	-	-				
Subarea V2	197	-	-	Subarea 4	-	-	-
Subarea V3	-	-	-				
Subarea V4	-	-	-				
Subarea V5	387	-	-				
Subarea V6	-	-	-	Subarea 5	1,072	-	-
Subarea V7	613	-	-				
Washougal							
Subarea W1	46	-	46	Subarea 7	272	-	229
Subarea W2	15	-	29				
Subarea W3							

Source: Clark County Department of Assessment and GIS, 2006

The greatest impacts associated with resource lands would be conversion of agricultural land to urban uses. Areas where the fewest impacts to resource lands would occur would be in the vicinity of Subarea 4, where only V2 would convert agricultural resource land, approximately 197 acres, to urban uses. The largest conversions under Alternative 3 would occur in V7, (613 acres), C1 (407 acres), L2 (405 acres), V5

[10] *Mining resource land can be located within any land use designation. Impacts to mining lands are those that are located with the County's Surface Mining Overlay District.*

(387 acres), and L1 (306 acres). Over half of the land in the L1 and L2 subareas is currently designated agricultural resource land, and taking into account what is already proposed under Alternative 2 Subarea 1, the potential conversion would total approximately 1,209 acres. While this is less resource conversion than in other subareas, nearly half of the expansion areas near would occur on agricultural land.

The area with the greatest impact to resource lands would be in V7, which would convert approximately 613 acres of agricultural land. When compared to Alternative 2 Subarea 5, which would convert approximately 1,072 acres of agricultural land, the total potential conversion in this Vancouver subarea would total 2,072 acres (including 387 acres proposed in V5), more than any other area in the county and more than ten times the amount of resource land that would be converted in Subarea 4 and V2.

Other subareas where resource land would be converted would be in Ridgefield, where impacts to resource land would occur primarily in R1 and R3, affecting between 286 acres and 298 acres. Alternative 2 Subarea 2 would already convert 1,211 acres to urban uses, and if either R1 or R2 were added, would have the largest impacts except for what is proposed in the vicinity of Alternative 2 Subarea 4 in Vancouver.

Few mining resources would be affected under Alternative 3 except for in the Washougal area where W1 and W2 would affect 46 acres and 29 acres, respectively, in the Surface Mining Overlay District. This is considerably less than what is proposed under Alternative 2, which would affect approximately 229 acres of the Surface Mining Overlay District.

3. Mitigation

Once resource land is included in an UGA, it is assumed that the resource itself is no longer protected from conversion to urban uses and loss of the resource would eventually occur. However, the County's mineral resource overlay zone does provide some protection. While protecting resource lands is largely Clark County's responsibility, the cities can contribute by designing their UGA expansion areas to avoid resource lands. The following sections describe proposed County policies and suggest additional mitigation measures.

a. Plans and Ordinances

Clark County: The County's Rural and Natural Resource Element goals provide for the maintenance and enhancement of productive forest (Goal 3.3), agricultural (Goal 3.4), and mineral (Goal 3.5) lands and discourage incompatible uses on those lands (also known as right-to-farm and right-to-harvest-timber regulations). Policies under each goal seek to encourage conservation through identifying, designating, and protecting resource lands. Policies encourage protection of these lands through uses that enhance and are compatible with the nature of these lands, a level of public facilities that can meet the production needs of these areas, reviewing impacts of proposals on resource uses, support for special purpose taxing districts, and preservation of parcel sizes that are conducive to farm or forest production and mineral resources (Policies 3.3.1 – 3.3.4, 3.4.1 – 3.4.9, 3.5.1 – 3.5.3). Policies for farm and forest land encourage the concept of cooperative resource management (Policies 3.3.9 and 3.4.10). It discourages rural residential development near resource lands or be located in a manner that minimizes conflicts with use of the resource (Policies 3.3.10 – 3.3.12, 3.4.11- 3.4.12, 3.5.10, 3.5.12). In addition, policies encourage the continuation of commercial resource management by supporting land trades that result in consolidated forest and agricultural ownership and other incentives for continued production (Policies 3.3.13, 3.3.14, 3.4.14, 3.4.15, and 3.4.16).

Finally, the resource element establishes some specific policies with regard to mining. These policies support the conservation of mineral lands for productive economic use by designating lands with long-term commercial significance (3.5.1), encourage the recycling of concrete and aggregate materials, and preserves the use until the resource is depleted or reasons to discontinue extraction are demonstrated (3.5.5 and 3.5.7). Policies establish some limitations on mining activities and encourage the extraction of minerals in a manner which minimizes the adverse effects on floodplains, water quality, fish and wildlife,

adjacent activities, and sensitive, scenic, or wildlife habitat areas (3.5.8 and 3.5.9). The plan also provides for the eventual conversion of exhausted sites to other uses through the removal of the surface mining overlay (3.5.13 – 3.5.17).

Battle Ground: Resource lands are not discussed in the Battle Ground comprehensive plan or implementing ordinances.

Camas: Resource lands are not discussed in the Camas comprehensive plan.

La Center: La Center's comprehensive plan Policy 8.1.11 encourages that prime and important agricultural land and productive timberland shall be located outside the urban growth boundary and encouraged to continue in productive resource use, while conversion or incompatible uses are discouraged.

Ridgefield: Resource lands are not discussed in the Ridgefield comprehensive plan

Vancouver: Resource lands are not discussed in the Vancouver comprehensive plan.

Washougal: Resource lands are discussed in the Natural Resources section of Chapter 2 of the comprehensive plan. Policy 4-D states that mining operations shall be required to reclaim mining sites in accordance with DNR standards.

b. Additional Mitigation

1. Local jurisdictions could redraw the proposed UGA to exclude all viable farm and forest lands or increased zoning densities in existing UGAs to accommodate more population without needing to convert resource land.

2. The county could include a greater portion of the undeveloped lands classified as prime soils by SCS as agricultural and forest lands as resource lands, regardless of lot size. Specialty agriculture, such as ornamental nurseries, does not require large parcels.

3. Incentives (e.g., transfer of development rights) and stricter development regulations in the county could be developed to discourage the construction of any residences on resource lands, unless they are necessary to support the resource use.

D. Economy

1. Setting

a. Framework

The GMA established statewide economic development goals that:

> Encourage economic development throughout the state that is consistent with adopted comprehensive plans; promote economic opportunity for all citizens of the state, especially for unemployed and disadvantaged persons; and encourage growth in areas experiencing insufficient economic growth all within the capacities of the state's natural resources, and local public services and facilities.

Prior to the 2003 DEIS, Clark County, the business community and the CREDC worked to devise a set of economic development strategies to meet GMA goals by leveraging existing strengths into new economic power. The result was the *Economic Development Strategic Plan* (EDSP) (2002), which was used to guide the update of the 2004 Growth Management Plan. Since then, the CREDC amended its strategic plan in November 2005 to address changes in the local and regional economy since the 2002 EDSP was adopted.

The 2005 EDSP focuses on critical success factors for developing the regional economy, which include:

- Development of necessary human capital and physical infrastructure to support regional economic growth;
- Expansion of employment in primary clusters; and
- Growth of a high performance financially vibrant organization to undertake and coordinate the implementation of programs and services.

The first two success factors are focused on economic development, while the third describes CREDC's role in improving the regional economy. Given the limited resources facing all communities, the plan identifies goals for developing the regional economy, particularly developing emerging industry clusters that depend on a knowledge-based workforce, understanding that the dynamics of the marketplace would create supporting businesses.

b. Regional Industrial Clusters

A concept central to economic development is that the economic success of the region depends on the competitiveness of key industry clusters. Five significant clusters in the PMSA have driven regional growth and are expected to remain the foundation of the future economy. These include high-technology products and services, telecommunications, creative services, nursery products and metals fabrications. With the exception of perhaps nursery products, all have a significant presence in Clark County. The clusters targeted to drive the future economy are:

- Semiconductor and electronic manufacturing
- Telecommunications
- Knowledge-based service industries
- Life sciences
- Health care

The growth and development of significant industry clusters serve as the basis for attracting similar firms and investment as well as growth of existing businesses. Several strategies identified to implement the 2005 EDSP include:

- Focusing development activities on existing clusters where there is a regional advantage, existing infrastructure, and a workforce base.
- Identifying existing and emerging clusters and support future growth by streamlining infrastructure and permit requirements. Develop shovel ready sites where environmental impacts would be minimized.
- Supporting the expansion of the academic and technical programs at local community colleges and satellite campuses, specifically in creating a technical institute and joint training center that would grant applied technology, four-year undergraduate, and advanced degrees in areas supporting targeted industry types.
- Growing targeted industries that support the desired pattern of growth by increasing the overall inventory of designated commercial and industrial lands. The inventory will include a number of larger parcels (larger than 75 acres) that individually and collectively accommodate knowledge-based campus development and the clustering of targeted industries.
- Making targeted infrastructure investments in advance of business growth to guide development and streamline the development process. Local jurisdictions should share revenue to support targeted investments. These investments can also be supported by new public sector finance mechanisms sufficient to allow for infrastructure investment in advance of development and to direct growth to identified nodes.
- Continue to support the development of the Discovery Corridor.

c. The Local and Regional Economy

Clark County has had one of the most vibrant economies in Washington State and the nation during the past two decades; especially during the 1990's, the county experienced a period of remarkable economic and population growth. Clark County's location within a larger urban area and its existing and new industries has provided the basis for continued growth and prosperity.

Clark County's economy mirrors that of the PMSA as a whole. It is broadly diversified and is strong in high technology manufacturing, financial and business services, and international trade. Nationally, the region is known as the Silicon Forest, a concentration of more than 2,000 high technology and technology related firms. The addition of these industries to an already highly diversified economy within the PMSA has made Clark County more resilient to national economic downturns (e.g. 1991), although even with diversification the area has not been immune to changes in the economy.

The county's largest employers are shown in Table 59, first by all sectors, and then broken out by the largest employers in the manufacturing, distribution, and call center sectors (there is therefore some duplication of companies). The growth of small and medium sized firms at new locations, not the growth of existing large businesses, has largely driven economic expansion in the PMSA. These firms are located throughout the county, with the majority of the industries concentrating in the Vancouver/Clark County urban area. The top five employers in 2005 were Southwest Washington Medical Center (3,250 employees), Evergreen School District (3,050 employees), Vancouver School District (2,800 employees), Hewlett-Packard (1,800 employees), and Clark County (1,700 employees). Existing firms have created both a skilled work force as well as a network of suppliers and business relationships that attract and foster growth in these sectors.

The growth of the economic base in the 1990s resulted in employment growth. The labor force grew to 178,000 in 2000, a 40% increase over 1990. The PMSA was similar to the nation with low unemployment during the 1990s, eventually dipping to as low as 3.5% in 1997. The national recession starting in 2001 reversed a period of fast economic growth and low unemployment, resulting in significant layoffs and unemployment rates increasing to 8% by February 2002 in Clark County and the PMSA. This downturn affected over 14,000 Clark County residents. More recently the economy has begun to improve regionally and within the county. 2005 unemployment for Clark County was 6.2 percent with a 5.8 percent unemployment rate in the PMSA for the same period.

A *Riley Research Associates* study (April 2002) placed the percent of employed workers living in Clark County but working in Oregon at 25 percent, or about 41,000 people. This rate has remained remarkably stable during the past decade despite the growth in the Clark County economy and local employment opportunities. The study found that Clark County residents traveling to Oregon for work are employed in various industries, but primarily: transportation services (13 percent), health care (13 percent), low-and high-tech manufacturing (11 percent and 8 percent, respectively), professional/business services (10 percent), and construction (9 percent). The availability of employment opportunities within the PMSA allows the area to attract and retain working age residents, but as shown by the number of people leaving Clark County for work, the area does not provide jobs for all of its residents. Some Clark County residents working in Oregon may have moved to Clark County from Oregon for more affordable housing while retaining their jobs in Oregon.

d. Factors Influencing Economic Growth

There is broad potential for economic development in Clark County. However, various factors may hinder or impede the progress of development and the successful achievement of economic viability. For instance, the county has a manufacturing base that exceeds the state average and has a concentration of business services in the form of corporate offices and technical support services, and yet the county still exports workers to Oregon and takes more than its share of houses. The pace of development within the county will depend on the economic prospects of the entire PMSA, and the pace of growth on the ability to capitalize on a combination of domestic and Pacific Rim markets.

Table 59. *Largest Employers in Clark County, by All Sectors and by Individual Sectors*

Company	City	Product/Service	Function	NAICS	Employment October 2005
All Sectors					
Southwest Washington Medical Center	Vancouver	Healthcare	Hospital	62	3,236
Evergreen School District	Vancouver	Public Education	School	61	3,052
Vancouver School District	Vancouver	Public Education	School	61	2,775
Hewlett Packard	Vancouver	Inkjet Printers	R&D/Marketing	33	1,800
Clark County	Vancouver	Government	Government	92	1,664
Clark College	Vancouver	Public Education	School	61	1,434
Fred Meyer	Vancouver	Retail	Retail	44	1,383
Bonneville Power Administration	Vancouver	Public Utility	Utilities	22	1,285
Safeway	Countywide	Retail	Retail	44	1,202
Battle Ground School District	Vancouver	Public Education	School	61	1,125
City of Vancouver	Vancouver	Government	Government	33	1,100
WaferTech	Camas	Silicon Wafers	HQ	32	1,100
Georgia Pacific	Camas	Pulp and Paper	Branch Manufacturing Plant	62	950
Kaiser Permanente	Vancouver	Healthcare	Healthcare	62	760
The Vancouver Clinic	Vancouver	Healthcare	Healthcare	33	750
SEH America	Vancouver	Silicon Wafers	Branch Manufacturing Plant	62	650
Legacy - Salmon Creek	Vancouver	Healthcare	Hospital	44	600
The Holland, Inc.	Countywide	Restaurants	Retail	61	567
Washington State University	Vancouver	Public Education	School	33	516
C-Tech	Camas	Pressure Washers	HQ	44	280
Hi-School Pharmacy	Countywide	Retail	Retail	62	250
Manufacturing					
Hewlett Packard	Vancouver	Inkjet Printers	R&D/Marketing	33	1,800
WaferTech	Camas	Silicon Wafers	HQ	33	1,100
Georgia Pacific	Camas	Pulp and Paper	Branch Manufacturing	32	950
SEH America	Vancouver	Silicon Wafers	Branch Manufacturing	33	650
Frito Lay	Vancouver	Food Products	Branch Manufacturing	33	585
Columbia Machine	Vancouver	Concrete Block Machines and Palletizers	HQ	33	575
Sharp Labs and Microelectronics	Camas	Electronics and R&D	Research	54	380
The Columbian Publishing	Vancouver	Newspaper	HQ	33	347
C-Tech (Landa)	Camas	Pressure Washers	HQ	33	280
Linear Technologies	Camas	Linear and analog circuits	Branch Manufacturing	31	240
Matsushita Kotobuki	Vancouver	TV/DVD/VCR	Branch Manufacturing	33	228
Pendleton Woolen Mills	Washougal	Clothing	Branch Manufacturing	31	210
Bemis	Vancouver	Multiwall and paper bags	HQ	32	150

Company	City	Product/Service	Function	NAICS	Employment October 2005
Distribution					
Dollar Tree	Ridgefield	Warehouse/Distribution	Regional Distribution Center	48	130
U.S. Food Service	Ridgefield	Warehouse/Distribution	Distribution Center	48	120
Corwin Bottling	Ridgefield	Warehouse/Distribution	HQ/Distribution Center	48	105
Vancouver Warehouse and Distribution	Vancouver	Warehouse/Distribution	HQ/Distribution Center	48	49
Food Express	Vancouver	Warehouse/Distribution	HQ/Distribution Center	48	30
Blue Bird Transfer	Vancouver	Warehouse/Distribution	HQ/Distribution Center	48	15
Call Centers					
Electric Lightwave	Vancouver	Full Service integrated telecommunications services	Inbound/Western Regional HQ	51	480
The Nautilus Group	Vancouver	Exercise Equipment	In/Outbound	42	350
New Edge Networks	Vancouver	DSL Internet Network Provider	Inbound	44	330
Charter Communications	Vancouver	Call Center	Inbound	56	300
Wells Fargo Financial	Vancouver	Total Customer Service Center	Inbound	51	300
Cascade Call Works	Vancouver	Call Center	In/Outbound	56	100

Source: Columbia River Economic Development Council. October 2005

The Portland-Vancouver metropolitan area may not regain the number of heavy industry manufacturing jobs it had in the late 1970s as jobs shift from traditional manufacturing to service-oriented employment. As a result, the total Clark County employment forecast could be affected. In addition, further expansion of the labor force could be constrained by a shift in demographics, due to the forecasted aging of the county's population. These shifts are due to the fact that virtually all of the baby-boomers that are now in the labor force will retire over the next 20 years and the age cohort coming in behind is significantly smaller. Labor force participation rates tend to be highest where age is concentrated between 20 and 55 years and education levels are higher than average.

Another factor affecting the economic viability of the county is the ability to develop the industrial lands that have been identified. Clark County has the largest inventory of industrial lands in the metropolitan marketplace. If developed appropriately industrial lands can generate high-wage jobs at a rapid pace and propel the county's economy. A major stimulus to long-term growth of the county is its location relative to the region. The Portland Metropolitan area attracts industry to the region but, for firms to locate in Clark County, adequately serviced and readily available land is needed. The biggest potential concerns could be the funding of infrastructure and jurisdictional questions between the land use planning and regulatory functions of Clark County and the water/sewer service functions of the cities.

e. Income Profile

Personal and household incomes are closely related to employment opportunities. Industries that pay low wages (e.g., restaurants, department stores) result in lower incomes. Income in turn affects the type of retail commercial and housing required to meet the needs of a lower income population. Personal and household incomes are indicators of the types of jobs available in the community and whether the income from one worker or a household would be enough to support a family. Income and housing are discussed in more detail in the respective Population, Housing and Land Use sections.

f. Industrial and Commercial Land Analysis

There are approximately 12,000 acres zoned for industrial uses (light and heavy industrial zoning designations) in Clark County, 97 percent of which is located in urban areas. As part of the 2003 DEIS the CREDC categorized all industrial lands within the county and determined that Clark County has approximately 800 acres of *prime* industrial land available for development with a total vacant inventory of over 5,000 acres. Prime industrial land is defined as immediately available industrial land of sufficient size that is vacant, properly zoned, served with adequate infrastructure, and free of land use and environmental conflicts. The 2005 *Plan Monitoring Report* showed that between 2001 and 2004, approximately 229 acres of industrial land were developed, primarily within the Vancouver UGA, which accounted for approximately 65 percent of industrial development countywide. Industrial development in Ridgefield accounted for approximately 30 percent of the total industrial development in the county. Overall, approximately 41 percent of industrial development has occurred on portions of parcels with critical lands. La Center does not currently have any industrial land, and only limited commercial lands.

Approximately 602 acres of commercial land was developed between 2001 and 2004, primarily in the Vancouver UGA that accounted for approximately 80 percent of all commercial development within the county. Approximately 23 percent of commercial development occurred on portions of parcels with critical lands.

2. Impacts

a. Methodology

The ability of the local jurisdictions and the county as a whole to offer employment opportunities has a direct impact on how the county functions in a regional economy. Since Clark County adopted its first comprehensive plan in 1994, county leaders have committed to focusing on economic development and balancing jobs and housing in the county. Job growth is assumed to occur under all alternatives, although job growth under Alternative 1 would occur only within existing UGAs while job growth under

Alternative 2 would occur within the existing UGAs and proposed expansion areas. Table 60 shows the assumptions used to determine the number of jobs needed and what densities were actually achieved by development between 1995 and 2000 (2001 *Buildable Lands Report,* the most recent information available).

Table 60. *Comparison of Assumptions*

	1995-2000 Achieved Development	Alternatives 1 & 2
Percent infrastructure	**	25%
Percent redevelopment	5-9%	5%
Market factor	N/A	0
Jobs per acre		
Retail	29	20
Industrial	13	9
Office/Business Park*	20	20

**Government employment was assumed to be the same as office/business park.*

***The percentage of land devoted to infrastructure was not calculated for retail, industrial, or office/business park developments. However, residential development averaged 27.5 % infrastructure. This was adopted by the BOCC in 2005 as part of the plan development process.*

Alternatives 1 and 2 use the same assumptions, although compared to what was reported in the 2001 *Buildable Lands Report*, the achieved employees per acre for retail and industrial development were higher than what is assumed. Assumed retail densities are 20 employees per acre compared to an achieved 29 employees per acre, while assumptions for industrial employees per acre are 9 compared with an achieved 13 employees per acre in Clark County between 1995 and 2000.

The total number of jobs created under each alternative was determined by evaluating the proposed 2005-2024 population growth (192,810 new residents) and assuming a 1:1.75 ratio of jobs to population. Jobs were then distributed by employment sector depending on the assumed percentage under each alternative that varies depending on the type of employment. Assuming 1 job for every 1.39 new residents, 138,312 new jobs would be needed to meet the County target. This translates to 3,504 acres needed, as shown in Table 61. However, if higher employee density continues, the jobs target could be met with less land added to UGAs

b. Focused Public Investment Areas

As part of the 2003 DEIS, Clark County undertook an analysis of areas with the potential to meet the needs of existing and new industry by investing the county's limited resources in those areas most likely to generate family-wage employment. County investments are targeted to capital improvements that eliminate gaps in public facilities for a particular geographical area to produce acceptable levels of service for development in that area. Such areas can be said to contain "fully-served" land because all public facilities meet or exceed standards, achieving some of the County's economic development goals to have "shovel ready" land. A result of that analysis led to the identification of several Focused Public Investment Areas (FPIAs), shown in Figure 31.

The Barberton area, generally located along I-205 and between 72nd Avenue, St Johns Road and 78th Street and within the Vancouver UGA, was one of the focused public investment areas evaluated in 2003. It has access to major transportation facilities; infrastructure cost estimates are comparatively low; many public investments are already being planned and funded; private sector support is strong and growing; and the area has numerous, large vacant parcels. Clark County anticipates that buildout of the area could provide up to 14,000 new jobs.

c. Planned Employment versus Actual Capacity

The planned job growth used to project the land need is shown in Table 61.

Table 61. *Projected Job Creation by Employment Sector, Alternatives 1 and 2*

	Alternative 1	Alternative 1: If 1995-2000 Achieved Densities Were Assumed	Alternative 2	Alternative 2: If 1995-2000 Achieved Densities Were Assumed
Planned Jobs				
2005 population	391,500		391,500	
Annual growth rate	2.00%		102.00%	
2024 population	584,310		584,310	
2005-2024 population growth	192,810		192,810	
Urban population growth*	173,529		173,529	
Average jobs to population ratio	1/1.39		1/1.39	
Percent retail	22%		22%	
Total retail jobs	30,429		30,429	
Percent industrial	29%		29%	
Total industrial jobs	40,110		40,110	
Percent office/business park	40%		40%	
Total office/business park jobs	55,325		55,325	
Percent government	9%		9%	
Total government jobs	12,448		12,448	
Total Jobs	138,312		138,312	
Actual Capacity				
2024 population capacity*	510,537	538,862	588,327	588,327
Urban population growth capacity*	118,969	118,969	177,385	177,385
Average jobs to population ratio	1/1.0	1/.9	1/.3	1/1.1
*Retail***				
Total retail acreage	1,686	1,686	1,880	1,880
Employees per acre	20	29	20	29
Minus infrastructure	25%	25%	25%	25%
Total Retail jobs	25,290	36,671	28,200	40,890
Industrial				
Total Industrial acreage	2,796	2,796	4,128	4,128
Employees per acre	9	13	9	13
Minus infrastructure	25%	25%	25%	25%
Total Industrial jobs	18,873	27,261	27,864	40,248
Office/Business Park				
Total Office/Business Park acreage	3,306	3,306	4,003	4,003
Employees per acre	20	20	20	20
Minus infrastructure	25%	25%	25%	25%
Total Office/Business Park jobs	49,590	49,590	60,045	60,045
Total	93,753	113,522	116,109	141,183
Additional city proposals	12,329	12,329	12,329	12,329
Public sector jobs	7,944	7,944	7,944	7,944
Total Jobs Capacity	114,026	133,795	136,382	161,456
Percent of Capacity Used	82%	97%	99%	117%

Source: Clark County Planning Department; Clark County Department of Assessment and GIS, 2006

**Capacity based on Clark County Vacant Lands Model.*

***Includes Mixed-Use, Mixed-Use Employment, and Commercial designations*

Overall, impacts on land use, that is, the amount of retail, industrial, and office/business park land added for job creation under each alternative, is discussed in detail in Section 1, Population, Housing and Land Use. An analysis of the actual capacity of land identified in the 2004 County inventories of retail, industrial and business park lands showed that Alternative 1 would have nearly enough land to accommodate the projected need for new jobs. If employment densities achieved between 1995 and 2000 are assumed to continue, Alternative 1 would use 97 percent of its capacity. If actual achieved employment densities were applied to Alternative 2, actual capacity would be larger with approximately 117 percent of planned employment accommodated, a surplus of 17 percent.

d. All Alternatives

None of the alternatives would change the UGA or land use designations for Yacolt or Woodland nor would be a change to land use or projected population or employment growth as a result of these alternatives. Development within these two communities would continue as in the past and existing and proposed comprehensive plan policies would direct economic development.

e. Alternative 1

No land would be added to UGAs under Alternative 1, requiring development on existing vacant or underdeveloped land to increase the number of jobs within the county. Although UGAs would not expand, Alternative 1 would still include the FPIA in the Barberton area. Alternative 1 would not have the capacity to accommodate the in projected number of jobs needed by 2024, exceeding capacity by 18 percent, approximately 24,300 jobs. If actual achieved density between 1995 and 2000 were assumed, Alternative 1 would nearly meet the jobs target, accommodating all but 3 percent of the planned jobs. This is based on increasing the assumptions for retail and industrial jobs per acre from the planned 20 jobs per acre to the previously-achieved 29 jobs per acre for retail and from the 9 planned to the 13 achieved jobs per acre for industrial development. Most jurisdictions have developed only a small percentage of their vacant industrial and commercial land and still have large tracts of land available for development.

Both Alternatives 1 and 2 assume one new job for every 1.39 new people. Alternative 1 would meet Vancouver's goals of creating activity centers more than Alternative 2 because it would concentrate housing and employment on land within the existing UGA and have the greatest opportunity to connect new development with the existing urban development pattern. Compared to Alternative 2, this alternative would provide better connections to the existing development pattern and would meet Vancouver's policies around activity centers.

Alternative 1 would offer fewer large tracts of vacant land for economic development and therefore would not support some of the County's economic development strategies, particularly those with emphasis on campus development and industry clusters.

f. Alternative 2

Alternative 2 plans for the same number of jobs as Alternative 1, but would add approximately 1,907 acres of the industrial land and approximately 1,597 acres of mixed-use, commercial, and employment center/campus land. Alternative 2 would add land for jobs to all jurisdictions, but the majority would be dedicated to Vancouver (1,024 acres) and Camas (699 acres). Unlike other jurisdictions, expansion of the Camas UGA would be predominantly for mixed-uses (535 acres), whereas Battle Ground, La Center, and Ridgefield would all be allocated approximately 500 acres of employment acreage predominantly for commercial, employment center/campus, and industrial lands.

Alternative 2 would accommodate the projected jobs target. If the achieved employment trends continue with higher employment densities in retail and industrial than what is assumed, this alternative would include enough land for 17 percent more jobs than the employment target.

This alternative would include large lots for industrial uses, with some acreage for other types of employment, although less than half of the total acreage of Alternative 2 would be designated for jobs and

may still mean that Clark County residents would have to look for employment in other areas outside of the county because of the higher percentage of land devoted to housing.

g. Alternative 3

Impacts to the economy under Alternative 3 would vary depending on the amount of land added for employment. Subareas where no land for employment is proposed could still provide short-term employment opportunities from residential construction, although these jobs would likely be more cyclical than long-term employment in industrial and high tech clusters the county is attempting to attract.

Alternative 3 subareas that would add employment acres include B1 (22 acres), C1 (590 acres), L1 (86 acres), L2 (239 acres), R2 (49 acres, R3 (122 acres), V2 (875 acres), V5 (495 acres), V7 (668 acres), W1 (31 acres), and W2 (41 acres). Employment acreage would accommodate jobs in industrial, commercial, retail, and office/business park style development.

Industrial land generally dominates the proposed employment acreage additions in the Alternative 3 subareas. The most industrial acreage would be added in the Vancouver area, particularly in the vicinity of Alternative 2 Subarea 5 where V5 and V7 would add approximately 1,163 acres of industrial land to the UGA in addition to approximately 941 acres of industrial land proposed under Alternative 2 Subarea 4. Industrial land would be provided primarily in the Vancouver and La Center subareas, but some small amounts of industrial land would also be added in R2 and W2.

The largest single increase in employment acreage would occur in V2, where approximately 875 acres of employment center land would be added to the Vancouver UGA, compared to all of Alternative 2 Subarea 4 where approximately 83 acres would be added for employment. Other large increases in employment center land uses would occur in C1 (590 acres) and R3 (122 acres).

While Alternative 3 subareas would provide additional industrial and employment center land, the majority of land devoted to employment would still be concentrated in Alternative 2 subareas. Employment acreage that would be added to existing UGAs under Alternative 3 would increase potential employment opportunities provided public facilities could be provided to those sites to support future development.

3. Mitigation

Each of the alternatives would affect, to a greater or lesser extent:

- the number of total new jobs created;
- the balance between jobs and housing;
- the diversity and types of industry sectors favored; and
- the cost of providing urban levels of services to commercial and industrial development within UGAs.

As with mitigation for land uses, the primary mitigation for economic impacts is to select an alternative that would contain sufficient land to accommodate firms of varying sizes and sectors, minimize adverse impacts, and distribute commercial and industrial land equitably, although additions in employment acreage would add costs to serve the increased land capacity.

With respect to mitigating the impacts of each alternative, there are few immediate remedies other than changing the assumptions behind the designated UGA, such increasing the assumed number of employees per acre. Mitigation measures to protect the existing and proposed industrial land supply are to implement policies and zoning regulations that protect industrial uses. For example, policies 9.1.8 and 9.3.3 direct cities and the county to provide for orderly long-term commercial and industrial growth and maintain an adequate supply of land suitable for compatible commercial and industrial development. County policies 9.1.11 and 9.1.13 restrict the conversion of industrial land to other uses, but add provisions to permit the designation of master planned developments of major industrial developments.

E. Historic and Cultural Resources

1. Setting

The GMA requires all local jurisdictions "to identify and encourage the preservation of lands, sites, and structures that have historical or archaeological significance."

Historic and cultural resources in Clark County are rooted in a rich history that dates back thousands of years. The historic record of the county includes the formation of the region's unique physiography, the settlement of the region by Native Americans, and its exploration by European nations. Many of the county's historical resources no longer exist due to development and increasing urbanization. The remaining historic, cultural, and archaeological resources within the county are protected by state regulations, local policies and ordinances, and by voluntary registration of historic structures. A full list of these resources is maintained by County staff.

Figure 32 shows the Archaeological Predictive Model map of Clark County. Table 62 lists the number of historic resources in Clark County and the cities, according to whether they are registered (locally and/or federally) or inventoried but not registered.

Table 62. *Existing Historic Resources in Clark County*

County	Clark County Historic Register	14
	Inventoried, not registered	100
	National Register	8
Battle Ground	Clark County Historic Register	1
	Inventoried, not registered	19
	National Register	0
Camas	Clark County Historic Register	4
	Inventoried, not registered	22
	National Register	1
La Center	Clark County Historic Register	1
	Inventoried, not registered	0
	National Register	0
Ridgefield	Clark County Historic Register	1
	Inventoried, not registered	40
	National Register	1
Vancouver	Clark County Historic Register	21
	Inventoried, not registered	141
	National Register	17
Washougal	Clark County Historic Register	1
	Inventoried, not registered	17
	National Register	1
Yacolt	Clark County Historic Register	0
	Inventoried, not registered	1
	National Register	0

Source: Clark County Planning Department; Clark County Department of Assessment and GIS, 2006

The Clark County Archaeological Predictive Model and associated probability maps were adopted by the County in 1994 and updated in 2001. These maps identify the likelihood of a particular area having archaeological resources and establish specific ranges of probability: low (1 to 20 percent), low-moderate (21-40 percent), moderate (41-60 percent), moderate-high (61-80 percent), and high (81 to 100 percent). Much of the county has been identified as having a high probability for archaeological resources, in part

because of the area's rich history and its importance as a settlement location. Many of the high probability areas are located along streams, rivers, and other water bodies. When applications for development are submitted, a pre-determination of the probability rating is required. The model helps staff determine whether an applicant is required to investigate potential resources further in order to protect them from development, or how to mitigate impacts. Most of the cities work with Clark County to protect historic and cultural resources, and many have agreements to use the County's predictability model in their own reviews.

2. Impacts

Figure 32 shows how most of the land area in Clark County is within a moderate to high predictability area. GIS can determine which UGAs proposed for Alternative 2 and the subareas for Alternative 3 would have the largest land area with high predictability. However, impacts tend to be largely a matter of project-level decisions. All areas in and adjacent to UGAs contain a very high proportion of land having a high predictability, so comparing subareas does not reveal many opportunities for reducing impacts under Alternative 2 by expanding into Alternative 3 subareas. Tables 63 and 64 compare relative acreages with moderate to high predictability for Alternative 1 and Alternative 2, and for the subareas.

Table 63. *Moderate to High Areas of Archeological Predictability, Alternatives 1 and 2 (acres)*

	Alternative 1	Alternative 2						
	Existing UGAs	Total New UGAs	Battle Ground UGA	Camas UGA	La Center UGA	Ridgefield UGA	Vancouver UGA	Washougal UGA
Size of UGA			1,507	1,123	1,213	2,144	3,993	877
Moderate	4809	1,252 +4,809	118	167	151	153	614	49
Mod-High	6482	1,716 +6,482	144	135	309	502	546	80
High	22,217	4,760 +22,217	697	392	704	1,273	1,528	166
% of UGA		-	64%	62%	96%	90%	67%	34%

Source: Clark County Planning Department; Clark County Department of Assessment and GIS, 2006

a. Alternative 1

Alternative 1 would not create any new impacts on cultural or historic resources that were not discussed in the EIS for the 2004 Plan. There are approximately 34,000 acres of land with a moderate, moderate-high, or high probability for archeological resources in the existing UGAs. Alternative 1 contains 289 historic sites in the UGAs, of which 29 are on the local Clark County register and 20 are on the National Register. The rest are inventoried but not registered.

Since creeks tend to have a high probability for archaeological resources, expanded UGAs that include shorelines and streams would tend to increase the risk of encountering cultural resources. This alternative would not add expand to include new lands with surface waters. This alternative would add no new miles of streams or shoreline.

However, by confining growth to existing UGAs this alternative could increase the pressure to remove urban historic resources, usually structures such as homes, schools, and churches, to make way for higher density and higher intensity development.

b. Alternative 2

Table 63 shows the acreage of land in Alternative 2 that would be classified as having a moderate to high probability of containing archeological sites. Alternative 2 would add about 7,700 acres to the total 34,000 acres of moderate to high probability, an increase of 23 percent. The most noticeable aspect is the high proportion of the total Ridgefield and La Center UGAs that have a moderate to high predictability rating.

There are eight registered or inventoried historic properties or structures within the proposed expansion areas, as shown in Table 65, which compares those resources between subareas, below. The expanded UGAs under Alternative 2 contain eight inventoried, but not registered, historic sites, which would bring the total to 297 sites in UGAs. Alternative 2, by expanding UGAs onto undeveloped rural lands, would have a higher likelihood of encountering unknown rural historic and archaeological resources. As noted above, the likelihood increases with the presence of streams and shorelines. This alternative would add 42 miles of streams and 145 acres of shoreline within expanded UGAs.

Figure 32 places most of Clark County, excepting areas long since urbanized, within high-probability areas. Consequently, most of the areas proposed for expansion in this alternative would require further investigation as to the incidence of cultural resources.

c. Alternative 3

With respect to the archaeological predictability model all subareas are dominated by areas within the high probability range. Table 64 presents a comparison of subareas for only the moderate, moderate-high, and high probabilities, since those areas predominate. Only land in subareas B2, L2, V1, and V5 have a lower percentage of moderate to high predictability than the corresponding Alternative 2 subarea. In absolute terms, B1, V1, V4, V5, and W1 contain markedly less land with moderate to high probabilities and if used as part of the Preferred Alternative instead of some areas in Ridgefield and La Center UGAs, could reduce the overall impact shown for Alternative 2. If the Alternative 2 boundary at Ridgefield and La Center were retracted to avoid high potential areas, adding some or all of B1, V1, V4, V5, and W1 in exchange would reduce potential overall impacts archaeological resources based on the predictability model.

Nine of the 19 proposed expansion areas have registered or inventoried historic properties or structures. Alternative 3 subareas have a total of 10, of which two are registered historic sites: C1 (National Register) and L2 (Clark County Historic Register). UGAs with no potential impacts to known historic sites are those for Battle Ground and La Center. Otherwise impacts are relatively equal between subareas and also between comparable subareas in Alternative 2.

Table 65 compares the number of known historic structures in the subareas for Alternatives 3 and 2.

Table 64. *Moderate to High Archeological Probability, by Subarea*

	Battle Ground			Camas			La Center			Ridgefield			
	Alternative 3		Alternative 2	Alternative 3		Alternative 2	Alternative 3		Alternative 2	Alternative 3			Alternative 2
	B1	B2	Subarea 3	C1	C2	Subarea 6	L1	L2	Subarea 1	R1	R2	R3	Subarea 2
Size of Subarea	41	120	1,507	1,243	125	1,123	534	793	1,213	614	227	362	2,144
Moderate	6	28	118	150	40	167	26	77	151	75	15	33	153
Mod-High	8	15	144	251	17	135	102	182	309	163	45	74	502
High	27	21	697	883	24	392	425	489	704	334	168	233	1273
total	41	64	959	1284	81	694	553	748	1164	572	228	340	1928
% of subarea	100%	53%	64%	103%	65%	62%	100%	94%	96%	93%	100%	94%	90%

	Vancouver									Washougal			
	Alternative 3				Alternative 2	Alternative 3			Alternative 2	Alternative 3			Alternative 2
	V1	V2	V3	V4	Subarea 4	V5	V6	V7	Subarea 5	W1	W2	W3	Subarea 7
Size of Subarea	1,006	875	402	908	2,302	635	219	668	1,691	809	122	21	877
Moderate	92	92	48	124	376	57	208	9	247	27	0	0	49
Mod-High	131	160	75	145	344	35	5	25	202	168	18	0	80
High	315	602	147	372	701	98	2	634	827	284	27	21	166
total	538	854	270	641	1421	190	215	668	1276	479	45	21	295
% of subarea	53%	98%	67%	71%	62%	30%	98%	100%	75%	59%	37%	100%	34%

Source: Clark County Archeological Predictability Model and GIS, 2006

Table 65. *Historic Structures, by Subarea*

	Alternative 3	Alternative 2	
Battle Ground		Subarea 3	0
Subarea B1	-		
Subarea B2	-		
Camas		Subarea 6	1
Subarea C1	-		
National Register	1		
Subarea C2	-		
La Center		Subarea 1	1
Subarea L1	-		
Subarea L2	-		
Clark County Historic Register	1		
Clark County Inventory	1		
Ridgefield		Subarea 2	2
Subarea R1	-		
Clark County Inventory	1		
Subarea R2			
Subarea R3	-		
Vancouver		Subarea 4	2
Subarea V1			
Clark County Inventory	1		
Subarea V2	-		
Clark County Inventory	1		
Subarea V3			
Clark County Inventory	1		
Subarea V4	-		
Clark County Inventory	2		
Subarea V5	-	Subarea 5	1
Clark County Inventory	1		
Subarea V6			
Subarea V7			
Washougal	-	Subarea 7	1
Subarea W1			
Clark County Inventory	1		
Subarea W2	-		
Subarea W3			

Source: Clark County Archeological Predictability Model and GIS, 2006

3. Mitigation

a. Plans and Ordinances

Clark County: Under Clark County's historic preservation ordinance (CCC Section 40.250.030), the Clark County Historical Preservation Commission is directed to collect and evaluate cultural resource information; review proposed restoration/rehabilitation for historic significance; review nominations to

the National Register of Historic Places, Washington State Heritage Register, Clark County Heritage Register, or other local registries; and develop and manage a variety of educational and interpretive programs. Further, the Commission is responsible for evaluating probable impacts to historic properties, the nature of those impacts, and the reasons for a particular determination. Through inter-local government agreements, the Commission is able to provide historic preservation services to each incorporated city in the county.

Battle Ground: Goals and objectives under Goal 1 (Livability) adopted in December 2001 include policies to encourage preservation, enhancement and integration of its historic resources and cultural heritage (Livability Goal 6). Policies encourage the preservation of resources through public information and advocacy, and where necessary regulation (LO6.1) and support private efforts as well (LO6.2). The preservation is voluntary and the city will periodically review this approach to determine if additional measures are required (LA6.1.2). Battle Ground does not currently have a historic preservation ordinance.

Camas: Camas' comprehensive plan has an objective to "Preserve and enhance properties of historical significance to the community". The Historic/Cultural Element of the plan has three goals for protecting these resources: En-33 to general protect the resources in shorelines of the state, EN-34 to acquire historical/cultural sites to ensure their preservation, and EN-35 to encourage educational projects. Camas has incorporated the provisions for protection of historic structures through the Clark County system in Title 16, Environment, Sections 16.05, Archeological Resource Preservation, and 1607, Historic Preservation of its municipal code.

La Center: Goal #7 in the La Center Urban Area Comprehensive Plan states that the city shall identify and encourage the conservation of historic and cultural resources. Five policies implement this goal, such as working with the County to maintain and update the current inventory, to increase public awareness of the city's resources, to protect resources through a comprehensive planning approach, and to provide assistance to builders on re-use and rehabilitation of structures and sites.

Ridgefield: Chapter 3 of the Comprehensive Plan concerns historic Ridgefield. Policies HP-1 through -6 call for partnering with Clark County to provide a strong preservation program, encouraging the preservation of historical and archaeological sites and structures that have significance, for raising public awareness through education, providing assistance to property owners and developers regarding re-use and rehabilitation of structures, exploring the option of a downtown historic district and developing tours.

Vancouver: Policy CD-11 (Archeological and historic resources) calls for protecting and preserving cultural, historic and archaeological resources. It promotes preservation, restoration, and reuse of significant older buildings. The Vancouver zoning ordinance implements the historic preservation policies of the comprehensive plan through Section 20.510 Historic Preservation Overlay District. The Conservation Area Overlay Districts (CA) are intended to preserve the special architectural character and/or historic or cultural significance of certain areas within the City. In addition, the Historic Preservation section of the building code (Vancouver municipal Code 17.39) establishes regulations for the listing and protection of eligible properties. Vancouver has adopted an Archaeological Preservation Ordinance and uses the County's predictability model.

Washougal: Historic and cultural resources are discussed in the Comprehensive Plan Policy 1-F, which states the City will identify and encourage the preservation of lands, sites, and structures that have historic or archaeological significance.

Yacolt: Goal 6 from Yacolt's comprehensive plan states that "Development within the Yacolt UGA shall proceed in a manner consistent with the preservation of lands, sites, and structures that have historical or archaeological significance."" Policies 6-1 through 6-4 support this goal by requiring the identification of historic resources, offering financial incentives for the preservation of historic properties, establishing a process for when historic and cultural artifacts are found during project work, and encouraging public education on historic preservation.

b. Additional Mitigation

Other ways to reduce or avoid impacts are to:

1. Adopt development incentives which encourage the rehabilitation and preservation of historic structures and neighborhoods within urban areas.

2. Develop policies that preserve historic and cultural resources through historic or culturally significant zoning overlay districts and encourage increased neighborhood and citizen involvement in preservation and maintenance of these areas.

3. Encourage new development in historic areas to be designed to reflect the character of the area.

VIII. Transportation

A. Transportation Network

1. Setting

The GMA requires that local land use and transportation systems be balanced and that land use decisions consider transportation needs and impacts. The GMA also requires that local and regional plans be coordinated. Once the comprehensive plans are adopted, jurisdictions would only be able to approve developments that can demonstrate that adequate transportation facilities would be available at the time of development or be planned and funded to be complete within six years of development approval without reducing the level of service below that set in the plan.

a. Planning

Transportation planning is conducted by various agencies. Federal regulations require a designated Metropolitan Planning Organization (MPO). The Southwest Washington Regional Transportation Council (RTC) is the MPO in Clark County.

The GMA requires that local comprehensive plans include a transportation element. The GMA further created a formal mechanism for local governments and the state to coordinate transportation planning for regional transportation facilities and authorized the creation of Regional Transportation Planning Organizations (RTPOs). The RTC was designated as the RTPO for the three-county area of Clark, Skamania, and Klickitat Counties. RTPOs are intended to be integrated with the federally required MPO in the urbanized areas.

The Metropolitan Transportation Plan (MTP) for Clark County is the region's principal transportation planning document. The 2005 MTP identifies future regional transportation system needs to the year 2030. It outlines strategies and improvements necessary to maintain adequate mobility within and throughout Clark County. The MTP must be consistent with the area's comprehensive long-range land use plans, including the Clark County Community Framework Plan; urban development objectives; overall social, economic, and environmental system performance; and energy conservation goals and objectives.

b. Transportation Demand

Several factors influence the demand for transportation. These include the growth in population and employment, the patterns of development and land use, and demographic factors including household size, workforce participation, and vehicle ownership.

In the 1990's, household size in the county remained stable, averaging 2.69 persons per household. Housing density is increasing. In 1980, single-family residences accounted for 81% of the housing stock and 19% were multi-family. By 2000, the ratio was 77% single-family to 23% multi-family. Another trend

that affects travel demand is the increase in two-worker households, which leads to an increase in vehicle miles traveled per household.

Employment patterns have also been changing. There has been an increase in "high-tech" employment opportunities and an expansion of the retail sector in suburban areas of the Portland-Vancouver metropolitan region. This has led to a greater dispersal of employment throughout Clark County.

Travel demand has also grown as a result of the number of passenger cars registered in Clark County. However unlike the dramatic increase of 171% in passenger cars between 1960 and 1980, the increase (82%) from 1980 to 2000 has tracked closely with the population increase (80%) over the same time period.

Freight traffic is also an important component of travel demand. A recent study commissioned by the Port of Portland suggests that freight truck transportation would increase significantly in the region during next 20 years.

c. Existing Roadway Facilities

The regional transportation system (Figure 33) has been designated by the Washington Regional Transportation Planning Program to include the four classifications of transportation facilities. The first category includes all state transportation facilities including I-5, I-205, State Routes (SR) 14, 500, 501, 502 and 503.

A second category of facility includes all local freeways, expressways, and principal arterials. Principal arterials, such as Mill Plain, Fourth Plain, NE 78th Street, NE 112th Avenue, SE/NE 164th/162nd Avenue, and segments of St. John's and Andresen are included.

The third type of regional transportation facility is high capacity transit (HCT) systems: any express-transit service operating on exclusive rights-of-way including high occupancy vehicle (HOV) lanes. The I-5, I-205, and SR-500 (I-5 to Orchards area) corridors are designated as HCT corridors. A study of future high capacity transit is beginning this year.

The final category of regional facility includes all other transportation facilities and services considered necessary to complete the regional transportation plan. These include transit services and facilities, roadways, rail facilities, airports, marine transportation facilities, etc. which are discussed below.

d. Existing Transit, Airport, Rail, Port & Non-Motorized Facilities and Services

Within Clark County, local transit is provided by C-TRAN, a publicly funded transit agency. C-TRAN operates 17 local urban routes, 8 premium commuter routes and five innovative/dial-a-ride services. C-TRAN provided more than 5.6 million rides in 2005. Vanpool and paratransit services served an additional 200,000 riders in 2005. C-TRAN also provides more than 1,500 parking spaces at seven park-and-ride facilities. Intercity scheduled bus service to cities throughout the northwest and nationwide is provided by Greyhound Bus Lines and by Northwest Trailways.

There are five general aviation airports operating in or serving Clark County: Portland International Airport (PDX), Pearson Airpark, Grove Field, Goheen Airport, Fly for Fun and Taylor's Green Mountain Airpark. General aviation airports are either publicly or privately owned airports that serve general aviation users. There are also several additional private unattended airfields located throughout Clark County.

Mainline freight rail service in Clark County is operated by Burlington Northern Santa Fe Railroad (BNSF). Union Pacific operates some freight trains to Tacoma and Seattle on BNSF's lines.

Amtrak provides daily passenger service on the BNSF lines. Twelve daily Amtrak trains serve Vancouver. The *Empire Builder* travels between Seattle and Chicago via Portland, Oregon; the *Coast Starlight* travels between Seattle and Los Angeles via Portland, Oregon; and the *Cascades* travels between Vancouver, British Columbia, and Eugene, Oregon. An average of 5,274 passengers per month pass through the Clark County station. Clark County owns the Lewis & Clark Railroad, a 33-mile short line railroad. The Columbia Basin Railroad Company is responsible for freight operations on the segment from Battle Ground south. The Battle Ground, Yacolt, and Chelatchie Prairie Railroad Association (BYCX) operates a passenger excursion program on the north segment.

Clark County has three Port Districts: the Port of Vancouver, the Port of Camas-Washougal, and the Port of Ridgefield. The Port of Vancouver features a variety of modern port facilities with intermodal connections to railroad and highway systems serving the entire nation.

The development of non-motorized transportation modes (bicycling, walking) provides options for travel and recreation as well as maximizing the capacity of the road system. Clark County and other local jurisdictions have included bicycle and pedestrian elements in their comprehensive plans. Bicycling is allowed on all state routes in Clark County except on I-5 between the Interstate Bridge and slightly north of the Mill Plain Boulevard interchange.

e. Concurrency & Level of Service

As defined by the GMA, concurrency is the requirement that adequate transportation capacity be available to support development. Concurrency helps balance the timing and sequencing of development in relation to transportation improvements, such as new streets and traffic signals. Clark County and each city jurisdiction have a concurrency program. The two main parts of a concurrency program are an ordinance, which defines how concurrency is administered, and the comprehensive plan, which establishes transportation level-of-service (LOS) standards.

The GMA requires local jurisdictions to set LOS standards for transportation facilities that are regionally coordinated. These levels of service are designated A through F, from best to worst. LOS E describes conditions approaching and at capacity (critical density).

Level of service standards represent the minimum performance level desired for transportation facilities and services within the region. The standards are used to identify deficient facilities and services in the transportation plan, and are also to be used by local governments to judge whether transportation funding is adequate to support proposed land use developments.

Multiple transportation improvement projects are planned by Clark County and local jurisdictions, such as roadway improvements, traffic signals, road widenings, overlays, intersection reconstruction, access ramps, bicycle lanes and sidewalks, school crossings, guard rails, culvert replacements, and storm drainage improvements. Approximate total cost of these programmed projects (reasonably funded projects) are: $459 million for Clark County, $406.2 million for the City of Vancouver, $99.2 million for the City of Battle Ground, $45 million for the City of Camas, $16.5 million for the City of La Center, $318.7 for the City of Ridgefield, $80.8 million for the City of Washougal, and $4.9 million for the City of Yacolt.

B. Impacts

This summarizes the transportation analysis, impacts, and potential mitigation measures for the three land use scenarios being considered in the Clark County comprehensive plan update. Transportation modeling was conducted by Regional Transportation Council staff using the regional EMME/2 travel demand model. Modeling was performed on the 2023 Metropolitan Transportation Plan Update (2030 MTP Update) network for both highways and transit. Refer to this document for details on the network assumptions. Alternatives 1 and 2 were analyzed as "stand alone" alternatives for impacts and mitigation.

Results were reviewed and adjustments made during post-processing where volume balancing was necessary.

Alternative 3 consists of 19 subareas which could potentially be added to the Alternative 2 boundary or which could be substituted for any areas within Alternative 2 that fail to meet the goals and values established by the board. Given the large number of potential combinations of subareas and the relatively minor impacts to the performance of the regional transportation network that would result from including any of these subareas, a more qualitative approach was used to evaluate the likely impacts of including each subarea in an urban growth boundary expansion area.

Table 66 describes the performance measures that were used to analyze Alternatives 1 and 2.

Table 66. *Summary of Impacts, Alternatives 1 and 2 (Based on Performance Measures)*

	Conditions in Year 2000	Alternative 1	Alternative 2
Future Households		219,405	224,880
Future Employment		242,386	223,378
Employment per HH		0.90	1.00
Total Person Trips*		2,576,734	2,565,337
Percent to Portland		8%	9%
All-Day Bridge Crossings		338,006	355,836
Vehicle Miles Traveled	614,777	1,070,911	1,076,081
Vehicle Hours Traveled		30,920	31,973
Vehicle Hours of Delay (VHD)	1,034 (PM Peak Hours)	3,379	4,518
Lane Miles LOS E/F	45.48	159	175
Non-motorized mode share		6.07%	5.73%
Transit Share – all trips		1.25%	1.19%
Average roadway speed	37 mph	35 mph	34 mph

*Source: Regional Transportation Council. *Total personal trips includes all trips with at least one end in Clark County.*

Table 67 summarizes the estimated level-of-service for major arterial corridors within Clark County in 2024. It is based on the volume-to-capacity ratio, which is not the actual measure used to determine transportation concurrency, but is a good indicator of future areas of concern. Where a major facility is not listed or where no letter is shown in the table, the roadway is expected to be operating at LOS D or better conditions in 2024. Figures 34 and 35 show the road segments where the projected traffic volume is likely to approach or exceed the road capacity for Alternatives 1 and 2.

Table 67. *Major Transportation Corridors: Estimated LOS, Alternatives 1 and 2*

Corridor Segment	Alternative 1	Alternative 2
I-5, Columbia River to 99th Street	F	F
I-5, 99th to 134th	D	D
I-205, Columbia River to SR-500	E/F	F
I-205, SR-500 to I-5	D	D
I-5, I-205 to 219th	-	-
I-5, 219th to Ridgefield	F	F
SR-500, I-5 to I-205	-	-
SR-503, SR-500 to 119th Street	F	F
SR-503, 119th Street to Battle Ground	E	E/F
SR-502, I-5 to Battle Ground	-	D
SR-501, I-5 to Ridgefield	-	-
SR-14, I-205 to 164th Avenue	D/E	D/E
Ward Road, SR-500 to UGA	F	F
Ward/182nd, UGA to 159th Street	D/E	D/E
162nd Avenue, SR-14 to Mill Plain	D/E	D
162nd Avenue, Mill Plain to Ward	F	F
La Center Road, I-5 to La Center	E/F	F
Lakeshore/Fruit Valley, Vancouver to Felida	E/F	E/F
72nd Avenue, 119th to 219th Street	E/F	F
199th Street, NE 10th to 72nd Avenues	-	-
179th Street, I-5 to 72nd Ave.	-	-
Burton Road, Andresen to 86th Avenue	E/F	-
Andresen/Padden/88th Street vicinity	E/F	F
137th Ave., 28th to SR-500	-	-

Source: Clark County Department of Assessment and GIS, 2005

1. Impacts to Roads and Highways

Both alternatives show a significant number of congested lane miles of roadway. For purposes of this analysis, congestion is assumed to occur wherever the modeled volume-to-capacity ratio is 0.90 or higher during the p.m. peak hour. The congested facilities by alternative are shown in Figures 34 and 35.

Most of I-5 south of 99th Street is forecast to be at LOS F conditions under both alternatives, even with the widening to six lanes. The Leadership Committee of the Trade and Transportation Partnership Study has agreed not to widen I-5 beyond the six lanes in the MTP. An EIS is underway that would analyze a variety of options for the Columbia River Crossing and the Bridge Influence Area and make

recommendations on a preferred alternative. In addition to river crossing and transit components, the evaluation would consider freight, bicycle, pedestrian and transportation system management/transportation demand management performance. At this time, there are no eight-lane I-5 alternatives for the section of I-5 from 134th Street to approximately Mill Plain Boulevard, although the section leading to the Columbia River crossing has a variety of lane configurations that in essence could serve as eight through-lanes of traffic across the Columbia River. While the modeling shows a need for eight lanes on I-5 during the p.m. peak hour, this cross-section would be inconsistent with bi-state recommendations that have resulted from previous work on the I-5 Transportation and Trade Partnership Study.

Significant congestion is also likely to occur on I-5 between the 219th and Ridgefield interchanges unless alternative arterial and collector routes are planned and built. The high traffic volumes on this segment of I-5 appear to be due to local trips and the lack of parallel arterial and collector roadways. The County is currently analyzing a future new roadway extension west from the I-5 /219th Interchange to Hillhurst Road and into Ridgefield that could provide an alternative for local trips.

The MTP includes a series of improvement projects on I-205 between the Columbia River crossing and the Padden Parkway to improve long-term traffic operations. These include a new split-diamond interchange with 18th Street and Burton Road, and a collector-distributor system in concert with the SR-500 interchange. Modeling shows that these improvements would not completely solve congestion during the p.m. peak hour of travel demand. Traffic volumes and congestion would be higher under Alternative 2 (F) than under Alternative 1 (E/F) on I-205 north of SR-14.

The I-205 and I-5 bridges would operate at LOS F during the peak hour under both Alternatives 1 and 2. All day bridge crossings for Alternative 2 are 5.2% higher than for Alternative 1, resulting in a much higher peak hour volume/capacity ratio which indicates more congestion. The higher bridge crossings with Alternative 2 are due to the larger number of households and the smaller number of jobs analyzed in this alternative. It should be noted that the land supply in Alternative 2 has the capacity to accommodate about 30,000 more jobs than were assumed in the transportation model for Alternative 2.

Under both alternatives, the SR-503 corridor between Fourth Plain in Vancouver and SR-502 in Battle Ground would be at LOS E to F. This corridor serves a significant portion of the proposed urban growth expansion of the Battle Ground and Vancouver UGAs as well as being a major travel route for rural commuters. The draft Washington Highway System Plan includes several solutions to address mobility and safety concerns in this corridor ranging from Intelligent Transportation System (ITS) investments and median curb to a six lane widening project. Widening to six lanes would result in impacts to adjacent residents, businesses, and two schools along with potential wetlands impacts near Salmon Creek and Meadowglade.

SR-14 is approaching full capacity between I-205 and SE 164th Avenue in both Alternatives 1 and 2. The draft Washington Highway System Plan includes several solutions to address mobility and safety concerns in this corridor ranging from ITS, ramp widening and extensions and ramp metering at interchanges in addition to the planned widening from NW 6th Street across Lady Island to Union Street/SR-500, and an interchange project Union Street/SR-500.

The level-of-service on some segments of SR 502 from I-5 to Battle Ground would decline to LOS D under Alternative 2.

Levels of service on most county and city roadways would be similar under either Alternative 1 or 2. Exceptions are noted under the discussion of the alternatives below. Corridors within the Vancouver UGA that would experience poor to failing levels of service during peak hours under both alternatives include:

- Mill Plain Boulevard from I-205 to NE 136th Avenue
- NE 18th Street from I-205 to NE 138th Avenue
- NE162nd/SE 164th Avenue
- Ward Road
- NE 152nd from Ward Road to NE 99th Street
- Salmon Creek Avenue
- Andresen Road/ Padden / 88th St /I-205 area
- Lakeshore Avenue
- Hazel Dell Avenue from NE 63rd Street. to NE 78th Street
- Sections of NE 99th Street near Gaiser Middle School
- Sections of Main Street/Highway 99 from McLoughlin to NE 78th Street
- Fourth Plain from SR-503 to NE 137th Avenue
- NE 86th/87th Avenues from Fourth Plain of NE 18th Street
- SR-500 interchanges at St. Johns, NE 54th Ave. and Andresen Road
- Vancouver Plaza Drive and several neighborhood routes around the mall

Other corridors showing poor to failing levels of service during peak hours under both alternatives include:

- NE 72nd Avenue north of NE 119th Street
- NE 50th Avenue from Salmon Creek to NE 179th Street
- NE 13th Street/ Goodwin Road
- La Center Road, La Center Bridge and E 4th Street
- 82nd Avenue at Daybreak Bridge
- SR-503 north of Battle Ground to NE 269th Street

a. Alternative 1

Alternative 1 has a higher number of total person trips, and a somewhat higher transit and non-motorized mode share (see Table 66). This alternative has a lower number of Columbia River Bridge crossings and a lower percentage of all trips traveling from Clark County to Portland. With the number of bridge crossings projected, and with the modeled network not assuming replacement of the I-5 Bridge, the result would still be substantial traffic queues approaching each Columbia River bridge, as well as a longer peak period for both morning and evening commutes.

I-5 and I-205 bridges would both be operating at LOS F conditions. Because of the impacts on the freeway mainlines, it is expected that in the a.m. peak travel time in Clark County, ramps leading to the I-5 and I-205 facilities would queue and would spill back onto the intersecting arterials, impacting traffic operations on those facilities.

With the forecast level of congestion, there could be increased cut-through traffic using neighborhood streets to avoid congestion on the major corridors, intersections, and interchanges. Major corridors where traffic levels are noticeably higher and where levels of service would be lower compared to Alternative 2 include:

- Burton Road from Andresen Road to NE 86th Avenue
- the SE 164th Avenue corridor from SR-14 to Mill Plain

- the SE 192nd Avenue corridor.

b. Alternative 2

Alternative 2 is higher in the number of congested lane miles, vehicle hours of delay, vehicle hours and miles traveled (see Table 66). I-5 and I-205 and the mainline approaches would both be operating at or near LOS F conditions. Alternative 2 has almost 18,000 more daily bridge crossings, so the congestion at both river crossings would be worse than under Alternative 1. Because of the impacts on the freeway mainlines, it is expected that in the a.m. peak in Clark County, ramps leading to the I-5 and I-205 facilities would queue and would spill back onto the intersecting arterials, impacting traffic operations on those facilities.

Congestion on the major corridors, intersections, and interchanges could increase the potential for traffic to use neighborhood streets to avoid congestion. Major corridors where traffic levels are noticeably higher and where levels of service would be lower compared to Alternative 1 include:

- SR-503 from NE 119th St to Battle Ground
- NW 11th Ave/Spencer Rd
- NE 259th St west of 29th Ave
- portions of Hillhurst and Royle Roads
- NE 10th Avenue north of 219th Street
- NE 142nd Avenue from 159th Street to Battle Ground
- A section of NE 50th Avenue just south of NE 179th Street

c. Alternative 3

Subarea B1: The proposed residential area of approximately 7 acres would require a new local access to SR-503, which is already projected to function at an unacceptable level-of-service during peak hours under Alternative 2. The new local access to SR-503 would be either a road to the north through a wooded rural area or access to the south through an area designated for Employment Center. The 67-acre Employment Center area on the north side of NE 244th Street has moderate slopes, but is otherwise generally unconstrained. Development would add significant p.m. peak hour traffic to the west leg of the signalized intersection at SR-503 and NE 244th Street, resulting in increased demand for "green time" on NE 244th and adding to travel delays on SR-503.

Subarea B2: The commercial portion is about 37 acres, roughly double the size of the Fred Meyer complex and triple the size of the Safeway complex on the north corners of SR-503 & Main Street/SR-502. The potential trip generation would be substantial and cause significant impacts to the operation of the signal at SR-503 and NE 244th Street as well as increase delays on SR-503. The proposed residential expansion area comprises about 128 acres. The estimated capacity is about 325 additional households, which would generate a similar number of p.m. peak hour trips.

Subarea C1: This proposed expansion area is constrained by Lacamas Creek and Lacamas Lake and not well served by transportation facilities. Potential development could include over 1,900 households and 7,700 jobs. The two main corridors providing access to this area, (Goodwin Road/ NE 28th Street and SR-500/ NE Everett Street) are both projected to function at an unacceptable level-of-service during peak hours under Alternative 2.

Subarea C2: This proposed 113 acre residential area is just east of Camas High School on the north side of SE 15th Street/Nourse Road. Capacity could be up to 300 dwelling units, but there are powerline and wetland constraints that could reduce this total. The potential increase in traffic would not be significant beyond the local network.

Subarea L1: This subarea is west of the current city limits and the proposed UGA under Alternative 2. It is included in the expansion proposed as La Center's Alternative 3 in their Draft EIS released on May 1, 2006. L1 is bisected diagonally by the East Fork of the Lewis River. Pacific Highway provides access to the portion northeast of the river. Development of this small area would add to the peak hour congestion in downtown La Center and at the bridge, but not significantly. The portion south of the river is partially constrained by priority habitat and environmentally sensitive areas. It is also constrained by a dead-end road pattern. Development under the proposed commercial and industrial zoning could substantially increase congestion at the intersection of Paradise Park and La Center Roads and the interchange off-ramp unless additional access to La Center Road is provided further to the east. The addition of L1 is desirable from La Center's perspective in part because it could provide the opportunity for a second bridge crossing which would reduce the impacts on downtown La Center from growth north of the river.

Subarea L2: Only the 225 acre industrial portion west of I-5 is included in the Preferred Alternative in the Draft La Center EIS. About 125 acres of this could be suitable for industrial development with visibility from I-5 and reasonably good access to the La Center Road interchange via NW 31st Avenue. Inclusion of the residential portion east of I-5 to the urban growth boundary would add traffic to NW 11th Avenue and NW Spencer Road which would already be in failure under Alternative 2.

Subarea R1: Providing an adequate arterial and collector system to support additional residential growth north of Pioneer Street is problematic due to topographic constraints including Gee Creek, Allen Canyon Creek and their tributary streams. N 45th Avenue, N. 51st Avenue and NW 289th Street are likely to remain the only significant transportation facilities to serve this area. The expansion of Ridgefield's urban growth boundary north to NW 289th/291st Street could be preferable to a partial or incremental expansion of this residential area in that it would remove any jurisdictional issues regarding the road improvements that would be needed to support additional growth.

Subarea R2: This subarea includes a section of industrial land east of N 65th Avenue (about 45 acres) and a residential section of about 175 acres between I-5 and NW 11th Avenue that is currently Tri-Mountain Golf Course. This area has adequate access to transportation facilities. Additional impacts to the I-5/Ridgefield Junction interchange would likely be mitigated in the design of the interchange improvements currently underway.

Subarea R3: Access to this subarea is currently very limited. Urban development would not be adequately supported without the extension of a new arterial roadway west from the I-5/NE 219th Avenue interchange. Expanding the UGA here would provide Ridgefield with the potential to construct this western extension.

Subarea V1: This large urban reserve area is constrained from developing an adequate road system to serve urban growth by a number of factors including parcelization and the existing pattern of private roads. Including this subarea in the UGA would significantly increase traffic impacts to the I-5/Salmon Creek Interchange.

Subarea V2: This large expansion of Business Park land would extend the "Discovery Corridor" concept north to take advantage of the new I-5/NE 219th Street Interchange capacity to be constructed in 2008. This area would have excellent accessibility and freeway exposure. There would be additional traffic impacts to the 179th Street corridor and interchange, which is likely to experience a failing p.m. peak hour level-of-service within a few years. Improvement of NE 179th to the principal arterial standard is in the current County 6-year Transportation Improvement Program. Currently, WSDOT has no plans to upgrade the I-5/NE 179th Street Interchange. With the opening of the I-5 NE 219th Street Interchange, jurisdiction for NE 10th Avenue (SR-502) would be transferred to the county.

Subarea V3: Residential development of this area would primarily impact 179th Street and NE 50th Avenue. The planned improvements to NE 179th Street would mitigate these impacts to some extent; however congestion and delays at the I-5/179th Street interchange would increase.

Subarea V4: Urban development in this subarea would increase traffic on Salmon Creek Avenue, NE 50th Avenue and NE 72nd Avenue. Salmon Creek Avenue is designated as a minor arterial, however, environmental constraints have precluded construction to this design standard in the vicinity of the WSU campus and are likely to be a factor further east as well. NE 50th Avenue is designated as a collector between Salmon Creek Avenue and NE 119th Street, but would likely carry arterial levels of traffic if adjacent areas Alternative 2 and V4 are included in the urban growth boundary. North-south circulation in this subarea is constrained by Salmon Creek and east-west circulation is constrained by the lack of continuity of NE 139th and 159th Streets. The portion of V4 south of Salmon Creek would have better access, fewer environmental constraints and less impact to the Salmon Creek Interchange than the north portion.

Subarea V5: The extensions of NE 134th Street from Laurin Road to SR-503 and of NE 107th Avenue north of NE 119th Street as approved in the SR-503 Circulation Plan would significantly improve circulation for the area east of the railroad. The area west of the railroad would not be very accessible without the extension of NE 94th Street north of NE 119th Street. This extension would have to be funded by the County, since the adjacent property is not within any urban growth boundary expansion proposal.

Subarea V6: This subarea includes about 175 acres of residential land that would add traffic primarily to NE 99th Street, NE 172nd Avenue and Ward Road. Access to the regional transportation system is good and impacts would not be significant provided that the safety improvement is completed at NE 172nd Avenue and Ward Road in the near future.

Subarea V7: Although this is a large area, there are environmental constraints that substantially reduce the area that could be developed. Circulation in this area would also be constrained. Traffic impacts would primarily affect Fourth Plain, SR-500 and NE 162nd Avenue. The southern portion of this subarea abuts residential land, but industrial traffic through these neighborhoods is unlikely, because the proposed industrial lands are large tracts in common ownership with frontage along NE 162nd Avenue.

Subarea W1: This subarea is a large expansion of Washougal's boundary to the north on both sides of the Washougal River. Accessibility and circulation are very limited due to the river, topography and existing development patterns. Development of that portion west of the river would add traffic to Woodburn Road and Washougal Road. No improvements to these roads are proposed in the city's transportation Capital Facilities Plan except at the intersection of 17th St and Washougal River Road. The primary access to that portion east of the river is 32nd Street/Stiles Road/34th Street. Widening of this facility to three lanes from SR-14 to the north UGA is proposed in the city's transportation Capital Facilities Plan.

Subarea W2: This small subarea would be accessible from 20th Street, W Street and 362nd Avenue. Unless the W Street connection is completed across Campen Creek and along the north edge of the park, additional traffic would have to use 49th Street and J Street to reach this area. These are designated as Traffic Calming Streets in the Transportation CFP. The proposed industrial expansion area on the south side of 20th Street would have poor accessibility without substantial additional investments in road facilities.

Subarea W3: There is no public street access to this single parcel subarea which appears to be part of the Steigerwald National Wildlife Refuge. There are private roads within the port district that would likely provide access. No negative impacts are expected if this small area were to be included in the UGA.

2. Impacts to Public Transportation

Under all three alternatives, C-TRAN buses would travel in mixed traffic on surface streets and freeways. No high capacity transit facilities were included in the transportation network. A study of potential high capacity transit corridors and options is just getting underway under the direction of the Regional Transportation Council.

C-TRAN buses would experience high congestion levels on most local routes and cross-river commuter routes. C-TRAN service corridors would experience substantial delays and, therefore, increased costs to provide levels-of-service reflecting current conditions. These corridors include:

- I-5 between NE 219th Street and the Interstate Bridge and downtown Portland
- I-205 between NE 18th Street and the I-205 Bridge
- Routes to Camas/Washougal on SR-14
- Lakeshore/Fruit Valley Road between Felida and downtown Vancouver
- Burton Road and Mill Plain Boulevard routes
- Andresen Road routes
- Salmon Creek Road service to WSU
- Highway 99 between the Salmon Creek Transit Center and downtown Vancouver
- NE 162nd Avenue route
- Routes from the Vancouver Mall to downtown Vancouver and Fisher's Landing Transit Center
- Connector routes to Battle Ground, La Center, Yacolt and Ridgefield

a. Alternative 1

Alternative 1 assumes no expansions to existing UGA boundaries. Future growth would occur inside existing UGAs. With greater housing and employment densities, demand for transit service would likely increase. C-TRAN may need to expand service hours, but the additional service would be focused primarily within the existing Vancouver UGA. The financial impacts on operations and maintenance budgets are not known at this time. Increased ridership might also be gained through provision of additional park-and-ride facilities to capture commuter work trips on I-5, I-205, and other regional facilities. Development of park-and-ride facilities would require significant capital expenditures and increased operating expenditures to provide new service routes to the facilities. Significant delay on I-5 and I-205 may serve to inhibit transit ridership.

b. Alternative 2

The proposed alternative 2 expansion is about 10,850 acres or roughly 17 square miles. Most of the land in these expanded areas would be allocated for additional moderate to low-density housing. Providing transit service to these areas would be more expensive because it costs more to serve spread-out, low density residential areas. C-TRAN would need to expand service hours and route miles, both of which have financial impacts on its operations and maintenance budget. Increased ridership might be gained through provision of additional park-and-ride facilities to capture commuter work trips on I-5, I-205, and other regional facilities. Development of these park-and-ride facilities would require significant capital expenditures and increased operating expenditures. Significant delays on I-5 and I-205 may serve to inhibit transit ridership.

c. Alternative 3

Expansion of UGA boundaries beyond those analyzed under Alternative 2 would likely require additional expansions to service hours and route miles with a corresponding increase in financial impacts. Subareas that already have fixed route service or that are adjacent to areas currently served could be provided service at the least expensive.

Subareas that have a fixed route line crossing through the subarea include: V2 (Route 173); V4 (Route 19) and V5 (Route 7). Subareas that have a fixed route line abutting the subarea include V1 (Route 2).

Both V6 and V7 are fairly close to existing fixed route service. None of the other subareas could be easily served by transit because they aren't adjacent to existing transit routes. If the La Center Junction area becomes a major employment center as assumed in Alternative 2, it might be realistic to assume that transit service would be improved that could potentially serve portions of L2 and R2.

3. Impacts to the Pedestrian/Cycling Network

Impacts would be similar under all three alternatives. The non-motorized mode share is 34% higher for Alternative 1 than for Alternative 2. Congestion on the major corridors could serve to encourage pedestrian and bicycle trips for shorter non-work trips and bicycle trips for work trips, if pedestrian and bicycle facilities were provided.

The outlying employment centers in Alternatives 2 and 3 may serve to discourage longer-distance bicycle commute trips without a focus on regional bicycle facilities connecting the Vancouver and Battle Ground UGAs to other FPIAs and urban areas. Of the Alternative 3 subareas, W3 is closest to a city center and would be most accessible for pedestrian and bicycle trips to work. V5 and V7 are relatively close to develop urban areas and could also be made reasonably accessible to non-motorized travel.

Listed below are locations of identified bicycle system deficiencies within FPIAs. The listed deficiencies are either "caution" areas or "failed" areas. It is recommended that cyclists use caution while riding on "Caution" corridors. Areas considered "Failed" are not recommended as bike routes. Extreme caution should be used while riding through these areas:

- Ridgefield Junction: NE 10th Avenue
- Discovery Corridor: NE 179th Street
- St. John's: NE 72nd Avenue
- 117th Avenue : NE 94th Avenue
- Vancouver Mall: NE Andresen Road and NE Thurston Way

Most FPIAs also include facilities considered to have low bike levels of service. These facilities are not recommended for bike riders of low and average riding skill. Bicycle and pedestrian facilities should be provided as these facilities are upgraded or expanded. Development of multi-use trails should also be considered where appropriate.

4. Impacts to the Freight System

The movement of freight is critical to the economic health of Clark County, Southwest Washington and the Portland metropolitan region. Significant improvements to the freight rail system would be necessary under any alternative in order to reduce the existing bottlenecks and increase the system capacity. There are several projects underway to address rail system problems, including a $1.2 million study of the statewide rail system and an analysis of options for improving service to the Port of Vancouver.

Truck freight mobility is dependent on road and highway levels of service. To some extent, truck shipments can shift to off-peak hours to reduce delays. The best available indicators of freight performance for comparing the alternatives are the total vehicle hours of delay and the roadway levels of service during the p.m. peak.

Using these metrics, freight mobility would be substantially impacted by both alternatives. The number of vehicle hours of delay is substantially higher for Alternative 2 (4,518) than for Alternative 1 (3,379). The difference is to a great extent due to the much higher employment level and jobs to population ratio assumed in Alternative 1, which reduces the number of cross-river commuters.

Based on the p.m. peak hour data, the major freight corridors that would likely experience substantial delays under either alternative are:

- I-5 between Ridgefield and the Interstate Bridge
- I-205 between SR-500 and the I-205 Bridge
- SR-503 from SR-500 to north of Battle Ground
- SR-14 from I-205 to NE 164th Avenue
- Mill Plain east of I-205
- Fourth Plain east of SR-503
- NE 72nd Avenue from 119th to 219th Street
- NE 162nd Avenue from SR-500 to Ward Road
- Portions of Lakeshore/Fruit Valley Road between NE 99th Street and the Port of Vancouver
- Additional freight corridors that would be impacted under Alternative 1: Portions of NE 192nd Avenue
- Additional freight corridors that would be impacted under Alternative 2: Portions of SR-502 from I-5 to Battle Ground

5. Impacts to the School Transportation System

Congestion on the major arterial roadways from either Alternative 1 or 2 would likely have adverse impacts on school bus operations. Peak morning congestion would increase travel time for school buses, which in turn reduces the length of routes that school buses can have and still run on time (high schools and middle schools).

Because elementary schools tend to convene at a later time, the increased peak period congestion would be unlikely to have a significant impact on school bus transportation. Conversely, in the p.m. peak, all school types dismiss prior to the start of the peak, which limits the impact of congestion on school bus operations.

School buses often serve high schools first, then middle schools, and then elementary schools. Since schools tend to use the buses for multiple trips, the number of buses and routes needed somewhat depends on the traffic levels during the high school and middle school morning pickups. Consequently, any increased morning peak congestion on the major arterial routes would negatively impact school bus operations by requiring a greater number of buses. Since the a.m. peak hour level of service was not specifically analyzed, a comparison of relative impacts between the alternatives is not available. In general, Alternative 2, based on the higher total vehicle hours of delay is likely to create the greater impact.

6. Impacts to Emergency Services

Refer to discussion and tables in the sections regarding Impacts on Fire Protection and Impacts on Police Protection in Section X Public Facilities and Utilities.

7. Safety

There are several high accident corridors and locations currently identified within Clark County (identified by WSDOT, Clark County, and the City of Vancouver). These include:

- I-5 from NE 134th Street to NE 179th Street
- SR-500 from I-5 to SR-503

- SR-502 from I-5 to Battle Ground
- I-205 at NE Mill Plain/Chkalov
- NE 78th Street at Highway 99
- NE 182nd Avenue from NE 119th Street to NE 159th Street
- SR-14 from SE 192nd Avenue to Washougal
- NE 72nd Avenue from 119th Street to 219th Street
- NE 99th Street at 130th Avenue
- NE 78th Street at NE 5th Avenue
- Thurston Way at Parkway Drive
- Thurston Way/82nd Avenue at Vancouver Mall Drive
- NE 49th Street at 122nd Avenue
- Fourth Plain at F Street
- Columbia Street at W 13th Street

Alternatives which add significant traffic levels at these locations would likely serve to exacerbate the high accident problem unless mitigation measures are undertaken.

8. Impacts on Focused Public Investment Areas (FPIAs)

Focused Public Investment Areas are distributed throughout the south and west portions of the county (see Figure 31). The intent of the FPIA approach is to be able to focus public infrastructure investments in a concentrated area for increased efficiency. For transportation, this could include a mix of roadway improvements, park-and-rides, bikeways and walkways, traffic calming, and safety improvements. Where congestion occurs within or adjacent to FPIAs, funds could be focused on fixing those transportation problems. Conversely, where traffic congestion occurs outside of the identified FPIAs, improvements needed to improve these facilities could reduce the amount of funding available to make investments within the FPIAs.

Substantial traffic congestion would occur on many of the major corridors countywide under either alternative. Relieving traffic congestion would require a sizeable investment in corridors connecting urban areas together as well as corridors within urban growth areas.

Alternatives 1 and 2 would have somewhat different impacts to the various FPIAs. Alternative 1 assumes aggressive growth in essentially all of the FPIAs within the Vancouver UGA and restrains growth in all other FPIAs to the amount permitted under the existing land supply. Alternative 2 would create a new large employment center at La Center Junction and would expand the supply of employment land at Ridgefield Junction and in the 117th St. FPIA. Alternative 3 includes options for additional employment land in these three FPIAs, and also in the Discovery Corridor, the Burnt Bridge Creek FPIA, the Battle Ground FPIA and at the Port of Camas/Washougal.

As previously noted, there are few major differences between these alternatives in terms of transportation corridor failures. The high levels of growth in Section 30 and the Columbia Tech Center in Alternative 1 appear to contribute significantly toward the increased congestion on Burton Road, 162nd Ave and 192nd Avenue. The dispersal of jobs and households and lower jobs-to-population ratio in Alternative 2 contribute to declining levels of service on several major corridors that serve FPIAs including SR-502 and SR-503 to Battle Ground, NE 50th Ave through the WSU Research Park FPIA and 72nd Ave and Andresen/Padden in the St. Johns FPIA.

For Alternative 3 subareas, the addition of L1 and L2 would support the La Center FPIA. R2 includes a substantial amount of employment land that would implement the Ridgefield Junction FPIA. V2 includes

more Employment Center land than was originally envisioned in the Discovery Corridor FPIA. V5 expands the 117th Avenue FPIA. V7 adds to the Burnt Bridge Creek FPIA and W3 is a minor expansion of the Port of Camas/Washougal FPIA. To the extent that these areas produce jobs that balance housing growth and reduce the growth of cross-river commuting and reduce trip length for home-to-work trips, they would provide a net benefit to critical transportation corridors during peak hours.

C. Mitigation

The impact analysis highlights several major policy issues. These issues are the same regardless of the alternative selected.

Cross-river bridge capacity is not sufficient to serve projected growth at the current acceptable level-of-service. The Columbia River Crossing EIS is addressing some aspects of this problem within the I-5 corridor. When a preferred Columbia River Crossing alternative is identified, it would be critical for the region to support it and aggressively pursue the resources necessary to complete the project.

During the course of the I-5 analysis, the issue of additional bridges across the Columbia River was repeatedly raised. There should be more study to identify whether there are any corridors where a bridge would be feasible. The initial study could be done in the context of the 50-Year Transportation Corridor Visioning process that is just getting underway. If there are no realistic highway corridor connections, the other option for increasing cross-river capacity would be high capacity transit (HCT). There is a study underway of HCT options that would identify the most promising policies, corridors and modes for increasing the level of transit service in Clark County. The effects of additional cross-river transit capacity should be a key consideration in the study.

A comparison of the alternatives also demonstrates the need for a better balance between jobs and housing in Clark County. If the population grows without a corresponding growth in local employment, the peak hour failure of the interstates and bridges is inevitable. Beyond the monitoring of land supply, jobs and housing growth, consideration should be given to more effective economic development strategies and programs that support the expansion of existing businesses. Policies that prevent unbalanced housing growth could also be considered.

A second policy issue is how to address low levels of service on state highways. Although HB 1487 exempts Highways of Statewide Significance (HSS) from concurrency requirements, it requires the County, RTC, and WSDOT to jointly adopt a level-of-service for Highways of Regional Significance (HRS: state highways that are not HSS). HB 1487 also requires WSDOT to set a level-of-service for HSS routes. Both of the land use alternatives analyzed here contribute to traffic growth and congestion on Clark County's HSS and HRS routes.

Given the right-of-way, policy and financial constraints, the widening of I-5 to eight travel lanes outside of the Columbia River Crossing Bridge Influence Area is unlikely. Similar limitations apply to I-205 beyond the projects already programmed in the MTP. The acceptable level-of-service in these corridors may have to change or be redefined in terms of a multi-hour peak.

The draft Washington Transportation Plan has identified minimum to maximum cost solutions to congestion and safety problems on SR-503 from Fourth Plain to Gabriel Road, on SR-500 from I-5 to Fourth Plain and on SR-14 from I-5 to the Washougal east city limits. In general, the lower cost solutions include ITS improvements and/or medians, while maximum cost options focus on widening and interchange improvements.

The region has been successful in recent years in securing appropriations of approximately $500 million for major improvement projects on state highway corridors. These include the I-5/NE 219th Street. Interchange, the I-5/Ridgefield Junction Interchange, the I-5/Salmon Creek Interchange, a new interchange at SR-500 and St. Johns, interchange improvements at I-205/Mill Plain, widening of SR-502

to Battle Ground and SR-14 in Camas. Funding for major projects on state highways is primarily controlled by the State Legislature and dependent on voter approved tax packages. It is difficult to program local funds, including traffic impact fees, for state highway projects until the state's share of the improvement costs is known.

An additional strategy for preserving and maximizing the capacity of state highway facilities is to ensure that there are parallel arterial and collector roadways that reduce and replace the demand for short distance travel on state highways. The transportation analysis makes it clear that there would be significant growth in north-south travel demand due to population growth in Battle Ground, Ridgefield, La Center and the unincorporated rural area.

Current county policy does not provide for four-lane rural arterials except as state highways. NE 72nd Avenue under both alternatives shows a need for four lanes between NE 119th Street and NE 219th Street/SR-502. Access to growth in the south part of Ridgefield may require the western extension of a rural arterial from the I-5/NE 219th Street Interchange. Other corridors, such as NE 137th Avenue and NE 172nd/182nd Avenues could provide relief to SR-503 congestion if designated for arterial level future capacity and could be necessary to accommodate long term growth as the area between the current Vancouver and Battle Ground UGAs is urbanized. Changes to the policy, code and Arterial Plan Map would be needed to designate and preserve future north-south arterial corridors.

- Some of the future deficiencies are on arterial and collector roadways that have been built out to their current functional classification. Given the high levels of urban growth adjacent to the existing right-of-way, it may not be realistic to increase capacity by adding travel lanes in these constrained corridors. Widening projects beyond the functional classification of a roadway should be weighed against other options including:
- Adding capacity at intersections, or through signal coordination and access management;
- Adding transit capacity;
- Land use and design that increases non-motorized travel;
- Identifying new corridors through the 50-Year Transportation Corridor Visioning process or other studies;
- Circulation plans that reduce access and local trips on arterial corridors; and
- Reducing the level-of-service.

Table 68 shows a comparison of the locations where transportation capacity improvements would be needed to achieve a system-wide level-of-service on roadways approximating LOS D for each alternative. Table 69 shows proposed mitigation measures to address the congested corridors identified above.

Table 68. *Capacity Project Needs by Alternative*

Corridor Segment	Alt. 1	Alt. 2	Alt. 3
Highways of Statewide and Regional Significance			
I-5, Columbia River to 99th St.	X	X	X
I-205, Columbia River to SR-500	X	X	X
I-5, 219th to Ridgefield (or alternate route)	X	X	X
SR-500, 162nd to 182nd Aves	X	X	X
SR-503, Fourth Plain to 119th St	X	X	X
SR-503, 119th St to 269th St, N. of Battle Ground	X	X	X
SR-14, I-205 to 164th Ave	X	X	X
Rural and Inter-urban Corridors			
Ward Rd, SR-500 to UGA	X	X	X
Ward Rd /182nd Ave, UGA to 159th St	X	X	X
NE 13th St / Goodwin Rd	X	X	X
NE 72nd Ave, 119th to 219th St	X	X	X
NE 239th St extension, NE 10th Ave to 29th Ave.		X	X
NW Timmen Rd / NW Spencer Rd / NW 11th Ave		X	X
Daybreak Bridge / NE 259th St	X	X	X
Multimodal			
Bike/pedestrian improvements particularly in FPIAs, around schools and in mixed use areas	X	X	X
High Capacity Transit	X	X	X
Extended transit service to outlying employment centers		X	X
Vancouver UGA			
Burton Road, Andresen to 86th Ave	X		
NE 18th St, I-205 to NE 138th Ave	X	X	X
Andresen/Padden/NE 88th Street area	X	X	X
Mill Plain Blvd, I-205 to NE 136th Ave	X	X	X
NE 137th Ave, Fourth Plain to 99th St	X	X	X
Fourth Plain Blvd, SR503 to NE 137th Ave	X	X	X
NE 162nd/SE 164th Avenues, SR-14 to Mill Plain	X		?
NE 162nd Avenue, Mill Plain to Ward	X	X	X
Lakeshore Ave, RR Bridge to NE 119th St	X	X	X
Salmon Creek Ave, NE 134th St to NE 50th Ave	X	X	X
NE 219th St. Arterial extension to NW 31st/Hillhurst	X	X	X
Hazel Dell Ave, NE 63rd to 78th St.	X	X	X
NE 50th Ave, Salmon Ck to NE 179th St	X	X	X
NE 87th Ave, Mill Plain to Fourth Plain	X	X	X
NE 99th St, NE 25th to 39th Ave	X	X	X
Main St /Hwy 99, McLoughlin to NE 78th St	X	X	X
NE 152nd Ave, Ward Rd to 99th St	X	X	X
NE 142nd Ave, NE 159th St to 199th St		X	X
SR-500 crossings at St. Johns, 54th Ave & Andresen	X	X	X
Vancouver Plaza Dr & local routes near mall	X	X	X
Battle Ground UGA			
NE 112nd Ave, NE 179th to 244th St	X	X	X
Main St, SR-503 to Grace Ave	X	X	X
NE 199th St, NE 112th Ave to Parkway Ave	X	X	X
Ridgefield UGA			
Local collector/circulation system	X	X	X
La Center UGA			
La Center Rd, I-5 to La Center,	X	X	X
E 4th St, La Center Rd to Highland St	X	X	X

Source: Clark County Department of Assessment and GIS, 2005

Table 69. *Proposed Transportation Mitigation Measures*

Corridor Segment	Proposed Mitigation
Highways of Statewide and Regional Significance	
I-5, Columbia River to NE99th St.	CRC EIS preferred alt. and modify LOS measure
I-205, Columbia River to SR-500	HCT preferred alternative and modify LOS measure
I-5, NE 219th to Ridgefield (or alternate route)	Add 219th west extension to CFP
SR-500, NE 162nd to 182nd Aves	Frontage improvements w/ development
SR-503, Fourth Plain to NE 119th St	Draft WA Transportation Plan tiered solutions
SR-503, NE 119th St to 269th St, N. of Battle Ground	Draft WA Transportation Plan tiered solutions
Rural and Inter-urban Corridors	
Ward Rd, SR-500 to UGA	Complete corridor improvements to Pr4-cb
Ward Rd /NE 182nd Ave, UGB to NE 159th St	Designate and construct as rural arterial
NE 72nd Ave, NE 119th to 219th St	Designate and construct as rural arterial
NW Timmen Rd / NW Spencer Rd / NW 11th Ave	Frontage improvements identified as mitigation in La Center DEIS
Daybreak Bridge / NE 259th St	Not a concurrency corridor; accept peak hour congestion
Multimodal	
Bike/pedestrian improvements particularly in FPIAs, around schools and in mixed use areas	Included in CFP projects and on-going programs
High Capacity Transit	To be determined by HCT study
Reduce peak hour home-to-work trips	Extended transit service to outlying employment centers; Commute Trip Reduction program
Vancouver UGA	
Burton Road, Andresen to 86th Ave	Constrained corridor; ITS proposed in City CFP
NE 18th St, I-205 to NE 138th Ave	Construct 5 lane arterial; in City CFP
Andresen/Padden/NE 88th Street area	Constrained corridor; over-capacity even with build out and new interchange; identify and evaluate new corridor options in 50-Year Trans. Visioning Process
Mill Plain Blvd, I-205 to NE 136th Ave	Parallel street circulation improvements; in City CFP
NE 137th Ave, Fourth Plain to NE 99th St	Constrained corridor; not a concurrency corridor; accept peak hour congestion
Fourth Plain Blvd, SR503 to NE 137th Ave	Constrained corridor; ITS proposed in City CFP
162nd Avenue, SR-14 to Mill Plain	Constrained corridor; ITS proposed in City CFP
NE 162nd Avenue, Mill Plain to Ward	Constrained corridor; ITS proposed in City CFP
NW Lakeshore Ave, RR Bridge to NE 119th St	Not a concurrency corridor north of 78th St; accept some peak hour congestion; among various intersection improvements included in County CFP
Salmon Creek Ave, NE 134th St to NE 50th Ave	Constrained corridor; make safety improvements as needed and evaluate new corridor options in 50-Year Transportation Visioning Process
NE 219th St. extension to NW 31st/Hillhurst	Evaluate benefit and add to CFP if warranted
Hazel Dell Ave, NE 63rd to 78th St.	Re-stripe to 3 lanes; intersection improvements with development
NE 50th Ave, Salmon Ck to NE 179th St	Add 119th to 179th segment to County CFP
NE 87th Ave, Mill Plain to Fourth Plain	City Transportation Plan includes parallel route improvements to 92nd and 97th corridors
NE 99th St, NE 25th to 39th Ave	These two short segments of apparent congestion are due to the transportation model loading all of the residential trips from the north and south sides of NE 99th St onto 99th St. Now that Basin 12A streets are more connected, trips should be assigned to 88th St.
Main St /Hwy 99, McLoughlin to NE 78th St	Expand Hwy 99 project to 78th St; Main St improvements and ITS project are in City CFP
NE 152nd Ave, Ward Rd to NE 99th St NE 142nd Ave, NE 159th St. to 199th St	Add to County CFP Add rural section to County CFP; urban section to be frontage improvements or City CFP project
SR-500 crossings at St. Johns, 54th Ave & Andresen	Arterial improvements and ITS projects are in City CFP that address all three corridors
Vancouver Plaza Dr & local routes near mall	Arterial improvements and ITS projects are in City CFP that address mall area. Vancouver Plaza Dr. is not a concurrency corridor

Corridor Segment	Proposed Mitigation
Battle Ground UGA	
NE 112nd Ave, NE 179th to 244th St	Identified in City TSP as a County project; add to City projects
Main St, SR-503 to Grace Ave	Constrained corridor; City TSP projects add capacity to several parallel routes
NE 199th St, NE 112th Ave to Parkway Ave	Intersection improvements included in City TSP
Ridgefield UGA	
NE 239th St extension, NE 10th Ave to 29th Ave.	Frontage improvements w/ development
La Center UGA	
La Center Rd, I-5 to La Center,	City DEIS includes planning level estimates for widening and for a second bridge alternative
E 4th St, La Center Rd to Highland St	Continuous left turn lane identified in City DEIS; City preferred alternative would divert through traffic to another corridor and river crossing
Camas	
NE 13th St / Goodwin Rd	City should add project to their CFP

Source: Clark County, 2006

All of the cities experiencing growth have adopted new or updated transportation plans that identify the deficiencies, levels-of-service, proposed improvements, costs and revenues in 2004 or since. Ridgefield and La Center have also issued Draft EIS documents that address the impacts and mitigation for their proposed UGA expansions. These documents provide a much more detailed analysis than can be readily summarized in this DEIS. All adopted plans met the GMA requirements.

Table 70 identifies transportation projects that would be necessary to mitigate the impacts of additional population and employment projected under any of the alternatives as well as one additional project needed to serve Alternative 2. Proposed projects to mitigate both Alt 1 and Alt 2 are estimated to cost between $98.5 and $124.5 million. An additional mitigation project for Alternative 2 would cost approximately $18.9 to $23.4 million.

As previously noted, Alternative 3 sub-areas can only be discussed in qualitative or relative terms until the combination of sub-areas is known. None of the Alternative 3 sub-areas is likely to trigger significant County or regional transportation improvements.

Table 70. *Proposed County Mitigation Projects*

Proposed Mitigation Projects for All Alternatives			
Location	Project Type	Low Estimate	High Estimate
NE 50th Ave	Widen road	$18,900,000	$23,400,000
NE 72nd Ave	Widen/Bridge	$31,150,125	$ 38,200,125
NE 152nd Ave	Widen road	$6,300,000	$7,800,000
Ward Rd	Widen road	$10,500,000	$13,000,000
NE 182nd Ave	Intersection imp.	$1,680,000	$2,080,000
Various locations	Intersection imp.	$30,000,000	$40,000,000
Sub-total		***$98,530,125***	***$124,480,125***
Additional Mitigation Projects for Alternative 2			
NE 137th/142nd Ave	Widen road	$18,900,000	$ 23,400,000

Source: Clark County, 2006

The Clark County Transportation Capital Facilities Plan and the Transportation Improvement Program (2006-2011) describes the programmed projects proposed to serve the existing unincorporated area. The total cost for capital projects and programs is estimated at between $576 million and $609 million (2006-

2024). Of that total, over the next 6 years, expenditures for projects and programs would total $169.7 million. An additional $131 million would be required to complete the projects programmed to start over the next 6 years. Additional projects planned in the MTP could cost between $200.5 million to $233.8 million (low and high estimate).

Table 71. *County Transportation CFP Summary*

	Low Estimate	High Estimate
Projects & Programs 2006-2011	$169,673,000	$169,673,000
Projects & Programs 2012-2024	$406,455,142	$439,787,642
Projects & Programs 2006-2024	$576,128,142	$609,460,642
Projects & Programs 2006-2024		
Mitigation for Alternative 1	$98,530,125	$124,480,125
Mitigation for Alternative 2	$117,430,125	$147,880,125
Total Capital Costs		
Alternative 1	$674,658,267	$733,940,767
Alternative 2	$693,558,267	$757,340,767

Source: Clark County, 2006

County staff has generated projections of revenue under current law that would be available for transportation capital projects and programs for the 2006-2024 period under Alternatives 1 and 2. Table 72 and Table 73 summarize the revenues and costs for these alternatives:

Table 72. *County Transportation Cost / Revenue Summary, Alternative 1*

Calculation of Revenue Available for Transportation Capital Projects		
General Revenue Sources	**Net Present Value**	
Property Tax	$623,640,598	
Fuel Tax	$118,465,776	
All Other Sources	$77,849,149	
Total General Revenue	$819,955,523	
Capital Revenue Sources		
Traffic Impact Fees	$60,749,979	
Grants	$133,318,356	
Public Works Trust Fund Loans (net)	$337,092	
Total Capital Revenue	$194,405,427	
Non-Capital Costs		
Non-Capital Engineering, Management	$164,629,164	
Transfers	$6,369,863	
Road Maintenance/Preservation	$239,051,589	
Facilities	$1,244,427	
Deputies	$51,844	
Total Non-Capital Costs	$411,346,888	
Revenue Available for Capital	**$603,014,061**	
Capital Costs	**LOW**	**HIGH**
Transportation Projects & Programs 2006-2024	$576,128,142	$609,460,642

Mitigation Projects for Alternative 1	$98,530,125	$124,480,125
Total Capital Costs	$674,658,267	$733,340,767
THE BALANCE	**$(71,644,206)**	**$(130,926,706)**

Source: Clark County, 2006

Table 73. *County Transportation Cost / Revenue Summary, Alternative 2*

Calculation of Revenue Available for Transportation Capital Projects		
General Revenue Sources	**Net Present Value**	
Property Tax		$629,520,818
Fuel Tax		$118,465,776
All Other Sources		$77,849,149
Total General Revenue		$825,835,742
Capital Revenue Sources		
Traffic Impact Fees		$60,749,979
Grants		$134,328,184
Public Works Trust Fund Loans (net)		$337,092
Total Capital Revenue		$195,415,255
Non-Capital Costs		
Non-Capital Engineering, Management		$164,629,164
Transfers		$6,369,863
Road Maintenance/Preservation		$239,051,589
Facilities		$1,244,427
Deputies		$51,844
Total Non-Capital Costs		$411,346,888
Revenue Available for Capital		**$609,904,109**
Capital Costs	**LOW**	**HIGH**
Transportation Projects & Programs 2006-2024	$567,128,142	$609,460,642
Mitigation Projects for Alternative 2	$117,430,125	$147,880,125
Total Capital Costs	$693,558,267	$757,340,767
THE BALANCE	**$(83,654,158)**	**$(147,436,658)**

Source: Clark County, 2006

IX. Public Facilities and Utilities

The preceding section discussed how growth in Clark County would affect the county's transportation systems. Growth in Clark County would also have an affect on the provision of public facilities and utilities.

A. Fire Protection

1. Setting

Fire protection for Clark County is provided by a combination of municipal fire departments, rural fire protection districts, the Washington Department of Natural Resources (DNR) and the US Forest Service. Cities and towns in the state of Washington are responsible for fire suppression, medical and other emergency response, and fire prevention, investigation and code enforcement within their respective incorporated areas. Fire districts are responsible for fire suppression and emergency response in unincorporated areas. They are not responsible for fire code enforcement, and have only limited authority

with respect to fire investigation. In unincorporated areas, Clark County is responsible for administering and enforcing the fire code, and investigating the cause and origin of the fires, as well as the extent of loss from fires. The City of Vancouver operates the only hazardous materials response team in Clark County. The DNR provides protection for all state trust land, in large sections of eastern and northern Clark County. The Forest Service provides fire protection to the Gifford Pinchot National Forest, a portion of which is located in eastern Clark County. Figure 36 shows current fire district boundaries and facilities in Clark County. All city fire departments and fire districts in Clark County have signed mutual aid agreements. Mutual aid agreements ensure that the nearest fire station responds to emergency situations regardless of the responsible district.

a. Level of Service

The Washington State Surveying and Rating Bureau (WSRB) is an independent property insurance rating bureau for the state of Washington. They operate as a public service institution, and their services are available to all companies licensed to sell property insurance in Washington, and to the public, including consumers, agents and professionals involved in promoting sound fire protection practices. Cities, towns, fire protection districts and suburban or rural localities are graded with this rating system for insurance purposes according to the efficiency of their public fire protection. The grading system involves 10 classes. Class 10 indicates that the fire protection facilities, if any, are not considered adequate. Information on classifications for Clark County are published the WSRB Public Protection/BCEG Classification Manual. Classifications can change if the service provider improves services. A lower rating number affects insurance rates. For example, the addition of a ladder truck to a fire department's inventory of fire apparatus can improve the fire department's rating and lower insurance costs. Table 74 presents standards for emergency medical service and ambulance response.

Table 74. *Emergency Medical Service and Ambulance Service Response Standards*

	Urgent /Priority	Not Urgent/Priority
First Response		
Urban	4.59 minutes	8.59 minutes
Suburban	5.59 minutes	12.59 minutes
Rural	10.59 minutes	20.59 minutes
Ambulance Response		
Urban	7.59 minutes	11.59 minutes
Suburban	10.59 minutes	17.59 minutes
Rural	17.59 minutes	29.59 minutes

Source: EMS District #2 Paramedic Ambulance Services Contract October, 2004. Clark County Department of Assessment and GIS, 2005.

Clark County adopted an emergency medical service ordinance (CCC Chapter 5.48A) that establishes response time rules for emergency medical response for urban, suburban, and rural geographic areas. There are two sets of response time goals for both first response providers (fire departments and districts) and for ambulance response and transport. They are for urgent medical calls and less urgent medical calls. The urgent medical calls require the use of lights and sirens ("hot").

b. Service Providers

Three municipal fire departments, ten rural fire districts, DNR and the Forest Service provide fire protection and emergency medical services (EMS) to Clark County. In addition, there are three ambulance services in the county: American Medical Response (AMR), City of Camas, and North County EMS District No. 1. Table 75 summarizes information about the area served, response times, and WSRB rating for fire protection providers.

Table 75. *Fire Protection Providers*

District	Population Served, 2005	Area (sq. mi.)	No. Stations	Avg. Response Time, 2005 (minutes)	WSRB Rating
Municipal					
Camas	15,460	12	2	6	4
Vancouver*	232,169	93	9	6:38 fire; 5:18 EMS	4
Washougal	11,350	6	1	3 – 4	5
Fire Districts					
CCFD No. 1	3,149	20	2	6:14	8
CCFD No. 2	2,063	35	1	8.5	8
CCFD No. 3	20,000+	83	4	6	5
CCFD No. 5*	77,369	44	Combined with City of Vancouver		
CCFD No. 6	60,000	37	3 + 1 joint	3:41	3
CCFD No. 9	6,604	38	3	6:04	8
CCFD No. 10	6,725	68	6	6.3	8
CCFD No. 11	30,000	54	3 + 1 joint	5.5 fire; 4.5 EMS	(6 District 11, 5 City of B.G.)
CCFD No. 12**	14,000	70	4 + 1 joint	5 fire; 5 EMS	4 (5 Ridgefield; 4 La Center)
CCFD No. 13	5,380	36	2	6.3	8 (6 Yacolt)

CCFD = Clark County Fire District

**CCFD No. 5 contracts with the City of Vancouver to provide service*

*** Towns of Ridgefield and La Center have merged with CCFD No. 12.*

According to the National Fore Protection Association (NFPA) Standard 1710, fire suppression staffing levels are determined through task analysis. For example, the authority having jurisdiction determines what systems, methods, or approaches are equivalent or superior in performance. The jurisdiction creates their own analysis to determine staffing levels and for such tasks as type of firefighting equipment used and results expected at a fire scene The standards do not indicate a level of firefighters per 1,000 population.

2. Impacts on Fire Protection

Increased demand for EMS and fire protection is related to population growth, number of emergency calls and response times in Clark County. The growth pattern determines cost of providing acceptable levels of service, and which service providers must bear that cost. More compact development patterns are easier to serve, and particularly easier to provide with adequate water flows for fire suppression. All fire and EMS providers are challenged by the tax revenue limits posed by Initiative 747. Table 76 shows the needed fire and emergency facilities by alternative.

Table 76. *Needed Fire/Emergency Facilities, by Alternatives*

District	Current Facilities	Alternative 1	Alternative 2	Alternative 3
Municipal				
Camas	2	2	2	2
Vancouver	9	3	3	3
Washougal	1	2	2	2
Fire Districts				
CCFD No. 1	2	1 new facility + 1 new living quarters		
CCFD No. 2	1	1	1	1
CCFD No. 3	4	1 new facility + 1 addition + 1 expansion		
CCFD No. 5	Combined with City of Vancouver			
CCFD No. 6	4*			
CCFD No. 9	3	1 replacement + 1 new facility + 1 new living quarters		
CCFD No. 10	6			
CCFD No. 11	4*	1 addition + 1 remodel		
CCFD No. 12	5*	1	1	1
CCFD No. 13	2	2 remodels + 2 expansions		

Source: Clark Clark County Department of Assessment and GIS,and Capital Facility Plans for Camas, Vancouver, Washougal, and CCFD No. 1, 2, 3, 6, 9, 10, 11, 12, and 13.
**shares one facility with CCFD's 6 and 12*

a. Alternative 1

Alternative 1 would not expand urban areas, which means that most of growth would occur in the Vancouver UGA. Growth would be accommodated through the development of existing undeveloped and underdeveloped properties in current urban and rural areas, and through redevelopment or more intensive use of existing structures. This alternative would include higher density development and could require upgrading of facilities to accommodate increased water flows for fire-fighting. Additional staff and vehicles would be added, and additional facilities would be needed. One major impact could be in response times as a result of traffic associated with additional density, although this can be offset by additional facilities.

The City of Vancouver/CCFD#5 reports that while response times are improving, they currently do not meet the established level of service (LOS) goal in the eastern part of the city and the Vancouver UGA, and service to additional urban areas would result in increased response times and lower LOS for that area.

b. Alternative 2

Alternative 2 would expand UGAs, which means new water lines and hydrants for firefighting. Impacts of expansion on the northern edge of the Vancouver UGA would initially fall on Fire Districts 3, 5 and 11, until this land is annexed to the city or a new city is formed that includes portions of the existing and proposed urban area. Until these areas are annexed, the responsibility for serving this growth would fall to the designated fire districts, or to the City of Vancouver in the case of CCFD #5. Additional facilities as well as staff and equipment would likely be needed within the next six years, including new training facilities for CCFD #11 and #3 at an estimated cost of $2 million and $350,000, respectively. The proposed Cowlitz Casino is included in this expansion but would pay CCFD #12 for fire service.

c. Alternative 3

Alternative 3 provides an area that can be used to adjust the boundaries in Alternative 2, but should not be considered an alternative that would add significant acreage to what would become the preferred

alternative. The acreage of the preferred alternative is expected to be approximately the acreage in Alternative 2. Since EMS and fire protection activities are not constrained by geography, emergency services are impacted more by population and job growth. Therefore, the impact on EMS and fire services would depend on the size of the various urban growth boundaries. UGAs would be expanded, thereby increasing demand for services.

3. Mitigation Measures

a. Plans and Ordinances

Clark County: Clark County has not included fire protection as one of the services considered under concurrency management. CWPPs set the minimum fire flow as 1,000 GPM for urban areas and rural centers, and 500 GPM in rural and resource lands. No changes are proposed to rural development densities or rural center locations and size. Alternatives 2 and 3 would convert different amounts of rural area to urban uses. Individual cities have established general policies in their comprehensive plans requiring public facilities and services to be adequate to serve new development at the time it is available for occupancy and use, but fire is not included in concurrency management procedures. Individual cities and fire districts have set additional service standards that they attempt to meet. These standards and planned improvements are described below.

Battle Ground: The City of Battle Ground contracts fire service from Fire District #11. The Board of Fire Commissioners in District #11 adopted a Capital Facilities Plan in February 2006. It identifies an addition/remodel to station 11-2 and 11-3 (located in downtown Battle Ground), replacing one ambulance and one class "A" fire engine, and a new training facility. Battle Ground also has a fire plan that includes a financial resources and improvement plan to address required new facilities over the six year period from 2004 through 2010.

Camas: The City of Camas has established a response time standard of 6 minutes from dispatch to arrival with 1.3 fire fighters per 1,000 population. Fire Station #42 on Parker Road in the northwest of the city would provide service to proposed growth areas. When it was constructed, it was sized and equipped to handle proposed growth.

La Center: La Center is served by Fire District No. 12. Because the town does not provide its own fire protection, there are no specific LOS standards established for the city. Existing facilities in the town are adequate to serve the existing town limits as it develops. Expansion of the La Center UGA would occur in the area of the I-5 junction under Alternatives 2 and 3. CCFD No. 12 has a new station in the Ridgefield Junction area to serve both the Ridgefield and La Center Junction areas.

Ridgefield: CCFD #12 has a level of service standard of 5 minutes response time within the Ridgefield city limits, and they are meeting that standard. The 2006 CFP indicates replacing vehicles and some equipment and constructing one new fire station.

Vancouver: The City of Vancouver consolidated its fire department with CCFD No. 5 to more efficiently provide service to the Vancouver urban area. Increasing call volume, particularly in east county, would require additional resources, including a new station with fire and EMS equipment. In the interim, service and growth in new urban areas would come at the expense of a reduced LOS overall in east county.

Washougal: The City of Washougal has established a response time standard of six minutes from dispatch to arrival with 1.2 fire fighters per 1,000 population. A new fire station has been constructed to serve development in the northern part of the city. The CFP indicates the need for two additional fire stations adding two engines, three vehicles and a ladder truck to accommodate projected growth from alternatives 2 and 3.

b. Additional Mitigation Measures

Additional mitigation measures that could be adopted to minimize impacts to fire and emergency services are listed in Chapter 15.12 of the Clark County Fire Code. Some form of phased development could be mandated in new expansion areas until fire service meets adopted standards.

B. Police Protection

1. Setting

The Cities of Camas, Washougal, Battle Ground, La Center, Ridgefield, and Vancouver provide local law enforcement services through local police departments. The Clark County Sheriff's Department provides services in those areas outside the city boundaries and in Yacolt. Cooperation between the cities and the county is good. Each jurisdiction provides backup for others in emergency situations. The Washington State Patrol has police jurisdiction on all state routes within the county. The State Patrol is largely responsible for state facilities, but also provides backup for the Clark County Sheriff's Department and local jurisdictions.

Regional or shared law enforcement and correction facilities include the county jail, a leased office for the inter-jurisdictional Clark-Skamania Narcotics Task Force, the 911 Clark Regional Communication Agency, and the Child Abuse Intervention Center. A cooperative agreement established the Clark Regional Communications Agency (CRCA) in 1976, which responds to 911 emergency service calls and directs them to the appropriate agency. The role of this agency expanded in 2000 and the name changed to the Clark Regional Emergency Services Agency (CRESA). CRESA also provides emergency management coordination, ambulance contract oversight, and operation and maintenance of regional radio services. In addition to these regional facilities, Vancouver, Camas, Washougal, and Battle Ground each have their own jail/holding facility. Larch Corrections Center is the only State detention facility in Clark County. It is an all-male, minimum security facility that houses 164 inmates. No additional state facilities are proposed for the region. Such facilities would be reviewed under Countywide Planning Policies related to the siting of new regional facilities.

Demand for law enforcement services is directly related to the population and employment in an area. Most of the growth in Clark County has occurred in the unincorporated, largely rural sections of the county. As a result, the Clark County Sheriff's Department has experienced the greatest increase in demand/need for services. The Federal Bureau of Investigation (FBI) recommends a ratio of 1.6 sworn officers per 1,000 for urban areas and 1.8 sworn officers per 1,000 for suburban areas. Most calls for police assistance are associated with the home location of the population, not employment or shopping centers. Table 77 provides an overview of the current police departments and sheriff's department facilities.

Table 77. *Police Service Providers*

Jurisdiction	Facilities
Clark County Sheriff	Clark County Law Enforcement Center Orchards Substation Clark-Skamania Narcotics Task Force
Battle Ground	Police department office at 507 SW 1st Street
Camas	Camas Police Department offices at 2100 NE 3rd Avenue Holding facility with three cells
La Center	Police department offices
Ridgefield	Police department offices
Vancouver	Vancouver Police Department offices Holding facility Vancouver Mall Precinct Vancouver facility
Washougal	Washougal Police Department offices Two holding facilities

Source: Battle Ground, Camas, Vancouver, and Washougal police departments and Clark County Sheriff's Office, 2004. Clark County Department of Assessment and GIS, 2005

While service providers use ratios of staff to population and response time to measure level of service, residents and businesses care more about the crime rate and prefer jurisdictions where the rate is low or declining. The crime rate is also related to total population, age distribution of the population, and the economic state of the community. Table 78 shows crime statistics for Clark County communities.

Table 78. *Crime Rates*

		2003				2004			
		Violent Crimes		Property Crime		Violent Crime		Property Crime	
Agencies	Population	Total Violent Crime	Rate Per 1,000	Total Property Crime	Rate Per 1,000	Total Violent Crime	Rate Per 1,000	Total Property Crime	Rate Per 1,000
Clark County. Sheriff.	185,785	264	1.4	5614	30.2	271	1.5	5372	28.9
Battle Ground P.D.	14,220	17	1.2	529	37.2	30	2.1	436	30.7
Camas P.D.	15,360	16	1	556	36.2	9	0.6	588	38.3
La Center P.D.	1,990	3	1.5	52	26.1	4	2	17	8.5
Ridgefield P.D.	2,195	5	2.3	106	48.3	2	0.9	104	47.4
Vancouver P.D.	152,900	642	4.2	8756	57.3	642	4.2	8455	55.3
Washougal P.D.	10,770	14	1.3	403	37.4	26	2.4	513	47.6
WSU Vancouver P.D.	0	0	---	15	---	0	---	11	---

Source: Washington Association of Sheriffs and Police Chiefs, Uniform Crime Reports, 1995-2004, Table 7. Clark County Department of Assessment and GIS, 2005

2. Impacts on Police Protection

Each of the police protection agencies would provide service to the homes and businesses which locate in their service areas. As land in each UGA is annexed to the city or town, the responsibility for law

enforcement would transfer from the sheriff to city police. Table 79 shows the number of sworn officers that would be needed under each alternative. All alternatives would require additional staff and facilities than is projected under the 2004 comp plan based on the increase in projected population. A new or expanded jail facility is projected within the next six years at an estimated cost of $90-100 million.

Table 79. *Needed Sworn Law Enforcement Officers, by Alternative*

Jurisdiction	Standard	Authorized Sworn Officers	Alternative 1[1]	Alternative 2[1]	Alternative 3[1]	Cost[2]
Battle Ground[3]	1.5/1000 population	25	52	52	52	$65K per officer
Camas[4]	1.64/1000	12	42	42	42	$75K per officer
La Center[5]	2/1000	7	12	24	25.6	$75K per officer
Ridgefield[6]	1.6/1000	4.3	6	6	6	$75K per officer
Vancouver[7]	1.3/1000	201[7]	452	452	452	$75K per officer
Washougal[8]	1.52/1000	19	25	25	25	$80K per officer
Clark County[9]	1.3/1000	141	277 (241)[10]	344 (257)[10]	345 (277)[10]	$75K per officer

[1]Alternatives (except Battle Ground) estimated by county planning staff based on percentage of past population for each UGA.
[2]Where estimated Personnel Costs are not provided by the City, cost is provided by County planning staff at 75K per year/per officer.
[3]City indicates Alternative 3 not available without VBLM "capacity" analysis of population. Assuming same population at Alt 2, needed officers would be 52.
[4] Based on 2004 standard and estimated amount of growth by county staff.
[5]Based on Federal standard of 1.6/1000 and estimated 20 year total amount of population.
[6]Based on current city limits and population and estimated 20 year total amount of population.
[7]Based on current authorized staffing which is at a lower percentage than the target 1.3/1000 officer standard.
[8]Washougal staff provided officers/1000 and cost per officer. Additional information provided by County planning staff.
[9]Planning staff added projected sworn positions to the currently authorized 141 positions provided by the Sherif's office. The Sheriff's office indicates this evaluation is based on statistical data that shows substantial increases in police effort for large "big box" retail establishments as a more accurate measurement of staffing needs than population increases.
[10]Numbers in parentheses are the number of positions required to respond to calls for service outside of small city UGAs only.

a. Alternative 1

Alternative 1 would not expand urban areas, which means that most of the growth would be in the Vancouver UGA. Growth would be accommodated through the development of existing undeveloped and underdeveloped properties in current urban and rural areas, and through redevelopment or more intensive use of existing structures. Assuming that population growth would be similar for each alternative, there would be similar staffing needs. However, staffing needs are influenced by response times, and more attention is being given to the number of calls to commercial property. One major

impact could be in response times as a result of traffic associated with additional density, although this can be offset by changes in deployment strategies.

b. Alternative 2

Alternative 2 would have a greater impact to the Sheriff's Department because of the increased growth proposed for all UGAs, particularly in commercial property. Serving the proposed UGA expansions continues to be the responsibility of the sheriff until lands are annexed to the city or a new city is formed that includes portions of the existing and proposed urban area. Staffing requirements are estimated in Table 79, above. Additional facilities as well as staff and equipment would be needed within the next six years, including a new county jail at an estimated cost of $90-100 million. Increased response times in some areas could also be an issue.

c. Alternative 3

Alternative 3 provides an area that can be used to adjust the boundaries in Alternative 2, but should not be considered an alternative that would add significant acreage to what would become the preferred alternative. The acreage of the preferred alternative is expected to be approximately the acreage in Alternative 2. Since law enforcement activities are not constrained by geography, it is impacted more by population and job growth. Therefore, as with Alternative 2, the impact on local law enforcement agencies would depend on the size of the various urban growth boundaries. UGAs would be expanded, thereby increasing demand for services. Depending on the location of new UGA additions, additional facilities might be required.

3. Mitigation Measures

a. Plans and Ordinances

The GMA does not require the inclusion of law enforcement services in concurrency, and no Clark County jurisdictions have elected to include them, though minimum officers per thousand population standards have been adopted.

The individual jurisdictions have established policies in their comprehensive plans requiring public facilities and services such as police protection to be adequate to serve new development at the time that it is available for occupancy and use. The cities and towns have identified the following mitigation measures to mitigate impacts to police services on future growth. Additional mitigation measures which could be adopted are also identified below.

Clark County: Police protection is not included in the county's concurrency management program. As the GMA is implemented and urban areas are annexed to cities, the sheriff will have to add staff. County jail and regional facilities responsibilities would not change, because they are related to countywide population. Due to the increased projections for jobs and population growth, the Sheriff has indicated that a new jail facility will be necessary within the next 6 years at an estimated cost of between $90-100 million. Annexation of land to the cities will result in responsibilities shifting from the sheriff to the cities in those areas so that the sheriff may be expected to focus more on countywide responsibilities. If annexation to cities, specifically Vancouver, does not occur prior to development, the Sheriff will require a substantial number of additional officers, support staff and related facilities to service those urbanizing areas. The impact of such growth is shown in the above table.

The same policies discussed under Clark County's mitigation for impacts on fire and emergency services also apply to police services.

Camas: The new public safety facility on Parker Road provides service to the northwestern portion of the City. Plans to upgrade the downtown Public Safety Building are also underway.

La Center: The City of La Center estimates that under either Alternative 2 or 3 a new facility could be required to serve development concentrated at the I-5 Junction. Financing this facility will be a challenge.

Ridgefield: Ridgefield anticipates a need for a new public safety facility (combining fire and police protection) in the vicinity of NW 31st and NW 269th in order to serve proposed development in the Ridgefield Junction area. Financing this facility would be a challenge.

Vancouver: The City of Vancouver would need to increase police staffing and equipment as the population grows and urban growth areas are annexed. New facilities would also be needed. Mitigation policies for fire and emergency medical service in Vancouver also apply to law enforcement.

Washougal: The city is not proposing to accommodate significant additional growth at this time. Existing facilities are expected to be adequate, but additional staffing and equipment may be needed.

b. Additional Mitigation Measures

The following mitigation measures could be implemented by the cities and county in order to improve safety for residents and make most efficient use of staff, facilities and equipment.

1. Revise the development standards for residential, commercial and industrial development to incorporate safety measures (such as lighting, fencing and landscaping);
2. Include police precincts as part of new community facilities and identify locations for them on each local subarea plan.
3. Encourage neighborhood watch programs to support community policing efforts.
4. Encourage cooperation among law enforcement/correction agencies for shared enforcement and corrections services and facilities.
5. Some form of phased development could be mandated in new expansion areas until fire service meets adopted standards.

C. Public Schools

1. Setting

There are nine school districts within Clark County: Battle Ground, Camas, Evergreen, Green Mountain, Hockinson, La Center, Ridgefield, Vancouver, and Washougal. Figure 37 shows school district service areas and the locations of existing schools. Table 80 offers a summary of current facilities within these different districts.

Table 80. *Summary of Current Clark County School District Facilities*

School District	Number of Public Schools		
	Elementary	Middle School	High School
Battle Ground	6	5	3
Camas	5	2	1
Evergreen	20	6	4
Green Mountain	1	*	Students attend La Center High School
Hockinson	2	1	1
La Center	1	1	1
Ridgefield	2	1	1
Vancouver	21	6	6
Washougal	3	2	2

Source: 2005 Capital Facilities Plan for Clark County School Districts. Clark County Department of Assessment and GIS, 2005

**Green Mountain School houses grades K-8*

From 1994 to 2004, Clark County has experienced a population growth rate of 42.3 percent, adding an additional 116,491 residents. This growth has made it challenging for many districts to provide adequate services to students. The increase in the number of students attending Clark County public schools over the past decade is due to both significant in-migration, which accounted for three-quarters of total population growth, and to "echo boomers," those children between the ages of 6 and 23 who were born to baby boomers. Table 81 shows total enrollments for Clark County school districts for the years 2005 and 2011.

Table 81. *School Enrollments for School Districts, 2005 to 20111*

School District	2005	2011	% change
Battle Ground	12,487	15,308	+22.5
Camas	5,289	7,132	+34.8
Evergreen	25,940	29,951	+15.5
Green Mountain	119	162	+36.1
Hockinson	2170	2,640	+21.7
La Center	1,405	1,617	+15.1
Ridgefield	1,962	2,353	+19.9
Vancouver	22,335	24,497	+9.7
Washougal	2,928	3,435	+17.3
Woodland	2,024	2,335[1]	+15.4
Total Enrollment	**76,659**	**89,430**	**+16.7**

Source: Office of Superintendent of Public Instruction. Clark County Department of Assessment and GIS, 2005

[1]2011 projected enrollment

Although enrollment in Vancouver public schools has grown at a significant pace in recent years, enrollment growth has been below the rates experienced by other school districts in Clark County. In 2001, the Vancouver School District represented just over 32 percent of countywide enrollment, a decline of four percent from 1986 levels. The Evergreen School District, with around 23,000 students, is now the

largest school district in the county and the sixth largest school district in the state. This district, along with the Battle Ground and Camas school districts, has experienced rapid increases in enrollment. As of 2001, Evergreen had 34 percent of all public school students (K-12) and captured 38 percent of Clark County's total public school enrollment growth since 1986.

Although the Legislature did not specifically include schools as one of the public facilities subject to the direct concurrency requirements of the GMA, schools are required by existing state law to be adequately provided for before land divisions can be approved (RCW 58.17.110). To meet minimum facility standards set by state and federal agencies, schools usually require relatively large sites of at least 10 acres for elementary schools, 20 acres for middle schools, and 40 acres for high schools. Space requirements, land acquisition costs, area to be served, access, and size of property are important factors to be considered by school districts in siting new facilities. Schools typically require a full range of urban services, including transportation, sewer, water, fire and police service, and utilities.

2. Impacts to Public Schools

As public services go, public schools in the county would feel the most direct and immediate impact of any public facility/utility next to roads as a result of growth. Figure 37 shows the expansion areas in relation to school district boundaries. Table 82 shows how many new schools would be needed and the associated costs by alternative. Costs for portables do not include development costs. Property costs in urban areas may approach $250,000 per acre.

Table 82. *Needed School Facilities, by Alternative*

School District	Current Facilities[1]	Alternative 1[2]		Alternative 2[2]		Alternative 3[2]	
		Additional Facilities	Cost (millions)	Additional Facilities	Cost (millions)	Additional Facilities	Cost (millions)
Battle Ground	6 elem 5 mid 2 high	3 elem 3 mid 2 port	$114.7	6 elem 6 mid expd high 5 port	$256.2	7 elem 7 mid 1 high 13 port	$326.7
Camas	5 elem 2 mid 1 high	1 elem 2 port	$20.3	2 elem expd mid 3 port	$51.5	3 elem expd mid 4 port	$74.0
Evergreen	20 elem 6 mid 4 high	6 elem 1 mid 1 high 32 port	$243.8	7 elem 1 mid 1 high 27 port	$265.4	7 elem 7 mid 1 high 28 port	$265.4
Green Mountain[3]	1 elem 0 mid 0 high	4 port	$0.35	1 elem	$10.0	1 elem	$10.0
Hockinson	2 elem 1 mid 1 high	Expd high 2 port	$20.2	Expd high 6 port	$0.2	Expd high 1 elem 6 port	$25.0
La Center	1 elem 1 mid 1 high	1 elem 1 mid Expd high	$64.0	1 elem 1 mid Expd high	$64.0	1 elem 1 mid Expd high	$64.0
Ridgefield	2 elem 1 mid 1 high	2 elem 13 port	$40.7	3 elem 1 mid 1 high 8 port	$138.3	4 elem 2 mid 1 high 8 port	$193.9
Vancouver	21 elem 6 mid 6 high	2 elem 1 mid 1 high 28 port	$109.5	2 elem 1 mid 1 high 32 port	$109.6	3 elem 1 mid 1 high 24 port	$122.2
Washougal	3 elem 2 mid 2 high	1 elem expd mid expd high 2 port	$45.1	1 elem expd mid expd high 2 port	$48.4	2 elem 1 mid 1 high 4 port	$83.3
Total Schools/ Portable Classrooms		24 schools 85 portables	$658 million	36 schools 83 portables	$944 million	53 schools 87 portables	$1,165 million

[1] Current number of elementary, middle and high schools
[2] For facilities: proposed number of elementary (elem), middle (mid) and high schools (high), and portable classrooms (port). expd=expansion of existing facility. Costs include land acquisition.
[3] Students attend La Center High School

a. Alternative 1

Alternative 1 would not expand urban areas, which means that most of growth would occur in the Vancouver UGA. Projected growth would be accommodated through increases in density in both urban and rural areas. Expansion of existing facilities or new facilities would be needed (Table 82 above), but this alternative would make the most efficient use of existing facilities and therefore have lower costs.

b. Alternative 2

Alternative 2 would require a larger number of new school facilities given the expansion of UGAs. Most of the proposed residential expansion is along the northern part of the Vancouver UGA that would put the most burdens on the Battle Ground and Ridgefield School Districts, although most of the expansion areas proposed for industrial lands fall in these two districts as well. The responsibility for serving growth would fall to all school districts.

c. Alternative 3

Alternative 3 provides an area that can be used to adjust the boundaries in Alternative 2, but should not be considered an alternative that would add significant acreage to what would become the preferred alternative. The acreage of the preferred alternative is expected to be approximately the acreage in Alternative 2. Therefore, the impact on local school districts would depend on the size of the various urban growth boundaries, and how much residential land would be added to each respective school district. Each of the cities would experience more growth than anticipated in the 2004 Comprehensive Plan due to the increased population and job projections.

3. Mitigation Measures

a. Plans and Ordinances

Clark County's school districts have revised their long-range plans to reflect the 2004 GMA plans of the county and cities, and will revise their plans to respond to the plan that is ultimately adopted. Schools are not a part of the concurrency management system of the county or any of the cities. However, local jurisdictions have adopted school impact fees on new development for all school districts, as allowed by state law.

The school districts have also asked local jurisdictions to balance land uses within school districts so that they have the tax base to support the schools. That is, each school district would like to have a balance of residential, commercial, and industrial land uses.

The Vancouver School District representative has stated that the community needs proactive and intentional zoning and development standards that produce balanced, quality housing and integrated communities. In addition, the Vancouver School District, has requested that the county:

- Utilize techniques such as inclusionary zoning, opportunity housing, and mixed use developments to provide mixed-income housing;
- Align city Urban Growth Boundaries to support an equitable distribution of jobs, housing, and infrastructure within the County;
- Reinforce urban revitalization for efficient use of existing facilities and services;
- Utilize qualitative measures of progress, not just quantitative ones; and
- Coordinate City/County planning in the unincorporated areas within the Vancouver UGA (such as Hazel Dell, Felida, and Salmon Creek).

Clark County: Schools are major employment centers, require urban levels of water and sewer service and fire protection, and generate high volumes of traffic. They are also a focus of community life and should be located in activity centers. Schools are not included in the county's concurrency management system. Goal 6.5 of the county's comprehensive plan is to coordinate with school districts to ensure that sites are constructed to meet the educational needs of county residents. Policy 6.5.1 focuses on mitigating

land use impacts of school sites by requiring location with UGAs where possible, ensuring that facilities hook up to water and sewer services and that transportation facilities are adequate. Policies 6.5.2-6.5.4 encourage coordination between the county and school districts for efficient provision of school services and use of facilities. School impact fees are provided for as a funding source in Policy 6.6.5. Capital Facilities Plans for the school districts are adopted by reference in Policy 6.5.6.

Battle Ground: The improvements listed in this section are improvements needed in addition to the planned improvements through 2012. To accommodate Alternative 1, three elementary schools would need to be constructed and the existing high schools would require expansion. Forty-eight elementary students and 229 high school students would be housed in portables. For Alternative 2, six elementary schools and one new high school would require construction. This additional new high school would accommodate 1,200 students. Under Alternative 2, 437 elementary students would be housed in portables and 227 high school students would be housed in portables. To accommodate Alternative 3, seven elementary schools and one additional high school would need to be constructed. The new high school would have a capacity to accommodate 1,600 students. Under alternative three, no additional elementary students would be housed in portables and 251 high school students would be housed in portables.

Camas: For Alternative 1, the projected enrollment is lower than the school district's projected enrollment through 2011. The reason for this discrepancy is that Alternative 1 build-out forecast is based solely on county assumptions regarding the number of households that would be built on the vacant buildable lands and the District's 2005 (most recent) student generation rate, with the assumption that the student generation rate (average number of students per household) would remain constant. The 2011 forecast is based on observed growth, cohort survival, local development trends and other demographic factors. To accommodate Alternative 2, two new elementary schools would need to be constructed. As far as the middle schools, the existing schools would need to be expanded and/or reconfigured to accommodate 250 additional middle school students. No new high schools would need to be constructed under Alternative 2. Sixth-one elementary school students, 28 middle school students, and 21 high school students would all need to be housed in portables.

Evergreen: For Alternative 1, the district projects a 3,961 student enrollment increase, with the majority of the increased enrollment at the elementary school level. In addition to constructing the six-year improvements in the 2006-2012 Capital Facilities Plan, the District would need to construct six elementary schools, one middle school and one high school. The facility needs for Alternative 2 would require construction of seven new elementary schools, one new middle school, and one new high school. One hundred elementary students, 466 middle students, and 758 high school students would be housed in portables. To accommodate Alternative 3, construction of the following would be required: seven new elementary schools, 1 new middle school, and 1 new high school. In addition, 142 elementary school students, 482 middle school students, and 773 high school students would all be housed in portables.

Hockinson: For Alternative 2, 552 low-density households would need to be accommodated in the Hockinson School District. According to Hockinson's school administrator, the school district can accommodate the additional households.

La Center: In La Center's School Capital Facility Plan, a new elementary school is planned for construction in 2007 and to be occupied by 2008. A new middle school is planned for construction in 2020, and high school expansion is planned for construction in 2015.

Ridgefield: For Alternative 2, three new elementary schools and one new middle school would need to be constructed. The existing high school would need to be reconfigured and/or expanded. As far as portables, 223 elementary students, 111 middle school students, and 209 high school students would all be housed in portables. For Alternative 3, four new elementary schools, two new middle schools, and one new high school would need to be constructed. The portable needs are as follows: 225 elementary school students, 98 middle school students, and 142 high school students.

Vancouver: The Alternative 2 facility construction needs are as follows: two new elementary schools, one new middle school, and one new middle school. Twenty-eight new portables would be required under Alternative 1. The school district estimates that the costs for Alternative 1, 2 and 3 would be $109,450,000, $109,600,000 and $122,200,000, respectively.

Washougal: To accommodate the Alternative 2 growth scenario, one new elementary school would need to be constructed. The existing middle schools and existing high school would need to be reconfigured and/or expanded to accommodate 250 additional middle schools students and 600 additional high school students. Under Alternative 2, 94 elementary, 19 middle school, and one high school students would be housed in portables. For Alternative 3, two new elementary schools and a new middle school would need to be constructed. The existing high school would need to be reconfigured and/or expanded to accommodate 600 additional high school students. Under Alternative 3, 21 elementary school students, 49 middle school students, and 138 high school students would need to be housed in portables.

Yacolt: No new development is proposed for Yacolt school district under any of the growth alternatives.

b. Additional Mitigation Measures

The following policies could be adopted by local jurisdictions and school districts to reduce or eliminate any adverse impacts to school services caused by amendment of the growth management plan.

1. Cooperate with the school districts to ensure that school impact fees are adequate for the increased demand generated by growth.
2. Include schools as one of the public facilities under the concurrency management system mandated by the GMA.
3. Identify school site requirements as part of the designation of land for community facilities when planning for urban activity centers.
4. Assist the school districts to identify alternative sources and means of funding school facilities and educational programs. Such sources might include certificates of participation for funding new facilities and establishment of endowments or trust funds for special programs (e.g., arts and/or sciences)
5. Eliminate the requirement for a conditional use permit for new school facilities that are proposed within cities or UGAs.
6. Some form of phased development could be mandated in new expansion areas until school services meet adopted standards.

D. Parks and Recreation

1. Setting

Clark County has been involved in park acquisition and development since the 1930s. The early years were active years, and almost half the county's park land was acquired before 1972. In 1960, a Park and Recreation Board was established and an effort to plan comprehensively for parks and recreation facilities began. Comprehensive Parks and Recreation Plans were adopted in 1965, 1971, 1981, and 1987. In 1995/96, the City of Vancouver and Clark County joined forces and created the Vancouver-Clark Regional Parks and Recreation Dept. A joint parks plan for the Vancouver urban area was adopted and updated in 2001. Figure 38 shows the location of park land in the county.

a. Funding

Park land acquisition and development is funded locally either by park impact fees (PIF) and a real estate excise tax (REET) of one-quarter percent. In addition, the V-CPRD has aggressively pursued grant funding for acquisition and development. The REET is dedicated to curing park deficits in developed urban areas. PIF are used to acquire and develop parks in developing areas. Under these funding programs, 54 park sites have been acquired and 16 community and neighborhood parks have been developed. Another 13 park sites have been funded through REET and are scheduled for development within the near future. Neither of these funding sources can be used for on-going maintenance and operation costs. These are funded from the general fund or facility use fees, and represent the limiting factor on parks development and recreation programming in the county.

The Conservation Futures program is a levy approved to fund acquisition and preservation of open space, habitat, and resource lands. The Greater Clark Parks District, a voter-formed metropolitan parks district funds meaintenance and operation of a number of parks, sports fields, and trails in the Vancouver urban, unincorporated area.

Clark County has adopted minimum standards for the number of acres of parks of different kinds necessary to maintain the quality of life and recreation opportunities desired by county residents. The types of parks as well as the existing standards are outlined below.

b. Regional Park System

The overall standard for the regional park system is 10 acres per 1,000 people. In 2004, the county population was 391,500, resulting in a need for 3,915 acres of regional facilities. However, the V-CRPD owned only 2,334 acres, indicating a deficit of 1,531 acres.

There are several types of regional facilities, the adopted standard for each of which is described below.

Regional Parks: These parks are intended to serve several communities within one hour driving time, although closeness to population centers is desired. They typically range in size from 100 to more than 325 acres. The desirable size is 200 acres or greater, although no minimum is recommended. The standard is 10 acres per 1,000 persons.

Regional Trails: The Clark County Trails and Bikeways System Plan identifies a comprehensive trail and bicycle system throughout Clark County that provides opportunities for non-motorized travel (walking, bicycling, skating, and horseback riding) to meet county recreation, fitness, and commuting needs. Acquisition and development is guided by public need and available funding.

Regional Special Facilities: Special facilities parks are typically located and developed to serve one or more recreational, historical, cultural, environmental, or educational activities. Facility standards and minimum sizes vary. Some special facility types do not have standards; however the facility and/or site must be large enough to accommodate the specific use.

Regional Conservation and Greenway Systems: Regional conservation and greenway systems are resource-based open spaces. They are acquired with the intent of little or no development. Conservation and greenway systems serve various functions, including protection of environmentally sensitive areas and wildlife habitat, wildlife viewing, environmental education, and trails. The availability of funding and the level of threat to identified, high priority lands determine the rate at which the open space plan is implemented.

Wildlife Habitat: Wildlife habitat is composed of land, water, vegetation, and other natural resources necessary to support fish and wildlife populations. Clark County has used several methods to map and/or designate its highest priority habitat and critical/sensitive lands (e.g. high-quality wetlands.) While these

programs utilized different methodologies to identify high-priority wildlife habitat, the results produce similar or complementary findings and lead to consistent preservation priorities. Acquisition is based on the value of the resource, and on completing/protecting identified, value wildlife habitat.

c. Urban Park System

The urban park system consists of urban-level parks within UGAs. These properties include small neighborhood parks (3 to 5 acres), community parks (15 to 100 acres), and open space. The acquisition standard for the urban park system is 6 acres per 1,000 people. In 2000, the urban area population was 251,348. Therefore the amount of urban park land needed to meet standard was 1508 acres. V-CPRD owned 1526 acres, for a surplus of 18 acres.

The standard for developed parks is 6 acres per 1,000 people, or a total need of 1068 developed park acres in 2000. In 2004, the Vancouver urban area population was 286,226. Therefore, the amount of urban park land needed to meet the standard was 1,717 acres. Vancouver-Clark PRD owned 1,733 acres, a surplus of 16 acres.

There are several types of urban parks, each with different standards, as described below. Table 83 shows existing parks acreage.

Table 83. *Existing Clark County Park Facilities (includes School & Drainage Land)*

Park Type	Developed (acres)	Undeveloped (acres)
Neighborhood Parks	569	337
Community Parks	688	288
Regional Parks	417	1026
Conservation and Greenway	NA	1898
Open Space	NA	318
Regional Trails	NA	105

Source: 2006 Draft Clark-Source: 2006 Draft Vancouver-Clark Comprehensive Parks, Recreation, and Open Space Plan. Clark County Department of Assessment and GIS, 2005.

Neighborhood Parks: These parks are intended to serve residential areas within walking distance (one-third to half-mile radius) of the park site. The minimum desirable size for a neighborhood park is three to five acres and would not normally exceed 20 acres. The guideline is 2 acres per 1,000 people. V-CPRD has 568 acres of developed neighborhood park and 336.71 undeveloped neighborhood park acres.

Community Parks: These parks primarily serve groups of neighborhoods within a one- to three- mile radius of the park site. The minimum desirable site is 20 acres and would not normally exceed 100 acres. The guideline is 3 acres per 1,000 people, or a total of 754 acres needed. Currently V-CPRD has 689 acres of developed park and 288.4 acres undeveloped. More community parks would be needed as the region grows.

Schools: Schools meet an important part of the recreational need for parks. Neighborhood and Community parks complement and expand on the services provided by school grounds. In certain areas, neighborhood and community parks are located adjacent to schools or involve developing and upgrading the school site. School grounds of sufficient size and with the necessary facilities to serve as neighborhood or community parks are included in the VCPRD inventory of park facilities.

Urban Open Space: These are not parks in the traditional sense, but provide visual and psychological relief from areas of intensive development. Urban Open Space sites may or may not be improved, but can include trails, greenway corridors, community gardens, farmed areas, and areas within community or

neighborhood parks which are left in their natural state. The county standard is 1 acre per 1,000 people. Currently VCPRD provides 286 acres of urban open space, meeting the standard.

US Forest Service: Approximately 1,087 acres of the Gifford Pinchot National Forest are located within Clark County. Forest Service lands provide a variety of recreational opportunities including camping, hiking, hunting, fishing, horseback riding, and snowmobiling.

National Parks Service: The Parks service operates the 209-acre Fort Vancouver National Historic Site, including a visitor's center and the reconstructed fort, play area and a parade ground.

US Fish and Wildlife Service: The Fish and Wildlife service manages the 5,149 acre Ridgefield National Wildlife Refuge, located in the Columbia River lowlands west of Ridgefield and the Steigerwald Lake Wildlife Refuge in Washougal. Recreational opportunities include wildlife observation, hiking, environmental education, fishing, and hunting in portions of the site.

Washington State Department of Fish and Wildlife: WDFW manages five wildlife and hunting areas and several public access areas on the county's lakes and rivers.

Department of Natural Resources: DNR is the largest public land owner in Clark County. Most of their land is forest land and is managed for timber production. However, within the Yacolt Multiple Use Area DNR has developed six camping or picnic areas in Clark County. DNR also manages Caterpillar Island and the Woodland Special Campground for the handicapped.

Washington State Department of Parks and Recreation: The department owns and manages three park sites in Clark County, including Battle Ground Lake, Paradise Point, and Reed Island.

In addition, each city has its own parks and recreation facilities. Not all of the cities have adopted park standards, and some differ from those adopted by Clark County. Table 84 compares park standards for each jurisdiction.

Table 84. *Park Standards for Each Jurisdiction.*

	Parks and Open Space Standard (acre/1,000 population)			
Jurisdiction	**Neighborhood**	**Community**	**Urban**	**Regional**
Battle Ground	5.0	--	--	N/A
Camas	2.5	--	--	10.0
La Center	1.5	5.0	Trails/0.5 Ac.	7.0
Ridgefield	2.5	2.5	2.5	N/A
Vancouver	2.0	4.0	6.0	10.0
Washougal	5.0	2.68	--	N/A
Yacolt	1.0	3.0	1.0	N/A
Clark County	2.0	3.0	6.0	10

Source: 2006 Draft Vancouver-Clark Parks Parks, Recreation and Open Space Plan; Camas Parks and Recreation Master Plan; Battle Ground Parks and Recreation Plan; Washougal Needs Assessment; La Center Urban Area Capital Facilities Plan (2004)

While Clark County owns a substantial amount of park land, a large portion of it remains undeveloped, limiting recreational use. State and federal funds are available to acquire park sites. Sometimes these grants include the cost of park development. However, the cost of maintaining facilities (including landscape maintenance, building maintenance, and maintenance of roads, trails, and parking facilities, as well as maintenance of recreational facilities) is not covered in these programs.

2. Impacts on Parks and Recreation

Park standards would not change among the alternatives, but the distribution of parks and the cost of acquiring them would affect different jurisdictions with each alternative. Because park standards are based on population, new parks would be required under any of the alternatives. Currently, parks within cities and UGAs cost approximately $225,000/acre to acquire, while the per-acre cost in rural areas is $15,000 to $40,000.

As urban areas are annexed to the cities, the county's role would shift from being a provider of urban parks to providing regional and rural parks and recreation. This eventuality has already been considered in the creation of the Vancouver-Clark Parks and Recreation Department and adoption of the updated comprehensive plan by the county and the City of Vancouver. Table 85 shows the projected park needs by capacity for Alternatives 1 and 2. Alternative 3 subareas could be used to modify Alternative 2 if need be.

Table 85. *Estimated Parkland Needs for Alternatives 1 and 2*

Jurisdiction	Current Combined Standard	Current Situation	Alternative 1 (additional acres)[1]	Alternative 2 (additional acres)
Battle Ground	5.0 acres/1,000	12.1 acres/1000	20.0	50.5
Camas[2]	n/a	n/a	n/a	n/a
La Center	7.0 acres/1,000	9.7 acres/1,000	13.8	33.6
Ridgefield	7.0 acres/1,000	2.8 acres/1,000	77.2	155.4
Vancouver	6.0 acres/1,000	5.2 acres/1,000	499.8	652.9
Washougal	6.41 acres/1,000	5.69 acres/1,000	46.8	68.6
Yacolt	5.0 acres/1,000	13.8 ares/1,000	0	0
Clark County	10.0 acres/1,000	8.68 acres/1,000	1,989	2,498

Source: Clark County Department of Assessment and GIS, 2005
[1]Based on UGA capacity
[2]The City of Camas uses a distance radius to determine need, not on acreage per 1,000 population.

a. Alternative 1

Alternative 1 would not expand urban areas, which means that most of the growth would be in the Vancouver UGA. Growth would be accommodated through the development of existing undeveloped and underdeveloped properties in current urban and rural areas, and through redevelopment or more intensive use of existing structures. Planning and construction of new park and recreation facilities would primarily occur in urban areas to accommodate the increased population. It is likely that urban parks would be more heavily used to the point of over-use with increased urban densities.

b. Alternative 2

Alternative 2 would have the greatest impact on the northern part of the proposed Vancouver UGA expansion where planned low-density single family land use would create a relatively dispersed residential population that would not be served by any newly allocated park land. There are no new park facilities planned for the new expansion areas surrounding Vancouver. The provision for new parks and recreation facilities would fall on Vancouver – Clark Parks and Recreation for the proposed expansion. All of the

cities would also require new park and recreation facilities to accommodate the expected growth from annexed lands.

c. Alternative 3

Park standards are based on population and this DEIS is considering only one population assumption. Therefore, as long as the amount of acreage that would be added from Alternative 3 and the amount of acreage that would be exchanged for it from Alternative 2 would support roughly the same population, there would be no difference in park impacts. If there is excess capacity created that could be filled by population growth above and beyond that planned growth, there would be greater impacts by adding land from Alternative 3. Only one subarea option (L1) would add land designated for parks/open space.

Therefore, the impact on local parks and recreation agencies would depend on the size of the various urban growth boundaries. Each of the Cities would experience more growth than anticipated in the 2004 Comprehensive Plan due to the increased population and job projections.

3. Mitigation Measures

a. Plans and Ordinances

In their individual comprehensive plans, Clark County and the cities have established policies for provision of parks and open space to accommodate new development and enhance the quality of life in urban areas. The following discussion summarizes the ways that each jurisdiction intends to meet adopted standards.

Vancouver-Clark Parks: Vancouver-Clark Parks and Recreation adopted their current capital facilities plan in 2002. The current assessment of demand and need is divided into three basic categories which include neighborhood parks, community parks, and urban open space. There continues to be a need for both acquisition and development of neighborhood and community parks, and the acquisition of urban open space. The minimum standard level of service is 6 acres per 1,000 population rather than the preferred standard of 10 acres per 1,000.

The Department currently projects demand at 107.86 acres and a deficit of 55.91 acres of Urban Parks. Additionally, the 2002 plan projects a deficit of 64.59 acres of park land in 2013.

Battle Ground: The City of Battle Ground adopted a Parks Plan concurrently with the Comprehensive Plan in December 2004. The City of Battle Ground owns approximately 184 acres of parks and open space on 35 parcels within the City limits. Battle Ground established service standards based on the National Park and Recreation Association recommendations. These include 5 acres of parks and open space for every 1,000 people.

The Battle Ground Future Urban Growth Area is divided into 21 Neighborhood Service Areas (Nyssa's). The City's analysis identifies the need for 54-90 acres of additional park land to serve anticipated growth. The acquisition and development of a youth sports fields complex, including baseball, softball, soccer, and a "challenger" field are the City's highest priorities.

Camas: The recently adopted Parks and Recreation Plan identifies a need for 483 acres of total park land in the next twenty years. Acquisition and development of parks would be funded through a variety of sources including impact fees, REET, state and local grants, and the general fund.

La Center: La Center recently completed a 12-acre community park that includes a variety of recreational facilities. The city indicates that it has adequate park facilities to serve expected growth. Chapter 6 of the La Center Urban Area Comprehensive Plan (2004) concerns Parks and Recreation and Open Spaces and adopts the National Park standards (Policy 1). Policies call for coordination with Clark County and other agencies for preservation of recreation values of the East Fork Lewis River, implementation of the Parks

and Recreation Master Plan, development of bicycle and pedestrian circulation system, and preservation and enhancement of the East Fork of the Lewis River wetlands and riparian lands. The city has implemented a PIF program since 1997. The current La Center Urban Area Capital Facilities Plan (2004) anticipated that by 2023 the city would require 13.5 acres of additional developed community park lands, 4.1 acres of developed neighborhood park lands, and 1.4 acres of developed pedestrian trails to serve an anticipated population of 3,500 persons. The 1991 Parks and Recreaton Master Plan will be updated in 2007.

Ridgefield: Ridgefield expects tremendous residential growth through 2010 and the necessary park acreage to serve anticipated residential growth is substantial. The city is currently developing a citywide master parks plan to guide the location, acquisition and design of park facilities for the future. Policies P-1 through P-8 of the City of Ridgefield Comprehensive Plan (2005) require coordination between the city and the county in developing parks and trails systems. Policy P-5 obligates the city to provide adequate acreage of parkland to meet existing and future park and open space needs. The forthcoming Parks and Recreation Master Plan would develop appropriate levels of service and standards. Impact fees for parks may be considered.

Washougal: According to the Draft Washougal Comprehensive Park and Recreation Plan an additional 2.7 acres of neighborhood park land is currently needed in Washougal. Washougal anticipates an update of the Park Impact Fee to accurately reflect the cost of developing park and recreation facilities.

Yacolt: Yacolt is not proposing any additional residential development since it does not have a sewer system to support it. Therefore, no additional parks facilities would be needed.

E. Libraries

1. Setting

Fort Vancouver Regional Library District (FVRLD), headquartered in Vancouver, Washington, was established in 1950 as the first inter-county rural library district in the state. The district has grown since 1950 to serve all of Clark, Skamania and Klickitat Counties and the city of Woodland in Cowlitz County. The City of Camas has its own library which was recently remodeled and expanded to better serve that growing community.

With twelve branch libraries, three bookmobiles, a Vancouver operations center, and dial-up and Internet access to electronic services, FVRLD provides information resources and services, and community and cultural events for a population of more than 383,000 residents. The 4,200-square mile service area includes farm, open range and national forest lands, communities along the Columbia River, small towns and expanding urban and industrial areas.

National library standards are not widely used to establish levels of service because local conditions vary so greatly nationwide. Standards in general use, and those used by Fort Vancouver Regional Library System (FVRLS) indicate that there should be 0.50 square feet of library space per capita. Currently, FVRLD provides a total of 69,400 square feet of library space in eight Clark County branches, which translates into a ratio of 0.2 square feet per capita. The FVRLD also coordinates with the City of Camas Library.

In 1996, FVRL had a capital plan study completed by the BJSS Group (study was completed in 1999) that used an existing desired standard of 0.5 square feet per capita for the district. The 20-year capital facilities plan for library services in Clark County defines an urban service model and a rural model. If funded, this would increase the current 69,400 total square feet to a projected 215,500 square feet by the year 2020, to serve about 465,000 residents and result in a service area ratio of approximately 0.46 square feet per capita, slightly less than the 0.5 square foot benchmark.

2. Impacts on Library Services

Library service demand is directly related to population. As the population of the county increases, demand for library service would increase.

a. Alternative 1

Alternative 1 would accommodate all expected growth within existing UGAs, largely by in-fill development on passed over lots. While this would encourage efficient use of existing facilities, it could increase competition for available land, making it more expensive to develop new library facilities which are needed because of the growing population.

b. Alternative 2

New library facilities would be needed to keep pace with the projected 20-year population. An expansion of UGAs would allow more options for siting of needed facilities.

c. Alternative 3

New library facilities would be needed to keep pace with the projected 20-year population. An expansion of UGAs would allow more options for siting of needed facilities.

3. Mitigation Measures

a. Plans and Ordinances

None of the cities and towns or Clark County includes library services in the concurrency management system. Funding for FVRLD comes from property taxes, fees and donations.

b. Additional Mitigation

The following mitigation measures could be adopted by the county and cities and towns in order to assist FVRLD to meet the increased demand from expected growth.

1. Include library facilities in the planning for community facilities in planning for downtown development and urban activity centers.

2. Permit libraries to locate their facilities in conjunction with local school facilities, not only within designated UGAs, but also in urban reserve areas.

3. Provide land for libraries in or adjacent to urban parks (neighborhood or community parks).

4. Assist FVRLD to identify alternative sources and means of funding new facilities and outreach programs. Such sources might include certificates of participation for funding of new facilities and establishment of endowments or trust funds for special programs.

F. General Government

1. Setting

General government buildings house the staff that operate each city and town, and include offices, public works yards, and maintenance facilities. As cities and towns grow, more staff is required to provide services to residents and maintain city/town facilities. As a result, more general government space is needed.

2. Impact on General Government Facilities

General government buildings are not included in the concurrency management system. Government staff growth is more related to program mandates than to population growth.

After the 1994 comprehensive plan was adopted, Clark County completed a facility plan for all its operations and the result is the new office building to house county staff currently located in rental facilities around the Courthouse. No additional office space would be needed is expected to be needed over the next 10 years at least.

The City of Battle Ground expects to need additional space to serve the much greater population and employment base under all alternatives.

The City of Camas is expects to remodel its city hall over the next five years in order to provide for growth and changing state mandates.

The city of La Center expects to construct a new city hall to include an expanded police department as well, in the next 5 to 10 years.

The City of Vancouver located some staff (transportation planning and design) in the new county office building, but, based on historic trends, may need additional facilities over the next 10 years.

The City of Washougal may have to expand its city hall to provide facilities for staff expansion as it grows over the next 20 years.

3. Mitigation Measures

No mitigation measures are proposed.

G. Solid Waste

1. Setting

Transfer stations serve as centralized collection points for solid wastes collected by licensed trash haulers. They also provide for the collection of additional solid wastes, such as source-separated recyclable materials (not collected by curbside programs), yard debris, household hazardous waste (HHW), certain sludge, bulky waste, asbestos and other special wastes.

Central Transfer and Recovery Center (CTR) is located at 11034 N.E. 117th Avenue (SR 503). CTR includes a 40,000-square-foot transfer building with a hydraulic compactor unit, a 13,000 square feet building for use as a drop-off area for HHW and source-separated recyclable materials. CTR serves primarily the northern Vancouver urban area, outlying rural areas and the cities of Camas and Washougal.

The West Van Materials Recovery Center (West Van) is located at 6601 NW Old Lower River Road, on the west side of Vancouver. Most of the waste delivered to this facility is generated in west and north Vancouver. This facility functions as a transfer station and materials recovery center. West Van includes an 82,000-square-foot main building, entry and exit scales, control facilities, a truck wash facility, a container and drop-box storage area, administration and employee buildings, a six-acre C & D processing and composting area and a stormwater detention and treatment area.

Clark County does not have a licensed landfill within its boundaries. Municipal solid waste delivered to CTR and West Van is end-loaded by hydraulic compactor units into shipping containers which are transported directly to the barge-loading facility at Tidewater Barge Lines. They are then shipped upriver for final transport to the Port of Morrow and ultimately the Finley Buttes Landfill. Tidewater Barge Lines is the contracted transport company.

2. Impacts

Both CTR and West Van have been designed to receive and transfer up to 438,000 tons per year of solid waste (250,000 tons of solid waste were received during 2001). Under interim emergency conditions, either facility is designed to handle the entire projected year 2011 flow of municipal solid waste within Clark County. This full backup capability is expected to last throughout the 20-year planning period covered in the comprehensive plan. The current system has been designed with flexibility to respond to changes in population and economic growth and in the behavior of residential and non-residential waste generators. It is essential for the waste transfer system to maintain an acceptable "level of service" during the 20-year planning period covered by the comprehensive plan.

The loading and unloading capacity of the existing crane at the Port of Morrow is approximately 15 containers per hour, or 330 containers per day during a three-shift work day. During the two weeks each year when the navigation locks on the Columbia River are closed for routine maintenance, or in the event of unanticipated locks closures, containers can be shipped by truck or train.

Each shipping container holds approximately 30 tons of municipal solid waste and has an internal volume of approximately 90 cubic yards. The existing staging yard behind the dock has a storage capacity of approximately 500 containers. Two sizes of barge systems are used for transport. The smallest barges carry up to 36 containers; the largest carry up to 80 containers. Based on the tonnage of non-recycled waste exported to Finley Buttes Landfill, the average number of loaded shipping containers transported upriver and through the Port of Morrow was about 150 containers per week in 1998.

Finley Buttes Landfill is located in Morrow County, Oregon, approximately 180 miles east of Clark County and approximately 12 miles south of Boardman, Oregon. The facility is owned and operated by Finley Buttes Landfill Company and is the designated disposal site for municipal solid waste generated within Clark County. The landfill is designed, constructed and operated to be in compliance with all requirements of the Oregon DEQ and EPA Subtitle D MSW landfill requirements.

The projected life of the current permitted landfill exceeds the 20-year period covered by this plan. Finley Buttes Landfill occupies a permitted 510-acre site. The estimated available fill capacity at the site, as currently permitted by the Oregon DEQ, is 90 million tons of municipal solid waste. The design of the landfill incorporates features to protect groundwater and surface water, prevent soil erosion, provide fire protection, allow ease of access and manage and control landfill gas and leachate system. The site is designed to be compatible with the surrounding land use, both during the active life of the landfill and after the landfill closes.

A backup disposal facilities plan was submitted to the county by Columbia Resource Center in 1992. The plan describes the designated alternative disposal sites if Finley Buttes Landfill ceases operations, either temporarily or permanently. CRC has backup disposal agreements with both Columbia Ridge Landfill in Gilliam County, Oregon, operated by Waste Management, Inc., and Roosevelt Regional Landfill in Klickitat County, Washington, operated by Allied Waste. In addition, a landfill in Wasco County, Oregon is owned and operated by Waste Connections Inc. Both truck and rail transport are available to these backup sites.

3. Mitigation Measures

Mitigation measures are not required, since the existing system has the capacity to accommodate all expected growth. However, in the interests of the long-term health of the system, each jurisdiction could adopt waste reduction measures and encourage additional recycling. The county's recycling rate is estimated at 35% with a recovery rate of 45%.

H. Public Water Systems

1. Setting

GMA requires that availability of public water be included in the concurrency management system of each local jurisdiction. The ability of local governments and utilities to keep up with service demands can be difficult in times of rapid growth. At worst, this may result in water shortages. After the adoption of the growth management plans in 1994 and 2004, water service providers amended their long range plans to be consistent with expected levels and patterns of growth.

Water service within Clark County is provided by a variety of local jurisdictions and a publicly owned water provider. Within urban areas, the Cities generally provide water service. This is true in the case of Vancouver, Battle Ground, Camas, Ridgefield, and Washougal. CPU is the primary water provider for the unincorporated areas of the county and for the City of La Center and town of Yacolt. CPU is a publicly owned utility that supplies potable water within their designated service area. Figure 40 shows Clark County and the local jurisdiction water system service areas. Generally, the city water districts are larger than the existing city limits and do not necessarily correspond with city or UGA boundaries.

Water systems within Clark County consist of three basic components; source (wells), storage, and transmission facilities. The source for virtually all water in Clark County, public and private, is from groundwater aquifers. Although adequate water supplies for individual domestic or small consumption commercial wells can be found in most parts of the county, aquifers capable of yielding large amounts of water for extended periods of time are less common. Identifying and developing adequate water supply to meet future demand is essential in order to ensure the continued growth and economic viability of Clark County. Potential future supplies that have been discussed include various surface water sources; water from deeper aquifers; groundwater from new sources in close proximity to the Columbia River such as Vancouver Lake lowlands, the confluence with the Washougal River and the Lewis River, and additional pumping of existing wells. The most prolific aquifers are shallow gravel deposits along the Columbia River in southern Clark County. Individual water providers are required under the federal Safe Drinking Water Act to monitor the water quality of their production wells, subject to the review of the Washington State Department of Health.

Although overall water capacity is ultimately determined by the physical carrying capacity of available sources, the delivery capabilities of individual purveyors are determined by available water rights. Consumptive use of 5,000 gallons per day or more of ground or surface water from a particular source point by any public or private entity requires a water right certificate, to be allocated by the State Department of Ecology. Water rights are prioritized by seniority. In granting such a right, the Department of Ecology must find that no previously established water rights would be hindered.

Rural development not supplied with water from a provider usually relies on private wells for domestic needs. Although there is generally an adequate water supply for rural users, the water providers have difficulty finding aquifers that provide consistent, long-term water output. Identifying additional water sources is essential to serve the growing population. To address this concern and to ensure that water resources are protected for all users, a committee was created in 1983 to develop a coordinated water system plan for the county. The Water Utility Coordinating Committee (WUCC) is a committee composed of managers and technical officials from Clark County, the Clark County Department of Health, the Southwest Washington State Department of Health, local communities and other water providers. In 1983, WUCC instituted a process to develop a countywide plan. The culmination of these efforts was Clark County Coordinated Water System Plan (CWSP) that was adopted in 1983 and most recently updated in 1999. The plan is updated every five years. The CWSP contains information about service areas and capacities for each jurisdiction and the entire county. Table 86 summarizes information about existing water systems in Clark County. CPU projects that the new Vancouver Lake Lowlands would provide sufficient groundwater to sustain the expected growth while continuing to reduce

drawdown in watersheds considered essential to endangered salmon species. This water source is forecasted to serve county-wide water needs beyond 2025.

Table 86. *Existing Water Systems in Clark County*

Provider	Population Served	Water Rights*	Number of Wells	Storage Capacity (gal)	Average MGD
Battle Ground	16,250	2,912	8	3,500,000	1.40
Camas	15,401	7,430	9	8,450,000	2.39
CPU includes La Center	73,421	13,846	34	12,452,000	10.53
Ridgefield	2,195	962	3	1,117,000	0.355
Vancouver	209,527	75,000	40	24,000,000	2.8
Washougal	12,270	6,504	6	4,000,000	1.75
Yacolt	1,560	279	5	500,000	0.12

Source: Clark County Department of Assessment and GIS, 2005

**acre-feet/year. ** Camas also draws water from two creeks.*

2. Impacts on Public Water Systems

Water is one of the services that is included in concurrency management in Clark County. That is, all new urban development must have public water available at the time that it is occupied. Increase in demand for water is a function of population and employment growth, and the pattern of development. Table 87 shows the added demand for Alternatives 1 and 2. Table 88 shows the added demand for each of the Alternative 3 subareas. The City of Vancouver's 2006 Water system Comprehensive Plan identifies the average demand of 235 gallons/day per dwelling unit. Vancouver's Sanitary Sewer Plan indicates a rate of 800 gallons/day per acre for commercial, industrial, and mixed use development.

Table 87. *Public Water Demand, Alternatives 1 and 2*

Jurisdiction	Dwelling Units	Alternative 1 (acres)	Gallons / Day	Dwelling Units	Alternative 2 (acres)	Gallons / Day
Battle Ground						
Residential	1,461		343,335	3,701		869,735
Commercial/Retail w/ 25% MU		285	228,000		294	235,200
Business Park		352	281,600		729	583,200
Industrial		252	201,600		316	252,800
Total	1,461	889		3,701	1,339	
Total			1,054,535			1,940,935
Camas						
Residential	3,621		850,935	4,890		1,149,150
Commercial/Retail w/ 25% Mixed Use		136	108,800		188	150,400
Business Park		923	738,400		1,074	859,200
Industrial		115	92,000		115	92,000
Total	3,621	1,174		4,890	1,377	
Total			1,790,135			2,250,750
La Center						
Residential	667		156,745	1,758		413,130
Commercial/Retail w/ 25% Mixed Use		39	31,200		98	78,400
Business Park						
Industrial					372	297,600
Total	667	39		1,758	470	
Total			187,945			789,130
Ridgefield						
Residential	4,100		963,500	8,138		1,912,430
Commercial/Retail w/ 25% Mixed Use		71	56,800		93	74,400
Business Park		745	596,000		823	658,400
Industrial		595	476,000		881	704,800
Total	4,100	1,411	2,092,300	8,138	1,797	3,350,030

Source: Calculations based on VBLM Gross Acres, Alternative 1 and 2 Capacity Analysis, Clark County Department of Assessment and GIS, 2005

Table 87, Public Water Demand, Alternatives 1 and 2 (continued)

Jurisdiction	Dwelling Units	Alternative 1 (acres)	Gallons / Day	Dwelling Units	Alternative 2 (acres)	Gallons / Day
Vancouver						
Residential	30,536		7,175,960	39,913		9,379,555
Commercial/Retail w/ 25% Mixed Use		1,199	959,200		1,252	1,001,600
Business Park		1,656	1,324,800		1,656	1,324,800
Industrial		2,578	2,062,400		3,392	2,713,600
Total	30,536	5,433		39,913	6,300	
Total			11,522,360			14,419,555
Washougal						
Residential	2,667		626,745	3,915		920,025
Commercial/Retail w/ 25% Mixed Use		53	42,400		65	52,000
Business Park					141	112,800
Industrial		134	107,200		314	251,200
Total	2,667	187		3,915	520	
Total			776,345			1,336,025
Yacolt						
Residential	208		48,880	208		48,880
Commercial/Retail w/ 25% Mixed Use		16	12,800		16	12,800
Business Park						
Industrial		10	8,000		10	8,000
Total	208	26			26	
Total			69,680			69,680
UGA TOTAL	43,260	9,159	**17,493,300**	62,315	11,829	**24,156,105**

Source: Calculations based on VBLM Gross Acres, Alternative 1 and 2 Capacity Analysis, Clark County Department of Assessment and GIS, 2005

Table 88. *Public Water Demand for Alternative 3*

	Battle Ground				Camas				La Center			
Land Use/Subarea	**B1**		**B2**		**C1**		**C2**		**L1**		**L2**	
		Gallons/ Day		Gallons/ Day		Gallons/ Day		Gallons/ Day		Gallons/ Day		Gallons/ Day
Residential*	59	13,865	326	76,610	738	173,430	305	71,675	272	63,920	845	198,575
Comm./Ret. w/25% Mixed Use**												
Business Park**	21	16,600			543	434,400						
Industrial**									55	44,000	217	173,600
Total		**30,665**		**76,610**		**607,830**		**71,675**		**107,920**		**372,175**

	Ridgefield						Vancouver			
Land Use/Subarea	**R1**		**R2**		**R3**		**V1**		**V2**	
		Gallons/ Day		Gallons/ Day		Gallons/ Day		Gallons/ Day		Gallons/ Day
Residential*	1,479	347,565	39	9,165	579	136,065	2,743	644,605		
Comm./Ret. w/25% Mixed Use**										
Business Park**					96	76,800			702	561,600
Industrial			46	36,800						
Total		**347,565**		**45,965**		**212,865**		**644,605**		**561,600**

Source: Calculations based on VBLM Gross Acres, Alternative 3 Capacity Analysis, Clark County Department of Assessment and GIS, 2005
Note: Residential dwelling units; **Commercial, Retail, with 25 percent mixed uses, acreage*

Table 88: Public Water Demand for Alternative 3 (continued)

	Vancouver									
Land Use/Subarea	**V3**		**V4**		**V5**		**V6**		**V7**	
		Gallons/ Day		Gallons/ Day		Gallons/ Day		Gallons/ Day		Gallons/ Day
Residential*	1274	299,390	2,713	637,555	511	120,085	685	160,975		
Comm./Ret. w/25% Mixed Use**										
Business Park**										
Industrial**					410	328,000			662	529,600
Total		**299,390**		**637,555**		**448,085**		**160,975**		**529,600**

	Washougal					
Land Use/Subarea	**W1**		**W2**		**W3**	
		Gallons/ Day		Gallons/ Day		Gallons/ Day
Residential*	1,136	266,960	83	19,505		
Comm./Ret. w/25% Mixed Use**	25	20,000				
Business Park**						
Industrial**			25	20,000	21	16,800
Total		**289,960**		**39,505**		**16,800**

Source: Calculations based on VBLM Gross Acres, Alternative 3 Capacity Analysis, Clark County Department of Assessment and GIS, 2005

Note: Residential dwelling units; **Commercial, Retail, with 25 percent mixed uses, acreage*

a. Alternative 1

Alternative 1 would not expand the UGAs, which means that most of growth would occur in the Vancouver UGA. This alternative would rely primarily on the existing systems. Some water mains might have to be replaced over the twenty-year life of this alternative and some areas would need larger water lines to support more intensive development. New wells and treatment plant capacity would probably also need to be expanded to accommodate all expected growth.

b. Alternative 2

Alternative 2 would have the greatest impact on the northern part of the Vancouver proposed UGA expansion, although Ridgefield, La Center and Battle Ground are proposing proportionately large expansions. The provision of water would initially fall on CPU until this land is annexed to the city or a new city is formed and includes portions of the existing and proposed urban area. Water service is currently provided in this area and CPU anticipates no difficulty in providing water as development occurs.

c. Alternative 3

Alternative 3 provides an area that can be used to adjust the boundaries in Alternative 2, but should not be considered an alternative that would add significant acreage to what would become the Preferred Alternative. The acreage of the Preferred Alternative is expected to be approximately the acreage in Alternative 2. Therefore, the impact on water providers would depend on the size of the various urban growth boundaries. Each of the Cities would experience more growth than anticipated in the 2004 Comprehensive Plan due to the increased population and job projections.

3. Mitigation Measures

Mitigation to preserve the quality and quantity of surface and ground water (as discussed above) also works to protect public water supplies. The impacts of additional growth creating demand for water can be mitigated to some extent by additional conservation policies and implementation measures.

a. Plans and Ordinances

Clark County: Chapter 6 of Clark County's comprehensive plan establishes goals and policies related to the provision of water as a public utility. Goal 6.2 is to provide water service to all households minimizing environmental impacts and long-term public cost. Policies stipulate that water service is to be extended to the urban areas and limited in rural areas in accordance with the Clark County Coordinated Water System Plan (1999) and 20-Year Plan map (Policies 6.2.1-6.2.4, 6.2.7 –6.2.9, 6.2.11). Development approval is contingent on sufficient and sustainable sources of water (6.2.10). Water conservation and elimination of private water providers where appropriate is encouraged (6.2.12-6.2.15).

Clark Public Utilities (CPU): Customer-owned utility providing water service to the City of La Center, Town of Yacolt, rural centers and unincorporated areas of the City of Vancouver, Battle Ground and Ridgefield. Clark Public Utilities 2003 Water System Plan presents the water utility's policies concerning the design and operation of the water system; provision of water to adjacent utilities; service boundaries; operation of satellite systems; and provision of service to new developments and individual customer. CPU is planning to develop a new well in the Vancouver Lake Lowlands in the next six years.

Battle Ground: To ensure growth occurs first in developed areas, Battle Ground had developed a plan goal and objective that directs capital facility planning and programming policy as indicated in their 2004-2024 Comprehensive Plan, and a Water System Plan. The capital facilities goal is concurrent provision of capital facilities, and the objective is Battle Ground would require provision of capital facilities concurrently with development. In addition to the Capital facilities goal and objective, the Water System

Plan includes a capital improvement plan identifying the timing and costs of prioritized projects to meet supply, treatment, and distribution needs over the next six-year and twenty-year periods.

Camas: Camas has policies for water and sanitary sewer in its 2004 comprehensive plan. They include working with property owners to eliminate private systems, encouraging connecting to public systems, and prohibiting construction of new private wells and subsurface sewage disposal systems. Plans for providing services would be coordinated with plans for designation of UGAs, rural uses, and for the transition from rural to urban uses. Services are to be planned to maximize efficiency and cost effectiveness and ensure concurrency. Adequate public water service should be extended throughout urban areas.

La Center: General policies under the Capital Facilities and Utilities chapter of the comprehensive plan address the provision of services. CPU owns and operates the City of La Center water system. Policy 4.1.1 states that the City will annually update a six-year CFP program. The City will rely upon a combination of SEPA, concurrency, and Urban Holding to ensure adequate infrastructure. The City will also adopt and review annually level of service standards for sanitary sewer service and domestic water serving new development with in the UGA (Policy 4.1.3). Public water is not to be extended outside the UGA (Policy 4.2.3). All new construction and land divisions within the city limits are required to connect to public water and sewer, with limited exceptions for legal lots of record (Policy 4.2).

Ridgefield: Policy PF-1 Provide Service of the Ridgefield comprehensive plan is consider water, sewer, police, transportation, fire, schools, stormwater management, and parks as necessary public facilities and services. Ensure that facilities are sufficient to support planned development. Policy PF-2 Service Standards establish service standards to planning assumptions for estimating needed public facilities, based on service capabilities, local land use designations and nationally recognized standards. Use LOS standards to encourage growth in designated centers and corridors. Continued growth in the water system will require the City to develop additional water resources or work with CPU on the development of a regional water resource. Policy PF-W-2 restricts provision of urban services outside the UGA. The city will work with property owners to annex properties requiring City services. Policy PF-W-5 states that water and sewer connection is required. Connect all new construction within the UGA to the City's water and sewer systems concurrent or subsequent to annexation, except for single-family residences on lots existing at the time of adoption of the UGA.

Vancouver: Existing plan policies PFS-1 and PFS-2 provide for service availability and service standard. Policy PFS-23 and PFS-24 deal with provision of water service. New private wells are not permitted in the Vancouver urban area (PFS-23). PFS-24 states that water service may be extended if it is consistent with the Clark County Coordinated Water System Plan and des not increase density beyond the adopted Comprehensive Plan. Vancouver plans to develop a new well to serve anticipated growth in the 2010-2012 timeframe.

Washougal: Policy 2-E under Urban Design Strategy states that the City will provide adequate public services and facilities to support desired development in an efficient manner.

Yacolt: Relevant polices and other text included in Yacolt's Comprehensive Growth Management Plan: Policy 8-3 Ensure that any development proposed for the community is contingent upon the availability of public facilities and services necessary to support the development, and that these facilities and services are available concurrent with the occupancy or use of the development. Policy 8-11 Establish and annually review design and/or level of service standards for certain public facilities and services including street and stormwater control, traffic circulation and water distribution—particularly fire flow. CPU owns and operates the Town of Yacolt's water system.

A thorough description of the water system that serves Yacolt is contained in *Clark Public Utilities Water System Plan Amendment for the Yacolt Water System*, July 2002. The plan amendment calls for improvements to the general plant, source of water supply, meters, water storage and booster pumps and water distribution—an estimated $473,700 in facility improvements. CPU will use revenue generated from water

rates and system development charges to cover the cost of some of these improvements. The utility will also seek loans under the Washington State Public Works Trust Fund program, and grants and loans under the HUD Community Development Block Grant program to support the cost of improving the water system. Water facility improvements listed in the water system plan are also identified in the six-year capital facilities program.

b. Additional Mitigation

1. The Water Utilities Coordinating Committee (WUCC) should review and revise existing service boundaries, plans and agreements to ensure that the region's water services and resources are managed efficiently through greater regional coordination, system consolidation, and system interconnections where appropriate, and reflect the policies of the GMPs.

2. Regional water supplies must be coordinated with DOE and the local building permit processes, and must be consistent with the county's comprehensive plan.

3. Areas that are future groundwater source areas, like the Vancouver Lake lowlands, should be managed to prevent contamination. This management should be as intensive as that in wellhead protection areas.

4. Water system infrastructure that might provide water supplies exceeding existing local needs should not be used to justify development counter to countywide land use policies, and any such development proposal should be denied by all appropriate county and local government permitting agencies.

5. Provision of water service should be coordinated among cities and purveyors to ensure protection and preservation of resources in both rural areas and in areas that are developing, and to ensure that new regional supplies are used to serve those areas targeted for additional growth and densities.

6. Water supply planning, development, and implementation decisions should be consistent with coordinated water system plans, basin plans, and other comprehensive regional plans and goals involving water, wastewater, stormwater, water reuse, and other public priorities and needs.

7. Water reuse and reclamation should be encouraged, especially for large commercial and industrial developments, and for high water users such as parks, schools, and golf courses.

8. Water conservation should be aggressively pursued as a means of ensuring efficient water use and protection of water resources, and as a water supply source that can make a substantial contribution toward meeting future regional water needs.

9. Cities, special districts, and other water purveyors not already involved in such programs should develop and implement conservation and public education programs consistent with the state Department of Health's and Department of Ecology's Interim Conservation Guidelines.

10. Prohibit the drilling of new private wells in urban areas and require all households to connect to public water as soon as it is available.

11. Establish a water pricing structure to encourage conservation and cover the full cost of providing water service.

12. Fully implement conservation measures prior to development of an alternative water source.

13. Some form of phased development could be mandated in new expansion areas until water service meets adopted standards.

I. Sanitary Sewer

1. Setting

Several jurisdictions and public agencies provide sanitary sewer services in Clark County. These include the cities of Battle Ground, Camas, Ridgefield, Vancouver, Washougal, CPU, and the Clark Regional Wastewater District (CRWWD). La Center assumed ownership of the sewer system from CPU in August 2006. CPU provides septic system monitoring for the Yacolt. Generally, urban sewer service areas include all locations within the city limits and may include portions of unincorporated Clark County. CRWWD serves unincorporated areas, and uses a county-owned and operated a regional treatment facility to treat its wastewater. Figure 39 shows the service areas for each sewer provider and the location of existing treatment facilities. Table 89 summarizes all wastewater treatment plants in Clark County.

When a local sewer provider determines they can provide the best service to a particular area, then that area is reassigned to that service provider and formalized through mutual service agreements.

While new developments within a jurisdiction's UGA are required to connect to the local sewer system, urban areas currently not served by sewer and rural areas still utilize septic systems. Since 1974, septic systems have been regulated through the Clark County Health Department (formerly the Southwest Washington Health District). Septic systems are the dominant sewer systems outside UGAs and within Urban Holding areas where higher density developments are prohibited.

Clark County. Clark County does not collect wastewater, but operates a treatment facility that is used on a contract basis by service providers that operate collection systems. The county's local collection system was transferred to the CRWWD in 1993, although the county does still maintain and operate the eight-mile long wastewater interceptor for the CRWWD and the City of Battle Ground.

Clark County operates the Salmon Creek Wastewater Treatment Plant (SCWTP) near the confluence of Salmon Creek and Lake River. The SCWTP is an activated sludge facility that provides secondary treatment prior to discharge into the Columbia River. Biosolids from this plant are applied on agricultural land in Cowlitz County.

The SCWTP has undergone two expansions in the last ten years to provide adequate service for the rapidly growing service area. Constructed in 1974 with an original treatment capacity of two million gallons per day (MGD), the treatment plant was last expanded in 1999 to 10.3 MGD, and is currently at 75 to 80 percent capacity. The City of Battle Ground and the CRWWD are currently the only treatment plant users. The City of Battle Ground transfers all of its wastewater to the SCWTP for treatment on a contract basis, while the CRWWD also has an agreement that allows it to transfer approximately 80 percent of its wastewater.

Clark Regional Wastewater District (CRWWD). As of 2005, Clark Regional Wastewater District serves approximately 26,000 customers/sewer connections in unincorporated Clark County. The SCWTP provides approximately 80 percent of the District's treatment needs, while the City of Vancouver treats the remaining wastewater at its Westside Wastewater Treatment Plant.

Battle Ground. As of 2004, Battle Ground sewer system serves a population of 14,220 and has approximately 5,349 customers in the Battle Ground service area.

The City of Battle Ground owns, operates, and maintains its collection lines and mains. Two other collection systems located outside of the Battle Ground UGA (Meadow Glade and Hockinson) are owned and operated by the Clark Regional Wastewater District. These are Septic Tank Effluent Pump (STEP) systems.

Table 89. *Wastewater Treatment Plants*

Agency	Type of Treatment	Design Flow for Maximum Calendar Month (MGD)	Actual Flow for Average Calendar Month 2005 (MGD)	Actual Flow for Minimum Calendar Month 2005 (MGD)	Actual Flow for Maximum Calendar Month 2005 (MGD)	Sludge Disposal Method
Clark County						
Salmon Creek Wastewater Management System	Secondary/Activated sludge treatment	10.3	6.5	5.5	7.4	Land Application
City of Camas	Secondary/Activated sludge treatment	6.1	2.3	1.9	3.1	Land Application
City of La Center	Secondary/Activated sludge treatment	0.56	0.22	0.15	0.31	Land Application and Silviculture
City of Ridgefield	Secondary/Activated sludge treatment	0.70	0.26	0.21	0.38	Transferred to CC Salmon Creek Wastewater Treatment Plant for Further processing
City of Vancouver						
Westside	Secondary/Activated sludge treatment	21.3	9.28	8.3	9.9	Incineration at the Westside Plant. Ash disposed of at the Boardman Landfill
Marine Park	Secondary/Activated sludge treatment	16.0	9.22	8.5	10.0	
Industrial Pretreatment	Secondary/Lagoons Facultative treatment	3.2	1.2	0.8	3.0	
City of Washougal	Secondary/Lagoons	2.24	1.2	1.06	1.49	Land Application

Sources: City of Camas, 2002; City of Camas Wastewater Facility Plan, 1997 City of Ridgefield, 2002: Facility Plan for the City of Ridgefield, 1997; 2005 National Pollutant Discharge Elimination System Waste Discharge Permit, SCWMS, City of Vancouver, City of La Center and Washougal .

The City of Battle Ground conveys all of its wastewater to the SCWTP for treatment and disposal. An inter-local agreement allows the city to use 18 percent of the treatment plant's capacity. Wastewater flows are sent to the SCWTP via a wastewater transmission system that was activated in April 1993 when the Battle Ground Wastewater Treatment Plant was abandoned. The transmission system serves the Battle Ground and Cedars collection systems, and serves Meadow Glade and Hockinson systems.

Camas. The Camas sewer system serves approximately 13,000 customers in their service area. The City of Camas provides wastewater service to all areas within the city limits and to areas west and north of the city limits within the city's UGA.

The City of Camas operates its own complete mix activated wastewater treatment plant. As of 2005, the Camas treatment facility is operating at approximately 53 percent of its capacity.

Since 1985, the City of the Camas has used STEP systems for new residential, commercial, and industrial connections to the sewer systems. The STEP systems are designed to settle the majority of suspended solids, which remain in the tank for three to five years. When the tank reaches capacity, the solids are pumped out and sent to the treatment facility. Use of a STEP system has not deterred residential or commercial development; however, the city is pumping the settling tanks more frequently as use increases.

La Center. The City of La Center recently acquired the sewer utility from CPU. The La Center sewer system serves a population of approximately 2100 residents, as well as: a small commercial area; a grade school, middle school and high school; and several municipal and public service facilities. The existing collection system was constructed in 1967 and rehabilitated in 1988. In the 1990's, several major collection system expansions were made to serve subdivisions that were constructed north and east of the City. Biological treatment is provided by a sequencing batch reactor (SBR) activated sludge process. The system includes two SBR basins and a flow equalization basin. From the SBRs, the flow is discharged to an Aquadisk fabric filtration unit. Treatment of waste solids is accomplished by a sludge belt filter press and sludge dryer. The solids are land applied. Disinfected secondary effluent is discharged from the facility via a 10 inch outfall and multiport diffuser into the East Fork Lewis River. The La Center treatment facility was constructed in 2004 and is operating at approximately 55 percent capacity. There are plans to convert to Membrane Bioreactor technology

Ridgefield. The Ridgefield sewer system serves approximately 2,300 customers in the Ridgefield service area. The service area includes all land within the city's UGA, although most of the area is rural and relies on septic systems. The city sewer system serves areas with higher densities located within the city limits, commercial and industrial land. The existing facility is generally adequate to handle wastewater; however, the mainline into the treatment plant is undersized and needs to be replaced with a larger pipe.

The Ridgefield wastewater treatment facility is an extended aeration activated sludge plant that was constructed in 1959 and expanded in 2000. The plant is designed to treat 0.70 MGD and is currently limited by the National Permit Discharge Elimination System to 0.5 MDG. The plant generally meets residential needs, but is often overloaded during heavy rainfall.

Vancouver. The City of Vancouver provides wastewater collection and treatment services to approximately 142,000 customers within the Vancouver city limits and some unincorporated areas. This includes portions of the CRWD north of the city limits and the Orchards areas northeast of the city limits. The service area includes three major drainage basins: Burnt Bridge Creek, Columbia Slope, and the Fisher/Lacamas, and the minor Westside Lowlands basin.

The City of Vancouver operates two wastewater treatment facilities and one treatment facility for industrial waste. In 2005, the Industrial Pretreatment Lagoon treatment facility was operating at approximately 37.5 percent capacity.

Residential and commercial wastewater flows can be shifted between the Westside Treatment Plant and the Marine Park Treatment Plant depending on available capacity. In addition to treating the city's wastewater, the Westside Treatment Plant also treats wastewater from the Clark Regional Wastewater District. The Marine Park Treatment Plant receives flows from the southeasterly section of the city that is primarily residential wastewater. Both treatment plants release treated water into the Columbia River.

As of 2005, the Westside Treatment Plant treated is operating at approximately 43.6 percent capacity. The Marine Park Treatment Plant is operating at approximately 57.6 percent capacity.

The City of Vancouver incinerates its sludge at the Westside facility. Ash is deposited at the Boardman landfill, which is designed specifically for handling this type of waste.

Washougal. The Washougal sewer system serves approximately 3,600 customers in the Washougal service area. The City's wastewater treatment facility is capable of treating approximately 2.25 MGD. Once treated, the effluent is released into the Columbia River. The City applies sludge to land leased from the Port of Washougal. The City is currently in the process of updating its Sanitary Sewer Capital Facility Plan, which will allow the city to plan the necessary general improvements to meet future growth.

Yacolt. There is no public sewer service in Yacolt. All existing development is served by on-site septic systems. The City recently adopted a sewer plan that includes a small monthly fee to inspect individual septic systems and ensure that they are operating properly. CPU performs these inspections. Eventually, the town plans to construct a local sewer system and treatment facility.

Septic Systems: Septic systems are used extensively throughout Clark County for wastewater treatment and disposal. The Clark County Health Department administers the permit process, although prior to 1959 no permit was required and there is no permit database prior to 1986. Septic systems are the primary method of sewage disposal in the suburban and rural areas of the county. They are still used within the urban service areas of the county, and within some cities' municipal limits.

Septic systems were virtually unregulated until 1974 when the then-Southwest Washington Health District began regulating the installation of septic systems. Some communities and homeowners associations that use septic systems have implemented maintenance agreements to inspect and maintain septic systems. As of 2003, the City of Vancouver estimates that there are 7,700 septic systems within the Vancouver Sewer Service area. The health department has a schedule of regular inspections and maintenance for these septic systems that is funded by a dumping fee collected by the City. Yacolt contracts with CPU to perform regular inspections of septic systems in its water service area.

Prior to 1979, Clark County policy allowed installing septic systems on urban lots and in subdivisions within the urban area. Now, new urban subdivisions are only permitted if sanitary sewer serves them. The county does still allow construction on individual large lots to be on septic systems within an urban area if sewer is not readily available. A large lot is defined as being double the allowable minimum lot size or larger.

The Clark County Health Department estimated that there are approximately 7,700 septic systems in use within the urban Vancouver Sewer Service Area. The department has a scheduled inspection and maintenance program for septic systems, which is funded by a dumping fee

collected by the City of Vancouver. In the CRWD sewer service area it is estimated that there are between 15,000 and 20,000 septic systems in use, with approximately 40,000 septic systems in the entire county.

2. Impacts on Sanitary Sewer Systems

Sanitary sewer service is one of the urban services that the county includes in its concurrency management system. Under all alternatives, public sewer service would be limited to urban areas, as required by GMA. Rural areas would continue to rely on septic systems. Impacts on sewer service are directly related to population and employment growth. According to the City of Vancouver Sanitary Sewer Master Plan, observed sewage generation flows at a rate of approximately 190 gallons per day (GPD) per dwelling unit and 800 GPD per acre for commercial, industrial, and mixed-use development. Table 90 shows the added demand for Alternatives 1 and 2. Table 91 shows the added demand for each of the Alternative 3 subareas. Table 92 shows the estimated costs of additional wastewater treatment facilities.

Table 90. *Public Sewer Demand, Alternatives 1 and 2*

Jurisdiction	Dwelling Units	Alternative 1 (acres)	Gallons / Day	Dwelling Units	Alternative 2 (acres)	Gallons / Day
Battle Ground						
Residential	1,461		277,590	3,701		703,190
Commercial/Retail w/ 25% MU		285	228,000		294	235,200
Business Park		352	281,600		729	583,200
Industrial		252	201,600		316	252,800
Total	1,461	889		3,701	1,339	
Total			988,790			1,774,390
Camas						
Residential	3,621		687,990	4,890		929,100
Commercial/Retail w/ 25% Mixed Use		136	108,800		188	150,400
Business Park		923	738,400		1,074	859,200
Industrial		115	92,000		115	92,000
Total	3,621	1,174		4,890	1,377	
Total			1,627,190			2,030,700
La Center						
Residential	667		126,730	1,758		334,020
Commercial/Retail w/ 25% Mixed Use		39	31,200		98	78,400
Business Park						
Industrial					372	297,600
Total	667	39		1,758	470	
Total			157,930			710,020

***Table 90**: Public Sewer Demand, Alternatives 1 and 2 (continued)*

Jurisdiction	Dwelling Units	Alternative 1 (acres)	Gallons / Day	Dwelling Units	Alternative 2 (acres)	Gallons / Day
Ridgefield						
Residential	4,100		779,000	8,138		1,546,220
Commercial/Retail w/ 25% Mixed Use		71	56,800		93	74,400
Business Park		745	596,000		823	658,400
Industrial		595	476,000		881	704,800
Total	4,100	1,411		8,138	1,797	
Total			1,907,800			2,983,820
Vancouver						
Residential	30,536		5,801,840	39,913		7,583,470
Commercial/Retail w/ 25% Mixed Use		1,199	959,200		1,252	1,001,600
Business Park		1,656	1,324,800		1,656	1,324,800
Industrial		2,578	2,062,400		3,392	2,713,600
Total	30,536	5,433		39,913	6,300	
Total			10,148,240			12,623,470
Washougal						
Residential	2,667		506,730	3,915		743,850
Commercial/Retail w/ 25% Mixed Use		53	42,400		65	52,000
Business Park					141	112,800
Industrial		134	107,200		314	251,200
Total	2,667	187		3,915	520	
Total			656,330			1,159,850
Yacolt						
Residential	208		39,520	208		39,520
Commercial/Retail w/ 25% Mixed Use		16	12,800		16	12,800
Business Park						
Industrial		10	8,000		10	8,000
Total	208	26			26	
Total			60,320			60,320
UGA TOTAL	43,260	9,159	**15,546,600**	62,315	11,829	**21,342,570**

Source: Calculations based on VBLM Gross Acres, Alternative 1 and 2 Capacity Analysis, Clark County Department of Assessment and GIS, 2005

Table 91. *Public Sewer Demand, Alternative 3*

	Battle Ground				Camas				La Center			
Land Use/Subarea	**B1**		**B2**		**C1**		**C2**		**L1**		**L2**	
		Gallons/ Day		Gallons/ Day		Gallons/ Day		Gallons/ Day		Gallons/ Day		Gallons/ Day
Residential*	59	11,210	326	61,940	738	140,220	305	57,950	272	51,680	845	160,550
Comm./Ret. w/25% Mixed Use**												
Business Park**	21	16,800			543	434,400						
Industrial**									55	44,000	217	173,600
Total		28,010		61,940		574,620		57,950		95,680		334,150

	Ridgefield						Vancouver			
Land Use/Subarea	**R1**		**R2**		**R3**		**V1**		**V2**	
		Gallons/ Day		Gallons/ Day		Gallons/ Day		Gallons/ Day		Gallons/ Day
Residential*	1,479	347,565	39	9,165	579	136,065	2,743	644,605		
Comm./Ret. w/25% Mixed Use**										
Business Park**					96	76,800			702	561,600
Industrial**			46	36,800						
Total		**347,565**		**45,965**		**212,865**		**644,605**		**561,600**

Source: Calculations based on VBLM Gross Acres, Alternative 3 Capacity Analysis, Clark County Department of Assessment and GIS, 2005
Note: Residential dwelling units; **Commercial, Retail, with 25 percent mixed uses, acreage*

Table 91, Public Sewer Demand for Alternative 3 (continued)

	Vancouver									
Land Use/Subarea	**V3**		**V4**		**V5**		**V6**		**V7**	
		Gallons/ Day		Gallons/ Day		Gallons/ Day		Gallons/ Day		Gallons/ Day
Residential*	1,274	242,060	2,713	637,555	511	120,085	685	160,975		
Comm./Ret. w/25% Mixed Use**										
Business Park**										
Industrial**					410	328,000			662	529,600
Total		**242,060**		**637,555**		**448,085**		**160,975**		**529,600**

	Washougal					
Land Use/Subarea	**W1**		**W2**		**W3**	
		Gallons/ Day		Gallons/ Day		Gallons/ Day
Residential*	1,136	266,960	83	19,505		
Comm./Ret. w/25% Mixed Use**	25	20,000				
Business Park**						
Industrial**			25	20,000	21	16,800
Total		**289,960**		**39,505**		**16,800**

Source: Calculations based on VBLM Gross Acres, Alternative 3 Capacity Analysis, Clark County Department of Assessment and GIS, 2005
Note: Residential dwelling units; ** Acreage*

Table 92. *Costs of needed wastewater facilities.*

City	Estimated Cost (in Millions)	Design Year
Clark County	$59.3	2009
Battle Ground	$24.8	2024
Camas	$25.5	2023
La Center	$25.4	2024
Washougal		
Ridgefield	$58.1	2025
Vancouver	$72.6	2023

Sources: Clark County 20 Year Comprehensive Growth Management Plan 2004-2024; City of Battle Ground, Comprehensive Plan, 2004-2024; City of Camas Comprehensive Plan, March 2004; City of La Center Draft Environmental Impact Statement, La Center Comprehensive Plan Amendment, May 2006; City of Ridgefield Comprehensive Plan, August 2005; City of Vancouver Comprehensive Plan 2003-2023.

Note: Clark County estimate is for 2003-2009.

a. Alternative 1

Alternative 1 would not expand the UGAs, which means that most of the growth would be in the Vancouver UGA. It would not require planning and construction of sewer collection facilities beyond the area already covered in sewer provider plans. Some sewer mains might have to be replaced over the twenty-year life of this alternative to support higher intensity use and new lines would be needed in Battle Ground and around Washington State University Vancouver. The City of Vancouver operates three treatment facilities, one of which is for industrial wastewater. As of 2005 these facilities operated at the following capacities: Westside facility, 43.6%; Marine Park, 57.6%; and Industrial, 37.5%. Treatment plant capacity is expected to be expanded to accommodate projected growth with planned improvements for Vancouver, and expansions may be needed for other cities as well.

b. Alternative 2

Alternative 2 would expand the UGAs. The primary location of demand is west central Clark County which includes Hazel Dell, Battle Ground, Ridgefield and La Center. A majority of this demand falls on the Salmon Creek Wastewater Treatment Plant. Additional growth would require constructing new pump stations along the I-5 corridor. This area would also have high costs to serve with sewer, because of Whipple Creek's terrain there is a need for multiple pump stations that restrict ability to serve large areas by gravity service. Expansion of Ridgefield's urban growth boundary, which is larger than proposed under Alternative 2 or 3 as indicated in their Comprehensive Plan, would require constructing approximately 41,500 additional linear feet of force mains, 136,050 linear feet of trunk lines, and 13 new pump stations. They have identified 4 phases to complete this work at a cost of $58.1 million that would likely be financed by system development charges and developer funded improvements. The Ridgefield plant is operating at near full capacity and would need expanding to accommodate growth. La Center's plant is operating at 55% capacity and can accommodate future growth.

A secondary location of demand is Camas and Washougal. As previously mentioned, Camas' treatment plant is operating at 53% (2005), and it can accommodate identified growth. Washougal is currently updating is Sanitary Sewer Capital Facility Plan to hold future growth.

c. Alternative 3

Alternative 3 provides an area that can be used to adjust the boundaries in Alternative 2, but should not be considered an alternative that would add significant acreage to what would become the preferred alternative. The acreage of the preferred alternative is expected to be approximately the acreage in Alternative 2. Sewer services are constrained by geography, and impacted by population and job growth. Therefore, the impact on sewer facilities would depend on the size of the various urban growth

boundaries. Each of the Cities would experience more growth than anticipated in the 2004 Comprehensive Plan due to the increased population and job projections.

Topographies for the Alternative subareas are shown in Table 93. Subareas that are in hilly locations may require STEP systems and force mains which can be expensive to build. Maintenance costs on STEP systems could be more expensive for residents compared to traditional gravity service.

Table 93. *General Alternative 3 Subarea Topography*

Elevation Gain[1]	Elevation Loss[1]	Elevation Gain and Loss[1]	Relatively Flat[1]
L2, V7	B1, B2, C1, C2, L1, R3, V3, V4, V5, W1	R1, R2 (industrial), V1, V2, W2	R2 (residential), V6, W3

Source: Alternative #3 Topography Jurisdiction Subareas, Contour Interval: 20 ft.. Clark County Department of Assessment and GIS, February 9, 2006

[1]In relation to the nearest treatment facility

3. Mitigation Measures

Sewer service must be included in concurrency management programs under the GMA, and policies for providing sewer service concurrent with new development within UGAs are established in all of the comprehensive plans. Additional mitigation measures that would reduce the impacts of growth on sanitary sewer services are also highlighted.

a. Plans and Ordinances

Clark County: Goal 6.1 is to ensure that necessary and adequate capital facilities and services are provided to all development in the county consistent with the comprehensive plan. General policies under that goal establish the county's role as coordinator and provider of regional facilities, including assisting in siting essential public facilities. Goal 6.3 is to provide sewer service within UGAs efficiently at least public cost. Policies under that goal call for new development in the UGAs to be served by connection to a public sewer system. Several policies regard septic systems and planned-for conversions to public sewers. Regular inspections of septic systems are required in wellhead protection areas (6.3.4). Policy 6.3.6 calls for working with Clark County Health Department to implement a mandatory system of inspection and maintenance. Policies also restrict public sewer service to UGAs, except for parks, and to expand treatment facilities to meet current and future demands within UGAs (6.3.7 to 6.3.9).

In January 2007, the City of Vancouver and Clark Regional Wastewater District (CRWWD) approved an Interlocal agreement between the sewer districts for a Merger Transition Feasibility Study. This study will evaluate the option of a potential transitional transfer of the District's wastewater collection operations and service area to the City within a mutually agreed upon timeframe.

Battle Ground: To ensure growth occurs first in developed areas, Battle Ground had developed a plan goal and objective that directs capital facility planning and programming policy as indicated in their 2004-2024 Comprehensive Plan, and a General Sewer Plan. The capital facilities goal is concurrent provision of capital facilities, and the objective is Battle Ground would require provision of capital facilities concurrently with development. In addition to the Capital facilities goal and objective, the City of Battle Ground General Sewer Plan, May 2004 address general planning criteria. Currently, and through the near future, all or a significant portion of Battle Ground wastewater will be discharged to the Clark County Salmon Creek Interceptor system discharging to Clark County's Salmon Creek Wastewater Treatment Plant (SCTP) for treatment and disposal. Battle Ground has committed to participate in the expense of the current Phase 4 SCTP expansion and capacity upgrades to the Salmon Creek Interceptor system.

Camas: Camas has policies for water and sanitary sewer in its 2004 comprehensive plan. They include working with eliminate private systems, encouraging connecting to public systems, and prohibiting

construction of new private wells and subsurface sewage disposal systems. Plans for providing services will be coordinated with plans for designation of UGAs, rural uses, and for the transition from rural to urban uses. Services are to be planned to maximize efficiency and cost effectiveness and ensure concurrency. Public sanitary service will be permitted only in urban areas.

La Center: To accommodate La Center's 2023 projected population growth of 3,500, the Capital Facilities Plan (updated in December 22, 2004), reflects the acquisition of the collection and treatment facilities from CPU, and identifies facility needs and financing mechanisms for anticipated expansion of service to serve projected needs.

Ridgefield: The City of Ridgefield has a Comprehensive Plan, August 2005 that contains sewer policies, and a general sewer plan. Their policies cover the following topics: provide sewer service, sewer service area, responsibility for system, private systems, new construction, efficiency, and protect groundwater. The sewer plan contains a capital improvement plan that identifies available funding for future collection system and wastewater treatment plant improvements.

Vancouver: According to Vancouver's Comprehensive Plan, 2003-2023 a Septic Tank Elimination Program (STEP) and Sewer Connection Incentive Program (SCIP) have been developed to protect water resources from failing systems and to help homeowners eliminate unreliable septic systems. The plan also identifies planned sewer improvements through 2023 that include categories such as roadway coordination, collection system, pump station program, relief sewer program, and a substandard main program.

In January 2007, the City of Vancouver and Clark Regional Wastewater District (CRWWD) approved an Interlocal agreement between the sewer districts for a Merger Transition Feasibility Study. This study will evaluate the option of a potential transitional transfer of the District's wastewater collection operations and service area to the City within a mutually agreed upon timeframe.

Generally, sewer is considered a necessary public service and the city ensures that sewer facilities are in place prior to occupancy of development. Level of service standards and locational standards are to be used on local land use designations and nationally-recognized standards.

Washougal: The 1994 comprehensive plan has a section for capital facilities and services. Section 1 includes purpose, goals, and policies. Policy 2-E under Urban Design Strategy states that the City will provide adequate public services and facilities to support desired development in an efficient manner.

b. Additional Mitigation

Additional mitigation could include:

1. Plan for and develop adequate sewage treatment capacity prior to need.
2. Adopt a program of regular sewer line inspection and maintenance.
3. Adopt water conservation measures to reduce the volume of sewage generated.

J. Electrical system

1. Setting

Electricity is provided to all Clark County jurisdictions by CPU, a consumer-owned public utility founded in 1938 that both generates and buys electricity. About half of the power supplied to CPU customers is generated at the River Road Generating Plant. Built in 1997, this is a combined-cycle, gas-powered plant producing 250 megawatts per year. The plant is operated by General Electric for CPU. The remainder of the power provided to customers is purchased from Bonneville Power Administration (BPA), other producers (for example, PacifiCorp), and co-generators such as the Great Western Malting Company. Hydropower supplies the majority of purchased electrical energy used in the county.

CPU has a significant investment in electrical transmission and distribution facilities throughout Clark County to serve its more than 157,000 customers, including 48 substations and more than 3,500 miles of power lines. Most of these lines are 65 and 115 kilovolt (kV) lines, and most of CPU's facilities are located in urban areas. CPU has three electric utility centers:

- the Electric Center in downtown Vancouver
- the Ed Fisher Customer Service and Operations Center on 117th in Orchards
- the Camas Customer Service and Operations Center

In addition, BPA has a major substation and the control center for the western power grid located in Vancouver. This substation has 65, 115, 230 and 345 kV lines feeding in and out of it. Major electricity users (such as aluminum processing plants) can buy electricity wholesale directly from BPA.

2. Impacts on the Electrical System

Electrical service is entirely a "pay as you go" service. Electrical system upgrades are paid for by new development directly (in the form of system connection fees) and by utility rates paid by CPU customers. Rates are adjusted to reflect changing costs of purchasing or generating power. CPU has adjusted rates four times in the past 18 years, three times since 1999 as prices to produce and buy electricity have risen significantly. CPU has instituted an aggressive energy conservation policy and provides incentives to customers to encourage their participation in conservation efforts.

For this reason, CPU expects to be able to expand the electrical system to serve development, no matter which alternative is selected. Likewise, availability of electricity is not expected to be a limiting factor for new development. (However, industries with special power needs – either total amount or reliability – may prefer to locate near existing substations or in areas where the power grid is more fully developed.)

3. Mitigation Measures

Suggested mitigation for energy conservation is discussed under the Energy and Natural Resources section.

X. Unavoidable adverse impacts and irretrievable commitment of resources

RCW 43.21C.030(2)(c)(I) requires local governments to include a discussion of any adverse environmental effects that cannot be avoided should a proposal be implemented, the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity; and any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented. The following discussion summarizes unavoidable adverse impacts and whether they are expected to be significant. Irreversible and irretrievable commitments of resources are discussed where applicable. At the end of this section is a brief discussion of the trade-offs between short-term and long-term environmental costs and benefits to productivity.

Soils

Health department regulations govern construction of septic systems and require specific engineering geared to soil types so public health and environmental impacts are generally avoided or mitigated at the construction stage. Consequently, the issue of soils not supporting septic systems is less of an issue than conversion of resource lands and soils that offer only weak support for foundations. Conversion of prime agricultural land to urban uses under all alternatives except Alternative 1 is an unavoidable impact; however, it is discussed more under Resource Lands.

Geology & Topography

In areas susceptible to landslides, activities such as septic system construction, the watering of lawns, and the redirection of stormwater runoff as a result of development could lead to the saturation of otherwise stable soils and may cause the loss of internal slope stability, resulting in landslides. These could be significant impacts. Clark County and the cities have adopted ordinances to require geotechnical studies prior to development in areas where slopes exceed 15% and restrict development in areas of unstable slopes.

Nothing can be done to control the magnitude or location of earthquakes. However, local jurisdictions can control the type of development that occurs in areas where earthquake damage is likely to be severe (unconsolidated fill and soils subject to liquefaction, for example). Development that is not designed to withstand the seismic event projected for the region can result in unavoidable impacts to the environment. For example, in urbanized areas, the greatest earthquake-related damage is often caused by secondary events, such as fires that result from ruptured natural gas lines or flooding caused by ruptured water lines or storage tanks, or spills of hazardous materials from damaged containers. This can be considered a significant adverse impact. However, no new fuel lines are proposed with this EIS and new development would be required to meet building code standards for seismic safety. The greatest risk is from older buildings that do not meet current seismic safety codes. Sanitary sewer line ruptures could create significant adverse impacts on surface water quality.

Climate

The amount of land that is urbanized, the extent to which resource, rural, and open space areas are preserved, and the efficiency of the transportation system reflected in the number of vehicle miles traveled have the potential to make an incremental contribution to climate change on a larger scale over a longer period of time. In this respect, compact development patterns tend to use fewer nonrenewable energy sources like fossil fuels, are less likely to increase emissions from small-engine non-mobile sources, mobile sources, and more likely to support travel by alternative modes that are more fuel efficient, like transit, bicycling, and walking. It is likely that any growth in consumption and emissions is likely to result in unavoidable impacts on climate, although the relationships between the many variables that affect climate change are so complex that the degree of change cannot be estimated.

Air Quality

Regulatory controls on point sources and mobile emissions have improved air quality in the last decades. The fastest growing source of pollution is expected to be non-road mobile sources such as gas-powered lawn mowers, tractors, leaf blowers, etc. Because those sources are currently unregulated, development patterns that result in an increase in use of non-road mobile sources (that is, sprawling rural and suburban development) could increase adverse impacts on air quality. It is unlikely that growth in the short-term would produce significant impacts. Beyond the short-term the potential significance is unknown.

Surface Waters

Most of the problems that lead to listing a stream as water quality limited are due to human activity or development in the drainage area of the stream. Regulations affect immediate and project-specific impacts from accelerated runoff and erosion, loading of chemical and organic contaminants into surface waters, increased flood peaks, and decreased groundwater recharge. Regulations in Clark County do not require mitigation of impacts on a drainage basin scale. Therefore, cumulative changes to the hydrology of streams or other surface waters as a result of development can be an unavoidable impact.

Increased impervious area decreases stormwater infiltration and thus the amount of cold groundwater-feeding streams, which is a cumulative and unavoidable impact. These changes inevitably occur as a result of the creation of impervious surfaces and removal of canopy cover on a site-by-site basis. Rural activities

also have the potential to impact surface waters cumulatively. Fecal coliform bacteria come from malfunctioning septic systems and animal waste from wild and domestic animals.

Not all ordinances designed to protect surface waters have been updated recently. The County's Shoreline Management Master Program has not been effectively updated since it was adopted in 1974. State legislation requires an update by 2011. Vancouver's updated Shoreline Management Master Program is currently being reviewed by the Washington State Department of Ecology. The County and most of the cities updated their Critical Areas Ordinances to adopt the Best Available Science requirements of the GMA. While mitigation is expected to be the most effective following adoption of the BAS, not all impacts from urbanization can realistically be eliminated. Compact urban development that emphasizes infill, redevelopment and reuse of existing urban land is the best way to mitigate or avoid these impacts.

While Vancouver has an inspection system in place to monitor the functioning of septic systems and help replace damaged ones or connect the property to public sewer, failures continue to occur and there are insufficient county-wide programs to inspect and monitor the safe functioning of septic systems. Often a weak link in the regulatory system is enforcement. These ordinances rely on residents and property owners to ensure that their septic systems are functioning properly. Unavoidable adverse impacts can occur from violations of the ordinances. Penalties may be not be large enough to protect against willful violations.

Groundwater

Clark County's nearly exclusive source of drinking water comes from underground aquifers. Protection of groundwater depends on comprehensive plan policies and local ordinances that place a priority on protecting groundwater quality from contamination and that require on-site infiltration to recharge aquifers. The cities and the County updated their CAOs to comply with the GMA requirement for using Best Available Science. While groundwater quality is likely more protected under the revised ordinances, more development increases the risk of impacts on groundwater. Unavoidable impacts include more impervious surfaces in critical recharge areas and greater risk of contamination from new industrial and commercial development in areas that currently are rural. If the alternatives cannot accommodate projected urban growth, more rural areas may develop and install septic systems. More rural residential development increases the eventual risk septic system failures that can contaminate private well water and public water sources.

Fish, Wildlife, and Migratory Species Habitat

Requirements for protecting critical habitats are found in the GMA, ESA, and the SMA. All Clark County jurisdictions have implemented requirements to protect critical areas, which include fish and wildlife habitat. There is little mitigation available, however, for the incremental loss of fish and wildlife habitat within larger watersheds. Native plants and animals are displaced by development. As with the potential unavoidable impacts on surface and ground water, mitigation based on Best Available Science is likely more effective at mitigating or avoiding impacts, but not all impacts from urbanization can realistically be eliminated.

Threatened & Endangered Species

Species listed as threatened and endangered under the federal Endangered Species Act or as threatened, endangered or sensitive species by the State of Washington are protected under the CAOs of each jurisdiction. Best Available Science implementation across the county should aid in the mapping and protection of critical fish and wildlife habitat. However, protecting habitat and STE species from new development does not restore habitat lost to previous development or reduce the unavoidable conversion of native vegetation to urban use that occurs with development.

Wetlands

All alternatives except Alternative 1 propose inclusion of additional wetlands within expansion areas. The filling of wetlands is regulated at the federal and local levels. Unavoidable adverse impacts on wetlands occur if mitigation proposed to offset the loss of wetland area and function does not produce the intended results. Therefore, unavoidable adverse impacts have the potential to occur both with conversion of rural land to urban uses, inclusion of wetlands in UGAs and with potential lapses in long-term monitoring and enforcement to ensure compliance with the permit conditions.

Energy

Any population growth (assumed under all alternatives) results in some increased energy consumption. Creation of electrical energy from hydropower, the main source for Clark County, has unavoidable adverse impacts on fish populations and other surface-water dependent wildlife. Any consumption of fossil fuels negatively affects air quality to some extent and results in the irretrievable conversion of that resource. Conservation measures help mitigate the impacts, but cannot prevent impacts altogether, particularly since promoting conservation is largely a voluntary task by local jurisdictions. The less compact the land use pattern, the greater the potential impact. Although the impact of incremental development to accommodate growth is not considered to be a significant impact, the cumulative impact of continued growth and consumption of nonrenewable fossil fuels could be significant on a statewide, national or global level.

Scenic Resources

Development tends to adversely affect the scenic values that most citizens associate with undeveloped natural areas and rural landscapes, unless it is well designed. Scenic resources have not been recognized as a critical or sensitive resource that should be inventoried and protected, except in designated scenic areas, like the Columbia River Gorge National Scenic Area. Unavoidable adverse impacts to views are more likely to occur from conversion to urban uses. Without programs to inventory the views from major public routes, public facilities, and viewpoints, those views are more susceptible to being lost. Once development blocks or impairs views, they are difficult to restore without displacement and often are permanently lost. Since there is no inventory of significant views, it is not possible to determine whether they would be affected.

Noise

Noise impacts would occur with development and growth. State and federal regulations only limit noise above certain levels from specific sources. They do not regulate the cumulative impacts of noise as it increases with urban activities. Few jurisdictions have development standards designed to limit noise, except in the case of airports and amphitheaters. Some require additional insulation in areas impacted by noise from Portland International Airport. Regulations that involve limitations on the actions or households or businesses instead of buffering are difficult to enforce because noise leaves no imprint once it ceases. Some noise impacts would unavoidably occur with growth, primarily from increased traffic and additional industrial and more intense mixed uses. These are not considered to be significant impacts.

Land Use, Rural and Resource Lands

With any expansion of UGAs, there would be conversion of rural land to urban uses. This can be considered to be an irreversible commitment of some rural resources to urban uses. There would be conversion of agricultural and forest resource lands. Prevention of unnecessary conversion of agricultural land to urban uses is a goal of the GMA. Loss of prime agricultural soils to urban development would occur with Alternative 2. This is considered an unavoidable impact; the only mitigation would be no expansion onto land with prime agricultural soils. This is also an irretrievable commitment of resources to urban uses.

When UGAs are expanded unnecessarily (i.e., there is significant excess capacity or vacant land), leap-frog type development can result, increasing the costs to provide urban services to those areas. Expansive UGAs also undermine current redevelopment efforts by cities within their existing boundaries, resulting in impacts to public finances as well as land use impacts.

Economy

Policies of no net loss of industrial land protect the conversion of industrial land to other non-industrial uses. No industrial lands are proposed to be rezoned to other non-industrial uses. An overabundance of residential land to land zoned for employment tends to strain financial resources of the service providers. To the extent that one growth pattern uses resources less efficiently than another and increased revenue is not an option, those resources must be funded at the expense of other services or programs. This is not considered a significant impact providing the economy stays at current growth rates or better.

Historic and Cultural Resources

Alternative 2 and Alternative 3 subareas would include land identified as having a high probability for archaeological resources. Local, state and federal regulations protect cultural resources from disturbance; however, the likelihood of encountering such resources increases with addition of undeveloped areas to urban uses. Many programs to protect historic resources exempt individual property owners or allow voluntary registration. Regulations cannot protect against deliberate violations that result in disturbance of historic or cultural resources, although they penalize the perpetrator.

Transportation

The major unavoidable adverse impact of growth in the region would be increased congestion unless additional capacity is provided. Additional capacity could be provided by transit as well as road improvements.

Fire and Police Protection Services

Inevitably population and employment growth would result in increased demand for EMS and fire protection. Unavoidable adverse impacts are related to the expenditure of resources to serve that growth. To the extent that one growth pattern uses resources less efficiently than another and increased revenue is not an option, those resources must be funded at the expense of other services or programs. This is not considered a significant impact providing the economy stays at current growth rates or better.

Schools

If revenue-generating uses are not distributed equitably among the school districts, school districts with a smaller tax base can experience unavoidable adverse funding impacts from having to serve their enrollments with less revenue.

Parks and Recreation

Current deficits in acreages of developed urban parks and of regional parks would continue under all alternatives due to population growth and funding constraints.

Libraries

If the proposed expansion of library space does not occur as planned, the level of service would drop and adversely affect the quantity of materials, and quality of library services on a per capita basis. This would occur no matter how the region grows.

General Government Facilities

None.

Solid Waste

None.

Sanitary Sewer

Inevitably population and employment growth would result in increased generation of waste water. Unavoidable adverse impacts are related to the expenditure of resources to serve that growth. However, Clark Regional Wastewater District sizes their sewer pipes conservatively. The sewer pipes are large enough for all the property to develop in their district. To accommodate additional growth they will install larger trunk lines or their collection lines will be adequately sized based on their review and zoning. Therefore, it will not have additional impacts. This is not considered a significant impact providing the economy stays at current growth rates or better and development continues to pay a fair portion of the costs.

Public Water System

Growth of population and employment would create additional demands on the public water supply. Finding reliable sources for public wells that produce consistently has been difficult. If growth continues and the water supply becomes constrained by a lack of new sources, the regulatory environment, or diminishing water quality, water shortages may occur. In addition, the growth pattern would affect the costs of providing water to all residents and businesses in the UGAs. Options that emphasize industrial growth can result in an irretrievable commitment of water resources which can be a heavier consumer of water than residential uses, by acre. To the extent that one growth pattern uses resources less efficiently than another and increased revenues are not an option, those resources must be funded at the expense of other services or programs. This is not considered a significant impact providing the economy stays at current growth rates or better and development continues to pay a fair portion of the costs.

Electricity

Growth of population and employment would create additional demands on the supply of electricity. Options that emphasize industrial growth can result in an irretrievable commitment of energy resources (whether from gas-fueled turbines or hydropower), which is a heavier consumer of electricity than other types of uses. To the extent that industry uses energy from fossil fuels, this represents an irretrievable use of a non-renewable resource. This is not considered a significant impact providing the economy stays at current growth rates or better and development continues to pay a fair portion of the costs.

Short-term Uses of the Environment and Long-Term Productivity

SEPA requires a discussion of short-term environmental gains and long-term gains and the extent to which the proposed action forecloses future options. Proposed UGA expansions result in the long-term commitment of rural areas to future urban uses. It is so extremely unlikely that those areas would ever revert back to rural uses, that they would be considered permanently converted and that some resources within them (such as agricultural or cultural resources) may be irretrievably lost. UGA expansion forecloses future rural use or open space (unless zoned for open space). The anticipated gain is the ability to house and employ residents in the county and its cities.

XI. Conformance with the Growth Management Act

A. Setting

The GMA establishes the overall framework for planning activities in Washington State. Central to the planning process established by the GMA is the preparation and adoption by local jurisdictions of comprehensive plans, which reflect a community's existing conditions as well as a vision for its future growth and development.

Comprehensive plans must include the following mandatory elements: land use, housing, transportation, capital facilities, utilities, and, for counties, rural lands. In addition, jurisdictions must designate natural resource lands—forest, farm, and mineral lands—and critical areas—wetlands, aquifer recharge areas, geologically hazardous areas, frequently flooded areas, and fish and wildlife conservation areas. The designation of natural resource lands and critical areas is the primary mandate of the GMA.

This section looks at how the comprehensive plans of Clark County and its cities conform to the requirements of the GMA. It also looks at the conformance of these plans with the requirements of the County-wide Planning Policies, which serve as the framework for the policies in the county's and cities' comprehensive plans. Consistency with the procedural criteria established by the Department of Community Development (DCD) is also evaluated. Together these requirements are meant to ensure consistency among the plans of the region and that the plans would be implemented as envisioned.

Finally, this section addresses concurrency, fiscal impacts, and annexation and incorporation issues that are associated with the different alternatives under consideration. There are important policy implications arising from the transportation improvements needed to mitigate the impacts of each alternative. Consequently, a separate analysis of each alternative's consistency with transportation policies is also included.

B. Conformance with the GMA Requirements and Countywide Planning Policies

Tables 94 through 109 identify those sections of the comprehensive plans of Clark County and its cities that address the requirements of the GMA and CWPPs. Generally, the County and each City has addressed these requirements in their comprehensive plans, in some cases through specific programs and in other cases through more general policy statements.

Table 94. *Conformance with Land Use Element Requirements of the GMA*

GMA Requirement	Battle Ground	Camas	La Center	Ridgefield	Vancouver	Washougal	Yacolt	Clark County
Land use designations?								
Agriculture	N/A	N/A	N/A	N/A	N/A	N/A	N/A	RRL:p 3-7
Timber Production	N/A	N/A	N/A	N/A	N/A	N/A	N/A	RRL: p 3-6
Housing	Figure 3-1	CP IV-2	Figure 1	Figure 2-1/p. 2-4, Figure 2-2/p. 2-5	p 1-9; Map 1-2	4.4, 4.5, 4.6, 4.8 & 6 (2/03 CP)	CP p. 33-35	H
Commerce	Figure 3-1	CP IV-2	Figure 1	Figure 2-1/p. 2-4, Figure 2-2/p. 2-5	p 1-9; Map 1-2	4.4.3, 4.9 (2/03 CP)	CP p. 12 & 27	Pg 1-2, 1-9
Industry	Figure 3-1	CP IV-2	Figure 1	Figure 2-1/p. 2-4, Figure 2-2/p. 2-5	p 1-9; Map 1-2	4.4.4 & 4.10 (2/03 CP)	CP p. 13 & 27	RRL: p 3-4
Recreation	Figure 3-1	CP IV-2	Figure 1	Figure 2-1/p. 2-4, Figure 2-2/p. 2-5	p 1-9; Map 1-2	4.4.6 (2/03 CP)	CP p. 13 & 28	RRL p 3-13
Open Space	Figure 3-1	CP IV-2	Figure 1	Figure 2-1/p. 2-4, Figure 2-2/p. 2-5	p 1-9; Map 1-2	4.4.6 & 4.12 (2/03 CP)	CP p. 15 & 28	RRL p 3-13
Open Space Corridors	Figure 3-1	CP IV-2	N/A	Figure 2-1/p. 2-4, Figure 2-2/p. 2-5	p 1-9; Map 1-2	4.4.6 (2/03 CP) ; Park & Rec CFP adopted 2006	CP p. 15 & 28	P
Public Utilities	Figure 3-1		Figure 1	Figure 2-1/p. 2-4, Figure 2-2/p. 2-5	p 1-9; Map 1-2	8.3 (2/03 CP)	CP p. 16 & 28	RRL: p 3-13
Public Facilities	Figure 3-1	CP IV-2	Figure 1	Figure 2-1/p. 2-4, Figure 2-2/p. 2-5	p 1-9; Map 1-2	8.1 (2/03 CP)	CP p. 16	CF pg 6-1
Other	Figure 3-1		Figure 1	Figure 2-1/p. 2-4, Figure 2-2/p. 2-5			N/A	
Land use map showing all?	Figure 3-1	CP Apx F-7	Figure 1	Figure 2-1/p. 2-4, Figure 2-2/p. 2-5	Figure 1-2	In Progress	CP Appendices	Figure 22-A
Lands useful for public purposes identified (utility corridors, transportation corridors, etc.)?	Chapters 8, 9, 10, 11	CP Apx F Figures 9-17	Figures 9, 10, & 11	Figure 7-1/p. 7-5, Figure 7-2/p. 7-9, Figure 8-1/p. 8-3, Figure 8-2/p.8-4, Figure 8-3/p. 8-5	Figure 1-2	T CFP 1.3 (updated 2/05)	CP Appendices	CF:p.6-20
Population densities?	Chapter 3, p. 32	CP Appndx C page 5	p.6	H, 5.3/p. 5-3	p 1-5	4.2 (2/03 CP)	CP p. 19-20	LU:p.1-5
Building intensities?	In progress	CP Appndx C page 5	p.6	H, 5.3/p. 5-3	p. 1-5 to 9	4.2 & 4.3 (2/03 CP)	CP p. 19-20	H

GMA Requirement	Battle Ground	Camas	La Center	Ridgefield	Vancouver	Washougal	Yacolt	Clark County
Population & employment forecasts?		CP Apx C p. 5	p.2	H, Table 5.1/p.5-1, ED, 4.2.1/p. 4-2	p. 1-6	3.3.5 & 4.3 (2/03 CP)	CP p. 19-22	LU: p 1-3
Consistent with regional?	Table 3-6		p.4	CP, 1.3/p. 1-2		4.3 (2/03 CP)	CP p. 20	RRL: 1-2
Groundwater protection?	6.2.5	CMC 16 CP III-7	Pol. 10.1.2(b), 10.1.7, and 10.6.1	CP, 6.3/p. 6-4	p. 4-5	2.1.2.2, 4.13 (2/03 CP); CAO 1/17/06	CP p. 52-56	
Flood hazard areas identified?	6.4.2	CMC 16 CP III-7	Figure 5	CAO adopted 04/27/06	p. 4-5	CAO adopted 1/17/06	CP p. 52, 53 Appendices CAO 440	RRL p 3-13 Figure 5B
Surface water quality protection?	10.6.3	CMC 18.31 CP III-6 CP VI-4	Figures 6 & 8	CP, 6.1.3/p.6-2, EN-7/p.6-5s	p. 4-10	2.1.2.1 & CAO adopted 1/17/06	CP p. 52, 53 Appendices CAO 440	RRL p 4-9
Urban Holding –Phasing Development								In progress
Vacant buildable land inventory?	Table 3.3	CP III-8	Volume 3	Tech. Supt.	p. 1-6	Ex. A, 2/2003 CP Update	CP p. 20	LU: pg 1-3
Implementation strategy?	Plan Doc	CP Apx A	p. 25	CP, 10/p. 10-1 to 10-2	p. 1-9	2 (2/03 CP)	CP p. 26-30 Appendices	RRL: p 4-18
Consistency: internal, external, interjurisdictional?	Plan Doc	CP Apx A	Pol. P.4.1	CP, 10/p. 10-1 to 10-2	p. ix	3.4 (2/03 CP)	CP p. 26-30	CWPP 1.1
Consistency with Relevant CWPPs	Plan Doc	CP Apx A	Pol. 8.3.6; p. 31	CP, 10/p. 10-1 to 10-2	p. ix	3.4 (2/03 CP)	CP pp. 3-11	CWPP 1.1

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BGMC: Battle Ground Municipal Code, CAO: Critical Areas Ordinance, CMC: Camas Municipal Code, Res. Doc.: Resource Document, Tech. Supt.: Technical Support, VMC: Vancouver Municipal Code

Table 95. *Conformance with Land Use Element Requirements of the Countywide Planning Policies*

Requirement	Battle Ground	Camas	La Center	Ridgefield	Vancouver	Washougal	Yacolt	Clark County
Urban Growth Areas								
Consistent with County?	iii:A:2:d	CP IV-2	Vol. 3	CP, 1.3/p.1-2		3.4, 3.5 (2/03 CP)	CP Appendicies	LU: p1-7
Consistent w/ CWPPs?	In progress	CP IV-2	p. 31	CP, 1.3/p.1-2	p. ix	3.4, 3.5 (2/03 CP)	CP p. 3-11	CWPP 1.1
Phasing of development								In progress
Consistent with adjacent cities?	N/A	NA	N/A	N/A	p. ix	3.4, 3.5 (2/03 CP)	N/A	CWPP 1.1 (-d)
Accommodate expected growth?	iv:C:3	CP IV-2	Vol. 3	LU, 2.2.2/p. 2-3	p. 1-5	3.3.5 (2/03 CP)	CP p. 20 & 25	LU:p 1-2
Balance business & housing?	iii:C:1:b	CP IV-2	Vol. 3	LU, 2.2.1/p 2-2 to 2-3	p. 1-5	3.5 & 7.2 (2/03 CP)	CP p. 25-27	LU:p p 1-5
No resource lands?	N/A		N/A	N/A	plan map	2.2 (2/03 CP)	N/A	
Changes to UGAs with reasons?	In progress	NA	N/A	N/A		3.3.5 & 4.1 (2/03 CP)	N/A	CWPP 1.1 f (3)
Provide for Accessory Units? (20,000+ pop.)	In progress	CMC	N/A	RMC 18.210.130.B	Adopted ADU stds	In progress	CP p. 34	H: p2-20
Population densities?	iv:C:3	CP IV-2	p. 6	CP, 1.3/p.1-2	Tech. Supt.	3.3 (2/03 CP)	CP p. 19	
Building intensities?	iv:C:3	CP IV-2	p. 6	CP, 1.3/p.1-2	Appendix C		CP p. 19 & 20	LU:p.1-11, 1-12
Population & employment forecasts?	iv:C:3	CP VI-2	iv:p.11	CFP pp. 6, 47, 68, 83, & 86	Appendix C	3.3, 4.2.2.5 & 7 (2/03 CP)	CP p. 21	LU:p 1-2
Urban levels of service?	In progress	CP X	In progress		In progress		N/A	CF, T5-21
Consistent with special districts?	In progress	CP X	vi:CF	CP, 1.3/p. 1-2, 1.4/p. 1-3	p. 7-5; IM 11	3.4.3 (2/03 CP)	N/A	N/A
Consistent with County?	In progress	CP	vi:D	CP, 1.3/p. 1-2,	p. 7-5, IM 7	3.4.3 (2/03 CP)	N/A	N/A
Hierarchy of centers?	iv:11		N/A	N/A	p. 1-7	Downtown plan (2/03 CP); Towne Center code	N/A	CFP p3
Criteria for annexation?	iii:C:2		p. 22	CP, 10.3/p. 10-1 to 10-2	p. 6-3 to 6-5	Amended 2005	CP p. 70-72 Annexation Manual	Annexation Element
Urban reserve areas & policies?	In progress	NA	Fig. 1	CP, 1.3/p. 1-2	p. 7-5	Section 1.1 (2/03 CP)	N/A	In progress
Consistent with county?	iii:B	NA	Yes	CP, 1.3/p. 1-2	N/A	Section 1.4 (2/03 CP)	N/A	In progress
Change in policy (No-net-loss)				CP, 1.3/p. 1-2				In progress

Requirement	Battle Ground	Camas	La Center	Ridgefield	Vancouver	Washougal	Yacolt	Clark County
Demonstrated need?	iii:B	NA	Vol. 3	CP, 1.3/p. 1-2	N/A		N/A	In progress
Vacant buildable land inventory?	iv:G	CP III-8	Vol. 3	Tech. Supt.	p. 1-5	Tech Supt.	CP p. 25	LU: pg 1-18
Goals & Policies of Shoreline MP?	N/A	CP VI-7 CP VI-11	p. 29	CP, 1.3/p.1-2	p. 4-6; Apendix B	SMP/CP P.ii2	N/A	Environ.Chapter
Implementation strategy?	iii:C	SMP	Vol. 3	CP, 1.3/p.1-2	Chapter 7	iii:E,F	CP p.20	RRL:p 4-19
Consistent w/ CWPPs?	In progress		Pol. 8.3.6, p. 31	CP, 1.3/p.1-2	p. ix	CP	CP p. 26-30 Appendices	CWPP 11.1

(-) Goal or Policy Number, p. page number, Pol: Policy number, LU: Land Use Element, RRL: Rural and Resource Lands Element, H: Housing Element, CF: Capital Facilities Element, (-) Goal (G),Pol: Policy number, p. page number, LU: Land Use Element, RRL: Rural and Resource Lands Element, H: Housing Element, CF: Capital Facilities Element, Pks: PksRecreation, Open Space Element (or P, Plan), T: Transportation Element, CP: Comprehensive Plan
BGMC: Battle Ground Municipal Code, CAO: Critical Areas Ordinance, CMC: Camas Municipal Code, Res. Doc.: Resource Document, Tech. Supt.: Technical Support, VMC: Vancouver Municipal Code

Table 96. *Conformance with Housing Element Requirements of the GMA*

GMA Requirement	Battle Ground	Camas	La Center	Ridgefield	Vancouver	Washougal	Yacolt	Clark County
Housing inventory & analysis?								
Existing	vii:B	CP IV-2	Vol. 3	H, 5.1/p. 5-1 to 5-2	p. 3-3 to 3-7	6 (2/03 CP)	CP p.22 & 33	H pg 2-3
Projected needs	vii:C	CP IV-2	Vol. 3	H, 5.1/p. 5-1 to 5-2	p. 3-3	6 (2/03 CP)	Cp p. 26, 27, 29, 34 & 35	Lu pg 2-11
Goals, policies, objectives?								
Preservation	vii:D:(2)	CP V-1	Pol. 3.1.4	H, 5.3/p. 5-3	p. 3-8	6 (2/03 CP)	CP p. 35& 36	H: pg 2-21, 26
Improvement	vii:D:(2-B)	CP V-1	Pol. 3.1.6 & 3.1.7	H, 5.3/p. 5-3	p. 3-8	6 (2/03 CP)	CP p. 35& 36	H: pg 2-28
New development	vii:D:(1)	CP V-1	Pol. 3.1.1 & 3.1.3	H, 5.3/p. 5-3	p. 3-8	6 (2/03 CP)	CP p. 35& 36	H: pg 2-29
Affordable housing	vii:D:(1)	CP V-5	Po. 3.1.2	H, 5.3/p. 5-3	p. 3-8	6 (2/03 CP)	CP p. 35& 36	H: p 2-22, 24
Sufficient land identified for:	iv:H:(3), Exhibit iv	CP IV-2				6 (2/03 CP)		
Government-assisted?	iv:H:(3),vii:D:(1)	CP IV-2	Vol. 3	H, 5.3/p. 5-3	Appendix C	6 (2/03 CP)	CP p.22 & 33	H: pg 2-14
Low income?	iv:H:(3),vii:D:(1)	CP IV-2	Vol. 3	H, 5.3/p. 5-3	p. 3-3 to 3-8	6 (2/03 CP)	CP p.22 & 33	H: pg 2-7, 27
Middle income?	iv:H:(3),vii:D:(1)	CP IV-2	Vol. 3	H, 5.3/p. 5-3	p. 3-3 to 3-8	6 (2/03 CP)	CP p.22 & 33	H: pg 2-25

GMA Requirement	Battle Ground	Camas	La Center	Ridgefield	Vancouver	Washougal	Yacolt	Clark County
High income?	iv:H:(3),vii:D:(1)	CP IV-2	Vol. 3	H, 5.3/p. 5-3	p. 3-3 to 3-8	6 (2/03 CP)	CP p.22 & 33	H: pg 2-25
Manufactured?	iv:H:(3),vii:D:(1)	CP IV-2	Vol. 3	H, 5.3/p. 5-3	p. 3-3 to 3-8	6 (2/03 CP)	CP p. 22, 33 & 34	H: pg 2-13
Multi-family?	iv:H:(3),vii:D:(1)	CP IV-2	Vol. 3	H, 5.3/p. 5-3	p. 3-3 to 3-8	6 (2/03 CP)	CP p. 22	H: pg 2-12
Group homes/foster care?	iv:H:(3),vii:D:(1)	CP IV-2	Vol. 3	H, 5.3/p. 5-3	p. 3-3 to 3-8	6 (2/03 CP)	CP p. 20, 33 & 34	H: pg 2-10
All economic segments?	iv:G:(3),vii:D:(1)	CP IV-2 CP III-9		H, 5.3/p. 5-3	p. 3-3 to 3-8	6 (2/03 CP)	CP p. 20, 33 & 34	H:, pg 2-6, 2-7
Condition of existing housing?	In progress	CP III-9		H, 5.3/p. 5-3	p. 3-5	6 (2/03 CP)	CP p. 33	H: pg 2-3
Housing assistance needs?	vii:C			H, 5.3/p. 5-3	p. 3.4	6 (2/03 CP)	CP p. 35 & 36	H: pg 2-8
Financing?	vii:C		Vol. 3	H, 5.3/p. 5-3	p. 3-6	6.2 (2/03 CP)	CP p. 35	H: pg 2-12 2-16, 2-24
Implementation strategy?	vii:D:(6)		Vol. 3	H, 5.3/p. 5-3	p. 3-7	6 (2/03 CP)	CP p. 26, 35 & 36	H: pg 2308
Consistency w/ CWPPs?	In progress		Vol. 3	H, 5.3/p. 5-3	p. 3-5 p. 3-3 to 3-8	6 (2/03 CP)	CP p. 6	CWPP 2.1 p2-26

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BGMC: Battle Ground Municipal Code, CAO: Critical Areas Ordinance, CMC: Camas Municipal Code, Res. Doc.: Resource Document, Tech. Supt.: Technical Support, VMC: Vancouver Municipal Code

Table 97. *Conformance with Housing Element Requirements of the Countywide Planning Policies*

Requirement	Battle Ground	Camas	La Center	Ridgefield	Vancouver	Washougal	Yacolt	Clark County
Housing inventory & analysis?								
Existing	vii:B	CP IV-2	Vol. 3	H, 5.3/p. 5-3	p. 3-3 to 3-7	Sect. 3.4, 3.5 (2/03 CP)	CP p. 25p.20-22	H: pg 2-3
Projected needs	vii:C	CP IV-2	Vol. 3	H, 5.3/p. 5-3	p. 3-3	6 (2/03 CP)	CP p. 26 & 27	H: pg 2-8
Sufficient land identified for:	iv:Exhibit IV							
Government-assisted?	vii:D:(1),iv:H:(3)	CP IV-2	Vol. 3	H, 5.3/p. 5-3	p. 3-3 to 3-8	6.2, 6.4, 6.5 (2/03 CP)	CP p. 34	H: pg 2-14
Low income?	vii:D:(1),iv:H:(3)	CP IV-2	Vol. 3	H, 5.3/p. 5-3	p. 3-3 to 3-8	6.2, 6.4, 6.5 (2/03 CP)	CP p. 34	H: pg 2-14
Middle income?	vii:D:(1),iv:H:(3)	CP IV-2	Vol. 3	H, 5.3/p. 5-3	p. 3-3 to 3-8	6.2, 6.4, 6.5 (2/03 CP)	CP p. 34	H: pg 2-14
High income?	vii:D:(1),iv:H:(3)	CP IV-2	Vol. 3	H, 5.3/p. 5-3	p. 3-3 to 3-8	6.2, 6.4, 6.5 (2/03 CP)	CP p. 34	H: pg 2-13
Manufactured?	vii:D:(1),iv:H:(3)	CP IV-2	Vol. 3	H, 5.3/p. 5-3	p. 3-3 to 3-8	6.2, 6.4, 6.5 (2/03 CP)	CP p. 34	H: pg 2-13, 2-23
Multi-family?	vii:D:(1),iv:H:(3)	CP IV-2	Vol. 3	H, 5.3/p. 5-3	p. 3-3 to 3-8	6.2, 6.4, 6.5 (2/03 CP)	CP p. 34	H: pg 2-12

Requirement	Battle Ground	Camas	La Center	Ridgefield	Vancouver	Washougal	Yacolt	Clark County
Group homes/foster care?	vii:D:(1),iv:H:(3)	CP IV-2	Vol. 3	H, 5.3/p. 5-3	p. 3-3 to 3-8	6.4 & 6.5 (2/03 CP)	CP p. 34	H: pg 2-10
Special needs?	vii:D:(1),iv:H:(3)	CP IV-2	Vol. 3	H, 5.3/p. 5-3	p. 3-3 to 3-8	6.2, 6.4, 6.5 (2/03 CP)	CP p. 34	H: pg 2-8
Jobs/housing balance?	vii:D:(1-B),(3)	CP IV-2	Vol. 3	LU, 2.2.1/p. 2-2 to 2-3	p. 1-5	6.5 G 3 and Sec 7 (2/03 CP)	N/A	H: pg 2-4, 2-5
Job site/housing link?	vii:D:(3)	CP V-4	Vol. 3	(LU, Pol. LU-12, p. 2-7	Appendix A	4.11, 6.5 G3 & Sect. 7 (2/03 CP)	N/A	H: pg 2-4, 2-5
Transportation/housing link?	iv:H:(7)	CP V-3 CP VII-2	Vol. 3	LU, Pol. LU-2, p. 2-6, T, Pol. TR-5, p. 8-11 to 8-12, Pol. TR-7, p. 8-12	Appendix A	TCFP Sect. 3; 4.11, 6.5 Goal 1 (2/03 CP)	N/A	H: pg 2-1
Public facilities/housing link?	ix:D:(1)		Vol. 3	CP, PF-1/p. 7-2	Appendix A	Pol. 3-B, Sect. 6.5 Goal 3 (2/03 CP)	CP p. 22 & 27	H: pg 2-1
Flexibility?								
Infill	vii:D:(1)	CP V-4	Vol. 3	H, Pol. HO-7, p. 5-3	p. 1-10	Sect. 6.5 (2/03 CP)	N/A	H: pg 2-20
Reuse/rehabilitation	vii:D:(2)	CP V-5	Vol. 3	H, Pol. HO-7, p. 5-3, CP, Chapter 3, Pol. HP-4, p. 3-2	p. 3-8	Sect. 6.5 (2/03 CP)	CP p. 35	H: pg 2-21
Preservation	vii:D:(2),iv:H:(3-D)	CP V-6	Vol. 3	CP, Chapter 3, Pol. HP-2, p. 3-2	p. 3-8	Sect. 6.5 (2/03 CP)	CP p. 35	H: pg 2-21
Other			Vol. 3					
Maximum & minimum lot sizes?	iv:F	CMC 18	Vol. 3	H, Pol. HO-1, Pol. HO-6/p. 5-3, RMC 18	VMC 20	Sect. 4.4 (2/03 CP)	CP p. 35	
Housing assistance?	vii:C	CP V-6	Vol. 3	H, Pol. HO-3/p. 5-3	p. 3-8	Sect. 6.4 (2/03 CP)	CP p. 34-5	H: pg 2-8
Mitigate impacts of new fees/regs?	vii:D:(1)		Vol. 3	H, Pol. HO-3, Pol. HO-7/p. 5-3	p. 3-8	vii:D:(1)	CP p. 34-35	H: pg 2-13
Financing?	vii:C		Vol. 3	H, Pol. HO-3/p. 5-3	p. 3-8	6.2 (2/03 CP)	CP p. 34 -35	H:pg 2-12,2-14,2-24

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Table 98. *Conformance with Utilities Element Requirements of the GMA*

GMA Requirement	Battle Ground	Camas	La Center	Ridgefield	Vancouver	Washougal	Yacolt	Clark County
Integrated with land use element?		CP IX-1	Vol. 3	H, 5.3/p. 5-3	Chapter 5	8 (2/03 CP), CF		CF: pg 6-1
Location & capacity of existing utilities?								
Electrical	ix:(Exhibit ix)	CP IX-10	Vol. 3	PF, 7.12.1/p. 7-15	p. 5-4	8.2.1 (2/03 CP), CF	CP p. 50	In progress
Telecommunication	ix:C	CP IX-10	Vol. 3	PF, 7.12.3/p. 7-16	p. 5-4	8.2.3 (2/03 CP), CF	N/A	CF: pg 6-9, 6-18
Natural gas	ix:(Exhibit ix)	CP IX-10	Vol. 3	PF, 7.12.2/p. 7-16	p. 5-4	8.2.2 (2/03 CP), CF	CF p. 50	In progress
Other		CP IX-10	Vol. 3					
Future capacity needs?		CP IX-10						
Electrical	ix:C	CP IX-10	Vol. 3	PF, 7.12.1/p. 7-15	p. 5-4	8.3 (2/03 CP), CF	CF p. 50	In progress
Telecommunication	ix:C	CP IX-10	Vol. 3	PF, 7.12.3/p. 7-16	p. 5-4	8.3 (2/03 CP), CF	N/A	In progress
Natural gas	ix:C	CP IX-10	Vol. 3	PF, 7.12.2/p. 7-16	p. 5-4	8.3 (2/03 CP), CF	CF p. 50	In progress
Other		CP IX-10	Vol. 3		p. 5-4		N/A	
Proposed location?		CP IX-10						
1Electrical	ix:C	CP IX-10	Vol. 3	PF, 7.12.1/p. 7-15	p. 5-4	8 (2/03 CP), CF	CF p. 50	In progress
Telecommunication	ix:C	CP IX-10	Vol. 3	PF, 7.12.3/p. 7-16	p. 5-4	8 (2/03 CP), CF	N/A	In progress
Natural gas	ix:C	CP IX-10	Vol. 3	PF, 7.12.2/p. 7-16	p. 5-4	8 (2/03 CP), CF	CF p. 50	In progress
Other		CP IX-10	Vol. 3				N./A	
Essential public facilities evaluation?		CP IX-10	Vol. 3	PF-5/p. 7-3, CP, 7.13/p. 7-17	p. 5-8	x:D & LU	CF. p 61	In progress
Countywide or s tatewide nature?	ix:D:(1)	CP IX-10	Vol. 3	CP, 7.13/p. 7-17	p. 5-8	xD & LU	N/A	CF: pg 6-10
Local criteria for siting utilities?		CP IX-10		CP, 7.13/p. 7-17			CP p. 28-29	In progress
Consistent with land use element	ix:D	CP IX-10	Vol. 3	CP, 7.13/p. 7-17	p. 5-8	xD:(1-B) & LU	CP p. 28	In progress
Public service obligations	ix:D	CP IX-10	Vol. 3	CP, 7.13/p. 7-17	p. 5-8	xD:(2-3) & CP	CP p. 28	In progress
Impact on utility's system	ix:D	CP IX-10	Vol. 3	CP, 7.13/p. 7-17	p. 5-8	xD:(2-3) & CP	CP p. 28	In progress
Design/system uniformity balance	ix:D	CP IX-10	Vol. 3	CP, 7.13/p. 7-17	p. 5-8	xD:(2-3) & CP	CP p. 28	In progress
Policies?		CP IX-10		CP, 7.13/p. 7-17				
Joint transp/utility rights-of-way	ix:D:(3-A)	CP IX-10	Vol. 3	CP, 7.13/p. 7-17	p. 5-6 to 5-8	x:D	CF p. 60-62	In progress
Road maintenance notification	ix:D:(3-A)	CP IX-10	Vol. 3	CP, 7.13/p. 7-17	p. 5-6 to 5-8	x:D	CF p. 60-62	In progress
Utility permit/devel. proposal timing	ix:D:(3)	CP IX-10	Vol. 3	CP, 7.13/p. 7-17	p. 5-6 to 5-8	x:D	CF p. 60-62	In progress
Consistent with regional plans?	ix:D:(1)		Vol. 3	CP, 7.13/p. 7-17	p. 5-6 to 5-8	x:D:(1)	CF p. 60-62	CF: pg 6-29
Consistent with County (cities)?	ix:D:(1)		Vol. 3	CP, 7.13/p. 7-17	p. 5-6 to 5-8	x:D:(1)	CF p. 60-62	CF: pg 6-27
Consistency w/ CWPPs?	In progress		Vol. 3	CP, 7.13/p. 7-17	p. 5-6 to 5-8	CP	CP p 8,9,16-18, 60-62	CWPP 6.1

Table 99. *Conformance with Utilities Element Requirements of the Countywide Planning Policies*

Requirement	Battle Ground	Camas	La Center	Ridgefield	Vancouver	Washougal	Yacolt	Clark County
Develop policies and incentives to:								
Eliminate private utilities (urban)?		CP IX-8		CP, 7.4.4/p. 7-6, 7.5.3/p. 7-8		3.4.3 (2/03 CP)	N/A	
septic systems	BGMC T.13	CP IX-8	Pol. 4.2.4	CP, 7.5.3, Pol. PF-S-4/p. 7-8	p. 5-30	3.4 (2/03 CP)	CF p. 53-56	CF: pg 6-26
private wells	BGMC T.13	CP IX-8	Pol. 4.2.4	CP, 7.4.4, Pol. PF-W-4/p. 7-6	p. 5-23 to 5-26	3.4 (2/03 CP)	N/A	CF: pg 6-27
Encourage connection to public water & sewer?	BGMC T.13	CP IX-8	Pol. 4.2.4	CP, 7.4.4, Pol. PF-W-1 & PF-W-5/p. 7-6; CP, 7.5.3, Pol. PF-S-1& PF-S-4/p. 7-8	p. 5-23 to 5-26	3.4 (2/03 CP)	CF p. 50, 53-56	CF: pg 6-27
Extend sewer only with annexation (unless health hazard exists)?	BGMC T.13	CP IX-8	Pol. 4.2.3	CP, 7.5.3, PF-S-2/p. 7-8, CP, A-2/p. 10-1	p. 5-8	Sect. 8 (2/03 CP) & CF	N/A	CF: pg 6-25
Extend utilities throughout urban areas?	CF El.							
Public sewer	CF El.	CP IX-8	Pol. 4.2.4	CP, 7.5.3, Pol. PF-S-2/p. 7-8	p. 5-8	3.3.2 (2/03 CP)	N/A	CF: pg 6-26
"Adequate" public water system	CF El.	CP IX-8	Pol. 4.2.4	CP, 7.4.4, Pol. PF-W-2/p. 7-6	p. 5-8	3.3.2 (2/03 CP)		CF: pg 6-26
Adequate public water in rural areas (where appropriate?)	N/A	CP IX-8	N/A	N/A	N/A	3.3.2 (2/03 CP)	N/A	CF: pg 6-27
Limit wells in rural areas?	N/A	CP IX-8	N/A	N/A	N/A	CF	N/A	CF pg 6-26
Septic inspection/maintenance program?	N/A	CP IX-8	Vol. 3	CP, 7.5.3, Pol. PF-S-6/p. 7-8	N/A		CF p. 55-56	CF: pg 6-26
Proof of adequate water supply before development?	BGMC	CP IX-8	Pol. 4.2.4	CP, 7.4.4, Pol. PF-W-1 & PF-W-5/p. 7-6	p. 5-8		CF p. 50	CF: pg 6-26
Consistent with County (cities)?		CP IX-8	Vol. 3	CP, 7.3/p. 7-2	Appendix A	3.3.2 (2/03 CP)	CF p. 61-62	CF: pg 6-27
Consistent with comp. & land use plans?		CP IX-8	Yes	CP, 7.4.4, Pol. PF-W-2/p. 7-6; CP, 7.5.3, Pol. PF-S-2/p. 7-8	p. 5-8	3.3.2 (2/03 CP) & CF	CF p. 61-62	CF: pg 6-2
Maximize efficiency & cost-effectiveness?	ix:D:(2),(3)	CP IX-8	Vol. 3	CP, 7.5.3, Pol. PF-S-6/p. 7-8	p. 5-8	3.3 (2/03 CP)	CF p. 61-62	
Consensus on current & future services?	not available	CP IX-8	Vol. 3	CP, 7.4.4, Pol. PF-W-2/p. 7-6; CP, 7.5.3, Pol. PF-S-2/p. 7-8	p. 5-8		CF p. 61-62	

(-) Goal (G),Pol: Policy number, p. page number, LU: Land Use Element, RRL: Rural and Resource Lands Element, H: Housing Element, CF: Capital Facilities Element, Pks: PksRecreation, Open Space Element (or P, Plan), T: Transportation Element, CP: Comprehensive Plan
BGMC: Battle Ground Municipal Code, CAO: Critical Areas Ordinance, CMC: Camas Municipal Code, Res. Doc.: Resource Document, Tech. Supt.: Technical Support, VMC: Vancouver Municipal Code

Table 100. *Conformance with Capital Facilities Element Requirements of the GMA*

GMA Requirement	Battle Ground	Camas	La Center	Ridgefield	Vancouver	Washougal	Yacolt	Clark County
Inventory of public capital facilities?		CF Plan						
Location & capacity for existing:	CFP	Apx D						
water system	Water Plan	Apx D	Vol. 3	CP, 7.4/p 7-6 CF, Apx II	p. 5-25	2.1.3 (2/03 CP) & CF	CF p. 50	CF pg 6-2
sanitary sewer	Sewer Plan	Apx D	Vol. 3	CP, 7.5/p. 7-8 & 7-9, Stw MP '06	p. 5-27	CF	N/A	CF: pg 6-3
stormwater	Stw MP	Apx D	Vol. 3	CP, 7.6/p. 7-6 to 7-8,	p. 5-32	CF	CF p. 52	CF: pg 6-4
schools	School CFP	Apx D	Vol. 3	CP, 7.10/p. 7-13 to 7-15	p. 5-53	CF 4/05	CF p. 49	CF: pg 6-12, 6-13
parks & recreation	Pks MP	Apx D	Vol. 3	CP, 9.1/p. 9-1 to 9-3, CF '03, Pks MP '06	p. 5-41	CF Pks & Rec P	CF p. 56	P: pg 6-15
police	CF	Apx D	Vol. 3	CP, 7.8/p. 7-10 to 7-11	p. 5-48 to 5-49		CF p. 49	CF: pg 6-16
fire	Fire Plan	Apx D	Vol. 3	CP, 7.8/p. 7-11 to 7-12	p. 5-44 to 5-45	CF Fire & Rescue	CF p. 48	CF pg 6-15
Establish level of service standards?		Apx D	CFP, Vol. 3	CF, Apx I, CF, Apx II, CF, Apx III, CF Pks '03, Pks MP '06	Chapter 5	CF	CF p. 42-43, & 51	CF: pg 6-34
Forecast of future needs?		Apx D						
Proposed locations		Apx D	Vol. 3	CF, Apx I, CF, Apx II, CF, Apx III, CF Pks '03, Pks MP '06	Chapter 5	CF	CF p. 48-69	CF: pg 6-2, 6-9
Proposed capacity		Apx D	Vol. 3	CF, Apx I, CF, Apx II, CF, Apx III, CF Pks '03, Pks MP '06	Chapter 5	CF	CF p. 48-69	CF: pg 6-2, 6-9
Industrial areas outside UGA?		Apx D	N/A	N/A	N/A		N/A	(part of Plan Update)
Financing, six-year plan?		CF Plan CP X-3	Vol. 3	CF, Apx I, CF, Apx II, CF, Apx III, CF Parks (2003), Pks MP '06	Chapter 5	CF	CF p. 63-69	CF: pg 6-2, 6-9
Siting Essential Public Facilities?		CP X-1	Vol. 3	CP, PF-4/p. 7-3, 7.13/p. 7-17	p. 5-8	LU CP	CF p. 53-56, 68	CF:E
Consistent with land use element?		CP X-1	Vol. 3	CP, 7.3/p. 7-2	Chpater 5	Sect. 8 CP	CP p. 25	CF: pg 6-25
Consistency w/ CWPPs?			Vol. 3	CP, 1.3/p. 1-2	Apx A	Sect. 8 CP	CP p. 3-18	CWPP 6.1 (-I)

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BGMC: Battle Ground Municipal Code, CAO: Critical Areas Ordinance, CMC: Camas Municipal Code, Res. Doc.: Resource Document, Tech. Supt.: Technical Support, VMC: Vancouver Municipal Code

Table 101. *Conformance with Capital Facilities Element Requirements of the Countywide Planning Policies*

Requirement	Battle Ground	Camas	La Center	Ridgefield	Vancouver	Washougal	Yacolt	Clark County
Establish level of service standards?								
Urban		CF Plan Apx D	CFP, pp. 19-22	CP, PF-1/p. 7-2, CF, Apx I, CF, Apx II, CF, Apx III, CF Pks(2003), Pks MP '06	Ch 5	CF	CP p. 42, 43 & 51	CF: pg 6-34
Rural	N/A	Apx D	N/A	N/A	N/A	N/A	N/A	CF: pg 6-34
Coordinated with land use plans?		CP X-1	Vol. 3	CF, Apx I, CF, Apx II, CF, Apx III, CF Pks(2003),	Ch 5	CF	CP p. 25	CF: pg 6-17
Location standards?		Apx D	Vol. 3					
Urban Growth Areas		Apx D	Vol. 3	CF, Apx I, CF, Apx II, CF, Apx III, CF Pks(2003), Pks MP '06	Ch 5	CF	CP p. 25-26	CF: pg 6-34
Urban Reserve Areas	N/A	Apx D	Vol. 3	CF, Apx I, CF, Apx II, CF, Apx III, CF Pks(2003), Pks MP '06	Ch 5		N/A	CF: pg 6-34
Rural areas	N/A	Apx D	N/A	N/A	N/A	N/A	N/A	CF: pg 6-34
Maximize efficiency & costs effectiveness?		Apx D	Vol. 3	CP, 7.3/ p. 7-2, PF-1/p. 7-2	p. 5-8			
Concurrent with GMA?		Apx D	Vol. 3	CP, 1.3/p. 1-2	p. 5-8		CP p. 3	CF: pg 6-34
Coordinated with County (cities)?		Apx D						
Existing service		Apx D	Vol. 3	CF, Apx I, CF, Apx II, CF, Apx III, CF Pks(2003), Pks MP '06	p. 7-4 to 7-5	CF	CF p. 62	CF: pg 6-2
Future service		Apx D	Vol. 3	CF, Apx I, CF, Apx II, CF, Apx III, CF Pks(2003), Pks MP '06	p. 7-4 to 7-5	CF	CF p. 62	CF: pg 6-2
Range of services in urban area		Apx D	Vol. 3	CP, PF-4/p. 7-3	p. 7-4 to 7-5	CF	CF p. 62	CF: pg 6-2
Implement adopted comp. plans		Apx D	Vol. 3	CP, 7.3/ p. 7-2, PF-1/p. 7-2	p. 7-4 to 7-5	CF	CF pp. 62, 77-81	
Process to reevaluate land use element if funds are insufficient?		CP X-1	Pol. 4.1.3	LU, Pol. LU-17/p. 2-7	p. 7-4 to 7-5	CF	CF p. 61-62	
Impact fees?		CP X-3	yes	CP, PF-3/p. 7-3	VMC	CF & LU	CF p. 60	
Financing?		CP X-3	Vol. 3	CF, Apx I, CF, Apx II, CF, Apx III, CF Pks(2003), Pks MP '06	Ch 5	CF 4	CF p. 57-59, 63-69	CF: pg 6-9
State/regional facilities plan?			N/A	N/A	Ch 5		N/A	

Requirement	Battle Ground	Camas	La Center	Ridgefield	Vancouver	Washougal	Yacolt	Clark County
Future needs identified?		CF Plan	Vol. 3	CF, Apx I, CF, Apx II, CF, Apx III, CF Pks(2003), Pks MP '06	Ch 5	CF	N/A	CF: pg 6-2

(-) Goal (G),Pol: Policy number, p. page number, LU: Land Use Element, RRL: Rural and Resource Lands Element, H: Housing Element, CF: Capital Facilities Element, Pks: PksRecreation, Open Space Element (or P, Plan), T: Transportation Element, CP: Comprehensive Plan
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Table 102. *Conformance with Transportation Elements Requirements of the GMA*

GMA Requirement	Battle Ground	Camas	La Center	Ridgefield	Vancouver	Washougal	Yacolt	Clark County
Land use assumptions identified?			Vol. 3	T, Ch 8	Apx C	T: 17, 18 (CF 12/05)	CP p. 42-43	
Inventory of existing:								
Air transportation facilities?	T:p.18		N/A	N/A	2005 amend	N/A	N/A	T pg 5-16
Water transportation facilities?			N/A	N/A	N/A	T: Sec 8.4 (CF 12/05)	N/A	T pg 5-15
Land transportation facilities?	T:p.12		Vol. 3	T, Ch 8/p. 8-1 to 8-14	Ch 5	T sec 2 (CF 12/05)	CP p. 37-40	T pg 5-3
Transit alignments?	T:p.12		Vol. 3	T, 8.1.6/ p. 8-8, Pol. TR-18/p. 8-13	Ch 5	T sec 2.6 (CF 12/05)	CP p. 38	T pg 5-9
Est. traffic impacts to state-owned facilities?			Vol. 3	T, 8.1.3-8.1.5/p. 8-2 to 8-7	MTP		N/A	CP update will provide
Maps?	T	Apx F Fig. 6	Fig. 9	T, Ch 8, Fig 8-1/ p.8-3, Fig 8-2/p. 8-4, Fig 8-3/p. 8-5, Fig 8-4/p. 8-10	Ch 5	T: p 4, 5, 14-16	CP p. 46-47	CP: Fig A-1 to A-5
Establish level of service standards?	T:pp.12, 16;Apx A	CP VII-4		CP, Ch 8/ p. 8-1 to 8-14	Ch 5	T: Sec 3 (CF 12/05)	CP p. 41-43	T pg 5-21
Regional LOS for arterials		CP VII-4	N/A	N/A	Ch 5	T: Sec 3 (CF 12/05)	CP p. 41-43	T p-21
Regional LOS for transit		CP VII-4	N/A	N/A	Ch 5	T sec. 3 (CF 12/05)	N/A	T:p5-22
Highways of state-wide significance		CP VII-4	N/A	T., 8.1.4/p. 8-6	Ch 5	T sec. 4.3 (CF 12/05)	N/A	*
Other state highways		CP VII-4	N/A	N/A	Ch 5	T sec. 4(CF 12/05)	N/A	
Local streets		CP VII-4	CFP, pp. 19-22	T., 8.1.4/p. 8-6, Pol. TR-16/p. 8-13	Ch 5	T sec. 3 (CF 12/05)	CP p. 42-43	
System expansion & maintenance to be in compliance w/LOSs?	T:pp.20-21	CP VII-4	yes	T., 8.1.4/p. 8-6, Pol. TR-16/p. 8-13	Ch 5	T: (CF 12/05)	CP p. 42	T pg 5-10
Traffic forecast (min. 10 years)?					Ch 5			In Progress

GMA Requirement	Battle Ground	Camas	La Center	Ridgefield	Vancouver	Washougal	Yacolt	Clark County
Vehicular	T:pp.41-43		Vol. 3	T, Section 3.4	Ch 5	T: Sec 3 (CF 12/05)	CP p. 46-47	T pg 5-11
Transit	T:p.44		Vol. 3	T, Section 4.8	Ch 5	T sec. 3 (CF 12/05)	N/A	T pg 5-11
Bicycle & pedestrian	T:p.44	CP VII-2	Vol. 3	T, Section 4.9	Ch 5	T sec. 4.5 (CF 12/05)	N/A	T pg 5-17
Existing & future needs?	CF	CF Plan	Vol. 3	T, Sections 3 & 4	Ch 5	T sec. 3 & 4 (CF 12/05)	CP p. 42-44	T 5-33, 5-26
Financing?		CF Plan	Vol. 3	T, Section 5	Ch 5			
Analysis (existing & projected)	CF:1-13	CF Plan	TIP	T, Section 5	Ch 5	T sec. 4 (CF 12/05)	CF p. 51, 52, 64-68	T 5-32, 5-32
Multi-year financing plan?	CF:1-13	CF Plan CP VII-6	TIP	T, Section 5, 6 yr. TIP	Ch 5	T sec. 5 (CF 12/05) & 6 yr. TIP	CF p. 64-68	T 5-32, 5-32
If funding shortfalls, additional funding sources identified?		CF Plan Appndx D	Pol. 4.1.3	T, Section 5,	Ch 5 & TSP	T sec. 5 (CF 12/05)	CF p. 57-59	T pg 5-32, CP Upate-T
Intergovernmental coordination & impact assessment?	CF	CP VII-4	yes	T., 8.1.4/ p. 8-6, Pol. TR-2/p. 8-11, Pol. TR-10/p.8-12	Ch 7	T sec. 5 (CF 12/05	CF p. 60-62	
Demand management strategies?	CF		Pol. 2.1.6 & 2.1.7	T., 8.2.1/p. 8-9, Pol. TR-15/p.8-12		T: (CF 12/05	N/A	T pg 5-6
Rural arterials		CP VII	N/A	N/A				In progress
Interchange policy				T., Pol. TR-12/p. 8-12 T, Section 4.7,				In progress
Goals & policies?		CP VII						
Roadways		CP VII-2	Goal 2	T, Pol. TR-10/p. 8-12	Ch 5 & TSP	T: (CF 12/05	CP p. 44, 45, 60-61	
Transit (fixed-route & demand resp)		CP VII-3	Pol. 2.1.7	T, Pol. TR-11/p. 8-12, Pol. TR-18	Ch 5 & TSP	T: (CF 12/05)	N/A	
Bicycle & pedestrian		CP VII 3	Pol. 2.1.6 & 6.1.5	T, Pol. TR-20/p. 8-13	Ch 5 & TSP	T: (CF 12/05	CP p.44	
Port facilities (air, water, etc.)		CP VII-5	N/A	T, Pol. TR-12/p. 8-12	Ch 5 & TSP	T sec. 4.8 (CF 12/05)	N/A	
Rail (passenger & freight)		CP VII-5	N/A	T, Pol. TR-1, Pol. TR-12/p. 8-12	Ch 5 & TSP	N/A	N/A	
Freight mobility (truck, barge, rail)		CP VII-5	N/A	T, Pol. TR-1, Pol. TR-12/p. 8-12	Ch 5 & TSP	N/A	N/A	
Concurrency			Pol. 2.1.11	RMC 18.010.080	VMX 11.95	T: (CF 12/05); Sect. 1.4 (2/03 CP), WMC 18.90	CP p. 44	T pg 5-2, 5-2

GMA Requirement	Battle Ground	Camas	La Center	Ridgefield	Vancouver	Washougal	Yacolt	Clark County
Consistent with land use element?	T:p.3	CP VII-3	yes	T, Pol. TR-6/p. 8-12	Ch 5	T: Sec 3.1 (CF 12/05)	CP p. 29, 44 & 45	T pg 5-1
Consistent with regional transp plan?	T:p.4	CP VII-4	yes	T, Pol. TR-6/p. 8-12	Ch 5	T: Sec 3.1 (CF 12/05)	CP p. 44	T pg 5-1
Consistent with County (cities)?	T:p.4		yes	T, Pol. TR-6/p. 8-12	Ch 5	T: (CF 12/05)	CP p. 44	T pg 5-1
Compliance with Clean Air Act?		CP VII-5	yes	T, Pol. TR-11/p. 8-12, Pol. TR-15/p. 8-12, Pol. TR-18/p. 8-13, Pol. TR-20/p. 8-12	Ch 5	N/A	CP p. 44	
Public involvement?			p. 4	CP, 1.2	ii & iii	Sect. 1.2 (2/03 CP)	CF p. 77-81	

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Table 103. *Conformance with Transportation Element Requirements of the Countywide Policies*

Requirement	Battle Ground	Camas	La Center	Ridgefield	Vancouver	Washougal	Yacolt	Clark County
Integrated/part of regional system?	T		Yes	T, Pol. TR-10/p. 8-11, Pol. TR-24/p. 8-14	Ch 5	T: Sec 3 (CF 12/2005)	CP p. 37 & 44	T
Coordinate with County, MPO & cities to establish consistent:							CP p. 44	
Roadway standards	T:p.37	CP VII-4	Pol. 2.1.3	T, Pol. TR-10/p. 8-12	TSP	T: (CF 12/05)	CP p. 39-43	T
Level of service standards	T:Apx A	CP VII-4	Pol. 2.1.3	T., 8.1.4/p. 8-6, Pol. TR-16/p. 8-13	TSP	T: Sect 3.2 (CF 12/05)	CP p. 40-43	T
Functional classifications	T:p.35	CP VII-4	Pol. 2.1.3	T., 8.1.1/p. 8-1, Pol. TR-16/p. 8-13	TSP	T sec 2.1 (CF 12/05)	CP p. 39	T
Coordinated, multi-modal system?								
Roadways	T:pp.10-12	CP VII-2	Pol. 2.1.3	T, 8.2.1/p. 8-9, Pol. TR-1/p. 8-1	Ch 5	T sec 4 (CF 12/05)	CP p. 38	T PG 5-2,5-3
Public transit routes		CP VII-2	Pol. 2.1.3	T, Pol. TR-11/p. 8-12, Pol. TR-18/p. 8-13	Ch 5	T sec 4 (CF 12/05)	CP p. 38	T pg 5-9
Bicycle paths	T:pp.35-39, 44	CP VII-2	Pol. 2.1.3	T, Pol. TR-20/p. 8-13	Ch 5	T sec 4 (CF 12/05)	CP p. 38-39	T pg 5-17
Pedestrian paths	T:pp.35-39, 44	CP VII-2	Pol. 2.1.3	T, Pol. TR-11/p. 8-12, Pol. TR-20/p. 8-12	Ch 5	T sec 4 (CF 12/05)	CP p 38 & 52	T pg 5-17
Carpools/HOV lanes			Pol. 2.1.3	T, Pol. TR-8/p. 8-12	Ch 5	N/A		T 5-5, 5-11

Requirement	Battle Ground	Camas	La Center	Ridgefield	Vancouver	Washougal	Yacolt	Clark County
Other			Pol. 2.1.3	T, Pol. TR-8/p. 8-12	Ch 5	N/A		
Coordinated with land use plan?		CP VII-2						
Transit corridors		CP VII-2	Pol. 2.1.3	T, Pol. TR-11/p. 8-12, Pol. TR-18/p. 8-13	Ch 5	T sec 3 & 4.4 (CF 12/05)	N/A	T pg 5-9
Commercial nodes			Pol. 2.1.3	T, Pol. TR-13/p. 8-12	Ch 5	T sec 3 & 4 (CF 12/05)	CP p. 27	T 5-28
Mixed land uses			Pol. 2.1.3	T, Pol. TR-13/p. 8-12	Ch 5	T sec 3 & 4.4 (CF 12/05)	N/A	T pg 5-29
Development standards that support alternative transportation modes?		CP VII-2	Pol. 1.1.2	T, 8.2.1/p. 8-9, Pol. TR-13/p. 8-12, Pol. TR-19/p. 8-13,	Chs 1 &5	T sec 4.4 & 4.5 (CF 12/05)	CP p. 38 & 52	Partnership Plan
Connections btw/ Urban/Rural Ctrs?			N/A	N/A		N/A	N/A	
Major inter-modal transp corridors?	N/A		N/A	N/A	Ch 5	N/A	N/A	
Transportation demand mgmnt.			Pol. 2.1.9	T, 8.2.1/p. 8-9, Pol. TR-15/p. 8-12	Ch 5	T sec 4.7 (CF 12/05)	N/A	T pg 5-17
Assess & minimize impacts?					Ch 5		CP p. 37	
Environmental		CP VII-6	Pol. 2.1.3	T, TR-1/p. 8-11, TR-7 & TR-9/p. 8-12	Ch 5		CAO 440	
Financial		CP VII-5	Pol. 2.1.3	T, 8.2.3 & TR-4/p. 8-11	Ch 5		CF p. 66-67	
Social			Pol. 2.1.3	T, TR-11/p. 8-12, TR-18 /p. 8-13			CF p. 21, 37	
Park-and-ride facilities?				T, Pol. TR-11/p. 8-12, Pol. TR-18/p. 8-13				
Regional corridors			N/A	N/A	N/A	T sec 2.6 (CF 12/05)	N/A	
Rural centers	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Consistent w/ state/federal legisltn.?	T:pp.1-5		pp. 2-3	T, Pol. TR-10/p. 8-12	Ch 5	T sec 1 (CF 12/05)	CP p. 44	

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Table 104. *Conformance with Critical Areas Requirements of the GMA*

GMA Requirement	Battle Ground	Camas	La Center	Ridgefield	Vancouver	Washougal	Yacolt	Clark County
Critical Areas identified?								
Wetlands	ii:	CP III-7; Ord. 2447	Fig 8	CP, Ch 6; CAO 4/06	Ch 4; VMC 20.740	2.3.2.1 (2/03 CP); CAO	CP p. 28, 29 Apxs, CAO 440	Figure 3
Aquifer recharge areas	ii:	CP III-7:		CP, Ch 6; CAO 4/06	Ch 4; VMC 14.26	2.3.2.2 (2/03 CP); CAO	CP p. 28 & 29 Apxs, CAO 440	Figure 6
Fish & wildlife conservation areas	ii:	CP III-8; Ord. 2447	Fig 6	CP, Ch 6; CAO 4/06	Ch 4; VMC 20.740	2.3.2.3 (2/03 CP); CAO	CP p. 28 & 29 Apxs, CAO 440	Figure 2
Flood hazard areas		CP VI-9 CP III-7		CP, Ch 6; CAO 4/06	Ch 4; VMC 20.740	2.3.2.4 (2/03 CP); CAO	CP p. 28 & 29 Apxs, CAO 440	
100-year	ii:		Fig 5	CP, Ch 6; CAO 4/06	Ch 4; VMC 20.740	2.3.2.4 (2/03 CP); CAO	CP p. 28 & 29 Apxs, CAO 440	Figure 5
500-year	N/A		N/A	CP, Ch 6; CAO 4/06	Ch 4; VMC 20.740	2.3.2.4 (2/03 CP); CAO	N/A	
Geological hazards								
steep slopes	ii:	CP III-7 Appndx F Figure 3	Plan Map	CP, Ch 6; CAO 4/06	Ch 4; VMC 20.740	2.3.2.5 (2/03 CP); CAO	CP p. 28 & 29 Apxs, CAO 440	Figure 7, 8
landslides	ii:	CP III-7	Plan Map	CP, Ch 6; CAO 4/06	Ch 4; VMC 20.740	2.1.1.2 (2/03 CP); CAO	CP p. 28 & 29 Apxs, CAO 440	Figure 7, 8
earthquakes	ii:	CP III-8	Plan Map	CP, Ch 6; CAO 4/06	Ch 4; VMC 20.740	2.1 (2/03 CP); CAO	N/A	Figure 7, 8
volcanoes	ii:	N/A	N/A	CP, Ch 6; CAO 4/06	Ch 4; VMC 20.740	N/A	N/A	
erosion	ii:	CP III-7	Plan Map	CP, Ch 6; CAO 4/06	Ch 4; VMC 20.740	2.3.2.5 (2/03 CP); CAO	CP p. 28 & 29 Apxs, CAO 440	Figure 7, 8
Open space corridors identified?				CAO 4/06	Figure 1-3	Sect. 1.4, 4.12 (G11) and 5 (2/03 CP); Sect. 5.4 Pks Pl	CP p. 24, 28 & 29 Apxs	P
Best available science policies?				CAO 4/06	VMC 20.740	CAO	CAO 440	
Measures to protect anadromous fisheries?				CP, Ch 6; CAO 4/06	Ch 4	2.1.2 (2/03 CP); CAO	CAO 440	
Policies to protect?		CP VI						Goal 4.1; Policy 4.2-1 to 4-2.3

GMA Requirement	Battle Ground	Camas	La Center	Ridgefield	Vancouver	Washougal	Yacolt	Clark County
Wetlands	ii:D	CP VI-4 CMC 16	iv:C	CP Ch 6, Pol., EN-5/ p. 6-5	Ch 4; VMC 20.740	2.3 (2/03 CP); CAO	CP p. 15 & 16	Goal 4-1
Aquifer recharge areas	ii:D:(1-B)	CP VI-4 CMC 16	iv:C	CP Ch 6, Pol., EN-7/ p. 6-5	Ch 4; VMC 20.740	2.3.3 (2/03 CP); CAO	CP p. 15 & 16	Goal 4-1
Habitat conservation areas	ii:D:(5)	CP VI-6 CMC 16	iv:C	CP Ch 6, Pol., EN-5/ p. 6-5	Ch 4; VMC 20.740	2.3.3 (2/03 CP); CAO	CP p. 15 & 16	Goal 4-1
Flood hazard areas	ii:D:(4)	CP VI-4 CP VI-9 CMC 16	iv:C	CP Ch 6, Pol., EN-8/ p. 6-5	Ch 4; VMC 20.740	2.3.3 (2/03 CP); CAO	CP p. 15 & 16	Goal 4.10
Geological hazards	ii:D:(4)	CP VI-5 CMC 16	iv:C	CP Ch 6, Pol., EN-11/ p. 6-5	Ch 4; VMC 20.740	2.3.3 (2/03 CP); CAO	CP p. 15 & 16	Goal 4.10
Consistency w/ CWPPs?			yes	CP, 1.3/ p. 1-2	Apx A	2.3.3 (2/03 CP); CAO	CP p. 3, 9, 15 & 16	

(-) Goal (G),Pol: Policy number, p. page number, LU: Land Use Element, RRL: Rural and Resource Lands Element, H: Housing Element, CF: Capital Facilities Element, Pks: PksRecreation, Open Space Element (or P, Plan), T: Transportation Element, CP: Comprehensive Plan
BGMC: Battle Ground Municipal Code, CAO: Critical Areas Ordinance, CMC: Camas Municipal Code, Res. Doc.: Resource Document, Tech. Supt.: Technical Support, VMC: Vancouver Municipal Code

Table 105. *Conformance with the Critical Areas Requirements of the Countywide Planning Policies*

Requirement	Battle Ground	Camas	La Center	Ridgefield	Vancouver	Washougal	Yacolt	Clark County
Countywide Policies								
Critical areas identified?	ii:		Fig 3-8	CP, Ch 6; CAO 4/06	Ch 4; VMC 20.740	CAO maps	CP p. 28 &29 Appendices	Figure 1
Protection policies?	ii:D	CP VI	pp. 27-29	CP, Ch 6; CAO 4/06	Ch 4; VMC 20.740	2.3.3 (2/03 CP); CAO	CP p. 3-11	EE: pg 4.1
Acquisition program?	ii:D:(6),V:E:(2)		No	CAO 4/06	Chss 4 & 5	Gs 5, 7; 2.3.3 (2/03 CP)	N/A	
Framework Plan Policies							CP p. 3-11	
Critical areas as open space?	v:D,E	CP VI-3	pp. 27-29	CAO 4/06	Ch 5	CAO	CP p. 28 &29	FWP p 9
Continuous system of open space?	v:D,E	CP VI-3	No	CAO 4/06	Figure 1-3	Sect. 1.4 (2/03 CP); CAO	N/A	
Ensure new development protects?	ii:D:(4)	CP VI-3	pp. 27-29	CAO 4/06	VMC 20.740	CAO	CAO 440	FWP pg 9
Maximize protection/minimize cost?			pp. 27-29	CAO 4/06	VMC 20.740	2.3.3 G4 (2/03 CP); CAO	CAO 440	
Consistent wetlands definitions?	ii:D:(1-H)		yes	CAO 4/06	VMC 20.740	CAO	CAO 440	EE pg 4-7
Aquifer recharge area protection?	ii:D:(1-B)	CP VI-4	pp. 27-29	CAO 4/06	VMC 14.26	CAO	CAO 440	EE pg 4-9
Revise dev. code for sensitive lands?	ii:D	CMC 18	yes	CAO 4/06	VMC 20.740	CAO	CAO 440	
Ground/surface water quality protection?	ii:D:(1)	CP VI-4	pp. 27-29	CP, Ch 6; Pol. EN-7, CAO 4/06	VMC 14.24, 14.25	1.2 & 2.3.3 G1 (2/03 CP); CAO	CAO 440	EE:p. 4-5, 4-6
Habitat preservation programs and policies?	ii:D:(5)	CP VI-6	pp. 27-29	CP, Ch 6; Pol. EN-5, CAO 4/06	Ch 4; VMC 20.740	2.3.3 G6 (2/03 CP); CAO	CAO 440	EE:p.4-3

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BGMC: Battle Ground Municipal Code, CAO: Critical Areas Ordinance, CMC: Camas Municipal Code, Res. Doc.: Resource Document, Tech. Supt.: Technical Support, VMC: Vancouver Municipal Code

Table 106. *Conformance with Rural Element Requirements of the GMA*

GMA Requirement	Battle Ground	Camas	La Center	Ridgefield	Vancouver	Washougal	Yacolt	Clark County
Identify rural lands?	N/A	N/A	N/A	N/A	N/A	N/A	N/A	RRL: pg 3-3
Identify future population permitted to live/work on rural lands?	N/A	N/A	N/A	N/A	N/A	N/A	N/A	RRL: pg 3-3
Adopt development policies?	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Types of uses permitted	N/A	N/A	N/A	N/A	N/A	N/A	N/A	RRL: pg 3-4
Variety of development densities:	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
residential	N/A	N/A	N/A	N/A	N/A	N/A	N/A	?
commercial	N/A	N/A	N/A	N/A	N/A	N/A	N/A	RRL: pg 3-4
industrial	N/A	N/A	N/A	N/A	N/A	N/A	N/A	RRL pg 3-4
Define rural gov't services	N/A	N/A	N/A	N/A	N/A	N/A	N/A	RRL pg 3-2
Appropriate buffers for land of long-term comm'l significance:	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
agricultural	N/A	N/A	N/A	N/A	N/A	N/A	N/A	RRL: pg 3-5, 3-5-,3-6
forest	N/A	N/A	N/A	N/A	N/A	N/A	N/A	RRL pg 3-5
mineral resource	N/A	N/A	N/A	N/A	N/A	N/A	N/A	RRL: pg 3-8
Development at UGA boundary	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Policies to preserve rural character?	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Critical areas	N/A	N/A	N/A	N/A	N/A	N/A	N/A	RRL:pg 3-14
Agric, forest, & mineral res. uses	N/A	N/A	N/A	N/A	N/A	N/A	N/A	RRL pg 3-14
Recreation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Goal 3.1
Scenic resource acquisition	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Policy 3.1.16
Environmental protection	N/A	N/A	N/A	N/A	N/A	N/A	N/A	RRL: pg 3.1.2
Consistency w/ CWPPs?								RRL:E Goal 3.0

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BGMC: Battle Ground Municipal Code, CAO: Critical Areas Ordinance, CMC: Camas Municipal Code, Res. Doc.: Resource Document, Tech. Supt.: Technical Support, VMC: Vancouver Municipal Code

Table 107. *Conformance with Rural Element Requirements of the Countywide Planning Policies*

Requirement	Battle Ground	Camas	La Center	Ridgefield	Vancouver	Washougal	Yacolt	Clark County
Identify land for existing rural development?	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
For future rural development?	N/A	N/A	N/A	N/A	N/A	N/A	N/A	RRL: pg 3.2
Recreational uses?	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Preserve open space	N/A	N/A	N/A	N/A	N/A	N/A	N/A	RRL: pg 3.3
Environmentally sensitive	N/A	N/A	N/A	N/A	N/A	N/A	N/A	RRL: pg 3.3
Comm'l development in rural centers?	N/A	N/A	N/A	N/A	N/A	N/A	N/A	RRL: pg 3.3
Large minimum lot sizes (residential)?	N/A	N/A	N/A	N/A	N/A	N/A	N/A	RRL: pg 3-3
TDR or similar program?	N/A	N/A	N/A	N/A	N/A	N/A	N/A	RRL pg 3.22
Master-planned resort criteria?	N/A	N/A	N/A	N/A	N/A	N/A	N/A	RRL: Policy 3.1.4, pg 3.13
Self-contained sanitary sewer	N/A	N/A	N/A	N/A	N/A	N/A	N/A	RRL: Policy 3.1.4, pg 3-15
Adequate public water	N/A	N/A	N/A	N/A	N/A	N/A	N/A	RRL: Policy 3.1.4, pg 3-15
Preserve scenic/cultural resources	N/A	N/A	N/A	N/A	N/A	N/A	N/A	RRL: Policy 3.1.4, pg 3-17
Focus on short-term visitors	N/A	N/A	N/A	N/A	N/A	N/A	N/A	RRL: Policy 3.1.4, pg 3-16
Full range of recreational amenities	N/A	N/A	N/A	N/A	N/A	N/A	N/A	RRL: Policy 3.1.4, pg 3-16
No adverse impact to resource land	N/A	N/A	N/A	N/A	N/A	N/A	N/A	RRL: Policy 3.1.4, pg 3-16
Preserve sensitive lands	N/A	N/A	N/A	N/A	N/A	N/A	N/A	RRL: Policy 3.1.4, pg 3-16
Nearby employee housing	N/A	N/A	N/A	N/A	N/A	N/A	N/A	RRL: Policy 3.1.4, pg 3-16
Comply w/ development standards	N/A	N/A	N/A	N/A	N/A	N/A	N/A	RRL Policy 3.1.4, pg 3-16
Cluster new development w/i resort or designated rural center?	N/A	N/A	N/A	N/A	N/A	N/A	N/A	RRL Policy 3.1.4
Affordable housing?	N/A	N/A	N/A	N/A	N/A	N/A	N/A	H pg 2-16

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BGMC: Battle Ground Municipal Code, CAO: Critical Areas Ordinance, CMC: Camas Municipal Code, Res. Doc.: Resource Document, Tech. Supt.: Technical Support, VMC: Vancouver Municipal Code

Table 108. *Conformance with Resource Lands Element Requirements of the GMA*

GMA Requirement	Battle Ground	Camas	La Center	Ridgefield	Vancouver	Washougal	Yacolt	Clark County
Designate natural resource lands of long-term commercial significance?								
Agricultural	ii:B		N/A		N/A	Sect.1.2 (2/03 CP)	N/A	N/A
Forest	ii:B		N/A		N/A	Sect.1.2 (2/03 CP)	N/A	RRL: pg 3.6
Mineral resource	ii:B		N/A		N/A		N/A	RRL: pg 3-8
Use of new information from DNR?								CP Update
Meet min. state criteria for designating resource lands?								CP Update
Encourage conservation of forest & agricultural lands?								
Development regulations to assure conservation?	N/A	N/A	N/A		VMC 20		N/A	RRL: pg 3-6
Discourage incompatible uses?						Sect.1.2 (2/03 CP)		RRL:E:Goal 3.5
Review previous designations?								
Consistent with comp. plans	N/A	N/A	N/A		N/A		N/A	RRL: pg 3-2
Compatible with adjacent lands?								
agriculture	N/A	N/A	N/A		N/A	Sect.1.2 (2/03 CP)	N/A	RRL: pg 3-7
forest	N/A	N/A	N/A		N/A	Sect.1.2 (2/03 CP)	N/A	RRL: pg 3-6
mineral resources	N/A	N/A	N/A		N/A	N/A	N/A	RRL: pg 3-8
No designation within UGA without transfer/purchase of development rights program?	N/A	N/A	N/A		N/A	N/A	N/A	N/A

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Table 109. *Conformance with Resource Lands Element Requirements of the Countywide Planning Policies*

Requirement	Battle Ground	Camas	La Center	Ridgefield	Vancouver	Washougal	Yacolt	Clark County
Policies to preserve/protect resources?								
Agricultural (WAC 365-190-050)								
WAC 365-190-050 currently used or designated	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Forest (WAC 365-190-060)								
WAC 365-190-060 currently used or designated	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Encourage conservation & protect large parcels w/ prime agricultural soils?	N/A	N/A	N/A	N/A	N/A	N/A	N/A	RRL: pg 3-6, 3-16
Standards for compatible land uses?								
Agricultural	N/A	N/A	N/A	N/A	N/A	N/A	N/A	RRL: pg 3-16
Forest	N/A	N/A	N/A	N/A	N/A	N/A	N/A	RRL: pg 3-7
Mineral resource	N/A	N/A	N/A	N/A	N/A	N/A	N/A	RRL pg 3-8
Review cluster resid. development?	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Programs/incentives for property owners?	N/A	N/A	N/A	N/A	N/A	N/A	N/A	RRL: pg 3-18, Policy 3.1.15
Best management practices								
Agricultural operations	N/A	N/A	N/A	N/A	N/A	N/A	N/A	RRL: pg 3-6, 3-11
Forest operations	N/A	N/A	N/A	N/A	N/A	N/A	N/A	RRL: pg 3-6, 3-11
Mineral operations	N/A	N/A	N/A	N/A	N/A	N/A	N/A	RRL: pg 3-6, 3-11
Buffers between resource lands and urban & rural uses?	N/A	N/A	N/A	N/A	N/A	N/A	N/A	RRL Policy 3.3.6, 3.3.11
Right-to-farm/harvest ordinances?	N/A	N/A	N/A	N/A	N/A	N/A	N/A	RRL pg 3-18, 3-19
Conversion not justified by available utilities/public facilities?	N/A	N/A	N/A	N/A	N/A	N/A	N/A	

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1. Consistency of the Alternatives with Plan Policies

The tables in the previous section identified the measures that each jurisdiction has or proposes to have in their plans and ordinances to address the requirements of GMA and the Countywide Planning Policies. However, those tables do not address how the alternatives with their proposed UGA expansions affect or are consistent with Countywide Planning Policies and local comprehensive plan policies. Not all policies are affected or need to be discussed, but as part of the decision-making process to select a Preferred Alternative, it is important to understand how the alternatives relate to policies for expanding the UGAs. In addition, because GMA requires communities to be able to fund the infrastructure for the land uses proposed over the life of the comprehensive plan, how the UGA expansions affect policies for transportation is also important. Inconsistencies with applicable policies raise policy implications; that is, what changes need to be made to either alternatives (in choosing or developing a Preferred Alternative) or to policies to fix the disconnection.

2. Relationship of the Alternatives to Countywide Planning Policies for UGA Expansion

Below are the Countywide Planning Policies that relate to UGA expansions. Some policies are proposed to be changed with the adoption of the 2006 Plan. Proposed language that is part of this comprehensive plan update is <u>underlined</u>. A brief discussion of how the alternatives are consistent with a policy or group of related policies is provided.

1.1 Countywide Planning Policies

a. *The County, municipalities and special districts will work together to establish urban growth areas within which urban growth shall be encouraged and outside of which growth may occur only if it is not urban in nature. Each municipality within the County shall be included within an urban growth area. An urban growth area may include territory located outside of a city if such territory is characterized by urban growth or is adjacent to areas characterized by urban growth.*

Alternative 1 would be consistent with this policy because no new expansions are proposed. However, if Alternative 1 would result in pressure to upzone rural residential areas because it cannot accommodate projected future growth, this alternative would not meet the intent of this policy. Alternative 2 would expand into areas currently characterized by varying types and intensities of rural rather than urban land use, with over 4,000 acres designated agricultural, followed by about 3,400 in urban reserve and about 3,000 in Rural Residential. All proposed UGAs would be adjacent to existing UGAs or city boundaries, except for the La Center Junction area. Alternative 2 proposes expansion of the La Center UGA onto rural land that is neither characterized by urban growth nor adjacent to areas characterized by urban growth at the La Center Junction area. Urbanization of the La Center Junction would not be consistent with this policy. Subareas R3, V3, and W2 of Alternative 3 could not be included in UGAs unless the adjacent proposed UGA were also included.

b. *Urban growth areas shall include areas and densities sufficient to permit the urban growth that is projected to occur in the County for the succeeding 20-year period.*

Alternative 1 would not be consistent with this policy because it cannot accommodate projected future growth based on BOCC adopted growth assumptions. Therefore, this alternative as proposed by Clark County would not be consistent with this policy. However, some of the cities have planning assumptions that differ from the County's that assume more housing and employment could be accommodated within the existing UGAs. Cities that anticipated accommodating more population and/or job growth than the County's assumptions include La Center, Vancouver, and Washougal. These local jurisdictions anticipate that with subarea plans and projects already underway or approved for construction, additional jobs and population would be accommodated within existing UGAs that are not accounted for in the County's calculations. However, even with known or likely projects taken into account, there is not adequate capacity in Alternative 1 to accommodate projected growth. Alternative 1 could only be made consistent with this policy by changing the growth assumptions or increasing densities in some areas of the cities.

As with Alternative 1, Alternative 2 would also not be consistent with this policy because, while the actual capacity to accommodate the projected population growth would be close (within 2 percent), the alternative would fall short of providing the projected amount of land needed. Alternative 2 would have adequate capacity to supply the projected employment needs of the county.

c. Urban growth shall be located primarily in areas already characterized by urban growth that have existing public facility and service capacities to adequately serve such development, and second in areas already characterized by urban growth that will be served by a combination of both existing public facilities and services that are provided by either public or private sources. Urban governmental services shall be provided in urban areas. These services may also be provided in rural areas, but only at levels appropriate to serve rural development.

Urban governmental services include those services historically and typically delivered by cities, and include storm and sanitary sewer systems, domestic water systems, street cleaning services, fire and police protection, public transit services, and other public utilities not normally associated with non-urban areas.

Neither alternative proposes expanding urban levels of service to areas outside proposed new UGAs. Alternative 2 proposes to eventually provide urban services to the expanded and existing but unserved UGAs; however, compliance with concurrency requirements for public facilities is dependent on the timing and costs of providing those services. Since costs for capital facilities and public services are expected to exceed projected revenues over the next 20 years, the more costly alternatives are less in conformance with this policy than the least costly alternatives. Costs are addressed in the public facilities and utilities section of this DEIS. Costs will be more fully addressed in the capital facilities plan prepared after a preferred alternative is identified.

d. An urban growth area may include more than a single city.

The subareas for La Center, Ridgefield, and the Vancouver V2 subarea proposed under Alternative 3 would, if adopted into a Preferred Alternative, effectively create a UGA that included those three cities. This UGA would eventually allow development of a contiguous urban area from the Columbia River to approximately 339th Street in La Center. The inclusion of the three cities does not conflict with this policy.

e. Urban growth is defined as growth that makes intensive use of land for the location of buildings, structures, and impermeable surfaces to such a degree as to be incompatible with the primary use of such land for the production of food, other agricultural products, fiber, or the extraction of mineral resources.

Conversion of resource lands under each alternative is addressed in the Resource Lands section of this DEIS. Only Alternative 1 would not convert any resource land to urban land. Resource land that would be added to existing UGAs in Alternative 2 or the Alternative 3 subareas is assumed to developable and be converted to urban uses sometime in the future.

f. The County and cities shall review, at least every five (5) years, their designated urban growth area or areas in compliance with RCW 36.70A.215. The purpose of the review and evaluation program shall be to determine whether Clark County and its cities are achieving urban densities within Urban Growth Areas. This shall be accomplished by comparing the growth and development assumptions, targets and objectives contained in these policies (and in county and city comprehensive plans) with actual growth and development that has occurred.

1. Each municipality within Clark County shall annually provide to the County parcel specific information on land developed or permitted for building and development in three categories: residential, commercial, and industrial. The County and municipalities shall follow the guidelines specified in the Plan Monitoring Procedures Report for the collection, monitoring, and analysis of development activity and potential residential/ employment capacity.

2. Clark County, in cooperation with the municipalities, shall prepare a Buildable Lands Capacity Report every five years, with the first report completed by September 2002. The report will detail growth, development, capacity, needs, and consistency between comprehensive plan goals and actual densities for Clark County and the municipalities within it.

3. The County and municipalities shall use the results of the Buildable Lands Capacity Report to determine the most appropriate means to address inconsistencies between land capacity and needs. In addressing these inconsistencies, the County and municipalities shall identify reasonable measures, other than adjusting urban growth areas, that will be taken to comply with the requirements of RCW 36.70A.215.

The *Clark County Buildable Lands Report* was developed by the County in 2001 and 2002. The report showed sufficient land capacity to accommodate forecast growth in population and jobs to 2023 under growth assumptions adopted by the BOCC at that time. Another similar buildable lands report is not due to be produced until 2007. The County, with input from the cities, identified trends in land absorption in the county that was used to estimate current and future capacity needs. Based on that information, the BOCC determined, based on a series of assumptions, that existing UGAs would not be able to accommodate the projected 2024 population growth and developed alternatives to evaluate how to accommodate the projected land need for housing and employment.

Alternative 1 would accommodate most but not all projected growth by measures other than expanding the UGAs. Local jurisdictions anticipate that with projects already underway or approved for construction, additional population would be accommodated within existing UGAs that are not accounted for in the County's calculations. In all jurisdictions except La Center, additional housing units are under construction or approved for construction. Alternative 1 could be made consistent with this policy by changing the growth assumptions or increasing densities in some areas of the cities. Without such changes, Alternative 1 would be inconsistent with paragraph 3 of this policy. Alternative 2 would also require changing the growth assumptions or increasing densities in some areas. Without such changes, Alternative 2 would be inconsistent with paragraph 3 of this policy.

g. Population projections used for designating urban growth areas will be based upon information provided by the Office of Financial Management and appropriate bi-state/regional sources.

Population projections from the OFM were used in all alternatives.

h. Interagency Cooperation

The County and each municipality will work together to:

1) *establish Partnership Planning Subcommittees to develop an ongoing coordination program within the urban growth area;*
2) *provide opportunities for each jurisdiction to participate, review and comment on the proposed plans and implementing regulations of the other;*
3) *coordinate activities as they relate to the urban growth area;*
4) *coordinate activities with all special districts;*
5) *seek opportunities for joint efforts, or the combining of operations, to achieve greater efficiency and effectiveness in service provision; and,*
6) *conduct joint hearings within the urban growth areas to consider adoption of Comprehensive Plans in the Partnership Planning Process.*

There has been coordination between the County and the cities in developing the proposed UGA boundaries in Alternatives 2 and 3. The County solicited city requests for boundary expansions and reflected that input on the maps for Alternatives 2 and 3. The County did not directly reflect Vancouver's request for a much more limited boundary expansion. Some of the cities within the County have disputed the County's calculations of land capacity and the potential for redevelopment. La Center provided information that would lead to a reduction in its capacity of the next 20 years, by 86 dwelling units. Vancouver has expressed objections to the proposed expansion of its UGA in most of the areas proposed under Alternatives 2 and 3. By City of Vancouver calculations, sufficient land supply exists in current UGAs and with upzoning to accommodate growth without expanding its UGA. If this is so, the proposed Alternative 2 and the alternate subareas under Alternative 3 would not meet the intent of this policy.

i. Coordination of land use planning and development

1) *The County and each municipality shall cooperatively prepare land use and transportation plans and consistent development guidelines for the urban area.*
2) *Comprehensive Plans must be coordinated. The comprehensive plan of each county or city shall be coordinated with, and consistent with, the comprehensive plans adopted by other counties or cities with which the County or city has, in part, common borders or related regional issues (ESHB 2929; Section 10). The city and the*

County shall play partnership roles in the production of plans which provide the opportunity for public and mutual participation, review and comment.

3) *Urban development shall be limited to areas designated by the urban growth boundary.*
4) *Salmonids cannot distinguish between urban and rural boundaries, therefore resource protection and ESA concerns should be applied similarly in both urban and rural area settings.*

There has been coordination between the County and the cities in developing the proposed UGA boundaries in Alternatives 2 and 3. However, Vancouver has expressed objections to the proposed expansion of its UGA in most of the areas proposed under Alternatives 2 and 3. Therefore, there may be some dissonance between the proposed comprehensive plan maps for Vancouver and the County if this is not resolved by the Preferred Alternative to be evaluated in the FEIS. Most of the cities and the County now have similar critical areas ordinances that apply similar protections to fish-bearing streams, which comply with the policy in paragraph 4.

a. Relationship of the Alternatives to Transportation Policies

The following summarizes how each alternative responds to transportation policies in the current comprehensive plans for Clark County, Battle Ground, Ridgefield, Camas, Vancouver, and Washougal.

Clark County: Countywide Planning Policies include the following:

Reducing reliance on single occupancy vehicle (SOV) transportation through a balanced transportation system

Alternative 1 would result in greater urban densities, which lends itself to an increasing role for transit options. It is likely that both Alternatives 2 and 3 would continue the same reliance on the auto-oriented transit.

Coordinated planning of regional and bi-state transportation facilities in the context of air, land, and water resources

Regional assessment of impacts of regional transportation facilities to maximize the benefits to the region and local communities

Implementation of Transportation System Management (TSM) strategies to optimize the efficiency of the current system

Regional planning of transportation facilities is required under the various federal transportation efficiency acts and would continue regardless which alternative is chosen. The Regional Transportation Council (RTC) is looking at region-wide transportation issues through the year 2030, and they have been an integral part of modeling the impacts of growth on the region's transportation systems. The work of the Bi-state Transportation group has been picked up in large part by the Columbia River Crossing group, who is looking at better ways to ensure freight movement in the I-5 corridor. WSDOT is working on the new interchange at I-5/219th Street and has been active in the discussions of the effects of growth on the state highway system in Clark County.

Implementation of Transportation Demand Management (TDM) strategies to reduce trip demand on the current system

TDM strategies such as commute trip reduction (carpooling; telecommuting) could be implemented under any of the alternatives.

Consider development of transportation corridors for high capacity transit and adjacent land uses that support such facilities.

RTC is undertaking a study to look at the potential for high capacity transit. The study will identify potential types of transit and where corridors for such transit might be located. It is likely that land uses would be changed along transit corridors. Funding high capacity transit is the biggest obstacle to getting it on the ground.

Battle Ground: The Battle Ground Transportation System Plan (TSP) contains several policies relating to their transportation system in the area of livability, passenger movement, freight movement, and non-motorized transportation. Several of these are combined below.

The City will encourage the construction of a transportation system that 1) enhances the city's livability, 2) is safe, and 3) has a variety of transportation options.

Battle Ground would continue to grow under any of the alternatives. Under Alternative 1, there is no proposed UGA expansion, which would require more density within the city. This would lead to more local traffic and would limit the ability to use parkways and preserve open space. Alternative 2 would allow the city to better plan its intra-city connections and to maintain livability, similar to Alternative 3 which only adds a small amount of additional land on the north edge of the UGA. The city also has plans for enhancing the pedestrian and bicycle systems. Alternatives 2 and 3 would be most consistent with these policies.

A transportation system that provides for 1) efficient movement of goods and services, and 2) balances accessibility and mobility.

A new interchange is planned at 219th Street/I-5 which would help residents of Battle Ground get to and from the Vancouver/Portland area. Given proposed growth in the area, however all alternatives add congestion to the regional roadways that serve Battle Ground. SR-503 (NE 117th Ave) would experience LOS E/F conditions from SR-500 to Battle Ground under all alternatives. SR-502 (NE 219th St) would experience LOS E/F conditions under the alternatives, although widening of SR-502 has been proposed. Sections of NE 72nd Avenue would also experience LOS E/F conditions under all alternatives; although in the 20-year plan it is proposed to be widened to NE 219th Street. Mitigating these conditions would require regional coordination to identify the appropriate level of improvement and funding options. This level of planning and coordination would take place regardless of which alternative is chosen.

Camas: The City's December 2002 draft Transportation Element includes several goals, policies, and strategies. The policies and strategies are grouped into general topic areas and the impacts of land use alternatives on these topic areas are discussed.

Provide a balanced transportation system that supports the land use vision for industrial, commercial, and residential uses.

Alternative 3 includes the preferred land use vision for most communities. Alternatives 2 and 3 have lower transit and non-motorized mode shares than Alternative 1. Without mitigation, Alternative 3 would be inconsistent with this policy.

Design and construct safe facilities that enhance the livability of Camas.

This goal contains several policies including improved traffic safety, protection against neighborhood cut-through traffic, and development of attractive streetscapes. If Camas dedicates funding for a neighborhood traffic program, all land use alternatives would be consistent with this goal. If there is no dedicated funding for a Neighborhood Traffic Program, all land use alternatives would be consistent with this goal.

High accident locations should be identified and safety improvements should be coordinated with WSDOT and Clark County. Specific revenue sources are available for safety improvements at high accident locations. The impact of the various land use alternatives on traffic safety would vary. Those alternatives that show significant congestion could exacerbate existing safety issues and create new safety issues. As congestion increases, driver's willingness to take risks increases. Drivers would accept shorter traffic gaps and seek alternate routes through neighborhoods. Alternative 3 has the highest level of congestion and may increase safety issues. Alternative 1 has the lowest level of congestion, followed by Alternative 2.

Create an efficient system that limits congestion, reduces percentage of trips by SOVs, and reduces number and length of trips.

Alternative 3 does not achieve a reduction of SOV travel and has the lowest transit and non-motorized mode share of all alternatives. LOS standards would likely need to be lowered as funding may be inadequate to maintain current standards and to mitigate for the additional congestion resulting from this alternative. Lowering these standards would not encourage transit use as there would be many areas of the UGA without transit service. This alternative is inconsistent with this policy.

Alternative 2 has lower transit and non-motorized mode shares than Alternatives 3, although not as low as alternative 1.

Coordinate with applicable agencies in planning road improvements and completing road maintenance.

Most impacts on regional transportation facilities occur outside of the Camas UGA. See the Clark County discussion for regional facilities outside of the UGA.

La Center: La Center's transportation policies address moving people and goods into and out of La Center; pedestrian and vehicular circulation within City limits; on-street and off-street parking, including that related to the card rooms; public transportation (although C-TRAN no longer serves La Center with fixed route service, C-Tran provides 'Connector' twice a day); and pedestrian/bicycle trails.

The following are the impacts of each alternative related to La Center's transportation element and policies:

Provide for a balanced, multimodal transportation system within the La Center UGA.

With C-TRAN's removal of fixed route service to and from La Center in 2000, transit service is now limited to the twice daily C-Tran Connector service which stops in the downtown core and makes calls to the residential areas. Additionally, La Center Road between I-5 and La Center is currently designated a rural major collector by Clark County, and thus would not have dedicated bicycle and pedestrian facilities within its right-of-way from the edge of the current UGA at Timmen Road out to I-5. The countywide Bikeways and Trails Plan does indicate a regional, multi-use facility paralleling La Center Road, but no funding has of yet been identified to build it. La Center has been constructing sidewalks within the city limits (all new developments must construct half street improvements, at a minimum), and has been planning for a trail along Breeze Creek, but no on-street bicycle facilities exist or are funded within city limits. Upon annexation, La Center regulations under development would require construction of bike and pedestrian accessways along city collector and arterials. The institution of the C-Tran Connector service, the current requirement for sidewalk construction and future adoption and implementation the city's proposed streets standards requiring bikeways along collectors and arterials would help bring the city's multi-modal transportation goals into balance.

Coordinate on Regional transportation facilities with Clark County, WSDOT, RTC, and C-TRAN.

For La Center, these would include Pacific Highway, La Center road, the I-5/La Center interchange, as well as North Fork Road, Highland Road, and 4th Street/Lockwood Creek Road. La Center could pursue coordination with other agencies under any of the alternatives.

Maintain LOS D at intersections on La Center Road/NW 319th Street, and at the I-5 interchange. Maintain LOS C at intersections on NW Pacific Highway, Bolen Street, East 4th Street, Aspen Avenue, 9th Street, North Fork Avenue, Highland Road, and Lockwood Creek Road. Apply standards to development proposals (concurrency). (These combine two goals).

Under all alternatives, La Center Road would be at LOS E or F and without widening to multiple lanes (including the La Center Bridge over the East Fork of the Lewis River) and providing intersection or interchange improvements at I-5, Timmen Road, and in the town core. It may not be financially feasible to provide LOS D for the La Center Road corridor into town. If it is determined that neither the county nor La Center have sufficient funding in the Capital Facilities Plan to improve La Center Road, it is recommended that an LOS E policy be adopted for La Center Road from I-5 into the town core. Another option is a second Lewis River crossing downstream from the La Center Road Bridge. The second crossing is more feasible under Alternative 3 rather that under Alternative #2 because Alternative #2 does not provide the contiguous UGA land connection over the East Fork of the Lewis River.

Alternative 1 contains La Center's growth within the current UGA. This would increase traffic congestion within La Center. Because of background traffic growth documented in the 2006 La Center DEIS,

Alternative # 1 would result in LOS failure at the La Center bridge and at the intersection of La Center Road/Pacific Highway and 4th Street and for a portion of 4th street through the downtown corridor. It is unlikely that LOS C can be maintained, and that sufficient transportation funding would be available to pay for all of the mitigation needed to maintain LOS D or higher on regional facilities or Highways of Regional Significance. Without significant intersection widening, it would be impossible to maintain LOS C at the intersections specified in La Center's current plan. This land use alternative is inconsistent with La Center's LOS goal.

Alternatives 2 and 3 include significant development at the La Center Junction. It would be critical that interchange improvements be included in a Capital Facilities Plan for this area to maintain LOS D at the interchange, especially if the proposed Cowlitz Indian Casino is built. Only the second crossing envisioned in Alternative #3 provides a viable relief valve for traffic on the east side of the East Fork. The second crossing is envisioned to be a city/developer funded project and would improve traffic circulation and emergency access east of Interstate 5 on both sides of the river.

It is recommended that the goal be changed to LOS D for the land use alternatives, and that a high level of pedestrian and bicycle facilities be included in the Capital Facilities Plan regardless of which alternative becomes the preferred land use alternative.

Discourage or prohibit driveways directly onto arterials, improve streets concurrent with development, and provide sidewalks for new developments (combination of three goals).

All of the land use alternatives would be consistent with these goals, as they are relevant to standards that would be applied to all new developments.

Coordinate with C-TRAN on establishing a park-and-ride and bus stops in La Center, and encourage the use of public transportation and/or carpooling.

With C-TRAN's inauguration of the Connector service in 2005, limited transit service is available in residences and businesses within La Center. Currently, there is one park and ride facility located on E Fourth Street in La Center. This current and future situation is, though not fully realized as fixed route transit service, not inconsistent with La Center's transit goal.

La Center should institute a Neighborhood Traffic (Calming) Program.

Such a program could include speed bumps, traffic circles, other physical devices, as well as programs such as speed watch to reduce speeding on residential streets. If La Center dedicates funding for this program, all land use alternatives would be consistent with this goal. If there is no dedicated funding for a neighborhood traffic program, there would be differences in La Center's financially ability to fund neighborhood traffic calming projects based on the specific land use alternative.

Implement Traffic Impact Fees within the UGA.

All alternatives would likely be consistent with this goal. All alternatives would require interchange improvements at the I-5/La Center Junction, some of which WSDOT would likely request be TIF-funded. La Center does not have the ability to collect enough traffic impact fees within a six-year period (the maximum amount of time a jurisdiction can hold TIF funds before they need to be returned, with interest) to pay for the entire multi-million dollar cost of an interchange widening. However, funding sources at the state and federal level all favor projects which exceed minimum local match requirements and provide for public/private partnerships (TIFs are considered private funding). Additionally, La Center likely could collect enough impact fees to provide for a small percentage (3 to 5 percent) of the interchange cost over a six-year period (and could likely find another project in its TIF area on which to spend the TIF funds if an interchange project is delayed or deferred). Thus, it is reasonable to include a small portion of TIF funds as part of the interchange project's local match.

Ridgefield: Coordinate with Clark County to develop and implement transportation programs which reduce reliance on the SOV, encourage energy efficiency, recognize financial constraints, minimize neighborhood impacts, minimize environmental impacts, and implement TDM programs.

Alternative 1 contains Ridgefield's growth within the current UGA, and thus there are no significant employment centers outside of the existing UGA. Because most of the growth is contained within the existing UGA, trip destinations for shopping and school trips, along with some work commutes, may be within walking or bicycling distance and fully contained within the Ridgefield UGA. C-TRAN may still find it financially infeasible to provide additional fixed route service within the UGA unless development standards were modified to increase density around transit stops and the Ridgefield Park-and-Ride.

Alternatives 2 and 3 present more of a challenge in terms of meeting this policy. An expanded UGA increases the amount of single-occupant vehicle travel countywide, including many highly congested regional corridors. The lack of established density or community centers in this alternative make it unlikely that extending transit service to areas within the UGA not currently covered by transit would be financially feasible. The high level of roadway capacity mitigation needed to offset the impacts of these alternatives would likely reduce the amount of funding available for bicycle/pedestrian projects, which in turn results in bike/pedestrian improvements serving the UGA being highly unlikely.

Alternatives 2 and 3, however, may encourage traffic flow in the non-peak direction of travel, thus using existing roadway capacity and serving to increase the efficiency of the system. C-TRAN may find that extending fixed route service to serve employment centers is financially viable, if employment centers are developed with transit- and pedestrian-oriented site designs. Planned additional housing may provide opportunities for more trip destinations for shopping and school trips, along with some work commutes to be fully within the UGA. This could make walking and bicycling trips more feasible and provide for shorter driving trips.

Level-of-service: generally provide LOS C and D on city arterials, except for unsignalized urban arterials, which are allowed LOS E where they do not meet signal warrants.

Ridgefield should be able to maintain LOS D on most of its city arterials under all of the land use alternatives. The exception is SR-501 (Pioneer Street), which would likely have several intersections at LOS E/F, including the intersection with I-5. Mitigation would be necessary at SR-501 (an interchange), and other intersections in the Ridgefield Junction area.

Coordinate with C-TRAN in providing service, stops, and park-and-ride facilities.

C-TRAN currently provides AM and PM commuter service between the Ridgefield Park-and-Ride facility and the Salmon Creek Park-and-Ride. The Ridgefield park-and-ride facility is located in the NE quadrant of the I-5 interchange. The limited nature of the roadways serving the facility and the current lack of housing and employment near the facility do not allow for convenient and safe walking or bicycling access. At this time there are no plans for transportation improvements or new transit service. This current and at least short-term future situation is inconsistent with the City's goal.

All alternatives provide for urban-scale development at the Ridgefield/I-5 junction. With development at the junction, it would be likely that the existing park-and-ride facility could be enhanced to better serve both Ridgefield resident commuters as well as those commuting to jobs at the Junction. Additionally, if the Ridgefield junction development density and site layouts are implemented so as to be transit- and pedestrian-oriented and have incentives or requirements for employer-based carpooling and vanpooling programs, C-TRAN may find that extending fixed route service to serve the Junction as well as continuing to and from the town core may be financially viable, especially coupled with service along the I-5 north corridor serving the Discovery Corridor and La Center Junction employment centers. These alternatives are thus consistent with this goal.

Minimize neighborhood congestion and encourage safety

This goal contains several policies including improved traffic safety, protection against neighborhood cut-through traffic, and development of attractive streetscapes. If Ridgefield dedicates funding for a Neighborhood Traffic Program, all land use alternatives would be consistent with this goal.

All alternatives provide for industrial and commercial development at Ridgefield Junction. Typically, traffic calming is not implemented within areas with these land uses, except where desired by the developer as part of site design. There would be little need for Ridgefield to extend a neighborhood traffic program to the Junction. If housing is built near the interchange and is served by public streets, the City should extend a neighborhood traffic program to the Junction. These alternatives are consistent with this goal.

Vancouver UGA: The Vancouver comprehensive plan and Mobility Management Element contain a wide variety of transportation policies and implementation measures. Rather than restate each and every policy and implementation measure, they would be grouped into general topic areas and the impacts of land use alternatives on these topic areas would be discussed.

Land Use Patterns: Promote land use patterns and site development practices which encourage multimodal (especially non-vehicular) transportation to work sites and for trips within the UGA, reduction in trip length and the number of vehicle trips made, and system efficiencies via TSM and TDM. Adopt LOS standards that encourage growth in urban centers and corridors as well as a multimodal transportation system. Coordinate parking standards to maintain neighborhood integrity, shared uses, and encourage economic development.

Alternative 1 serves to constrain growth within the established Vancouver UGA, meaning that there would be higher densities in a number of areas throughout the UGA. This would result in a high level of transit, walk, and bicycle accessibility to trip destinations.

Alternatives 2 and 3 significantly expand Vancouver's UGA (and others' as well). It is unlikely that there would be a reduction of SOV travel with a boundary expansion resulting in a reduction in transit and non-motorized mode share. LOS standards would likely need to be lowered as funding is inadequate to maintain current standards and to mitigate for the additional congestion resulting from this alternative. Lowering of these standards would not encourage transit use as there may areas of the UGA without transit service. Incompatible adjacent uses in the expanded areas would likely make shared parking infeasible. With the expansion of the Vancouver UGA into areas not currently served by transit nor within walking/bicycling distance of established community centers, this alternative is inconsistent with this policy.

Multimodal Transportation System: provide for a multimodal and efficient transportation system which provides reasonable alternatives to automobile travel and roadway expansion. Discourage future transportation projects that will result in a significant increase in carrying capacity for single occupant vehicles. Continue efforts to construct a High Capacity Transit system within the Vancouver UGA. Give priority to inter-jurisdictional, multi-modal projects.

Alternative 1 contains Vancouver's growth within the current UGA, and thus there are no significant employment centers outside of the existing UGA. As the city develops, trip destinations for shopping and school trips, along with some work commutes, may be within walking or bicycling distance and fully contained within the Vancouver UGA. C-TRAN may find it somewhat financially viable to provide additional fixed route service with the UGA as well. High capacity transit is not being considered for this or any of the land use alternatives.

Alternatives 2 and 3 would not help Vancouver meet this policy. This alternative increases the amount of single-occupant vehicle travel countywide, including many highly congested regional corridors within the Vancouver UGA (see various discussions above). The high level of roadway capacity mitigation needed to offset the impacts of this alternative would likely reduce the amount of funding available for bicycle/pedestrian projects, which in turn results in bike/pedestrian improvements serving the UGA being highly unlikely.

The alternatives are somewhat consistent with the City's multimodal transportation policy, but would require implementation measures to ensure full consistency with this policy.

Intercity Transportation: Support federal, state, and local programs to expand the level of air, water, and rail transport service to and from the region.

The policy regarding air, water, and rail transport relates to intercity transportation of people and goods, rather than movement within Clark County. None of the land use alternatives is inconsistent with this policy. Intermodal connections *within* Clark County may affect intercity transportation, however. For example, all land use alternatives add congestion to the state highway and regional transportation system within Clark County, which in turn affects the mobility of freight movement into and out of land, water, and air ports. Additionally, bus connections to the Amtrak passenger rail station in Vancouver is affected by congestion on the regional roadway system.

Access and Livability: Maintain and enhance the quality of existing roadways. Provide safe, attractive pedestrian facilities adjacent to arterials and streets within residential neighborhoods. Promote safe and secure terminal facilities for bicyclists, pedestrians, and transit users in activity centers and transit corridors. Ensure that the transportation needs of the physically challenged are met.

Regarding pedestrian and bicycle facilities, all alternatives could be consistent with this policy provided that transportation improvement projects all include pedestrian and bicycle facilities. Alternatives 2 and 3 have higher congestion levels on regional facilities than Alternative 1 within and serving the Vancouver UGA. Mitigating for this congestion may result in roadway capacity projects outside of the Vancouver UGA competing with multimodal transportation improvements within the Vancouver UGA.

Alternative 1 contains most growth within the current UGA, and would allow for multimodal transportation projects to occur, but none of the alternatives contemplates such projects. Regarding meeting the needs of the physically challenged, the city has adopted ADA-compliant design standards for new roadways as well as roadway reconstruction; thus, all alternatives are consistent with this policy.

Coordination: Ensure participation in the Vancouver/Portland area programs and planning efforts. Promote interagency coordination and multimodal systems.

The city currently participates in the Columbia River Crossing study, the I-5 Trade and Transportation Partnership Study, and other RTC and Metro efforts, to ensure regional coordination.

Financing: pursue all available funding and encourage multimodal transportation projects.

As stated above, Alternatives 2 and 3 would result in mitigation projects that increase the number of automobile trips, making the alternatives inconsistent with this policy. There would be opportunities for public-private partnerships for transportation improvements, especially in the Discovery Corridor, which may help leverage federal and state funding. Additionally, these alternatives may lend themselves to transit projects and service which serve outlying employment centers, provided that new employment sites be transit-oriented in layout and along the same corridor (such as the Discovery Corridor concept in Alternative 3 which includes expansion of the Ridgefield Junction industrial/employment area). Alternative 1 enables the city to focus on multimodal transportation projects within the current UGA, and thus is consistent with this policy.

Washougal: Washougal has a Concurrency ordinance that was amended in December 2005 as a result of the City's Transportation Plan 2005 update. The code sets LOS policy as LOS D for the city, except where intersections are unsignalized and do not meet signal warrants or a signal is not desired, whereby LOS E is acceptable. While there are no specific policies in the Transportation element, there are transportation improvement strategies listed by mode. A separate section in the Proposed Improvements Ch of the City's Plan relates potential coordinated improvements with SR-14. This discussion would focus on the impacts of the land use alternatives on Washougal's ability to provide modal strategies.

Level-of-service: generally provide LOS C and D on city arterials, except for unsignalized urban arterials, which are allowed LOS E where they do not meet signal warrants.

Washougal should be able to maintain LOS D on most of its city arterials under all of the land use alternatives. The exception is the former SR-140 (15th/17th Street and Washougal River Road), which would likely have several intersections at LOS E, including the intersection with SR-14, and 32nd Street at SR-14 and at E Street. Mitigation may be necessary at SR-14 interchanges (at both 15th and 32nd Streets or some frontage road connections to provide full access to and from SR-14), E Street (roundabout at 17th and intersection improvements at 32nd), and potentially B and C Streets (signal and intersection improvements). Additionally, the city proposes to build a new railroad grade separation as an extension of 27th Street between C Street and E Street.

Pedestrian and bicycle facilities: construct sidewalks along all collector and arterial streets. Construct bicycle lanes along selected local, collector and arterial streets.

The City's 2005 Transportation Plan update contains policies supporting completion of pedestrian and bicycle networks (sections 4.4 and 4.5 of Ch 4). As providing sidewalks is a city street standard, all alternatives are consistent with this policy. Priority should be given to sidewalks along city principal arterials, such as 15th Street, E Street, and a pedestrian/bicycle crossing of SR-14 into the Port area.

Transit: maintain or expand fixed- and flexible-route service.

There is limited local and commuter transit service to Washougal. C-TRAN has scaled back service due to limited operating funds and low ridership. Publicly-funded pedestrian and bicycle projects in Washougal which improve access to transit should be given priority.

Yacolt: The Yacolt area does not show a significant increase in traffic volumes between existing and 2023. All roadway links and intersections are expected to be at LOS C or better conditions, consistent with Yacolt's adopted level-of-service policy. Rural and regional roads linking Yacolt to the rest of Clark County would experience increased congestion. This increased congestion would serve to increase peak period travel times between Yacolt and urban centers such as Battle Ground and Vancouver.

Following is a discussion of the impacts of land use alternatives on Yacolt's Transportation policies.

Improve and maintain the town's road network and ensure coordination with the county and WSDOT on the regional network. Establish a regional transportation system. (Policies 9-1 and 9-2).

All alternatives add congestion to regional roadways which would serve Yacolt. Primarily, SR-503, which connects Yacolt to Battle Ground and Vancouver, would experience LOS E/F conditions from north of Battle Ground (near Lewisville) to SR-500/Fourth Plain in Vancouver. Congestion on SR-502 to I-5 (another route for Yacolt trips to reach the regional and interstate system) is prevalent in Alternatives 2 and 3. Without mitigation, these alternatives would be inconsistent with this policy.

Coordinated planning of regional and bi-state transportation facilities in the context or air, land, and water resources (Policy 9-3).

All impacts on regional transportation facilities occur outside of the Yacolt UGA. See the Clark County discussion for regional facilities outside of the UGA.

Optimize use and efficiency of current roads (Policy 9-4).

All land use alternatives maintain the existing roadway system within the Yacolt UGA.

Establish roadway design and level-of-service standards (Policy 9-5).

All land use alternatives maintain LOS C or better within Yacolt.

C. Concurrency

1. Setting

Concurrency refers to the relationship of new development to the availability of public facilities and services. Concurrency requirements have been enacted by local governments around the country to ensure that public facilities and services—typically transportation, water, sewer, parks, and schools—are not overburdened by the impacts of new development. Concurrency requirements also ensure that new residents have adequate public services and facilities available to them when they move into new developments.

The GMA requires all local jurisdictions "to ensure that those public facilities and services necessary to support development shall be adequate to serve the development at the time the development is available for occupancy and use without decreasing current service levels below locally established minimum standards."

The GMA deals with concurrency at two levels. At the regulatory and project level, a community must be able to demonstrate its ability to finance the capital facilities it needs to meet its planned land use. If the community does not have the financial ability to serve its planned loads or facility needs, it must reexamine its land use assumptions. Concurrency at the regulatory level is specified in the capital facility element of the comprehensive plan. At the project level, concurrency requires that adequate facilities must be available (or planned and financed to be in place) within a reasonable time, typically three to six years. If not, the project cannot be approved.

The concurrency requirement is mentioned at several points in the GMA. It defines public facilities as streets, roads, highways, sidewalks, street and road lighting systems, traffic signals, domestic water systems, storm and sanitary sewer systems, parks and recreational facilities, and schools. Public services include fire protection and suppression, law enforcement, public health, education, recreation, environmental protection, and other governmental services. However, the GMA specifies that only transportation, water, and sewer facilities must be reviewed by local jurisdictions for concurrency. Including concurrency requirements for other facilities is optional.

The GMA establishes specific concurrency requirements for transportation. Comprehensive plans must establish minimum levels of service, identify transportation facilities needed to meet these levels of service, and locate funding sources to pay for the necessary facilities. The GMA defines concurrency for transportation as "…improvements or strategies that are in place at the time of development, or that a financial commitment is in place to complete the improvement of strategies within six years."

In 2000, Clark County reviewed its transportation concurrency program and made it more corridor based. The County's original program, begun in 1994, focused solely on operations and levels of service (LOS) at intersections. The new concurrency system establishes LOS standards for 34 concurrency corridors and procedures to ensure those standards are met before new development is approved. The County's current program involves a three-step approach. The first step is the requirement to meet minimum travel speed standards for the 34 designated concurrency corridors. The next step is to set LOS standards for signalized intersections within the concurrency corridors. The third step relates to operations at unsignalized intersections. The availability of transit, sidewalks, bike lanes, and other travel modes is not taken into account in the concurrency program. The County is currently reviewing its concurrency requirements for transportation.

Clark County and each of the cities has established concurrency requirements for water, sewer, and transportation. The following section looks at how each of the alternatives under consideration would impact concurrency management for water, sewer, and transportation facilities.

2. Impacts on Concurrency

a. Alternative 1

Alternative 1 would keep the existing UGAs and growth patterns adopted in the 2004 Plan. Alternative 1 has the same increase in county population as under Alternative 2, so there would be no difference between them in terms of adequate capacity for water and sewer service. Providers have indicated that their facility plans account for such growth. However, projected growth cannot be accommodated in the existing UGAs under the current growth assumptions, so absent any change in densities, the actual demand for water supply and for sewer capacity could be less than predicted. There may be pressures to upzone urban and rural residential areas. The upzoning in urban areas is unlikely to be sufficient to significantly impact the size of pipes providing water and sewer service. This alternative, by not accommodating all projected urban growth, could result in accelerated development of rural lots. There would be no impacts on public water or sewer lines as these are not permitted to be extended outside UGAs.

As with other public facilities, transportation improvements would occur regardless of which alternative is chosen because existing facilities would not meet level of service standards. As population and employment increases, additional demand would be placed on the road network. The County's Capital Improvement Program identifies several projects that are already programmed for funding through 2011, although additional improvements may be required depending on where development occurs and the increase in demand for new transportation facilities.

b. Alternative 2

Alternative 2 makes concurrency management more difficult and costly than under Alternative 1 because it proposes over half of the proposed new UGA acreage as low-density residential development. The more dispersed growth is the more challenging it is to meet concurrency requirements. The location, timing, and pattern of growth directly relate to the cost of providing services and infrastructure. Generally, as new development spreads out from existing urban areas, the cost of providing and maintaining public services increases. For water provision, a more dispersed growth pattern would increase the length of transmission lines and, therefore, increase the cost of providing water to residents and businesses. Some parts of UGAs under Alternative 2 are outside current sanitary sewer service boundaries and would require the extension of sewer mains to these areas. However, much of the cost is paid by development fees.

Alternative 1 and 2 project the same number of new residents and jobs, although Alternative 2 would be spread over a much larger geographic area that would require improvements to rural roads as well as the collector and arterial system to accommodate the additional traffic. Alternative 2 would potentially make concurrency more difficult because of the added cost of providing a larger road system as well as accommodating the increased number of vehicles. Because the proposed land use pattern is predominantly low density residential, fewer people would be encouraged to use alternative forms of transportation than under Alternative 1. As with other public facilities, transportation improvements would occur regardless of which alternative were chosen because existing facilities would not meet level of service standards. As population and employment increases, additional demand would be placed on the road network. The County's Capital Improvement Program identifies several projects that are already programmed for funding through 2011, although additional improvements may be required depending on where development occurs and the increase in demand for new transportation facilities.

D. Fiscal Impacts

The GMA requires CWPPs to include an analysis of fiscal impact (RCW 36.70A.210(3)(h)), although the statutory requirement is brief and general. Subsequent conclusions by the Central Puget Sound Growth Management Hearings Board appeared to establish minimum requirements for fiscal analysis that included an assessment by local jurisdictions of anticipated costs versus revenues based on designated UGAs. There does not appear to be criteria for determining whether a particular assessment is adequate.

In the past Clark County has dispersed its capital improvements expenditures throughout the county providing partial solutions to many areas, but not complete solutions to priority areas. It is clear that existing revenue streams are not sufficient to keep up with demands for public services and facilities. Transportation concurrency policy has led to denial of projects in some corridors; park acquisition and improvements are not keeping up with population and employment growth; schools heavily rely on portable facilities, etc.

As a part of updating the comprehensive plan and planning for a better balance of jobs to population, the County has elected to pursue a more strategic approach to investment of public funds to better prioritize funding for capital improvements. The goal is to obtain "fully-served" land where all public facilities meet or exceed standards in areas planned for employment development. Experience shows that the market responds well to "shovel ready" sites at which development can begin as soon as plans and approvals are completed. Consequently, a very focused analysis was conducted to first identify potential investment areas (the FPIAs) and then develop conceptual plans and cost estimates for making them ready to build (recognizing that full build-out of all the areas would take many years and elected officials would determine the timing for improvements).

The results of estimating the costs of water, sewer, and transportation improvements for serving the UGAs proposed under each alternative were presented in the capital facilities section of this DEIS. The following sections discuss the potential fiscal impacts of water, sewer, and transportation improvements based on the proposed alternatives.

1. Water, Sewer and Electricity Costs

Water and sewer costs are largely funded by business and residential development incrementally extending lines and paying meter fees and other system development ("hook-up") charges. Plans for new trunk lines and/or treatment facilities are based on the cumulative amount of new demand that is measured against treatment plant capacity and collection system capacity and condition. Funding new facilities are historically addressed through independent rate studies. Connection fees have been utilized to fund new capital improvements that increase system capacity, while monthly rate revenues have been utilized to fund operation and maintenance costs. Other funding mechanisms for major sewer improvements include Local Improvement Districts, Bonds, Revolving Loan Fund Programs, Developer Financing, and State and Federal Funding Programs.

A review of the comprehensive planning documents for the various water and sewer utilities and discussions with staff indicate that some water and sewer providers have recently built and funded water supply and sewage facilities in response to the growth forecasts of the 2004 comprehensive plans. In each alternative, determining the best way to pay for the proposed work is on going. Low-interest loans have been obtained, and utility providers are pursuing additional low-cost financing. Bond markets may also be considered, depending on the need. For Clark Regional Waste Water Salmon Creek Phase 4 expansion it is important to note that property taxes are not involved in the funding of the improvements. The costs must be covered through fees for new connections and monthly service charges only. These fees have been established in order to serve the community needs.

The shape of Battle Ground and Vancouver's proposed urban growth areas are not influenced by fiscal impacts to sewer improvements. The Salmon Creek Wastewater Treatment Plant serves the Clark Regional Wastewater District as well as Battle Ground, Orchards, Cedars, and Meadow Glade areas. The treatment plant and the interceptor sewer will be updated to accommodate at least the next 20 years of growth. The SWWMS current expansions are already budgeted and should not have any additional costs.

2. Transportation Costs

Transportation costs cannot be recouped in the same way as costs for water and sewer service. In the past, the gap between funding for transportation improvements and the need to maintain concurrency levels of service on roadways has resulted in development moratoria in some congested corridors of Clark County.

The purpose of looking at the FPIAs as part of the comprehensive plan update was to identify where limited funds might best be invested to achieve the policy goals for economic development in Clark County and maintain the county and city concurrency levels of service. All alternatives would require significant investments in the transportation system to maintain LOS D.

Funds for county and city transportation improvements come from several sources:

- Portions of property taxes passed through the County's Road Fund
- Real estate excise taxes (REET)
- Sales taxes
- Traffic Impact Fees
- Frontage improvements and other private developer contributions
- Motor vehicle fuel taxes
- Federal and state grants
- WSDOT

Local agency funding includes current road and street funds, potential local option tax revenues, and other locally-adopted matching funds. Private funding includes developer proportionate share contributions to mitigation projects, traffic impact fees, latecomers' reimbursement fees, and required frontage improvements. It is expected that some form of regional traffic impact fee would be adopted to help pay for interurban transportation corridors, such as NE 50th Avenue and NE 72nd Avenue, that are in the county but require widening (for mitigation purposes) due to growth in outlying urban areas under specific land use alternatives.

3. Mitigation

Local jurisdictions could make the following adjustments to reduce potential adverse fiscal impacts.

- Eliminate certain proposed projects based on needs assessments and community priorities.
- Aggressively seek alternative funding sources from federal, state, and local grant programs.
- Establish appropriate impact fees for new development to offset the costs of providing additional public facilities and services.
- Implement user fees for appropriate public facilities and services.

E. Annexation and Incorporation

1. Setting

Annexation is the process of adjusting municipal boundaries to bring adjacent unincorporated areas into an existing city. Proper annexation can prevent the growth of separate fringe areas that may produce a complex pattern of government by multiple jurisdictions—city, county, and special districts—that can lead to administrative confusion, inefficiency, duplication of services, and excessive costs. Annexation is often seen as preferable to incorporation—the creation of a new city—because new incorporations in urban areas may cause conflicts of authority, the absence of cooperation, duplication of facilities, and an imbalance between taxable resources and municipal needs.

The intention of the GMA is that urban development occurs within cities or UGAs, which are areas that are designated to eventually become cities, either through annexation or incorporation. The transition of these areas from unincorporated to incorporated areas requires the cooperation of staff and policy makers from the County, cities, towns, and special districts. In order to achieve this level of cooperation, the Clark County Community Framework Plan (CFP) requires each jurisdiction within the county to plan for annexation and incorporation within UGAs.

Specifically, the CFP requires cities to (1) establish criteria for annexation or incorporation within a UGA, (2) develop an inter-jurisdictional analysis for the assessment of fiscal and other impacts related to annexation, and (3) provide a coordinated plan for the provision of urban services and facilities within the area to be annexed or incorporated. In compliance with the GMA, the CFP does not allow cities or towns to annex territory outside designated UGAs. This includes those lands designated as urban reserve areas.

2. Conformance with Annexation and Incorporation Requirements

The annexation or incorporation of lands within each city's UGA is a key element in the transition of these lands to urban densities and levels of service. Regardless of which alternative is selected, policies established by the CFP and countywide planning policies would continue to define the overall annexation and incorporation process that jurisdictions must follow. The particular goals and policies of each city's comprehensive plan that relate to annexation and incorporation would also continue to guide and define that jurisdiction's annexation process

Those alternatives that expand UGAs—Alternatives 2 and 3 —would increase the amount of land that would eventually be annexed or incorporated. Alternative 1, which assumes all new growth and development within existing urban growth areas, would not. The challenge of annexation is to extend city services to annexed neighborhoods where such services are needed without eroding existing service levels for established neighborhoods. Annexation also involves close cooperation between the County and cities in order to bring about a smooth transition in services. These challenges would be even greater under those alternatives that add a substantial amount of land to urban growth areas.

3. Mitigation

To mitigate impacts, the County and cities could:

- Continue to review and update, if necessary, policies and guidelines for annexation and incorporation within UGAs so that these policies reflect current growth and development trends.
- Assure that the annexation and incorporation process is coordinated among different levels of government—county, cities, special districts.
- Encourage local jurisdictions to establish inter-jurisdictional agreements for the provision of urban services within UGAs in a way that meets the goals of comprehensive plans.

APPENDIX A

- Non-procedural Changes to the Growth Management Act, 2002-2005

- References

5

- Glossary

Non-procedural Changes to the Growth Management Act, 2002-2005

RCW 36.70A—Multimodal Concurrency

2SHB 1565: Addressing Transportation concurrency strategies.

• Specifies that concurrency compliance improvements or strategies may include qualifying multimodal transportation improvements or strategies.
• Requires regional transportation plans that include provisions for regional growth centers to address concurrency strategies, measurements for vehicle level of service, and total multimodal capacity.
• Requires the Department of Transportation (DOT) to administer a study to examine multimodal transportation improvements or strategies to comply with the concurrency requirements of the Growth Management Act. Study to be completed by one or more regional transportation planning organizations (RTPOs) electing to participate in the study. Report of findings and recommendations by December 31, 2006.

RCW 36.70A.130—Comprehensive plans
RCW 36.70A, 36.70A.030, 36.70A.060, 36.70A.130—Recreational facilities

EHB 2241: Authorizing limited recreational activities, playing fields, and supporting facilities existing before July 1, 2004, on designated recreational lands in jurisdictions planning under RCW 36.70A.040.

• Authorizes the legislative authority of counties planning under RCW 36.70A.040 and meeting specified criteria (Snohomish) to, until June 30, 2006, designate qualifying agricultural lands as recreational lands.
• Establishes designation criteria, including specifying that qualifying agricultural lands must have playing fields and supporting facilities existing before July 1, 2004, and must not be in use for commercial agricultural production.
• Specifies activities that may be allowed on designated recreational lands.

RCW 36.70A.200—Long-term Air Transportation

ESSB 5121: Assessing long-term air transportation needs.

• Requires WDOT to conduct a statewide airport capacity and facilities assessment and a 25-year capacity and facilities market analysis, forecasting demands for passengers and air cargo. Report due July 1, 2006
• DOT to conduct , and report results by July 1, 2007.
• Creates an Aviation Planning Council to make recommendations on future aviation and capacity needs. The council expires July 1, 2009.

RCW 36.70A.070—Physical Activity

SSB 5186: Increasing the physical activity of the citizens of Washington state.

• Land use elements of comprehensive plans are encouraged to consider using approaches to urban planning that promote physical activity. The transportation element of a comprehensive plan must contain a pedestrian and bicycle component that includes identified planned improvements for pedestrian and bicycle facilities and corridors to enhance community access and promote healthy lifestyles. Comprehensive transportation programs must include any new or enhanced bicycle or pedestrian facilities identified in the transportation element.

RCW 35A.15—Agricultural Land

SB 5589: Providing for proceedings for excluding agricultural land from the boundaries of a charter or noncharter code city.

• Property owners of agricultural land may petition the legislative body of a code city for exclusion from the incorporated area of that city. The petition must be signed by 100 percent of the owners of the land. In addition, if non-agricultural landowner residents reside within the subject area, the petition must also be signed by a majority of those residents who are registered voters in the subject area.

RCW 36.70A.070—Development of rural areas

SSB 6037 Changing provisions relating to limited development of rural areas.

• Growth Management Act provisions for public services and facilities in qualifying limited areas of more intensive rural development (LAMIRDs) are modified. Until August 31, 2005, an example of a public service or facility that is permitted within recreational and tourist use LAMIRDs is a connection to an existing sewer line where the connection serves only the recreational or tourist use and is not available to adjacent non-recreational or non-tourist use parcels.

RCW 36.70A—Military installations

ESSB 6401: Protecting military installations from encroachment of incompatible land uses

• Comprehensive plans, development regulations, and amendments to either should not allow development in the vicinity of a military installation that is incompatible with the installation's ability to carry out its mission requirements. Counties and cities must notify base commanders during the process of adopting or amending comprehensive plans or development regulations that will affect lands adjacent to the installations.

RCW 35.61.160—Housing, Consumer Choices

SB 6593: Prohibiting discrimination against consumers' choices in housing

• Cities, code cities, and counties generally regulate manufactured homes in the same manner as all other homes. They may require new manufactured homes. The foundation must meet the manufacturer's design standard, and the placement of concrete or a concrete product between the base of the home and the ground may be required. Thermal standards must be consistent with the standards for manufactured homes.

RCW 36.70A.170-Agricultural Lands Study

SB 6488: Ordering a study of the designation of agricultural lands in four counties

• By December 1, 2004, the Department of Community, Trade, and Economic Development will prepare a report on designation of agricultural resource land in King, Lewis, Chelan, and Yakima Counties. The report will cover how much land is designated, how much is in production, changes in these amounts since 1990, comparison with other uses, effects on tax revenue, threats to the agriculture land base, and measures to better maintain the base and the agriculture industry.

RCW 36.70A .070—Rural development

ESHB 2905: Modifying provisions for type 1 limited areas of more intensive rural development

• Any development or redevelopment within one category of existing "limited areas of more intensive rural development" (LAMIRDs) must be principally designed to serve the existing and projected rural population.

• Building size, scale, use, or intensity of the LAMIRD development or redevelopment must be consistent with the character of the existing areas.

• Development or redevelopment may include changes in use from vacant land or a previously existing use if the new development conforms to certain requirements.

RCW 36.70A.106—Development regulations

SHB 2781: Changing provisions relating to expedited state agency review of development regulations

• Proposed changes to development regulations by jurisdictions that plan under the Growth Management Act (GMA) can receive expedited review by the Department of Community, Trade, and Economic Development and be adopted immediately thereafter, if timely comments regarding GMA compliance or other matters of state interest can be provided.

RCW 36.70A.110—National historic reserves

SSB 6367: Protecting the integrity of national historical reserves in the urban growth area planning process

• The existing requirement that cities and counties must include areas and densities sufficient to permit the urban growth projected for the succeeding 20-year period does not apply to those urban growth areas contained totally within a national historical reserve. A city may restrict densities, intensities, and forms of

urban growth as it determines necessary and appropriate to protect the physical, cultural, or historic integrity of the reserve.
RCW 36.70A.177—Agricultural land use
SB 6237: Providing nonagricultural commercial and retail uses that support and sustain agricultural operations on designated agricultural lands of long-term significance
• Agricultural zoning can allow accessory uses that support, promote, or sustain agricultural operations and production, including compatible commercial and retail uses that involve agriculture or agricultural products or provide supplemental farm income.
RCW 36.70A.367—Industrial land banks
SSB 6534: Designating processes and siting of industrial land banks
• The requirements for including master planned locations within industrial land banks and for siting specific development projects are separated so that designation of master planned locations may occur during the comprehensive planning process before a specific development project has been proposed.
RCW 36.70A (SSB 5602) Growth management planning
Concerning the accommodation of housing and employment growth under local comprehensive plans
• A new section is added to the Growth Management Act (GMA) requiring counties and cities subject to the GMA to ensure that, taken collectively, actions to adopt or amend their comprehensive plans or development regulations provide sufficient capacity of land suitable for development within their jurisdictions. • The requirement for sufficient capacity refers to accommodating a jurisdiction's allocated housing and employment growth as adopted in the applicable countywide planning policies and consistent with the 20-year population forecast from the Office of Financial Management.
RCW 36.70A.070 (SSB 5786) Rural development
Clarifying the scope of industrial uses allowed in rural areas under GMA
• Industrial "uses" are permitted under the Growth Management Act in both industrial and mixed-use areas in certain types of Limited Areas of More Intensive Rural Development (LAMIRDs).
• Industrial uses within specified LAMIRDs are not required to be principally designed to serve the existing and projected rural population in order to be lawfully zoned.
RCW 36.70A.110 (SHB 1755) Annexation
Creating alternative means for annexation of unincorporated islands of territory
• Creates an alternative method of annexation allowing jurisdictions subject to the "buildable lands" review and evaluation program of the Growth Management Act (GMA) to enter into inter-local agreements to annex qualifying territory meeting specific contiguity requirements.
• Creates an alternative method of annexation allowing counties subject to the "buildable lands" review and evaluation program of the GMA to enter into inter-local agreements with multiple municipalities to conduct annexation elections for qualifying territory contiguous to more than one city or town.

Source: http://www.cted.wa.gov/_CTED/documents/ID_2063_Publications.pdf

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ACRONYMS

ADA – Americans with Disabilities Act

AMR – American Medical Response

BNSF – Burlington Northern & Santa Fe Railroad

BOCC – Board of County Commissioners

BPA – Bonneville Power Administration

CAA – Federal Clean Air Act

CARA – Critical Aquifer Recharge Area

CCC – Clark County Code

CCFD – Clark County Fire District

CCHR – Clark County Heritage Register

CFP –Community Framework Plan

CMAQ – Air Quality Improvement Program

CMC – Camas Municipal Code

CMS – Congestion Management System

CPU – Clark Public Utilities

CREDC – Columbia River Economic Development Council

CRESA – Clark Regional Emergency Services Agency

CTR – Central Transfer and Recovery Center

CWA – Federal Clean Water Act

CWPPs – County–wide Planning Policies

CWSP – Clark County Coordinated Water System Plan

DCD – Department of Community Development

DEIS – Draft Environmental Impact Statement

DEQ – (Washington State) Department of Environmental Quality

DGER – Division of Geology and Earth Resources

DNR – (Washington State) Department of Natural Resources

DOE – (Washington State) Department of Ecology

DS – Determination of Significance

EDSP – Economic Development Strategic Plan for Clark County prepared by CREDC

EIS – Environmental Impact Statement

EMS – emergency medical services

ESA – Endangered Species Act

ESD – (Washington State) Employment Security Department

FEIS – Final Environmental Impact Statement

FEMA – Federal Emergency Management Agency

FIRM – Federal Insurance Rate Map

FPIA – Focused Public Investment Area(s)

FVRLS – Fort Vancouver Regional Library System

FWS – Fish and Wildlife Service

GMA – Growth Management Act

HCDP – Housing and Community Development Plan

HCT – high capacity transit

HHW – household hazardous waste

HOV – high occupancy vehicle

HUD – U.S. Department of Housing and Urban Development

ISTEA – Intermodal Surface Transportation and Efficiency Act

ITS – Intelligent Transportation System

kVa – 1000 volt-amperes; the rating assigned to an electricity distribution transformer

LCMC – La Center Municipal Code

LCSCI – Lower Columbia Steelhead Conservation Initiative

LOS – level of service

LOS E/F – level of service rating of E/F (close to failing or failing level of service)

LRT – Light Rail Transit

MGD – million gallons per day

MHI – median household income

MPO – Metropolitan Planning Organization; regional planning organization required by federal regulations (for Clark County it is RTC).

MRCI – municipal, residential, commercial, and industrial

MTP – Metropolitan Transportation Plan

NAAQS – National Ambient Air Quality Standards

NHS – National Highway System

NMFS – National Marine Fisheries Service (now NOAA Fisheries)

NOAA – National Oceanic and Atmospheric Agency

NRCS – Natural Resource Conservation Service

NRHP – National Register of Historic Places

NSS – Highways of Statewide Significance

OCD – Office of Community Development, State of Washington

OFM – Office of Financial Management, State of Washington

PDX – Portland International Airport

PHS – Priority Habitat and Species Program

PIF – Park Impact Fees

PMSA – Primary Metropolitan Statistical Area

RCW – Revised Code of Washington

REET – Real Estate Excise Tax

RMC – Ridgefield Municipal Code

RTC – Southwest Washington Regional Transportation Council

RTPOs – Regional Transportation Planning Organization; created by GMA (RTC is the RTPO for Clark, Skamania and Klickitat counties.)

SCWTP – Salmon Creek Wastewater Treatment Plant

SEPA – State Environmental Policy Act

SIP – State Implementation Plan (for reducing air pollution).

SMA – Shoreline Management Act

SR – State Route, Washington

STE – Sensitive, Threatened and Endangered species

STEP system– septic tank effluent pump system

SWCAA – Southwest Washington Clean Air Agency

TDR – Transfer of Development Rights

TEA-21 – Transportation and Efficiency Act

TIF – Transportation Impact Fees

TSM/TDM – Transportation System Management / Transportation Demand Management

UBC – Uniform Building Code

UGA – urban growth areas

UP – Union Pacific Railroad

USDA – U.S. Department of Agriculture

VHT – Vehicle hours traveled

VMC – Vancouver Municipal Code

VMT – vehicles miles traveled

WAC – Washington Administrative Code

WDFW – Washington State Department of Fish and Wildlife

WMC – Washougal Municipal Code

WSDOT – Washington State Department of Transportation

WSRB – Washington State Surveying and Rating Bureau

WUCC – Water Utility Coordinating Committee

DEFINITIONS

Achievable density – the density of residential development (usually expressed as number of dwelling units per acre) that can actually be built, taking into consideration the required street dedications, setbacks, parking, and environmental constraints such as slopes, wetlands, etc.

Acre, gross – An acre of land measured including all land uses (i.e., streets, sidewalks, utility easements as well as buildable lots).

Acre, net – An acre of land calculated excluding all unusable spaces (i.e., streets, sidewalks, utility easements, drainage channels, etc.)

Affordable housing – Housing is considered affordable to a household if it costs no more than 30% of gross monthly income for rent or mortgage payments, or up to 3.0 times annual income for purchasing a home. This is the standard used by the federal and state government and the majority of lending institutions.

Arterial – a major street carrying the traffic of local and collector streets to and from freeways and other major streets. Arterials generally have traffic signals at intersections and may have limits on driveway spacing and street intersection spacing.

Average Daily Traffic – the weighted 24 hour total of all vehicle trips to and from a site Monday through Friday.

Built-out – Having no remaining vacant land; fully developed to the maximum permitted by adopted plans and zoning.

Capital Facilities Program – A program administered by a city or county government and reviewed by its Planning Commission, which schedules permanent improvements, usually for six years in the future to fit the projected fiscal capability of the jurisdiction. The program is generally reviewed annually, for conformance to and consistency with the adopted Comprehensive Plan.

Cluster Development – Development in which a number of dwelling units are placed in closer proximity than usual, or are attached, with the purpose of retaining an open space area.

Collector – A street for traffic moving between major or arterial streets and local streets. Collectors generally provide direct access to properties, although they may have limitations on driveway spacing.

Comprehensive Plan – a document consisting of maps, charts, and text which contains the adopting city or county's policies regarding long–term development. A comprehensive plan is a legal document required of each local government by the State of Washington. The required content of the comprehensive plan is described in RCW 36.70 and 36.70A, 36.70B, and 36.70C.

Concurrency – occurring at the same time. The Growth Management Act requires that adequate public services and facilities such as water, sewer, storm drainage, and transportation infrastructure is available at the time that new development is occupied and that the level of service for that infrastructure must meet standards set by the city or county.

Critical Areas – includes wetlands, sensitive fish and wildlife habitat areas, critical recharge areas for groundwater aquifers, flood hazard areas, and geologically hazardous areas (such as landslide areas, earthquake fault zones, and steep slopes), as defined by GMA.

Density – For residential development, density means the number of housing units per acre. For population, density means the number of people per acre or square mile.

Density, gross – Density calculations based on the overall acreage of an area, including streets, roads, easements, rights–of–way, parks, open space, and sometimes, other land uses.

Density, net – density calculations based on the actual area of land used, exclusive of streets, roads, rights–of–way, easements, parks and open space.

Determination of Significance – under SEPA, the written decision by the responsible official of the lead agency that a proposal is likely to have a significant adverse environmental impact and therefore an EIS is required.

Developable land – land that is suitable as a location for structures because it is free of hazards (flood, fire, geological, etc.), has access to services (water, sewer, storm drainage, and transportation), and will not disrupt or adversely affect natural resource areas.

Element – a component or Ch of the comprehensive plan. State law requires each city comprehensive plan to include five elements, which are land use, public facilities, utilities, transportation, and housing. Counties must also prepare a rural element. In addition, elements addressing recreation, conservation, and solar energy may be included at local option.

Extremely-low-income household – households earning 30 percent or less than the countywide median household income.

Flood Hazard Area – a lowland or relatively flat area adjoining inland or coastal waters that is subject to a one percent or greater chance of flooding in any given year. Also known as the 100 year flood area.

Floodplain – typically is the surface elevation of a water body during a 100-year storm event, includes the floodway and floodway fringe.

Floodway – an area within the floodplain where encroachments (e.g., by a structure) would cause the floodplain elevation to rise.

Floodway fringe – an area between the floodway and the outside limit of the flood plain where structures can usually be built.

Floor Area Ratio – the gross floor area permitted on a site divided by the total net area of the site, expressed in decimals to one or two places. For example, on a site with 10,000 net square feet of land area, a Floor Area Ratio of 1 to 1 (1.0:1.0) will allow a maximum of 10,000 square feet of building area to be built. On the same site, a FAR of 1.5 to 1.0 would allow 15,000 square feet of building to be constructed.

Growth management – the use by a community of a wide range of techniques in combination to determine the amount, type, and rate of development desired by the community and to channel that growth to into designated areas.

Growth Management Act – Washington State House Bill (HB) 2929 which was adopted in 1990 and amended several times since then.

High Occupancy Vehicle – a vehicle carrying more than two people.

Household – all persons living in a dwelling unit, whether or not they are related. Both a single person living in an apartment and a family in a house are considered a "household".

Household Income – The total of all the incomes of all the people living in a household. Households are usually described as very low income, low income, moderate income, and upper income.

Impact fee – a fee levied on the developer of a project by a city, county, or special district as compensation for the expected effects of that development. The Growth Management Act authorizes imposition of impact fees on new development and sets the conditions under which they may be imposed.

Implementation measure – an action, procedure, program or technique that carries out comprehensive plan policy.

Infrastructure – the physical systems and services which support development and people, such as streets and highways, transit services, water and sewer systems, storm drainage systems, airports, and the like.

Land absorption – when vacant land is developed or underdeveloped land is redeveloped.

Landscaping – planting (including trees, shrubs, and ground covers) suitably designed and installed and maintained to enhance a site or roadway permanently.

Level-of-Service (LOS) – a method of measuring and defining the type and quality of particular public service such as transportation, fire protection, police protection, library service, schools/education, etc. Transportation levels of service are designated "A" through "F", from best to worst. LOS A describes free flowing conditions; LOS E describes conditions approaching and at capacity; LOS F describes system failure or gridlock.

Low-income household – households earning between 51% and 80% of the countywide median income

Market factor – an amount used in calculating the needed supply of vacant and buildable land; the market factor represents an additional "cushion" of available land. It is intended to ensure that the land supply does not become so restricted that it causes an artificial rise in land prices.

Median income – the mid-point of all of the reported household incomes; half the households have higher incomes and half have lower incomes than the mid-point.

Middle-income household - households earning between 95 and 120 percent of the countywide median income.

Moderate-income household – households earning between 81 and 95 percent of the countywide median income.

Non-project action – an action that is different or broader than a single, site specific project. Includes adoption of plans, policies, programs, or regulations that contain standards controlling the use of the environment, or that will regulate a series of connected actions (WAC 197–11–704).

Open space – any parcel or area of land or water that is essentially unimproved and devoted to an open space use such as preservation of natural resources, outdoor recreation not requiring development of play fields or structures, or public health and safety (flood control).

Planning Commission – a group of people appointed by the City Council or County Commission to administer planning and land use regulations for the jurisdiction. State regulations governing the powers and activities of the Planning Commission are contained in RCW.

Poverty level – a set of money income thresholds that vary by family size and composition that the Census Bureau uses to detect who is poor. If the total income for a family or unrelated individual falls below the relevant poverty threshold, then the family or unrelated individual is classified as being "below the poverty level".

Resource lands – as defined by GMA, lands that may be used for commercial forest, agriculture, or mineral extraction industries. Cities and counties must identify these lands and develop policies to protect them as a part of growth management planning.

SEPA – the State Environmental Policy Act which requires that each city or county consider the environmental impacts of a proposed development before approval and incorporate measures to mitigate any expected negative impacts as conditions of approval.

Transfer of Development Rights (TDR) – a program that permits a property owner or developer to relocate development potential from areas where proposed land use or environmental impacts are considered undesirable to another site which can accommodate increased development beyond that for which it was zoned.

Upper income household – households earning over 120 percent of the countywide median income.

Urban Growth Areas – areas where urban growth will be encouraged. Counties and cities planning under GMA must cooperatively establish the urban growth areas and cities must be located inside urban growth areas. Once established, cities cannot annex land outside the urban growth area. Growth outside of urban growth areas must be rural in character.

Vehicle Miles Traveled – the average number of miles traveled by a vehicle in a given area. This is both a measure of trip length and of dependency on private vehicles.

Very low income –households earning less than 50 percent of the countywide median income

Vision, Visioning – a collective and collaborative statement by citizens, elected and appointed officials and interested parties of their preference for what their community can and should be.

Water-quality limited stream – surface waters that have been identified as not meeting water quality standards and not supporting identified beneficial uses, as defined in Washington regulations (WAC 173-201A).

Zoning – a map and ordinance text which divides a city or county into land use "zones" and specifies the land uses and size restrictions for buildings within that zone.